An interactive web-based prototype for developing a destination information system (DIS) for the Kingdom of Bahrain

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An Interactive Web-based Prototype for Developing a Destination Information System (DIS) for the Kingdom of Bahrain

BY

Aysha Salem Mubarak

A Doctoral Thesis

Submitted in partial fulfilment of the requirements
For the award of
Doctor of Philosophy
of
Loughborough University

2005

Supervisor: Prof. Charles Oppenheim

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ABSTRACT

The World Wide Web (WWW) has brought about a revolution in the media environment; and the electronic exchange of information and payment, in the goods and services sector, has come of the age. Many new ways of reaching market segments, traditionally hard to reach, have been created, and international audiences are now online. A number of tourism destinations, by taking advantage of this technology, have developed their own websites or computer systems to place them at the forefront of Internet marketing in the tourism industry.

The Destination Information System (DIS), a web-based system, allows the development of a tourism information system and focuses on three crucial aspects:

- The use of databases, in combination with decentralised maintenance, allows for high quality content in terms of comprehension, accuracy and actuality.
- The support of different information retrieval strategies, ranging from pure navigation to a full search capability, is made possible along with an online booking facility.
- Different dimensions of customisation allow the system to be used by tourism information sources, and for diverse tourism information and products.

Despite the fast-growing popularity of websites, and the presence of many tourism organisations in this ‘virtual market’, the opportunities offered by this new medium for convenient and powerful access to tourist information and products are still being overlooked. Many organisations approach the WWW as a traditional approach of one-way communication. This research addresses the opportunity offered by the DIS for the Kingdom of Bahrain - a developing tourism destination - with a two-way communication approach in which users play an essential role.

A successful DIS attracts and retains consumers, and delivers business information with a formulated marketing strategy. However, the design and development of the DIS includes many business, technological and user challenges. Understanding and fulfilling the critical requirements of these challenges will determine the success of a commercial DIS application. Careful planning and preparation is needed to achieve the intended purpose of this new information exchange channel.
This research project examines the requirements for a DIS for Bahrain, including:

- Planning elements;
- Design elements, such as interactivity, navigation and functionality;
- Content elements such as readability, integrity, value and marketing-mix.

The research methodology involves the collection of information about DIS from existing literature and through field research, undertaken to acquire information about the requirements for a successful DIS. The following research instruments were used: web-based questionnaires, interviews and site mapping analysis. For practical analysis, it was followed by the design and development of a prototype, named Bahrain Destination Information System BDIS. System specifications, design, and content classification of the prototype were identified. The complete prototype was then analysed and tested to determine its suitability for providing the tourism related information and services. The prototype was implemented in a World Wide Web environment. An analysis of the prototype was undertaken, including both functional analysis as well as usability analysis.

Research empirical findings indicated that the BDIS prototype is dependable, effective and appropriate for its purpose, as welcomed by potential users. Finally, the prototype provides a suitable foundation for the provision of tourism information and services. The proposed prototype will enable The Kingdom of Bahrain and other disadvantaged destinations to attract more international tourists, and to gain appreciable benefits from the cutting-edge of technology. In order to set the scene for the new system within the hosted destination, the research will highlight cultural and social issues.

It is recommended that the Kingdom of Bahrain places BDIS on their agenda, as Tourism Affairs encourages and backs the research on tourism in Bahrain. It is further recommended that Tourism Affairs should build a partnership with the private sector to secure a successful DIS, and directly involve small and medium enterprises that are marginalised on the present web site. The prototype provides, especially for underdeveloped destinations, a sound foundation for promoting tourism information and services. Research findings indicate that the prototype is reliable, effective and appropriate for its purpose, and is well received by users.
Key words:
Dedication

To Sarah my beloved Aunt may your soul rest in peace
   For you I dedicate this work

To my parents

To my family

To the new generation of the family
Remember when you hold this work
   That it is the fruit of Love
       and
   Determination
AKNOWLEDGMENTS

First of all I want to express my deep gratitude to God almighty whose blessings have made this effort fruitful. A project like this is a major undertaking and a labour of love. Special thanks to Professor Charles Oppenheim for supporting this project wholeheartedly. Without Professor Charles' vision, sound judgment, experience and direction, this project would never see the light. His passion, single-minded focus and commitment to produce a good thesis was an inspiration. Thanks also to Professor McKnight the Director of Research at the Department of Information Science at Loughborough University for his help and support and to Professor Ron Summers the head of the Department of Information Science for his encouragement. Much appreciation goes to Professor Jack Meadows for his contribution of knowledge and ideas to this project.

The trustees of The Bahrain –British foundation also deserve accolades for funding the project in its embryonic year by awarding me the Bahrain –British foundation award, an award which will leave a fingerprint on my life. A big thank you to The British Council for funding the project for the second year and awarding me the Chevening Scholarship. A sincere vote of thanks to H.E. Dr Mohamed Bin Jassim Al Gatham, former Minister of Education in the Kingdom of Bahrain for generously funding the project for the third year.

My family “the winds beneath my wings“ who motivated and supported me emotionally and financially. To my beloved parents, my life role models, thank you is not enough; “I love you dearly.” To the greatest Mum, Zahra, “you are the beat of my heart beating rhythmically to my happiness, to my fear, to my sadness and to my excitement;” to you my immortal love. A very special recognition to my dearly loved brother for his love, continued support and understanding. Special thanks to my cousins Suaad who attended to all the niggling details of my problems with style patience and flexibility. Equal thanks go to my cousins Khawala, Jammela, Hassan, Marzooq and Abdullah Aman and my sisters in law Karen and Sue for their support and amazing good humour which cheered me up during the grey days.
My deep thanks and gratitude to Mr Mohmed Berka Ibrahim and Dr Martin Parker for their help and support.

"A friend is someone we turn to when our spirit needs a lift." During this project my spirit was lifted by a bunch of unforgettable friends; many thanks to Hanan, Badriya, Ghada, Layla and Rabab who continually encouraged me by the social mobiliser (telephone).

Discussion and cooperation with friends and colleagues in the Department of Information Science have contributed substantially to this work "never a dull moment around the office".

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My thanks, finally go to the organisations whose works such as illustrations, photographs and text have been used in the prototype. Many thanks goes to myself for patience and hardworking.
Abbreviations

AI  Artificial Intelligence
ASA  Additional Service Architecture
ASCII American Standard Code for Information Interchange
ATM  Asynchronous Transfer Mode
BBC  British Broadcasting Corporation
BDIS Bahrain Destination Information System
BOLA Business Open Learning Archive
CATC  Computer-Assisted Travel Counselling
CATWOE Clients, Actors, Transformations, Weltanschauung, Owners, and Environment
CDA Content Delivery Application
CERN European Centre for Nuclear Research
CF Collaborative Filtering
CFG Common Front Group
CGI Common Gateway Interface
CMS Content Management System
CRM Customer Relation Management
CRSs Computerised Reservation Systems
CTRs Computer Task Requirements
DFD Data Flow Diagram
DICIRMSs The socio-cultural and environmental impacts at destination.
DIS Destination Information Systems
DMOs Destination Management Organisations
DNS Domain Name Server
DSSs Decision Support Systems
ER Entity Relation
EDB The Economic Development Board (Bahrain)
EDI Electronic Data Interchange
EIS Executive Information System
EM EM Systems Electronic Market
ERDs Entity Relationship Diagrams
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<td>Expert System</td>
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<td>English Tourist Board</td>
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<td>ETC</td>
<td>English Tourism Council</td>
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<td>ETHICS</td>
<td>Effective Technical and Human Implementation of Computer-based Systems</td>
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<td>eW3DT</td>
<td>Extended World Wide Web Design Techniques</td>
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<td>FM</td>
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<td>GDSs</td>
<td>Global Distribution Systems</td>
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<td>Global System Mobile</td>
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<td>Graphical User Interface</td>
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<td>Human–Computer Interaction</td>
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<td>HTML</td>
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<td>International Data Corp</td>
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<td>IETF</td>
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<td>IFITT</td>
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<td>ISD</td>
<td>Interface Structure Diagram</td>
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<td>ISDN</td>
<td>Integrated Services Digital Network</td>
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<td>Internet Service Providers</td>
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<td>IUE</td>
<td>Information Use Environment</td>
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<td>JAD</td>
<td>Joint Application Design</td>
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<td>Korea National Tourism Organisation</td>
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<td>OOHDM</td>
<td>Object Oriented Hypertext Design Methods</td>
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<td>OSTA</td>
<td>Open System Task Analysis</td>
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<td>RAD</td>
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<td>Strategic Information System</td>
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<td>The Tourism Authority of Thailand</td>
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<td>THISCO</td>
<td>The Hotel Industry Switching Company</td>
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<td>TPSs</td>
<td>Transaction Processing and Systems</td>
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<td>TTWG</td>
<td>Tourism Technology Working Group</td>
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<td>UCD</td>
<td>User-Centred Design</td>
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<tr>
<td>UID</td>
<td>User Interface Design</td>
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<td>UKAIS</td>
<td>The UK Academy for Information Systems</td>
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<td>UNCTAD</td>
<td>UN Agency for Trade and Development</td>
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<td>URL</td>
<td>Uniform Resource Locator</td>
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<tr>
<td>VIDIS</td>
<td>Virtual Integrated DIS System</td>
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<tr>
<td>VSAT</td>
<td>Very Small Aperture Terminal</td>
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<tr>
<td>WAP</td>
<td>Wireless Application Protocol</td>
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<td>Web-based Information System</td>
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CHAPTER 1

INTRODUCTION

1.1 Introduction and Background

The Information and Communication Technologies (ICT) have influenced trade and businesses in a variety of ways. Where it has helped organisations to reach the international market place, it has provided consumers with more choices in products and tastes. It implies more competition and challenges for industries requiring innovative methods to stay in the market. This revolution has inaugurated a new era in which many value-adding activities in the economy will shift to cyberspace through globally connected electronic networks (Shaw 2000).

ICT contribute to the growth, development and diversification of the tourism industry (Sheldon, Wober and Fesenmaier 2001). They had opened new avenues for the tourism industry, diversified its concerns and provided access to a comparatively larger market. After the introduction of World Wide Web, it has been made possible for countries to exploit the potential of tourism as an important pillar of their economies. Given the innovative nature of ICT, the tourism industry has withstood the challenging job of catering for the needs of travellers seeking more convenience through consulting tourism Websites rather than going to travel agents1.

"Information technology (IT) has tremendous implications for tourism, as it changes the best operation practices and provides opportunities for business expansion in the geographical, marketing and operational sense. Consequently, tourism destinations must compete in an increasingly fiercely competitive marketplace. IT has become a critical factor in determining the future success or failure, as well as tourism impacts at destinations" (Schertler and Dierich 2001 p. 317).

Though a plethora of literature on the impact of the Internet, and the impact of information and communication on the tourism industry is available today2, there

---

1 Traditionally tour operators, travel agencies, tourist information centres, magazines and newspapers have been the source of information for tourists.

remains more to learn about the Internet's role in tourism marketing and the way it can be exploited to full potential (Liu 2000).

Since the 1950s, tourism technology has been characterised by the development and application of two technological systems:

- Computerised Reservation Systems (CRS) — used for managing flights and seat inventories for sales and operation purposes;

- Global Distribution Systems (GDS) — forms of which include GALILEO, SABRE and AMADEUS — described by Werthner and Klein (1999) as a network of one or more CRSs.

Almost all major airlines, tour operators, travel agents and hotels worldwide are linked to these systems but small and medium enterprises (SME), which also play an essential role in the tourism value chain, have been less able to take advantage of the potential of these technologies. Although CRSs and GDSs have a dominant position in the distribution chain of the tourism industry, these technologies are not without flaws (Werthner and Klein, 1999), as they are expensive for both the tourism producer and the retailer. Moreover CRSs and GDSs are incompatible, especially in the lodging sector where companies such as THISCO (The Hotel Industry Switching Company) are needed to connect hotels with all major GDSs to facilitate room reservations by travel agencies worldwide (Sheldon 1997).

Though computer applications were increasingly applied to the operations of Destination Management Organisations (DMO) throughout the 1990s, most of them did not use electronic distribution of their information and products until the Internet began to capture public awareness in the mid-1990s.

(1999), O'Connor (1999) and Sheldon, all provide in-depth discussions on marketing tourism on the Internet and vice versa.

3 In 1996, the cost of a GDS accounted for an average of 8.1% of the International Air Transport Association (IATA) member airlines' distribution cost, and the major GDS firms charge approximately US$ 600 a month to install a terminal in a travel agency (IATA 2000)
The growth of the World Wide Web (WWW) on the Internet has created many growth prospects for the tourism industry, especially for a ‘destination’⁴. But the challenges remain to identify the target market and to reach the potential customer on the Internet. New opportunities offered by the Web, allow local product databases such as accommodation, tourist attractions or events, and SME information to be made accessible online to international customers. According to a UNCTAD report:

"The tourism industry is among those sectors most quickly adopting the Internet as a business medium. Tourism is very information-intensive and substantial resources are used in advertising, market research and consumer profiling. Purchase and delivery are often remote occurrences and during the intermediary period the tourism product exists in the form of information (reservation number, ticket, voucher), which requires consumers to have confidence that it will materialize. Confidence is best gained through the quality of information provided by the seller or producer" (UNCTAD 2001a).

Actually, travel and tourism products are ideal for marketing on the Internet. Tourism is an information-intensive industry, with high involvement and well-differentiated characteristics, and the Internet is the most effective and efficient means of worldwide information exchange (Liu 2000).

Most of the world tourism destinations are opting for e-tourism, e.g. TiScover Austria, Gulliver Ireland, and VisitBritain, UK. Information about services provided and attractions at the destination are worthwhile to communicate worldwide through this new medium in order to make a position in the tourism market. Those destinations getting leading positions are those that provide Information gathered from major stakeholders like hotels, travel agents, and small and medium enterprises to the customers through the internet (WTO 2001c).

The Internet being a new phenomenon, many organizations did not recognise the potential and opportunities it offered initially but, the later presence of DMOs on the World Wide Web remained limited to printed material only. These ‘brochure-ware’ sites, without any mode of interaction with customers are outdated now. The examples of leading firms show that it is extremely important for DMOs to make fuller use of the

⁴A term defined by the Oxford Dictionary as a ‘place for which a person is bound’.
opportunities the Internet offers. The WTO (2001c) describes the uncertain future of DMOs that do not respond to the introduction of new technology, and therefore are under threat from their competitors:

"There is no option for DMOs to retain the status quo. New online commercial players will be quick to move into territories where the DMOs is not performing adequately, but without the DMOs commitment to the destination as a whole. All DMOs must make their investment plans and look upon their destination e-business systems, in whatever form they may take, as the key tool in their organisational armoury" (WTO 2001c, p.32).

Maintaining tourism information and services of the highest quality and reliability has become inevitable, with the recognition to exploit the Internet to its full potential. Thus, a trend emerged for developing fully Web-enabled advanced integrated Destination Information Systems (DIS), where the core databases such as customer databases support a wide range of functions throughout the organisation. Services databases like accommodation, attractions and travel agencies are used on an inter-active concurrent basis on Websites, in kiosks, at tourist information offices to produce electronic publications, online brochures and e-newsletters. Information, reservations and other tourism functions of the system can be accessed and operated on the Web. Customer databases can also be accumulated and processed for client feedback.

The term “Destination Information System” (DIS) came into existence to describe the IT infrastructure for specific destinations. Destination Management System, Destination Database and Destination Reservation System are the other terminologies serving the same purpose but differ only from one DMO to another depending on the aims and business strategies opted. A DIS is regarded as having to support multiple functions from core databases to online services. The emergence of DISs as ‘info-structures’ enables destinations to distribute inclusive information about the services and tourism products offered. DISs also facilitate the planning, management and marketing of regions as tourism entities or ‘brands’ (Buhalis and Spada 2000).

Some destinations took early initiative to utilise the rapid growth of the Web on the Internet. Austria, Scotland and Ireland exploit global distribution channels to establish their own Destination Information Systems that suit their business and client requirements. For instance, the Austrian/Tyrol Tourist Board developed a Web-based
system TIScover 99 with comprehensive functions, including information management, distribution, reservations and electronic marketing capability, described in detail in Chapter 2. The TIS was first launched in 1991, initially as an internal system by the Tyrol Tourist Board, but the system has since been extensively developed on a commercial basis by a wholly-owned subsidiary of the Tyrol Tourist Board (WTO 1999).

Some ‘destinations’, particularly those in developing countries, have a strong focus on dealing with end customers, and have developed a high level of interest in the Internet, because of its potential

UNCTAD discusses the role of information technology in DMOs:

“Destination marketing organizations-which often comprise partnerships among various tourism suppliers (airlines, hotels, attractions, tour operators) and government tourism boards - are a growing force in the travel industry worldwide, online and off, helping destinations to promote their "information products" and acquire market presence and clients." (UNCTAD 2001b).

The report also underlined the cardinal role of the Internet in the tourism industry of developing countries:

“Tourism and e-tourism are also important for developing countries, generating employment and foreign currency earnings. According to UNCTAD estimates, tourism represents at least half of all e-commerce in these countries and is the single most important e-commerce sector. Developing countries already have a growing share in the international tourism market, accounting for 29% of all international tourism receipts in 1999” (UNCTAD 2001b).

The World Tourism Organisation strongly encourages developing countries to grasp the opportunities provided by Information Age technology and, in its 1999 report stated:

“The Information Age is an age of new possibilities for all destinations. It negates the traditional perception that developing countries would never be able to compete on equal terms with developed ones, not having as large a budget to promote their tourism attractions through costly conventional marketing channels such as the press and television. The Information Age and its associated technology of the Internet are
levelling the playing field. All that is required is to grasp the opportunity.” (WTO 1999, p.146).

The destinations are bound to embrace new technology to satisfy the international market's demand for instant information on tourist destinations. Investment in technology is essential to prepare destinations entering the international marketplace. It is important to grasp this opportunity and increase their role in promoting and marketing tourism products through the Internet, and to capture and retain the attention of the international marketplace and to gain a competitive advantage.

It is important to provide the destination with a high-tech DIS, and to utilise this technology creatively and effectively, since project planning, development and effective management are prerequisites to a successful Destination Information System.

“A sustainable electronic "infrastructure" that is capable of establishing a comprehensive and multi-lingual destination Web site. This site can present existing and potential tourists with up to date information, from a variety of sources, about the destination in all aspects of tourism-tourist attractions, transportation, accommodation, tour operators, travel agencies........ as well as the background of its people, culture, history, economy, and climate. The master destination database can be integrated through hyperlinks with individual tourism companies........ which enable tourists to make their own holiday "packages". As such a mega-site could be the "portal" to all tourism enterprises in a destination.” (Liu 2000, p9).

Three crucial aspects, that seem to be essential for the success of tourism information systems can be identified as follows:

- Excellent accessibility ;
- Validity, reliability and accuracy of content;
- Ability to personalise, customize and localised the whole system.

According to Proll and Retschitzegger (2000), the acceptance of a tourism information system depends on comfortable and powerful access capabilities with a prerequisite that the system supports all phases of an e-commerce transaction, from the information phase via the negotiation phase to the settlement phase.
Apart from a business activity the DIS can contribute to social and cultural changes in host societies such as lifestyles, individual behaviour or organisational structure and vice-versa as sometimes visitors change their perceptions of destination inhabitants' behaviours after practical experiences.

While defining Destination Integrated Computer Information Reservation Management Systems DICIRMSs, Buhalis stated socio-cultural and environmental impacts at destinations:

"DICIRMSs can be defined as an integrated destination management strategic tool aiming to assist the enhancement of the long term profitability and competitiveness of the local private sector by reinforcing its marketing process and intra-channel negotiation power, as well as to enhance the management of tourism impacts at the destination level by intensifying integrated and sustainable economic development, interpretation and interaction of socio-cultural rituals and enhancement of environmental concern for destination region" (Buhalis 1997, p.77).

The inflow of tourism is a significant factor in theories of International Relations. However, these systems do more than provide opportunities to improve the socio-cultural and environmental impacts at destinations. For example, the former USSR was an undesirable place for tourism but after the break-up, Central Asian States have become a favourable environment for tourism. DICIRMSs can disperse information on a destination's local society, culture, customs, behaviour, dressing and interaction that brings the host society and tourists closer by establishing mutual respect and understanding. Equally, environmental corrosion can be reserved ensuring suitable visitor management. It might be an optimistic approach but to decrease negative socio-cultural and environmental impacts significantly through tourism and a pleasant interaction between visitors and locals can develop relations among divergent civilisations (Buhalis 1997).

The literature indicates some negative impacts that the host destinations suppose in consequence of DIS development despite its positive characteristics. These are the misconceptions that tourism generates negative socio-cultural impacts at destination. Clearly, interactions among civilizations leave impressions on visitors and locals but realistically the flow of tourists and travellers among different societies, bringing them closer, has been part of humanity for centuries.
However, misinformation and false expectation on both sides (the tourist and locals sides) leads to misunderstanding sometimes (Dogan 1989). Tourism marketing promotes desirable images of intangible tourism products which tend to emphasize only the attractive elements of the product (Krippendorf 1987). Commonly, consumers are more aware about the product than the tour operators or travel agents, who mostly remain unable to satisfy the curious clients. Therefore, a chance of inappropriate selection of the destination by tourists always exists.

This creates dissatisfaction, having negative implications on their relationships with the host population as well as on their behaviour towards environmental recourses as dissatisfied tourists are more likely to disrespect the destination (Krippendorf 1987, Dogan 1989).

In the same way the host population may mistakenly react to tourists because of some unrealistic perceptions. Generally it is assumed that tourists have a significant amount to spend at their destination and that they are well educated and knowledgeable of the local traditions, rituals and habits. Therefore host populations often expect that the tourists will purchase all products and services provided at destinations (Jafari 1974, Dogan 1989). They also expect, quite rightly, that visitors will respect their way of life, art, and culture, dress codes, rituals, socio-cultural protocols as well as environmental resources and public facilities (Jafari 1974, Dogan 1989).

The client always expects true information for services offered at the destination while the host waits for cultured and educated visitors who respect their norms and values. Regrettably this gap exists between both the groups in Bahrain but only because of misinformation. This gap needs to be bridged. The introduction of DIS can bridge this gap and could lessen social, cultural and environmental negative impacts by assisting both the groups in a realistic manner as detailed in chapter 6.

These implications originate when changes in value systems and behaviour are expected and a threat is perceived to alter indigenous identity, community structure, family relationships, collective traditional life styles, ceremonies and morality. In addition, tourism generates positive impacts as it serves as a supportive element for peace, fosters pride in cultural traditions and helps in the generation of economic activity at the destination. When different cultures meet, socio-cultural impacts are ambiguous: the same objectively described impacts are seen as beneficial by some groups, and are
perceived as negative - or as having negative aspects - by other stakeholders (Jafari 1974, Dogan 1989).

So far, the emphasis remains on the economic analysis of tourism in Bahrain but now the cultural impacts of DIS as a subject are under research in Bahrain.

Organisational culture is another important issue. DIS developers must consider because with the pace of technological advancement and the knowledge explosion, organisations face tremendous pressure as they attempt to gain support for change (Krell 2000). It is the nature of humankind to resist change, irrespective of the logic and need. It is more harmful when decisions are being taken in the larger national interest. To kill the resistance in a short time is unrealistic but to manage the crisis is an essential leadership skill.

The organisational barriers also hinder technology implementation. Limited resources, lack of proper management, insufficient knowledge, lack of communication, legal regulations, and restrictions and ownership issues are the most frequently mentioned in this regard.

"Rapid technological change demands at the same time that a work force be highly skilled, sometimes in specialised areas, and yet highly flexible, if an organisation is to continue to use the same workers" (Krell 2000, p.10).

Cultural diversification takes a divergent perspective on international information systems. When cultural differences are ignored problems may occur. Fernandes (1995) and Del Galdo and Nielsen (1996) provide guidance on user interface design. Both analysts point out problems that have occurred when user interfaces designed for one culture have been applied to another. Marcus and Gould (2000) reviewed selected Web pages from various cultures, basing their analysis on updated work by Hofstede (1991). They conclude that culture, does affect the design of Web pages. Thus a national portal like the project under research should mirror the cultural spirit of the state as Zahir et.al write:

"Indigenous national portals catering to the needs of distinct national and cultural groups should reflect the socio-cultural, technological and economic characteristics of their culture and countries both in their appearance and list of services they provide" (Zahir et. al. 2002 p.213).
1.2 Research Aim

The aim of this project is the development and evaluation of an advanced inter-active online DIS for the Kingdom of Bahrain, referred to as the Bahrain Destination Information System (BDIS), based on a model derived from experiences of the developed world. The BDIS is intended to assess and meet the international standards vis-à-vis customer requirements, expectations and demands – to attract tourists throughout the globe to Bahrain – by mobilizing the existing tourism infrastructure and promoting the wide range of public and private sector services.

1.3 Research Objectives

The research aim can be achieved through the fulfilment of the following objectives:

1. The development of an integrated model for DIS in general and the proposed destination information system for the Kingdom of Bahrain in particular (Chapter 4).
2. The identification of requirements needed for the development of the BDIS and its infrastructure (Chapters 7, 8, 9 and 10).
3. A review of the present use of DISs for different destinations (Chapter 10).
4. The design and evaluation, a prototype of a DIS, based on information gathered and the conceptual framework developed (Chapter 11).
5. The assessment of perceptions of potential international tourists toward the proposed DIS and the generation of data needed for improvements to the system (Chapter 12). This objective can be fulfilled by evaluating the under mentioned:

1. The users’ perception of the prototype content – their satisfaction level for:
   1. Content relation to the purpose of the prototype
   2. Content usefulness
   3. Content credibility
   4. Content currency
   5. The relevance of images to the content

2. The way users assess the design effectiveness and its layout in terms of:
   1. The overall appearance of the prototype (aesthetically pleasing)
   2. The layout organization
   3. The functionality of multimedia
   4. The colours and fonts used in the prototype
   5. Layout consistency
3. The users' satisfaction level with the accessibility of the system, loading speed, clarity of menus, and the ability to access the prototype from multiple points.

4. Customer ranking of the on-line services presented in the prototype, regarding ease of booking online, ticketing, accommodation and transportation rental, and the usefulness of multi-languages services, instant information provided on the weather, currency, world time, and feedback features like e-mails and FAQ.

5. The probability that BDIS encourages potential international visitors to visit Bahrain.

6. To what extent BDIS development serves consumers quickly and efficiently.

7. How much BDIS is able to customise the sophisticated requirements of customers.

1.4 Research Hypotheses

The following hypotheses are the basis for the system evaluation of the developed BDIS:

1. No significant differences in participants' status and attitude to the prototype.
2. No significant differences in participants' age and attitude to the prototype.
3. No significant differences in participants' gender and attitude to the prototype.
4. No significant differences in participants' computer experience and attitude to prototype.
5. No significant differences in participants' Web experience and attitude to the prototype.
6. No significant differences in participants' ability to find information on the Web and attitude towards using the prototype.
7. No significant differences in participants' experience of booking holidays or flights over the Internet and their attitude to the prototype.
8. No significant differences in participants' number of times of using the Internet for booking a holiday or a flight and their attitude to the prototype.
9. No significant difference in participants' future plans to use the Internet for online booking and their attitude to the prototype.
1.5 Significance of the Study

The instant nature of the new Internet medium demands academic research into such issues as the DIS. Literature on tourism information systems and the impact of the Internet on Bahrain both in terms of economics and societal issues is lacking.

The emerging attention given by researchers to DIS (Buhalis and Spada 2000, O'Connor 2000, WTO 2001c) has put forward a number of propositions. These will have a major impact on tourist destinations in term of information provision for tourism, as DISs have created the opportunity for DMOs to present themselves in a novel and customer-oriented manners. A DIS, with the use of Internet technology, enables destinations to market products and spread information in an inter-active way, through the use of multimedia applications. But to exploit maximum benefits of this new technology, expertise and will are the prerequisites (Buhalis 1997).

The World Wide Web, having unique characteristics, is able to combine text, pictures, sounds and video to generate a comprehensive multimedia-focused presentation, and Web-based tourism information systems enable content providers to upgrade their contents at any time for customer satisfaction and quick and accurate information. With the technological advancement traditional brochures-ware is becoming outdated (WTO 2001c). The recent growth in demand for 'last-minute' travel bookings shows that today's travellers require quick information and high-speed booking capability, as reflected by innovations of newcomers to the Internet tourism industry such as lastminute.com, Travelocity.com and e-bookers.

Bahrain is a relatively new international tourism destination, while tourism in Bahrain needs improvement and accessibility to the international tourism market. To move rapidly from the growth stage to maturity, and to promote a diverse and fragmented industry involving different public bodies and private interests, it is imperative that Bahrain makes the best use of the Information Technology. It is also essential for the Bahrain tourism industry to be fully aware of the potential of DIS and the expected opportunities for the state economy.

The available research material on tourism in general, and more specifically, on the role of Information Technology as an international communication channel to promote
Bahrain as a tourist destination, is not sufficient. This study will highlight the potential of the above-mentioned technologies to place Bahrain in the international tourism market. It is highly significant for Bahrain, as:

- Tourism is an important contributor to the national economy.
- The study will open the way for further research in the field of tourism studies in general, and in Bahrain in particular.
- This project recommends strategies to develop the application of IT for the tourism industry in Bahrain.
- The study has a generic foundation. Its research is applicable in a global context, providing both a theoretical foundation and a comprehensive application of a phenomenon that does and will continue to have a major impact on tourism.

There were several motives behind the decision to conduct this research project:

- The author's interest in Internet technology applications in general and in the tourism industry in particular.
- The growing interest in Internet technology and its applications in the tourism industry around the world including Bahrain.
- The scarcity of such studies in developing countries, and the fact that issues relating to a DIS have never been thoroughly studied.

1.6 Definition of Terms

Culture

According to Tayeb (2001):

"Culture is a woolly concept, almost impossible to observe and 'measure' all its visible and hidden corners; like the air that we breathe, we cannot see or weigh it, we cannot put our arms around it and feel its strength and power, but we know it is there" (Tayeb 2001, p.92).
**Destination**

A destination is defined as a *place for which a person is bound* (Oxford Dictionary 2002). The concept of a destination must be treated with caution as the destination or objective of a holiday is not necessarily a country or even a specific town or area. The destination could be a well-appointed resort offering a comprehensive experience. The geographic location of such a resort may be of secondary interest to a visitor. Likewise, an area in a town or region can also be considered as a destination (Cooper et al. 1998).

**Destination Information System (DIS)**

A Destination Information System is a database system containing comprehensive information about a destination’s facilities and tourism products, and is accessible by travellers or travel planners, either at the destination or in the home region (Sheldon 1997).

**Information System**

An Information System (IS) can be defined as a set of interrelated components that collect, retrieve, process, store and distribute information for the purpose of facilitating the planning, control, coordination, analysis and decision-making processes in organisations (Laudon and Laudon 1998).

**Internet**

A global network connecting millions of computers. More than 100 countries are linked into exchanges of data, news and opinions. Unlike online services, which are centrally controlled, the Internet is decentralized by design. Each Internet computer, called a *host*, is independent. Its operators can choose which Internet services to use and which local services to make available to the global Internet community. Remarkably, this anarchy by design works exceedingly well (Webopedia.com 2002a).

**Prototyping**

Prototypes are product models used to represent, test and iterate current design concepts. Prototypes can be represented by using models, task scenarios and user interfaces, and can be developed on a number of platforms including index cards, paper
and pencil mock-ups, and functional and non-functional computer models. Prototypes can be useful at many points during design, such as initial concept development, heuristic evaluations and usability testing (Thf-inc.com 2002).

**High-fidelity Prototype**

A high-fidelity prototype is a prototype that is close to the final product, having much detail and functionality. From a user-testing point of view, a high-fidelity prototype is close enough to a final product for one to be able to examine usability questions in detail, and to draw conclusions on how behaviour will relate to use of the final product (Usabilityfirst.com 2002).

**Web-based Information System (WIS)**

Web-based Information Systems are information systems based on Web technology and are likely to be tightly integrated with conventional IS as databases and transaction processing systems (Wang 2001).

**World Wide Web**

A system of Internet servers that support specially formatted documents. The documents are formatted in a script called HTML (*Hyper Text Mark-up Language*) that supports links to other documents, as well as graphics, audio, and video files. This means one can jump from one document to another simply by clicking on 'hot spots'. Not all Internet servers are part of the World Wide Web (Webopedia.com 2002b).

### 1.7 Thesis Outline

This Thesis comprises 13 Chapters covering aspects ranging from a general overview and history of the research, through to the research results and conclusions. The thesis is divided into three phases namely the Pre-Prototype Phase, the Prototype Development Phase and the Post-Prototype Phase, with the thesis outline depicted in Figure 1.1.5.

Chapter 1 – the *INTRODUCTION* presents a general overview of the research project and provides a brief history of the development of DIS in the tourism industry, and the

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5 All figures labeled " Auhtor " was designed by the researcher of this thesis.
relationship between culture and tourism. The significance of this project along with the research aims, objectives, and questions are also discussed.

**THE TOURISM INDUSTRY** in Chapter 2 provides the reader with an understanding of the industry, its importance as an economic activity and its performance relative to international standards. The impacts of IT on tourism; culture and tourism, tourism characteristics, structural change and Destination Information Systems have also been discussed.

Chapter 3 on **INFORMATION SYSTEMS** reviews literature relevant to this research project. It includes a number of diverse areas such as information systems, information system models, and general issues relating to information systems. The components and trends of information systems, information system methodology, Web information systems (WISs), human/computer interaction (HCI), user-centred design, user interface design (UID) Web portal usability are covered here, while prototyping, the methodology used in this study, and Web portal usability case studies also discussed.

Chapter 4 represents an **INTERGATIVE MODEL OF DESTINATION INFORMATION SYSTEM (DIS)** effectiveness and success that identifies key success factors which will enable a Destination Marketing Organisation (DMO) to outdo other dominating destinations open to potential visitors. In this chapter, the model is related to organisational issues within the Directorate of Tourism Affairs in Bahrain and emphasizes issues related to destination culture.

Chapter 5 outlines the **RESEARCH METHODOLOGY** employed in the study, including the population studied, sampling procedures and research techniques used. The latter includes online questionnaires, in-depth interviews, site-mapping analyses and prototype development. Designing the prototype, based on evaluating the proposed prototype by a combination of a usability test and a user-evaluation, is also presented and discussed.

The overview of the **KINGDOM OF BAHRAIN** in Chapter 6 provides a broad profile of significant facts and features of the Kingdom of Bahrain as a prerequisite for developing a national information system for the country and as a background to the
entire study. Features such as geography, economy, information, telecommunications and the cultural and social issues of Bahrain are highlighted.

**DIS REQUIREMENTS AND SPECIFICATIONS** in Chapter 7 describes the requirements for the planning, analysis and design phases of a new system. The planning phase focuses on two key elements, project initiation and project management. In the analysis phase, four crucial stages are briefly discussed: system analysis, information gathering, process modelling and data modelling. In the design phase, system design, architecture design, user interface structure and design components, data storage design and program design are discussed in detail.

Chapter 8 discusses **ACADEMIC QUESTIONNAIRE DATA** from an online questionnaire, with results and preliminary information on requirements for a complete DIS.

**INTERVIEW FINDINGS** in Chapter 9 describe the results of in-depth interviews with key players in the industry – representatives of U.K. tourism destinations. The interviewees were asked questions for type of required information in the DIS. Categories included questions on: organisational aspects, financial aspects, information content and resources, technical requirements and services: and the product markets that should be emphasised (such as attractions, information and accommodation).

Chapter 10 covers the **SITE MAPPING ANALYSIS** of ten tourism sites – Korea, Singapore, Yorkshire, South Africa, New Zealand, Kenya, Scotland, Thailand, Ireland and Austria. Site mapping gives a clear and practical understanding of similar pages, design pattern and structure for application to the proposed Bahrain Destination Information System (BDIS) prototype.

Chapter 11 – **PROTOTYPE DESIGN AND IMPLEMENTATION** focuses on the design and testing of the prototype, and discusses, in some detail, the concept of the proposed Bahrain Destination Information System (BDIS). A Web-based questionnaire, interviews and site mapping analysis techniques are used to form a basis for the design of the proposed system. An overview of the elements involved in the implementation of the BDIS prototype is given, including aspects such as system definition, system structure, interface design, production, technical and marketing aspects.
The *USER EVALUATION QUESTIONNAIRE* in Chapter 12 describes the findings from the evaluation of the BDIS prototype. Potential users participated in the evaluation of the prototype by visiting the site and filling in the online questionnaire provided. Users with different levels of experience took part in the evaluation.

The thesis closes with *CONCLUSIONS AND RECOMMENDATIONS* in Chapter 13, and provides recommendations for further research. Stakeholders in the design of the BDIS have also been identified.
CHAPTER 2
THE TOURISM INDUSTRY
Overview: Information Technology and Destination Information Systems

2.1 Preamble

Tourism generates economic activities and employment opportunities in several countries, and is particularly important to the fragile economies of least developed countries (LDC’s). There can be no question but that the industry is booming, and is one of the fastest growing industries (Poon 1993, Sheldon 1997, Laubenheimer 1999, Wilkinson 2001). Many governments, seizing this opportunity, are working for its growth and are putting ambitious plans and strategies in place to benefit from this lucrative industry (Werthner and Klein 1999, WTO 1999, WTO 2001c).

The growth in government departments for tourism\(^1\) heralds an expansion in the sponsorship of tourism development and a proliferation of small businesses, multinational corporations and individual entrepreneurs aspiring to derive benefits from tourism (Poon 1993, Sheldon 1997, Buhalis 1998), while tourism impacts on the economy at many other levels (Ashari et al. 2001). In a speech at WTO/OMC Tourism Symposium, Wason emphasised the role of Tourism in economies:

“Travel & Tourism is undoubtedly one of the key economic sectors in the world today and promises to be one of the three super-service industries in the future, alongside telecommunications and information technology.” (G. Wason 2001).

Greg Conley, general manager of IBM Global and Transportation, concisely summarises the essence of the new concept of tourism:

“It is global; it affects most of the worlds’ population, directly or indirectly. It is complex. It employs millions of people. It has relatively advanced

\(^1\) The English Tourism Council, for example, funded by the Department of Culture, Media, and Sport, was launched in July 1997.
business processes and computer capabilities. It is largely services-based” (Web Travel News 2000).

Tourism has considerable strength and tenacity in economic terms. It was recognised as the world’s largest and most steadily growing industry at the 1999 World Tourism Organisation (WTO) Conference on ‘Measurement of the Economic Impact of Tourism’. Worldwide arrivals increased by 4.3% per annum between 1989 and 1998. In 1998 alone 625 million tourists spent $445 billion on travel-related expenses, excluding international transport. (WTO 1999)

Despite temporary downturns, there is a sustainable growth in the tourist industry as underlined in a WTO study, showing arrivals predicted to increase by over 200% between 2000 and 2020 (Tourism: 20/20 Vision), while summarised in Table 2.1. (WTO 1999).

<table>
<thead>
<tr>
<th>Table 2.1: Forecast of Inbound Tourism between 2000 and 2020</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FORECAST OF INBOUND TOURISM BY REGION</strong></td>
</tr>
<tr>
<td><strong>(INTERNATIONAL TOURIST ARRIVALS IN MILLIONS)</strong></td>
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<tr>
<td></td>
</tr>
<tr>
<td>Europe</td>
</tr>
<tr>
<td>East Asia/</td>
</tr>
<tr>
<td>Pacific</td>
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<tr>
<td>Americas</td>
</tr>
<tr>
<td>Africa</td>
</tr>
<tr>
<td>Middle East</td>
</tr>
<tr>
<td>South Asia</td>
</tr>
<tr>
<td>Totals</td>
</tr>
</tbody>
</table>

A finger on the pulse of the industry is essential for future planning and strategy, and ensuring proper regulation and innovation. Measuring the economic impact of travel and tourism has remained the task of The World Travel and Tourism Council (WTTC) since 1991. Releasing its first estimates in 1992, the WTTC monitors the impact of tourism on world regions. Results confirm that travel and tourism is a major world industry and a producer of quality work opportunities.
The World Travel and Tourism Council expects, to generate US$78.1 billion of economic activity (Total Demand) in year 2003, growing (nominal terms) to US$152.1 billion by 2013. Travel & Tourism Demand is expected to grow by 4.5% per annum, in real terms, between 2003 and 2013 (WTTC 2003).

### Table 2.2: Estimates and Forecasts of Tourism Demand

<table>
<thead>
<tr>
<th>WTTC TSA ESTIMATES AND FORCASTS</th>
<th>2002</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>US$Bn</td>
<td>% of Tot Growth</td>
</tr>
<tr>
<td><strong>World</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personal Travel &amp;Tourism</td>
<td>2,039.0</td>
<td>9.9</td>
</tr>
<tr>
<td>Business Travel</td>
<td>379.1</td>
<td>-</td>
</tr>
<tr>
<td>Government Expenditures</td>
<td>203.6</td>
<td>3.8</td>
</tr>
<tr>
<td>Capital Investment</td>
<td>642.2</td>
<td>9.2</td>
</tr>
<tr>
<td>Visitor Exports</td>
<td>514.7</td>
<td>6.5</td>
</tr>
<tr>
<td>Other Exports</td>
<td>432.8</td>
<td>5.4</td>
</tr>
<tr>
<td>Travel &amp; Tourism Demand</td>
<td>4,211.1</td>
<td>-</td>
</tr>
<tr>
<td>T&amp;T Industry GDP</td>
<td>1,195.1</td>
<td>3.6</td>
</tr>
<tr>
<td>T&amp;T Economy GDP</td>
<td>3,282.5</td>
<td>10.0</td>
</tr>
<tr>
<td>T&amp;T Industry Employment</td>
<td>71,709.5</td>
<td>2.8</td>
</tr>
<tr>
<td>T&amp;T Economic Employment</td>
<td>198,098.0</td>
<td>7.8</td>
</tr>
</tbody>
</table>

Travel and tourism demand has positive impacts on the tourism industry that are numerous and all encompassing, and by its very nature, there is a filtering down, or vertical value percolation, that benefits a great number of related industries. Secondary and tertiary impacts are of growing importance.

- Edgell (1993) suggests tourism is the most wide-ranging industry, and, more than any other activity, generates a demand beneficial to other sectors of the economy (e.g., food and recreation), and it is a hybrid industry (Ashari et al. 2001).

- Karcher (1997) defines travel and tourism as a conglomerate of all the individuals and organisations involved in the production, distribution and consumption of travel and tourism products.

- Lundberg (1995) sees the industry as an umbrella encompassing a network of inter-related businesses, involving travel agents and providers of recreation and leisure facilities.
Figure 2.1: Components and Diversity of the Tourism Industry
Goeldner (2000) defines tourism as:

“A composite of activities, services and industries that delivers a travel experience:

Transportation, accommodations, eating and drinking establishments, shops, entertainment, activity facilities, and other hospitality services available for individuals or groups that are travelling away from home. It encompasses all providers of visitor and visitor-related services. For the collection of data, it is necessary to be even more explicit and precise; time and distance constraints must be also established” (Goeldner et. al. 2000, p. 14).

The term ‘usual environment’ excludes trips within the area of ‘usual residence’ and frequent and regular trips between the domicile and the workplace, as well as other community trips of a routine character. International tourism includes:

From its dynamic nature; its complexity and volume of business the tourism industry, and related secondary and tertiary tentacles, generates a multiplicity of information to be processed, communicated and subsequently analysed. Every passenger creates data relating to their travel arrangements, payment and associated scheduling (Sheldon 1997).

2.2. Tourism and Culture

2.2.1 – Culture

As a concept, culture is the beliefs, behaviour, language, and entire way of life of a particular group of people at a particular time. The term is difficult to define and may have more specific aesthetic interpretations.

“Culture is a woolly concept, almost impossible to observe and ‘measure’ all its visible and hidden corners; like the air that we breathe, we cannot see or weigh it, we cannot put our arms around it and feel its strength and power, but we know it is there” (Tayeb 2001, p.92).
Hofstede (2001) has attempted to give a general definition of the concept. To him, "[Culture] is the collective programming of the mind that distinguishes the members of one group or category of people from another". Hofstede also points out that "Culture is to human collectivity what personality is to an individual" Hofstede (2001 pp. 9-10).

Although culture is generally identified within the confines of language, time period and territory (Triandis 1995) it is a multi-faceted and multi-layered concept, however:

"Culture consists in patterned ways of thinking, feeling and reacting, acquired and transmitted mainly by symbols, constituting the distinctive achievements of human groups, including their embodiments in artefacts; the essential core of culture consists of traditional (i.e. historically derived and selected) ideas and especially their attached values" (Kluckhohn 1951, p. 86).

So culture is far beyond what it is generally believed to be. It means shared beliefs, attitudes, values, norms, roles and behaviours (Triandis 1995, Hofstede 2001).

"Culture emerges in interaction. As people interact, some of their ways of thinking, feeling, and behaving are transmitted to each other and become automatic ways of reacting to specific situations. The shared beliefs, attitudes, norms, roles, and behaviours are aspects of culture" (Triandis, 1995, p. 4).

Though some writers (Hofstede 2001; Hampden-Turner and Trompenaars 1994, Triandis 1995) have identified various dimensions of national culture, Tayeb (2001) cautions against the breaking down of culture into its constituent characteristics. According to him this activity facilitates comparisons across cultures but putting culture into neat, sometimes unconnected, little boxes, one might lose sight of the big picture.

"National culture cannot really be simplified and reduced to a handful of boxes into which some nations are placed and from which others are excluded. To do this will give one only a myopic and incomplete picture of a nation. Neither is it possible to attribute a certain degree of cultural characteristics to a nation and their opposites to others and then pigeonhole them there forever" (Tayeb 2001, p. 97)

2 These include Power Distance, Uncertainty Avoidance, Individualism, Masculinity/Femininity, and Long-Term versus Short-Term Orientation
2.2.2 – The Impact of Tourism on Culture

Culture emerges out of people’s interaction. According to Chambers:

"[Culture] is a process that originates in occasions in which different groups are led to confront and then attempt to reconcile each other’s standards of meaning and significance" (Chambers 1997, p. 3).

Since the tourist-host relationship is transitory, unequal and unbalanced, lacks spontaneity and is limited by spatial and temporal constraints (UNESCO 1976), such a relationship presents countless opportunities for confrontation and reconciliation.

"Tourism, with its multiple realms of human interaction, provides ample opportunity for the play of cultural processes and for the invention of new forms of cultural expression" (Chambers 1997, p. 3).

The type of visitors, their expectations and their numbers, determine how a local culture is affected by tourism (Smith, 1977). The healthy exchange of ideas and information between the tourists and hosts helps avoid stereotyping (Nettekoven 1979, Boissevain & Serracino-Inglott 1979, de Kadt 1979, Krippendorf 1987, Nunez & Lett 1989, Pi-Sunyer 1978).

The visitors must be aware of the norms and traditions of the community and the people’s code of life to avoid confrontation. A general knowledge of the tourists about the history of the area would help him understand the worldview of the people and the way they look at strangers.

However, sometimes the knowledge achieved through friends, books, movies etc. does not always prove up to the mark and their perceptions about the locality lead to confrontation with the people (Jafari 1974, Din 1989, Dogan 1989).

"There is also the problem of understanding the cultural meaning of the products. Local values, beliefs and practices are obscure to these leisure visitors. To their unaccustomed eyes, tourist find it difficult to detect cultural misrepresentations or even inventions in the products they consume. To tourists, the culture in the products may just as well be fiction...further more, for locals, the tangible and intangible components of a cultural object are intrinsically woven together, but these are decoupled in the context of tourism.
consumption. The tangible aspects of the cultural product are more visibly accessible to tourists that the intangible” (Ooi 2002, pp. 20-21).

People’s interaction with tourists casts a deep impression on the geography and the demography of the area. The change in customs, norms, values and intra-community relations, language and religion is another result (Dogan 1989, Ooi 2002).

Sociologists have documented three cases of cultural effects on the host community:

- Tourism’s effects on culture are most significant in cases where precious acculturation is little or nonexistent (Smith 1977, 1997);
- Where there is mass tourism (Smith 1977);
- Where tourism causes heightened desires for economic gains that are difficult, if not impossible, to attain (Hitchcock 1997).

Some writers (de Kadt 1979, Getz 1983, Krippendorf 1987, Pearce 1989, Peck & Lepie 1989) have warned that intensive tourism development may prove less favourable than organic and small-scale development. Besides environmental and social repercussions, tourism can cause change or loss of local identity and values. Some of such negative impacts are as below:

**Commoditisation**

By declaring a cultural entity as a commodity means the tourists’ expectations regarding religious rituals, traditional ethnic rites and festivals are accorded priority with a result of what has been called "reconstructed ethnicity." Catering to the demands of tourists for souvenirs, arts, entertainment and other commodities influences human values. Sacred sites and objects may not be respected when they are taken as goods to trade (Dogan 1989).

**Standardization**

Tourists often look for known facilities in an unfamiliar environment (host destination), like well-known hotel chains and fast-food restaurants like McDonalds, Burger King etc. Few tourists look for completely new experience, thus destinations risk standardization in the process of satisfying tourists' desires for familiar facilities (Jafari 1974).
Staged authenticity

This constitutes responding to the demands of the tourists in terms of cultural expressions while being in the local atmosphere like performing shows as if they are part of real life.

"Under the impact of mass tourism, food folklore, ceremonies, entertainment, accommodation facilities, etc., lose their authenticity and a similar culture grows everywhere in order to satisfy the standard desires of mass tourist." (Dogan 1989, pp. 217-218).

Adaptation to tourist demands

Craftsmen make changes in the designs of their products to satisfy the tastes of their new customers. Tourists want souvenirs, arts, crafts, and cultural manifestations and their interest results in cultural erosion (Dogan 1989).

Culture conflict

Difference of language, value system, life styles and the level of prosperity generates conflict between the tourists and host group resulting in an overexploitation of the social carrying capacity (limits of acceptable change in the social system inside or around the destination) and cultural carrying capacity (limits of acceptable change in the culture of the host population) of the local community (Jafari 1974, Dogan 1989, Din 1989).

The attitude of local residents towards tourism development may range from euphoria, where visitors are very welcome, through apathy, irritation and antagonism. Cultural clashes may further arise through:

Economic inequality

The locals are greatly influenced by the life styles of the tourists and their consumption habits. Tourists usually visit the locality seeking pleasure, spending large amounts of money and sometimes behaving in ways that even they would not accept at home. This may result in, on one side, erosion of the host community as it adapts the cultural traits and habits of the visitors and, on the other side, the creation of economic inequalities that lead to social and ethnic tensions (Al-Hadad 2001).
Irritation due to tourist behaviour

Tourists, in a fit of ignorance, disregard the values and norms of the host community and risk bringing about irritation and stereotyping. Social and cultural norms in a Muslim society demand women to cover the most part of their bodies in public. Tourists disregarding dress codes, half-dressed (shorts, skirts, bikinis) or consuming alcohol publicly may lead them to confrontation with the locals. The same types of culture clashes happen in other conservative communities (Din 1989).

Job level friction

The foreigners or the 'urbanised' nationals occupy most of the managerial jobs in the tourism industry. The locals are engaged in the lower level jobs like waiters, housemaids, gardeners etc. The lack of professional skills and influence in the hotel or restaurant chains prevents the locals from aspiring to the highly paid jobs. This may cause friction and irritation and increases economic imbalance between the cultures (Dogan 1989, Al-Hadad 2001).

Physical influences causing social stress

The physical influences can cause severe social stress for the local community. Some of the disadvantages to the host community are as below:

**Resource use conflicts:** When the tourists and locals are involved in competition on the resources like water and energy, the latter are obviously bound to lose. Other stresses include environmental degradation and increased infrastructure costs — higher taxes to pay for improvements to the water supply or sanitation facilities (Al-Hadad 2001).

**Cultural deterioration:** A common problem at archaeological sites in countries such as Sri Lanka, Egypt, and Mexico etc. is that poorly paid guards supplement their income by smuggling artefacts to wealthy tourists. Furthermore, degradation of cultural sites may occur when historic sites and buildings are unprotected and the traditionally built environment is replaced or virtually disappears (WTO 2001b).

**Conflict with original land users:** Tourism has other adverse effects on the culture especially on local people who live near the coastal zones who suffer from tourism
development in coastal areas because most governments provide facilities by taking the tourist side (WTO 2001b).

**Ethical issues:**

**Crime generation**

The growth of mass tourism is often accompanied by increased crime like gambling and prostitution. Since tourists carry a lot of money and valuables like jewellery, criminals are tempted into activities like robbery and drug dealing. Repression of these phenomena often exacerbates social tension (Al-Hadad 2001, Dogan 1989).

**Child labour**

The emerging trend in the tourism industry is the employment of minors as they cost less than adults in terms of salaries. The lure of getting money has forced children into this industry, children without safety provision or fresh air, children who are forced to work for long hours to serve tourists (World Congress 2003).

"In the hotel business, restaurants and tourism sectors, children carry out various duties: bellboys, chamber maids, pantry work, beach cleaning, hawking, caddies on golf courses, etc. 10% to 15% of the entire labour force of this sector around the world is under 18 years" (World Congress 2003).

**Prostitution and sex tourism**

The easy money of commercial sex has caused the sexual exploitation of young people. Tourists are willing to pay big money for sexual services and the trade in youngsters bodies has become more lucrative to criminals (Dogan 1989).

Such trends in the tourism industry have urged political parties and parliaments worldwide to emphasize on the implementation of sustainable tourism concepts. The *International Cultural Tourism Charter* is an ideal example.

The Principal Objectives of the Cultural Tourism Charter are:
• "To facilitate and encourage those involved with the conservation and management of heritage places and collections to make them accessible to the host community and visitors.

• To facilitate and encourage the tourism industry to promote and to manage tourism in ways that respect and enhance the cultural heritage and living the culture of the host community.

• To facilitate and encourage a dialogue between conservation interests and the tourism industry about the importance and fragile nature of cultural heritage assets and the need to achieve a sustainable future for them.

• To provide those formulating strategies and policies with standards relating to the presentation and interpretation of cultural sites and activities, in the context of their preservation and conservation". (International Cultural Tourism Charter 2003).

2.3 Tourism and September 11th

The year 2001 witnessed tremendous changes in the tourism industry worldwide after the September 11 attacks, which left devastating effects on passenger traffic and ultimately led to an economic downturn in the tourism industry. Tourism analysis reveals that it was the largest single monthly decline in the tourism history of the United States.

According to a WTTC estimation, a decrease of 4.4% in travel and tourism demand was noted in 2001. Similar variance analysis for 2002 assumes 30% of the variance is recession related, which yields a negative impact of 3.0%. The total impact of September 11 on travel and tourism demand is estimated at a loss of 7.4% (WTTC 2002).

"Our research results show a very clear picture of last year's impact on the industry and how that will continue in the months ahead, says Jean-Claude Baumgarten, WTTC President. He continued: but the industry has reacted positively and swiftly through cutting costs, creative advertising, innovative
promotions and seeking new market opportunities. In my mind 2002 is dedicated to stabilisation and recovery, and this process requires continued partnership between the private and public sectors” (WTTC 2002).

Table 2.3: Impact of September 11 on Tourism Industry

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<tr>
<td>Full Year Results 2001</td>
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<tr>
<td>Forecasts Over 2000 (Percent)</td>
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<td>Full Year Results 2001</td>
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<td>Full Year Results Over 2000 (Percent)</td>
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<tr>
<td>World</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personal Travel &amp; Tourism</td>
<td>2.8 (0.9)</td>
<td>(3.1)</td>
<td></td>
<td>3.0 (0.0)</td>
<td>(2.1)</td>
<td></td>
<td>(5.3)</td>
</tr>
<tr>
<td>Business Travel</td>
<td>3.1 (3.5)</td>
<td>(5.6)</td>
<td></td>
<td>3.1 (3.9)</td>
<td>(4.9)</td>
<td></td>
<td>(10.5)</td>
</tr>
<tr>
<td>Government Expenditures</td>
<td>3.0 (3.2)</td>
<td>0.1</td>
<td></td>
<td>3.2 (3.2)</td>
<td>(0.0)</td>
<td></td>
<td>(0.1)</td>
</tr>
<tr>
<td>Capital Investment</td>
<td>3.0 (0.4)</td>
<td>(3.5)</td>
<td></td>
<td>5.1 (1.0)</td>
<td>(2.9)</td>
<td></td>
<td>(5.7)</td>
</tr>
<tr>
<td>Visitor Exports</td>
<td>4.4 (4.9)</td>
<td>(9.6)</td>
<td></td>
<td>4.0 (4.2)</td>
<td>(5.7)</td>
<td></td>
<td>(15.3)</td>
</tr>
<tr>
<td>Other Exports</td>
<td>4.4 (4.9)</td>
<td>(9.6)</td>
<td></td>
<td>4.0 (4.2)</td>
<td>(5.7)</td>
<td></td>
<td>(15.3)</td>
</tr>
<tr>
<td>Travel &amp; Tourism Demand</td>
<td>3.8 (1.3)</td>
<td>(4.4)</td>
<td></td>
<td>3.8 (0.4)</td>
<td>(3.0)</td>
<td></td>
<td>(7.4)</td>
</tr>
<tr>
<td>T&amp;T Industry GDP</td>
<td>3.1 (1.1)</td>
<td>(4.1)</td>
<td></td>
<td>3.1 (0.9)</td>
<td>(2.8)</td>
<td></td>
<td>(6.9)</td>
</tr>
<tr>
<td>T&amp;T Economy GDP</td>
<td>3.2 (1.1)</td>
<td>(2.9)</td>
<td></td>
<td>3.7 (0.3)</td>
<td>(2.8)</td>
<td></td>
<td>(6.5)</td>
</tr>
<tr>
<td>T&amp;T Industry Employment</td>
<td>2.1 (2.5)</td>
<td>(3.9)</td>
<td></td>
<td>2.3 (2.0)</td>
<td>(3.0)</td>
<td></td>
<td>(6.9)</td>
</tr>
<tr>
<td>T&amp;T Economy Employment</td>
<td>1.9 (1.6)</td>
<td>(2.9)</td>
<td></td>
<td>2.3 (0.8)</td>
<td>(2.2)</td>
<td></td>
<td>(5.1)</td>
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<tr>
<td>T&amp;T Industry Empl. (000's)</td>
<td>1,602.6</td>
<td>(1,879.3)</td>
<td>(2,959.6)</td>
<td>1,827.3</td>
<td>(1,460.8)</td>
<td>(2,107.3)</td>
<td>(5,266.9)</td>
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<tr>
<td>T&amp;T Economy Empl. (000's)</td>
<td>3,852.0</td>
<td>(3,154.0)</td>
<td>(5,955.1)</td>
<td>4,742.0</td>
<td>(4,802.0)</td>
<td>(4,496.8)</td>
<td>(10,451.9)</td>
</tr>
</tbody>
</table>

To properly account for the impact of 9/11 in 2001 and 2002, it is necessary in the above table to adjust the variance between last year's forecasts and this year's results/forecasts by recessionary events that were unrelated to the events of September 11th. In 2001, OEF generally estimates that 85% of the variance can be attributed to the events of September 11th (15% to independent recessionary events). In 2002, this factor decreases to 70% associated with 9/11 (30% to independent recessionary events).

WTTC 2002

2.4 Model of Tourism Information Flow

The Tourism Information Flow model, developed by Sheldon (1997), provides insight into the information flow and the types of travel information needed and transferred between the various participants in the tourism industry.

Product information must be accessible to travellers and travel planners. Furnishing data to interested parties includes a network of agents, operators, corporate organisers and direct suppliers. Traveller behaviour, tastes and responses should be exchanged and fed back to product suppliers. Horizontal arrows on the model indicate this information flow.
Vertical lines between intermediaries (C) in Figure 2.2 represent information flow when several intermediaries are involved in travel planning. Agent/operator information flow is commonly represented by these lines. Suppliers (B) information flow internally or with other suppliers. Hotels may well require information from airlines, attractions or car rental agencies.

**Figure 2.2: Tourism Information Flow Model**

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A movement of information relating to relevant areas within an organisation is essential. Marketing, customer information, record keeping and accounting must be streamlined and flow between governmental agencies (A), suppliers (B), intermediaries (C), and travellers (D). Various important regulatory functions and information which flows by governmental agencies include the application of customs and health regulations, receipt of performance data, production of statistical aggregates and currency control. A major function of such agencies is to monitor contemporary travel patterns and domestic and international resource utilisation. State agencies include national and regional tourism organisations.
Providing a somewhat detached input, beyond commercial interests, are reputable practitioners—Universities (E), independent market research institutions and consultancies supplying pertinent data gleaned from surveys, statistical analysis, and assisting suppliers. The tourism product is characterised by attributes that differentiate it from other products. It is basically information-intensive as a result of its heterogeneity, intangibility, perishability and international scope (Sheldon 1997).

2.5 Tourism Characteristics

2.5.1 - Heterogeneity

The tourism industry is a complex mosaic of many components. For example, in planning a trip, individual travellers deal with many private and public sector firms and agencies. This heterogeneous nature of tourism, which brings together elements from all over the world, creates an information problem (Proll et al. 1998, Laubenheimer et al. 1999).

The industry is, by its very nature, fragmentary and lacks standardisation. On a global scale, this is reflected in variations in accommodation classification and grading. A failure to create a single standard system renders accurate price and quality comparison exceedingly difficult (Bennett 1990). This is also a problem at a national level. The English Tourist Board (ETB) and other national tourism boards for example, operate different systems with different interfaces. These are not compatible with each other and often confuse potential tourists.

In this regard, the English Tourism Council (ETC) established the Tourism Technology Working Group (TTWG) in December 1997 as a joint initiative for English destinations. This group specifically aims to disseminate information outside the Group on a regular ongoing basis. This demonstrates the merits of co-operation and common standards by sharing knowledge of pitfalls. It avoids repetition of errors and duplication of efforts, for example, in data collection, distribution and the development of technologies, while it also provides a clear indication of current developments, for the benefit of the whole industry (ETC 2000).

Efficient, accurate and timely information flows are required to piece together the multifaceted trip (Sheldon 1997). Information and information technology provide the crucial links between the different industry sectors and can help make the traveller's
planning and experience seamless. If links break down or are too slow, information is not transmitted in a timely manner and the industry does not function properly. Information and the mechanisms for conveying that information are therefore a vital component for the industry’s success (Sheldon 1997).

2.5.2 - Intangibility

Tourism is an intangible product (Proll et al. 1999), which increases the volume of information required. Potential tourists require appreciable volumes of pre-trip information as they are unable to see, touch or feel the product they are about to purchase. Thus, they need detailed, accurate information about their arrangements, routes and proposed destination. This information can be presented using a variety of media, and supplied in the form of brochures, leaflets, and videotapes. More recently, television travel programmes and electronic media have become important, beside the Internet as a rich source of electronic travel products and information.

2.5.3 – Perishability

The tourism ‘product’ has only one life, and once the ‘sell-by’ date has passed, that product is dead (Sheldon 1997). If a room, a seat, a ticket for a concert, booked for a certain date, is not used it can never be sold again. Proll et al. (1999) stress that information has the potential to minimise the loss of ‘perished’ products and to maximise loads and revenues. As the tourism industry grows, competition increases and there is a parallel expansion in information needs. The perishability of products, the products themselves being represented by information, has placed an emphasis on the need, not only for accurate information but also on the mechanism for communicating that information throughout the industry (Laubenheimer et al. 1999).

2.5.4 - International

Tourism is also an international industry (Sheldon 1997), and international travel generates and disseminates large volumes of information not found in domestic industries. International travellers must have access to, for example, information related to border controls, i.e. visa and passport regulations, customs regulations, arrivals or departure taxes, currency control and health regulations, such as immunisation requirements. International travellers also require culture-related information such as cultural practices, driving
regulations and languages. This geographic dispersion demands, as a pre-requisite, an efficient network providing sophisticated information exchange, enabling a global link to countries, tourism organisations and travellers. Without Information Technology (IT), the tourism industry would not efficiently function at an international level (Sheldon 1997). The establishment of an effective communication and transmission mechanism is vital, and needs the ability to store, process, retrieve, and disseminate the diverse data produced in tourism’s commercial activity.

Data reliant is a firm concept in the tourism industry, as contemporary information affects all aspects of the system, both horizontally and vertically through the industry, from market identification and provision, to essential feedback to intermediaries and the travelling public. Different information systems are developed to process this information and the information is stored in a specific system (Proll et al. 1999).

Increased volume and complexity of the relevant market and industry and the intricate web established is paralleled by a growth in competition between players (Bennett 1990). Fierce competitive strategies and inter-woven networks emphasise further the need for efficient, reliable, standardised and trusted information in relation to products and their availability. Buhalis (1998) argues that tourism destinations and enterprises increasingly need to adopt innovative methods to enhance their competitiveness.

Information is the lifeblood of the tourism industry and effective use of IT is pivotal, “hence, a whole system of IT is being rapidly diffused throughout the tourism industry and no player will escape its impacts” (Buhalis 1998, p.411). Moreover, the characteristics of the tourism product, its intangibility, heterogeneity, perishability and international nature, make it an ideal candidate for the use of IT (Bennett 1990). Through a concentrated investment in information technology, at all levels of the industry, significant benefits have been achieved, especially in targeted areas, where information and reservation processes have been greatly enhanced by the meteoric development in computer and communication technology. Software packages aimed specifically as the industry have heralded dynamic revolutionary processes. Systems, in a profusion of guises, are now ubiquitous. They range from the grand scale of the Global Distribution Systems (GDS) and the extensive international hotel Central Reservation Systems (CRS), through to the highly popular Destination Management Systems (DMS), accessed in high street kiosks (Frew and Crichton 1999).
In an industry that depends on contemporary data, and is information-intensive, IT selection and adoption is dependent on relevant software knowledge. There are some areas where data is more significant than in others, and this is where Destination Information Systems (DIS) proves most useful. DIS depends heavily on information storage and provides salient statistics for retrieval and dissemination (Chen and Sheldon 1997, Sheldon 1997, O'Connor 2000).

### 2.6 Structural Change

The tourism industry is always in flux, an amoebic structure reflecting contemporary trends. Orchestrated by the bourgeoning power of the consumer, in an environment of individualisation, the industry is experiencing a period of transition. A combination of globalisation and technological innovation has put considerable pressure on institutions in the sector to move to new products and new processes (Go et al. 1999). The industry cannot retain, and customers will not allow, a rigid alignment based on the out-dated compartmentalisation based on sex, age or social class. The menu is now 'a la carte'. Packaged holidays are no longer the staple diet of the industry and cease to be a basis for generating competitive strength, even when dangled before tourists at rock bottom prices (Go et al. 1999).

Specific individual packages, customer driven, are now demanded to allow for unique and authentic experiences, specialist interests, and include a new breed of activities focused on individual taste. The WTO has recognised, for over a decade, the importance of providing a commodity required by the consumer, and promotes a successful policy of rapid identification of needs and ensuring clients are served with comprehensive, personalised and up-to-date information. Godart (1999) adds to this argument, asserting that these changes are a substantial shift in the preference and behaviour of the tourism consumer, away from standardised packages designed by tour operators concentrating on bulk economics.

A further change in consumer activity, according to Rachman and Richins (1997), is a desire to travel more frequently, but cover less distance. Consumers are more geographically aware, and make greater demands on the industry. Reservations can be last minute; and consumers seek global advice, expect high service quality, accept as norm market transparency and have a hands-on approach verging on a self-service mentality.
Modern travellers are now destination-aware and tend to gather recreational 'micro services' to include in a customised holiday package. Schertler et al. (1999) report that customers are no longer satisfied with the mere issuing of tickets, but require professional travel billing management. Werther and Klein (1999) note that tourists:

- "Want more specific offers, both in content, and in the entire arrangements;
- Demand better information, about the product, about the destination and about additional services;
- Are more mobile and critical, but less loyal;
- Are more price sensitive;
- Tend to take more, but shorter, vacations;
- Decide later, leading to less time between booking and consumption" (Werther and Klein 1999, p12).

From this analysis it is clear that customer behaviour displays other features of a highly segmented market with 'maverick' consumers ready to occupy different segments at the same time. Consumer activity is fickle and some trends display a short shelf life while others are more resistant but are not distance runners. Sophisticated IT and associated communication technologies have played a major part in restructuring the tourism industry in a relatively short period.

On-line facilitation has brought about a revolution in the tourism industry. Steiner and Dufour (1998) assert that Internet-based Information Systems have effected a reorganisation of the industry chain and have altered the manner in which key players in the tourism industry offer, gather and use information. The Internet technology that facilitated the accessibility of information for professional travel agents in the 70s and 80s, now serves end-users in the 90s (Chen and Sheldon 1997, Licata et al. 2001). The Internet enables direct sales from suppliers to customers, and has forced the repositioning of traditional intermediaries (Eastman 1997).

IT has enticed newcomers to venture into territories long closely guarded by established travel companies. Reinders and Baker (1997) report that in a questionnaire-based study, 89% of 31 respondents, from a sample of tour operators, system suppliers, travel agents, consultants, suppliers and tourist associations, supported the statement that developments in IT will facilitate the entrance of industry outsiders into the tourism market.
Predator media and IT companies such as Bertelsmann or Microsoft are now providing multimedia content and Internet mediating transactions. Information communication is their business and tourism is able to utilise the software processes they sell. There is a realisation that tourism is a perfect niche and a most important application field (Werther and Klein 1999). Such ventures into IT software development contribute to major rethinking and restructuring of the industry. Microsoft Expedia and Travelocity are new recruits in Computer Reservation Systems (CRS). It is clear that convenient and effective ways of doing business will replace slow and expensive traditional systems (Eastman 1997).

Internet business has initiated radical changes in structure and customer attitude. Both convenient and profitable, it has bred a core group of intense clients who buy travel online. With continuous capacity excess and a vigorous price war a new dimension has been brought to the tourism industry (Affolter 1998). According to Web Travel News, 7% of Internet travel buyers are considered ‘heavy bookers’, who have made more than one online airline, hotel and car rental reservation. Such ‘heavy bookers’ tend to travel more frequently for business and pleasure, and are more likely to be ‘Net Vets’ with over two years of online experience. Sabre-owned Travelocity.com and Microsoft's Expedia.com are reported as the most frequently visited online travel sites for ‘heavy bookers’, followed by the sites Priceline.com and Preview Travel.com (Web Travel News 2000).

The new structure threatens intermediaries’ roles in the industry. Discarding of traditional channels is one consequence of restructuring (Bloch and Segev 1996, Karcher 1998, Steiner and Dufour 1998). Both positive and negative results could emerge, and much will depend on how proactive companies are in utilising the strengths of the Internet to increase efficiency and add customer value. Blinkered vision and an inability to absorb or complement Internet access will lead to failure. Farsighted organisations must build on the basic Internet provision, and add value, through knowledge, personal services and customisation, for the new breed of discerning traveller (Sheldon 1997).

Winners can also come from established players such as American Express and Rosenbluth Travel who have safeguarded and enhanced their physical world brands by adventuring into cyberspace (Bloch and Segev 1996, Karcher 1998). Buhalis (1998) suggests a fresh strategy is needed and advocates a profit-achieving scheme, whereby revenue can be shared with other players from referral, technical, customisation, maintenance, advertising, trade margin booking fees and from subscriptions.
The information age will prove fatal for some travel organisations (WTO 1999): small companies languishing without a niche, flailing medium size organisations, too large for niche markets and too small to compete with high volume players; companies without the online capacity of enterprising businesses, and new entrants failing to invest sufficiently in raising and maintaining brand awareness.

Winners will be those willing to and capable of adapting to the new ground rules: niche products and services offered by small companies carrying few overheads; global players with high brand awareness achieving economies of scale; uncluttered and freshly funded entrants owing no allegiance to the high street, already boasting a high profile or willing to invest in a prominent visible presence through marketing campaigns; travel principals who now have a viable direct channel to the market and continue to milk the agency channel; global distribution systems who reposition as travel intermediaries; technology and software suppliers; and destination marketing organisations (WTO 1999).

2.7 Tourism and Information Technology

The information technology revolution, with significant implications for the tourism industry, can only be compared to the introduction of the jet engine (Buhalis 1997). No player in the tourism industry will be untouched by Information Technology (Poon 1993, Buhalis 1997). Figure 3 illustrates the structure of IT in the travel and tourism industry. Information Technology is now the backbone of the travel industry and therefore effective use of IT is fundamental to tourism (Buhalis 1997).

The IT revolution has profound implications for the management of the tourism industry, mainly by enabling efficient co-operation within the industry itself and by offering tools for globalisation (Buhalis 1998, Leewattanakit et al. 2001). The use of IT in the industry is driven by both the increasing size and complexity of tourism demand, and by the rapid expansion and sophistication of new tourism products, addressing mini-market segments (Buhalis 1998).

To satisfy tourism demand and for long-term survival, there is no choice but to use IT to enhance inter-activity with the marketplace (Buhalis 1997). Daniele (1996) asserts that the convergence of computers and telecommunications is changing the nature of the tourism industry and revolutionising the activities of tourism organisations, both at the public and
private level, and in the way customers gain access to information and travel services. The volume and quality of the information, which is provided in the form of videos, pictures, clips and text, reduces the risk perceived by the customer when buying something without previous experience – an ever-increasing reliance on virtual encounters to judge suitability. Moreover, IT enables travellers to access reliable and accurate information as well as to undertake reservations in a fraction of the time, avoiding cost and inconvenience required by conventional methods. IT improves the service quality and contributes to higher guest/traveller satisfaction and also assists principals to understand consumer needs through market research and loyalty/partnership schemes. Improved access to information covering all aspect of tourist activities provides the framework for offering personalised services at price levels comparable to those of standard packages (Werthner and Klein 1999).
Figure 2.3: Structure of IT in the Tourism Industry

Legal and regulatory

Trade
National government
Local government

Regulatory

Suppliers

<table>
<thead>
<tr>
<th>Information</th>
<th>Transport</th>
<th>Hospitality</th>
<th>Holidays</th>
<th>Tourism</th>
<th>Finance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Books</td>
<td>Air</td>
<td>Hotel</td>
<td>Tours</td>
<td>Events</td>
<td>Commission tracking</td>
</tr>
<tr>
<td>CD-ROM</td>
<td>Car</td>
<td>B &amp; B</td>
<td>Visits to friends and relatives</td>
<td>Places</td>
<td>Bureau-de-change</td>
</tr>
<tr>
<td>On-line</td>
<td>Rail</td>
<td></td>
<td></td>
<td>Attractions</td>
<td></td>
</tr>
</tbody>
</table>

Intermediaries

Global distribution systems
New intermediaries
Tourist boards

Corporate networks

- X25
- ISDN
- AT&T

Imminus
Dial-up
Intranets

Consumer networks

- The Internet
- Digital TV
- Teletext

Travel agent

Tourist information centre

Self-service kiosk

The consumer

Corporate
Individual

Inkpen 1998
In the 1990s, the integration of IT and tourism became of major interest to researchers worldwide. The International Federation of Information Technology and Tourism (IFITT) took the leading role in popularising this new field. The IFITT has its origins in the highly successful series of ENTER Conferences (Conference on Information and Communication Technology in Tourism) that were first initiated to help guide the development of tourism in Austria. The IFITT aims to promote international discussion on the subject of information technologies in the field of tourism. As such, one of its primary objectives is the organisation of the annual ENTER conference (Inkpen 1998).

Tourism and the Internet make perfect partners, a marriage of like ideals. In a US survey of Internet companies, travel came second to real estate in companies, for the highest mean sales (Marcussen 1997). Faster computer processors, improved network capacity and mass ownership of PCs have led to an explosive growth in Internet users (Buhalis 1998). Developing economies are eagerly joining an expanding global use of IT for tourism, for instance Egypt, Zambia and Kenya (WTO 1999). IT will help developing countries break the dominance of advanced and developed destinations, and they will now be able to disseminate their tourism information at low cost and without restrictions (Cooper et al. 1998).

2.7.1 - Implications for Tourism

A new dynamism has engulfed tourism at both public and private levels, and reflects the meteoric developments in all aspects of computers and telecommunications. Operation, structure, destination choice and strategy within tourism organisations have been greatly transformed by the inroads made by IT.

Intermediaries must adopt advanced information technologies to effectively compete in the international tourism market. This is a necessity, as the tourism industry is highly dependent on intermediaries such as tour operators, travel agents, hotels and tourist offices (Archdale 1993).

Even the crude and unsophisticated computer systems were useful technology for the tourism industry is confirmed by the early use of computers in airline operations in the 1950s. Computer Reservation Systems for Sabre, Worldspan, Galileo and Amadeus, essentially databases that empowered tourism organisations and enabled them to manage
and improve their services, were some of the first examples of the application of IT to the tourism industry (Sheldon 1997). Figure 2.4 plots the history of CRS/GDS.

Until the mid-1970s, CRS use was confined to proprietary airline information. An airline’s major selling agents, however, were travel agents, who also needed access to the CRSs of airlines to research and sell seats more efficiently. Having a reservation terminal for each airline on a travel agent’s desk made no sense (Werthner and Klein 1999), and, as a result, a new generation of systems emerged. Computer reservation systems that affiliate with vendor airlines have become known as Global Distribution Systems (GDS), and are a major driver of information technologies in tourism, which derive from the deregulated United States domestic travel industry, and are in almost universal use by the world’s airlines to store and distribute route, tariff and seat availability (Archdale 1993). Werthner and Klein (1999) describe GDS as a network of one or more CRSs for distributing product offers of participating networks in different countries in the world.

GDSs have been moulded, through demand and usage, to accommodate much more than just the booking capability for scheduled air seats. That have matured into a facility coping with booking a wide range of travel products, including cruises, car rental and...
accommodation. GDS terminals allow agents to instantly access availability and instantly book on behalf of customers (WTO 1999).

With the complementary expansion of the Internet and the World Wide Web (WWW) throughout the 1990s, GDSs offered a greater array of services. Utilisation of multimedia in the inter-active exchange of information is achieved more readily between tourism organisations and customers, and it enables the provision and packaging of information to potential tourists (Buhalis 1998).

The role of GDS has been jeopardised, and they are in a difficult position, especially after the emergence of new Internet technology (Chen and Sheldon 1997, Buhalis 1998). Enterprising companies are recognising the opportunities and squeezing into the lucrative travel and tourism market. Destination Management Organisations (DMO) have eagerly entered the electronic marketplace by developing their own Destination Information Systems (DIS) (WTO 1999).

During the 1990s, powerful computing applications became more widely available, hence DMOs started to use IT more extensively, initially through self-contained systems designed to support specific areas of operations, for example, tourist information offices, information kiosks and database marketing (WTO 1999).

More recently there has been a noticeable shift in the literature on tourism technology from CRS (Poon 1993, Archdale 1993, Buhalis 1995, Sheldon 1997) and DIS (Sheldon 1997, Buhalis 1998) to the Internet, and specifically to the World Wide Web (WWW). Since 1996 a number of articles on tourism marketing via the Internet/WWW have been written (Tjoa and Werthner 1996, Marcussen 1997, Cano and Prentice 1998). So far, the National Tourism Organisations (NTO) have focused on using the Internet/WWW solely for disseminating tourism information and for marketing purposes. However, the Internet is also an optimal tool for the dissemination of tourism statistics and market intelligence information from NTOs to tourism businesses and other beneficiaries of this type of data (Nielsen 1999).
2.7.2 - The Internet

From its modest beginnings in the 1960s the Internet has blossomed in the new millennium with enormous growth including educational and commercial networks and services. No one 'owns' the Internet, but the National Science Foundation (NSF) and the Internet Engineering Task Force (IETF) have established a committee of scientists and experts to provide technical supervision, standards and guidelines for the Net (Gupta 2000).

"Over half a billion people worldwide now have internet access, according to a new research from Nielsen-Net ratings the research company's latest study indicates that 580 million people have Net access, compared to 563 million in the third quarter of 2002" (Nua Internet Survey 2004).

These figures show a very high growth rate, due to the simplicity of access and the flexible protocol the Internet uses. The Internet encompasses a number of online applications including the WWW, e-mail facilities, chat rooms and Usenet. Liu (2000) sees the Internet as being of great benefit in virtually all areas of marketing including marketing research, through market segmentation, targeting and positioning, to the effective use of the 'marketing mix', and the organization and control of marketing.

2.7.3 - The World Wide Web

The popularity of the Internet can be tied directly to the World Wide Web (Laudon and Laudon 1998). In 1989 a computer scientist, Tim Berners-Lee, at the particle physics lab in CERN (European Centre for Nuclear Research in Geneva), developed the WWW as a tool to help an international group of physicists exchange findings and information related to their research (Laudon and Laudon 1998, Werthner and Klein 1999, Stair and Reynolds 1999, Gupta 2000). From this modest origin, the Web has grown rapidly to a collection of tens of millions of public, private and personal web pages. The secret of the Web's popularity is the simplicity of its technology. Most untrained users can easily access information from the Web and even create sites themselves. In addition to integrating file transfer protocols, the Web allows users to access hosts through Telnet, read news group and to use e-mail. In addition, the Web's capability of blending text, pictures, sounds and video clips into multimedia documents adds to the popularity of the Internet, taking the
Internet out of its traditional academic shell and making it an effective popular medium in everyday life (Liu 2000).

2.8 Destination Marketing Organisations

According to Jung and Baker (1998), the growing importance of the Internet allowed the DMOs to realise the opportunity offered by this network. DMOs can promote destinations as electronic content providers and can offer electronic exposure to local small and medium enterprises (SME), ensuring the promotion of data about products, producers and customers. IT can support and improve all the traditional business processes of research, marketing, visitor services, membership management, destination planning and management.

2.9 Destination Information System (DIS)

A DIS is defined as a database system that contains comprehensive information about a destination’s facilities and tourism product, and is accessible to travellers or by travel planners, either at the destination or from their home country (Sheldon 1997). Such systems are still in their infancy.

O’Connor (2000) catalogued the different terms identifying a DIS that have come into use over recent years: Destination Database (Vlitos and Rowe 1992); Destination Information System (Sheldon 1993); Regional Integrated Computerised Reservation and Management Systems (Buhalis 1995) and Destination Management Systems (Baker et al. 1996).

Baker et al. (1996) define a DIS as essentially a marketing tool promoting tourism products at a particular destination, which might be a nation, region, town, or other recognisable geographical entity.

Chen and Sheldon (1997) provide a clear-cut definition:

“A DIS is defined as a database system that contains comprehensive information about a destination’s facilities and tourism products and is accessible by the travellers themselves or by travel planners, either in the destination or in the home region A DIS is designed to facilitate travellers’ and potential travellers’ vacation planning, trip organisation, and subsequent settlement of travel transactions ...DIS may also provide
DISs were introduced in the early 1990s. They included a range of travel and leisure services and permitted reservations for hotels, car rentals, cruises, railways, tours, theatres and sporting events (WTO 1999). A DIS is designed to facilitate travellers’ and potential travellers’ vacation planning, trip organisation and subsequent settlement of travel transactions (Sawyer et al. 1994). A DIS may also provide reservation capabilities, a customer database, a market database and statistical analysis capabilities (Sheldon 1997). A DIS can also replace or augment the traditional methods of information provision (Sheldon 1997). They were initially developed to fill in the gaps in Global Distribution Systems (GDSs) such as Sabre and Galileo, that dominated, at the time, the international travel market. Few provided comprehensive information on specific destinations (Chen and Sheldon 1997). Moreover, GDSs tended to provide information related to large companies with very high-priced homogeneous products (Sheldon 1994, Chen and Sheldon 1997, Sheldon 1997). Smaller enterprises cannot benefit from GDSs, which, although excellent at performing their primary functions, are essentially targeted at business travellers (Archdale, 1993).

Cano and Prentice (1998) argue that the Internet is a good tool that can provide opportunities for tourists and destinations. Studies have shown that the use of a DIS can significantly improve the competitiveness of a destination, in particular for SMEs (Archdale 1993, Sheldon 1993, Buhalis 1995).

One of the main tasks of a DIS is to provide unbiased, comprehensive destination information, including both public and private tourism products from both small and large enterprises (Chen and Sheldon 1997). The success of DIS applications not only increases market efficiency, but also promotes market equity (Buhalis 1998).

Many countries have developed DISs. Some are information-only DISs, like the Canadian BOSS; or the Danish Danata, developed by the Danish Tourist Board, and the Tyrol Information System TIScover, which had reservation capabilities discussed in some detail below. Others such as Baden-Württemburg, the Caribbean and Queensland have developed reservation systems intended for professional use. Success is not guaranteed,
and whilst some DISs have prospered, there have been casualties. Failure has meant loss of large sums of public and private money (Hyung and Twigeri 1999).

DISs now being developed are fully Web-enabled, and information reservation and other tourism service functions of the system can be accessed and operated across the Web by defined user groups through an extranet. Thus, for example, for tourist information and reservations for customers or hoteliers, one can access the system to update availability or obtain the latest market intelligence. Through low cost access, further usage of the system can be expanded (WTO 1999).

2.9.1 - Applications of an Integrated DIS

DIS not only supports DMO websites with tourism information, it also supports various other functions.

"Bed-night, visitor statistics, market research results, information about reports and books, newsletters and press releases, Information about press, e-mail address and WWW- links to tourism resources, general data about tourism to and in the country, information about /from the national tourist board previously on print only, and co-operative marketing campaign information from the board" (Werthner and Klein 1999, p198).

Utilising such functionality will have a major impact on the way any DMO works, calling for a carefully planned programme of change management (WTO 1999).

2.9.2 - The Austrian TIScover System

TIScover is a web-based system with comprehensive functionality, including information management, distribution, reservations and electronic marketing capabilities in both English and German. A comprehensive range of partnership agreements with leading Austrian and International organisations supports it. These agreements include online distribution, information collection and management, technical support and industry training arrangements (WTO 1999). Due to its success, the majority of Austria’s provinces have now adopted the system, and versions are also being used in Germany and Switzerland (TIScover 2000).
TIScover was, at the time of its launch, one of the most advanced destination-oriented systems (Werthner and Klein 1999). It was initially launched in 1991, only used as an internal system by the Tyrol Tourist Board (WTO 1999) and operated by the TIS Company, a subsidiary of the Tyrol Tourist Board (Tyrol Werbung). The Tyrol region is a famous Alpine skiing area in the west of Austria, and it receives the largest percentage of tourists to Austria (Sheldon 1997). The Tyrol's tourism industry is fragmented: its supply industry has an SME structure, it shows a lack of organisation and internal communication, its degree of co-operation is low and access to the market is limited. The marketing of this supplier community relies heavily on the local tourist boards - 264 in total in Tyrol. In a hierarchical network, these boards are linked with the Tyrol Tourist Board. They were confronted with changing consumer behaviour, increasing problems in reaching the market, and the increasing importance of electronic distribution channels, where CRS/GDS offered only very limited information about Tyrol (Werthner and Klein 1999).

Consequently, the Tourist Board decided to create its own system, and in 1989 aimed to:

- "Provide improved access to the market;
- Deliver information about the market and its trends to the supply side;
- Build an infrastructure for improving co-operation within the industry, enabling a better, faster and more democratic presentation of the product, and taking small suppliers into consideration;
- Improve the know-how of employees, their working situation and their working satisfaction to reduce fluctuations and, as a result, improve services for the tourist;
- Speed up and improve the communication between participating organisations;
- Improve the co-ordination capabilities of the Tyrol Werbung;
- Gain a competitive advantage over other destinations" (Werthner and Klein 1999, pp. 198-199).

The TIScover system started its operation by linking six tourist boards in December 1991. Within two years, 140 tourist boards were connected to the system covering approximately 85% of the Tyrolean region (Werthner and Klein 1999). Figure 2.5 shows the initial architecture of this system.
Clients were linked to the TIS network consisting of a central server and a workstation or linked to a local network telephone lines and modems. Remote participants, as well as the centre, had access to complete and replicated databases. Data was distributed daily to and from every site and included in the local database. The system was written in the fourth generation language ‘Progress’, based on a relational database. To guarantee clients a ‘first-class service’, TIScover Service Centres have been installed in all Austrian provinces (TIScover 2000).

Co-operation with national and international partners such as America Online, Microsoft Expedia and STRAT added more success to the system, and automobile clubs, the CRS/GDS START and Galileo, Minitel, Datex-J and local cable TV can access the tourist information module (TIScover 2000).

In addition, a management information module, accessible only by tourist boards was implemented. It was also realised that permanent marketing is necessary to ensure the system’s maintenance, exploiting the synergetic effects of the internal Tyrolean and external marketing. TIS was able to react promptly to the development of the Internet, and
added a Web interface to its system, called TIS@WEB. Web pages can be dynamically updated using the Common Gateway Interface (CGI) to connect to the database (Werthner and Klein 1999).

TIScover supports decentralised maintenance of the tourist information base. This means that the tourist information providers themselves maintain their data by simply using their Internet browser. TIScover also allows tourist information providers to access information on the booking of their products by means of a booking report, and to reserve rooms easily to cope with unforeseen guests (Proll et al. 1999).

TIScover contains the following functions:

"Internet: The interface to the end-consumer, which may use one of the following:
Reports: contains topical reports e.g. on the weather or snow situation;
Scout: a search engine based on stored database attributes;
Navigator: a browsing tool;
Journal: contains articles and short stories e.g. about travel and tourism.

Intranet: TIS internal network to ensure data maintenance, office functions, managing information on the Intranet, designing web sites and editing TIS multimedia materials.

Extranet: The primary suppliers of tourist products can directly manage their information, update availability, or have access to statistics or marketing information via the modules" (Werthner and Klein 1999, p 203).

"TIS is attracting a growing number of interested parties: Tiscover, headquartered in Innsbruck, Austria, attracted 57 million online visitors generating 225 million pages views in 2002. Tiscover provides destination portal for organisations including the Austrian National Tourist Office, the state of Bavaria in Germany, the province of Trento in Italy, and many more states, regions, cities and towns across Europe, totalling over 16,000 business client" (Tiscover 2004).

TIScover branded sites rank among the most visited travel sites on the Internet. (Tiscover 2002) With 53.5 million online visits, and 198 million page views in 2001, TIScover and its partners have created the world's largest destination portal family (Tiscover 2002). TIScover 2000 is the latest generation of information and reservation systems operated by the TIS Company. TIScover 2000 takes advantage of the latest online technology in cooperation with GSM network operations in Austria. TIScover 2000, with base information
on weather, avalanche hazards and snow conditions will also deliver information to the latest digital mobile phones (TIScover 2000).

The Tiscover 2002 new system automates tourism providers’ entire reservations processes, resulting in dramatically reduced booking times. The new system also makes updating availability easier as changes made by customers are dynamically updated across all TIScover websites on which they are represented, reducing support time and improving data integrity levels. Moreover, users will even be able to change information by sending SMS text messages from WAP phones to the TIScover portal (TIScover 2002).

In line with similar sophisticated integrated systems, many issues or variables must be considered. Organisational structures of tourism organisations differ from country to country, requiring different approaches, systems, languages and emphasis. The economic structure of the tourism organisation plays an important role in the development of any such system. To exploit the potential of these technologies, the tourism organisations have to be able to afford the design of an advanced, sophisticated system. The typologies of tourism information, noted earlier, are critical variables to be considered when designing a DIS.

All these variables are affected by important issues, such as the geography of the destination; the nature of tourism in that area (independent or group); the best mode(s) of travel, e.g. air, public transportation or automobile, the political environment of the tourism organisations, the various sources of funding, and the existence of travel information and reservation systems in the country or region (Sheldon 1997).

2.9.3 - Financial Issues associated with DIS

Invariably government takes responsibility for funding their DIS, covering the full costs of development and operation. On occasions, and for specific reasons, private sector money is deployed where there is a profit incentive. Such investment must consider budgeting for maintenance and updating the system; a labour-intensive requirement, so essential for ensuring the system’s quality, efficiency and accuracy.

Unlike other Electronic Market Systems, a DIS generates insignificant revenues, whether charging a nominal fee or even offering a free service. Occasionally, it secures income
from reservation functions, which contributes to operating costs. DIS are often publicly funded and administered by local or regional tourist information offices, local authorities or enterprise development agencies (Evans and Peacock 1999).

2.9.4 - Information Content

The success of the DIS depends on the accuracy and currency of its information (Sheldon 1997). However, many tourism products require intricate details involving multiple field databases for each product facet. On-line updating is essential and manageable, but requires networked terminals and modems from the supplier-end. According to O'Connor (2000), key success factors for the DIS are comprehensiveness and quality of information.

The quality of the information in the DIS needs to be monitored and controlled because the reliability of DIS information is crucial; false or misleading information may jeopardise the destination credibility in the international market. Quality control of DIS information is typically the responsibility of the Chamber of Commerce, the hotel association or a related body (Sheldon 1997). However, the updating of the information content in the DIS is always the responsibility of the information providers (TIScover 2000).

2.9.5 - Hardware and Software Issues for DIS

Relational database software is the most common software used for creating a DIS database (Sheldon 1997). Some tourism offices use text-based searching as it has the advantage that it doesn't need to be formatted into a database structure but can be scanned directly from the text into the computer. Text-based DISs can be easily accessed through the WWW (Sheldon 1997).

Public access to a DIS must be assured and provision guaranteed even during periods of high demand. Customer terminals ideally should be designed with user-friendly interfaces, such as touch screen or menu-driven user interfaces (Sheldon 1997). DISs in some countries are available via videotext. Connecting a DIS with GDSs provides the opportunity for travel agents to access comprehensive destination information online. DISs can also have interfaces with other computer systems, such as national weather computer systems, traffic systems and hotel databases to provide information that is important to travellers (Sheldon 1997).
A DIS is expected to store a diversity of destination information, such as attractions, events, entertainment, transportation, restaurants and accommodation as well as demographic, statistical, ecological and geographical information. This wealth of information poses design challenges, and Chen and Sheldon (1997) identify four such challenges:

- "Comprehensive information input from diverse sources;
- Online retrieval of multimedia data;
- Interfacing with global EM Systems;
- Resolving data heterogeneity" (Chen and Sheldon (1997 pp. 156-158).

Chen and Sheldon (1997) suggest solutions for these challenges, illustrated in Figure 2.6.

**Figure 2.6: Solutions for Design Challenge**

<table>
<thead>
<tr>
<th>Design Challenges</th>
<th>Design Alternative</th>
<th>Requirements</th>
</tr>
</thead>
</table>
| **Design Challenge 1:** Comprehensive information content from Multiple Data Sources | 1. EDI (Electronic Data Interchange) Technology  
2. Database Forms and validation Programs  
3. Database Federation using Gateway Technology | Information Quality  
Operation Efficiency  
Ease of Access & Ease of Use  
Flexibility for Incremental Growth  
Scalability and Extensibility |
| **Design Challenge 2:** Multimedia Data Management | 1. Attribute-based Approach  
2. Full-text or IR Approach  
3. Content-based Approach |  |
| **Design Challenge 3:** Interfaces to Global Electronic Markets | 1. EDT Technology  
2. WWW/Internet Technology  
3. Gateway Technology |  |
| **Design Challenge 4:** Resolving Data Heterogeneity | 1. Open System “Tourism Product Data Standard”  
2. Consolidated Database Integration  
3. Virtual Database Integration |  |

The requirements suggested by these four design challenges can be summed up in the following design criteria (Chen and Sheldon 1997):
The suggested system is called the Virtual Integrated DIS (VIDIS) system, as shown in Figure 2.7, and this architecture can effectively address the many challenges faced in the design of a DIS.

The development of a DIS is critical if a destination is to remain competitive in the increasingly complex international tourism market. Even though DIS development is high on many government agendas, the design and implementation of a DIS breaks new ground and is often a pioneering excursion.
Summary:

This chapter reviewed the literature related to the tourism industry in general and its strong relation with the information technology sector in particular. It laid the theoretical foundation for the empirical chapters of this research project. The next chapter will discuss Information System trends, typology, and methodologies.
3.1 Preamble

This chapter discusses general issues related with information systems and the components of tourism. It also encompasses trends in information systems, information system methodology, Web information systems (WIS), human–computer interaction (HCI), user-centred design and user interface design (UID) highlighting the missing gaps in research as related to the current study. Prototyping, the methodology used in this study, is also discussed.

Regardless of their size and type, organisations require information systems to keep pace with the rapid changes in today's global business environment, to address challenges created by these changes and to look for new opportunities. Information systems can also, if used properly, secure long-term survival, profitability, expansion and a greater market share for the organisation. Information systems have a major influence on organisations' day-to-day operations, their management and their strategic success. Increasingly, information systems are seen as a strategic resource, with an important impact on key operations determining the health of the organisation (Martin and Powell 1992).

Information systems, by storing information received from customers from surveys, invoice information, forms and contest giveaways, are helping businesses better target their marketing efforts. This allows managers to execute complex communications programmes that reinforce their name and build brand loyalty. Business owners know that to stay in business, some customers have to become repeat and loyal customers (O'Brien 2001).

The year 1993 stands as a milestone in the history of information technology as this was the time when the World Wide Web (WWW) took off. Government and businesses used it to promote their interests using its comfortable and platform independent user interface providing basic support for multimediality (Berners-Lee et al. 1994). In contrast to the traditional media, the WWW provides considerable advantages for both the information provider and the user. It has helped the information provider not only to visualize even
complex facts attractively and comprehensively but also to disseminate information in a fast and cost effective way. The user benefits especially from the spatial and temporal availability of this medium, its comfortable handling and the possibility to exchange information or even to wind up business transactions with the information provider (Berners-Lee et al. 1994).

In the beginning the WWW was merely used as a new form of contacting and attracting customers by presenting the company and its products. But now it is more and more employed for electronic commerce.

"International Data Corp IDC forecasts that e-commerce revenue worldwide will increase approximately eight-fold between 2001 and 2005, rising from $634 billion in 2001 to more than $ trillion in 2005" (WTO 2001c p 6).

The tourism industry provided a new avenue its stakeholders to take advantage of the WWW. According to market studies in the nineties, online travel sites are among the most popular and frequently visited sites (Nua Internet Surveys 1998). All types of tourism information providers — airlines, car rentals, hotels, travel agencies, and tour operators have homepages on the Web.

Government tourism offices and visitors bureaus often maintain a Website about the facilities of a whole destination, which usually serves as a starting point for consumers, looking for a certain destination (Sheldon 1997). Studies have shown that such systems can significantly improve the competitiveness of a destination (Archdale 1993, Buhalis 1995).

Early information systems employed for the field of the tourism industry were much less formalised and lacked systemic and value oriented information for the tourists like details about people and events. Since the features like rumours, gossip, exchange of ideas dominated the Websites, the systems tended to be "newsy" with obvious drawbacks in regard to accuracy, validity and reliability (Lucas 1986, Avison and Fitzgerald 1988).

A Web-based tourism information system that meets tourism information system requirements is TIScover (TIScover 1998). TIScover disseminates information about destination facilities by means of Internet and database technology. The aim of TIScover is twofold: first, tourists should be supplied with comprehensive, accurate and up-to-date
tourism information on countries, regions and villages and all destination facilities they offer such as hotels, museums or other places worth seeing. Second, it aims to attract the tourist to buy certain tourism products either offline or even more important to allow the tourist to buy them online (TIScover 1998).

While information systems can be manual, the explosion of information, and the need to process large amounts of data to extract small amounts of information have contributed to the increasing importance of computer-based information systems (Lucas 1986).

In this research project, the focus is on computer-based information systems, using computer hardware and software and other forms of information technology, including the Internet and Web technology as related to the study of tourism. Information systems are part of an inter-disciplinary field, connected to other disciplines such as computer science and management studies (Lucas 1986, Avison and Fitzgerald 1988, Minger and Stowell 1997).

3.2 Definitions

Buckingham, et al. (1987) cited in Avison and Fitzgerald (1988) define an information system as:

“A system which assembles, stores, processes and delivers information relevant to an organisation (or to society) in such a way that the information is accessible and useful to those who wish to use it, including managers, staff, clients and citizens. An information system is a human activity (social) system that may or may not involve computer systems.” (Avison and Fitzgerald 1988, p. 8)

Avison and Fitzgerald, (1988) define an information system as:

“An information system provides information about the organisation and its environment. This information, which is useful to members and clients of that organisation, could concern its customers, suppliers, products, equipment, and so on. The organisation could be a business, church, hospital, university, bank, library, and so on.” (Avison and Fitzgerald 1988, p. 1).

Another definition by Lucas (1994) is as follows:
"An information system is a set of organisational procedures that, when executed, provides information to support the organisation. Decision-making and control in the organisation." (Lucas 1994, p. 11)

Laudon and Laudon (1998) offer the following definition:

"An information system can be defined technically as a set of interrelated components that collect, retrieve, process, store, and distribute information for the purpose of facilitating planning, control, coordination, analysis, and decision-making in organisations" (Laudon and Laudon 1998, p. 5)

Here is another definition offered by www.snia.org (2002):

"The entire infrastructure, organization, personnel and components for the collection, processing, storage, transmission, display, dissemination and disposition of information."

The UK Academy for Information Systems (UKAIS 1997) provides a general definition of the information system domain, by considering the field's inter-disciplinary status as a cornerstone of their definition:

"The study of information systems and their development is a multi-disciplinary subject and addresses the range of strategic, managerial and operational activities involved in the gathering, processing, storing, distributing and use of information, and its associated technologies, in society and organisations" (UKAIS 1997).

The American National Standard for Telecommunications (2002) offers the following:

"Information system: A system whether automated or manual, that comprises people, machines, and/or methods organized to collect, process, transmit, and disseminate data that represent user information 2. Any telecommunications and/or computer related equipment or interconnected system or subsystems of equipment that is used in the acquisition, storage, manipulation, management, movement, control, display, switching, interchange, transmission, or reception of voice and/or data, and includes software, firmware, and hardware. 3. The entire infrastructure, organization, personnel, and components for the collection, processing, storage, transmission, display, dissemination, and disposition of information" (The American National Standard for Telecommunications 2002).
Martin and Powell (1992) point out that technology provides the infrastructure but it is the human who plays a vital role in the availability and manipulation of the data. They conclude that the integration of both human input and technology has fascinating results:

“It would be wrong to overemphasize the role of the computer alone. In practice, most management information systems are an amalgam of human and computer-based activities, where man and machine have different but complementary roles to play in achieving the successful working of the system. The question as to which aspects are best done by machine and which are best done by people is a fascinating one. Of course, the answer is changing constantly with rapid advances in technology” (Martin and Powell 1992, p. 3).

3.3 Types of Information Systems and their Characteristics

Avison and Shah (1997) classify information systems into three types (Illustrated in figure 3.1):

- **Informal information systems**: evolving patterns of behaviour in an organisation, never formulated, but which need to be understood by those involved in the organisation. This type of information system includes informal communication systems created during tea breaks, a game of golf and other social interaction.

- **Manual information systems**: formalised procedures that are not computer-based, for producing information within an organisation. These may include a manual filing system and a manual personnel record system.

- **Computer-based information systems**: automated procedures for producing information using information technology. This chapter focuses on such a system.
There are three characteristics that all effective tourism information systems have:

Each channel in the system has its own function. Travellers use different channels to get different kinds of information. An example is deciding where to go on vacation. A person may consult a friend or family member for that decision, but in deciding what to do when he/she gets there, the person may talk with a repeat visitor or employee at the destination site (Cooper et al. 1998).

All the information channels used in the system relate to each other. A tourism information system is like a novel because it has many different parts tied together by the theme. Even though a system's channels serve different functions in providing information, they are all tied together (Buhalis 1998, Sheldon 1997).

All channels used in the system are interdependent. A tourism information system functions like a puzzle. The different pieces of the system, the channels, are used to communicate with
tourists. If any of the puzzle pieces are missing, the puzzle's picture is incomplete. If one or more of the channels used is not dispersing information effectively, or if the information dispersed does not relate to the rest of the system, then the system will not effectively communicate its whole message. If one or more of these characteristics is missing from a tourism information system, then its message will be inconsistent and ineffective (Buhalis 1998, WTO 2000, WTO 2001c).

3.4 Components of Computer-based Information Systems

Most computer-based information systems have five major components and activities: people, hardware, software, data and network resources. The relationship between the components and activities of information systems is highlighted in the model presented by O'Brien (2001), in Figure 3.2 below, which expresses a conceptual framework.

**People resources** are the most important element in most information systems. They include the people who manage, run, and maintain the system; and the people who are end-users of the system. Any information system depends heavily on humans for development, design, operation, maintenance and usage, and information systems are forms of human activity systems, i.e., systems of communication which involve people in producing, collecting, storing and disseminating information (Davies 2000).

**Hardware resources** play a vital role in the information system. These include the physical devices and material used in information processing, including the computer and other equipment. Such resources include media such as sheets of papers, magnetic or optical disks, and devices for the input of data such as the keyboard, mouse and video screen (O'Brien 2001).
Software resources include the programs and procedures that govern the operation of computers. These include information processing instructions, which allow the computer to process, provide and send information to users. There are three basic types of software: System software, e.g. operating systems; Application software, designed to perform business tasks and provide direct support for user applications e.g. a word-processing program; and Procedures, including operating instructions for users (Martin and Powell 1992, Laudon and Laudon 1998, O’Brien 2001).

Data resources are raw facts or observations, typically about physical phenomena or business transactions. Data can take many forms and shapes including traditional Alphanumeric data, composed of numbers and alphabetical and other characters; Text data, consisting of sentences and paragraphs; Image data, such as graphic shapes and figures; and Audio data, the human voice and other sounds (O’Brien 2001).

Network resources include the Internet, intranet and extranet, which have become fundamental to the successful operation of all types of organisation, as they foster the free
exchange of ideas and information in real-time. The Internet is a vast inter-connected
'network' of networks linking businesses, governments, scientific and educational
organisations, and individuals across the globe (Laudon and Laudon 1998). Telecommunication networks include computers, communications processors and other
devices inter-connected by communication media and controlled by communication
software (O'Brien 2001), with the transmission of data using: twisted pair cables, coaxial
cables, fibre-optic cables; microwave transmission, cellular transmission, communication
satellite wireless systems and infrared transmissions (Davies 2002). Network support
involves the people, hardware, software and data resources that allow electronic
communication, and support in communication networks includes modems and
communication control software, e.g. network operating systems and Internet browser
packages (Davies 2002, O'Brien 2001). The model emphasises the vital role of personnel in
the development, design, operation and maintenance of the information system's
components. The model also highlights the dynamic relationships between components and
concludes that both human and technological factors are important in the information
system process.

3.5 Parts of a Tourism Information System

We have covered the fact that a tourism information system is made up of different related
and interdependent information channels. But what are these channels?

Figure 3.3: Types of Information Channels

- DMO Promotional Messages
- Individual business promotion
- Suggestions from other visitors
- Tour operators, travel agency
- Travel literature: Newspaper, brochures, flyers
- Websites
- Tourist Information Centre
- Repeat visitors
- Media, TV, Billboards etc
- Hospitality: hotels chain

Author 2003
While this list (figure 3.3) is not exhaustive, it gives some idea of what can be used as channels.

3.6 Managing Information Systems

The management of IS represents the realization of these management functions. The management of IS presents an actual practice of integration of their strategies with the business strategy of an enterprise. It includes careful coordination of IS with business functions, so quality changes occurred in IS managing during time.

In the world business practice, the IS, by their place and function in the strategy of enterprise, more and more define its business results and competitiveness in the market. Therefore, in this research, an exceptionally important question was asked: to what extent and how are the IS used in tourism to gain advantages in the conditions of the ever more open and competitive international tourist market.

There are three major reasons why it is necessary to manage tourism information systems:

a) Travellers need organized information so that it becomes easier to acquire information and make decisions (Sheldon 1997).

b) Tourism information systems present destination theme to travellers in a clear, concise, consistent and attractive manner. By managing one's information system, one may have some control over what information travellers receive and through what channels (Sheldon 1997).

c) Tourism information systems play an important role in community development (Buhalis 1997). This is especially important in tourism because travellers see the community as a whole, rather than as individual parts. Tourists build their image of a destination upon the information they receive from the information system whether a traditional one or an advanced one (Buhalis 1997).

There are a number of problems that concern the availability of tourism information in the region where the State of Bahrain is located, i.e., the Gulf region.
• Limited possibility to update the information at regular intervals. For example, information about tourism conditions must be updated regularly to maintain an acceptable information quality.

• Most of the information is not available from one single source. Often the information has to be collected from a large number of unrelated sources - in written form or as knowledge from staff or local inhabitants.

• A majority of visitors tend to stay only on the largest and most well-known tourist sites. This has a negative influence on both the experiences of the visitors due to crowded sites and the impact on the sensitive deserts/sea environment of the country. This problem is related to the lack of detailed descriptions of the tourist information available on tourist companies in combination with present maps getting out-of-date and trail signs and markings not always being consistent throughout the tourist information system. This makes tourism one area that urgently needs further development.

There are a variety of tools that one can use to manage one's tourism information system in order to conquer the problems mentioned above. Here the researcher wants to deal with four that experts believe are the most effective. These tools are most effective when used together, but they can be used individually.

• Establish a committee or organization to manage one's tourism information system (WTO 2001c).

• Establish a set of standards, or guidelines, for deciding what, how, and through what channels information will be presented (WTO 2001c).

• Involving the community co-operation in the system, to develop community awareness and pride (Milne and Mason 2001).

• Influencing tourist image of a destination by considering Zoning. Zoning can be used to enhance a community’s appearance. (Cooper et al. 1998).
3.7 Trends in Information Systems

Applications of information systems have grown rapidly in recent years, and systems have undergone tremendous changes in their design procedures and applications. Since the 1950s, information systems have been used in business, with the objective of many of these early systems a reduction in costs by automating many related, routine, labour-intensive business systems (Stair and Reynolds 1999). Until the 1960s, the role of most of these early information systems was to handle and process daily record keeping and business exchanges, or to handle transaction processing and systems (TPSs).

Growing attention is being given to the data stored in these systems by the operational layers of management, particularly those at the strategic and tactical levels, for organisational action to use such data to monitor the state of their organisation at any time, and to assist in better decision-making in areas such as human resources, marketing or administration. As a result, a further role was added to earlier systems, and a new concept of Management Information Systems (MIS) was introduced to assist managers in the decision-making process (Stair and Reynolds 1999).

By the 1970s, dramatic improvements in technology resulted in more effective, cheaper and handier information systems. It was realised that earlier systems were not meeting many of the decision-making needs and requirements of management and, consequently, the concept of Decision Support Systems (DSS) emerged to provide managerial end-users with ad-hoc and inter-active support for decision-making (O'Brien 2001).

In the 1980s, the rapid development of micro-computer processing power, application software packages and telecommunication networks allowed end-users at all levels to use personal computers for a variety of tasks; they were no longer dependent on the computer department (Stair and Reynolds 1999).

It soon became clear that top corporate executives needed to directly use the information reporting systems or the analytical modelling capabilities of decision support systems, but, unfortunately, the DSS at the time did not satisfy such needs. So, the concept of the Executive Information System (EIS) was developed; these used management data generated by the MIS to model short-term and long-term scenarios of company performance (Davies 2000), and to
give top management an easy way of obtaining critical information, tailored to the formats they prefer (O'Brien 2001).

An interesting development has been artificial intelligence (AI), where the computer mimics or duplicates the functions of the human brain (Stair and Reynolds 1999). *Expert Systems* (ES) and other knowledge-based systems opened a new vista for information systems, in that, they not only process information and help in decision-making, but can also serve as a 'consultant' by providing expert advice in limited subject areas (O'Brien 2001).

A concept of information systems that emerged in the 1980s and persisted through to the 1990s, was the *Strategic Information System* (SIS), is based on the idea that information is an essential component of the business process and helps organisations position themselves in the global market.

A major breakthrough in the field of information systems was the creation in the 1990s of the Internet, (Laudon and Laudon 1998). The Internet has appreciably changed how companies communicate with their consumers and employees, and offers speedy access to business information – enhancing efficiency and improving relationships with end-users and other organisations (Gupta 2000).

### 3.8 Information System Methodologies

Methodologies, divided in hard and soft categories, support the development, planning, analysis, design and implementation of information systems. Rowley and Slack (1998) have outlined three situations in which it is likely that a methodology might be used in a computer-based system:

- Automation of a system: converting a manual (classic) system to a computer-based system;
- Switching from one computer system to another computer system; example from a legacy system to web-based system;
- Introducing new changes to existing computer-based systems such as up-grading.

Most projects are concerned with the third situation when a methodology will be used either to aid the choice and implementation of commercially available systems or support the
design and implementation of a specifically tailored new system. The latter is the focus of this project.

3.8.1 - Hard System Methodologies (HSM)

Hard System Methodology (HSM), as the term implies, is meant to cater for the needs of modern engineering and industrial systems. The hard system engineering seeks to develop a technical solution to complex and highly structured but comprehensively and quantitatively definable situations. HSM focuses on the certain and precise, and looks at the problem from only one basic viewpoint (Avison and Fitzgerald 1997).

The hard approach has a significant drawback, as they have not originated from a user perspective. So they don’t fit in ‘soft’ situations, especially those relating to human activity systems; they are technically orientated and mostly focus on the functional and technical aspects of the system. The HSM are inadequate in meeting the needs of users, and these methodologies do not have a clear focus on interface design (Rowley and Slack 1998).

3.8.2 - User-Centred Design Methodologies

Soft System Methodology (SSM)


The past fifteen years have witnessed mounting interest in soft systems for its ability to represent the real world and handle the complexity, non-linearity and messiness of ill-defined situations inherent in social and physical systems. Soft Systems Methodology (SSM) is now well established as a vehicle for action research (Rose 1997).

Soft Systems Methodology duly recognises the importance of the impact of human beings within the area of system analysis and design. It is based on a highly participatory philosophy i.e. encourages users to be fully involved in all stages of the system development and requires the building of rich pictures, root definitions and conceptual models of human activities. In principle organisational sources are utilised to carry out a SSM project, with a consultant-
facilitator to decide on the principal components of the activity or system under study. An important facet of the problem definition is the identification of the actors involved.

Checkland uses the mnemonic CATWOE to describe the human activity situation, which involves the identification of:

- **Clients**: those who more or less directly benefit (or suffer) from the machinations of the....

- **Actors**: The players, who perform the scenes, read and interpret the script and improvise. These are the local and institutional actors, who undertake the....

- **Transformations**: what transformations, movements or conversions of X take place? What is the nature of transformations? What is the content and process of transformation from ingredients to a sandwich, from mixed, varied data to information, from an idea to a performance concept or marketable product?

- **Weltanschauung or world-view**: what is going on in the wider world that influences and shapes the system, and the need for the system to adapt.

- **Owners**: the activity is ultimately 'controlled' or paid for by the owners and it occurs within an ....

- **Environment**: the political, legal, economic, social, demographic, technological, ethical, competitive, and natural environment.” (BOLA 2002).

However SSM suffers from some drawbacks

“SSM can too easily ignore environmental and structural determinants and questions of power. All organisational members do not have equal choice and it is naive to think that everyone can openly discuss problems, perceptions and needs” (BOLA 2002).

A key feature of SSM is keeping the project vague and wide-ranging for as long as possible. It is vital to not jump at conclusions, nor to ignore a current situation by concentrating on some idealised future.
Co-operative Design

The main focus of user-centred system design methodologies is on the involvement of users throughout the stages of the design process as their intimate involvement in all aspects and stages of the designing process is crucial, as the results of a ‘new’ system will affect their organisation, jobs and services.

Two main strands of thinking or methodologies differing primarily in their philosophy and the practice represent the user-centred system design methodology. These are:

"Participative Design: in this type of design, importance is assigned to users as to get them involved in the process of information systems design arguing for a right for them to share the process from scratch. Users participate by analysing organizational requirements and planning appropriate social and technical structures to support both individual and organizational needs. Effective Technical and Human Implementation of Computer–based Systems (ETHICS)" (IEA 2002), as discussed in 3.8.4, is a good example of this approach.

"Socio-technical Design: this is a type of cooperative design concerned with the development of complete and coherent human-machine systems. The emphasis of this approach is on considering social and technical alternatives to problems. Open system task analysis (OSTA) is one such a model.” (IEA 2002).

3.8.3 - Multiview

Multiview is an all-encompassing methodology that includes socio-technical and soft systems approaches. The emphasis is on both the human and technical aspects of information systems development. This approach is strongly inspired by the work of Checkland and Mumford, but has fused these ideas with those found in hard methodologies (Avison and Fitzgerald 1988).

Multiview starts with the Primary Task Model (PTM), which is similar to Checkland’s ‘root definition’, defines the purpose of the system, the stakeholders, and the perspective of the system owner. This stage is followed by the ‘analyse information’ stage, concerned with conceptual modelling of the information flows and information structure to produce a Functional Model (FM), which is then used as a basis for task allocation. This stage uses a strong socio-technical approach – socio-technical options or components, such as the
People Tasks (PT), Role Sets (RS), and Computer Task Requirements (CTR), along with the entity model of the information structure, are used to drive the design of the interface. When the interface has been defined the technical aspects of the system are determined.

3.8.4- Effective Technical and Human Implementation of Computer-based Systems (ETHICS)

The socio-technical theorist Enid Mumford (1983) devised this design. ETHICS philosophy is based on a 'participative approach' to IS development that supports the identification of system goals and co-optimisation of the social and technical systems. ETHICS rests on the assumption that:

- A successful system will only emerge where the social and organisational needs of a work group are given equal weight with the technical aspects (Rowley and Slack 1998);

- For a system to be effective, technology must exactly mesh in with social and organisational factors with improved quality of working life and enhanced job satisfaction of users, which is a major objective of the system design (Avison and Fitzgerald 1988).

Mumford strongly believes that the interaction between people and technology should be recognised to achieve a system both technically efficient and has social characteristics conducive to high job satisfaction.

ETHICS provides an insight into the participation of organisational employees whose working lives may be influenced by the design, management and implementation of the system. Moreover, ETHICS in its focus on human needs highlights the practical implication of designs on peoples' working environments.

However, ETHICS suffers from some drawbacks. Avison and Fitzgerald, (1988) believes that ETHICS is impractical, difficult and time-consuming and hard to implement because of the multi-stages involved in the design and implementation process.
Therefore, in this research project, an alternative prototyping methodology is utilized to create the overall system. It will help the researcher to judge important variables such as design, technical issues, hardware and software and their impact on the overall system. By involving the users in the prototyping process, as in the evaluation process, the researcher can also collect important feedback on the layout and interface designs.

Prototyping enables both the designer and the user to have a feel and look of the actual system. Lantz defines prototyping as:

"Prototyping is a methodology; it is collection of methods. It is done in a systematic way........prototyping is based on building a model of the system to be developed. Moreover, the initial model should include the major program modules, the database, screen, reports, and the inputs and outputs that the system will use for communicating with others interfacing systems" (Lantz 1987, pp. 2-3).

3.9 Web Information Systems

Web-based Information Systems (WIS) or WBISs as they are called by Takahashi and Liang (1997), are a new generation of information systems that are constructed using Web technology and, therefore, are of great interest to industry and public organisations — their scope is much wider than traditional systems. The inherent characteristics of Web technology, such as flexibility, low-cost solutions, open standards, and the availability of software tools, often free both off- and on-line, have been the main driving forces behind the acceptance of WIS. In the opinion of Isakowitz et al. (1998) WIS has an important advantage over the traditional information systems for their distributed architecture, which provides global access to information and computing resources. Faster retrieval and remote manipulation of links can accelerate the development and deployment of WISs that make full use of this advantage.

Isakowitz et al. (1998) outline four basic Web-based systems a WIS encompasses:

- An intranet: internal private network within an organization for internal work only;
- Web sites—a collection of web pages represents an organisation outside its domain;
- Electronic commerce conducting of business and commerce via the internet, such as online shopping;
- An extranet is a special network or intranet for communicating with other organizations by using the World Wide Web.

This type of system has the potential to reach a much wider audience than systems based on proprietary networks — thanks to the development of the World Wide Web. The real difference in WISs and that of traditional systems lies in grass roots efforts against managerial edict. Besides disseminating information, a WIS plays an important role in interacting with users and processing their business tasks. DIS is a good example of this.

So given the potential and utility of WISs, a new approach to their design and development is required. It must be different from those Websites that mainly provide uni-directional information on a user’s request, such as catalogue, directory and advertisement sites (Takahashi and Liang 1997). Gregor et al (1999) advises learning from the past to develop successful WISs. He advocates paying more attention to social and political aspects of inter-organizational systems, human-computer inter-action issues and usability guidelines and issues associated with the development of hypermedia systems with the potential to increase the likelihood of system success Gregor’s views agree with the research model as the model emphasis is on the role of social and cultural aspects in order to develop a successful system. Balaubramanian and Bashian (1998) suggest taking a macro view in a national case study of the development of a large scale WIS for major financial management institutions.

Summing it up, WIS development and use involves a variety of problems related with different design concerns.

Many of these issues are often managed in an environment-centric way (i.e. taking into account the details of the implementation platform). However, since WISs are, after all, software systems, there is need to use solid software engineering techniques for dealing with the design complexity.

There are many design methods that can be used to model different aspects of WIS such as OOHDM (Schwabe and Rossi 1995), RMM (Isakowitz 1995), W3DT (Takahashi 1997), etc. providing a clear separation of concerns among architectural (conceptual) design, navigation design, user interface aspects and implementation. Separating navigational design from the other concerns, especially from the user interface aspects, allows us to concentrate on what
we think is the distinguishing feature of WISs, its hypermedia metaphor exercised through navigation.

However, many design problems are likely to be solved when thinking about navigation as a separate design issue. The hypermedia aspects of WISs bring a new array of design problems. The hypermedia literature has pointed out see for example Nielsen (1995) that building solid navigation architecture is a complex enterprise and demands maximum care in ensuring that information is easy to find and that the user will not experience cognitive overhead while exploring the information space.

The usual practice is just to develop the application model with objects and then build the user interface. By treating it as just another user interface operation, many products targeted to develop WIS tend to ignore hypermedia information design and its attending navigation operations\(^1\). Takahashi and Liang (1997) have raised probing questions to highlight its drawbacks, such as: ‘Whether and how do users accomplish their business goals using a WIS?’ ‘How do WISs process and respond to user inputs?’ and ‘How do users interact with other users via a WIS?’ Maintenance is also identified as an important issue as Websites become larger. So they propose a synergistic method for analysing and designing Web-based Information Systems (WBISs) utilising WebArchitect and PilotBoat tools to support their method.

Contrary to previous methods, now the focus is mainly on the architectures and functions of Websites, instead of on the appearance of each Web page. Besides ensuring low cost, it focuses on good results in terms of Web resources content and linkages between pages to support particular business processes (Takahashi and Liang 1997). The method for the analysis and design of WBISs consists of: entity relation (E-R) analysis, scenario analysis, architecture design, and attribute definition, as illustrated in Figure 3.4 below.

\(^1\)For example, in Visual Wave (The VisualWave Programming Environment), designers implemented Smalltalk applications, and their interfaces contain controls that allow the opening of another window as if they were just designing a conventional transactional application.
The WBIS operates in the problem domain and is examined by the E-R analysis. How the potential users will interact with WBIS to accomplish their business goals is determined by the Scenario analysis. These analyses provide basis for the design of WBIS architecture. The fourth stage defines the attributes of Web resources. In the fifth stage, the WBIS is constructed based on the design, tested and introduced in the workplace. There exists an arrangement that the system is maintained and revised for its lifetime (Takahashi and Liang 1997).

The rapidly changing environment of the Web, has given emergence to more user-centric approaches, such as Scharl's Extended World Wide Web Design Techniques (eW3DT), with a focus on the document-oriented storage layer of the Dexter Hypertext Reference Model.2

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2 The Dexter Hypertext Reference is an attempt to capture, both formally and informally. The important abstractions found in a wide range of existing hypertext system and future hypertext" Halasz and Schwartz, 1994). The model is divided into three layers. The storage layer describes the network of nodes and links that is
These techniques facilitate hypertext designers while providing a framework and a graphical notation to construct both reference and implementation models during the software development process of a commercial WIS. The eW3DT distinguishes between technical and content-specific responsibilities for design, implementation and maintenance of the WIS as a pre-condition for pursuing a partial globalisation strategy (Scharl 1999).

3.10 Human-Computer Interaction

"The designers of the future cannot afford to ignore the user or to assume that the user is just like they are. HCI is about to become everyone's business." (Dix et al. 1993, p. 2).

It is a must for the designer of a WIS to have a sound knowledge of the sociology of the users' environment as they don't perform tasks in isolation i.e. the nature of the human-computer interaction (HCI) field. Rose et al. (1999) term it essential because of the characteristics the WIS inherits, including the placement of the WIS, and the wide range of personnel backgrounds such as education, computer experience, culture and availability of training and support, in addition to the aspect of its inter-activity. Since the users have a lot of choice and may move from one to other sites if they lose interest, they must have the freedom to select or order options — they are not a 'captive audience'. An additional relevant characteristic of the WIS is the popularity of certain Web browsers, which provides a uniform style that users appear to learn quickly and easily and provides a foundation for other WISs (Rose et al. 1999).

The WIS, by its very nature, appeals to users from a wide variety of backgrounds, and has similarities with public access systems, with types of users classified as: 1) Novice; 2) Expert; 3) Occasional User; 4) Frequent User; 5) Child; 6) Older adult; and 7) User with special needs (Rowley and Slack, 1998).

HCI offers many guidelines for the design of interactive computer systems. Rowley and Slack (1998) point out that:

"The design of the human-computer interface is vital in the public access information systems. The ease of use depends upon the existence of an intuitive, easy-to-learn
interface, which allows users to make effective use of the information the system contains." Rowley and Slack 1998, p. 19).

A considerable number of scholars have produced a plethora of literature on HCI in the context of the WWW and Web usability\(^3\) such as (Shneiderman 1992, Dix et al. 1993, Preece et al. 1994). Sterne (1995) has laid great emphasis on navigation, use of large graphics, response time, design of search tools, and principles of marketing systems. Nielsen (1999) has warned of neglecting lessons learned from the design of interactive systems. Since the WIS, as a system, is interactive, the design methods in the area of computer-human interaction that prove to be useful must suit the design of the WIS (Rose 1999 et al.).

### 3.11 User-centred Design

User-centred design (UCD) software development methodology is driven by (Preece et al. 1994, Gregor et al. 1999):

- Clarifying, task and business objectives.
- Studying the user needs.

"Information collected through UCD analysis is scientifically applied in the design, testing and implementation of products and services. The UCD approach, when applied correctly, meets both users' needs and the business objectives of the sponsoring organization" (Taskz.com 2002).

Karat (1997) says that UCDs have become prominent over the last 10 years. He considers the emergence of the UCD as a shift toward a broader use of context in the development of usable systems, and that the design increasingly requires attention to the environment into which the system must fit. According to Katz-Haas (1998), UCD seeks to answer questions about users, their tasks and goals, and then uses the findings to drive development and design.

"The UCD seeks to answer questions such as:

- "Who are the users?"
- What are the users' tasks and goals?"

\(^3\) The part of HCI that deals with the World Wide Web is called Web usability. Nielsen has published several studies since the nineties in this field.
What are the users' experience levels?
What functions do the users need?
What information might the users need, and in what form do they need it?
How do users think this should work?
How can the design facilitate users' cognitive processes?" (Katz-Haas, 1998).

Seasholtz (2002) gives a high priority to user experience and says:

"A superior user experience is critical to the success of any Website. But it doesn't happen on its own, and it isn't easy to pull off. The quality of the user experience must be consciously, meticulously evolved through an interactive process of expert usability testing and refinement that begins in the strategy phase and continues through launch and beyond. Creating a superior user experience involves a substantial commitment of time, money and resources. When it's done right though, it pays for itself many times over." (Seasholtz 2002).

Galer et al. (1992) believes that designers, in order to satisfy the users, must have access to relevant information about users and their tasks, before venturing into the interface design. Since UCD methods are a good mix of human capabilities (users) and advanced technology, a system driven by features and functions must match the cognitive limitations and capabilities of the user. This research is based on this philosophy.

Taskz.com (2002) notes six important differences between technology-centred approach and the overall UCD process:

- "The UCD process begins with formalization of the strategic business objectives that are then translated by the management team into functional specifications By contrast, the technology-centred approach is often driven by a comprehensive list of technical specifications directed at system hardware.
- In the UCD process, design concepts are derived from the execution of a comprehensive task analysis carried out by professional usability engineers with users from all profile types. By contrast, the technology-centred approach bases the conceptual design on loosely defined functional specifications that are often derived from marketing studies.
- Composition of the development team. In a UCD process, the entire development team stays together during all steps of the process. Unlike the traditional approach, where each group works separately.
• The UCD methodology, customer response to the design of the screen-based experience forms the basis of all design decision-making. In the technology-centred process, customer feedback is often seen as a means of identifying bugs or minor problems.

• In the traditional technology-centred process, functional specifications are frozen very early in the development process. By contrast, under UCD design, freeze does not take place until the overall customer experience has been fully created in simulation form and tested for content, style, and user compatibility.

• Use of design iterations in the development process. In the traditional technology-centred approach, design iterations are problematic because they usually involve rewriting complex code. By contrast, the UCD approach demands design iterations; so far better solutions emerge in less time” (Taskz.com 2002).

Taskz.com, (2002) reviews the benefits of UCD as follows:

“User-centred design has numerous benefits for business. Firstly, UCD methods result in higher-quality screen-based systems with increased customer satisfaction and confidence. In the competitive online market, a high-quality design can mean the difference between success and failure. Secondly, under UCD methodologies, software development is more efficient. The system will likely go to market faster and cost less” (Taskz.com 2002).

Nielsen (1999) suggests a change in Internet ideology to make it adapt to the needs of millions of users. A lot of money is being spent on existing ideology concentrating on technologically orientated design rather than human-centred designs. However, there exists a strong opposition to this approach. According to Taskz.com (2002) transferring to UCD methodologies from technology-centred design can create problems for the development teams as they are used to working from the technology upwards.

3.12 UCD and Web Development

Despite emphasis on customer satisfaction through the application of Web technology, little has been said about UCD. Katz-Haas (1998) offers the following ten guidelines for Web-page design:
• "Visibility: Make important elements such as navigational aids highly visible.

• Memory Load: Make screen elements meaningful and consistent across the site to reduce memory load.

• Feedback: Provide immediate feedback when a user performs an action.

• Accessibility: Users need to find information quickly and easily.

• Orientation/Navigation: Help users orient themselves by providing navigational clues, such as descriptive links, a site map, and obvious ways to exit pages.

• Errors: Minimize user errors by avoiding situations in which users are likely to make mistakes.

• Satisfaction: Make your site pleasant to use and view.

• Legibility: Make text easy to read.

• Language: Improve usability by incorporating the following stylistic elements: concise language; everyday words instead of jargon or technical terms; active voice and active verbs; verbs instead of noun strings or nominalizations; simple sentence structure.

• Visual Design: The aesthetics of the interface play an important role in effectively communicating information and tone to users" (Katz-Haas 1998).

3.13 Interface Design

The scholars have offered a wide range of definitions varying from the simple to the complicated and technical. Free-online Dictionary of Computing (FOLDOC 2002) offers a simple definition:

"The aspects of a computer system or program which can be seen (or heard or otherwise perceived) by the human user, and the commands and mechanisms the user uses to control its operation and input data." (FOLDOC 2002).

An explanatory and working definition is offered by the Common Front Group (CFG 2002):

"The methods and devices that are used to accommodate inter-action between machines and the human beings who use them (users). User interfaces can take on many forms, but always accomplish two fundamental tasks: communicating information from the machine to the user, and communicating information from the user to the machine" (CFG 2002).
Rowley & Slack (1998) provide an abridged definition:

"Interface design is concerned with the study and theory of the inter-action between humans and the computer" (Rowley & Slack 1998, p. 9).

Faulkner (1998) specifies the functions of the human-computer interface: the interface work as a bridge linking the user with the computer system, and as a facade hiding the harsh reality of the system, the interface mirror the system model to the user and translate the user inputs into system activity helping him/her to fulfil their aims.

3.14 User Interface Backgrounds

The first generation of interfaces was as simple as the computers themselves and only highly trained specialists were able to communicate with a computer. The interaction between the computer and the user was achieved through flashing lights and mechanical switches. A slightly advanced stage, the second generation, introduced printing devices, with the users communicating back to the computer, e.g. via punch cards. However, the process of communication was still inefficient and needed further development (CFG 2002).

When video screens communicated information from the computer to the user and typewriter-style keyboards communicated information directly to the computer, it still lacked flexibility and was of limited use, as users were required to memorise commands (CFG 2002).

It was the innovative designers of the Xerox Palo Alto Research Centre who broke away from the character-based interface paradigm and invented the Graphic User Interface (GUI). This advance stage was characterised with graphics that provided visual and textual information and a wide range of options for users. Additionally, it did not require users to memorise and manually enter commands from a set of options. This was basically a user-centred technology focussing on human needs (CFG 2002).

3.15 Prototyping

Prototyping is not a new term as engineers use it to test projects for mass production where the design first needs to be thoroughly tested. It is also found useful in areas where the final version is a one-off, like buildings that will be costly or even a disaster, if wrongly designed.
(Avison and Fitzgerald 1988). It gained popularity after the introduction of software tools, in particular fourth-generation software (Laudon and Laudon 1998), which greatly reduced costs associated with prototyping. Prototyping can be defined as "An interactive analysis technique in which users are actively involved in the mocking-up of screens and reports" (Ambler 2000, p. 4).

It is difficult to completely specify the requirements for an interactive system in the initial stages of its life cycle. Hence, the designers build a prototype and test this on users to assess the best features of the potential design. The prototype can be studied for further development and enhancement on the basis of the test results. As an interactive process, prototyping combines steps of the traditional systems development cycle (O'Brien 2001, Dix et al. 1993). Prototyping, also known as rapid application development or RAD (Gupta 2000), is a development methodology that deals in experimental prototypes (Avison and Fitzgerald 1988, Laudon and Laudon 1998, Gupta 2000).

Avison and Fitzgerald (1988) stress that the prototype is particularly useful where:

- System application is unclear for developers.
- The cost of involving large population of users would be very high.
- Developing a successful information system.
- Encouraging user involvement and participation.

Most of the areas mentioned by Avison and Fitzgerald (1998) are addressed in this research project, and prototyping is the essence of this study. It includes four phases:

1) An analysis phase, 2) prototyping phase 3) evaluation and modification phase and, 4) final version of the system. (Avison and Fitzgerald 1988).

Prototyping can be used in different phases of the development cycle. For instance, it may help to elicit more detailed descriptions of the intended user tasks — 'requirement capture' — from experts or future users. At a later stage, it can help to test, enlarge and complete specifications (Galer et al. 1992).

Gupta (2000) reviewed the benefits of prototyping benefits as follows:

- To build new system with unclear requirements.
• Give the user the opportunity to test and evaluate the preliminary model of the system.

• Prototyping support teamwork to achieve goals.

• In prototyping, users, not developers, give their feedback.

The first aspect Gupta raises is at the heart of this research project.

There are three main approaches to prototyping:

**Throwaway or rapid prototyping (low fidelity prototype):** The prototype is discarded after several iterations. It is usually built and tested to gain knowledge and check the design, with knowledge gained used to build the final product (Dix et al. 1993).

**Incremental prototyping:** Usually used for large systems, its early version is a skeleton containing the main features of the system. There is one overall design for the final system and once the main features are refined, the final product is released (Gupta 2000).

**Evolutionary prototype (high-fidelity prototype):** Evolving continuously from a simple prototype into a fully-fledged system. It accommodates modifications as each round of the prototype builds on the previous one. It is ideal for projects in which system requirements are unclear and users’ information needs continuously evolve (Gupta 2000).

### 3.16 Prototype Development

The prototyping process (illustrated in Figure 3.4 below) includes the following steps:

• **Identify users’ requirements:** The requirements can be gathered from interviews, questionnaires, modelling sessions and class diagramming sessions. In this study, the requirements were gathered by using: Web-based questionnaires, in-depth interviews, site mapping analysis and the literature review on Destination Information Systems.

• **Develop a conceptual design for the proposed prototype.**

• **Develop an initial prototype:** An initial prototype is created at this stage consisting only of the main screen or a few pages.
• **Evaluate the prototype**: at this stage the initial version of the prototype evaluated by the users in order to get the feedback. The Bahrain DIS (BDIS) was twice evaluated, the first time by international usability experts and then by actual users of the system.

• **Diagnose & revise initial prototype**: according to the evaluation results the developer either starts developing a working functional prototype or improves the prototype by avoiding the previous mistakes.

• **Improve prototype**: On the basis of the recommendations of end-users, the technical expert or analyst revises the prototype and gives finishing touches to the final version. In this study, the recommendations were sought for further enhancement by both private and public sectors. Maintaining and upgrading the workable prototype is very important in order to reach a working functional system.

Prototyping is not without its demerits:

• It is highly exhaustive methodology. The IS manager has to make special efforts to reduce stress levels, reward the creativity of team members, and acquire developers to carry out extensive training in prototyping methodologies. Prototyping members tend to ignore system documentation, which leads to serious problems if key developers quit (Gupta 2000).

• Laudon, and Laudon (1998) regard it unsuitable for certain types of information systems; it cannot be applied easily to massive, mainframe-based systems with complex processing instructions. Moreover, it is not a substitute for the research and analysis required to build information systems.

• According to Stair and Reynolds (1999), documentation in prototyping is expensive and time-consuming to create, and users cannot easily review intermediate products and evaluate whether a particular product (e.g. a data flow diagram) meets their business requirements or not.
Figure 3.5: Prototype Development life cycle

1. **Identify & gather system and users requirements**
2. **System Conceptual design**
3. **Develop the Initial prototype**
4. **Evaluate prototype**

Feedback:
- **Working Prototype**
- **Maintenance & Upgrading**
- **User feedback**
- **Expert feedback**

Decision Points:
- **NO** for Diagnose & Revise initial Prototype
- **YES** for Improve prototype (New version)

Author 2003
3.17 Portals

"Portal is designed to be an entry point for users into the web" (Davies 2002, p 483). In the opinion of a senior business advisor at Boston-based Delphi Group:

“A major trend in enterprise portals is that deployers are looking more and more for the portal to be an interactive environment. There is a growing number of extranet portals that are not only supposed to provide information to suppliers, business partners and clients, but also to allow people to conduct transactions or to work on a project together right in the portal” (Hawes 2003).

The portal serves the purpose to facilitate access to information contained in documents spread throughout the Intranet. Initially, Boolean operators or associative links between Web pages (Dias 2001 p.273) were used in the search engines to help users locate the document. Now the categorising of the content by search engines “into sports, meteorology, tourism, finances, news, culture, etc.,” (Dias 2001, p.273) not only is time saving but also helps the new users in surfing the site.

According to Strauss,

‘Portals are not a fad or a new name for something that we’ve been doing all along. They will turn the Web from an institution-centric repository of information and applications to a dynamic user-centric collection of everything useful to a particular person in a particular role” (Strauss 2000 p 33).

In the 1960s and 1970s, information systems were designed to support the information and transaction processing needs of such large central organizational units as personnel offices, and accounting offices (Stair and Reynolds 1999, O'Brien 2001). However, these systems provided limited flexibility. But the 1970s and 1980s introduced fourth-generation languages that made it possible to produce customized reports, primarily for central units (Koulopoulos 1999, Stair and Reynolds 1999, O'Brien 2001). At the same time, minicomputers performed essentially the same tasks to meet the needs of local units in different academic units of the institution. As Strauss (2000) indicates, the focus of technology throughout this period has been on the organization entity as the “end user.”
The proliferation of networks and the introduction of the World Wide Web and client-server in the 1990s created the potential to customize the delivery of information and services between the central and devolve organizational units of the institution. Katz and West (1992) described this development as the "network model" that has enabled institutions to:

- Decentralise organizational responsibilities;
- Improve service standards between central units of the system and other departments;
- Reduce the cost of administrative expenses in the organisation.

### 3.17.1 Phases of development

Reynolds and Koulopoulos (1999) identify the following phases of Web portal development:

- "Boolean search;"
- Categorized navigation;
- Personalization;
- Integration of additional features providing direct access to other specialized information and commercial worlds" (Reynolds and Koulopoulos 1999).

### 3.17.2 Portal characteristics

- A portal is not a destination in itself. Rather, it may be called a doorway to a destination ranging from a store to a tourism sight.
- A quality Web portal reflects a collection of personalized gateways to other places in a smooth way displaying several important doorways to view, through links, each one of the mentioned portals.
- There is enough room in a quality portal to view and walk through the doorway and into a room dedicated to that particular information.
- Web portals are hub Websites linking to related businesses and in present case the tourism related business.
- Web portals are a great starting point in searching for specific information.
- Web portal are hubs for tourism destinations, industry-specific services, government information and many other useful destinations (Eckerson 1999, Dias 2001, Nelisen 2002).
3.17.3 Types of Web portals

There are two basic forms of places where the Web portals are placed.

1. **Basic Web hubs** are purely entry points to information on one subject area. For example, the tourism related businesses could join together on these hubs making it easy for the visitors to locate information in one place. For example, the tourism hub for Scotland, www.Scotland.com, contains details on all sorts of accommodation, attractions, events, maps and weather (Eckerson 1999, Dias 2001).

2. **Sophisticated Web hubs** include large-scale systems and supply-chain integration and commitment. They may operate as collaborative buying groups over the World Wide Web (Eckerson 1999, Dias 2001).

Portals adapted to cater specific roles and groups. The term "enterprise information portal" was coined for the first time in a Merrill Lynch report, elaborated by Christopher Shilakes and Julie Tylman (1998):

> "Enterprise information portals are applications that enable companies to unlock internally and externally stored information, and provide users a single gateway to personalized information needed to make informed business decisions." (Shilakes and Tylman 1998).

Brio (2000) defines a portal as;

> "A tool that provides users with broad access to information, no matter where it is stored, and enables information delivery to all users, wherever they work."

A "business portal" is a term introduced by Eckerson (1999). Koulopoulos emphasises the role of portals:

> "...Portals [are] the next generation of desktop computing [...] portals will do for global knowledge-work what the railroad did for the industrial revolution" (Koulopoulos 1999, p.1).

There are four main types of portals:

- **Consumer portals** like Yahoo AOL and MSN
Corporate portals or enterprise portals mostly used by employees of the company to help disseminate information to their employees in a timely and efficient manner.

Niche portals examples of niche portals that are accessible to the public include she.com (for women), cars.com (for car lovers);

Industry or B2B portals (Eckerson 1999).

Writers and experts (Calde and Cooper 1992, Eckerson 1999, Dias 2001, Detlor 2000) agree unanimously that the survival of portals depends on the long term successful relationships the portal creates with their users through various techniques including rich and up-to-date content, the environment and context that is tailored to the customers' specific needs and services.

Calde and Cooper (1992) points out that many self-proclaimed portals are not simply the doorways. Some consumer portals like “Yahoo!” and MSN have created such a magnetism through the Website to hold back a customer as long as possible before moving to some destination through their gateway. Therefore it is often said that the more the banner ads seen on the Website the better the attracting magnetism towards the customers (Sweeny 2001).

Others are the pure search engine portals such as Google probably the most popular portal on the Web). They are designed strictly for keyword-based searching. Such portals are also called single-purpose portals translating keyword input into a list of matching URLs. The main difference between these and the customer portals is that there are no contents of the Websites of their own. In between these types of portals are hundreds of other consumer portals (Calde and Cooper 1992).

3.17.4 Qualities of a good portal

Appearance: good sights, colours, and sounds as well as the fastness in the opening of the pages without disturbing irrelevant banners and ads (Brosche 2002).

Content: Good content is vital to a good portal on top of a clean and intuitive interaction. A good content is the one that is relevant and pertains to the information portal that it is specifically made for, the good content should also be accurate and on time with up-to-date records as well as digestible (Brosche 2002).
Customisation: There is also the requirement of customisation. But the customisation in its own is not a goal itself that should take the owner's time. The building of a portal requires memory at the front and memory for the backup data. The new information creeps into the site pushing behind into the memory the old memories (Goodwin and Nielsen 2003).

3.17.5 - Case studies:

This section provides a background of some different portal cases from around the world and from different fields to look at their methodologies and to examine and critique those cases in comparison to this present study. They were selected to represent different types of portals, some have a well established system like the University of Pretoria portal, others have embarked on e-business recently with the advantage of adopting the latest internet based technologies, as in the case of the Spanish Tourism Board.

1 - Spanish Tourism Portal:

Spain is a premier destination for tourism. It is an important tourism hub. Tourism plays a fundamental role in Spain's economy and is one of the most important industries. As part of its global tourism campaign, Spain tourism authority has identified the Internet as a key communication component.

The site aims to unify all the spread information in one centralized structured database and provide a Web gateway to all the Spanish destinations because Spain lacks a central reservation system and structured tourism information. This site helps the Spanish Tourism Authority to guide its visitors to the right information by using a sophisticated indexing method, and by encouraging visitors to make their direct contact with individual tourism operators, travel agencies, hotels etc and to promote Spain in the targeted markets (Microsoft case studies 2003).

Turespaña launched the Spain tourism portal in 2002 to provide visitors with the latest technology such as multimedia and 3-D virtual imagery, PDA and WAP (Microsoft case studies 2003). The portal introduces personalised services allow users to plan the whole trip from ticket to accommodation (Microsoft case studies 2003).
The portal is provided in more than one international language such as English, French, German, Chinese, Italian, Japanese, Portuguese and Russian. The portal works as a hub for other smaller portals that contain regional information (Microsoft case studies 2003).

"Everything we get, we distribute," says Jorge Rubio, CIO of the tourism secretary general. "The portal allows us to aggregate all the different elements while allowing the regions and municipalities, and the private sector, to pursue their own tourism strategies without having to duplicate content." (Microsoft case studies 2003).

Spanish portals take the advantage of modern IT elements such as e-commerce to provide B2B relationships to the stakeholders in the tourism market. The portal helps people in launching new business and the market place to grow.

The Spanish tourism portal “is a three-year, €9 million services project (excluding hardware and software) with development and management work being undertaken by Microsoft Consulting Services together with Telefónica Data, the technology arm of the Spanish telecommunications operator, and Indra Sistemas, Spain’s leading systems integrator and IT services company” (Microsoft case studies 2003).

The project adopts the Microsoft Solution for Internet that relies on Microsoft.net. This solution provides the features, scalability and reliability, which is required for a successful portal (Microsoft case studies 2003). XML-based schema, also developed to help hotels, travel agencies, small and rural villages listed in the system is used to create value added features (Microsoft case studies 2003).

The Spanish portal focuses on the technological approach. Though the stockholders such as travel agencies, tour operators, and hotels participated in the development process the potential users or the system’s actual users have been overlooked. It is good to provide the users with the cutting edge technology but it would have been excellent if the users had been involved in the development process.

2 - University of Pretoria Academic Portal

Pretoria Academic Portal is a project designed by the academic information services at the University of Pretoria in order to develop communities that work within the academic mission, to encourage academics to participate in all aspects of the institution and to allow
users to customize the layout of their portals as well as personalise the knowledge resources (Pretoria Academics Portal 2003).

Users of the Pretoria portal include academics and departments in the relevant academic territory. The long-term goal in this portal is to allow academics to access academic information and services as conveniently and quickly as possible and support e-publishing, virtual conferences, virtual classrooms and workspace for research project.

The Pretoria Academic portal aims to develop a powerful system for academics through a combination of the technical expertise and a creative approach based on User-centred Design UCD, a development and review philosophy that involves the user at key points to create a solution that provides a positive user experience. The UCD complements the University's academic goals, while at the same time meeting the needs and requirements of the users (Pretoria Academics Portal 2003).

The project developers undertook UCD activities during the design and implementation of the Pretoria academic portal that included interviews with eight senior academics representing different fields such as engineering, zoology, accounting, biology, languages, psychology, physics and archaeology (Pretoria Academics Portal 2003).

The project developers use the following tools:

- In-depth Interview (include identification of information needs);
- Prototype;
- Evaluation of portal through survey.

It appears that the user centred design, prototyping and online usability evaluation is widely used by portal developers and is the most common used for developing and evaluating portals. In the next case the developers used the UCD in order to involve the users in the developing process of a health information portal.

3 - Virginia Internet — Health Information Portal

This project aims to develop a health information portal for senior citizens, and its extension as user-centred Design to Senior Centred Design, through incorporating remote methods and tools into the development process. The design process is as follows:
"Need analysis

- Traditional Focus group
- Computer-interactive focus Group

Requirements Specification

- Content requirements
- Interface & Interaction requirements

Conceptual design

- Menu Design
- Interface & Interaction Design

Interactive Prototype Design

- Prototype Implementation
- Design Team Review
- Fidelity & Design improvement
- User Evaluation by Focus Groups

Usability Evaluation

- Design modification
- Developers checklist Evaluation
- Interactive usability Evaluation
- Online Usability evaluation“

(Virginia Internet Health Information Portal 2003).

For needs analysis the developers used traditional focus group discussion techniques asking the participant structured questions. Then they moved to a more advanced stage where they used an interactive focus group to gather users' needs related to the interface format and the interaction style used in the project interface in addition to benchmark tasks to rate the group discussion. The last type was the Tele-focus group they used for distant evaluation of user needs.

More than one technique was used by developers in order to cover and satisfy - as much as they could - the users' needs, both those who were available in the experiment environment and those who were remote. Requirements specification comes as the second main stage,
where the developers put together the user needs analysis and the literature and Web survey related to the project (Virginia Internet Health Information Portal 2003). The developers built the project conceptual design based on menu and content design, interface and interaction design and finally paper-and-pencil prototype reviewed by seniors in focus groups.

The prototype went through two types of prototypes: low-fidelity prototype and high-fidelity prototype. The low-fidelity prototypes involved the following stages: prototype implementation, team design review and design brainstorming. The high-fidelity prototype involved: the fidelity and design improvement, user evaluation by focus groups and design resolution. It was followed by two parts of usability evaluation: first, developers' checklist evaluation and interactive usability evaluation for the focus groups, second, an online usability evaluation by using a Web-based remote usability evaluation tool (online questionnaire). Finally, they relied on feedback for continuous updates (Virginia Internet Health Information Portal 2003).

Portal design for expanded government organizations is usually disordered and unpredictable. DIS as a complex phenomenon demands some research on multinational companies for that matter. The next case studies of well-known companies illustrate the approaches and methodologies used by them to develop, test and evaluate portals.

4 - KPMG

KPMG is a leading management-consulting firm providing professional services, which include assurance, tax and financial advisory services. KPMG considered using portals to help them enhance their services by providing a wide range of information and services to their clients (Goodwin and Nielsen 2003).

In order to keep pace with their clients' requirements KPMG developed a portal by using a variety of methodologies and tools such as: one-to-one interviews, focus groups and surveys to elicit requirements and gather feedback to develop its portal. For four years KPMG has carried out annual Web-based surveys covering its knowledge management system and core values (Goodwin and Nielsen 2003).

The response rate for the values survey was 43.6% for the knowledge management. It is noteworthy that such a high response rate was despite no incentive being offered to the
participants (Goodwin and Nielsen 2003). This means that the developing team found Web-based surveys a good tool for gathering users' requirements. According to Iain Sampson, an information architect at KPMG UK:

"We try and elicit from the population what they need, what they're frustrated with, what they find valuable, and what they want to know more about. We use the surveys to drive our action plans for the next year" (Goodwin and Nielsen 2003, p. 44).

The developing team seeks help focusing to understand what services people need, and what activities they do. Information from them is combined with automated information about usage of the site to build up a more complete picture of user requirements. To make sure that the team covered most of the user requirements, the team carried out three or four one-to-one interviews (Goodwin and Nielsen 2003).

5 - NAVSEA

Naval Sea Systems Command (NAVSEA), builds and supports America's fleet of ships and combat systems. NAVSEA provides virtual support anywhere and anytime to ensure the Fleet remains ready and capable - operating around the globe (Goodwin and Nielsen 2003). NAVSEA, like other firms, is working hard to satisfy its clients all over the world, the usability challenges facing the NAVSEA portal project are similar to those of many large global projects. Its intended users are based all over the world having a wide variety of jobs and coming from different backgrounds (Goodwin and Nielsen 2003).

Though it is apparently difficult to test the usability of the project, the US Navy does have a couple of advantages over commercial companies. The Burke Consortium anticipating its difficulties in this regard conducted a series of meetings with focus groups having six to eight participants in the very early stage, to discuss the basic concepts of the portal with potential users, sharing with them the paper prototypes (Goodwin and Nielsen 2003).

In order to avoid the portal grey areas, "a couple of rounds of user testing were undertaken by the developers during the development process, taking in around 20 users each time" (Goodwin and Nielsen 2003, p.43). A number of productive changes were made to the site structure and navigation (Goodwin and Nielsen 2003).
6 - SPRINT

The Sprint is a global communications provider serving more than 26 million customers worldwide with nearly $27 billion in annual revenues. Sprint is widely recognized for providing state-of-the-art network technologies (Goodwin and Nielsen 2003).

Sprint portal team used different methods to cater to the needs of the users. For example the team used focus groups comprising 8 to 20 people with an objective to discuss the development plans and specific features of the portal. A paper prototype was used in 2002 with small group of participants followed by a working prototype. A team of experts was chosen to participate in order to provide quick answers to questions. To gather as many requirements as possible, the portal team conducted a lengthy survey (30-50 Questions) during 2001 that provided the developers with required information. A DVD player was used as an incentive to encourage the participants to take part in the survey. The results provided the developers with information about the functionality of the portal and the results also highlighted technical problems with the system (Goodwin and Nielsen 2003).

3.17.6 - Comparative analysis:

Being a comparatively young discipline in relation to other traditional systems, Web portals are difficult to build. The development process is complex and there are not so many alternatives available. Technology is the main constraint in limiting the objectivity of the portal. A wide option does not exist in terms of strategies to integrate the end users. The visitwales.com site provides a good example of the complexity of the development process. The Web portal has to be moulded several times to keep pace with the latest technology and complexity of the system.

The objective of the prototype research is to build a successful DIS and its success fully depends on end user involvement. Six case studies were chosen to serve as models for the current project, each employing a slightly different methodological approach to develop their system, which helped to understand the level of contrast between the individual case studies.

The Spanish tourism portal was chosen in part as a representative tourism Web portal using the latest technology to attract its international tourists. There are similarities found between the Spanish case and the study project as both projects used the latest technology such as
online services, and the latest technology in utilising e-commerce and B2B. In addition both projects aim at attracting international tourists through utilising multilingual models.

The two case studies are at variance with each other at some points. The Spanish case agrees with the research project in the technological approach and in the general aim of attracting international tourists, while it differs in the methodology of application. That lays added emphasis on the user centred approach against the technological approach. However, the Spanish case helped the author to know the latest technology used in the field of tourism.

Though the research project is focus on the same field, tourism, as in the Spanish case, the research project has more similarities with the other five cases selected from different fields: academic (University of Pretoria), health (Virginia health Web portal) and commercial (KPMG, NAVSEA and SPRINT).

These cases were selected as a larger facility with a more organized and established Web portal methodology. Most of these cases employed the user-centred approach. For instance, in the case of the University of Pretoria academic portal, the user-centred approach was used as the main approach of the project and the same approach was used in the Virginia Internet Health information portal. These cases utilised the latest Internet technology as well.

In terms of methodology techniques or tools there are similarities between the tools used in the research project and the cases analysed; most of the five cases used interviews, focused groups, survey questionnaires, and prototype techniques to gather information about the system requirements, evaluation and development.

Online usability evaluation was extensively used in these cases especially in the University of Pretoria and Virginia Internet Health information portals. Building an iterative prototype is another prominent tool used in the analysed cases. Focus group and simple or paper prototypes were used as essential tools in the KPMG and NAVSEA while in the SPRINT focus group, lengthy survey and working prototypes were used. The Virginia Portal agrees with the research project as both cases developed a conceptual design for the development of their systems.

As the objective of these cases is to build a successful Web portal, most of their methodologies are based exclusively on user involvement as the success of the project fully depends on end user involvement. It became evident by analysing these cases that a
prototype is widely used for Web information systems or Web portal development. This was due to its easy use and interactivity that cannot be found in other tools; therefore a prototype was used to develop the proposed system. Studying and gathering the users' requirements was found an essential element for the success of the system as the majority of cases studied relied on gathering the requirements of the user as a prerequisite for developing a successful system.

For example in the case of Virginia and KPMG portals, the developers used a focus group and a survey to study the users' requirements. It can be assumed that the focus group is a useful tool for developing systems. But unfortunately the research project cannot apply this technique due to time restrictions on the research. Both the research project and Sprint case studies used incentives to prompt participants to participate in the developing process.

In this research project the author used survey, interviews, and site mapping to study the requirements of the users. It is clear from the previous cases that a team of professionals is essential for the success of the system; most of the cases had a team for developing their systems. However, owing to the nature of job, only the author in this study carried out research.

The research project was particular in the sense that it utilised site mapping for gathering information about DIS designs. Generally the research project benefited from others' experiences in the methodology tools, especially survey, interviews and prototype. In spite of the difference in backgrounds of the case studies, the author managed to extract information and experience to draw a rich picture of the proposed system. This experience played an important support role to the project's success. It helped the author to develop an approach taking into account skills of different professionals providing a wide option for techniques to develop the project. In addition, these cases met their goals successfully and the Web portal received positive exposure from the media and analysts who reviewed it.

The combination of methodologies worked very well and complemented one another. One of the biggest benefits to the author has been the reduction in Web development time, allowing the author to focus on more value-added activities than going through a lengthy development process by missing a lot of portal features.
Unfortunately the case studies don’t focus on some critical issues related to the development of the Web portal. Hence, they need to attend to the content management structure and other issues like funding, legislation and the organisational culture.

3.17.7 - HCI and Web portal Usability:

HCI (human-computer interaction) is a discipline concerned with how people interact with computers and to what extent computers and human beings both get on with each other and interact successfully (Rowley and Slack 1998). HCI is a multidisciplinary area as mentioned in section 3.10. (Dix et al. 1993, Forsythe et al. 1998, Rowley and Slack 1998). Therefore, the present research accommodates the approaches of Computer Science, Sociology and Anthropology. According to Preece (1993), human-computer interaction (or HCI) is a rapidly developing field that solves problems related to the usability of systems. On the other hand, Nelisen (1993) claim it as a one-dimensional concept. He describes five components that define usability:

- **Learnability:** System is easy to learn.
- **Efficiency:** Once the system is learned, it is efficient to work with.
- **Memorability:** System is easy to remember, can return after time and still be able to use.
- **Errors:** Low error rate as to avoid causing errors for user.
- **Satisfaction:** System is enjoyable” (Nelisen 1993, p. 26).

3.17.8 HCI Principles for the Web

There is no alternative to the interface design that caters to the information requirements of the users. No matter how impressive is the site due to such features as good graphics, a poor interface design may kill the whole purpose of the exercise. The problems become more acute when the technology is overemphasised, neglecting the users in the case of tourism sites. A poorly designed Web interface, despite its impressive graphics, can propel the user to another site with one click of the mouse (Rowley and Slack 1998, Goodwin and Nielsen 2003).
“Another problem is acceptance by users. No matter how good the new portal interface and how intuitive the information architecture is, if people are unhappy with the way the new system has been introduced they are likely to vote with their fingers, by resisting using it. And low usage means a poor return on the investment made in the portal” (Goodwin and Nielsen 2003 p.18).

They continued:

“Good communication with users right from the start avoids a whole lot of potential problems. Telling prospective users and information providers why the portal project is happening, and involving them in specifying, designing and testing the portal right from start, are important ways of winning them over to the finished system” (Goodwin & Nielsen 2003, p.20).

3.17.9 Culture and HCI

Culture and usability issues are interlinked in a way that can affect user performance. The cultural preferences and characteristics such as colours, contents, graphics, images and background provide a base for a user-friendly approach that also manages similarity, but travellers can find themselves in unfamiliar Web sites, “therefore usability issues must adapt to a cultural context” (Barber and Bader 1998).
3.18 Web Usability

Though HCI principles apply equally well to both graphic user interfaces GUIs and Web interface design, there is significant difference between GUIs and the Web (Rowley and Slack 1998). There are some unique Web characteristics such as online services that require the attention of the designers because "the proliferation of pages with poor usability suggests that most designers of Web pages have little knowledge of user interface (UIs) designing and engineering" (Borges, Morales and Rodriguez, p.137). The design of a good UI call for various usability evaluation methods; the heuristics evaluation method is one of these methods (Nielsen 1993).

3.18.1 – Web portal Usability - Critical Issues:

Web portal usability is a new term. However, a general definition is the extent to which a site can be used by a specified group of users to achieve specified goals with effectiveness, efficiency, and satisfaction in a specified context of use (Nielsen et al. 2000, Goodwin and Nielsen 2003). The idea of usability originates from user design, which is a design method to meet users' needs.

Many Web designers do not take into account how important it is to make each portal as usable as possible. For example "the Spanish government's main Internet portal, "administrations", still suffers from innumerable usability and accessibility problems inviting protests from politicians and usability practitioners alike. Since then the lack of development - to improve on shortcomings in the original which cost €2 million - has kept hitting the headlines" (Ferguson 2002).

As mentioned earlier, the portals are a blend of external and internal Websites, offering a mixture of information, application and services. Portals are typically based on more advanced Web technologies that go beyond the simple HTML interface of typical Web pages. So there is a lot beyond technicalities to take into consideration, such as culture, user environments and organisation culture.

Most of the Web style guides do not address portal applications; they cover only traditional information-based Websites (Detlor 2000).
3.18.2 Usability and Cultural dependency

Culture and usability issues are interrelated in a way that can influence users’ performance. The cultural preferences and characteristics such as colours, contents, graphics, images and background provide a base for a user-friendly approach, therefore “usability issues must adapt to a cultural context” (Barber and Bader 1998).

Web technology is a strong factor in globalisation process. The unprecedented international exposure afforded by the web increases the designer’s responsibility for ensuring international usability (Nielsen 1996, p.1). Though the need for standardisation in web site design, information architecture, and development procedures is there but reflection of civilizations’ identity in the web sites is also an upcoming phenomenon. Yet designers are also under pressure to adapt or reflect the culture in which the web site originate (Nielsen 1996, Barber and Bader 1998).

Cultural issues and its importance for the success of web sites vis-à-vis HCI research is overshadowed by technological issues such as programming and visual elements. To date, only a scattering of studies have investigated the relationship between culture and usability.

The importance of relationship between Web site design and the culture cannot be denied. Barber and Badre (1998) coined the term "culturability" to show the fusion between culture and usability in web site design. They recommend that “culturability” should be based upon a genuine and clear understanding of the culture by web sites designers.

A site needs significant consideration when it is designed for international users.

"Consequently, cross-cultural analysis and design issues will need to be considered more integrally in planning stages, and developers will need check-lists and guidelines to assist them in their design phases. As more cultural analysis of user-interfaces occurs, the results may surprise many professionals who base their assumptions about usability, aesthetics, and emotional experience on previous paradigms that were culturally biased." (Marcus 2003, p. 4).

People from different cultures do have different expectations and needs, and meeting these needs improves the usability of the localised versions of a multilingual site (Cleary 2000).
The design of the web site along with visual effects, colours, text and graphics affect the users' conceptions and perceptions. Some time colours reflect strong cultural values, much deeper than mere appearance. In an experiment the colour of a site was found to be mysteriously reflecting cultural constituents such as creed and faith (Bourges-Waldeg et al 1998, p.298).

Barber and Badre (1998) provided empirical evidence by highlighting a number of what they called cultural markers in determining the origin or the identity of the web site. They are of the view that such cultural influence can be seen in the frequent use of cultural markers such as national symbol colour, or spatial organisation in the web design.

In their experiment they elaborated that colours have different meaning in different countries (Table 3.1: colour-culture chart).

<table>
<thead>
<tr>
<th>Colour</th>
<th>China</th>
<th>Japan</th>
<th>Egypt</th>
<th>France</th>
<th>United States</th>
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</thead>
<tbody>
<tr>
<td>Red</td>
<td>Happiness</td>
<td>Anger</td>
<td>Death</td>
<td>Aristocracy</td>
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<td>Blue</td>
<td>Heavens</td>
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<td>Freedom</td>
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<td>White</td>
<td>Death</td>
<td>Death</td>
<td>Joy</td>
<td>Neutrality</td>
<td>Purity</td>
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<td></td>
<td>Purity</td>
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</tbody>
</table>

Barber and Badre 1998

Cultural Marker: Cultural markers are interface design elements and features that are prevalent, and possibly preferred, within a particular cultural group. Such markers signify a cultural affiliation. A cultural marker, such as a national symbol, color, or spatial organisation, for example, denotes a conventionalized use of the feature in the web site, not an anomalous feature that occurs infrequently (Barber and Badre 1998, p. 2).
In China green stands for dynasty while in France green stands for criminality and it is for safety in USA. White stands for death in Japan whereas for joy in Egypt and for purity in USA. Spatial orientation is also pointed. In the Middle Eastern web sites the natural flow of control differs from the western sites. The Middle Eastern web sites start from the right whereas western sites start from the left. In addition, the menu bar starts from the right side while the left side is focused for users coming from west (Figure 3.6). Though it is important to consider language characteristics when designing web sites for international users.

**Figure 3.6: Flow of control in Middle Eastern web sites**

Designing sites for international users needs more research and attention, for instance, whether the design acceptable in Egypt is suitable for China or not. Barber and Badre also identify national symbols like flags as one of the cultural markers. What becomes clear is that a Global Interface Design relies upon culturability, as it is capable of capturing the cultural nuances of a targeted audience to enhance usability; thus, the Global Interface may really
mean an American Interface, a French Interface, an Israeli Interface, and a Chinese Interface (Barber and Badre 1998, p. 4).

Barber and Badre used a three-stage procedure to pinpoint the cultural markers i.e. the foraging stage, cultural marker identification stage and pattern identification stage. In the first stage hundreds of websites were classified by country, genre and language. In the second stage, they analysed the composed web sites and came up with a list of dominant web design features. Finally, “the cultural markers were checked for emergent patterns within countries, genre, and across region, which can be analysed for depth and WWW design implications” (Barber and Badre 1998, p. 7).

Apple Web Design Guide (Apple Computer, Inc.) provides the following guidelines for the designing for international users:

- "Provide a way for users to choose the language.
- Know the region for which the web site is being developed.
- Choose the graphics wisely.
- Know the date.
- Consider languages differences or mistranslation by translation engines.
- Avoid assumptions about text.

Gould et al (2003) also recognize the importance of “culturability" by saying that “a heightened awareness of ones own cultural-dependency therefore is a good starting point for successful design for the world" (Gould et al. 2003, p. 702). Cultural awareness in designing multi-cultural or international sites is pressing, thus designers need to be aware of these cultural implications as culture traits influence the audience and users conceptions, this awareness must be accompanied with deep investigation of diverse cultures” (Gould et al. 2003).

Thus, appropriate procedures should be taken in the initial stages of the development process of a site to coup with the challenges to attract international users. Consideration of “Culturability” issue is prerequisite for that matter. The design should include visual colours, graphics and spatial orientation that have cultural implications and background in a way to minimise its usability problems too.
Moreover, most of the usability guidelines were designed for western cultures, and also most of the usability tests and experiments were undertaken in a western environment. For instance, the author noticed that the flow of control in the Web page (the main menu, the movement of the pages) for the western culture is from left to right, whereas the flow of control for Middle Eastern culture is from right to left. In fact it is important that the layout of the portal follow global layout issues, the page size, the scrolling of the page, the menus etc. In most of the portals examined, these issues were ignored.

The technology-orientated approach though provides the portal with the state-of-the-art technology as discussed in the Spanish case, but it makes the portal slow due to large multimedia files and useless Java scripts and plug-ins that “often ignore the information needs of the users” (Detlor 2000, p. 91). Some unorganised portals lack standards and consistency and large-scale portals suffer from poorly structured information. Davenport (1997) proposes a new approach, called information ecology.

This approach concentrates on the way people create, distribute, understand and use information. Most of the designs of Web pages in general, and tourism portals in particular, are just showcase technology (WTO 2001c) i.e. bahraintourism.com. The Thailand tourism official site (www.tat.or.th/) is another example that overuses flash, images and multimedia.

As mentioned above, there is a tendency among the developers to treat the tourism portal as a brochure full of colours and superficial images. The tourism portals mostly suffer from the misusing of superficial images. Due to their size, portals experience the cluttering of useless and outdated information and a negligence to be maintained by developers. Bahrain tourism site is a good example (See bahraintourism.com).

Help and support is one of the ten recommended heuristics for usable interface design suggested by Nielsen (2002b). Unfortunately, some of the portals lack these services, and as a result users are not provided with appropriate levels of help and support (online as well as via a helpdesk), both technical and functional — a good example is bahraintourism.com.

The author noticed that there are always people who are ignored by the developers (such as disabled people, senior citizens or young children). In spite of the opportunity offered by the Internet most of the portals overlook these groups in their design. In this regard, Laux said:
"The internet and the WWW offer people with disabilities opportunities that were only dreamed of a few years ago. Information access, online communication, and interactions with complex systems are now possible for users who are unable to move, see, speak or hear" (Laux 1998, p. 87).

She recommended that:

"Designers should keep in mind that the target population includes millions of potential users of Web pages who have various handicapping sensory and physical conditions" (Laux 1998, p.87).

Some portals tend to use a sophisticated language, forgetting that users come from different educational and cultural backgrounds, and simplicity may be more rewarding.

"Web design changes are often necessary to address regional, linguistic, cultural and writing system differences. If the objective is to reach international audiences, appropriate measures should be taken from the beginning". (Vora 1998, p. 153)

International considerations play an important role in the success of the international portal, for which Nielsen stressed the role of the designer:

"They don’t call it the worldwide Web for nothing. A single click can take you to a site on another continent, and a business can attract customers from many countries. The unprecedented international exposure afforded by the Web increases the site designer's responsibility for ensuring international usability" (Nielsen et al. 2000).

Vora emphasised that the following guidelines should be considered while designing for an international audience:

- "Provide a way for users to choose the languages
- Know the region for which the Web site is developed
- Choose the graphics wisely
- Consider language differences; don’t use slang to avoid possible confusion misinterpretation, or mistranslation by translation engines
- Avoid assumptions about text
As the author mentioned earlier tourism portals were originally developed and adapted to the international and global market. In other words, they are designed to be usable in other parts of the world too and developers forget that the aim of the tourism portal is to promote and market the targeted destination to the rest of the world. However, some developers underestimated this fact and they have localised their portals, using one language that doesn't necessarily cater to the needs of international users. In the proposed BDIS project, this issue is considered.

3.18.3 - Towards a new Paradigm for portal design

After reviewing portal literature one could realise that traditional data-driven approaches to portal and design often pay no attention to the information needs and practices of users. In other words, it didn't involve the user in the designing process. Consequently, portals can suffer from usability problems such as poor navigation and inappropriate display of information that prevent the functionality and use of these systems. This happens because some of the designers follow only systematic design or procedures. The portal usability is more than that. It has also to take care of more general issues like packaging the offerings, structuring, integrating and organising them as well as tailoring a portal to a specific user group (Waloszek 2003).

Some of the cases reviewed earlier, such as the Spanish case, only utilised the technological approach, though in most of the cases the developers followed the user- centred approach as mentioned earlier. The traditional approaches of portal design do not involve the users; they cover only traditional information-based portals. So there is a missing link or a gap that the designers need to fill.

The portal designers must have a deep understanding of the people who will use the environment. While considering accessibility, distribution and scanning of information, success comes from understanding what people are doing and why they are doing it. So understanding users and their environment is the missing link overlooked by most of the designers, specifically designers in developing countries, who give no weight to users in the
design process. The reason for this behaviour lies in the scarcity of the HCI institutions, researchers and publications etc. vis-à-vis lack of awareness in those countries. Taylor (1986) emphasised users and their environments as necessary ingredients to the understanding and improvement of the systems. Focusing the users and taking into account the criteria by which information will be judged valuable can fulfil the lack in the design approaches. Therefore developers must be able to interpret user environments as useful parameter for systems design.

Portal design is different from a simple Web design. It requires involving a group of elements and factors. According to Detlor:

"Developers must be aware of the situational context in which portals are used. This includes not only understanding the physical characteristics that impede information access and use, but also the political factors that impede the free flow of information between groups and the culture of the organisation that deters the extent to which information is shared and valued in the company" (Detlor 2000, p. 98).

We can conclude that studying and understanding the requirements of the prospective users and using appropriate usability guidelines results in useful portals, guaranteeing a satisfying relationship between the users and the designers. So user-centred design driven by a deep understanding of how people use this portal is essential.

3.18.4 - Considerations in Creating an Online Portal

The following are some of the considerations that need to be kept in mind while creating an online portal.

First of all there is a need to identify the tourism portal market that is based on complicated distribution processes and likewise the portal should provide a valuable single and uniform platform, compensating for the otherwise expensive or complex distribution channels (Detlor 2000, Dias 2001, WTO 2001c).

The designers need to include customer-centred design in their agenda as the traditional designs have lost their usability altogether. What is important is that the designers should be ready to support a full work support environment (Detlor 2000).
At the international level, developers must be aware of the cultural contexts in which portals are used. This includes not only understanding the cultural characteristics that impede information access and use, but also the political factors that affect the free flow of information within an organization (Zahir et al. 2002, Nielsen et al. 2000).

At the interface level, portals may be designed to incorporate functions and features that enhance the potential usefulness of information; “it is vital that the portal can reach all corporate information available” (Broche 2000, p. 21). “A portal interface should lean on knowledge gained from the field of Web design. It is advantageous to use known design principles, such as navigation principles” (Broche 2002, p. 47).

There is not only new technology but also new user groups that require new designs. As far as the role of usability is concerned, the user interface designers may change from designing screen elements and singular applications to a more holistic approach of designing useful portals for people; this demands smooth collaboration between all concerned. In the case of tour2bahrain.com usability, specialists from different usability backgrounds (see chapter 5) came together with experts from tourism industry management and the actual users of the portal. The task of the interdisciplinary team was to configure the Portal Interface Patterns in such a way that they would optimally support the specific user goals and scenarios within tour2bahrain.com.

For portals designed for the clients, it is essential to bring the clients into the discussion process at an early stage. In some cases, developers may find that they can provide what the users want without expensive new software; a way may exist already (Detlor 2000, Goodwin & Nielsen 2003). For systems covering different departments, locations and support groups, a steering group across the organisation is highly desirable covering all “stake holders” (Goodwin & Nielsen 2003) — the same as suggested for the proposed BDIS.

As already mentioned, an important aspect of portals interface is that they are typically tailored to specific roles and groups. In this study a reader can find a description of how user interface designers fill this new role in a development team by using important tools of this new approach such as site visits, interviews, questionnaires and prototypes that are evaluated by the prospective users. Only in this combination can people-centric portals come to life.
To improve the design usability, it is necessary for designers to combine in person the expertise of the information architect and graphic designer as well. It is quite desirable in the case of a small team. In larger teams, however, people from different backgrounds will fill these roles cooperatively.

It is also a matter of common observation that there is a dire need of backing up the portals with good market studies accommodating customers’ perceptions and the visitors’ norms, demographics, psychographics and such other factors. Such portals that base their foundations on the market studies are successful as e-commerce providers focusing on a particular industry such as tourism. Dias supports the author’s view when he said about corporate portals:

“It is evident that there is still no scientific argument to prove them. Until now, most part of the claimed benefits are intuitive. A more rigorous methodology is needed to verify these benefits through real case studies” (Dias 2001, p. 285).

**Qualities of an ideal portal**

The author came to the conclusion that an ideal portal:

- Should be intelligent able to personalized and customised user information
- Should show credibility of data, states, information, etc. and meet real-time user demands.
- Should have, security and content management capabilities.
- Should enhance user satisfaction

**3.19 Summary**

This chapter has thoroughly reviewed and emphasized the major trends and changes occurring in the information system field that encompasses many complex technologies, methodologies and different applications. Features of the information systems related to tourism industry have been sparsely elaborated in this chapter, where necessary. The chapter covers prototyping methodology underlining that the proper design and realization of a Web-based tourism information system is currently one of the most challenging issues in the tourism area. A well-designed system will be important in future as the tourist looks for and
expects more customized vacations (Sheldon 1997). The following chapter will shed some light on the study model.
CHAPTER 4

DIS INTEGRATIVE MODEL

4.1 Preamble

The aim of this chapter is to develop a model of Destination Information System (DIS) effectiveness and success that identifies key factors which would enable a Destination Marketing Organisation (DMO) to outdo other dominating destinations for potential visitors. In this chapter, the model is related to organisational issues within the Directorate of Tourism Affairs in Bahrain.

Since a range of factors, both technological and non-technological, influences a DIS's effectiveness and success, a model recognising all the factors must be developed. The identification of effectiveness and success factors will help the destination officials and stakeholders of the tourism industry know what influences the decision of a tourist.

The model of DIS effectiveness and success will help identify the advantages and disadvantages of the Kingdom of Bahrain as a tourist destination. Maximum care will be taken to develop the model in full recognition of the issues stressed by the notable tourism researchers and practitioners.

4.2 The Need for an Integrated Model

Though the DIS model TlScover has been identified as the best to date (Werthner and Klein 1999, WTO 1999, WTO 2001c, TlScover 2003), the researcher sees that this model fails to resolve and address the cultural and user dimensions of the system. (Buhalis 1997) strongly supports the involvement of both culture and the user. So there is a need for an integrated model that covers both the technological as well cultural issues. Interestingly, the review of the existing literature on the subject provides a strong basis for developing a model of DIS effectiveness and success.
“These systems provide unparalleled opportunities to improve the socio-cultural and environmental impacts at destination. DICIRMSs can diffuse information on destinations’ local society, culture, history, customs, codes of behaviour or dressing, and on every thing that would bring host communities and tourists closer by establishing mutual respect and understanding” (Buhalis 1997, p. 88).

Proll et al. 2003 emphasis that:

“The proper design and realization of a Web-based tourism information system is one of the most challenging issues in the tourism area. Among others, two aspects are crucial for the success of such a system: First, the system should be as integrated as possible, i.e., representing a one-stop shopping experience by providing a high-quality content in terms of comprehensiveness, accurateness and actuality. He continues….. Second, the system should be as open as possible, i.e., easily customisable by the tourism information provider to fulfil his requirements without any programming effort. A Web-based tourism information system that has faced these requirements is TIScover. TIScover is currently employed in three different European and Asian countries, covering solely in Austria more than 100,000 Web pages, presenting tourism information and products gathered, from more than 3000 tourism information providers” (Proll et al. 2003).

Since the integrative model developed through this study owes much to the theory proposed by the TIScover model, it would be appropriate to describe some strengths and weaknesses of the TIScover.

**Strengths**

- TIScover is a technological oriented model involving elements like E-commerce transactions, web technology (WAP) and databases with the latest technology.
- TIScover is focused on data management, evident from different access paradigms supporting the information phase.
- TIScover gives more attention to services - especially online services like booking and ticketing.
• Design is also one of the essential ingredients for developing the TlScover. The latest design guidelines were considered by the TlScover developers in addition to input from both the public and private sectors.

Weaknesses

• TlScover has overlooked some of the important issues related to the effectiveness and success of a DIS, such as the user, organisational characteristics, and destination culture. For instance, to the knowledge of the researcher, the cultural dimension of both the organisation and the host destination were omitted in the development process of TlScover.

• This omission of human factors such as user, organisational skills, characteristics etc, has the potential to create risks for the life cycle of the system.

• TlScover focuses on the technological issues and fails to acknowledge the user as a focal point in the development process. Customer Profiling should be used to reduce the information overload. In this sense Proll et al. 2003 said:

"Another experience gathered is that the information overload the customer is faced with should be reduced by establishing tracking and reporting mechanisms for customer profiling. This means that user transactions and movements within the Web site are captured in order to generate a personal profile of the customer. According to this profile, the presented tourism information and products are dynamically customized, thus reducing the information overload. The more times a customer visits a site, the more detailed his personal profile becomes. Besides that, various offline analysis can be done on the basis of customer profiles, resulting in much more selective marketing efforts" (Proll et al. 2003).

In short, the TlScover model is not sufficient to satisfy all the requirements of a destination information system. We need a model that views components from the perspective of the user, the latest technology and the environment in order to meet the needs of DMO customers.

A web integrative model has to offer an integrated approach to these problems because the relationship between the two has to be reflected both in the software architecture and in the human relational architecture.
This chapter answers such questions as, “What are the main ingredients of a successful system?” and, “How does the system work?” The proposed model offers the conceptual framework for embedding the web application technology environment into relational human architecture, and thus reduces the risk of operational failure. From this perspective, the web integrative model would have to perform one essential function: to create a successful system and prevent it from failure and abandonment of the technology and its environment.

The researcher has discovered from the literature review that the effectiveness and success of a DIS for DMOs depends on the implementation and coordination of fourteen interrelated elements:


4.3 Conceptual Framework

To achieve the objectives of this research, a conceptual framework was proposed and a model developed. The latter was derived from a comprehensive literature review. This model only describes core players related to the study, although DISs are usually characterised by a large number of players who take part in numerous processes.

4.4 The Study Model

The proposed DIS Web Integrative Model has fourteen core elements influencing the effectiveness and success of DISs, namely:

1. Web Internet Technology
2. Content Management
3. Organisational Characteristics
4. Information Technology Infrastructure

5. Services

6. Destination Culture

7. Public Sector (initiation policies and guidelines)

8. Private Sector (funding and maintenance)

9. Stakeholders

10. Design Elements

11. The User

12. Global issues

13. Marketing Strategy

14. Promotion Strategy

The model consists of three parts: Part One presents the major elements affecting the effectiveness and usefulness of the DIS in general: the second part portrays the architectural model of the DIS; the third part addresses the data flow model of the DIS. Below, the relational structure is first described, and then an analogy is drawn with both the second and the third parts.
Figure 4.1: The DIS Web Integrative Model

Author 2003
4.5: Conceptual Model of the DIS

As an amalgam, the model consists of various factors, these factors provide the main ingredients of a successful DIS that make the destination attractive to visit. Together with the design, the user, marketing strategy and promotion strategy, they provide the basis for DIS effectiveness and success.

The following paragraphs are intended to add to the understanding of the model and give some references to its origins. The DIS Web Integrative Model is a merging of various elements represented in the conceptual diagram Figure 4.1, including the following:

4.5.1 Web Technology Application

- The web enables the presentation of complex hypermedia information, which can improve a destination’s traditional processes, such as marketing, visitor services and membership.
- It also provides powerful retrieval and search mechanisms to assist the user in locating information from a global network of information.
- The development of a DIS requires advanced web applications, especially for online reservations, and for accessing and providing information for users.
- Since the main objective of this study is to develop an inter-active online destination information system, it is imperative to use advanced web applications in developing this system. Without these advanced technologies, it is difficult for a user to obtain immediate online information on tourism from the DIS.
- As such, Internet technology has a strong relationship to the other elements of the model.

The DIS will rely on a Bahraini state-owned service provider company, Bahrain Telecommunication Company (Batelco). Compared with other developing countries, the current services are adequate for the current needs of the country (Al-Amer 2003). This doesn’t mean that Batelco should stop here but it needs to keep pace with the latest technological developments.
"The telecommunications infrastructure in Bahrain is comparable in certain features to global standards, yet there are many aspects that lag behind global standards." (Al Amer 2003, p. 12)

According to Bahrain's 2001 Census results Published by the Directorate of Statistics, Central Informatics Organisation cited by Al-Amer:

"Internet diffusion in Bahrain is the second highest in the Arab World. The number of Internet users in Bahrain is estimated at 150,000 users, and is still growing rapidly. Out of total of 105,686 households in Bahrain, 19,191 households are connected to the Internet" (Al Amer 2003, p. 13).

Thus, the Kingdom of Bahrain has the Internet infrastructure for building a DIS in the near future.

4.5.2 Content Management

The content management addresses fundamental issues in relation to data. The basis of the management of knowledge is collecting, managing and enhancing data, and its distribution (Sheldon 1997). There may also be a team of writers given the task of compiling information, and a team of editors who proofread and ensure high quality content. Additionally, there may be a department of editors and administrators who answer the public user's queries, or merely forward them to the right parties (Murphy et al. 1996, Web Magnet 2002).

According to Wilson (1996) web content plays three key roles in:

- Attracting users to the site;
- Convincing them that the information is credible;
- Promoting the organisation's products or services (Wilson 1996).

Content comprises data, information, documents, pictures and sound. The format of each document is adapted to meet most potential requests for the technical equipment used. For example, an online reservation form is designed to meet most tourist requests. The 'perishable' nature of tourism information means that the accuracy of the
information content is essential, and up-to-date (Sheldon 1997). DIS information such as news, information reservation and weather is essential for the tourist. Adding a ‘What’s New’ link to a list of recent changes and additions to the site provides regular visitors with an easy method of receiving current information. When this feature is regularly updated, it can add an element of ‘freshness’ to the site (Murphy et al. 1996, Web Magnet 2002).

The richness and credibility of information is an important factor in content considerations. The Ministers Under-Secretary emphasising the quality of information about Bahrain said, “The department provides tourists and investors with up-to-date information...information is the lifeblood of tourism; information reflects the image of Bahrain to the outside world” (Al-Atwi 2003).

4.5.3 Organisational Characteristics

Some of the factors that can influence the quality of an organization’s web site include the size of the organization, the presence of linkages to the business community in the management and the confidence of the management in its approach to audience cultivation (WTO, 2001c).

Small-sized DMOs usually lack funding that usually hinders them from developing and updating their web information system. On the other hand, “Larger DMOs that possess more human and financial resources tend to be more successful in their Web marketing efforts” (Wang and Fesenmaier 2003, p. 309).

The small size of the DMO means that it has the capacity to introduce the DIS to its organisational system; and this is clear from the vision of the department (Wang and Fesenmaier 2003). Even though Bahrain is a small country, the government encourages innovative projects for the development of the tourism sector.

The Formula One track shows that the government invests generously in tourism. Furthermore, the department has a good relationship with the business community in and outside of Bahrain through organising conferences and workshops, and participating in international tourism fairs (Al-Atwi 2003). The Department of Tourism Affairs has the
capability to introduce such a project to its organisational system. Setting up a steering committee to oversee all aspects of the business strategy implementations is inevitable. This must be led from the top with the support from all parts of the organisation and its wider partners.

The Department of Tourism Affairs will have the responsibility of monitoring progress against deadlines, controlling budget and evaluating achievements. Appointing a project team is another important issue that must be considered along with staff understanding. Buy-in and involvement is essential and queries specific programmes of consultation, discussion and active participation, backed by appropriate training and development activity (O'Brien 2001, Davies 2002). This includes communicating to those at the highest level especially where there is a significant amount of changes to manage. It is important to ensure in this way that the pressures that can be caused by setting up a DIS and by implementing new ways of working do not become de-motivating. In this regard Al-Atwi was optimistic about the department training scheme.

4.5.4 Information Technology Infrastructure

Information technology infrastructure provides the organisation with a basis on which it may plan and implement the development of new IT systems (O'Brien 2001). This technological infrastructure, supporting communication in the organisation, consists not only of physical resources such as hardware, software, communications technology and people, but also non-physical resources such as knowledge, plans and Internet literacy of the staff (Sheldon 1997, Stair and Reynolds 1999, Davies 2002).

The dynamic relationship between DMO organisations and their use of information technology plays an important role in the development of the DIS (Sheldon 1997). It is important to check both the information system's impact on the DMO and its employees in today's world, as well as the impact of current developments in IT affecting the workplace environment (WTO 1999).

In the case of Bahrain, according to Al Atwi, the Department of Tourism Affairs is working very hard to equip itself with the latest technology.

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1 Mubarak Al Atwi, The Minister's Under-Secretary, Bahrain Tourism Affairs said in an interview with the researcher, Manama, Bahrain, May 2003.
“We are working very hard to introduce the latest technology to the department. For example; there is a proposal to use the Geographical Information System (GIS) for tourism purposes. What’s more, we have trained our staff to keep pace with the rapid changes in both the tourism and information technology industries” (Al-Atwi 2003).

Since the public consider the department very outdated in term of technology, Al-Atwi statement gives some hope for the development of a DIS, as it implies that the Department’s senior management is willing to develop their services and equip them with the latest technology such as DIS. Al Atwi’s (2003) assurance that “Our staff have been trained to use the Internet, and we have training plans for the future,” is another sign of hope.

4.5.5 Services

The DIS is primarily designed to introduce service offerings and advertise products and services, and consequently, the quality and quantity of services offered by the DIS are very important. Services offered are potentially used in:

- One-to-one communication (for example, an individual buying a ticket online), and one-to-many communication (for example, an individual purchasing more than one item online, such as accommodation and transportation);
- ii) To collect data and information from visitor requests, via an online application form and online surveys – including personal interests and personal opinion regarding the services; and,
- To provide a continuous online service – 24 hours a day and 7 days a week. High quality and advanced technological services, including fast and efficient online reservations, are important issues considered in the model.

(Sheldon 1997, Buhalis 1998)

The Tourism Directorate in Bahrain is striving to provide high quality services - in order to attract potential tourists – through the development of new tourism products, maintenance of tourism attractions (for instance, the Directorate made major renovations on its historical attractions including Arad Fort and Bahrain Fort). The Directorate is also making every possible effort to publish the latest tourism literature.
There are also future plans to provide information services at the attractions themselves (Al-Atwi 2003).

In addition, the Directorate is proud to provide online information for the potential tourist, at www.BahrainTourism.com (Al-Atwi 2003). The website provides tourists with basic information about Bahrain. Given all the above efforts, the author believes that the Directorate is ready to provide comprehensive information about Bahrain via DIS.

4.5.6 Destination Culture

A DIS should reflect the culture and values of a destination. Thus, developers must reflect the host culture in order to be successful (WTO 1999, WTO 2001c). For example, intrinsic cultural traits have been incorporated in the visual design of the interface offered by national DISs, for instance, through the use of colours and layouts that reflect strong cultural values. i.e., green is generally considered an Islamic colour; saffron yellows a Hindu/Buddhist colour; and red, blue, white and gold are colours of the Judeo-Christian West (Marcus and Gould 2000). Understanding the cultural meanings of the products, local values, beliefs and practices of a destination is the job of the DIS developers.

They must consider all these aspects when designing a national DIS. The DIS plays the role of a cultural mediator, helping to prevent tourists from misunderstanding, ignoring or even being unaware of the many diverse and complex aspects of the destination. As such, it is not only necessary to inform tourists about things that are considered culturally interesting and important in the local society; it is also important to represent the cultural products in a more meaningful manner (Marcus and Gould 2000).

“Preserving Bahraini culture, customs and values is one of our main targets. We as a governmental organisation aim at clean tourism — we don’t want to disturb the culture of Bahraini people. We respect every single aspect of it. Banning some irresponsible practices by nightclubs is a proof of our preservation policy. Most of the tourism projects in Bahrain reflect the cultural dimension of Bahrain.” (Al-Atwi 2003)

Thus, emphasising the culture, the local values, beliefs and practices, is the job of the proposed DIS, since this system will be the electronic gateway to Bahrain.
**4.5.7 Public Sector**

Public sector involvement and policies play an essential role in the development of a DIS. Without the support and backing of the public sector, a DIS may fail. Hiline, a DIS in Scotland, was operationally successful, but failed when public sector support was withdrawn (Tunnard and Haines 1999).

The involvement of the public sector depends on the political culture of the country and the interest of the government in power. Public sector involvement has an important leadership and co-ordination role, and often initiates the development of a DIS (Mistilis and Daniele 2001).

The government of Bahrain strongly supports the involvement of the public sector in tourism. The fast depleting oil reserves are the main reason behind the government's urge to promote the tourism industry (Bahrain 1998).

> “Depletion of Bahrain's limited oil reserves has prompted efforts to develop other industries for example, in the 1970s the government established Aluminium Bahrain (ALBA); aluminium smelting remains an important industry. In a further effort at diversification, the government has promoted tourism.” (Mapzones.com 2003).

Thus, the government of Bahrain strongly encourages and supports the development of tourism projects to diversify the non-agricultural sector of the economy. The government generously funds tourism projects; and the Directorate issues licences for tourism projects and encourages investment in this field (Al-Atwi 2003).

The public sector has a powerful integrative relationship to the other elements of the model. Projects like the DIS need to work under a legislative umbrella as management commitment, investment capital, qualified technical and managerial personal and a legal background are prerequisite for success (Sheldon 1997, O'Connor 1999, Tunnard and Haines 1999). Many companies remain unable to exploit the potential of Internet marketing, despite recognition of this new medium, only because of deficient dynamism, the commitment it needs and insufficient resources at hand. Buhalis and Spada, (2000) recommend the public sector involvement in balancing the needs of the main stakeholders, for a DIS to succeed. Therefore, the functioning of a DIS project is
doubtful if the government is indifferent to promoting, facilitating and regulating e-commerce on the Internet (WTO 2001c).

4.5.8 Private Sector

Developing a DIS requires generous financial support, not only for the development phase, but also for maintenance and operation of the system. The dearth of finances can cause a system to fail. This problem can be solved through a public-private partnership (Sheldon 1997, O'Connor 1999, Tunnard and Haines 1999) with the private sector taking the major role in funding (Sheldon 1997, O'Connor 1999, Tunnard and Haines 1999).

The private sector in Bahrain participated in the development of tourism infrastructure and some of the large tourism projects such as the development of 4- and 5-star villages, hotels and resorts, in addition to developing the coastal areas and providing them with the basic infrastructure to become major tourism attractions. Such projects reflect the willingness of the private sector to invest in the tourism industry in Bahrain (Al-Atwi 2003). So, there exists a fair chance that the Bahrain DIS might be funded and supported by the private sector.

4.5.9 Stakeholders

The DIS goals can be best achieved by working in partnership with all tourism stakeholders at destination where they operate. Joint ventures can create a better tourism experience that safeguards the destination, its culture, economy and environment, and increases benefits for the local community. There are strong mutual links between the DIS and the stakeholders (WTO 2001c). A DIS is important for the destination’s economy and stakeholders are important for successful operation of DIS. It is important to work closely with a cross-section of stakeholders to encompass the diversity of views and interests present in the destination - including hotels, travel agencies, tour operators, etc. This partnership would address current problems as well as future potential as seen by the various stakeholders (WTO 2001c).
4.5.10 Design Elements

Designing a successful DIS is different from designing an ordinary website. Issues need to be considered before designing the DIS interface in particular, and the whole system in general. Factors such as the appearance, functionality, usability, navigational aids and the accuracy and security of online services must be paid due attention. Design is a pivotal element in this model as it is the body of the website that will display the system, from place to place, from country to country, and from user to user. (Benckendorff 1998). The DIS should consider other design factors such as the layout, the look and the domain name. Design elements are illustrated in the model as a circle, reflecting its powerful relationship with other elements, such as Internet technology and information content. Services with a poor design give rise to reluctance on the part of a user to use the services provided; it is important that there is provision for links within the design to facilitate user access to other areas of interest (Benckendorff 1998). The tourism industry requires large volumes of information, and one site cannot provide all the information needed. Therefore links to other tourism and related organisations, at local, national and international level are required. For example, vaccination is required to visit tropical countries, and in this case, a link to a health organisation is helpful. Links play a vital role in providing information from non-tourism organisations. Links should follow public sector guidelines and not link to undesirable or extreme political or religious sites (Buhalis 1997, Benckendorff 1998).

In Bahrain, the Directorate of Tourism Affairs is competing to present a good image of the country. Providing the tourist with high quality services and information is the Directorate’s main goal. Thus it is anticipated that providing a well-designed DIS will be highly valued by the Directorate.

4.5.11 The User

The DIS user is the focal point of the model; consequently all the stages of system development and, the design and evaluation process revolve around the user. In a conceptual model of DIS, the user is indicated as a blue circle inside the design circle, where all the variables intersect, to emphasise the user consideration at every stage. Beside economic gains it is an obligation for a host country to pamper the tourists in order to satisfy their needs and requirements (Sweeny 2000). With DIS development, it is
the Directorate of Tourism Affairs (if applied by the directorate), which must take into account the client at every stage. Another issue that must be considered, concerns whether the system should offer the users the opportunity to “customise its homepage to much the customers particular needs” (WTO 2001c, p.25). Customer Relationship Management (CRM) “involves building up in depth information about customers or contacts” (WTO 2001c, p.12). In order to build a good relationship with the user and to maintain a strong relationship with customers or the users, the DIS should apply such an approach.

4.5.12 Global Issues

The World Wide Web has revolutionised contemporary communication systems. Now that the web is more than a source of information, the DIS presents a unique opportunity for a national DMO to attract international users worldwide by the unique characteristics of the web (WTO 2001c). An Asian user can enter a system based in South America and vice versa with a single click only. The global usage of the system enhances the DIS developers’ responsibility in terms of reliability and accessibility of the system. The system should be compatible globally by adopting major languages of the world to add potential visitors. The Bahrain Directorate of Tourism Affairs aims to attract worldwide users, therefore it is essential to meet the international standards.

4.5.13 Marketing Strategy

Sale of product or services through dynamic marketing strategies is the essence of a successful business. The services sector needs more emphasis on marketing to get to the break-even point as early as possible. For that matter a comprehensive promotional plan must be chalked out for DIS development. Allocation of finances, identification of the market, time frame, and a definite marketing strategy are the core issues to be considered well before launching any Web (Wilson 2002). To get hold of the potential market as quickly as possible is not an issue but a steady growth within a time frame by maintaining the standard of services would have a positive impact on the industry (Sweeny 2000). Therefore developers and marketing professionals must avoid deceptive tactics to attract the users. Proper feedback and user satisfaction would minimise the risk factor of failure of a DIS system. Everything involved in the DIS campaign should be measured
effectively for continuous improvement (Sweeny 2000). DMOs’ privacy policy would also help to build user confidence. Beside Tourism Affairs Directorate own marketing strategy, an Internet marketing strategy is essential in generating the sales. A good ranking within higher search engines and placement of banner or button adds on popular sites could be one of the best ways to attract potential tourists.

4.5.14 Promotion Strategy

Every business entity depends highly on a sustainable promotional activity. Promotion keeps products and services in the minds of the customer, and helps stimulate demand. It is a continuing process that includes presentation, image-building and public relations. DIS is a global system that has to catch the attention of international clients; therefore it must be careful in choosing the words, slogans and expressions (Wilson 2002, Sweeny 2000).

There are hundreds of promotional techniques a DIS can benefit from; therefore a good promotional strategy can help a DIS to be effective and successful.

The Directorate of Tourism Affairs has its own promotional tools such as traditional media, advertising, and so on. Since Internet promotion is a mixture of both new and traditional media, a promotional plan for the proposed DIS should include techniques such as search engine linking strategies, viral strategies, public relations, traditional media, e-mail publishing, and networking and paid advertising in addition to the current techniques employed by the Directorate.

4.6: DIS inter-relationship model

In a Destination Information System, one factor influences the other that ultimately influences the design of the system. Following is a brief description of interrelationship shown in the DIS model. A joint venture of public and private sector, because of the nature of project, can only make a DIS successful. The organizational interrelationship makes clarity while defining the role of the public and private sectors.

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1 Design a strategy that encourages others to carry marketing messages via e-mail, using their own network of relationships and preferably their own sources. (Wilson 2002 p. 178).
The model proposes the public sector to supervise the project, for that matter public sector forms a steering committee and that steering committee forms and supervises a project team.

Public sector provides IT infrastructure and selects the web information technology that is considered a part of the IT infrastructure. Services require web technology for designing interactive and complex sites.

Web technology at the same time uses web content. Web content is based on the information provided by the stakeholders to the public sector.

Destination culture influences the design; considering the culture and values of a destination is essential. The system must reflect the host culture intrinsic traits by incorporating it in the visual design of the DIS.

The global issues such as languages also influence the design. The target market is first defined and accordingly the languages are selected in which the content has to be displayed. The general layout of the site must be accepted internationally.

It is the public sector that controls the quality and authenticity of information provided by the stakeholders. Stake holders are supposed to provide information regarding their services to be provided to the tourists.

Organizational characteristics such as size of organisation and the size of budget strongly influences the design as designing of large scale portals is costly than designing of small or medium size portals.

The contributions of private sector are in two ways as most of the stakeholders come from private sector and secondly, the direct funding from that sector. As finances influence the design; good funding helps in obtaining the latest technology and expertise for a good design.

Promotional strategy is also based on the funds available. Marketing is the part of promotional strategy. A good funding by private sector could help public sector to formulate effective marketing strategy such as on internet, television, international media, print media and direct marketing through pamphlets, flyers along with introductory letters to tour operators and reputed organizations around the world.
Promotional strategy and marketing is of vital importance for the system as marketing is to get maximum tourists and the concentration of tourists can make the system functional. Stakeholders highly depend on the sale of their services; a good marketing can be the only way to maintain them intact with the system.

Finally, users are of focal importance in the design as it is made for them. Therefore the design must be user centred. Users must get involved in the site that they feel attraction in the destination. The available content must be satisfactory keeping in view all needs of the users from different backgrounds. To sum up, involving the user throughout the designing process of the DIS will help to make a successful system.
Figure 4.2: The DIS inter-relationship Model
CHAPTER 4

4.7: DIS Architectural Model

For comprehensive illustration of the model, the second part examines its architectural framework. This details DIS from a technical perspective and provides a close insight into its structure.

4.7.1 System and Structure

DIS architectural design is based upon the literature review as illustrated by figure 4.2. The model consists of three levels: the Presentation Level, Application Level, and Infrastructure Level.

**Presentation Level**

This level represents the access or portal procedures whereby a user can access the interface designed specifically for the public, in multiple ways:

- Firstly, it can be accessed via a PC from different places, such as home, office or Internet café. The tourist can navigate through this web-based system and access tourism information, can purchase products online, and may get ‘Online Services’ such as accommodation and flight reservations.

- Secondly, a tourist can access the DIS from web-based information kiosks installed at the destination. These Information kiosks can be accessed via touch screen or speech input.

- It is the uniqueness of a DIS that it can be accessed any time from anywhere around the world, via cellular phones or wireless application protocol (WAP). This means that tourists can get the latest tourism information, such as weather forecasts and airline timetables etc.

- Lastly, the DIS is designed to support new/future technological devices.
Nielsen (2000) states that 'No site is an island'. The DIS is a complex information system containing and managing a huge amount of tourism information. The DIS opts for a strategy of 'linking' beyond its boundaries, with local and international Websites to satisfy requests for specific information that is not part of the DIS database, but is available on other Websites.

**Application Level**

The application level is a middleware layer to function as a broker and engine between the presentation and infrastructure layer, which could be accessed to produce 'end to end' processing of a client service. It is not a data-holding layer as most data holdings are based within the infrastructure level, which contains databases from both the DMO and the tourism service providers (Stakeholders).
**Infrastructure Level**

The infrastructure level of the system, located below the application level, it is an internal network, or an intranet of different information databases for internal purposes, such as updating information relating to customers, stakeholders and Small and Medium Enterprises, and also for internal marketing within the DMO. The internal databases are accessible to designated departmental staff only as the network is protected by a firewall, (shown in figure 4.3). In this level the extranet also incorporates all external stakeholders of tourism, such as hotels, attractions and travel agents, to gather information requested by the tourist. Here, only the authorised stakeholders can provide the information by accessing the intranet layer.

4.8: DIS Data Flow Model

Part three represents a data flow model of the DIS. A prompt information exchange system leads to online transactions and order confirmation.

Clients access the home page of the DIS through a URL for information which is of interest to them. The URL can be accessed through computers, cellular phones, kiosks or search engines. They browse the information of their interest and may request further information. The DIS retrieves this information from the databases and provides prompt feedback. Thus, if the requested information is about airlines, the system may retrieve airline database information from the Infrastructure Level.

When a customer intends to place an order, the system asks personal information about the client such as name, e-mail and physical address, credit card information and order. This information is transferred to a transaction layer and flows to the infrastructure layer where the requested information is retrieved from the data warehouse.

Meanwhile the system verifies the customer's credit card details and the transaction takes place with a secure online card clearance company, with whom the merchant account is established. All these processes take place within a short time, in a secure environment since the system is guarded by firewalls, which protect the system from intruders.
Figure: 4.4 DIS Data flow Model

Channel 1 | Channel 2 | Channel 3 | Channel 4
---|---|---|---
URL | Search engine | | |
| **Browse** | DIS | Main page | **Links**
| | | | |
| **Firewall** | | | |
| | **Data transaction** | | |
| **Retrieve information requested** | | | |
| Database | Database | Database | Database

Author 2003
4.9 Summary

New tourism information systems can increase the efficiency and effectiveness of a DMO by providing rapid access to relevant information from multiple sources. A wide range of technological and non-technological factors influence the effectiveness and success of these systems. Thus, there has been a dire need for the development of a model which acknowledges all these factors. It will help to identify the influential aspects of tourism decision-making, taking into account local Bahraini organisational issues. In this regard, a model has been developed: this model uses a practical approach to identify factors that influence the effectiveness and success of a DIS and establish a well-managed DMO. This model consists of three parts - a conceptual model, an architectural model, and a data flow model of the DIS. The next chapter looks at the methodology.
CHAPTER 5

RESEARCH METHODOLOGY

5.1 Preamble

Literature relating to Information System (IS) methodologies illustrates the wide variety of research perspectives and approaches. Most of these approaches are based on a social science approach (Kraemer 1991, Galliers 1992, Cornford and Smithson 1996, Remenyi and Williams 1996, Chatzoglou and Macaulay 1996, Silverman 1998), and literature has duly recognised IS as, basically, a social science. For example, Land and Hirschheim (1983) argue that an information system is a social system that uses information technology. Cornford and Smithson (1996) strongly support this view and state that Information Technology (IT) is itself the product of a social process at various levels. These levels range from the macro-level (national research and development policies promoting specific types of technology) through to the micro-level, for example a specific office choosing a particular type of word-processing software. Ultimately, it makes no sense to separate the social from the technological. Angell and Smithson (1991) state that IS are social systems, heavily influenced by the goals, values and beliefs of individuals and groups, and by the performance of technology.

This research project aims to develop and evaluate an advanced interactive online Destination Information System (DIS), and to introduce this DIS into a social system requiring a holistic approach. The study uses two different research paradigms – a quantitative method (Web-based questionnaires) and a qualitative approach (interviews, site-mapping analysis) in the pre-prototype phase to collect preliminary information for the proposed system. A Web-based questionnaire was used for evaluation purposes.

The project is divided into three main phases: pre-prototype phase, the prototype phase, and the post-prototype phase.

The prototype methodology for this project moved through eight main stages, as illustrated in Figure 5.1 that has been designed by the author. The first stages encompassing the definition of the research problem in Chapter 1, and the literature review in chapters 2, 3, 6, 7 and the model chapter 4 in the second stage, are pre-requisites
for the third stage employing a Web-based survey (Chapter 8). The fourth stage involved in-depth interviews with management in national tourism organisations, detailed in Chapter 9, and the fifth stage the site-mapping of similar system sites, such as visitingsingapore.com, tour2korea.com etc. in Chapter 10. The sixth stage saw the development of the prototype explained in chapter 11, with this stage divided into three sub-stages as follow: the prototype development, the technical test stage where the prototype is tested using an Alpha test and a Beta test and expert evaluation by experts in ‘usability’; and finally the modification of the prototype.

The seventh stage is the user-centred evaluation stage (Chapter 12) which looks at the modified version of the design prototype evaluated by ‘tourists’. Finally, the eighth stage concludes the study by summarising the major findings and recommendations for further research in the light of the original objectives, questions and hypotheses raised in Introduction.

5.2 Conceptual Framework

To achieve the objectives of this research, a conceptual framework was proposed and a model developed in chapter 4 (as derived from a comprehensive literature review). DISs are characterised by a large number of players who take part in its numerous processes. However, the proposed model only describes core players related to the study.

5.3 Research Design

Based on this ‘skeleton’, the author designed the research to get a more general portrait of the DIS in term of requirements and the development process. Research methodology is at the heart of any research, and this section elaborates the research methodologies by reviewing research strategies used in similar research.
Research Methodology Route

Research Problem – Chapter 1

Literature Review
Chapters 2, 3, 4, 6 and 7

Pre Prototype Phase

Web Questionnaire
Quantitative
International
Tourism Academic
Sample 170
Chapter 8

Interviews
Qualitative
Management Tourism
Organisation
Sample 7 interviews
Chapter 9

Site-mapping
Qualitative
Tourism Web sites
Sample 10
Chapter 10

Prototype Development Phase

Prototype Development - Chapter 11

Prototype Tests
Qualitative
Alpha, Beta by researcher
4 Usability Expert tests
Prototype usability
Chapter 11

Modified Version of Design - Chapter 11

Post Prototype phase

User evaluation - International students,
Quantitative + Qualitative
Undergraduate, Postgraduate and Research
Sample 76
Chapter 12

Conclusion and Discussion - Chapter 13

Figure 5.1: The Research Methodology

Author 2003
5.4- Research Related Strategies

Most of the previous studies relating to this research project employed survey or case study methodologies, and most are exploratory and descriptive in nature. Questionnaires, interviews and content analysis are widely used in such research, with a few recent studies using the prototype approach. According to Frew (2000) electronic distribution has been a consistently significant area of research over the past five years. It is evident from the literature that questionnaires, interviews and content analysis are the most widely used techniques in research in this domain. A recent study by Wöber and Gretzel (2000) which addresses the use and effectiveness of online decision support systems in marketing, surveys tourism managers in 30 European countries. The purpose of the study was to examine the factors that affect usage of an Internet-based Marketing Decision Support System. Another study on the use of the Internet for tourism marketing, by Law and Leung (2000), explores the degree to which 30 airlines around the world are using the Internet for online reservation services. Schonland and Williams (1996) were amongst the first to employ Web-based survey techniques to evaluate the use of the Internet for travel services. Another study by Tierney (2000) aims at developing and applying a low-cost, automated, Internet-based survey methodology to investigate the effectiveness of a promotional tourism Website. Cano and Prentice (1998) used questionnaires sent to 14 area tourist boards and 32 local authorities in Scotland to identify and specify sites developed by those organisations, and to assess their awareness of the WWW as an advertising medium. McCann (1999) presents a report on the findings of a 1991 and 1995 survey of the use of interactive computer services at State ‘welcome centers’ in the United States, with a mailing survey as the main tool of the study. Later research followed these techniques by using the survey method. In a recent longitudinal study, from 1994 to 2000, Main (2001) has investigated the use of the Internet by small and medium hotels in Wales, and employed questionnaires for this study.

‘Prototyping’ for tourism information systems is a recent development. One of the first prototypes of an intelligent computer-assisted travel counselling system was designed by Huschka and Mazanec (1990). As the Internet was not functional at that time, the system was consumer-oriented but not directly accessible by tourists. Loban (1997) proposed another well-known framework for computer-assisted travel counselling (CATC). It was designed to assist tourists, at an early decision stage, with tour packages.
A recent information system prototype, Additional Service Architecture (ASA), designed for Internet use has been developed by Withalm et al. (2000). This aims to provide a heterogeneous distributed Internet information system and booking system for Austria. An interesting study recommends developing prototypes for Web-based systems, (Hwang and Fesenmaier 2001) on Collaborative Filtering (CF) strategies for travel destination ‘bundling’. The system uses this new technology, a Web-based system that provides suggestions to an enquirer based on their and other recorded preferences.

Tourism, Web-Raising and Community Development, a study by Milne and Mason (2001) develops a Website prototype to empower communities to build an effective tourism marketing and development tool. Unfortunately, there is a scarcity of studies using site-mapping techniques for tourism purposes.

5.4.1 - Applied Research

<table>
<thead>
<tr>
<th>Research</th>
<th>Phase 1</th>
<th>Phase 2</th>
<th>Phase 3</th>
<th>Sample</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Web-based Survey</td>
<td>2000</td>
<td></td>
<td>2002</td>
<td>International Academics - Phase 1</td>
<td>170</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>International Students - Phase 3</td>
<td>76</td>
</tr>
<tr>
<td>Interviews</td>
<td>2000</td>
<td></td>
<td></td>
<td>Management Tourism Organisations</td>
<td>7</td>
</tr>
<tr>
<td>Site-mapping</td>
<td></td>
<td>2002</td>
<td></td>
<td>Tourism Sites</td>
<td>10</td>
</tr>
<tr>
<td>Expert Test</td>
<td></td>
<td></td>
<td>2002</td>
<td>Usability Experts</td>
<td>4</td>
</tr>
</tbody>
</table>

Table 5.1: Summary of Research Strategies

Here four approaches were used, namely: Web-based questionnaires, interviews, site-mapping analysis and expert evaluation see table 5.1 and 5.2. The first Web-based questionnaires — marked by red lines — provided insight into all later techniques. The framework of the study is based on fact-finding and identifying requirements for the development of a DIS and requires a survey method to study the needs and requirements.
for developing such a major system. Social research methods offer methods for collecting large volumes of data from a large population over a wide geographical area in a relatively short period of time.

A combination of three survey techniques (questionnaires, interviews and sitemapping analysis) was utilised in the first and second phases to balance qualitative and quantitative research. They reflect the aims, objectives, information required, time and financial limitations of the study, and allow for confidence in the research findings (Bryman 1994).

Table 5.2 Data gathering methods and targeted samples

<table>
<thead>
<tr>
<th>Data gathering method</th>
<th>Description of target sample approached</th>
<th>Number of Respondent needed</th>
<th>Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>On-line Questionnaire Using window-based software program (Infopoll), for designing questionnaires used to gather data from academics</td>
<td>International academic in the field of tourism studies</td>
<td>250</td>
<td>170</td>
</tr>
<tr>
<td>Interview Face to face &amp; and telephone interview</td>
<td>Senior personnel in national tourism organisations in the UK</td>
<td>20</td>
<td>7</td>
</tr>
<tr>
<td>Site mapping Using mapping software called Powermapper</td>
<td>Ten different sites represent different destinations mapped by site mapping tool</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Usability experts expert evaluate the site and pinpoint the shortcoming of the design</td>
<td>Expert in the field of human–computer interaction in testing the usability of the DIS system</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Online Questionnaire A questionnaire attached to the site proposed tour2bahrain.com evaluated by international students</td>
<td>International student from Loughborough university at undergraduate, postgraduate, and research student level</td>
<td>76</td>
<td>76</td>
</tr>
</tbody>
</table>

Author 2004
The first stage aimed to collect preliminary information and identify current needs and requirements for developing a DIS. Based on these objectives, and to develop an appropriate methodology to carry out this investigation, a survey was chosen as the prime approach for this phase.

Surveys are considered an appropriate method for the analysis of information systems (Kraemer 1991); they provide the basic foundation for further analysis and for model building (Cornford and Smithson 1996).

Surveys are often used at the ‘requirement’ stage of projects, and in-depth surveys, for example, are used to obtain information in the development process and about particular requirements (Chatzoglou and Macaulay 1996).

A focused definition of survey methods is offered by Tull (1993):

“A survey research is the systematic gathering of information from respondents for the purpose of understanding and predicting some aspect of the behaviour of the population of interest” (Tull 1993, p. 164).

Similarly, Malhotra (1999) writes:

“The survey method of obtaining information is based on the questioning of respondents. Respondents are asked a variety of questions regarding their behaviour, intentions, attitudes, awareness, motivations, and demographic and lifestyle characteristics’. These questions may be asked verbally, in writing, or via computer, and the responses may be obtained in any of these forms.” (Malhotra 1999, p. 178).

Surveys are one of the most common data collection methods used in the field of IS (Cornford and Smithson 1996). Galliers (1992) emphasises that a descriptive, interpretive survey, along with action research, is the most popular method in IS.

Advocates consider the survey method has several advantages:

- It is cheaper to administer;
- It can be administered to a large number of individuals at the same time, so data collection is less time consuming;
• It allows investigators to gather information on target populations without undertaking a complete enumeration;
• Autonomy;
• Provides a wide geographical contact;
• It reduces bias errors that may result from the personal characteristics of the interviewer (Oppenheim 1992, Malhotra 1999).

However, questionnaires do have a number of problems and constraints in their usage. Some of the weaknesses and disadvantages of the survey method are:

• Questionnaires generally give low response rate, and consequent bias;
• Questionnaires lack the opportunity to correct misunderstandings;
• Questionnaires lack the opportunity to probe, or to offer explanations or help;
• Questionnaires lack control over the process of answering the questions;
• Questionnaires lack check on completion (Oppenheim 1992);
• Questionnaires often unreliable in understanding the problem under investigation;
• Questionnaires tends to collect a mass of facts and statistics and provide little of theoretical value;
• Questionnaires tend to look at particular aspect of people’s beliefs and actions without looking at the context in which they occur; they rely on highly structured questionnaires, which are necessarily limited (Malhotra 1999).

Galliers and others (1992) opine that little insight can be obtained about the causes and processes behind the phenomena being studied and because there is a possible bias in respondents (self-selecting nature of questionnaire respondents), the researcher, and the point in time when the research is undertaken.

Nevertheless, advocates of questionnaires such as (Sekaran 1992, and Tierney 2000) argue that a well-designed and carefully administered survey technique will eliminate these drawbacks. Despite the disadvantages and a range of alternative data collection techniques, questionnaires and interviews are still the two most popular techniques in the IS field.

A combination of questionnaires, interviews and sitemapping analysis is the most appropriate technique for this study, as fact-finding and requirement analysis requires a combination of qualitative and quantitative methods.
The author decided to use a questionnaire in the first phase to set a quantitative basis and provide the research project with basic information, whereas the interviews in the second phase provide in-depth qualitative information. The sitemapping content analysis also furnishes information related to the structure of similar sites, which aids in the design of the prototype in the early stages. This combination reduces some of the drawbacks and shortcomings of using only one technique.

5.4.2 The Web-based Questionnaire

A questionnaire is defined as a structured technique for data collection consisting of a series of questions, written or verbal, to which respondents reply (Malhotra 1999).

The purpose of a questionnaire is to measure certain characteristics or the opinions of respondents. Generalisations can be made from the sample of people interviewed, and applied to the whole population if the sample is representative (May 1993).

The purpose of the questionnaire in this study was to elicit opinions from experts in the tourism field with the aim of:

- Identifying and analysing the requirements for the establishment of a national DIS.
- Assessing the worth of a Destination Information System at a national level.
- Providing a broad understanding of the critical areas for a DIS, including organisational structure, financial matters, information content and sources.

Online or Web-based data collection surveys are growing in popularity. These surveys are placed on a Web page, and respondents usually access the online survey by a link to an e-mail message, as in the first questionnaire in this research project, or on a Web page, as in the second questionnaire for evaluating the prototype (Tierney 2000). Online surveys have the advantage of acquiring large samples, at a very low cost and in a short time due to the automation of data gathering, and the entry and compilation of data into descriptive statistics. The disadvantage is the low response rate. Web-based surveys are characterised by 'incentives', which attract respondents (Tierney 2000).

The Internet is rapidly becoming a primary medium for all kinds of survey research. An Internet survey is used as an instrument in this research, as it offers faster results, lower cost, and convenience to respondents and faster follow-up. On the other hand, an Internet
survey has a disadvantage – not everyone has access (CustomerSat 2000). However, as more areas of the world gain Internet access, this problem will be resolved.

An e-mail survey is a relatively new technique for deploying surveys. Most e-mail surveys use pure ASCII to present the survey questionnaire. The respondent edits the survey by typing characters into the message at the appropriate places to indicate either their choices or open-ended responses, and then uses the edited message as the reply (CustomerSat 2000).

However, some e-mail software limits the length of the mail for both sender and recipient. To send a long questionnaire via e-mail, the sender may need to use multiple messages per questionnaire, which can be time consuming. Alternatively, the sender can attach the questionnaire to the e-mail. This allows an e-mail survey of virtually unlimited length though recipients are often reluctant to open attachments because of the possibility of a virus (CustomerSat 2000, Comley 2000).

A Web survey, another medium for presenting a questionnaire, is composed in HTML, and posted to a Website. A Web survey offers several advantages over e-mail surveys:

- Radio buttons, checkboxes and data entry fields are possible in HTML.
- Skipping instructions can be implicit rather than explicit, i.e. questions can be presented in a specific order based on the respondent’s answers.
- Responses may be validated as they are entered, e.g. ages of less than 10 or greater than 100 years can be rejected.
- Additional survey elements, such as graphics, images, animation and links to other Web pages can be integrated into or around the survey (CustomerSat 2000).

The combination of e-mail and a Web survey enables solutions not possible with either medium on its own. Researchers can send an e-mail message to announce the survey and give the URL of the Web page. Respondents can either copy and paste the URL from the e-mail message into their Web browser for the survey, or, if their software is Web-capable, can simply click on the URL in the e-mail message to launch their browser and be taken to the survey. The researcher can also control the type of respondents who have access to a survey (CustomerSat 2000).

ASCII text is the common denominator for all e-mail systems, and these surveys can be received and responded to by anyone who can receive and send an e-mail message.
5.4.3 Pilot Studies

A pilot study is undertaken to ascertain the clarity and validity, and to sharpen or improve the wording of the questionnaire, alter the question order and assess the length of time taken to provide comments. This is further discussed in Section 5.5.1 below.

5.5 The Initial Web-Based Questionnaire

For this project, the questionnaire was deployed using a combination of e-mail and the Web. This method was selected, as the sample population has a high educational level and likely to be interested in the subject. Secondly, access to the Internet was likely to be freely available. In such cases, a combined e-mail and Web survey may attract the respondent and produce a better response rate, as the questionnaire is targeted at international tourism academics and a Web-based survey is a convenient instrument.

The Web-based questionnaire was developed after the analysis of relevant literature, consulting Web-based questionnaires employed in other similar studies, and after frequent discussions with the author’s supervisor.

5.5.1 Pilot Studies

In the first pilot stage, a draft of the second Web-based questionnaire was handed over to a number of Ph.D. students in the Information Science Department at Loughborough University and general comments were invited. Suggestions and recommendations about the general structure of the questionnaire were taken into account for the second piloting stage.

The content of the questionnaire was then piloted inside and outside the UK. Questionnaires were sent to three international academic experts in the tourism and social science field, namely:

- Dr Dimitrios Buhalis, University of Westminster, UK
- Dr Peter O’Connor, Institut de Management Hotelier Intern, France
- Ms Hilary Main, Swansea Institute, UK
5.5.2 - Questionnaire Procedures

The aim of the questionnaire is to obtain data from experts on the requirements for developing a DIS, and to establish an understanding of requirements, before pursuing further input.

The questionnaire features both quantitative and qualitative variables in a format where a quantitative answer is, in certain questions, followed by a qualitative answer, or explanation, to elicit 'richer' data. This method allows respondents to give impressions and opinions, and qualitative data is used to further clarify several areas of the research, as for example in Question 1.2 and 2.3. (See Appendix 2).

Initially the questionnaire was drafted in plain text, and a final version designed using Infopoll Designer (www.Infopoll.com) (See Figure 5.2). This software was chosen from a wide range of survey software, and was the only survey software available at the time to offer a complete solution for survey needs.

Infopoll Designer is a fast, flexible and easy to use Windows-based software program, for designing questionnaires through to delivering a complete survey, which allows a researcher to create a suitable questionnaire and can also be used to deliver a complete survey. Forms are used to collect data, to obtain feedback and to request information. It has a user-friendly interface, 'point and click' ease of use, 'copy and paste' and 'drag and drop' functions, with an outline view to help organise the survey (Infopoll 2000).
The questionnaire was then transformed into a Web-based survey. Other factors used in the design, included: the type of language used; the length of the questionnaire; the kind of questions asked; the choice of answers provided and the question order.

The questionnaire avoided duplicate submissions to online forms as responses were checked and validated as they were entered. However it was difficult to avoid the duplication of answers in those forms. Thus, the researcher during data analysis discovered repeated answers which caused some of statistical problems solved by the researcher later on. In addition another necessary deletions and changes were made such as deleting questions related to technical issues such as the size of the system and the type of software, firewall, and networks, in order to avoid confusion for both the author and the participants. Then, the questionnaire was published online on 3rd May 2000 (see Figure 5.3). A copy of the questionnaire can be found in Appendix 2.

Invitations to complete the questionnaire were individually e-mailed to 250 targeted individuals, their names and e-mail addresses were obtained from the staff lists of tourism departments located on Websites of universities around the world, and from tourism associations in addition to subscribers to the tourism mail-base.
The invitation was accompanied with an explanation of the purpose of the study and, for consistency, a definition of terms, and a hyperlink integrated into the invitation (see Appendix 1) to allow respondents to access samples of other international DIS.

Figure 5.3: Web-based Questionnaire

The Web-based questionnaire remained online until 25th August 2000. To monitor survey progress, from time to time, a live report of the survey results was created, to view responses, record by record, from a Web browser, anywhere, at any time (See Appendix 3).

5.5.3 - First Questionnaire Sample

Interviews with national and international subject matter experts are considered a strong option to fill knowledge gaps, which will likely materialize at a later stage of research. International academics in the field of tourism studies are an appropriate sample to identify the requirements and needs of a DIS from a theoretical point of view. In addition, they are potential international tourists whom the DIS aims to serve and they are familiar with the tourism industry, while the general public, at the time the research took place, are not too familiar with Destination Information Systems. They also add an international dimension to the study, aimed at attracting international tourists, and such an audience...
gives insights into international requirements of tourists. Names and e-mail addresses were collected from the staff lists of tourism departments, found on Websites of universities around the world, and from tourism associations. A further list was obtained from The Tourism Society (UK) and from the European Association for Tourism and Leisure Education Web pages.

An invitation was also sent to subscribers of the tourism mail-base (now on jiscmail) e-mail discussion group. This discussion group is aimed at academics and researchers, primarily located in the UK, and working in all areas of tourism. Discussions on issues concerned with the teaching of tourism at undergraduate and/or postgraduate level and research into tourism and its related areas are found on this list (Theobald and Dunsmore 2000). A message was sent to all targets with a note of guidance, as in Appendix 2, and the survey Web address was added to the e-mail message.

The survey consisted of 35 questions covering five areas: general issues related to information technology; organisational issues; technical issues; information content; and, sources and DIS testing. E-mails were sent out in the week of 4th May 2000. One of the advantages of using e-mail is that all respondents are identifiable, and seventy reminder e-mails were sent to late participants, one month after the first one. Fifty e-mail addresses proved to be invalid, but of 250 e-mails successfully sent, 170 responses were received and found valid for analysis. Some reasons for specific e-mail failure include one or more misspellings, incomplete email addresses, respondents changing service provider or addresses, and respondents giving URLs but not e-mail addresses. The response rate was 70% which is considered a high response rate.

5.6 The Interviews

Interviews are defined as:

"An unstructured, direct, personal interview in which a single respondent is probed by a highly skilled interviewer to uncover underlying motivations, beliefs, attitudes, and feelings on the topic" (Malhotra 1999, p. 157).

The most serious disadvantage of in-depth interviews is that they are expensive, both in terms of time and money. Any lack of structure makes results subject to interviewer
influence, and the quality and completeness of results depends heavily on interview skills, while data obtained are often difficult to analyse and interpret (Malhotra 1999).

The aim of the interviews was to obtain opinions on developing a DIS, from a 'management' perspective, looking at problems which may hinder the development of a DIS and how these could be solved, and to further explore some of the issues raised in the questionnaire to balance the more rigid fact-finding features of this technique with a more flexible qualitative approach. The choice of method was relatively straightforward; a combination of face-to-face and telephonic interviews was used.

5.6.1 - The Interview Sample

Interviewees are a range of senior personnel in national tourism organisations in the UK, including national and regional tourism boards, members of the Tourism Technology Working Group (TTWG) and government tourism policy-makers. Ten interviews were conducted with senior officials based mainly in the UK. The country has wide experience in the field of tourism in general, in using Internet technology and DIS in particular. The wide spectrum of tourism products available in the UK, the heavy international tourist traffic to the country and limited funds which hindered interviews with international top-management in the tourism industry constituted the main features of the survey.

Not only did such interviews serve the purpose of surveying essential requirements for destination information systems, but they also complemented the first phase of the research, by allowing the probing of issues raised in questionnaire responses, and aided in clarifying specific implementation problems and future plans for a DIS.

Decision-makers in national tourism organisations can exercise considerable influence in accelerating the development of a national DIS. For example:

- Senior people and policy-makers in national tourism organisations are important elements of the social, economic and political structure of the national tourism system and, as such, are more likely to influence and support the use of DIS as a national information system.
- They are directly responsible for initiating, formulating and executing the DIS at national level.
• Their experience in identifying national tourism needs, and possible weaknesses, on which the formulation and implementation of the DIS is largely dependent, will have far-reaching effects on the development of the DIS.

Twenty of decision-makers from key national tourism organisations were selected as the population for this survey, based on consultations with the research supervisor, consisted of staff from the following organisations: 

Department of Culture; Media and Sport; British Tourist Authority (Four interviews); Wales Tourist Board; Yorkshire Tourist Board; Leeds Tourist Board; Cornwall Tourist Board; Scottish Tourism Board.

When the researcher started conducting interviews in 2000 there were scattered boards, providing online services to England, particularly EnglandNet which now provides a national distribution system for England. The researcher, after discussion with the supervisor, decided to send invitation letters to 20 governmental organisations and regional and national tourism boards. 10 replies were received. The researcher, after discussion with the supervisor, decided to send interview invitation letters accompanied with interview form, interview aims and interview questions (See Appendixes 4&5). Interviews were conducted with the following:

A: the government, (Department of Culture, Media and Sport; British Tourist Authority),

B: Regional tourism boards RTB’s (Yorkshire Tourist Board; Leeds Tourist Board; Cornwall Tourist Board),

C: National tourism boards (Scottish Tourism Board, Wales Tourist Board).

Scottish Tourism Board, Yorkshire Tourist Board and Cornwall Tourist Board were excluded because they didn’t reply.

Though appointments were confirmed by telephone with the remaining organisations, the researcher was able to conduct one interview in group B (Leeds Tourist Board). Whereas in group A, only two government organisation replied (Department of Culture, Media and

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2 Some of these tourism boards mentioned above are members of the Tourism Technology Working Group (TTWG) established in December 1997 by the English Tourism Council.
interviews in this group one with the Department of Culture, Media and Sport and four with British Tourist Authority. In group C the researcher was able to conduct one interview. In terms of decision-making the interviewees were Chief Executive Officers, Vice Presidents of Sales and Marketing, e-commerce directors and marketing directors.

Figure 5.4: Map showing UK Tourism Boards

The contacts made before the interview were helpful. The method used was either direct, where the researcher took the initiative of speaking to senior officials, or by pre-arranged appointment. This aimed at building trust between the researcher and respondents; to ensure participation and commitment, the researcher was introduced and the objective of the study explained to the respondents.
All participants approached showed willingness to take part in this study and the interviewees extended time and co-operation, and provided the necessary information on their activities and future plans by discussing issues frankly and openly. They helped the researcher reach the 'heart of the matter' and acquired a better understanding of the situation in national tourism organisations. The interviewees showed great interest in the study itself, and asked for more details on the study and a copy of the final results.

An invitation letter accompanied by an interview form was sent to the senior officers (Appendix 4). Interview fieldwork took place from 23\textsuperscript{rd} June to 13\textsuperscript{th} July 2000. A prepared questionnaire by the researcher was used (see Appendix 5). Interviews lasted between 45 to 60 minutes and all interviews were taped and notes were also taken. An interview outline was followed in all the interviews and the meaning of the answers clarified, as suggested by Kvale (1996). In two cases, the interview was conducted by telephone due to the interviewee's workload. Procedures adopted to ensure a high response rate were:

- Ensuring that the questionnaire and interview questions were clear, short and easy to understand. A separate page including the research outline was attached to the covering letter, sent to the interviewee;
- Creating a timetable for the interviews (Appendix 6);
- Clarifying the main objectives and purpose of the interview;
- Attaching an interview form to the covering letter to give the interviewee the opportunity to write down the date and time most convenient to the interviewee;
- Sending individual letters or e-mails to respondents for the interviews. The cover letter was printed on Loughborough University notepaper, and was duly signed;
- Sending stamped self-addressed envelopes to the interviewees so that they could return the interview form;
- Sending a reminder letters to the interviewee (see Appendix 7)

Afterwards, 'Thank You' letters were sent to respondents (see Appendix 8).

5.7 Site-Mapping Analysis

Websites should be visualised to facilitate planning, analysis and navigation.
"Visualisation is a good design practice, which in turn is good graphic design practice. Visualisation supports and facilitates co-operative group authoring - co-ordination of the writers, designers, and programmers - needed to create the complex hybrid of publication and computer program that is a Website.” (Kahn and Lenk 2001, p. 9).

Visualising the content of a complex and large site is time-consuming. Site-mapping tools, sometimes called ‘site walkers’ provide a rich vein of information as they ‘walk’ through all documents linked to the site. Kahn and Lenk (2001) define a site walker as, “[A] program which gathers information from a Website by systematically reading the content of pages as they are discovered”. Such an investigation can also be done, with a ‘Web-walker’ program, also called a crawler or spider, which starts at a home page and crawls the entire Website. These tools are useful, and allow a researcher a bird’s eye view of a targeted site.

Web-walker programs, such as Powermapper and Inxight, access the site via the http protocol, request the size and date of the file from the file system, read the HTML source data for the file and extract information such as page title and link destinations. As it walks through the page, it must keep track of the boundaries of a Website, detect external link destinations and avoid page repetition (Kahn and Lenk 2001).

These programs face many technical problems; however unresponsive Web servers, deleted or moved links, pages with frame sets, links expressed in Java script, flash or other non-HTML forms, will work in some browser programs but cannot always be interpreted by the Web walker. Pages may contain forms which require user-input to access databases, and create a different version of the Website by personalising it. Some walker programs include interactive controls, and can control and limit the walk to a certain number of levels and, as required, simplify the map (Kahn and Lenk 2001).

Although Website development is improving fast, creating intuitive and useful Websites is still in its infancy. There are a number of visual strategies for site mapping i.e. hierarchical lists organised in horizontal and/or vertical relationships, progressive disclosures, an unfolding presentation of hierarchy, circles, circular arrangements and metaphor diagrams, that employ a metaphorical relationship to the information being presented (Mappa Mundi 2002).
Site-mapping's main advantage is that it provides users with a bird's eye view of a site in a single glance, by dedicating an entire page to visualisation of the information architecture. Dynamic site mapping is basically an alternative way of navigating through the 'information space', and supporting the discovery of the Website, using a set of mapping techniques (Kahn and Lenk 2001).

Typically, site-mapping tools are used to manage and maintain a site, keep it error-free from broken links, missing images, stale content and other problems related to navigation. In this study, the aim is to uncover the site content of tourism sites to consolidate ideas related to design of the site and the information structure to provide a foundation for the prototype design. Site-mapping software includes: Powermapper; the Brain's SiteBrain; Inxight Software's Tree Studio; IBM's Java-based Mappuccino and Dynamic Diagram's eponymous product.

Powermapper (professional edition), an automated site-mapping tool, is the software used in this research to map targeted sites. The Powermapper has powerful features such as creating maps of any site in the world, and rapid navigation; users can access any page by a single click without downloading the whole site. Customisation allows modification of maps to match the user's needs; validation finds pages with invalid HTML or broken links; and visualisation checks consistency of site structure and graphic design (Electrum 2002). Powermapper software was found to be an ideal tool for visualising the entire content of sites targeted.

Ten sites — Visitsingapore, TLScover, Thailand, Tour2 Korea, South Africa, Gulliver Irelands, Yorkshire, Kenya, New Zealand and Scotland — were mapped by Powermapper, and their general structure, information content and interactive services such as online reservations were studied. Being latest technology, there is a dearth of studies relating to site mapping. Studies by Kahn and Lenk (2001) Dodge and Kitchin (2001) are 'pioneering' research into the use of site-mapping tools to survey Websites. However, to this researcher's knowledge this research project is the first to use site mapping for studying tourism Website structures to develop a destination information system.

1 The researcher found this software while looking for the one that could crawl inside the site and uncover its content in order to study the organisation and the size of the site content. The mapping software was mentioned in a book called "Mapping the Cyber space" by Kahn and Lenk (2001).
5.8 The Prototype Methodology

"Prototyping is a methodology; it is a collection of methods, it is done in a systematic way and that way can be described." (Lantz 1987a, p. 2).

Prototyping is based on building a model of the system to be developed and then using the model for further design and development of the online system. Online systems are difficult for systems designers to visualize if they are only on paper, and using some kind of prototyping, at least for the flow of information to and from screens, is a natural solution to this problem for many designers. Lantz (1987) provided an information system oriented definition for the prototype:

"Software prototyping is an information system development methodology based on building and using a model of a system for designing, implementing, testing, and installing the system." (Lantz 1987a, p. 1).

Another definition is given by Delta:

"A prototype is a simplified model of a system or parts of a system. It is possible to simplify function, performance, appearance, or quality as long as the basic behaviour remains the same. The purpose of prototyping is to eliminate the possibilities of uncertainty and misunderstanding, to achieve unity, or to verify a solution at an early stage of design. A prototype shows what we mean to do and is a first best guess of what the system might be. A prototype with a limited scope can be designed with less formal methods, and the costs can therefore be kept at a minimum" (Delta 2002).
Design and evaluation of prototypes is a cycle with unclear requirements and ends with a verified user interface (Delta 2002). Requirements for a new system are usually unclear but a ‘prototype’ makes it clearer for both designers and users. It is not advisable to specify in advance the requirements of a computer system as this is quite difficult and may give rise to undesirable results. Using a prototype is a sound method to decrease the complexity of, and uncertainty surrounding, a problem, as well as illustrating one attempt to meet its requirements. It is difficult to introduce a new system when tasks have not been fully established and, in such cases, it may be difficult to undertake a task analysis, which could lead to negative results (Lantz 1987b).

Prototypes are mainly used to imitate the actual system and to reduce the cost of complex projects. But prototypes can be used for several other purposes such as testing the usability of a system, for use during systems design, for testing the functionality of the system, and, later, for marketing and training. It is recommended by Lantz (1987b) that any prototype include the three major parts of the user interface: system services, graphical design and users' information.

Prototyping design is based on two approaches: revolutionary and evolutionary prototyping — the dividing line between the two depending on how much of the prototype is reused in the product. Revolutionary prototyping only reuses small sections,
or none of the prototype, and is also known as 'low tech' or 'low fidelity' prototyping. Evolutionary prototyping, 'hi tech' or 'high fidelity' prototypes, reuse large parts (Delta 2002).

**Low-fidelity Prototypes**

- "A low-fidelity prototype is a 'quick and dirty' mock-up, that is cheap, easily changed and which can be discarded without complaint.
- During usability tests, a low-fidelity prototype often uses a person as the computer and a pointer as the mouse.
- The goal of such a prototype is to create something as quickly as possible to elicit user feedback.
- Very often, paper and pencil are used to construct this type of prototype, though presentation software (e.g. PowerPoint) may be used" (Delta 2002).

**High-fidelity Prototypes**

- "A high-fidelity prototype (executable) is close to the actual product in look and feel.
- The prototype often requires use of a programming language.
- The user interacts with a computer.
- The executable prototypes allow for more realistic test situations.
- These prototypes make it possible to navigate and simulate feedback and functions in a dynamic fashion" (Delta 2002).

**Advantages of Prototyping Methodology**

According to Lantz (1987a), prototyping offers several advantages for developing information systems as follows:

- Reduces development cost.
- Decreases communication problems especially with users, as users are actively involved and participate in the design and development of the system.
- Reduces operation costs; systems use fewer computer resources.
- Slashes time required, as several phases are done concurrently. A project using prototyping methodology takes less time than one using life cycle methodology.
- Produces the right systems the first time.
• Cuts manpower needed, and
• Makes the user feel involved. If the system does not meet users' requirements they can request modifications (Lantz 1987a. pp. 12-14).

Disadvantages of Prototyping Methodology

The prototype methodology requires cooperation between the user and information systems (Lantz 1987). (For details see section 3.15 in chapter 3).

5.8.1 - Developing the BDIS Prototype

Analyzing System and User Requirements

System requirements play an important role in any development project and implementation must be driven by these requirements. The requirements for the Bahrain Destination Information System (BDIS) prototype derived from an initial online questionnaire, interviews with prospective users and top-management in tourism organisations, and the sitemapping of similar Web-based systems. Reservation and payment aspects are not developed in the system due to the high cost of e-commerce software.

Developing Conceptual Design

Following the identification of the system and user requirements, the design of the prototype is initiated. A high-level structural concept of the design is the first practical step towards the structure of the system, identified by users in the previous stage. The conceptual design aids the researcher in visualising the system, making changes or improvements, eliminating mistakes and answering questions, such as:

• What services must the BDIS offer?
• How should these services be structured?
• How do users access the BDIS?
• What are the main sections of the BDIS?

(Design concepts and entities focused by these questions, are discussed in Chapter 11).
Developing the Initial Prototype

The initial draft was compiled using Microsoft Word and then converted to HTML. (Details are given in Chapter 11).

Refining System and User Requirements

The prototype was refined, based on the requirements gathered from the online questionnaire, the interviews and from sitemapping.

Testing and Evaluation Prototype

The first version was alpha tested in March 2002 to ensure it was free of 'bugs' and was working online. After further development, a version of the prototype was beta tested online in April 2002, with the goal of finding 'bugs' overlooked in the previous test. Testing was carried out by ten research students from the Department of Information Science and other departments such as those of Computer Science and Human Science Departments at Loughborough University.

Expert tests to verify the functioning and the usability of the interface were then undertaken (Delta 2002). Usability tests are often the focus of criticism for being costly and requiring expensive investment in usability test laboratories. Expert evaluation is an alternative, or complementary, technique for improving the usability of the user interface (Delta 2002). At this stage, the prototype may still be too general to meet all usability requirements but this testing helps the researcher pinpoint shortcomings in the design. It is important that the prototype be fully evaluated for completeness and the fulfilment of goals, to be able to suggest improvements and to improve the planning and usage of the next prototype (Delta 2002).

Experts in the field of human-computer interaction were invited to participate in testing the usability of the system and provide their opinion of the prototype. Invitations were sent to 5 usability experts, and four replied by e-mail, one expert refused to participate because he wanted to charge for the evaluation. The evaluation of the prototype accorded with general guidelines, adapted from Nielsen (2002b), for the design of a good user interface (see Appendix 9). To eliminate obvious shortcomings, three colleagues from the
Department of Information Science at Loughborough University with experience in interface construction provided the researcher with their subjective comments. Minor changes were made. (For more details on the expert test, see Chapter 11).

5.9 Second Web-Based Questionnaire

After changes were made, 76 international students potential tourists evaluated the prototype via an online questionnaire. Respondents were asked to browse through the site for at least 20 minutes before completing the online questionnaire — a £10 book token was sent to participants on completion of the questionnaire.

Figure 5.6: The Web-based Questionnaire on the Main Page

5.9.1 - The Second Pilot Test

The questionnaire included questions on work experience, computer experience and the user's attitudes towards the prototype and was tested by research students at the Department of Information Science and other invitations for piloting to students of Computer Science and Social Science were sent to ensure the questionnaire was clear/understandable. An invitation letter was also sent to tourism experts to ensure the clarity of both the questionnaire and the prototype (see Appendix 9).

4 De Vaus (1996) considers the pilot test fundamental to detect fallacies, hidden problems and to ensure the suitability of questions.
Following their suggestions, certain questions were excluded, and changes to some wording and the layout were made.

5.9.2 - The Second Questionnaire Sample

5.9.1 Sample Determination

The researcher defined the sample population universe as: “Foreign travellers who travel for leisure and have reason and interest to visit Bahrain destination for tourism purposes only”. Seventy-six students (potential tourists) were approached and interviewed and thus integrated into the study sample. The hypotheses were tested based on the data collected by Web-based questionnaires answered by a sample of potential tourists (students) from different nationalities.

5.9.3 The Ideal Sample Population and Venue

In an ideal situation, in the case of this research project, the target population should have been defined as all visitors (international and domestic) who enter the area under study, Bahrain, for the purposes of leisure.

The choice of sampling selection method in tourism studies depends on the survey venue, the location where the survey will be carried out (Cooper et al. 1998). In the case of this research, the ideal venue for a survey was at entry/exit points (namely airports, border check points, ports, and railway stations) or accommodation (hotels, Bed and Breakfasts, and so on). However, due to time, monetary resources and security reasons, the researcher couldn’t carry out such a survey in the venues mentioned.

5.9.4 Target Sample

The target sample constituted 76 international students from Loughborough University at 16 undergraduate, 20 postgraduate, 25 research-student and 15 participants from different short courses and diploma levels. This sample was chosen because it represents some of the characteristics of the ideal population, in that the respondents represent different
countries, cultures and environments in addition to their desire to travel for reason\textsuperscript{5} of tourism (See Appendix 10). The chosen sample to some degree agrees in some aspects with the ideal target population (international tourist). Eurostat 2000 defined international tourist as:

"An international tourist is an international visitor who stays at least one night in collective or private accommodation in the country visited" (Eurostat 2000, p. 128).

Nevertheless, the chosen sample is international students according to the definitions above this sample share some of the characteristics of international tourist like staying outside their usual environment. In addition the researcher stressed that the participants should have international travelling experience (see Appendix 10). However, the target population from which the sample is drawn does not meet all the demands of the ideal population (not perfectly ideal sample) but it had some of the characteristics of the ideal one.

5.9.5 Reasons for Sample Selection

The availability of resources such as money, time and personnel plays a fundamental role in sample selection. International students were chosen for this research project for the following reasons:

- International students represent the ideal population (international tourists) in terms of their diverse geographical backgrounds. They represent different countries, cultures and languages. Loughborough University currently has over 2000 students from outside the UK.
- The researcher was encouraged to select this sample by the exorbitant cost of conducting a survey at entry and exit points by trained surveyors. The researcher had a very limited budget, and she chose this sample because it is very costly to conduct a survey with travellers in entry and exit points. WTO (2000) provide a three scales for data collection; method one of these scales related to the cost of survey:

\textsuperscript{5} The desire to travel for reasons of tourism is one of the conditions for participating in this prototype evaluation and was mentioned in the advertisement posted on the electronic board of the university. See Appendix 10.
"The overall cost of undertaking a survey or a data gathering exercise will largely depend on the volume of data that is to be collected. This will be determined by the sample size and the level of detail required from each individual interview or enquiry. However, the unit cost (that is the cost per interview /enquiry) will be based on the level of manpower required to undertake the data collection, the traveling involved, and organisation costs. In some cases, where limited funds are available, certain surveys will not be possible because of their high execution costs" (WTO 2000, p. 28).

- The researcher also chose a university as research venue, and international students as the research sample, due to tight security and consequent strict regulations and procedures at the ideal venue, the international airport in Bahrain.
- The willingness and availability of respondents to partake in the survey was also a factor affecting sample selection. Students value research, and understand the importance of participating in a research project.
- International students are also potential international tourists, and they are Internet users with sound Internet knowledge.
- International students can be conveniently contacted if more information is required.
- The limited time of three months provided for conducting the survey was one of the factors that urged the researcher to carry out the survey at the University campus.

An online advertisement for the research study was posted on the Loughborough University electronic notice board in May 2002 (Appendix 10). 76 students responded after receiving the responses the questionnaire went online in May 2002 and sent to the 76 participants who responded to the online advertisement posted on the university electronic notice board. In addition, an invitation was sent to the university's International Student Association but they refused to give any information about their members.

5.10 Prototype Evaluation.

In this study, the researcher discovered from the pilot study that testing the prototype components e.g. navigation, content, access or design individually, is a lengthy and boring process for the participants - they are reluctant to invest time and effort in evaluating
individual components, even though the researcher gave them incentives. Therefore, to avoid a situation of disinterested users the researcher, after discussion with her supervisor, decided to evaluate the prototype as a whole, rather than in individual components.

The limited budget of this project is another reason that encouraged the researcher to evaluate the prototype as a whole.

Time is another factor that affected the researcher's choice of prototype evaluation method. Evaluating individual components of a prototype is time consuming, and in this case, the evaluating process required more time than had been planned for the project. Securing the involvement of users in evaluating the prototype separately is an exhausting process, especially in the face of a large-scale prototype like tour2Bahrain.com. The researcher found the inexpensive technique of evaluating the usability of the prototype as a whole very useful for this project. However, this technique is not without limitations. The technique revealed usability problems that affected user acceptance of the prototype, as mentioned later in Chapter 13. In general, this type of evaluation can provide organizations and researchers with an easy-to-use method to evaluate the usability of their Web-based systems or prototypes.

5.10.1 Criteria for evaluation of the prototype

In view of the fact that the prototype is a web site the researcher used four criteria for evaluating web site to evaluate the prototype: currency, accuracy, ease of use, credibility, coverage, design, graphic and multimedia, aesthetic, consistency, links and user satisfaction (See Table 5.3).

These criteria are supported by a number of authors such as Alastair 1997; when he offered a toolbox of criteria include the following:

"The scope, content, accuracy, authority, currency, uniqueness, links made to other resources, quality of writing, graphic and multimedia design, purpose and audience, reviews, workability, user friendliness, required computing environment, searching, browsability and organisation, interactivity, interactivity, connectivity, cost" (Alastair 1997, p. 7).

Everhart 1996 provided an evaluation worksheet covering the following:
“Currency, content, information, authority, navigation, experience, multimedia treatment, access, miscellaneous” (Everhart 1996, p. 1).

Table 5.3 Criteria for evaluation of the prototype

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Criteria 1</th>
<th>Criteria 2</th>
<th>Criteria 3</th>
<th>Criteria 4</th>
<th>Criteria 5</th>
<th>Criteria 6</th>
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<tbody>
<tr>
<td></td>
<td>Content</td>
<td>Design &amp; layout</td>
<td>Navigation</td>
<td>Accessibility</td>
<td>Online-Services</td>
<td>General comments</td>
</tr>
<tr>
<td>Currency</td>
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<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
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<tr>
<td>Accuracy</td>
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<tr>
<td>Ease of use</td>
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<tr>
<td>Content usefulness</td>
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<td>Credibility</td>
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<tr>
<td>Coverage of information</td>
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<td>■</td>
<td>■</td>
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</tr>
<tr>
<td>Design</td>
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<td>■</td>
<td>■</td>
<td>■</td>
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<tr>
<td>Graphic and multimedia</td>
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</tr>
<tr>
<td>Aesthetic</td>
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</tr>
<tr>
<td>Consistency</td>
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<td>■</td>
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<tr>
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<tr>
<td>User satisfaction</td>
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<td>■</td>
</tr>
</tbody>
</table>

Not all the criteria mentioned by the authors are convenient for this research project and there are no standard criteria for evaluating tourism web sites.

“No current study provides a comprehensive methodology for evaluating travel web sites with a customer satisfaction focus” (Mills and Morrison 2003, p 10).

Therefore the researcher chose only criteria related to the research project. The following indicators: currency, accuracy, ease of use, credibility, content usefulness, coverage, design, graphic and multimedia, aesthetic, consistency, links and user satisfaction were used to develop a set of specific questions and given to evaluators (see questionnaire Appendix 11).
5.10.2 - Data Collection

The questionnaire was closed in June 2002. Seventy-six respondents entered the site and completed the online questionnaire. All were found to be valid for statistical analysis.

5.10.3 - Data Analysis

The raw data from the online questionnaires was entered into a computer software program, SPSS, coded and analysed. Firstly, the distribution of the respondents' characteristics was calculated by frequencies and percentages with relevant measures of central tendency, mean and standard deviation to answer the research questions. Relationships between the respondents' characteristics and study variables were examined using the Mann-Whiteny U test and the Kruskal-Wallis one-way ANOVA (details in Chapter 12). The analysis was then checked by a statistician, a member of the teaching staff in the Department of Education at Loughborough University, to ensure that the correct statistical procedures had been followed.

5.10.4 - The Evaluation Questionnaire

The questionnaire is an important instrument used in this section, its aims were: evaluating the prototype and study respondents' attitudes; to use their subjective opinion for further insight into the balanced construction and content of the system and to elicit suggestions for further development. The questionnaire shown in Appendix 11 was divided into seven parts and contains 45 questions, mostly using a 5 point Likert type scale, as follows:

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disagree Strongly</td>
<td>Disagree</td>
<td>Undecided</td>
<td>Agree</td>
<td>Agree Strongly</td>
</tr>
</tbody>
</table>

Table 5.4: Questionnaire Scale

5.10.5 Questionnaire Sections

I. **Personal Characteristics**

Respondents were asked to provide information on their departments, nationality and an optional choice for name and address for posting the participation 'token'. Questions in this section included age and sex, and participants were asked about their computer
experience, their usage of the Internet, their attitude toward obtaining information from
the Internet, if they use the Internet for tourism purposes, such as booking, and if they
planned to use the Internet for future tourism.

2. Content of the Prototype

Six questions were posed on the usefulness and credibility of site content, the currency and
relevance of images. Respondents could add their comments to their answers.

3. Navigation

Six questions were asked on the viability of navigating through the system, the sufficiency
of linked sites, the flexibility of accessing information and the attractiveness of the site.

4. Designs and Layout

Seven questions assessed respondents' satisfaction with the design in respect of its layout,
overall appearance, layout organisation, use of colours, multimedia, fonts and layout con-
sistency from page to page.

5. Access

Five questions assessed respondents' reactions to the accessibility of the site, including
questions related to the speed of page loading, the clarity of menus and multi-access points
in the system.

6. Online Services

Nine questions were devoted to this section, ranging from online booking to other online
information, for example, weather, currency, world time and services such as reserving
flights, accommodation, and car rental online. The remaining questions assessed the
respondents' attitudes toward the ability to access the site in different languages, the
suitability of information provided for international tourists, other features provided, such
as e-mail and FAQs. Finally respondents were asked if these online services would
encourage them to visit Bahrain.

7. General Comments

General questions about the prototype were asked in this section of seven questions, and
respondents were also asked about their general impressions of the system.
5.11 Summary

The major research objective of this research project is the development and evaluation of an advanced interactive online DIS for the Kingdom of Bahrain, as little data exists concerning the development of the DIS a large emphasis was placed on gathering primary data in order to fulfil the aim of this project. Therefore, different approaches were used to collect primary data such as a Web-based questionnaire, interviews, and site mapping analysis.

To fulfil the aim and develop a novel system practically a prototyping methodology was used. To provide a solid theoretical foundation for the research secondary data were used in this research project. Thus this chapter presented the research, design adopted and the research techniques employed for the collection of data. The following chapter gives the background to the Kingdom of Bahrain.
CHAPTER 6

THE KINGDOM OF BAHRAIN:

Background & Cultural Perspective

6.1 Preamble

This Chapter provides the background of the Kingdom of Bahrain, as a pre-requisite to the development of a Destination Information System for Bahrain. Features such as the geography, economy, information, telecommunications and the social structure of Bahrain are highlighted in the context of the tourism industry of the state.

Documentary sources used in the research and writing of this chapter comprises library material, national tourism publications, international statistics (World Tourism Organisation reports), and information from the Internet. The author's knowledge of Bahrain's society, in its various aspects, is used to supplement the documentary sources where these are inadequate or out-of-date.

6.2 Bahrain and Socio-cultural Background

Bahrain is a modern country having an elegantly designed and well-maintained international airport, along with sophisticated systems of communication, health services, hotels, restaurants, resorts, clubs, and conference and convention centres. It attracts thousands of businessmen, industrialists and visitors throughout the year.

With a total land area of 711.9 km², Bahrain is an archipelago of 33 islands situated on the western shores of the Arabian Gulf. Bahrain is the largest of these islands, and Muharraq - where the airport is located - is the second largest island. The large islands like Bahrain, Muharraq, Sitra and Hawar are inhabited whereas the rest, the small islands have no population. The name of the state was changed from "The State of Bahrain" to "The Kingdom of Bahrain" on 14th February 2002.
Figure 6.1: Map of Bahrain
6.2.1 - The People

On the Basis of the 2001 census, Bahrain has a total population of 650,604 in its 12 regions, including the capital Manama, with a significant percentage of expatriates of various nationalities. While relatively small in population, land area and resources, Bahrain has achieved a high level of social and economic development, and that too in a short period, due to its demographical variety and its large expatriate population. Bahrain has a marvellous mix of nationalities; all living harmoniously in a unique blend of diverse cultures (Bahrain 2002). That is why Bahrain is described as a ‘cultural melting pot’. Besides Arabic, English is widely spoken in Bahrain by the locals and expatriates alike (Bahrain 2002). Bahrainis are naturally friendly and hospitable and could add greatly to the tourism product offered by Bahrain (KPMG 1996, p. 15).

6.2.2 - Economy

Bahrain was once a hub of the pearling industry, but the industry has declined precipitously due to the introduction of the Japanese cultured pearl and the discovery of oil in 19321, Bahrain's economy became heavily oil dependent. The new oil revenues provided improvements in the quality of education and health care (Arab.net 2002). The oil reserves of Bahrain are small compared to those of other Gulf States, but this has proved to be an advantage. It has given rise to economic diversification such as trading, banking, tourism and technology. Today strong efforts have been put into making the Kingdom a commercial hub, attaching high importance to tourism. Bahrain becomes a centre to famous multinational companies investing and doing business in the Gulf. The development of the oil industry in Bahrain had instant social and economic effect on the fabric of the Bahraini society where there was a wide scale move from a declining pearl trade into stable employment offered by new petroleum companies at that time (Jenner 1984). Weinberger highlighted some positive indicators of Bahrain’s economy:

"Bahrain’s economy is basically strong, despite a budget deficit. Privatisation, which will help reduce Bahrain’s deficit, is moving ahead rapidly. Utilities, banks, financial services and other areas will shortly follow the lead of the telecommunications industry, which is a most successful example of the private

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1 Bahrain was the first Gulf state to discover oil, and become the first oil producing Arab state.
sector's ability to take over and run such a large, vital industry" (Weinberger 1995, p. 33).

Table (6.1) presents Bahrain economic indicators from the year 1997 to the year 2000.

<table>
<thead>
<tr>
<th>Table 6.1 Bahrain Economic Indicators (1997-2000)</th>
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<tr>
<td>Indicator/Year</td>
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<td>----------------</td>
</tr>
<tr>
<td>*Nominal GDP</td>
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<tr>
<td>*GDP Growth (%)</td>
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<tr>
<td>*Real GDP</td>
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<tr>
<td>**CPI (%)</td>
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<tr>
<td>***Trade Balance</td>
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<tr>
<td>***Current Account</td>
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<tr>
<td>Foreign exchange reserves (USD million)</td>
</tr>
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</table>

6.2.3- Education

The development of education began with the opening of the first boys school in Muharraq in 1919 and one for girls 1928. The 1950s witnessed a further dramatic growth in education when the first colleague graduates returned home from Beirut, the first female secondary school was founded and the first group of girls went to Beirut College for Women in 1956 (Jenner 1984).

The oil money played an essential role in improving education in Bahrain. There are a group of modern universities in Bahrain, such as The University of Bahrain and The Arabian Gulf University. Furthermore, higher educational colleges and institutions that cover many areas of science have also been established.

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6.2.4 - Tourism and Islamic Culture in Bahrain

The Bahraini culture has its roots firmly in the Islamic religion. The people of Bahrain take Islam as a way of life. Bahrainis are not only tolerant towards the beliefs of different Muslim sects such as Sunni and Shi'ite, but also tolerant towards other faiths including Christianity, Hinduism, Judaism and Buddhism, whose followers are allowed to practice their religion in churches and temples. Clarke (1990) summarised the culture and life in Bahrain as:

"Life in Bahrain may be conducted more slowly and less directly than often elsewhere in the world, but frequently it is done with more restraint and politeness. When the first explorers and developers arrived in Bahrain, they would have found few similarities with the way and pace of life they knew in America or Europe. The fabric of Bahraini society may be likened to an intricate carpet; it comprises many patterns woven with many threads. Like any complex carpet design, it is impossible to appreciate it fully at the first viewing. It takes time to absorb the work in its entirety, if it is possible ever to do so." (Clarke 1990, p. 38).

The family and other social institutions still command the respect of almost all the individuals regardless of their social or ethnic backgrounds. The people of Bahrain demonstrate hospitality to strangers as per teachings of Islam (Jenner 1984). Their faith encourages them to travel across the earth so that they can appreciate the greatness of God through observing the beauty and bounty of his creations spread worldwide (Din 1989).

Although Islam encourages tourism, it discourages the negative characteristics of modern tourism such as sexual permissiveness, alcohol consumption, gambling, and so on. Islam also encourages meaningful humane, equitable, and reciprocal cross-cultural communication (Din 1989). From this perspective, it is evident that the people of Bahrain respect and understand other cultures. In addition Bahrain's strategic position in the Arabian Gulf provides its dynamic and responsive people with the opportunity to interact with different cultures such as Persian, Portuguese and English. In this regard, Rajab, the former Tourism Affairs Assistant Under Secretary said:
"The history of our nation, the local heritage and culture, people’s values and religious affiliations, their traditions and their attitudes towards visitors have all added to the positive image." (G.D.N., 29 January 2002a, p. 11).

Even though the tourism industry in Bahrain is growing, there is a continuous call from religious leaders to resist irresponsible cultural behaviour. There is a strong pressure in the country to minimize and control the negative impacts of tourism, which affect the Bahraini culture. The religious leaders have demanded that the government introduce what they call "Clean Tourism", a term, which in Bahrain tourism terminology means tourism free of sexual permissiveness, gambling, drugs, etc. These views are also being conveyed through their articles in local newspapers and their lectures, which they deliver in mosques in Friday sermons.

A radical religious figure Sheik Adel Al Maawda, a member of the fundamental Islamic party, strongly criticized tourism activities in his Friday lecture (Al–Wasat, 7 December 2002, p. 9).

Sheikh Abdulatif Al-Mahmood, a well-known moderate religious figure in Bahrain opposed it, though for a different reason:

"Promoting and encouraging sexual permissiveness in the name of tourism is rejected by our religion and society. These alien activities brought to us by strangers will destroy our society values, culture and our youths and their future."


To Saleh, a famous newspaper columnist, it was what he called "Garland Tourism". But at the same time, he recognised the tourism potential of the country and advocated having cleaner and healthier tourism. He said that if the government wanted success, it had to clean up this polluted industry and introduce a sustainable tourism (Saleh 2001a).

Bahrain’s elite has also called for a clean up of the tourism sector (Faqeeri 2002, Nasser 2002, Saleh 2001b, Sayer 2001). For instance, Mohamed Dadabhai (2002) strongly rejected

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2 Friday is a holy day on which Muslims religious leaders deliver lectures.
3 The practice of garlands being bought by patrons to present to performers at the nightclubs.
the unprofessional and unacceptable activities of some of the irresponsible hotels and apartments in Bahrain.

The Directorate of Tourism Affairs has issued clear orders to the hotels and restaurants for family-oriented entertainment that has visible effects on the industry as there has been a witnessed growth of Arabic style restaurants where Arabs enjoy drinking, dancing and music. Directorate of Tourism Affair in Bahrain has ordered the hotels and nightspots to replace unprofessional acts like skimply dressed female singers and dancers with family-orientated entertainment like cultural folk bands and magicians" (G.D.N., 30 September 2002b, p.13). Stating the government's policy, Assistant Under Secretary Mubarak Al-Atwi's stressed that:

"We will not allow such unprofessional acts and disorganised shows anymore. Bahrain will witness a cleaner and healthier tourism market, and our prime emphasis is on family tourism.” (G.D.N., 30 September 2002b, p. 13).

The Tourism Affairs has provided a solution by allowing in-house bars, discotheques and health and fitness services for tourists inside the premises of their hotels. Here, the hotels become accommodating, since practising such activities in public places means breaking the social norms and the law of the land.

The 3- and 4-star hotels in the residential zones are another disturbing phenomenon that causes social, cultural, and moral problems for local residents. The Ministry of Housing has tried to solve this dilemma by issuing a ministerial decree denying licenses to 3- and 4-star hotels, and hotels in converted residential buildings (Akabar Al-Kahleej, 24 October 2002).

The alien conduct of tourists is another cause of concern for Bahrainis. Though Islam prohibits women uncovering some parts of their bodies, some female tourists have been violating such codes by wearing very short skirts. Such an attitude of tourists causes resentment among the locals. This is a cultural conflict which assumes serious dimension when some local women adopt alien dress codes as a part of fashion.
6.2.5 - Social Relationships and Rules in Bahrain

- Bahraini social structure is the same as that of most of the Muslim dominated states of the world. Social relationships are characterised by commitment to family values, respect for elders, honesty, honour, loyalty to the primary group, hospitality and generosity. As with any Arab society, Bahrainis respect people, regardless of their social background. Small wonder that Bahrainis devote so much time and care to family life for it is the one stable element in a world of changes (Jenner 1984, p.114). Bahrain, a part of the Gulf region, observes traditional families in the sense that the joint family system is well knitted in the society through inter-family marriage. Youngsters show high respect to the elders and take care of the old people. Neighbour discusses social, economic and political problems in majleses or dewaniah and lunches (Mubarak 1993, Arabian business & cultural guide, 2003).

This practice can be traced back in the history of Bahrain (Jenner 1984). Every home contains special rooms to hold such inter-family gatherings. The extended family helps make its members caring and protective about the business interest of their relatives. Inter-family marriages add a particular dimension to Bahraini society when observed from the economic viewpoint.

- The society is gender sensitive and gatherings have separate arrangements for men and women. Women gather in one house that is considered as the focal point of the clan. Such social events prove instrumental in distributing news and information and solving a lot of social problems (Mubarak 1993, Arabian business & cultural guide, 2003). Large weddings are also social occasions where the men and women gather separately. Nowadays women gather in modern cafes and restaurants in addition to weddings. The religious institutions, like mosques of Sunnis and Husseiniyas of Shiites, are other points of socialisation for Bahrainis. Traditional old style cafes serve as local meeting places, and are found in all towns and villages. (Jenner 1984, Arabian business & cultural guide, 2003). Hospitality is an important norm of Bahraini society. The visitors are cordially welcomed and the hosts make special arrangements to entertain their guests. Friends and relatives usually visit each other and are offered foods and drinks. It is the norm not to decline what the host offers to his guest. Guests who are sensitive to the values attached to this cultural trait are appreciated (Arabian business & cultural guide, 2003); those violating them are tolerated as a matter of courtesy.
6.2.6 - Cross-Cultural Issues

The researcher recommends the following behavioural codes to tourists visiting Bahrain:

- **Dress codes**: Bahrain is a Muslim society and observes certain dress codes both in the case of men and women. Men are not expected to roam streets in shorts; bikinis and mini skirts are not recommended for women.

- **Signs of affection.** The local population does not appreciate mixing of men and women in public places. Showing sign of affection between members of opposite sexes may invite anger. A stranger approaching a member of the opposite sex of the locals, regardless of what purpose, is regarded as offensive (Arabian business & cultural guide, 2003).

- **Alcohol consumption.** Though alcohol is consumed in hotels in cities and isolated places in the small towns, it is not tolerated in public. Muslims don't eat, drink and smoke in the daytime of the month of Ramdan. So, to avoid any inconvenience the tourists must show respect to the religious sensitivities of Bahrainis.

- **Photographing Women.** Photography needs to be handled carefully. Tourists must not insist on taking photographs of women if they don't give their permission.

- **Negative comments.** The cultural norms attach high importance to self-respect. So negative comments must not be passed in public.

- **Locals hospitality.** It is against the social norms to decline a Bahraini's offer of some food and drink. While visiting the home of a local for lunch, it will be appropriate to take along flowers or a gift for the family.

- **Bargaining with locals.** Bargaining is a part of Bahraini culture in trade and the norms like honesty or dishonesty are nothing to do with it. (Arabian business & cultural guide, 2003).

- **Greetings codes.** Bahrainis greet each other by saying “Salaam” or “Merhaba” (Hello). The greeting ranges from just shaking hands to kissing cheeks on both sides depending on the group the two people belong to. Among friends, greetings are followed by polite inquiries about one's health, family, and work. Among close friends of the same (and sometimes the opposite) gender, Bahrainis shake hands and kiss on both cheeks. Kissing one of the opposite sex is not allowed in public. (Arabian business & cultural guide, 2003).
6.2.7 - The Tourist-Host Encounter

Interaction between tourists and the Bahraini people is not without consequences. Sometimes the locals interpret this interaction as a threat to the culture (Al-Hadad 2001). Youth is particularly receptive to Western norms and values. Young people serve the tourists as middlemen and taxi drivers (Dogan 1989). The youth tend to copy the dress codes and behaviour of foreigners. Local people encounter tourists in hotels, restaurants, beaches and shopping malls (Al-Hadad, 2001). Since Bahrain is a small country, the tourist influence is easily noticeable. Bahrainis take pride in displaying their customs through the sale of handicrafts and the performance of traditional dances. These activities are now performed outside of the context of their traditional meanings — they are now performed for entertaining tourists and making money, in other words staging the authenticity. This is perceived by some as a denigration of culture (Cooper 1998, Dogan 1989) but there are advantages in this transition for Bahraini society. Tourists’ interest in local handicrafts, art and culture has not only stimulated economic activity, it has also helped in the preservation of culture. Through these activities the locals preserve traditional skills of making handicrafts and of the traditional performing arts. A good example is the Annual Cultural Festival, which is organised by the Ministry of Information. For instance, the skills necessary to make traditional pottery and to perform traditional dance, were almost extinct, but have been revived due to the development of tourism. Locally made artefacts, such as wooden boxes and coffee pots, are now placed in tourists’ rooms as souvenirs. Jenner (1984) strongly supports this view and stresses the role of government in preserving this heritage:

"Of the traditional rural handicrafts, possibly none would have survived the oil-age without government support. The potters, weavers, basket and coffeepot makers preserve the heritage as living examples of dying skills" (Jenner 1984, p. 47).

6.3 The Tourism Industry in Bahrain

Historically, Bahrain's tourism was a strategic transit point for trade between East and West: international merchants were Bahrain's earliest tourists. Since the 1970s, by capitalising on its use as a stopover for flights between Europe and Asia/Australia, Bahrain has expanded its tourist products beyond shopping, visiting historical sites and relaxing on the beaches (WTO 2001a).
In conformity with Mufeez and Ghunaim (1998), the history of tourism in Bahrain has had four stages, as summarised below:

**Primitive Tourism:** From 3000 BC until 628 A.D (the emergence of Islam), Bahrain was regarded as the "Paradise of Dilmun" — the land of life, because of the availability of spring water and the diffusion of agriculture. This feature encouraged its neighbours to select Bahrain as a place to bury their dead and achieve immortality (Jenner 1984).

**Explorers, Conquerors and Commercial Tourism:** From the appearance of Islam until the discovery of oil in 1932, Muslim and Portuguese explorers, British military leaders and historians (during British colonialism in the Gulf region) and merchants visited Bahrain and wrote about its strategic importance and tourism attractions (Jenner 1984).

**Modern Tourism:** With the discovery of oil in 1932, tourism development in Bahrain entered a new era.

**Tourism Activity Stage:** On March 10, 1985, as an attempt to diversify Bahrain’s oil dependent economy, the Amiry Legislative Decree No. 1 established the Supreme Council for Tourism to be chaired by the Minister of Information (Appendix 12).

The aims of the Supreme Council for Tourism are:

- To suggest programs for developing and activating the tourism industry in Bahrain, and for stepping up the capability of the concerned bodies of tourism.
- To suggest ways to preserve and develop tourism and cultural sites by co-operating with the heritage directorate and the central municipality council.
- To study the plans and projects presented by the Ministry of Information, and to find ways to solve problems facing tourism in Bahrain.
- To suggest tourism legislation that encourages more activities for this sector.
- To develop tourism awareness and encourage it amongst the population.
At the latest stage, the government opened doors for more investments in this sector as an economic alternative. Accordingly, "hotels were built specifically to cater to business tourists and very few tourist attractions, amenities and facilities were developed during this period" (KPMG 1996, p.71). An Amity Decree\(^4\) underlining the need for diversification of economic activities was issued to organise tourism activities and services, to revise the conditions for tourism licenses, and to classify the hotels. The Decree regulated all facilities, services and activities of the tourism industry. Licensing, promotion and the planning of future development was given due consideration, and further ministerial orders redefined and delineated the features of tourism and its role in Bahrain (Appendix 13).

An important aspect of membership in the Supreme Council for Tourism is that it is derived from both public and private sectors. Representatives are from diverse fields such as immigration, finance, the Chamber of Commerce, physical planning, municipalities, travel agencies and hotels (Bahrain 1998).

The Ministry of Information also enacted rules to improve the working of the tourism sector, such as "the legislation of tourism" which determines the concept of tourism. Laws were introduced pertaining to the classification of hotels according to their standards and quality of services (Appendix 14), furnished apartments (Appendix 15) and travelling and tourism agencies (Appendix 16). These rules recognise the ability of the government to attract a sustainable number of tourists to Bahrain from Gulf countries, i.e., U.A.E, Saudi Arabia, Qatar, Kuwait, and Oman.

Due to such government measures the tourism industry has developed steadily. The number of tourists rose from 64000 in 1985 to a booming 2.8 million in 1998. The opening of The King Fahd causeway (1989) that links the island with Saudi Arabia and other Gulf States (Bahrain 1998) was a particular stimulus.

Bahrain has several ancient cultural and archaeological sites. The Bahrain Museum, considered one of the finest in the world, serves as a window on Bahrain's heritage and history. The Saar archaeological site offers stunning insights into the Dilmun era around 2000 BC (Bahrain 1998). In addition, Hawar Island, with its wide variety of animal and bird life, has been developed as a peaceful holiday destination for tourists, both local and foreign (Bahrain 1998).

\(^4\)The Amity Legislative Decree No. (15) dated August 14, 1986
6.3.1 - The Department of Tourism Affairs

The Department of Tourism Affairs, at the Ministry of Information, has actively promoted the growth of the tourism sector in Bahrain. A routine task of Tourism Affairs is the licensing of new tourist facilities, and the continuous monitoring of the quality of services provided by these facilities, including hotels, serviced apartments, resorts, specialist restaurants, and travel and tour agencies (Bahrain 1998). In addition, it manages a number of tourist marketing activities and functions during the year. Besides developing tourism facilities to provide the best possible services to visitors and tourists, Tourism Affairs takes part in international tourism exhibitions and fairs for marketing purposes.

Tourism Affairs also provides tourism and travel agencies and Bahrain embassies abroad with tourist guides, booklets and brochures in many languages. Advertisements are placed in Gulf newspapers, and in magazines specialising in world tourism, highlighting tourist sites and locations (Bahrain 1998).

The role of the Economic Development Board (EDB) in promoting tourism in Bahrain is also worth mentioning. Its strategy includes establishing Bahrain as a family destination where children and adults can find amusement and entertainment. “We aim to appeal to visitors of all ages and interests, with something being available for everyone” (EDB 2002). Important EDB goals are: “providing attractions and events that will increase tourists' length of stay. Longer term investment opportunities exist for large-scale tourist attractions that appeal to the international tourist” (EDB 2002).

6.3.2 - Strengths of the Tourism Industry in Bahrain

Bahrain as a regional tourist centre provides:

- Open environment with a hospitable local population and strong national identity;
- Cosmopolitan setting;
- Year-round sunny climate;
- Convenient land access to a regional population of 200 million;
- Water sports and activities, including scuba diving and pearl diving (EDB 2002).
Bahrain's historical attractions like Barbar temple, the Aali burial mounds, the Bahrain fort, the Arad fort, Beit Al-Jasra and Al Khamis mosques are the special visiting points for tourists. Other unique attractions include the Tree of Life, the Al-Areen wildlife sanctuary, and the Dilmun ruins. Regular cultural events are concerts, ballets and exhibitions (EDB 2002).

6.4 IT and Telecommunications in Bahrain

Bahrain enjoys the most advanced telecommunications infrastructure in the Gulf region that is continually being developed and upgraded by the Bahrain Telecommunications Company. In 1991, Bahrain became one of the first countries in the world to have a fully digitised network (EDB 2002).

6.4.1 - The IT Industry in Bahrain

Information technology (IT) and telecommunications are assigned high priority in Bahrain. The country is the hub for a number of IT companies; the number of IT companies and services based in Bahrain is on the rise (EDB. 2002).

The Bahrain Telecommunications Company (Batelco) has an advanced telecommunication infrastructure and meets international standards in communication and information services. The characteristics of these services comprises:

- A Digital network including digital switches and inter-exchange fibre-optic links;
- Digital international circuits to all business and financial centres in the world;
- A purpose-built environment (Facility Management Centre) for the installation and 24-hour management of customers’ telecommunications equipment;
- Mobile fax and data service through the GSM network;
- Availability of advanced services including ISDN, ATM, LAN Connect, and VSAT;
- Immediate provision of GSM mobile and Internet services, with access to more than 50 countries (EDB 2002).

^ A historical attraction in Bahrain.
6.4.2 - Bahrain Tourism and the Internet

International tourism boards have recognised the prospects of marketing through the Internet. The Department of Tourism Affairs emphasises that the tourism industry in Bahrain will benefit from innovative Internet technology. Although Bahrain already has a simple Website www.BahrainTourism.com providing information about tourism in Bahrain, historical attractions, accommodation and shopping, there exists a significant requirement for a dynamic site.

**Figure 6.2: The Official Bahrain Tourism Site**

![Bahrain Tourism Site](image)

6.5 The Need for a Destination Information System for Bahrain

The Internet as a medium has revolutionised not only information systems but also the global economy. It has a great potential to influence the tourism market in Bahrain by entering the global market. Those destinations which have opted for Destination Information Systems to attract international tourists pose a significant challenge to Bahrain as competitors.

The current site lacks the ability to compete due to its low functionality, thus Tourism Affairs should establish an inter-active system with easy mechanisms that match tourists
requirements and existing tourism attractions in Bahrain. For that matter a comprehensive database-driven site must be developed through optimal utilization of resources and advanced communication infrastructure available in Bahrain.

A complete DIS system will require a considerable effort to implement it therefore deliberations must be made for the need of such a system.

- Bahrain’s tourism industry lacks a broad strategy for using the Internet, as the present site carries out-dated information in some sections and depends on links to other sources of information that may encourage tourists to ‘abandon’ the site immediately.

- The Bahrain tourism Website has a low functionality and lacks the modern facilities such as online reservation for accommodation, attractions and car rental. The site only provides telephone/fax numbers (Figure 6.3) and links to some hotels with their own sites. It lacks the information of small medium enterprises (SME) such as small and traditional restaurants and hotels.

**Figure 6.3: Bahrain Site ~ Low Functionality Features**
• The site does not meet international standards as the design and layout has not been changed for a long time. Since 1998 this site has had the same interface; a recent visit by the researcher to the site show no signs of changes.

• No doubt, the site reflects the Department of Tourism Affairs will to present itself in cyberspace in a dynamic mode. The internet is the medium and these are the strategies and methodologies which utilise its full potential.

6.6 The Proposed Bahrain Destination Information System

The proposed Bahrain Destination Information System (BDIS) is a comprehensive system that requires proper management to eliminate the risk factor for The Department of Tourism Affairs. Public access to the BDIS must be assured and provision guaranteed, even during periods of high demand. The BDIS must interface with other computer systems, such as the national weather forecasts, traffic systems and hotel databases, to provide information important to travellers (Sheldon 1997).

The main features of such a system are as follows:

• Since the tourism organisations differ from country to country, and require different approaches, funding, systems, languages and emphasis, the BDIS will store a diversity of destination information, such as attractions, events, entertainment, transportation, restaurants and accommodation, as well as demographic, statistical, ecological and geographical information.

• Tourism Affairs in Bahrain, backed and supported by both the government and the private sector make Bahrain a fertile soil for developing a Destination Information System.

• In spite of Bahrain’s rapid modernisation, its way of life remains largely traditional with a diverse population profile. For such a society there are implications for a Destination Information System (DIS), such as variety of languages and blend of culture where a reflection of Persian and Indian influences is substantial. Any attempt to develop a DIS within such diverse population parameters and varied
cultures should take these variations into consideration if it is to be successful. While only a prototype development, the project needs to reflect this national diversity.

6.7 Related Studies to the project:

Information Technology (IT) and tourism are new concepts in Bahrain. Up to now, no local IT studies have been conducted. However, there have been several local, regional and international studies of cultural tourism in Bahrain. Five of these studies are illustrated below:

- “Tourism Abilities and Development Opportunities in Bahrain” was a local study (in Arabic) concerned with the tourism sector in Bahrain. It was conducted by a team of researchers at the Bahrain Centre for Studies and Research (BCSR). The study aims to identify opportunities and challenges in the tourism sector in Bahrain. It laid a theoretical foundation for tourism research in Bahrain, by providing fundamental information about hotels, visitors and tourism activities.

- The second study, in Arabic, is a Master’s thesis presented by Al Jeeb (1995), titled “Tourism History and Its Development in Bahrain”. The study describes the concepts of tourism and emphasises the historical side of tourism in Bahrain. It does not cover the role of information technology in tourism.

- A Master’s study by Al-Shirrawi (2001) recognises tourism as an industry. The study identifies interests and opportunities of stakeholders in the Bahrain tourism industry. It presents a new concept of, and options for, economic diversification.

- The government is committed to developing and diversifying the state economy. In 1996, a management consultant firm, KMPG, was awarded a contract to study the viability of tourism and to formulate innovative strategies for tourism development. The “Bahrain Tourism Strategy”

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6 Al Klai, Al Mannai and Abdulla, (1990)
consisted of five reports reflecting the challenges and opportunities for the tourism industry in Bahrain.

- Mufeez and Ghunaim conducted a comprehensive study in 1998; geographical features were taken as a source of tourism attraction. The researchers studied the geographical location of Bahrain and its islands and concluded that tourism could be a major economic activity if due priority was given to this sector. The study also devotes a section to the use of geographical information system (GIS) for tourism in Bahrain.

Of all these studies, only Mufeez and Ghunaim (1998) considered the importance of utilizing Information Technology in the tourism industry in Bahrain when they highlighted the role of GIS in tourism development.

6.8 Summary:

A general view of Bahrain, its history, geography and culture has been presented in this chapter. The economy of the country, the education of its people and the development of its tourist industry have been described. Islamic culture and tourism in Bahrain, social relationships, cross-cultural issues and the tourist-host encounter have also been considered. Governmental tourism policy with respect to tourism management has been examined here in order to show the considerable responsibilities of the Ministry of Information in managing this industry. Information about tourist attractions is also included in this chapter. In conclusion, it is clear that there is no clear strategy for adopting internet for developing Bahrain destination. The next chapter deals with requirements for developing a DIS.
CHAPTER 7

DIS REQUIREMENTS AND SPECIFICATIONS

7.1 Preamble

This chapter consists of three parts. The first part focuses on the general requirements for the planning, analysis and design phases of a new system. The planning phase focuses on project initiation and project management. The analysis phase briefly discusses four stages: system analysis, information gathering, process modelling and data modelling. The design phase discusses: system design, architecture design, user interface structure design, user interface design components, data storage design and program design. The second part focuses on the development of the web information system (WIS). The concluding part is devoted to the proposed system (BDIS) requirements.

7.2 Phase 1: Planning

1. Project Initiation

Project team role and skills

Project team composition is fundamental to the development of any system, which must be established before any discussion of business strategy and feasibility analysis. Contemporary System development requires project teams that contain members with unique but complementary skills (Dennis and Wixom 2000).

In the formative days of system development, many organisations envisaged multi-faceted, multi-talented analysts operating the project development. In small organisations project analyst would have all the required attributes to develop a system, and were expected to perform various roles independently and unilaterally, but due to the enhanced complexity of organisations and technology, there has been a realisation of the significance of inter-related units. Project teams, having several skilful and experienced individuals with clearly defined roles, are the basis for optimal success (Dennis and Wixom 2000).
Analysts require a multiplicity of skills, including a thorough understanding of technology and the business aptitude to apply it to different situations. An ability to discover the primary issues of a problem is essential, as is resourcefulness for unforeseen events that helps to accept and manage the pressure and risks associated with a project. Analysts should be armed with a broad, flexible and strategic outlook, and a methodical mind to tackle complex situations. Crucially, analysts must work in harmony with the other members of the team, accepting and initiating ideas and strategies (Kendall and Kendall 1995, Dennis and Wixom 2000, Davies 2002).

**Business Analyst**

'The business analyst focuses on the business issues implicit in the system by identifying the business value and elaborating the opportunities that the system will create. The role of business analyst in generating ideas, initiating business development and designing new processes and policies in conjunction with the systems analyst is of vital importance. This individual requires a background of business experience' (Wiley 2004).

**System Analyst**

The system analyst, with the help of the business analyst, designs new business processes and information systems and also ensures that all IS standards are maintained. A competent system analyst should have significant training and experience in analysis and design, programming and relevant areas of the business (Dennis and Wixom 2000).

**Infrastructure Analyst**

Infrastructure analysis demands expertise in networking, database administration and a multiplicity of hardware and software products. Such an analyst focuses on technical issues involved in the inter-action between the system and an organisation's technical infrastructure (hardware, software, networks and databases) (Kendall and Kendall 1995, Dennis and Wixom 2000, O'Brien, J. 2001).
Change Management Analyst

The change management analyst handles and co-ordinates public and management issues related to the system installation. This role ensures that adequate documentation and support is available to users besides training to the users on the new system and development of strategies to overcome resistance to change. Such an individual is expected to have significant training and experience in organisational behaviour in general and change management in particular (Dennis and Wixom 2000).

Project Manager

The project manager must take responsibility for achieving timetables, operating within budget constraints and ensuring intended benefits to the project sponsor. This role is holistic and centres on team management, project planning and assigning resources. Liaison with external bodies and individuals is fundamental to this position. Experience for this position should have background in project management and preferably an adequate knowledge of system analysis (Kendall and Kendall 1995, Dennis and Wixom 2000).

Planning Issues

Initiating projects, determining project feasibility, scheduling projects, managing activities and team member productivity are all important abilities for the system development process. These are considered project fundamentals. Ideally, planning is an essential prerequisite to the development processes of any system project. Yeates, Shields and Helmy (1994) state that:

"Two important things should be understood about planning: firstly that it is essential for a project's success and secondly that it should be undertaken as early as possible"

(Yeates, Shields and Helmy 1994, p. 94).

Kendall and Kendall (1995) note that:
"Planning includes all activities required to select a system analysis team, to assign members of the team to appropriate projects, to estimate time required to complete each task, and to schedule the project so that tasks are complete in a timely fashion" (Kendall and Kendall 1995, p. 53).

7.3 DIS Business Strategy

It is essential for an information system to be driven by a perceived business requirement and justification. Although this is well enough understood in theory, most of the literature related to system development gives too little attention to identifying the business strategy. Some IS projects start without clear links in support of business plans and strategies (Yeates, Shields and Helmy 1994).

Dennis and Wixom (2000) strongly support the idea of identifying the business strategy, which they call the business value:

"All systems have to address business needs or they likely will fail; therefore, most organisations have process for ensuring that businesses value has been identified before a development project can begin. Every organisation has its own way of initiating a system, but most start with a technique called a system request." (Dennis and Wixom 2000, p. 27).

According to Dennis and Wixom (2000) ideally, the system request launches any IS project and this is supported by others (Yeates, Shields and Helmy 1994, Kendall and Kendall 1995). This request includes four elements: the project sponsor, business need, functionality and the expected value summarised here:

- **The project sponsor** is the individual engaged in overseeing the proposed system working successfully in the real life project, and works as the focal point of the project, being the primary contact for the system on the business side.

- **The business need** justifies the construction of the information system and defines to the steering committee the business needs. In this project, the steering committee comprises the supervisor, the research director and some experts, whereas the steering committee in
real life for such a project is the Supreme Council for Tourism. This consists of the 
Minister of Information, the Under Secretary for Tourism Affairs and other top 
managers in the tourism industry.

- *The functionality* of the system needs to be explained at a high level so that the approval 
committee, and ultimately the project team, understands what the business units expect 
from the final product. For example functional specification would state that customers 
should be able to search for products such as accommodation and tickets over the 
Internet, could place an order for products online, receive immediate credit approval and 
confirmation of orders that are in place.

- *The expected value* to be gained from the system should include both tangible and 
intangible values. Tangible value can be quantified and measured, whereas intangible 
value arises from an intuitive belief that the system will provide qualitative, decisive but 
often-abstract benefit to the organisation (e.g. improved customer services). In the case 
of this project, enhancing the image of the destination is an intangible value.

- Estimating intangible business value is relatively straightforward in this case. The 
Internet is likely to improve customer recognition and satisfaction. An estimation of 
tangible value is more difficult.

- The assessment of the project should include the issues and problems that may arise 
from time to time during the implementation of the project. The project sponsor who 
manages and controls the development of the system must be mindful of such 
constraints (to be discussed later) (Kendall and Kendall 1995).

7.4 Feasibility Analysis

After the functional necessities of the system realised, the next stage is to envisage the 
maximum utilisation as well restraints the system may yield and confront respectively. It will 
help the project to reconsider the strategy adopted so far. This is known as feasibility analysis 
and it becomes important when the project is a large and complex one (Davies 2002).
Technical feasibility

Initially, and crucially, in the feasibility analysis it is essential to assess the technical feasibility of the project — the extent to which the system can be successfully designed, developed and installed by the technical team. Technical feasibility analysis is, in essence, a technical risk analysis that strives to answer the question ‘Can we build it?’ (Dennis and Wixom 2000). There are many risks that can endanger the successful completion of the project at this stage (Kendall and Kendall 1995, Dennis and Wixom 2000):

- Familiarity with the application. An analyst should be familiar with the business application area as lack of knowledge at this level may create misunderstanding of user requirements or jeopardising opportunities for development. In this project, the business application is clearly defined in the system request that is based on the information gathered from the related literature.

- Familiarity with the technology. An organisation not familiar with the technology of the new system will hinder or delay the development of the project (Davies 2002). The Tourism Affairs Department may not be familiar with the DIS. However, it is familiar with the Internet, the web and its applications, because it has its own website which can be converted to DIS. This site is designed and maintained by an out-source.

- The number of project team members is directly proportional to the size of the project and inversely proportional to the prescribed time. Large projects with a short time for their completion need more project members and vice versa (Davies 2002). Large projects involve the danger of overlooking vital requirements of the system. So the expertise of the members, besides their number, also plays an important role in the success and failure of the project the proposed project is a large-scale project it requires a large skilled team.

Economic feasibility

The economic feasibility analysis identifies the financial aspects of a project. It is determined by identifying the cost and benefits associated with the system, assigning values to them and calculating the cash flow and return on investment of the project (Hawryszkiewycz 1988).
CHAPTER 7

Identifying cost and benefits

The cost benefit analysis includes:

- Take off costs,
- Running costs,
- Tangible profits,
- Intangible profits (Hawryszkiewycz 1988).

Development costs are usually thought of as being associated only with developing and implementing the system. For example, it includes costs incurred during the assembly of the team and the building of the system, such as salaries for the project team, hardware, software, expenses, consultant fees, training, office space and equipment.

Operational costs are the variable costs required for operating the system, such as salaries of operational staff, software licensing fees, equipment upgrades, communication charges and maintenance (Hawryszkiewycz 1988).

Organisational feasibility

The best system is the one that caters to the needs of the users and addresses all the services possible that a user may need to resolve through using the system. So the perceptions of the users are the yardstick for the success and failure of the system. It is recognised among seasoned developers that organisational feasibility analysis is the most difficult feasibility aspect to assess (Dennis and Wixom 2000).

Organisational feasibility may be assessed through stakeholder analysis. A stakeholder is a person, group or organisation that can affect (or will be affected by) a new system (Dennis and Wixom 2000).
Yeates, Shields and Helmy (1994) believe that IT professionals usually ignore a critical success factor: the people who actually use the system. Without adequate consideration of their needs and requirements, the system being introduced is likely to fail, no matter how well designed it is. For example, in the case of users, IT professionals need to know the users, their motivation, their awareness about the system, culture barriers to adopt the new system and their knowledge and skill for the best utilisation of the system.

Furthermore, it is important to ensure that users and managers:

- Accept the concept of changing the system, and are dedicated to achieving them;
- Have pragmatic (real) expectations about the final version of the new system.
- Know exactly their role before, during and after system functioning;
- Get the support from the highest level of management throughout the change (Yeates, Shields and Helmy 1994).

This project incorporates a wide range of stakeholders. They range from the suppliers, airlines, hotels, and attractions through to the Tourism Affairs staff. This research project focuses on international tourists who are targeted as the prime users of the proposed BDIS. In an attempt to satisfy the requirements of the users, a front-end prototype of the system was developed – a product tailored to the customers’ requirements (Curtis 1998).

**Legal feasibility**

The system developers must take into consideration the legal ramifications of the system they are developing; it should comply with the law and statutes of the state where it is being introduced. For example, sensitive databases should be secured with stringent access controls (Yeates, Shields and Helmy 1994).

The transmission of financial data dealing with mergers and acquisition must also be tightly controlled. Many regulatory bodies have strict procedures for dealing with the retention of records and the level of security that is required (Kendall and Kendall 1995). Failure to comply with these regulations can cause criminal and civil suits to be brought against the company and even the system professionals who developed the system (Shields and Helmy 203).
Sensitive information should be safeguarded from unauthorised access by conducting a formal legal feasibility analysis that includes both an analysis of civil law to assess potential liabilities and the possibility of lawsuits, and an analysis of criminal law to address legal conformity with the law. Assessing criminal law is particularly important in an international context where laws may be contradictory or less well understood. For example, it is against the law in France to operate a web server that provides information in languages other than French, unless the information is also available in French (Dennis and Wixom 2000).

Yeates, Shields and Helmy (1994) stress that an analyst should take legal issues into consideration:

“It is becoming increasingly the case that the users of information are liable for the consequences of things done, or put in train, by those systems. If there are such liabilities, the analyst must examine them and allow for them in the proposed system” (Yeates, Shields and Helmy 1994, p. 86).

Security and privacy

The analyst needs to determine from the outset which type and level of security conditions will be required for the proposed system. Clearly, a web-based system like the DIS demands very high level of security because it is using e-commerce facilities such as online payment for event tickets and attractions. The DIS therefore needs to be secure against unwanted intruders such as hackers and viruses (Shields and Helmy 1994).

Schedule feasibility

Meeting the deadline for the completion of the project constitutes a vital part of the project. So it is necessary to avoid an unrealistic timeframe (Davies 2002). Once the tasks have been identified and the schedule for their completion prepared, the target should be met within the prescribed time.
7.5 Planning Phase 2 (Project Management)

This forms the second part of the planning phase. Here, the work plan is examined, including the project tasks, and different types of estimation detailed. It also focuses on methods employed to staff, monitor and control a project.

Working plan

Initially a project needs to identify four major activities: planning, analysis, design and implementation. A project plan is required once all tasks have been acknowledged. Visual presentation is invaluable in supporting a narrative account, and for this purpose a Gantt chart (named after its inventor, Henry Laurence Gantt) is used. Adopting this simple technique allows for easy scheduling of tasks and displays activities on a direct line basis. Another automated tool such as Microsoft Project is available to aid the project manager to develop his or her work plan (Davies 2002).

This research concentrates solely on three phases: planning, analysis and design of the DIS, as illustrated in the project work plan (see Appendix 17) which represents a dynamic schedule that records and keeps track of all the tasks to be accomplished during the three phases of the life of the project. The work plan presents each task along with related information about each, such as the date of completion.

Identifying tasks

Each project task throughout the life of the project should be identified to meet the overall objectives of the system that are listed in the system request. The project manager is responsible for ensuring the accurate identification of tasks at all stages (Kendall and Kendall 1995).
Estimating time and size

Estimation of project dimensions and completion objectives follow directly from task identification. Assessment of duration is one of the key tasks in the planning phase and one that can be performed manually or with the help of relevant software. Kendall and Kendall (1995) note that:

"Sometimes the most difficult part of project planning is the crucial step of estimating the time it takes to complete each task or activity. There is no substitute for experience in estimating time requirements, and systems analysts who have had the opportunity of an apprenticeship are fortunate in this regard" (Kendall and Kendall 1995, p. 55).

Estimating efforts

The next step is to estimate the effort that is required to tackle all tasks involved. Effort is a function of the size combined with production rates (how much work someone completes in a given time). Once the effort is understood, the optimal schedule for the project can be estimated (Kendall and Kendall 1995, Dennis and Wixom 2000).

Staffing the project

Following the choice of a systems project, team selection and staffing is the next priority. Assigning the project team is fundamentally matching peoples' skills with the needs of the project; motivating them to meet the project's objectives and minimising conflicts that will occur over time are all important. Kendall and Kendall (1995) say:

"For the team to continue its effectiveness, tensions must be continually resolved. Minimising or ignoring tensions will lead to ineffectiveness and eventual disintegration of the team. Much of the tension release necessary can be gained through skilful use of feedback by all team members. However, all members need to agree that the way to interact (i.e. the process) is important enough to merit some time" (Kendall and Kendall 1995, p. 64).
Usually there is one manager responsible for guiding and controlling the development of the project. This person is assisted by a team of analysts falling into different categories with different assignments. A functional leader supervises the group of analysts while a separate leader is required to take care of the technical side. The staffing plan must be devised carefully to cater for the needs of the project (Kendall and Kendall 1995).

Possession of both technical and interpersonal skills is a must for the development of the project. Technical skills are necessary for tasks such as real HTML scripting, tables and frames, CGI forms, databases, Java script and all other programming, interpersonal and communication abilities necessary for dealing with business users, senior management executives and other members of the project team (Dennis and Wixom 2000, Kendall and Kendall 1995).

Motivating the team members is recommended (Yeates, Shields and Helmy 1994, Kendall and Kendall 1995, Dennis and Wixom 2000).

Controlling and directing the project

This last step of the project management includes refining the original estimates, tracking tasks, co-ordinating project activities, managing scope and mitigating risks. The manager should keep it in his/her mind that the ratio of positive results increases as the project nears completion. Illustrative exhibits of the work plan, such as Gantt Charts, must be used for tracking the tasks. Experts (Yeates, Shields and Helmy 1994, Kendall and Kendall 1995, Dennis and Wixom 2000) have suggested that project managers should allow only those additional requirements to the project at this stage that they deem essential.

7.6 Phase 3 - Systems Analysis

The analysis process

This part provides an overview of one of the fundamental phases of a system's development life cycle, the SDLC process. This is the systems analysis process. The systems analysis
process provides the solid base for the following SDLC phases and answers many of the key questions about the new system. Dennis and Wixom (2000) divide this phase into three steps: understanding the as-is (current) system, identifying improvements and developing a concept for the to-be (new) system. Burch (1992) identifies the major tasks of systems analysis as:

- Establishing the system's scale
- Gathering information
- Analysing the gathered data
- Produce system analysis report

To carry out their work precisely and adequately, it is clear from the discussion above that the system analysts not only need to determine the scope of the new system but also to assemble a great deal of important information related to the proposed system, such as ideas for improvements, gleaned from users, managers, and other key players in the system, and aiming to build a concept for a new system.

**Gathering information**

As the project analyst works to understand the new system and its requirements, it will be a key necessity to examine a variety of data such as technical, financial, organisational and other related information, which will offer a valuable insight and a clear understanding of the current situation of the system. The analyst needs to examine both quantitative and qualitative hard data to piece together an accurate picture (Kendall and Kendall 1995). No specific technique is superior to another. Most projects use a combination of techniques to ensure the breadth and depth of information. The most commonly used techniques are: interviews, joint application design (JAD), group meetings, document analysis, observation and questionnaires (Dennis and Wixom 2000). Such an information gathering process is also useful for gaining political support for the project, and establishing trust and a closer relationship between the project team developing the system and the users who will ultimately choose to accept or reject the new system.
Process modelling

To understand and explain the information requirements of the users, it is important for the systems analyst to document the processing of the new system in a communicable and concise way, which will be understandable and accessible to other members of the project team. The system analyst must be able to conceptualise the system in a diagrammatic form, showing the data flows through the organisation, the process of transformation that the data undergoes and the output of this process (Davies 2002). While information-gathering techniques, such as interviews and investigations of hard data can provide the analyst with narrative information of the system, other techniques, such as a Data Flow Diagram (DFD) provide the analyst with a visual illustration which can clarify the process of the system. Consequently, process modelling or processes design constitutes the design elements which specify when and how system process should be undertaken to support user requirements. Dennis and Wixom (2000) define process modelling as:

“A process model is a formal way of representing how a business system operates. It illustrates the process activities that are performed and how data move among them. A process model can be used to document the current system (i.e. as-is system) or the new system being developed (i.e. to-be system), whether computerised or not” (Dennis and Wixom 2000, p. 144).

Because of the diversity of users’ information requirements, the process design is also diverse. Burch (1992) portrayed this diversity in three dimensions, as illustrated in Figure 7.1.

The first dimension deals with time, that of technology platform comes second. If the time aspect is real time, the technology platform must be some kind of networked computer architecture with online access to databases. Similarly, if the time dimension is batch, the technology platform will typically be a stand-alone computer that processes sequential files periodically.

The third dimension deals with the key modelling techniques used to design real-time and batch process applications such as Data Flowing Diagrams (DFD) (Burch, 1992) as used in chapters 4 and 11.
As the name implies, Data flow diagrams (DFDs) are a pictorial depiction of a process showing the movement of data into, around and out of a system. This is a structured analysis technique that a systems analyst puts together as a graphical representation to provide a compact, top-down representation of a system, which eventually provides a solid system foundation (Hawryszkiewycz 1988). DFD is used here to provide a representation of the proposed system. Kendall and Kendall (1998) address the advantages of using DFDs:

- "The biggest advantage lies in the conceptual freedom found in the use of four symbols. None of the symbols specifies the physical aspects of implementation. This allows the systems analyst to conceptualise necessary data flows and to avoid committing too quickly to their technical realisation.

- The data flow approach has the additional advantage of serving as a useful exercise for systems analysts, enabling them to better understand the interrelatedness of the system and its subsystems."
- A third advantage of the data flow approach is that it can be used as a tool to interact with users.
- The last advantage of using data flow diagrams is that they allow the analyst to describe each component used in the system" (Kendall and Kendall 1998, p. 229).

Data modelling

The analyst must accurately acquire information about the new system by questioning, collecting and collating documents, to present it in DFDs. From this, the underlying logic of the system and the requirements for the new system are identified. This involves checking details with the user, improving existing models and developing new ones. Dennis and Wixom (2000) define the data model:

“A data model is a formal way of representing the data that are used and created by a business system; it illustrates people, places, or things about which information is captured and how they are related to each other. The data model is drawn using an iterative process in which the model becomes more detailed and less conceptual over time” (Dennis and Wixom 2000, p. 190).

Creating the logical data model is an iterative process that begins with a basic plan model of the current system. This first stage can be made without interpreting the data content of each entity in detail, in other words, without indicating how data are stored, created or manipulated. Progressively, with further fact-finding processes, the original data model is expanded and refined. This model has no implementation or technical detail. This helps the analyst to focus more easily on co-ordinating the diagram with the real requirements of the system (Hawryszkiewycz 1988, Dennis and Wixom 2000). There are several ways to model data but the most commonly used technique is by entity relationship diagrams (ERD). This diagram shows the information that is created, stored and used by a system. It is drawn to establish the direct relationships between entities. ERD shows that each relationship has been considered and resolved in a way that satisfies the requirements of the user’s new system (Kendall and Kendall 1998, Dennis and Wixom 2000).
7.7 Phase 4 - Design Phase

The process of fact gathering, analysing, and modelling during systems analysis provides the foundation of the new system. In this phase, the system proceeds from the approved objectives and requirements, to the detailed system which means that the entire system has to be expounded in terms of information flow, data, screen layouts, printed outputs, designs and procedures.

This phase contains planning guidance procedures that direct the project team precisely through the system construction. The requirements identified in the analysis phase serve as the main inputs for design activities in this phase.

Design strategies

An organisation needs to make an explicit decision on its approach after considering three alternatives for creating the new system: developing a custom application in-house; buying a packaged system and customising it; or relying on an external vendor, developer or system provider to build and support the system. A final decision depends on in-house experience, staff skills, budget, organisation size and visions and objectives (Kendall and Kendall 1998, Davies 2002).

Selecting a design strategy

There is nothing absolute in terms of designs as each serves its own purpose. Every design has specific objectives to serve and has some characteristics that provide a common basis to other designs (Kendall and Kendall 1995, Dennis and Wixom 2000).

- Each design has its own identity and characteristics,
- Business strategy, is a perquisite for every design,
- Every design reflects the skills and experience of the in-house designers,
• The timeframe and size and complexity of the system affect the system design
  (Kendall and Kendall 1995, Dennis and Wixom 2000).

Developing the design plan

According to the literature (Yeates, Shields and Helmy 1994, Kendall and Kendall 1995,
Dennis and Wixom, 2000) the project team either uses in-house resources to develop the
design or it relies on the expertise available in the market. In the latter case, the quality of
the design is verified by a mutually agreed system of verification. If the project team does
not opt for outsource, it must have the knowledge to ensure application of the specific
technology to the plan devised to build a system. During the process, the team should be
aware of conflicting factors that could influence their decision (Hawryszkiewycz 1988).

Physical data flow diagram and entity relationship diagrams

Development from the logical to physical entity relationship diagrams (ERD) and the data
flow diagrams (DFD) is an important aspect of the design phase that illustrates in detail how
the system will be constructed and how the final system will work (Kendal and Kendal
1989).

Architecture Design

The architecture design is a vital part of the design phase. This depicts the future technical
environment of the new system including the network model, the hardware specifications
and the plan for security and global support (Dennis and Wixom 2000).

Computing Architectures

According to Dennis and Wixom (2000), the computing structure is of three types
determining who will accept the responsibility of running the system:
Table: 7.1 Types of servers

<table>
<thead>
<tr>
<th>No</th>
<th>Type of computing</th>
<th>Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Server-based</td>
<td>The server will perform all work.</td>
</tr>
<tr>
<td>02</td>
<td>Client-based</td>
<td>The client computers will be responsible for the application functions.</td>
</tr>
<tr>
<td>03</td>
<td>Client-server</td>
<td>The work is shared between client and server. It can be two-tiered, three-tiered or multi-tiered.</td>
</tr>
</tbody>
</table>

Selection of each type should be based on several criteria: the cost and ease of development; the need for a graphical user interface (GUI); network capacity; central control; security and scalability (Dennis and Wixom 2000). In some cases the project team may also desire to take into account the existing computing architecture of the current system.

Network model

A network model is not achieved in isolation; various technical components of information system like servers, personal computers and networks are integrated. It also displays the geographical links and locations throughout the organisation.

Burch, (1992) believes that

“A well-designed network can essentially change the way an enterprise conducts its business. A network enables an organisation to bring its system applications out to where the work is being performed” (Burch 1992, p. 490).
The components of the network model have the various clients as detailed by Dennis and Wixom (2000), O'Brien (2001).

- Computers
- Workstation and servers
- Databases, Communications, and printers.
- Connection: wires, dial-in connections, satellite links.
- External links with internet service providers.

In addition, the network model development is a top down process too.

First, creating a high-level diagram to show the geographic locations that accommodate the various components of the new system; secondly, after the creation of the high-level diagram, a low-level diagram is developed to illustrate each in detail with location mentioned in the high-level diagram. This model also shows the links between the system's hardware. (Dennis and Wixom 2000).

**Hardware and software specification**

The identification of the hardware and software specifications required for the support of the new system must be detailed along with additional costs including technical training, maintenance, extended warranties and licensing agreements (Kendall and Kendall 1989, Dennis and Wixom 2000).

**Global issues**

The global requirements also compel the project team to plan how the application will be developed, maintained and used in a 24-7 environment and need constant vigilance for the communication infrastructure that is in place (WTO 2001c). The designed system must be
capable of coping with the effect of new global trends, such as multi-lingual requirements. In addition, the project team has to decide the type of control for the application; whether a centralised control or an application controlled by local groups.

Security

The organisation's information and applications must be securely protected. The project team must follow a three-step process: [1] identify threats to the system; [2] assess their risks; and [3] develop controls to address each threat. The controls include security plans, password protection and firewalls (Dennis and Wixom 2000, O'Brien 2001).

User Interface Design

The user interface works as the face or front page of the whole system. Generally, the interface consists of the screen displays that help the user to navigate through the system. It also includes the data screens and forms the output of the system, either on paper, on screen or via some other medium (Rowley & Slack 1998).

User interface design principles

Construction of a user interface has several principles. The most common design is rectangular in shape having a top menu for navigation, consisting of a central area for inputs and outputs, and a status bar at the bottom. The supreme objective of design is to facilitate users' access to the system keeping in view their needs, and to make them aware of content and context. The best interfaces are user-friendly; they are equally good for all whether novice, experienced or people with disabilities (Faulknar 1998, Rowley & Slack 1998).

It must also be aesthetic and attractive to users in terms of colours and fonts used. A colours scheme must be exceptional and fonts should be consistent to make the site attractive. Reliability in design is another important issue, especially for the navigation controls and terminology. As well as all this, the emphasis must be to accelerate the data entry, decrease the errors and offer prompt and proper feedback to the user from the system (Faulknar 1998, Rowley & Slack 1998).
The user interface design process


The purpose of the navigation design is to provide mobility to the users within information space. The system is made simple through preventing user mistakes and simplifying recovery process (Whitaker 1998, Dennis and Wixom 2000).

Input Design

Input design plays an essential role in the system. Poor input calls into question the trustworthiness of the entire system (Kendall and Kendall 1995). Input design is the designing of screens used to enter information.

Output Design

The information a system delivers to users, on the screen or the paper, is called the output. It must be accurate, precise and concise (Kendall and Kendall 1989, Dennis and Wixom 2000).

7.8 Phase 5 Data Phase

Data storage design

Kendall and Kendall (1995) think storage the heart of an information system. The data must be accurate and readily available to the users. A two-step approach to data storage design recommends selecting the format of the data storage and optimising the data storage to perform effectively.
There are two methods (Kendall and Kendall 1998, Dennis and Wixom 2000) available for data storage format in computer-based systems. The first method is to store the data in an individual file while the second approach to data storage involves building a database.

Database Data storage formats

Kendall and Kendall (1998) define databases:

"Databases are not merely a collection of files. Instead, a database is a central source of data meant to be shared by many users for a variety of applications. The heart of a database is the DBMS (database management system), which allows the creation, modification and updating of the database, the retrieval of data, and the generation of reports" (Kendall and Kendall 1998, p. 606).

Mattison (1998) gives a narrower definition of a database:

"A database is a collection of data, organised logically and managed by a unifying set of principles, procedures, and functionalities that helps guarantee the consistent application and interpretation of those data across the organisation" (Mattison 1998, p.19).

There are four types of database:


Selecting a data storage format

Since different data storage formats serve different purposes, the selection depends on the type of system to which a specific format would be applied. Kendall and Kendall (1998)
Dennis and Wixom (2000) suggest that the project team needs to consider technology already existent in the organisation and technology likely to be used or required in the future.

**Optimising data storage**

Efficiency and speed of access are necessary to optimise a relational database. Mattison (1998), Dennis and Wixom (2000) recommend efficient relational database tables in terms of data storage for they have no redundant data and few null values.

**Data sizing**

Employing the right hardware to support its data improves the speed of the system (Dennis and Wixom 2000).

**Program Design**

The program design performs the system’s application logic. Analysts must create instructions and guidelines that clarify matters for the programmer. The structure chart and program specification are the two techniques that are used together to communicate how the application logic for the system needs to be coded. The first depicts a program at high level in graphic form while the second is a set of written instructions at a lower level of detail (Dennis and Wixom 2000).

### 7.9 Web Information System

The new information exchange channel (web information system) needs cautious planning, preparation and expert website design to achieve the optimum results (Takahashi and Liang 1997). In the previous section IS development was covered generally with only a cursory mention of the Web. This section addresses in detail the issues related to the Website development.
Business strategy of the Site

Identifying the goal, concept and the audience of the project are necessary to recognise how the site is presented and the content and the visual style used. The client vision must be given priority in this respect. Assessment of technical needs, budget and the time scale play a vital role in determining the business strategy of the site (Powell et al. 1998).

Financial considerations

Financial considerations refer to the costs of creating and maintaining the web application. This covers short and long-term budgeting for the website (Powell et al. 1998).

Site classification:

Internet, Intranet and Extranet are the three formats prevalent. Each of these three environments has its own requirements that are specific to the type of site. Intranets require technologies different from Internet and Extranet sites. With an Intranet site, it may be possible to design for a very specific browser and platform because the designers and programmers in this case know the users. Internet sites are unpredictable and uncontrolled; hence it is imperative for the site to be more generic to satisfy users' needs (Sano 1996). The Intranet mainly focuses on the corporate guidelines of the organisation whereas Internet sites contain marketing requirements. Extranet sites involve both (Powell et al. 1998).

Site infrastructure

The objective of the project determines the nature of the site. There are two types of sites:

1. Static sites: Static web pages (Brochure ware) are flat file system HTML files with their contents stored in a database (Milano 2000). Such sites take advantage of the medium's strengths, such as inter-activity, personalisation and dynamic content. Therefore, the requirements for a static site are mostly content-related (Milano 2000).
b. **Dynamic sites**: The dynamic sites require both content and functionality. The dynamic site objectives include dynamic page generation to serve content, which is individually tailored, or to offer complex search capabilities. Given high volume usage where ease of maintenance is the main concern, or dealing with continually changing content like press releases. A dynamic site is the appropriate choice for an organisation (Sano 1996, Powell et al. 1998, Milano 2000).

It is important to note that the static and dynamic options are not mutually exclusive (Powell et al. 1998), and both can be present in a single website. A site can have a split function, in part dynamic and the remainder static. Low inter-activity sites may require a partial database, while sites with dynamic content, renewed daily, might be entirely database-driven (Sano 1996).

The differences between static and dynamic Websites influence their functionality, the development process of the proposed system and the requirement phase. The objectives of the project reflect the organisation's needs and visions. Thus, the decision to develop a dynamic site, a static site or a combination of the two is conditional upon objectives (Sano 1996, Powell et al. 1998, Milano 2000).

**Environmental requirements**

Milano (2000) considers the audience as the heart of site designing. Therefore, a website designer should take considerable time and care to define and address the needs and requirements of end users vis-à-vis their likely access speed, preferred computer platform, browser and their level of computer expertise. In addition, some general information about the target audience can be obtained by surveying a sample of the user population or by analysing statistical reports of existing users (Powell et al. 1998). Unlike using printed or multimedia CD-ROM products, Web users may dramatically alter the appearance and layout of Web pages by changing attributes in their user preference file (Sano 1996).

For an Intranet site, connection speed and monitor size are not significant issues but specifying browser type is vital. Applying various technologies different browsers can be
used; such as ActiveX supported by Microsoft Internet Explorer, Netscape-centred JavaScript etc. But the Intranet will not be completely functional using either browser without establishing the system requirements, so the benefits of designing an Intranet site will be lost (Powell et al. 1998).

End-user requirements cannot be achieved in isolation without server consideration. Site provision within a server type needs to be sensibly established besides hosting general information (Sano 1996, Powell et al. 1998). Functionality demands the site influence at server-side, corporate standards and performance requirements; but does impact the design decision, if the site is dynamic. The middleware of the dynamic sites must be compatible with the server. Special software installation, such as an electronic commerce package also demands compatibility with the server. In addition, server selection is highly dependent on volume of transactions (Powell et al. 1998).

**Marketing and corporate requirements**

Intranets involve primarily corporate requirements, Internet sites have marketing functions, while, extranet sites involve both corporate and marketing demands (Powell et al. 1998). The corporate requirements of Intranet include; document format issues, internal communications standards and document management systems. Internet sites do not need to focus on internal corporate requirements, but need to address the marketing and branding necessities of the organisation. The marketing procedures of a website need consistency with other marketing methodologies of the organisation. The standards, which an organisation prefers to maintain to its print literature, must be applied to the websites (Benckendorff 1998).

**Content requirements**

Content selection is a prerequisite for an outstanding website. The content must be carefully selected, logically organised and follow appropriate guidelines (Benckendorff 1998). The information provided should be relevant, accurate and adequate for user satisfaction. Early
collation of information would avoid the project delay. Rosenfeld and Morville (1998) describe the importance of the contents as:

"Sites that use well-planned information architecture are as magical as the phenomenon of the Internet itself: Both are incredibly effective at the tricky task of routing users and packets respectively. Strong information architectures are specially important for large web sites" (Rosenfeld and Morville 1998, p. 8).

To manage the content of websites a content management system (CMS) can be used. It consists of two elements; content management application (CMA) and content delivery application (CDA) (Morville 1998). The CMA element allows the content manager or author to manage the creation, modification and removal of content from the website without getting the expertise of a Webmaster and knowledge of Hypertext Markup Language (HTML). While the CDA element uses and compiles that information to update the website as the content has a specific life. It originates, evolves, consumes and often ages like many organic substances (Whatis.com 2002).

**Web Taxonomies**

Classification of web site content is fundamental for easy, accurate and timeless browsing. In Web design, taxonomies are created to describe categories and sub-categories of topics. Classifying the web content has become more acute especially for large websites, which require the development team to implement more structured information-handling techniques (Whatis.com 2002).

**Functionality requirements**

Functionality is the specification the programmers and designers use to develop the site. This factor addresses the competence and operational method of the site. Functionality requirement for a simple static side is a request form for users to get information or only directional navigation may solve the purpose (Milano 2000) while the dynamic sites connected with merchant accounts for online transactions need more secure functionality to avoid fraudulent activities. An Extranet with e-commerce technology has major functionality
requirements for detailed online inter-activity. An Extranet will most likely be password-protected and must be dynamically generated (Hamill 1997, WTO 2001).

Estimation and resource requirements

In the absence of a significant history of the website, the estimation of the web project becomes a quite difficult job (Powell et al. 1998). The scope of the design and the technology are the main factors to evaluate the cost and assess the resource requirement.

The in-house development of the website involves careful assessment of the resources like time, expertise and finances designated for the project. It requires constant vigilance of the project manager as he/she bears the responsibility to facilitate communication and coordination among the project team (Powell et al. 1998, Rosenfeld and Morville 1998). If the website development is outsourced, the estimation process involves comparing bids and allocating resources. In this case, vendor firms will carry out the estimation process. They will produce the development itinerary, ensuring close liaison with a designated person of the organisation (WTO 2001c). However in the case of DIS there are disadvantages in choosing this route,

"Particularly in relation to splitting commission, retaining the customer data and the right to use it and incorporating the full range of the destination's accommodation products" (WTO 2001c, p. 29).

The project team

The project manager must take maximum care in the selection of the team that has to completely design the website. The expertises required are as diverse as information architecture, graphic design, writing and editing, programming, marketing, and project management though the composition of this team will depend upon the needs of a particular project, the available budget and the availability of expertise (Rosenfeld and Morville 1998).

Gotomedia, too, lays much emphasis on the factor of collaboration among the team members and terms it the secret to a good website. Because of the changing nature of roles
and the Web many individuals wear multiple hats when working on projects (Gotomedia 2000).

The website project team ideally comprises the following key members as agreed by most of the authors (Sano 1996, Powell et al. 1998, Gotomedia 2000).

Marketing

A marketing team focuses on the intended purpose and audience of a website. Their job is to bring the website into the spotlight and into the hands of the target market by formulating an internet marketing strategy and matching it with the organisation's objectives, products, services and target market (Sano 1996, Powell et al. 1998).

Information architecture

Information architecture focuses on the design of the site, the indexing, labelling and the navigation systems to support browsing and searching through the website (Sano 1996, Powell et al. 1998).

Graphic designer

The designer is responsible for the graphic identity or appearance of the website. The designer strives to create and implement a design philosophy that balances form and function (Sano 1996, Powell et al. 1998).

Editorial

The use of language in the website needs skilful persons called editors who have to ensure a common voice for the site and creating new copy. Their task includes proofreading and editing copy and massaging content (Sano 1996, Powell et al. 1998).
Technical

The technical designers and programmers look after server administration and the development or integration of site production tools and website applications. They advise the other teams regarding technology-related opportunities and limitations (Sano 1996, Powell et al. 1998).

Project Management

Besides keeping the project within budgetary resources, the project manager supervises the in-time accomplishment of scheduled tasks. It is mandatory for him/her to keep communication intact, both in-house and with the clients (Sano 1996, Powell et al. 1998).

Technical infrastructure

A website should be unique. In this respect, technical issues like connection speed, the computer platform, display resolutions and bit-depth are important; the browser support transforms a site design or the site blueprint into a working website (Sano 1996).

Since this transformation involves as complex a mechanism as coding programmes, creating various software and hardware interfaces, installing components such as firewalls and packaged tools, interfacing with existing sites, coding new software functions, Milano (2000) believes the technical skills of the web designer are vital to do this challenging job.

In addition, Milano (2000) terms it necessary for a designer to understand the limitations, advantages and compromises of HTML browsers and Internet connection speeds. Coordinating the web server, the application server and the database system is another testing job the web designer has to do to make the site attractive as well as efficient (Milano 2000). A project team must have knowledge of both the client-side technologies (the browser) and server-side technologies (CGI, Java Servlets, and Database Middleware) as it is a prerequisite to accurate technical decision-making (Milano 2000).
Content technologies

The relevant components of the technical infrastructure required for web designing includes images, sounds, videos, text, and other media forms, such as binary formats like Adobe Acrobat files, Macromedia and Shockwave files that make up a page (Powell et al. 1998).

Testing

The website on its completion must undergo Alpha testing (Lynch and Horton 2002). It includes unit testing, component testing and system testing e.g. running the site in various screen resolutions, on dial-up Internet connections and on various speeds before it is available for general public consumption. The Beta test, the second phase of testing, must be carried out on the real situation to uncover any defects missed by the Alpha test (Lynch and Horton 2002). They advise that it is necessary for the designers to be familiar with operational aspects of the site by conducting trials at every phase of its development.

Maintenance

Once the site is established on the Web, it is important to have a maintenance schedule in place for at least six months. Drew (2000) advises adding little randomising elements so that the site looks a little different every time someone visits it and giving the time and date on the site. Randomised graphics and animations can be another attraction.

Large websites need constant attention and grooming to maintain their aesthetic as well as technical qualities (Lynch and Horton 2002). Someone will have to accept the responsibility of coordinating and vetting the new content stream, maintaining the graphic and editorial standards, and assuring that the programming and linkages of all pages remain intact and functional.

Web-site maintenance, though the degree of changes may vary significantly from site to site. This development activity performed to modify or remedy the web site after it has been completed or reached some milestone can be divided into four categories (Powell et al. 1998): 1) Preventive 2) Adaptive 3) Perfective and 4) Corrective.
Security

Security means preventing unauthorised use of the website by using differing tools and technologies like firewalls. The purpose is to prevent destruction of the data and denying access to the organisational secrets. Backups may exist but it takes time and effort to restore the data (Loew et al. 1999).

Acceptability

According to Lu and Yeung (1998) the web project must conform with the legal, political, economic and cultural environment of the target population. The products, services and core messages must not be alien to the interests of the society for which the website has been designed (Benckendorff 1998). The products or services promoted or sold through the Internet should not be considered illegal by the users. Similarly, politically unacceptable ventures could put the life of the promoter as well as of the site staff under risk. The target population must have the purchasing power to make the web project economically acceptable. Lu and Young (1998) have also emphasised the cultural acceptability of the website that means the products and services for sale must conform to social beliefs and user's ways of life.

7.10 Proposed System (BDIS) Specification

As mentioned in Chapter 6, the proposed BDIS will follow the elements of a successful web-site development as listed in Table 7.2.
Table 7.2: Elements of Successful Web-site Development

**Planning**

i. Strategies and **objectives** must be formulated and formalised in a marketing or business plan.

ii. The target audience must be identified and the site must meet the needs of market segments.

**Design**

iii. The design of the site must include features that facilitate **inter-action** between the use and the organisation (e.g. e-mail, forms, and hyperlinks).

iv. The site should have a hierarchical structure, which is supported by **navigation** aids that create a sense of place and allow users to move around the site (e.g. menus, icons, site maps and search engines).

v. Other essential features that add **functionality** and aesthetic appeal must also be included (e.g. multimedia, multi-lingual support, timely information and corporate identity).

**Content**

vi. The textual content on the site must be **readable**.

vii. The site must have **integrity** in terms of the credibility, relevance and accuracy of information presented.

viii. The site should make use of **value-added** content to encourage users to explore further and to return to the site.

ix. Evidence of the **marketing mix** variables should be present as a framework for developing site content.

**Management**

x. The site needs regular **maintenance** to add, revise or remove content.

xi. **Promotion** of the site must take place using online resources and an integrated approach, which incorporates traditional media.

xii. The financial, human and physical **resources** required for the Internet Marketing.

Beckendorff, 1998

7.10.1 - The Current System

The Internet has the potential to enable the Tourism Affairs Department in Bahrain to reach beyond its original focus and significantly increase potential tourists by moving firmly into
the global market. However the Internet also poses a significant threat, as other electronic tourism competitors continue to attract international tourists away from a small destination like Bahrain.

7.10.2 - BDIS Business Strategy

It is imperative to define the Internet marketing objectives of the DIS in the planning stages of the system. Target markets need to be identified too, because the information provided by the BDIS must be tailored to the needs of these users. An understanding of the target audience’s demographic makeup will assist in the design and development of the system as detailed in chapter 11.

Unfortunately, bahraintourism.com lacks the ability to compete because the functionality of the site is at a very low level. It is a brochure-ware site, providing only the most rudimentary interactive elements as mentioned in chapter 6. It is vital to establish functionality that allows international tourists’ requirements to be matched with the tourism products available in Bahrain. To achieve this, a comprehensive DIS must be developed, and in this matter considerable effort will be required. This effort should begin by outlining the reasons why Bahrain needs to develop such a system; the answer is contained in the business strategy of this project. The first step is to identify a business strategy for the proposed system, as detailed in Chapter 10.

7.10.3 - BDIS Steering Committee

The proposed BDIS steering committee should consist of the Minister of Information and the members of the Supreme Council for Tourism in Bahrain, in addition some representatives from the private sector (stakeholders) such as hotels, travel agencies, tour operators and resorts.

7.10.4 - BDIS Background

BDIS should be:
- **Reliable**: it should be available for users 24 x 7 or most of the time, be secure, protected by a firewall.

- **Ideal**: it should be accepted by the user easy to browse, and searched.

- **Efficient**: it should work efficiently making use of the available resources.

- **Scalable**: it should be able to cope with the demands of growing end-users.

### 7.10.5 - BDIS Technical Infrastructure

BDIS is a large-scale system that contains thousands of pages that may present a risk for the Tourism Affairs Department if it is badly managed. Relational database software is the most common software used for creating a DIS database (Sheldon 1997). Some tourism offices use text-based searching because this has the advantage that it doesn't need to be formatted into a database structure but can be scanned directly from text into the computer. Text-based data can be easily accessed through the WWW (Sheldon 1997). In this case, a relational database is the most suitable database type for BDIS.

Public access to the BDIS must be assured, even during periods of high demand. BDIS needs reliable software because it needs to support multiple users with different needs. It is wise to choose an operating system that can reliably handle this situation and it may be sensible to choose an operating system which the organisation is familiar with. Securing the server is imperative. BDIS relies on various external services and links so if for any reason the network connection goes down, the system cannot offer services to its customers and if Domain Name Server (DNS) entry is not available for some time it is useful to have an off-site secondary site for the system or a mirror site; it is even better if the system have an off-continent secondary entry (Sheldon 1997). The design of the system interface will have an effect on the efficiency of the system. For instance, most of the browsable interface of the system can be designed in a manner to be cached by remote web caches and at the web browser.
7.10.6 - BDIS Design Characteristics

The design of the BDIS plays an important role in determining that visitors explore the system and remain satisfied. Three key elements of BDIS design, inter-activity, navigation and functionality provide the system with additional life but these elements are not mutually exclusive. For example, links to other sites provide inter-activity, but are also integral to site navigation.

**BDIS Interactivity**

BDIS facilitates and encourages users to exchange information with the tourism organization in an interactive way, by providing features like e-mail, forms, contests, online reservations, interactive maps and travel planners. These features will make the system user friendly, increasing the multilateral information flow between the BDIS and its users.

**BDIS Navigation**

Directionless navigation not only leads users away from the right track but also reduces their interest. The Georgia Tech Research Corporation (1998) states that the dilemma of users being “Lost” in space provided by the World Wide Web is a key issue to be addressed. In this matter pages of BDIS must be arranged in a logical way and the order of the pages and contents of the site should be in accordance with user psyche (Sargan 1998, Apple 1996). This structure must be supported by navigational aids, which allow the user to move from one page to another (Hamill 1997). Therefore, the BDIS must have navigational support to ease the navigational process in a manner which makes it user friendly.

**BDIS functionality**

BDIS is a dynamic system but some additional features are required to meet the consumer’s demands. The download facilities, banner advertisement, language and multimedia support must be considered. The functionality, aesthetic appeal and diversity of the system could enhance the objective value of the site (Liu, 2000).
7.10.7 - BDIS Content Characteristics

Ellsworth and Ellsworth (1995) propose that information rich site content having adequate information is another tool for successful web sites. Assessment of the contents four key elements, readability, integrity, value adding, marketing mix should be addressed.

Readability

Textual content revolves around the readability of information. A recent study by Nielsen and Morkes (1997) suggests that users scan web pages rather than reading them completely; therefore, by taking advantage of their behavior, sites can catch the attention through highlighted keywords, essential subheadings, bulleted lists and simple paragraphs.

Integrity

BDIS is a national system that reflects the state’s tourism image; therefore it must have accurate and relevant information. Web Magnet (2002) emphasised an ‘About Us ’ section in organizational web sites. In this section BDIS can elaborate its mission, vision, and member and contact details to strengthen its credibility. Placement of quotations from satisfied travelers can also attract and encourage the perspective tourists. Above all, the BDIS needs to establish its integrity by providing only relevant, accurate and credible information to its target audience.

7.10.8 - Value-Added Features

Reputation in the international market is a key element for success of a system. BDIS should offer something unique and free to its customers. Tourism marketing through the Internet has some special avenues for promotion through some value-added features free of cost for its customers. Virtual postcards, gifts, and links to other sites can bridge this gap (Briggs 1997).
The Marketing Mix

The marketing mix is a business strategy to attract the target market. The services industry demands optimal client satisfaction for success; therefore, while developing the content of the BDIS, the marketing mix must be considered keeping in view the requirements of the anticipated clients. According to Adam and Westberg (1998), it is the marketing mix that leads to meeting the needs of the target market consisting of those who want information or online solutions via the Internet.

7.10.9 - BDIS Management Characteristics

Managerial issues play an essential role in Internet marketing in general and in the BDIS in particular. Changes in user demographics and technology mean that the web site requires a constant flow of resources to facilitate promotion and maintenance.

Bygrave (1997) proposes that, before embarking on an Internet marketing effort, organisations should evaluate what resources are realistically available. The roles of financial, human and physical resources are often forgotten by organisations when they develop a web site. Financial resources must be allocated for both the development and maintenance of the Internet marketing effort.

In line with similar sophisticated systems, many issues or variables must be considered. The organisational structure of the National Tourism Organisation differs from country to country and requires different approaches, systems, languages and emphases. The economic structure of the NTO plays an important role in the development of such systems. To exploit the potential of these technologies, the NTO must generate resources to design an advanced, sophisticated system. The typologies of tourism information, which were noted in the literature earlier, are critical variables to be considered when designing the BDIS.

All these variables are affected by a variety of important issues, such as destination geography; tourism nature either independent or groups; travel modes such as air, public transportation or private automobile; political environment of the NTO; the various sources
of funding; and the existence of travel information and reservation systems in the country or region (Sheldon 1997).

Since BDIS is a national project, the NTO in Bahrain (Directorate of Tourism Affairs) should take responsibility for funding the BDIS, covering all the costs of their development and operation. In a partnership with the private sector, such a project also needs budgeting for maintenance and updating the system (Sheldon 1997, O'Connor 1999, Tunnard and Haines 1999).

Bahrain Tourism Affairs Department, supported by the public and private sector, is striving to boost Bahrain's tourism industry and to raise its profile globally by establishing several major tourism projects like resorts and theme parks. Tourism affairs will not face the funding constraints for the project if the government backs it as funding for tourism projects in Bahrain which has already increased. In this regard the ex-minister under-secretary Dr Kadem Rajab stated, “The government is offering attractive incentives to develop quality family-oriented facilities, such as resorts and recreational complexes and parks” (GDN 2002a, p. 11).

**BDIS Staffing Issues**

BDIS is a comprehensive system and similarly wide-ranging systems are more challenging. As discussed earlier, a prerequisite for the development of information systems is a skilled and experienced team. Accordingly, for the development of BDIS, a multi-skilled team is required as mentioned earlier by Sano(1996), Powell et al. (1998), and Gotomedia (2000).

**7.10.10 - BDIS Maintenance**

Maintenance of any system is as important as its development phase in order for it to stay in the competitive market economy. Information system analysts take into account the significance of maintenance as follow:

Maintenance can take up to 50 percent of an organisation’s total programming effort and account for up to 70 percent of a software product’s lifetime costs (Powell et al. 1998).
All information systems require maintenance if they are to be efficiently run; they need to be monitored and maintained (Laudon and Laudon 1998).

Maintenance also involves the removal of outdated information and links 'link rot' and the addition of new information. Content concerning prices, products and events must be regularly revised (Web Magnet 1998, Wilson 1996).

**Promotion**

Website management revolves around its usage and number of clients. Promotion is imperative once the site has been built. Unlike traditional media, the WWW is a 'pull' technology, which means that the organisation must attract visitors to its site. Research suggests that the top three resources used to find Internet sites are other WWW sites, search engines and online directories (Georgia Tech Research Corporation 1998).

The BDIS can also be promoted through traditional means like print media including newspapers, magazines brochures and business cards etc. Other sources such as television and radio can be utilized by adopting an integrated marketing approach. BDIS like other DISs must also be listed at well-known search engines to ensure its popularity (WTO 2001, Wilson 2002).

**7.11 Summary**

This chapter focuses on the general requirements of the BDIS starting from the planning phase moving to the analysis phase, briefly discussing the system analysis, information gathering, process modeling and data modeling. The chapter also elaborates design elements such as system architecture design, user interface structure design, and issues related to data storage design and program design. The final part of this chapter examines web information systems. The requirements of the proposed system BDIS have also been discussed. By concluding, the chapter provides a theoretical foundation for the following empirical chapters. The next chapter will discuss the results of a web-based questionnaire for tourism academics.
8.1 Preamble

As mentioned earlier, the basic aim of this research project is the development of an interactive online destination information system for Bahrain (BDIS), partly based on an exploratory questionnaire survey of academics. The questionnaire lays the foundation for this research project by providing information on respondents' perceptions for developing a national Destination Information System (DIS).

The questionnaire contains the following five categories:

1. Ordinal ranking questions, such as:

   Do you think that DIS should be operated by?

   - Government Department
   - Private Organization
   - Hotels or travel agencies
   - Other, please specify ______________________

2. Nominal ranking questions such as:

   How important is the information technology for providing tourist information to potential tourists?

   - Unimportant
   - Important
   - Very important

3. Dichotomous questions: Yes/No questions

4. Contingency questions, such as:

   In order to define national DIS strategies, guidelines and procedures, do you believe that a national committee should be formed?  
   - Yes
   - No

   If No please go to section 3

5. Open-ended questions.
What other services do you think a national DIS should provide?

8.2 Questionnaire Data

8.2.1 – DIS General Issues

1- Respondents were divided in their opinion, when asked (question 1.1) what they consider the effective media for attracting international tourists. Not surprisingly, out of a sample of 170; 50 (29%) identified tour operators as being a major distribution channel, where as 39 (23%) believed that a DIS is the most effective medium, while 37 (22%) selected both leaflets and brochures, 24 (14%) Radio and T.V., and 20 (12%) considered other mediums such as newspapers; billboards and exhibitions (see Figure 8.1).

Though DIS is still a new concept, it can be assumed from this data that DIS could be a promising and important medium for attracting international tourists. However, people still trust tour operator services due to human involvement as some respondents are of the view that:

"Tour operators are an effective medium because tourists like to have human interaction, for instance to give them better advice."

![Figure 8.1 Most Effective media](image)

2- Respondents were also asked (question 1.2) to justify their choice for the most effective medium. Some of their comments are mentioned here. One of the advocates of Tour Operators said:
"Tour Operators have the best understanding of their markets, and allow destinations to leverage their marketing dollars through strategic partnerships and co-operative efforts."

The most common comment was that the tour operators could provide more pre-trip information than the other media due to their experience in the marketplace.

"They know their markets best, so they can put together packages that will appeal to these markets. And from an efficiency perspective, they already have a presence in the local market that cannot be bought from overseas."

Tour operators were an effective medium according to the questionnaire results. This behaviour may be due to the fact that the respondents' greater travel needs require tour operators more than other media, or they may be seeking more complex travel arrangements and need help with unusual travel destinations such as adventures in forests, deserts and so on.

However, 23% of the respondents believe that a DIS offers a powerful combination of two-way interactivity. According to the respondents, by using the capabilities of this new medium, it will lead to deeper relationships and greater personalisation of services. Some DIS supporters commented that:

"Specific markets can be targeted; DIS would seem to be a logical follow-up resource. A battery of information sources is needed."

"Inexpensive way to send information to millions of people, particularly niche tourists."

"DIS will in the long run be the cheapest and most suitable medium to use."

"Assuming that the DIS is web-based, it would be a cheap unrestricted access to a very wide audience indeed. In addition, it could be a useful supplementary resource for overseas NTO offices and TAs. Nevertheless, there will always be a need for the other mediums you have listed in your questionnaire."

Some respondents mentioned that a combination of more than one medium is an ideal way of attracting and communicating with tourists. They suggested:

"Most people do not have that much information on many international destinations; they are easily influenced by images of 'paradises', and tour ops (STC) are key players within this process (certainly TV is crucial but doesn't have the same coverage as travel agents, or tour operators) – also the Internet
plays a key role in decision-making and many tour ops (sic) are exploiting this opportunity."

3- When respondents were asked to indicate the importance of information technology (IT) in (question 1.3) (See Appendix 2) for providing tourist information to potential tourists 99 (58%) respondents considered IT as very important, 56 (33%) considered IT only important, leading to a total of 91% in favour of IT as an important channel (Table 8.1). This result reflects the growing awareness of the application of information technology’s in tourism industry.

Table 8.1 The Importance of technology for distribution of tourism information

<table>
<thead>
<tr>
<th>IMPORTANCE</th>
<th>RESPONDENTS</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unimportant</td>
<td>15</td>
<td>9%</td>
</tr>
<tr>
<td>Important</td>
<td>56</td>
<td>33%</td>
</tr>
<tr>
<td>Very important</td>
<td>99</td>
<td>58%</td>
</tr>
<tr>
<td>Total</td>
<td>170</td>
<td>100%</td>
</tr>
</tbody>
</table>

4- When respondents were asked (question 1.4) whether developing a national DIS helps in the development of a country’s tourist industry, an overwhelming majority of 95.8% believed that a Destination Information System (DIS) would help a country’s tourist industry. Responders recommended applying DIS in all destinations in future, as one Russian respondent stated:

"So far International Tourism for Russia can't rely on DIS (which will be most effective in future) - because of the lack of DIS in most Russian destinations."

A Chinese respondent stated:

"Before people leave home, they contact tour operator or travel agency (in China, both ... are called travel agency) and Internet, but as they arrive the place, what they need most is the destination information, which can provide latest and the most detailed information."

5- About the content of a Destination Information System (question 1.5), respondents provided their opinions as: 60 (35%) respondents regarded specific information on
attractions and weather as major information, but considered all information important, 50 (29%) thought that general destination information should be available in a DIS, 35 (21%) believed that accommodation information must be available in a DIS, 15 (9%) believed that information about reservations must be available, and 10 (6%) consider other information such as safety, cultural, and medical information to be in a DIS.

Figure 8.2 Types of Information Preferred in the DIS

![Bar chart showing preferences for various types of information in a DIS.]

8.2.2 – DIS Organisational Issues

Respondents were asked (question 2.1) whether a national committee should be formed to define national DIS strategies, guidelines and procedures. A majority of respondents 150 (88%) showed positive response about this.

For establishing a national DIS committee (question 2.2); 65 (38%) considered establishment a government department as tourism boards or national tourist offices as the most appropriate for establishing a national DIS, 55 (32%) believed that a private organization is more appropriate body for establishing a DIS, 40 (24%) thought that local tourism boards are the most suitable bodies to establish a DIS, 10 (6%) considered other bodies such as small- and medium-sized enterprises (SMEs) and other appropriate stakeholders (Figure 8.3).
A few comments (question 2.3) in this regard are noted as below:

"There should be people from different sectors (information, promotion, culture, economy) and from different parts of the country, sometimes locals know better what they have to offer."

"Tourism is such a diverse field that all role players should be involved in the planning procedure."

"Government organisation can ensure the ‘weight’ or accuracy of information, while local boards will facilitate the flow of information."

"The design of DIS should be at a national level planning."

"National tourism organisations have the ability to leverage government funding, and direct overall strategies. Local tourism boards can focus on particular destination marketing."

**Figure 8.3 The Appropriate Body for Establishing a DIS**

A public-private partnership for building the DIS is mutually beneficial for both sectors. The private sector, working with the government to improve the service industry is critical in the very nature of national economy. Government works with the private sector to reduce procedural barriers and overcome funding problems. Public-private partnership remains one of the conditions for the survival of DIS, as a DIS needs the financial support
both from private sector and public sectors. Public sector has to cover the legislative side, as the DIS cannot function effectively without governmental support (Buhalis and Spada, 2000) an effective partnership between the public and private sectors must therefore be identified. Some comments relating to this issue are:

"The government represents the whole country and national tourist boards go more into details. Private companies are normally more efficient in implementing such a system because of less organisational overhead."

"The government is most suitable for policy implications, the private for commercial co-ordination; and local tourism boards for grass root inputs."

2- Respondents were asked (question 2.4) to choose from a list of tasks that they think the DIS committee should undertake; 60 (35%) respondents said the main task for a national DIS committee should be to ensure comprehensiveness information provided, 59 (35%) said obtaining the necessary funding for the DIS should be the main task, 40 (24%) considered the main task should be to manage the DIS, and 11 (6%) believed that the task of the committee should to negotiate with the external electronic market.

<table>
<thead>
<tr>
<th>COMMITTEE TASKS</th>
<th>RESPONDENTS</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ensure information comprehensiveness</td>
<td>60</td>
<td>35%</td>
</tr>
<tr>
<td>Obtain funds</td>
<td>59</td>
<td>35%</td>
</tr>
<tr>
<td>Manage DIS</td>
<td>40</td>
<td>24%</td>
</tr>
<tr>
<td>Negotiate with external EM</td>
<td>11</td>
<td>6%</td>
</tr>
<tr>
<td>Total</td>
<td>170</td>
<td>100%</td>
</tr>
</tbody>
</table>

3- In response to who should operate the DIS (question 3.2), 65 (38%) respondents indicated that the DIS should be operated by a private organization, while 58 (34%) think that a government department should operate the DIS, whereas 27 (16%) believe that hotels or travel agency partnerships should operate the DIS, and 20 (12%) considered other operators such as tourism boards. These findings underline the role that the private sector may play in the future of the DIS.
Table 8.3 The Operating Body for the DIS

<table>
<thead>
<tr>
<th>OPERATING BODY</th>
<th>RESPONDENTS</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private company</td>
<td>65</td>
<td>38%</td>
</tr>
<tr>
<td>Government department</td>
<td>58</td>
<td>34%</td>
</tr>
<tr>
<td>Hotels &amp; Travel agencies</td>
<td>27</td>
<td>16%</td>
</tr>
<tr>
<td>Tourism board</td>
<td>20</td>
<td>12%</td>
</tr>
<tr>
<td>Total</td>
<td>170</td>
<td>100%</td>
</tr>
</tbody>
</table>

8.2.3 – DIS Funding Issues

1- Funding is the key factor in implementing a project. In case of development of DIS; 70 (41%) respondents think that development funding for DIS should come from the government (question 3.1), 57(34%) responded that local tourism boards are the ideal sources of funding, 43 (25%) stated that private companies should bear the responsibility for development funding.

Table 8.4 Funding Body for the Development Stage

<table>
<thead>
<tr>
<th>FUNDING BODY (DEVELOPMENT)</th>
<th>RESPONDENTS</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government</td>
<td>70</td>
<td>41%</td>
</tr>
<tr>
<td>Local tourism boards</td>
<td>57</td>
<td>34%</td>
</tr>
<tr>
<td>Private company</td>
<td>43</td>
<td>25%</td>
</tr>
<tr>
<td>Total</td>
<td>170</td>
<td>100%</td>
</tr>
</tbody>
</table>

2- Regarding the appropriate method of funding for the operational costs of a DIS (question 3.3); 55 (32%) respondents said that an annual fee for membership is appropriate method for funding operational costs, 39 (23%) believed that Government is the appropriate source for funding operational costs, 36 (21%) considered advertising revenues, 20 (12%) respondents thought commission per book is appropriate method, and 20 (12%) public/private sector partnership for that matter. The statistics show (Table 8.5) that the highest percentage of respondents chose annual fees membership; this provides strong evidence that this might be the suitable funding method for the operational stage.
Table 8.5 Funding Body for the Operational Stage

<table>
<thead>
<tr>
<th>FUNDING BODY (OPERATIONAL)</th>
<th>RESPONDENTS</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual fees membership</td>
<td>55</td>
<td>32%</td>
</tr>
<tr>
<td>Government funds</td>
<td>39</td>
<td>23%</td>
</tr>
<tr>
<td>Advertising revenues</td>
<td>36</td>
<td>21%</td>
</tr>
<tr>
<td>Commission per book</td>
<td>20</td>
<td>12%</td>
</tr>
<tr>
<td>Private–public partnership</td>
<td>20</td>
<td>12%</td>
</tr>
<tr>
<td>Total</td>
<td>170</td>
<td>100%</td>
</tr>
</tbody>
</table>

3- Some suggestions (question 3.4) for financial requirements and funding quoted are as follows:

"An initial sum should be provided by the government. The running cost could be covered by a small charge to local companies with additional income from advertising."

"Co-operative partnership resources are essential. A pooling of resources ensures buy-in from all parties. Less reliance on government is ideal, but there should be government resources as well."

"Personally, I do not like adverts cluttering information pages (I avoid commercial internet sites and seldom watch commercial channels on TV). If the aim of the DIS is to present the entire country's interest, then it should be a partnership between government and major industry groups. The acknowledgement for the latter's contributions can be done in the normal manner, not through ads, who is to pay the membership? If this is kept too low, it does not generate enough funds. If kept too high, it will deter the majority of small time users. Not good for public relations. Wait till the initial system has been operating for a while before widening the funding sources."

8.2.4 – DIS Content Issues

1- Respondents to (question 4.1) considered the relevancy and type of information in the DIS as; 67 (39%) responded that accurate and up-to-date information is important, 48 (28%) stated that comprehensive information of destination should be available, and 35 (21%) some sort of information from both private and public sectors should be accessible. Only 20 respondents (12%) answered that other information types such as information about international organisations should be part of the DIS (Table 8.6).
2- Quality control of DIS information plays a vital role in the development of the system (question 4.2), 66 (39%) respondents answered that a national tourism office should be responsible for quality control of the DIS information, 58 (34%) responded Chamber of commerce and 46 (27%) a private organization. The statistics show that the responses are almost evenly distributed among the three options and inclined towards the national tourist office.

Table 8.7 DIS Information Quality Control Body

<table>
<thead>
<tr>
<th>QUALITY CONTROL BODY</th>
<th>RESPONDENTS</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>National tourist office</td>
<td>66</td>
<td>39%</td>
</tr>
<tr>
<td>Chamber of commerce</td>
<td>58</td>
<td>34%</td>
</tr>
<tr>
<td>Private organisation</td>
<td>46</td>
<td>27%</td>
</tr>
<tr>
<td>Total</td>
<td>170</td>
<td>100%</td>
</tr>
</tbody>
</table>

3- When respondents were asked (question 4.3) to explain why their selected choice should be considered as the right body for quality control of the DIS? some responded with:

"The National Tourism Office (NTO), in consultation with stakeholders, has the interest of the whole tourism industry at heart and is seen as an appropriate body (most likely institutionalised by law) to regulate, protect and organise the tourism industry at the national level."

"DIS in a way projects images of the country."
"The National Tourism Office (NTO) has national responsibility and should be able to ensure comparability and consistency of information."

"It is usually the NTO that has the overall view of what is going on in destination development."

4- For information maintenance on the DIS (question 4.4), 68 (40%) responded that individual suppliers of tourist information should be responsible for this, 56 (33%) answered that the database administration team should take care of this and 46 (27%) favoured the National Tourism Office (NTO) as the organisation accountable for this duty (Figure 8.4).

5- When respondents were asked to add additional comments concerning information, (question 4.5) they contributed with:

"Some information that will allow "the feel" of the destination is very important. Some ‘legends’, ‘recipes’ or ‘games’. Current events, weather, interviews with guests and residents of the destination. DIS should have some image."

"Provide individuals an opportunity to comment on the reliability and relevancy of information obtained via the DIS – customer feedback forms, printed and web-based and other means."
“Individual suppliers...with annual reminders from central source monitored for accuracy and timeliness by a neutral body.”

8.2.5 – Technical and online services requirements

1- In an effort to identify technological requirements, respondents were asked different technological questions related to the DIS. The vast majority (question 5.1) of the respondents 160 (94%) thought that an information system work group should be created, while 10 (0.05%) reject the idea.

2- Inquiring about which system listed in the questionnaire is appropriate for a national DIS (question 5.2), 78 (46%) respondents answered that a centralised system is appropriate for a national DIS, 52 (30%) responded that a distribution database at a state level or local level is most appropriate and 40 (24%) believed that other methods such as distributed databases at regional and international level are the most suitable systems.

<table>
<thead>
<tr>
<th>APPROPRIATE SYSTEM</th>
<th>RESPONDENTS</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Centralised system</td>
<td>78</td>
<td>46%</td>
</tr>
<tr>
<td>Distributed databases at state level</td>
<td>52</td>
<td>30%</td>
</tr>
<tr>
<td>Other</td>
<td>40</td>
<td>24%</td>
</tr>
<tr>
<td>Total</td>
<td>170</td>
<td>100%</td>
</tr>
</tbody>
</table>

3- The internet remains the main medium for successful DIS (question 5.3), where 168 (98%) of respondents believed that a DIS should be available through the internet, which will enable access to a great number of people, as well as offering online services.

4- When participants were asked (question 5.4) whether they believe that a national DIS needs to interface with global distribution systems (GDS), 131 (77%) said “Yes” while 39 (22%) said “No”. 155 (91%) (question 5.5) sees Electronic Data Interchange (EDI) as an advantage for a national DIS, yet 15 (0.08%) were against the usage of Electronic Data Interchange (EDI) technology, while 123 (72%) (question 5.6) think that a DIS database should handle heterogeneous databases and 21 (12%) rejected the idea. This result shows that DIS should be compatible with other databases to avoid technical problems such as poor data flow.
5- About accessing a DIS in the future (question 5.7), Internet (web pages) was the most popular answer to this question; a major share of 50 (29%) considered the Internet as the most appropriate channel to access DIS, public access 30 (18%) kiosks and Internet TV 30 (18%) were in second place with respondents, GDS was placed in third with 20 (11%), 15 (9%) respondents saw Interactive TV as the appropriate channel, 15 (9%) considered teletext as appropriate to access a DIS and finally, hand-held devices (e.g. WAP and PDAs) got less attention with only 10 (6%) respondents. Although hand-held devices are a relatively new technology, they probably did not score well due to their recent arrival on the market. Teletext had a relatively low percentage since it is an almost obsolete technology that is being replaced by other new systems (Figure 8.5).

![Figure 8.5 Appropriate Channel for Accessing DIS](image)

**Figure 8.5 Appropriate Channel for Accessing DIS**

8.2.6 DIS additional Services

The observations extracted from theoretical debate in earlier chapters reveal that a DIS requires multiple services. 148 (87%) (question 6.1) respondents recommended that the DIS should provide services like zooming and image browsing to view maps and buildings. 160 (94%) (question 6.2) respondents answered that DIS should include a multilingual module to allow users to select their choice of language for interaction. 149 (87%) (question 6.3) respondents asked that a DIS should offer remote booking while the same percentage (question 6.4) thought that a DIS should offer booking confirmation. 147 (86%) (question 6.5) of those surveyed were of the view that DIS should offer remote
payment. These statistics provide strong evidence that DIS users have enough confidence in online booking; this is a good indicator that DIS would be accepted as the regular way of booking trips.

"Consumers spent a record $6.9 billion at travel-related web sites...during the first quarter of 2002" (BizReport 2002, p. 1).

"Travel and tourism have become rapidly the single largest category of products sold over the internet ..........Jupiter has forecast that, as a result of these trends, US online industry sales will reach $63 billion in 2006" (WTO 2001 C, p. 7).

Comments relating to other services (question 6.7) that the DIS should provide were noted as follows:

"Mailing of brochures on destination and specific properties or interest videos."

"Ability to locate attractions or events on an interactive map and determine "what else" is, in a given radius."

"DIS must have the funds to support it. In these dollar-driven days there is a need to do negotiation with other groups (stakeholders). I firmly believe that all groups need to work together - governments, local boards and business, as the issue of tourism no longer belongs to one domain. All the SME services should be provided in the DIS."

8.2.7 - DIS Testing

1- DIS Testing is of vital importance before it is launched publicly. Compatibility with business requirements and user's needs of such a system is the prerequisite for success. Therefore pre-launch testing, as emphasised in the literature review, will ensure that the system is free from errors and ready for public use. 162 (95%) (question 7.1) respondents were of the view that a comprehensive pre-launch testing was mandatory to avoid any adverse impression. As for the test-body that should carry the usability test, 109 (64%) (question 7.2) answered that a research organisation such as a university should carry the test (Figure 8.6), 35 (21%) responded that the test-body should be government and 26 (15%) answered that a private company is the most
suitable body for this task. Indeed, in its initial stages TIScover was tested at an Austrian university (TIScover 99, Werthner and Klein 1999, WTO 2001).

**Figure 8.6 DIS Usability Test Body**

When it comes to the design and presentation of the information in TIScover nothing is left to chance. In a comprehensive testing project of TIScover, TIScover 99’s precursor, maintained by the Centre of Competence at Trier University, the system got excellent marks for its user-friendliness.” (TIScover 1999).

2- It has been observed that real life experience is very important for testing the DIS. (question 7.3) 150 (88%) of those surveyed recommended that this test should include a real life experience, while only 20 (11%) believed it unnecessary. Respondents, who were affirmative in this regard, supported their views by referring to many difficulties associated with real life experience such as system bugs, and so on. They also added their suggestions (question 7.4) regarding testing usability as:

"A suitable testing time should be allocated so as to detect bugs, if any, in the system."

"Make Web site address known to university and college tourism programs throughout the world and ask for feedback. Teachers might incorporate testing into their coursework if asked."
"Try focus groups and small groups of tourists in the main source countries and on site."

"A professional consultancy services should be retained for this initiative, Its brief should include: determining appropriate content, selecting a private sector entity to operating/managing the project, undertaking the necessary IT work."

3- Additional comments (question 7.5) by respondents about DIS in general are as follows:

"It is important to set down clear objectives, aims, funding and partnership agreements before embarking on a DIS. Use the failure or successes of other DIS as template for success."

"National coverage is very hard to achieve, but even on a small scale DIS seems worth while. A pioneer product with sufficient backup by the tourism market and public bodies is needed. Moving from a small DIS towards larger one is the way forward."

"The co-operation between central tourism administration and local ones is absolutely necessary, so the principle of the whole system of establishing the DIS should be set up earlier, it should be detailed to direct the future work."

8.3 Discussion and Summary

It is not appropriate to develop a system without satisfactory information and expertise concerning the system. Understanding a system usually demands a knowledge-oriented approach. Since extensive knowledge in this regard is not readily available, learning from international tourism experts has become vital. This questionnaire has sought to determine expert tourism opinion, perceptions as well as practices regarding the requirements of the DIS. The survey used both qualitative and quantitative methods to collect relevant data.

The survey results identified: the understanding of DIS; the customers; the services; the suitable technology; public-private-partnership; and finally funding as the key elements for designing an effective DIS. Obviously, these factors affect the design of a DIS as already illustrated in the proposed theoretical model in chapter four. The respondents also identified a number of obstacles such as, limited resources, lack of proper management, insufficient knowledge and technological expertise, communication gap, and legal regulations. Acknowledging these barriers in their scope and nature can be helpful in overcoming the deficiencies.
Besides limitations, a number of issues were highlighted in this study that provide a solid foundation for the development of the DIS, such as establishment of the DIS national committee, the DIS operational body, the funding body, the DIS content, and DIS technology and services. Some of the observations and recommendations were based on the respondents' own experiences with DIS that provide rich information for this research project.

Regarding theoretical aspects of the project, the importance of information technology was highlighted as an important factor of a DIS. Some respondents also understand the technological issues such as formation of an information system working group using EDI, WWW, and DIS databases. The involvement of information technology in the DIS and its testing with real life experiences by a research institution to exercise all possible conditions that affect the system, was recommended by significant proportion of respondents.

The far-reaching implications of this survey demand a customer-focused system. Information gathered from this survey can be applied in designing a BDIS to better communicate with potential tourists. DIS design in general must provide relevant and accurate information keeping in view the customers' demands. It is evident from the survey results that an interactive design is vital to achieve the goals and objectives of the project.
CHAPTER 9

INTERVIEW FINDINGS

9.1 Preamble

This chapter presents the findings from interviews with 10 members of the management of national tourism organisations and national tourism boards in the UK. The interviewees comprised a range of senior personnel in tourism organisations and were guaranteed anonymity. The interview was based around five main subject areas; General Issues, Organisational Issues, Technical Issues, Information Issues and Future Plans.

9.2 General Issues

This section aims to elicit information regarding the approach of various organisations to usage of Information Technology (IT), and in particular, of Destination Information Systems. The respondents were asked to freely express their opinion and views for all questions.

9.2.1 - Background

When asked if their organisation takes advantage of online technologies, such as a Destination Information System (DIS), there was a general consensus among interviewees that using these technologies to improve the services and communicate electronically with customers is a major advantage.

All interviewees claimed that their organisation was taking advantage of online technologies. All the information and marketing managers stated that information and communication technology, especially the Internet, has greatly improved the tourism services offered by their organisations.

Interest in embracing the latest technology in their organisations was reflected by their competition in building comprehensive web sites. Most interviewees used superlatives, such as 'the most advanced', and 'the best' to indicate the importance of online technologies. Comments referring to their perceptions were:
"... City council has one of the more advanced local authority web-sites, and have online booking, for example for booking accommodation, or for conference bookings. Specific initiatives like clubbing breaks are available and we are linked to night clubs. Weekly and break accommodation is available online."

"At the ... we take advantage by having a web-site - we've got databases ... we collect all source of information to be held in our database, at the moment on a weekly basis but soon on a daily basis fed directly to the web-site. We have more information than we show on the web-site, but we intend collecting all information into the ... web site."

"We have a web-site for ... and on that site we have a lot of tourism information about things people can do within the region. A huge database of places to visit and places to stay, i.e. accommodation, and you can book accommodation online."

9.2.2 - Tourist Perceptions of the Destination

In reply of, whether tourist perceptions of destinations have changed as a result of accessing the information provided in their Destination Information System, interviewees generally agreed that perceptions have changed, as evidenced by the following comments:

"We have an average of about 82 e-mails per day at the moment, and we can see from the comments coming through that people are quite surprised by the information they find on the site."

"... daily receives a huge volume of e-mail enquiries - most of them ask for further information on areas not on the tourism map, and only displayed on the ... web-site."
9.2.3 - Pre-design System Requirements

The structural change the tourism industry has undergone, including global interest in tourism, technological innovation, the growing request for individually planned visits, and the increased market power of tourists, all affect the main requirements for the pre-design stage of a DIS.

Most of the interviewees agreed that meeting the needs of the modern tourist requires real-time availability and booking services. Gathering information from prospective users and involving them in the evaluation of the system from the initial stages is important. The establishment of a national committee is desirable, and there is a need to set clear aims and objectives for the system.

One interviewee stressed that good planning and setting pragmatic aims and objectives is very important, while surveying the needs of both the tourist and the destination is essential in the pre-design stage. He commented that:

"First of all in the early stages you establish your objectives for introducing a system - is it to get more business; is it to save time; is it to deal with enquiries more effectively. There are many different objectives for introducing a system and planning your main priority might affect the specification of that system. In terms of installation it is obviously critical that everybody in the organisation, particularly those who are going to use the system, know why you are installing the system and its role. Everyone must be fully trained, even before installation, and then the system should be run on a 'pilot' basis to eliminate problems."

And continued:

"You have to see this as a long term investment, and have to be quite pragmatic about the benefits, as some will be short term, some will be medium, and some will only bring very long term benefit. This is why the people who manage the destination information system have to agree the policy on why one introduces a system in the first place: are we doing it to save money, to save staff time, or to generate new business? I think objectives should be very clear, as the system has to support everything the organisation
is trying to do, and has to support the wider business and marketing principles.”

Some of the interviewees believed that a mixture of traditional and the latest technologies are the main requirements for a Destination Information System.

“Looking for ‘real time’ availability, but we still have a lag between people sending us enquiries, which we basically deal with manually, and then e-mail back or fax, so we are partially using online technology. Our main tourist information centre is online in term of e-mails and a web facility so our staff can use the Internet and can receive direct e-mail enquiries, but it is not a real time destination information system. A DIS needs both old and new technologies.”

“It is important to set down clear objectives, aims, funding and partnership agreements, before starting, and looking at failure and successes of other DIS as a template for success.”

Similar remarks were observed throughout the interviews.

9.2.4 - Main Requirements at the Installation Stage

Interviewees provided little information in this area. However, several stressed that obtaining a technical specification, including the network architecture, is insufficient. Preparing an installation plan is very important at this stage. This plan should cover not only the installation of the IT itself, but also everything that the DIS will have to achieve as an integral part of the programme. Training is a major requirement prior to installation.

9.2.5 - Essential Requirements for the Operational Stage

Most of the interviewees indicated that setting up a steering group to drive and observe this stage is essential. A project manager to direct and support the DIS is also essential in the early stages to avoid failures and duplication of efforts. Sufficient funding is indispensable.
9.3 Organisational Issues

9.3.1 - Is a National DIS Necessary or Desirable?

The overwhelming majority of respondents believed that a national DIS is necessary: to promote the national tourism industry; to increase tourism; to improve communication with local tourist boards; to reduce costs of marketing activities; to provide information for the potential tourist; and to enable tourists to quickly and easily book accommodation and other ‘products’ related to the trip. It will strengthen the relationship between the user and the destination, for example, by providing information on their specific interest. According to one interviewee:

“There are initiatives being looked at, at a national level and there are a lot of people working at regional and local level, and one of the problems is how to make sense of it all. It needs a meeting of minds between those people working at the local and regional level and those that are trying to take the larger national level view.”

One interesting finding was came from a manager with reservations about the relationship between local and regional boards, and the national authorities:

“May be we are not good in organizing information; maybe this system enables us to make the information available to more people in the right place at the right time but the fact is that we think we are only collecting information. There is a value in information if only from the time and effort of collecting it. Whether it’s just sitting there in list or databases, or in brochures; whatever the format we have invested time and money in collecting this information… One of the issues with a national system is the extent to which local people or regional organisations are happy to give away the value of this information to a national organisation that may well exploit this value of information. We invest time and effort collecting hotel details, attraction admission times and event details, and then give this away, via a national organisation, and in turn to a private company, like Thomas Cook or the AOL internet provider, with these companies taking bookings or somehow obtaining a financial benefit from using our information.”
9.3.2 - Organisational Structure for a National DIS

For a national DIS, some interviewees supported a centralised network, whereas others advocated a co-operative network; however both groups were of the view that a joint effort was best in one sense or another.

"The DIS has got to cover the whole problem. One problem we experience is that the industry is fragmented. Trying to get regions to work together and co-operate under one structure is very difficult, so I think it only needs to be led from the centre, with some kind of networking, otherwise it will not be a comprehensive DIS."

9.3.3 - Closer Co-operation and Inter-sector Linkage

Interviewees agreed that co-operation and linkage among local tourist boards is a priority for future development, especially to avoid duplication of effort.

"Yes I think it is necessary, as, in some areas, the private sector is setting up on their own without involving the regional tourist board. It is very important that local boards and the regional board work together, otherwise it will not be a comprehensive tourist development."

Another interviewee stressed the importance of closer co-operation and inter-sectional linkage within the local tourist board.

"Consistency of information is available through linking web-sites, but the difficulty is linking or sharing information stored in databases that might use different ‘fields’ or criteria. The tourism technology working group is trying to establish common protocols and common data sets, so if we decide to create cooperative networks they will be co-ordinated. At present there are too many people doing their own thing in different parts of the country."

9.3.4 - Training Required

Regarding training issues, answers were contradictory. The majority of respondents (seven persons) indicated that training is essential for operating a DIS.
“It relates back to the main requirements for pre-design and installation - the training issue is quite critical for most organisations. We would not run the system until we've done extensive training on the system. We will run it in parallel with our existing manual system for two to three months before we go fully ‘live’ with the new system ………. But training is not just about the mechanics of using a system; is not just about pressing the right button – its also about understanding why we are doing this, and about the objectives of the organisation. It is to become more efficient, more accountable, and prove the value of what we do. Staff that have been trained need to understand some of those wider issues so training needs to be more than just how to use the system – it is also about why we are introducing the system and how it fits into our bigger picture.”

However, one of the interviewees held that training for DIS is over-emphasised, and there is no real need for a large scheme of training – it just requires simple skills.

“If you’re talking about an online destination information system it will be purely online functionality without staff being heavily involved. If you’re talking about inter-action through a call centre, obviously telephone training is needed, and training in terms of being able to answer information enquiries.”

9.3.5 - Current Plans for Development

There are many differences among tourism boards in their role and remit, and their ways of working, but all agree for the need to improve their current web sites, to develop compatible databases, and to develop better online information services for their customers. Some quotations that illustrate these points are as follow:

“At the moment we have a web-site, with an online booking system. It's intended to develop this into a service section, so that we can attract tourists and provide information to them online rather than through post or via traditional means. We are developing an extranet to communicate with tourist information. We are in a middle position. At the moment we have e-mail, and web services. We have a phone system
which is ‘crumbling’ while struggling to deal with the volume of enquiries. We are dealing with an increasing number of enquiries, from an increasing number of channels but don’t have any more staff or resources or capacity to deal with these enquiries. Plans for development are really dependent on better information. At the moment we are gathering information on the longer term needs of the service.”

9.3.6 - Financial Issues

The rapid development of the tourism industry demands serious strategic planning to meet future needs, along with sufficient funding to ensure a presence in the international market. Difficult bureaucratic processes make applying for financial support time consuming and tiresome. This discourages many destinations from requesting vital funding for continuing development. One interviewee from a national tourism board, said:

“Financial issues are always likely to hinder, but we are lucky as we obtained some funding from the English Tourism Council to take this work forward along with three other regional tourist boards. European funding is possible for access in certain areas but for a more sustainable, longer-term view, a public/private sector partnership and private sector funding is necessary. We absolutely also need the support of the government.”

Another interviewee was uncertain on this problem, but showed an understanding for the precarious situation of his local authority and tried to minimise the expenses of this project. He elaborated his views by saying:

“We don’t know yet exactly what’s required, and the cost, and until we know the cost we don’t know whether we can absorb this within our current budgets or whether we need to make an additional case for funding. To introduce a new system, it is not an annual cost but we do need to put in a bid for extra money, but, at the moment, funding is not clear. Financial issues are important because local authorities are not swimming in money.”
9.3.7 - Ideal Method for Funding

Most interviewees suggested new ways and methods for securing funding for the development of their DIS, ranging from self-funding to public and private funding, but most interviewees supported a public/private partnership. Experiences are reported as follows:

"Initially ...paid for the development of our own system through funding raised from services that we sell to our members, so it is self-generated income. We also have money granted by the government, and by the English Tourism Council, which is welcomed for the development stage and getting a system running. For the longer term we will finance by selling advertising on the site, and by commission from accommodation bookings. First, a DIS will have to prove its efficiency to the destination and businesses and only then turn to collecting membership fees. If it fails, another company should be selected to operate the DIS. The system must be above suspicion or mistrust. Only loyal members will willingly pay fees."

Self-funding is difficult to generate, and some of the interviewees were already involved in public/private sector partnership. One interviewee disagreed with the public/private partnership idea, and said:

"I very much doubt we would get partner support from local industry to actually invest in the system. I think it is our responsibility to generate funds for our system."

He continued:

"I think probably the ideal method for funding is that the public sector or the local authority or the destination management organisation make the initial investment; the capital investment, so we get to a situation where we have the system, and then get support for the revenue for the year-to-year operation, and actual running costs meet by commissions or payments for adverts on the web-site or on public access systems."
9.4 Technical Issues

9.4.1 - Technical Needs for a DIS

There is a growing need for the latest technology to enable a DIS to keep pace with the rapid changes in information and communication technology. Technical issues, including network infrastructure and appropriate hardware and software, are the backbone for the operational stage. When the interviewees were asked about their technical background most of them admitted that they have a 'shallow' technical background and gave simple and general opinions from an administrative point of view:

"Ideally you only need to be online if you have 'real time' availability from the accommodation provider. At present a consumer who wants to book for accommodation can ring a call centre, which takes down their requirements. Then rings the B&B or hotels, check for availability and then rings the customer back, which isn't very satisfactory. You need individual hotels to be able to put their real time availability live into a web site, so the consumer can instantly see the availability.

Basically any system has to deliver what you specify. This depends on the objectives of your organisation, and, in design terms, on who is using it. There are some systems where the system is only used by the back office or by tourist information centre staff where they use it purely as an office system. In this situation you could argue is not as important for the design to look or be user-friendly. In some systems what you have behind the desk for staff is the same as customers will see in a kiosk, or might be the same they see at home on the web site. In this case the design must be customer friendly, and its usability is very critical."
9.4.2 - Design

A number of questions on design, including its importance, the system design strategy, and design principles followed in respondents' DIS, were posed in the interviews.

There was general agreement between the interviewees that DIS design plays a significant role in attracting tourists, with some organisations using their own design team, with the rest mostly having the design of their DIS outsourced. On design principles, all these interviewees wanted to maintain their brands, colours, fonts, aims and objectives. They were keen to maintain their standard and quality. One interviewee commented that, "it's quite important in the sense of functionality, because it needs to look attractive as well as unique".

9.4.3 - Does the Design Consider Needs, Trends and Requirements?

The tourism organisations leave no stone unturned in trying to fulfil the needs of tourists and provide top rate service to all customers. Respondents confirmed that the design of their system considers the requirement of users, and satisfying them is a priority. One interviewee stated:

"We are undertaking ongoing research with customers, and get their feedback, allowing us to improve the design of the site, and we are constantly updating the site and bringing in new developments and trends."

One interviewee, whose local authority face problems with sophisticated tourists, expressed serious concern:

"There is a problem in that users of the web are becoming more sophisticated, and are expecting relevant and up to date information. They will get frustrated if presented with too much irrelevant information, and are already frustrated by the slowness of the web and time taken to download or getting sent off in the wrong direction. I think a key is making our system, whether it's the web system or database, quick, relevant and as focused as possible."
9.5 Information Issues

9.5.1 - Information Strategy

Interviewees were asked for their preference for an information strategy for the national DIS, and to choose among:

- **Local-to-Local strategy,**

- **Local-to-National strategy,** i.e. information flow within the UK, or

- **Local-to-Global strategy,** i.e. information flow to the external world.

Information is the life-blood of tourism, and tourism services are highly dependent on information, a cornerstone of the tourism industry. Tourism organisations need a specific information strategy to cope with local, regional and international demands, and, in this regard, most interviewees preferred a Local-to-Global strategy, so as to maintain a presence in the international market. Quotes to illustrate opinions are:

“For a national destination system, I think it should be Local to Global strategy, as we are concerned about bringing tourists to England.”

“Ideally I think all three, as there is some agreement that the biggest task and priority is probably the establishment of an industry extranet, which is basically Local-to-Local because it’s only when you have got the quality and consistency of inter-action and information exchange at the local level then you are able to pass that through to the national system and from there to the international.”

9.5.2 - Regulatory Body

When given a choice between each tourism zone putting into practice its own policy regarding quality, or a government body to act as a regulator to ensure quality, there was general agreement that a government body should act as a regulator to ensure the quality of information produced by the tourism boards. Illustrative comments were:

“From the consumers’ point of view it is better if a government body acts as regulator as they will have legislative power.”
The government body should act as a watchdog/regulator to ensure the DIS maintains a reputation for impartiality and accuracy, reflecting the interest of all concerned."

This could well be national, with a 'template DIS', which could be rolled out to different destinations in an integrated way."

There should be a national quality system at national level, that's recognised by consumers, with national quality needs, and, in fact, it needs to have certain minimum legal requirements, whereas at the moment it's a voluntary system."

9.5.3 - Updating Information

All interviewees thought that individual suppliers of tourism information at the local level should be responsible for updating information. For example:

"Ideally we should go down to a local level if possible, which could be done by an Intranet system where individual tourism parties update their local data."

If you manage to get Local-to-Local flow, with compatibility financially, there is a need for some value to be added at regional level, then further value added at national level. The responsibility for updating information certainly has to be local, for example, if you have a tourist attraction, and for some reason it changes its opening time, it is some time before we get to know about it locally, so there is no way a national organisation can deal with all such changes. Major issues can be updated at national level, but the main responsibility is at the local level."

9.5.4 - Type of Information

Interviewees were certain that high quality, up-to-date, comprehensive and reliable information is required for the DIS. This comment summarised the views of most interviewees:

"We try to make the user happy and satisfied with the information provided in our system, and try to cover as much of information as possible, ranging from accommodation to flights to SME information."
We make sure that our information is up-to-date and accurate, filtered by information quality supervisors.”

9.6 Future Plans

9.6.1 - A National Destination Information System

Steps considered necessary at a national level comprise: a common policy; partnership funding; co-operation between regional and local tourism boards; more online services; and building awareness among stakeholders of the importance of the DIS. Most interviewees stressed the establishment of a national committee. A need for the development of a national destination information system is evident by this comment:

“The national tourism organisations such as the British Tourist Authority and the English Tourism Council need to get together and agree some common policy.”

Another interviewee stressed that cooperation between regional and local tourism boards is necessary to build up a national system:

“In two years time everyone else will be linked up. We will not be, because we collect information or present it using different systems. The steps required are to continue work at the tourism technology working group, co-operation between regional tourism boards and a constant flow of information, and to ensure nobody steps 'out of line' and jeopardises the possibility of a national system that works. In the short term, carry on at a regional and local level.”

9.6.2 - Future Plans for Local DIS

No tourism board appears to have a concrete plan for DIS development, but, in general, their future plans include improving their current system to accommodate the national system and trying to attract funding for their system. The introduction of new online services to their systems, such as online booking, are receiving attention, as is the introduction of new technology, such as WAP messaging services. Few specified the period and the budget required for their project, but a number of interviewees predicted, for the future, that their organisations ‘will enhance’, ‘will develop’, or ‘will introduce’
new technologies to keep pace with the ever-quickening changes. Relevant noted comments were:

"We will introduce these technologies in the future but, to be honest, it comes down to funding. We have enough funding to get off the ground, and to keep online booking, but we're going to try to link to what is available nationally, to take advantage of these resources."

"We'll enhance our web site; look at the implications for staff resources in dealing with e-mails and web enquiries; introduce our software system for a conference site as soon as possible and hopefully make some moves towards a wider destination information system."

9.7 Summary

A general awareness was noted for a need of IT involvement in tourism organisations. Interestingly, the parties interviewed were found to be already working towards introducing more online services with increased user involvement. A National Committee with clear aims and objectives was generally recommended, to decide on compatible databases, and for co-operation among all parties.

Most Boards intended to convert current web sites into a DIS, and to provide the technical infrastructure suitable for its development. It was considered that a new Destination Information System (DIS) would require an installation plan with a steering group, under a project manager, to manage the project. Training, before, during and after installation, was regarded essential.

Design plays a significant role in attracting tourists. Therefore, selecting high quality brands, colours and fonts was advised generally. High quality, up-to-date, comprehensive and reliable information was considered as essential, while updating information was regarded the supplier's task.

A Local-to-Global strategy - implemented by a governmental body - was recommended in order to maintain standards and quality, and to ensure a common policy. To cope with the funding restraints a partnership between private enterprises and public bodies was suggested commonly. It was also assumed that costs could partially be recovered by advertisements on the web site, and from commissions too. The next chapter will discuss site mapping analysis.
CHAPTER 10
SITE MAPPING ANALYSIS

10.1 Preamble

Websites can be mapped to reveal the underlying structure, and to study the design and layout, the information content structure, navigation, links and online services provided. Site mapping provides a bird’s-eye view of a site by dedicating an entire page to visualisation of the information architecture.

Typically, site-mapping tools are used to manage and maintain a site, keep it free of broken links, missing images, stale content and other problems related to navigation. In this chapter, the aim is to uncover the entire site content of similar sites with the aid of these site-mapping tools. Powermapper (professional edition), an automated site-mapping tool, was used to map targeted sites. Powermapper can present maps of any site. Customisation allows modification of maps to match the user’s needs, finds pages with invalid HTML or broken links, and gives an overview of site structure and graphic design (Electrum 2002).

Ten sites were mapped using Powermapper, then categorised according to their general structure, information content, and inter-active services such as online reservations. To clarify the structure up to 200 pages from the sites were mapped, and a map drawn for each site. This software slashes the time required for studying sites with a large number of pages and it is easy to access any part of the website, using the inter-active map produced by this software.

In order to study different aspects of international tourism portals such as design, layout, content, navigations and links, and online services, certain criteria were set for choosing the 10 sites reported on below. For example, according to the WTO (1999), Singapore was known for its excellent design, whereas TIScover was known for its excellent online services. Also included: design and layout in the case of Korea, Singapore and Yorkshire; navigation and links in the case of South Africa, New Zealand and Kenya; information content organisation in the case of Scotland and Thailand; and online services in the case
of Ireland (Gulliver) and TIScover. The last site was used as a basic model for the BDIS. In the next text that follows, a map of the site follows a subjective description of each site.

10.2 Singapore

10.2.1 - Introduction

The visitSingapore.com site is the official site of the Singapore Tourism Board (STB). The STB developed this informative tourism website to further its international tourism marketing efforts, under the theme of ‘Live it up Days’ a tactical campaign, with multi-dimensional marketing platforms. The target markets in Europe include France, Germany, the Netherlands, Sweden and the United Kingdom (STB 2002).

Figure 10.1 Visit Singapore Web site

VisitSingapore 2003
10.2.2 - Design and Layout

The site is available through different sub-main pages targeting different geographical markets, namely India, Australia and New Zealand, North America and Canada, as illustrated in Figure 10.1. Visitsingapore.com is highly interactive and customised to suit different international markets. 13 different language versions are available with up-to-date information on Singapore's latest attractions, food and entertainment options (STB 2002).

According to the WTO the layout of the site is well organised, and the overall appearance is a major strength on this site. The site has excellent images, is visually attractive and demonstrates innovative ways of delivering large amounts of information on the destination. It is a sophisticated multimedia tourism site (WTO 1999).

10.2.3 - Information Content

The site is rich in information and content, and is well organised. Information is categorised in an effective way, and is sub-divided to suit different markets. The site provides detailed information under different themes such as 'Chinatown', 'Little India', and 'Geylang Serai' which reflects the cosmopolitan and multi-ethnic culture of Singapore.

10.2.4 - Navigation and Links

The site is easy to navigate with links providing very easy access. The main drop-down menu appears on every page. The site has numerous links, both external and internal, for example, links to national parks and museums as well as links to festivals and events.

10.2.5 - Online Services

The site offers online services, such as online booking for accommodation. The site has an interactive planner that enables users to enter their holiday interest and dates (up to December 2039) and to receive a day-by-day itinerary (WTO 1999).
10.2.6 - Structure

The Singapore site map is depicted in Figure 10.5, which illustrates the organisation of the site. The site follows a hybrid style, with a combination of hierarchical and linear structure. Hierarchy is the most common web structure as depicted in Figure 10.3. The user starts at the top and moves down through the pages.

A glance at the map in Figure 10.5 reveals that the site consists of five layers, for example, the main page (the international version) is represented by the highest cubical shape, followed by the second layer of pages such as the new asia-singapore page, then a third layer of pages, including a snapshot of Singapore, which consist of a group of sub-
pages such as postcards, downloadable images and books. The fourth layer contains information on the Singapore botanical gardens, FAQ, other attractions, accommodation by location, with the fifth layer presenting information on Singaporean seafood, the animal kingdom and transport. A linear structure, usually used to move through ordered lists of similar items, is used on this site for the online booking process where the user follows certain steps to accomplish this procedure, via the structure illustrated in Figure 10.4.

10.2.7 Cultural Issues

Singapore is a multicultural country. The Malays, Indians and Eurasians make-up most of its society (VisitSingapore 2003). Singapore culture has evolved through the fusion of cross-cultural identities. The website highlights the multi-cultural and multi-ethnic characteristic of the country's population. The overall impression it conveys is that of Singapore being a lively country with a coloured cultural tradition of diverse Asian races. The same diversity has been witnessed in terms of religions, and information is available on the Website about Islamic mosques, sharp-pointed towers of chapels, Hindu temples, small Indian temples, Arabian streets, and Chinatown bearing Buddhist signs and Chinese culture. All are of great appeal to the visitors of the site. Moreover, there is plenty of information on the annual cultural festivals held across the country.

10.2.8 - Comments

At first glance, the main site creates a good impression on the visitor's mind about the organisation of the information content, especially on information related to the destination itself that provides a basis for the information content of the proposed BDIS site. It constitutes video animation, images, an inter-active map and sub-pages with international links. But the domineering presence of external ads (for other companies) on the homepage is a visible disadvantage of the site.
10.3 Ireland

10.3.1 - Introduction

The Irish Gulliver System was first established in 1990 as a joint venture between the Irish Tourist Board (ITB) and the Northern Ireland Tourist Board (NITB) (WTO 1999). It is one of the earliest examples of a comprehensive Destination Information System, (DIS). The www.goireland.com is a comprehensive guide to tourism information for Ireland with several databases such as accommodation, attractions, car rentals, vacations and flights.

Figure 10.6: Goireland Web site

10.3.2 - Design and Layout

The design of this website is straightforward and clear to users. Novices can use the site without serious navigational problems, as it is highly inter-active. The main page has
more text than images. The site has an inter-active map of Ireland in the centre of the page and thumbnail images on the right-hand side.

10.3.3 - Information Content

The site has abundant information, which is highly categorised and well organised. For example, the site contains information on some 11,000 accommodation possibilities, with an ‘abstract’ and link to the property. The site also provides a wealth of information on Irish vacations, with over 100 holidays and tours across Ireland, in addition to a variety of data on car rental, entertainment, environment, wild life, transport, education, Irish music and Irish recipes. The site provides the information a tourist needs, both before and after arrival in Ireland.

10.3.4 - Navigation and Links

The inter-active nature of the site, and its simple and easy to navigate design are its strengths. It is virtually impossible to get ‘lost’ on the site, as the navigational aids are very clear.

10.3.5 - Online Services

GoIreland is one of the pioneers in online services. One of its main features, which distinguish this site from its counterparts, is the online service it provides. It has a wide range of online services, ranging from booking accommodation, as in Figure 10.7 to shopping online. Accommodation has various databases ranging from hotels, self-catering, guesthouses and hostels to university accommodation. Other databases include attractions, flights, car rental and restaurants. The site provides for the sale of Irish goods.

10.3.6 - Structure

Goireland.com depends on a combination of hierarchical and linear structures. The site depends heavily on the linear or chronological series because the site offers a wide variety of online services such as booking accommodation, car rental, flights, and restaurants which need to follow a sequential order. The hierarchical structure was very clear, with
the site having five layers as illustrated in Figure 10.8. Information is ranked in importance and organised by inter-relationships between units.

Figure 10.7: Online booking form on goireland.com

GoIreland 2003

The site follows a logical set of priorities, starting with the main home page in layer one, presenting a general overview, followed by vacations packages, flight, accommodation and car rental in the second layer, with information such as e-cards, FAQ and a county town list in the third layer. The fourth layer is devoted to information about sport and recreation. Finally the fifth layer has more specific information about activities such as golf.

10.3.7 Cultural Issues

Ireland has a long history and a rich cultural heritage; there are castles, houses and monuments (GoIreland 2003). The site does justice to the rich past and the vibrant culture of Ireland by dividing subjects in different categories. The cultural section presents Irish cultural events, including exhibitions, concerts, readings and lectures. The site provides information about music, art, myths, language, food and literature.
10.3.8 - Comments

The website is simple, attractive and informative. This characteristic is visible in all the features that make-up the site. The goireland.com site provides the researcher with many themes and subjects related to online services for accommodation, planning, holidays, car rental and restaurants. The simple design and layout of the site indicates design usability and usefulness. The simple categorisation of information helps users handle a large amount of information easily. The site has a very attractive, clean layout with simple navigation. There is an 'About Us' section to give the visitor an idea of the character of the site and to state the website's purpose.
10.4 Thailand

10.4.1 - Introduction

The Tourism Authority of Thailand (TAT) was established on March 18, 1960, the first organization in Thailand to be responsible specifically for the promotion of tourism. TAT supplies information and data on tourist areas to the public, and publicises Thailand to encourage Thai and international tourists to travel in Thailand (TAT 2002). Thailandtourism.org is the official site for TAT, and like other tourism sites offers a large volume of information available in seven languages.

Figure 10.9: The Thailand Tourism Authority Main Page

![The Thailand Tourism Authority Main Page](image)

10.4.2 - Design and Layout

The design of the site is very simple, with a straightforward presentation. Text is not overwhelming, and a useful feature of the site is the inclusion of a provincial guide, linked to mini-sites of the provinces of Thailand. Other pages, such as the festivals page, are more sophisticated and inter-active, but more cluttered with information. The site was crowded with flash and animation which might cause a visual destruction for the viewer.
10.4.3 - Information Content

The main page provides general information on Thailand. The ‘Province Guide’ page is divided into four groups of provinces, with each province’s page containing its history and culture, things to see and do, festivals and events, what is happening on the local scene, and finally, local ‘flavour’ from food to handicrafts.

10.4.4 - Navigation and Links

Even though the site has detailed information and a large number of links, the navigation of the site is quite easy. The identical design and layout of the provincial pages, illustrated in figure 10.10, makes it easier for the user to navigate without problems. The site provides many external links, including links to tourist police, ministries and agencies, airlines, railways, weather forecasting and foreign exchange.

10.4.5 - Online Services

The site provides online services such as booking accommodation and restaurants, and buying souvenirs, but is not very inter-active. It does offer services such as e-newsletters and a mailing list.

Figure 10.10: Typical Design of Provincial Pages
10.4.6 - Structure

It is clear from the map in Figure 10.11 that the Thailand site is four-layered and uses a hierarchical structure where the users start at the ‘top’ and move through the pages. For example, the site starts at the homepage in layer one, moving through a second layer of pages such as tourism authority related information conferences, exhibitions, events and festivals. This is followed by a third layer of web pages such as Thailand tourism statistics, tour programs, Thai food, transit tour, plan your trip, and things to see and do, and moves to the fourth layer of pages such as sports, FAQ, getting around, miscellaneous, recipes, tour programs, and other small provinces such as Soughkla province.

10.4.7 - Cultural issues

Thailandtourism.org is the gateway to Thailand and contains a package of information for travellers (TAT 2002). It highlights the tourism sites and annual festivals held across the country. Thailand possesses a rich culture and diversity adds to its uniqueness. This site provide tourists with information aiming at promoting learning about Thailand and the exchange of ideas between tourists and local people, thus broadening more understanding of, and tolerance for each other’s cultural differences. A unique feature of the site is that the visitors can seek information through choosing the language.

10.4.8 - Comments

The site is well managed and more informative due to related external links such as links to governmental agencies and ministries, and other non-tourism links such as weather and a currency converter. The constant design and layout of the provincial pages provide new ideas to the researcher. Being the official tourism site of Thailand, it needs some improvements. For example, a site map, backed with information, is vital for a site like this, while in addition, the site provides a search facility on the homepage, so the items in the main index should be organised in an order of importance to the users, i.e. accommodation is more important for a tourist than tourism statistics, thus it should come first.
Figure 10.11 Thailand site map
10.5 New Zealand

10.5.1 - Introduction

The www.purenz.com, the official tourism site for New Zealand, is an introduction to tourism in New Zealand and acts as a guide for the tourist who wants to visit the country.

The website features a database of tourism industry operators in New Zealand, each with an individual web page that details attractions, experiences and offers. Once tourists decide what they want to do and where they want to travel, they can make direct contact with the individual tourism operators concerned.

10.5.2 - Design and Layout

The main menu is at the top of the main page. It is simple, with organised information and headings. The main page has news and current information on events, and, in addition, some experiences which a visitor might enjoy. The site’s main page includes: About New Zealand; Getting to New Zealand; sights and activities; accommodation; and transport and journeys. The rest of the page includes: get to know New Zealand; planning a trip; special offers; and souvenirs.

Figure 10.12: New Zealand Main Page
10.5.3 - Information Content

This site has abundant information with most of the information organised on databases. News and event information are provided on the main page, via thumbnail images related to the topic presented, for example – ‘share your memories’. The site provides information on pre-trip preparations.

10.5.4 - Navigation and Links

The navigation of the site is simple and easy, with links to stakeholders such as hotels. The strength of the site lies in its simplicity, despite the volume of information contained within the site.

10.5.5 - Online Services

The site provides links to other databases, so visitors can do their booking directly with the provider.

Figure 10.13 The Accommodation Rating System

Purenz 2003
10.5.6 - Structure

Like previous sites, a hierarchical structure is employed on the New Zealand site. The site has three layers, and starts with general issues on the homepage, including about New Zealand, accommodation, transport, sights, activities and destinations with the second layer, as illustrated in Figure 10.14, presenting 100% pure New Zealand, New Zealand middle earth, special offers and screen savers followed by the third layer which includes information on special offers, ‘contact us’ and general help.

10.5.7 - Cultural issues

New Zealand is a blend of Polynesian and European cultures. The site presents the influence of Maori, Pacific Island, European and Asian cultures which makes New Zealand a colourful and vibrant place with many different customs and foods (Purenz 2003). The purenz.com is a gateway to the rich and dynamic culture of New Zealand. Information on the indigenous people, their customs and traditions makes the site tactful. Since it is an official undertaking, it is simple and purpose oriented, and is not laden with unnecessary information.

10.5.8 - Comments

The site provides pre-trip information system, a rating system for accommodation listed in databases. The design of the top main menu provide ideas to the researcher. The organisation of the information in the main body of the home page is unique the information presented nicely. However, the visitor has to scroll down to read hidden information, which is a disadvantage. The logo of the site is not easily noticeable and looks a little bit strange.
10.6 Austria

10.6.1 - Introduction

The tiscover.com site is an electronic guide for made-to-measure holidays and package deals in Austria. This allows the visitor to choose from a wide range of regions, resorts, hotels, accommodation, B&B’s and holiday apartments.

Figure 10.15 Tiscover.com web sites

10.6.2 - Design and Layout

As well as presenting a large amount of information in a precise and straightforward way, the TIScover site has a number of features that differentiate it from other DISs. An important feature is the introduction of a WAP service. Currently, TIScover providing:
“Leisure and holiday information through WAP mobile phones. Snow reports, lake temperatures, weather, hotels available for online booking and booking of accommodation itself is all possible thanks to the new WAP service” (TIScover 2004 p. 1).

“If a traveller is looking for a vacant accommodation, the traveller can use TIScover WAP services if the traveller selects the homepage of TIScover WAP, the WAP phone automatically dials in the WAP gateway and gateway returns the requested Wireless Markup language (WML) page. Now the user can select one of the predefined queries, the cellular phone will request the current position from the location server. After the geographic coordinates were determined the geographic search can be performed. The GIS system calculates the nearest hotel in combination with TIScovers availability information. The presentation engine takes the search result and processes them with WAP specific XSL style sheet. The resulting WML page is sent back via the WAP gateway to the micro browser of the WAP phone. The traveller can use the returned phone number” (Puhretmair et.al. 2001, p. 81).

In addition to the WAP service the site is equipped with live web camera. The design of the site is clear, simple and user-friendly, and the site has inviting images.

10.6.3 - Information Content

The site is rich in information, with detailed databases related to accommodation, attractions and other activities. Information is concise and current. The information content in the middle of the page is full of useful data to users, and the site has many beautiful pictures of the destination that makes the site attractive

10.6.4 - Navigation and Links

Navigation through the site is very easy with the main menu at the top of the page. It is impossible to get lost on this site, despite the huge amount information on the site.

10.6.5 - Online Services

TIScover functionality includes information management, distribution, reservation and electronic marketing. TIScover is known for its highly sophisticated accommodation and attraction reservation system. The site provides accurate and timely information on
accommodation availability and snow conditions. It also provides holidays tailored to suit special groups, or interests (expert holidays) including private accommodation, romantic hotels, castle hotels and more than 50 other hotels. Furthermore, the site offers a new online WAP services for its customers as mentioned earlier and as shown in Figure 10.16.

Figure 10.16: TiScover WAP Services

10.6.6 - Structure

Like the New Zealand main page, TiScover applies a hybrid structure – a combination of the hierarchical and linear structures. The linear structure is used for online services offered on the site, such as accommodation, flights and car rental, which needs a sequential process to help the user through the booking process, step by step. The hierarchical structure of this site consists of four layers, and moves from the home page, which contain features such as online booking of hotels, accommodation, and car rental down through increasingly specific sub-menus and content pages such as events, life style and newsletters, as illustrated in Figure 10.17.

10.6.7 Cultural Issues

The site utilises a consumer-relation approach easily noticeable from the organisation of events the tourist is usually interested in. Concerts, opera, theatre and open-air events
are some of the most important aspects of Austrian tourism (TIScover 2003). It implies that culture is the backbone of the Austrian tourism industry. The TIScover site serves the best example of tourism websites (as researched by the author) of the countries that depend on their cultural resources to attract visitors.

The cultural resources of Alpine destinations demonstrate an advantage for both tourists and inhabitants through its destination management system. In the case of the Tyrolean destination, TIScover study what kind of cultural promotions offers are popular among Internet users and the type of influence the Internet has on the selection of these offers (WTO 2001c, TIScover 2003).

10.6.8 - Comments

This site serves as a model for the proposed system. A lot of features e.g. the main menu, the organisation of information and images on the main page, the WAP services and online reservation system have been borrowed from this site for application to the proposed BDIS site. However the site has some disadvantages such as it required scrolling down for information and the centre of the homepage is full of text and images. Another disadvantage is the language – the visitors opting for the English version confront some Dutch words in the text.
Figure 10.17 Tiscover site map
10.7 South Korea

10.7.1 - Introduction

The site is the official site of the Korea National Tourism Organisation (KNTO), and is available in seven languages: Japanese, Chinese, English, French, Spanish, German and Russian. The site offers detailed information on tourist attractions, touring logistics, festivals and culture, and provides not only essential information for visitors, but also Korean-related contents and links (KNTO 2003).

10.7.2 - Design and Layout

The site design is simple and clear-cut, and practically every aspect in tour2korea.com demonstrates sound practice in DIS design. The layout of the site is well organised, and the site contains hundreds of pages on tourism accommodation, attractions and services. The site is not cluttered with images and is very attractive. However the site is busy with text see (Figure 10.18).

Figure 10.18: Tour2Korea Main Page
10.7.3 - Information Content

The site has ample information, and provides data on sightseeing, food, shopping, festivals and culture. It also provides brief basic information for travellers, a list of tour operators and a bulletin board. The content is well organised, in spite of the huge volume of information.

10.7.4 - Navigation and Links

The simple design of the site, and the navigational aids provided, made the site easy to navigate and find information required.

10.7.5 - Online Services

The site offers limited online services including reservation of accommodation and tours.

10.7.6 - Structure

The site, like previous sites, has a hierarchical structure that helps create a consistent visual hierarchy in which important elements such as sightseeing, food and shopping, festivals, culture, reservations and information about Korea are emphasised on the home page. The site has three layers, presented by three different green shades, as illustrated in figure 10.19. The pages, such as food and shopping, maps, culture, overseas offices and press releases, are organised logically and predictably on the site; however the site uses a linear structure even with the limited online services offered. Usually linear structures are used to move through ordered lists of similar items, for example the online booking process which ironically, this site doesn’t have.

10.7.7 Cultural Issues

The tour2korea.com site introduces cultural tourism products of Korea covering such diverse aspects as cultural heritage, folk art, history and education (KNTO 2003). It also includes the tourism that allows visitors to experience traditional life. Products related to the regional festivals and traditional markets are also represented.
10.7.8 - Comments

The layout organisation of the site gives the researcher a clear idea vis-à-vis that of the proposed BDIS prototype. Moreover, the catchy domain name is also noteworthy. On the negative side, the homepage is too 'busy' with text. Another feature of the website that needs to be attended to is the watermark which is overused and might confuse the visitor.
10.8 Kenya

10.8.1 - Introduction

The official destination website for Kenya, MagicalKenya lets visitors explore Kenya and discover a wealth of information on this destination.

10.8.2 - Design and Layout

The site is full of text and uses many different colours, although the layout is simple and uncomplicated. However the text is cluttered in the middle of the page. The site uses different colours for the main headings such as wild safari, sport safari, and scenic safari, which is a disadvantage for clarity. The site does, however, provide a comprehensive search facility. A ‘search box’ is available on each page, and there is an advanced search facility, which allows ‘deeper’ searches in various sections of MagicalKenya.com.

Figure 10.20: Magical Kenya Main Page

MagicalKenya 2003
10.8.3 - Information Content

MagicalKenya.com provides a wide variety of information. For example, at the top of the page, a menu of 'environments' presents the complete range of Kenyan landscapes such as wilderness, coast, mountains, forest, lakes, desert and cities, while the site also provides a list of information on safaris, accommodation, dining and shopping. The site information content is not complicated and is well organised.

10.8.4 - Navigation and Links

The site guide makes it very easy to navigate the site.

10.8.5 - Online Services

The site does not provide a sophisticated online reservation system.

10.8.6 - Structure

Magical Kenya uses the common hierarchical structure, and, as depicted in Figure 10.21, it contains three layers. The main information, different types of safari and different landscapes such as wilderness, desert, forests mountains lakes and cities and accommodation flows from the main page, moving down to detailed sub-pages of these features, with other pages like planning, shopping, virtual tours, and e-mails in layer three.

10.8.7 Cultural issues

The dominant theme of the MagicalKenya site is nature and the people who live close to it. The wildlife and scenic beauty of the land have been projected on the main page. Abundant wildlife, bird life, hospitable people, a culture that is both complex and fascinating, were very clear in the site.

There are fascinating tribes with their unique way of life. The site invites the visitors to explore the character, values, beliefs and customs of the Kenyans. There is lot to learn about their artistic endeavours and social ways. And to find out about their fascinating
tribes as well as how they make a living the site provides the visitors with Listings of
Galleries, Activities and Events, Museums, etc (MagicalKenya 2003).

10.8.8 - Comments

The site has a virtual tour facility that inspired the researcher vis-à-vis the design of the
proposed BDIS prototype. The 'e-mail this page' proposal is also interesting, as is the
organisation of the information content. Uppercase letters on the homepage are
overused which make the page look very 'busy'. In addition to the unmatched colours,
the design of the site is overloaded with information and large blocked groupings
especially in the main index, to the left of the page seem in need of visual relief.
10.9 Scotland

10.9.1 - Introduction

VisitScotland is the official site of the Scottish Tourism Board. The site has many pictures, and is a good example of an inter-active DIS. VisitScotland uses inter-activity to its full, and especially in inter-active databases for accommodation, transportation and car rental.

10.9.2 - Design and Layout

The design and layout of the site is simple, clear and full of colourful images. The main menu, at the top of the page, includes transport, accommodation, what to see and do, outdoor activities, traditional Scotland, contacts and feedback. The middle of the page is, interestingly, divided according to the five senses: See it, Hear it, Touch it, Taste it and Smell it. The left side of the page is devoted to e-newsletters, seasonal offers and languages. In general, the design of the site is consistent and well set.

Figure 10.22: VisitScotland Main Page

VisitScotland 2003
10.9.3 - Information Content

The information content on this site is well organised, especially those pages related to accommodation, transportation and car rental. The site offers good general background information on the destination, and information on the site is presented in an interesting way, especially the use of the five senses theme.

10.9.4 - Navigation and Links

The site is navigable and easy to use, and has a large number of links. It is difficult for a user to lose orientation on this site, as it has direct links and the navigational aids are clear.

10.9.5 - Online Services

The site provides inter-active online services, especially those related to accommodation, transportation and car rental. A clickable inter-active map of the destination is used to navigate around available databases, and the user easily selects the information required. A detailed online search is an added feature of this site. The visitor can search for detailed disabled facilities, location positions, policies, (e.g. a no smoking policy), general facilities, children's facilities and parking facilities.
10.9.6 - Structure

VisitScotland creates a concise hierarchical outline structure, with a single home page at the top, and up to 8 sub-pages below. The site is made up of four layers moving from general and important information on the homepage in layer one to specific and optional information in layers two, three and four, as illustrated in Figure 10.24. The site also employs a linear structure for online services such as accommodation and flights.

10.9.7 - Cultural issues

Scotland is rich with culture. Although the site provides information about the ancient Scottish traditions the main emphasis is on modern and contemporary arts. Information includes: archaeology; hotels, clans, tartan abbeys, monasteries, & priories; cathedrals & churches, country houses, stately homes & palaces, ruined castles, and tower houses (VisitScotland 2003). There is a set of comprehensive information about Scottish people and contemporary festivals and the way the cultural information presented in the site persuades one to visit Scotland.
10.9.8 - Comments

The proposed BDIS prototype benefits from the concepts of inter-active online services, especially the online search mechanism and the detailed online search form. However the site is busy and crowded with information. The homepage uses a lot of colours and a watermark technique adds to the visual confusion of the visitor.
Figure 10.24 Scotland site map

- Highlights of
- e-news letter
- Art and Culture
- Visits
- Visiting Scotland
- Activities
- Stirling
- About
- Accommodation
- Transport
- Scotland Tours
- Search
- De official site
- Visitscotland
- a guide Scotland
- Golf course
- Conference venues
- Golf holidays
- Events Information
- News
10.10 South Africa

10.10.1 - Introduction

The site of the South African Tourism Board (SAT), www.southafrica.com, is a comprehensive source of information on travel to South Africa. The site presents a wide variety of information, including South Africa's scenic beauty, diverse wildlife, a kaleidoscope of cultural heritage, the great outdoors, sport and adventure opportunities, eco-tourism and conference facilities.

10.10.2 - Design and Layout

The design of the site is very simple with a background of beautiful scenes of South Africa. The main menu is at the top of the page, and is divided into eight sections: Home; why SA is unique; where to go; what to do; trip planner; calendar; search; and media. The bottom of the page consist of: contact us; about SAT; research; trade; image library; print this page; email this page; and links. The design is very straightforward.

Figure 10.25: South Africa Main Page
10.10.3 - Information Content

This is an information-intensive site, and presents the information under five main sections: ‘Where to go’, which includes information on beaches and coastline, game parks, areas to explore, provinces, towns and cites, and floral highlights. ‘What to do’ includes information on business and education, wildlife, arts and culture, sports, shopping, adventure activities, nightlife, food and health. ‘Trip planner’ helps the visitor plan a trip. ‘Calendar’ provides information on events and activities taking place in SA, and finally the media section provides news about the destination.

10.10.4 - Navigation and Links

It is very easy to retrieve information from the site and the site has an effective indexing system, with a link to the homepage on every page, a search facility, an e-mail loop and an image library.

10.10.5 - Online Services

The site provides simple services with general information about service providers listed on the site. Visitors can obtain basic plain information about accommodation, transport and attractions only without any online service.

10.10.6 - Structure

The site was organized by level of importance following the hierarchical structure. The hierarchy consists of five layers, with the site organized as off-shoots of a single home page where the user starts at the ‘top’ and moves to the following main themes in the second layer: “where to go”, “what to do” trip planner, calendar, search and media, and moves down through the third layer to sub-pages such as photo catalogue, news, and the different provinces such as Pretoria and the Free State in a fourth layer. Finally the fifth layer contains detailed information on such aspects as like marketing as depicted in Figure 10.26.
10.10.7 Cultural issues

The South Africa site cultural section offers information and facts on South Africa's society and culture and selected links to cultural venues such as museums, national heritage centres and cultural villages etc. The site contains plenty of information regarding the tribal life style and rituals (South Africa 2003). The cultural issues have been aptly highlighted in this site.

10.10.8 - Comments

The site is a good example of simplicity in design and is easy to navigate. The researcher was impressed and learnt a lot from the navigational system. The main menu gives the user three important pieces of information: where to go; what to do; and where they are. The same arrangement was used in the current project main menu. However, too many instances of ‘Home’ on the homepage occurred. There is no site-map. The background image on the homepage interferes with pictures, as the images seem to dissolve in the huge background.
10.11 Yorkshire

10.11.1 - Introduction

The official site of the Yorkshire Tourism Board presents a range of places to stay and things to see and do. The site provides the visitors with rapid access to information on availability of accommodation, events and other tourism related products with increased speed and efficiency.

10.11.2 - Design and Layout

The site layout is simple and elegant. Every page is clearly set out and the information presented is very easy to use and retrieve, with many internal links.

Figure 10.27: Yorkshire Main Page
10.11.3 - Information Content

The site contains comprehensive data, well presented and well organised. The site allows users a quick search for information, with different categories of information from a drop-down menu.

10.11.4 - Navigation and Links

The simple design made it easy to navigate and interesting at the same time, as it has the main menu and the categories of information on the left side on every page.

10.11.5 - Online Services

The site provides visitors with inter-active online databases for online booking. It has an inter-active database for accommodation and attractions, and also provides for special deals from accommodation providers. The site has an inter-active map that breaks Yorkshire down into smaller areas for more in-depth information.

10.11.6 - Structure

The Yorkshire site uses a combination of hierarchical and linear structures, and uses the linear structure for online services such as accommodation and attractions. The hierarchy starts with the homepage, which contain eleven sub pages. The map in Figure 10.28 shows the four levels of the site. The first level contains the homepage (the largest cubical shape), the second level, presented in light green, is devoted to the sub main pages, e.g.: “why Yorkshire?”; “regional overview”; where to stay?, places to visit; what’s on?; travel information; latest news; fun stuff; Yorkshire market place; holiday ideas; and Yorkshire club. The third level, marked in dark green, includes customer services, attraction offers, facts and figures and a web cam. The fourth level, marked with deep dark green, contains information on e-postcards, offers and a promotional scheme.

10.11.7 Cultural issues

The Yorkshire site stresses the cultural and heritage assets of the destination displaying a wide variety of cultural and historical attractions. The site provides the visitors with
details on historic houses, castles, gardens, abbeys, ministers & cathedrals. It also includes a list of the national parks: the Yorkshire Dales, the Peak District and the North York Moors (Yorkshire 2003). The Yorkshire site also presents cultural attractions such as the West Yorkshire Playhouse, the Yorkshire Sculpture Park, the National Museum of Photography, Film and Television and the Millennium Galleries (Yorkshire 2003). This Website uses a searchable map that provides information on cultural and heritage treasure.

10.11.8 - Comments

The researcher benefited from the site's design, its simplicity and the inter-active map. Conversely, it had a redundancy of information related to accommodation. The site doesn't show any date or time or even the last update. The domain name http://www.ytb.org.uk/ used for the site is not inviting and is quite deceptive, for instance, most of the tourism destination information system or portals use catchy and simple and easy to remember domain — Korea uses tour2korea, Singapore uses VisitSingapore, New Zealand uses purenz etc.

10.12 Summary

One method of acquiring the necessary knowledge and means to cater to the needs of tourists is by studying similar existing sites, to generate and consolidate ideas and practical tips. Using site-mapping tools to uncover the site content is the ideal way to study such sites, especially where the sites are large. All design tips and tricks learned from mapping the sites mentioned above will be used in the next chapter.
Figure 10.28 Yorkshire site map
CHAPTER 11

PROTOTYPE DESIGN AND IMPLEMENTATION

Bahrain Destination Information System (BDIS)

11.1 Preamble

This chapter discusses the conception of the proposed Bahrain Destination Information System (BDIS). This involves using a web-based questionnaire, interviews and site mapping analysis techniques to form the basis for the design of the proposed system. In the implementation of the BDIS prototype, an overview of the elements involved in the implementation phase is provided, including aspects such as: system definition, system structure, interface design and production, and technical and marketing aspects. The relevant Web pages are treated as a system, and development follows an established 'system-development' life cycle, beginning with requirement gathering, moving through analysis and design, testing, and, finally, implementation and evaluation. The focus is solely on the 'front end', or public layer of the system.

11.2 System Definition

11.2.1 - The Aim

The aim of this project is the development and evaluation of an advanced inter-active online DIS for the Kingdom of Bahrain, referred to as the Bahrain Destination Information System (BDIS), based on a model derived from experiences of the developed world. The BDIS is intended to assess and meet international standards vis-à-vis customer requirements, expectations and demands - to attract the tourists throughout the Globe to Bahrain – by mobilizing the existing tourism infrastructure and promoting the wide range of public and private sector services.
11.2.2 – Objectives-cum-Business Strategy

The limitations and objectives of this project are defined and documented in the form of a business strategy, which considers the marketing objectives of the BDIS, the target audience’s demographic makeup, and target markets.

The Business needs are summarised in the following objectives:

- To increase business to Bahrain, and to tourism operators.
- To develop effective communication with targeted groups, such as businessmen and women, SMEs, historical groups and ecotourism groups.
- To facilitate and co-ordinate information services e.g. weather and transport.
- To serve tourists and provide inter-active services, such as online reservations.
- To create a ‘brand-name’ and slogan for Bahrain in International tourism industry.
- To generate repeated traffic to the destination.
- To reduce marketing costs – a web-based information system enables tourism organisations to market internationally at a low cost (Archdale 1995)
- To attract more international tourists to Bahrain.
- To generate revenue for the BDIS from commissions and advertising.
- To secure a competitive advantage in the global tourism market.
- To create sound public relations, by linking to other international sites.

11.2.3 - Audience Profile

This prototype is designed around the needs and motivations of the target market, with the starting point an understanding of the demographics of current WWW users. As the BDIS aims to attract and serve international tourism, available international demographic data were used to identify the target audience. Table 11.1 provides a summary of these demographics and trends for international users, who access the WWW for travel information. In addition, information was gathered from the web-based questionnaire and interviews about the kind of information required by international tourists. User involvement in this project is important towards tailoring a suitable and successful system. Therefore, ‘actual’ users were involved in the evaluation of the prototype system.
### Table 11.1: WWW Demographic Data for International Travel Seekers

<table>
<thead>
<tr>
<th>Detail</th>
<th>Prominent Groups</th>
<th>Comparison to worldwide Internet users</th>
<th>Trends</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>21-30 30.7% 31-40 24.9% 41-50 22.9%</td>
<td>Travel seekers are older. Average age for travel seekers was 37.48 years, while the mean for world users was 35.12.</td>
<td>The 51-60 age bracket has increased with a decrease in the 31-40 age bracket. This indicates travel seekers are getting older.</td>
</tr>
<tr>
<td>Gender</td>
<td>Males 58.1% Females 41.8%</td>
<td>Travel seekers were more gender neutral than worldwide internet users.</td>
<td>The distribution of gender is becoming more neutral. Trends suggest numbers will be equal by the end of 1999.</td>
</tr>
<tr>
<td>Education</td>
<td>University 33.9% Some University 28.9% Masters 18.4%</td>
<td>Travel seekers are better educated than users worldwide. Proportion of travel seekers with at least one university qualification is 59.9% versus 50.1% for worldwide users.</td>
<td>Increases in numbers who have completed some university, with a decrease in those attaining masters and doctoral degrees, suggests that the level of education is increasing.</td>
</tr>
<tr>
<td>Occupation</td>
<td>Computer-related 31.4% Professionals 22.2% Others 18.4%</td>
<td>More computer-related and fewer educational occupations than worldwide users.</td>
<td>Increase in computer-related occupations and decrease in ‘Others’ suggests the emergence of a more diverse market.</td>
</tr>
<tr>
<td>Household Income ($US '000)</td>
<td>50-74 25.1% 75-99 13.9% Over 100 18.1%</td>
<td>Generally higher than worldwide users. 57.1% of travel seekers earn more than $50K, whereas 48.4% of users worldwide earn more.</td>
<td>Trends suggest a increase in lower income brackets and an increase in upper income brackets, but the distinction is subtle.</td>
</tr>
<tr>
<td>Marital Status</td>
<td>Married 47.8% Single 31.3%</td>
<td>Higher proportion married - lower proportion single - compared to World figures.</td>
<td>No distinct trends.</td>
</tr>
<tr>
<td>Years on Internet</td>
<td>1-3 yrs 40.2% 4-6 yrs 33.1% Over 6 yrs 18.8%</td>
<td>Higher proportion of travel seekers over four years, fewer under 12 months.</td>
<td>Trends show a marked decrease in new users looking for travel information.</td>
</tr>
</tbody>
</table>

*Georgia Tech Research Corporation 1998*

### 11.3 System and Structure

A conceptual design of the system is developed, based on the TlScover model, and the integrative model is designed by the researcher, as illustrated in chapter 4. Figure 11.1 illustrates the BDIS model consisting of four layers: the Public Access Layer, the Internal...
Layer, the External Database Layer and the External Links Layer, with the research project focussing on the Public Access or 'front-end' layer.

11.3.1 - Public Access Layer (INTERNET)

BDIS is designed for public access in three ways,

- It is accessible through World Wide Web from anywhere around the world such as home, office, or Internet cafes. The customer can browse the site and can get such online booking services as flight reservation, accommodation, and car rental etc.

- A tourist can access Bahrain tourism information and products offered from online information kiosks installed at the destination. These kiosks can be accessed via touch screen and speech input. Some of these are already installed at Bahrain International Airport.

- BDIS is designed to support new technological devices like cellular phones or wireless application protocol (WAP). A tourist at any time from anywhere around the world can get current tourism information including weather forecasts and airline timetables.

11.3.2 - Internal Layer (INTRANET)

The internal layer of the system, below the public access layer, deals with internal networks as information databases for internal purposes only. The internal network or an intranet is used for updating information relating to customers, stakeholders and SMEs etc. This intranet is also used for internal communication within the tourism affairs department. Only designated departmental staff can access the internal databases, while it is also protected by a firewall, as indicated by the red colour in the above model.

11.3.3 - External Database Layer (Stakeholders) (EXTRANET)

The external database layer integrates all stakeholders to the internal database layer to get the information requested by the customers. Stakeholders like travel agents, hotels and
attractions at the destination provide requested information as an online service. Here, only authorised stakeholders can provide the information by accessing the intranet layer. This layer is not incorporated into this prototype yet, as the project focuses on the Public Access Layer.

11.3.4 - External Links Layer

Like other DIS, the BDIS is also a complex information system, containing and managing huge amounts of tourism information. BDIS opts for 'linking' itself with local and international web sites to satisfy requests for specific information. This strategy is formulated for tourist satisfaction to provide with them the information, which is not part of the BDIS databases but available on the other sites.

11.4 The BDIS Model — Main Components

To meet BDIS visitors' demands and requests, a sustainable and adaptable equilibrium between the three main components - illustrated in the Cambodian model (Fig. 11.2) - is required. The three main components, quantity and quality of services offered, quality and quantity of contents, and number of links offered, are described below.

11.4.1 - Quality and Quantity of Services

Services are a critical success factor for the tourism industry. Increasingly, tourists' satisfaction depends on the accuracy and relevance of tourism services as well as the promptness of responding to consumers' requests. Thus providing high quality and quantity of services to the tourist is a prerequisite for success. In this regard, WTO listed the following generic services:

- Information search by category, geography (using GIS) and keywords etc.
- Itinerary planning
- Reservation
- Customer/contact database management, through registration and membership
- Customer relationship management (CRM) functions
- "Push" marketing
Figure 11.2: Main Components of the Model

Ministry of Tourism, Kingdom of Cambodia 2002

- Marketing research and analysis
- Image library
- Publishing to electronic and traditional channels
- Event planning and management
- Marketing optimisation and yield management
- Data editing and management
- Financial Management
- Management information system and performance evaluation
- Economic impact analysis
- Access to third party sources, such as weather, transport, timetables and travel planning, theatre and event ticket reservation.” (WTO 2001c, p. 20)

Some of the above mentioned generic services are implemented in the BDIS whereas some are not for example GIS, because it needs special software, and a prototype for the front end only.
11.4.2 - Quality and Quantity of Content

Content development does not happen in isolation. Information, visual and interaction design all have an impact on the text and other content materials. Content development is therefore a collaborative, iterative process that overlaps with creative and technical development. The content developer as well as the information architect, visual designer and programmer are responsible to make sure that the content, and the site's design and functionality, are compatible and integrated. The quality of the content plays an essential role especially in tourism sites because of the richness, or the quantity of information provided.

DIS should include only what the user needs or wants to read - nothing more. This scope provides a clear picture for web developers to understand, what the web site requires, and how it should it look. In the project planning stage the developer needs to determine the scope of the content through user research and discussion with the content expert(s). In the planning stage of this project (BDIS), the major discussion was with the supervisor, although the researcher also benefited from the comments provided by tourism academics during the survey, and the interview discussion with the management of national organisations and national tourist boards in the U.K.

BDIS content comprises up-to date data, information, documents, pictures and sound (a film about Bahrain is provided in the site). Each document in BDIS is tailored to satisfy its users requirements and demands. The site provides the user with up-to-date information by adding a ‘What’s New’ link to update the user with the latest changes and to add freshness to the site. Current information on accommodation offers and airline offers can be found on the site.

11.4.3 - The Links

The third essential element in this model is the Links. ‘Links are the most important part of hypertext: they connect the pages and allow users to go to new exciting places’ (Neilsen 2000). BDIS offers links to meet visitors' demands for information, and, to add value to the content of the system. External links or outbound links are added to the site, including local tourism organisations, and international organisations, e.g. the World Tourism Organisation and the World Tourism Council. Nielsen suggests that, the more sites listed the less users concentrate their attention. Therefore links in the BDIS are limited to a small number of relevant external pages.
11.5 BDIS Data Flow Diagram

The arrows in Figure 11.3 illustrate how the information flows within the BDIS. Visitors access the BDIS home page first - by typing the URL or via search engines while locating the information of their interest - from their computers, kiosks or cellular phone. Then they navigate the site and browse interesting information about the destination.

After getting the basic information, customers often request more information. The proposed BDIS can retrieve that information from the secured intranet databases and provide feedback. For example, if a visitor requests information about accommodation, the system retrieves information from the accommodation database and sends it to the user, and if a customer places an order, then they are asked to provide some information e.g. name, e-mail and physical address, credit card information, and the quantity on order.
Figure 11.3: Data Flow ~ Bahrain Destination Information System

- Mobile
- Computer
- Online-kiosk

URL
Http://tour2bahrain.com

Search engine, Yahoo, Google

Main page
Tour2bahrain.com

Browse through BDIS
Tour2bahrain.com

Firewall

Retrieve information

Database

Database

Database

Author 2003
11.6 Designing the BDIS Prototype

The first stage (the pre-prototype stage) of the process identified the DIS objectives. This was achieved by using web-based questionnaires to a representative sample of 170 international tourism academics, followed by face-to-face interviews with 7 key players in the industry - representatives of U.K. tourism destination regions in four interviews from the government, (Department of Culture, Media and Sport; British Tourist Authority), and two interviews from regional tourism boards RTB’s (Leeds Tourist Board; Cornwall Tourist Board), and one interview from national tourism boards (Wales Tourist Board).

The interviewees were asked about the type of information needed (e.g. organizational, financial, information content and resources, technical requirements and services), and the product-markets that should be emphasized such as attraction information and accommodation. In addition, 10 tourism sites were visited and mapped by Powermapper mapping software, and their designs studied to obtain ideas on design, and the ‘dos’ and don’ts’ of such systems. As a DIS approach was generally in an embryonic stage, untried, and unfamiliar in Bahrain, all these approaches were used to lay the foundation for the proposed BDIS.

11.6.1 - Information Gathering

Having assessed the BDIS requirements, Phase 2 of the planning process identified major information sources to serve as a starting point for the design of a new BDIS. Preference was given to solutions that would minimize duplication of effort and maximize available resources, by utilizing two major techniques:

- Mapping similar sites content (Chapter 10) to identify similar system designs and characteristics, including information structure, services and technology used. The design layout and colours used are examined to see how the site is organized.

- A literature review related to DIS (Chapters 2, 4, 6, and 7), which offers current and relatively detailed information on DIS content, characteristics, strengths and weaknesses. Extensive literature on Bahrain was consulted to provide a pictorial view of Bahrain, and different types of information from different sources were collected, including annual reports, tourism guides, brochures, magazines, articles, photographs and videos. Other information required, such as time differences,
exchange rates and weather were collected from international web sites such as the BBC Weather Centre and the Universal Currency Converter.

11.6.2 - Prototype Development

As BDIS is a web-based system, the first step in the development process requires a sitemap, basically a flow chart that shows how the BDIS content is organized. The sitemap in Figure 11.4 shows every key page on the site. At this stage, technical needs were defined, and a decision on the navigation of the site was taken. A project plan was developed to make sure that the project followed the timeframe (see Appendix 17).

![Figure 11.4: BDIS Sitemap](image)

11.7 Interface Design and Production

A mock-up was developed as shown in Figure 11.5, and the graphics were put together to give the 'look and feel' of the site. A click-through prototype, a working HTML mock-up of the site, was created to test it in different browsers.
Figure 11.5: Mock-up of Main Page

Tour 2 bahrain, Island of golden smile

A Wealth of Attractions
Bahrain is an archipelago of 33 islands situated on the western more...

A Heaven for Water Sports
Images of coral reefs teeming with colourful tropical fish is the last thing one associates with the Arabian Gulf more

© Bahrain.com
11.8 Technical Aspects

After the completion of the design and the layout of the site, technical aspects such as HTML scripting, tables and frames were undertaken with the help of colleagues. To set parameters for target audience capability and technical standards, a five part work sheet was adapted from Gotomedia (2002).

11.8.1 - Audience Specifications

The establishment of clear audience specifications, such as resolution, browsers, browser version, platforms, connecting speed and page download size is necessary. Some internet users still use 14.4, 28.8 and 56k modems, and 20% of web users still run their systems at 640 by 480 pixels (Sweeny 2000).

Table 11.2: Audience Specifications

<table>
<thead>
<tr>
<th>Site Features</th>
<th>Site Specification</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resolution</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Browsers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Browser Versions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Platforms</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connection Speed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Page Download Size</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Gotomedia 2002

11.8.2 - Functionality Features

To add life to the site, specific technology was added to enhance its functionality, based on information gathered from similar sites.

Table 11.3: Functionality Features

<table>
<thead>
<tr>
<th>Site Feature</th>
<th>Preference/Status</th>
<th>Issues</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frames</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Forms</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Java Script</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pop-up Windows</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cascading Style Sheet</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flash</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Media (Video/Audio)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Gotomedia 2002
11.8.3 - Design and Layout

Design and layout characteristics are given a priority in this prototype, and while creating visual site features - layout, linking, colours and tags are taken into account.

<table>
<thead>
<tr>
<th>Site Features</th>
<th>Remarks (1)</th>
<th>Remarks (2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Layout</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Linking Colours</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;IMG&gt; &lt;ALT&gt; Tags</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;Title&gt; Tags</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Other site design elements were added to enhance the inter-activity of the site, including phone numbers listed, addresses listed, e-mails listed and online reservation details. To ensure visitors find their way around the sites, navigational aids were provided, including consistent menus, hyperlinks, links to other sites, a search facility, and, because the site is complex, a text-based sitemap is given. To achieve professional, aesthetically pleasing results, additional features, to improve functionality, were added to the site, e.g. multimedia and the effective use of colours. The site colours were 'integrated' with the red and white colours of the Kingdom of Bahrain because these colours have a cultural implication it represent the kingdom flag colours. To provide narrative background for normal sight, and visually impaired tourists, audio and video tools were used on the site, while to avoid such problems as low-resolution, 'thumbnail' graphics were used. As the target audiences are international tourists generally, cross-cultural differences, language barriers and multi-lingual capabilities were accommodated on the site. A corporate identity for the site was created, and, to assist 'brand' recognition, a logo was designed for the site. Domain names play an important role in destination information systems, and a DIS needs a catchy and memorable name to help attract traffic to the site. As Sweeny stresses:

"Having a domain name projects the image of an established business operating online in a professional manner" (Sweeny 2000, p. 19).
The domain name ‘tour2bahrian.com’ was registered, and, as the BDIS operates in an international environment, the BDIS is registered with a ‘.com’ domain name extension, globally recognized and used around the world. Download facilities, and versions of the online brochures provided in portable document format (PDF), are added to the site.

11.8.4 - Server Hosting Information

A clear decision on the hosting of the site is necessary; hence an Internet service provider (ISP) hosted the prototype that requested the following information.

Table 11.5: Server Hosting Information

<table>
<thead>
<tr>
<th>Site Features</th>
<th>Contact Information</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISP/Hosting</td>
<td>Name:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Address:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>E-mail</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Phone:</td>
<td></td>
</tr>
<tr>
<td>Server Platform</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FTP Information</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Development Server</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Gotomedia 2002

11.9 Site Content

Content elements include four aspects essential to a successful web site: readability, integrity, value-added information and the marketing mix (Benckendorff 1999).

- **Readability** of information plays a very important role in the content of the site. Nielsen (1996) suggest the use of an inverted pyramid writing style, as used by journalists, and this approach was used for the site, with the 'conclusion' or 'summary' presented first, while the information is presented in a concise and objective way to reduce textual information and avoid frustrating readers with a scrolling mechanism. According to AMGY.com "inverted-pyramid style of writing generally start with the main conclusion and get progressively more details, conclusion, supporting information, background and technical details, unlike the traditional style when a writer starts with a foundation and gradually build to a
• **Integrity** of the site refers to the credibility, relevance and accuracy of information. For this reason, a feature on the site ‘About Bahrain’, containing facts, figures and up-to-date information about Bahrain, was added.

• **Value-Added Features** play an important role in enhancing the reputation of the site. In the context of destination marketing on the Internet, value-added marketing requires additional information services to enhance the reputation of the region being promoted. Virtual postcards, and links to other sites can be used as a means of adding value to a site (Briggs 1997). Sweeny (2000) strongly supports this view, and suggests that people love to get something for nothing -- offering something for free is a good way to generate traffic. To increase traffic to the destination of Bahrain, virtual postcards (electronic photographs of the destination) are provided, as a means of adding value to the site. ‘Give-aways’ is another tool to add inter-activity to the site, and in this project a £10 Book Token was given to visitors to the site when they filled in the online survey. Links to other sites add value by providing a pathway to relevant information, and links, both local and international, together with links to other useful tourism information sites, e.g. weather information, a currency converter and world time, are also provided on the site.

• **The Marketing Mix** is important in the presentation of content through the use of the eight P's as a framework for presenting a complete range of content:

  - **Products** - the basic products on this system are e.g. attractions, accommodation, and flight tickets – all presented in an attractive and practical way to make for easy purchase.

  - **Promotion** - probably the most visible of the Ps in the marketing mix. Promotional activities stimulate interest in the product and services, furnish information to help people decide what to buy, provide incentives for purchases, and, in general, attempt to persuade consumers to purchase particular products and services (Burke & Resnick 2000). Because this is only a prototype, opportunities exist through the provision of media statements and other information about the destination.
Price - deals with the cost of tourism products, and is important to visitors as it provides them with the chance to tailor their trip in line with their budget. The site provides detailed and up-to-date pricing. (Benckendorff 1998).

Physical Environment – is important in two ways: firstly, as the environment where the sale takes place, and secondly, as the environment where the product is found and ‘consumed’. In the travel industry, the physical environment can be particularly important for securing repeated visits, so the BDIS acts as a physical environment for sales and products sold, e.g. flight tickets can be purchased on the BDIS (Burke and Resnick 2000).

Place/Process of Delivery – are the activities that make the product available to consumers. The place element of the marketing mix is primarily concerned with the distribution of tourism products, by providing linkage to different stakeholder, e.g. travel agents or tour operators and public kiosks. By developing an online purchase system, BDIS makes products widely available (Burke & Resnick 2000).

Packaging - involves the bundling of various services into a single product that meets the demands of the target market. The site offers travel companies a mechanism to meet needs by bringing complementary products together in ways that directly address those needs. The system provides customers with the opportunity to select a suitable package, and the opportunity to assemble their own packages (Briggs 1997, Sweeny 2000 and Burke & Resnick 2000).

Programming - concerned with presenting special activities and events that give added appeal to a package or travel services. The BDIS devotes a section to ‘What’s New’, and includes a calendar of events, which may be of interest to tourists (Sweeny 2000).

Partnership - involves co-operative promotions and other marketing efforts with other organisations linked in the BDIS display (Briggs 1997).
11.9 Testing and Proofing

To avoid potential problems, a test plan was systematically used, and results documented to differentiate between tested and untested areas (Appendix 18). This test includes testing of browsers and checking the site compatibility with the most popular browsers.

Content testing ensures that the content of the site is correctly implemented, which include visual reproduction issues such as images, spelling and grammar. The site was 'edited' by using a 'web editor' to ensure that the site is free from grammar and spelling mistakes. The site was also checked in multiple screen sizes, and with different modem speeds, to ascertain that the site has the same look and feel in different resolutions. The entire site, page by page, was printed, to check for 'bugs', and handed over to colleagues and friends to suggest changes. Links to each and every page were carefully checked.

11.11 Usability Heuristic Test

A key component of the prototype is its user interface, and the full-fledged BDIS is likely to become a major point of contact between the Department of Tourism Affairs in Bahrain and international tourists. For many tourists, this system will be the only way by which they would judge tourism in Bahrain, and thousands of tourists will obtain visitor data from this source. Ease of learning, ease of use and general user satisfaction, along with quality and comprehensiveness of content and functional capabilities, will determine the success or failure of the system. A usability test on the prototype was therefore undertaken and results fed the system development process. Limited resources and time were available for this project, thus a quick and inexpensive evaluation was needed; therefore 5 usability experts (mentioned in chapter 5) undertook the usability test, a number recommended by (Nelisen 2002a).

11.11.1 - The Method

Usability inspection, as defined by Jakob Nielsen, quoted by Michael & Frederick (2002) is '... the generic name for a set of methods based on having evaluators inspect or examine usability-related aspects of a user interface.' Of the eight inspection methods catalogued by Nielsen (2002b), heuristic evaluation is the least formal, having usability specialists to judge whether aspects of a given interface conform to a list of established
usability principles (see chapter 5). Heuristic evaluation, along with the other inspection methods, differs from more conventional empirical usability testing in significant ways: evaluators are not drawn from the user community, evaluations take less time, evaluations are easier to set up and run, and evaluations cost less (Michael & Frederick 2002).

The promise of ease, speed, and low cost was attractive; and the evaluation was carried out via e-mails to five usability experts four out of five only answered (as mentioned in chapter 5) (Nielsen 2002a) with different international backgrounds. Nielsen recommends using three to five usability experts as evaluators. For background, the author prepared two documents. The first was a project overview, describing objectives, target audiences and expected usage patterns of the BDIS system. The second was a list of usability principles, or heuristics, derived from a general-purpose list given by Nielsen (Appendix 9). Evaluators e-mailed back their feedback and suggestions for improvement. From the evaluators' suggestions, a few changes were made to the interface, as mentioned below.

11.11.2 – Experts' Evaluation

The experts spent 1 to 2 hours using the site, and evaluated it against accepted measures (heuristics) as Nielsen suggests:

"Typically, a heuristic evaluation session for an individual evaluator lasts one or two hours. Longer evaluation sessions might be necessary for larger or very complicated interfaces with a substantial number of dialogue elements, but it would be better to split up the evaluation into several smaller sessions, each concentrating on a part of the interface." (Nielsen 2002a).

11.12 Experts’ comments

As a whole, the web site is well presented and has a professional appearance. It appears to contain most information the tourist will require; however; the experts pinpointed three issues (the most related to the project) out of the 5 selected five usability heuristics issues shown in (Appendix 9) they selected the following:

1 The researcher selected five heuristics out of ten, the excluded heuristics not related to the project
1. Aesthetic and minimalist design:

1. Lengthy text needs to be reduced or categorised.
2. Several graphic files are very large, which will take a long time to download – customers have no patience to wait for a long time. One comment was: ‘personally I find it quite distracting to have many images. Also it takes quite a bit more time to load each page with so many images with my 56k modem.’
3. Some of the pages need to scroll down to reach them, which may be quite annoying for some visitors: ‘The page in the archaeological site is interesting, but I'd also suggest breaking it up into a number of different pages, one for each site, as it's really too much text to scroll through for one page’.

2. Flexibility and efficiency of use (Navigation)

- The site has some broken links.

**Figure 11.6: Broken Link in tour2bahrain.com**

- Visited links do not change colour – visitors rely on this for navigation.
- The site needs a sitemap to help the users in their navigation.
- As the site serves international tourists, it needs to add more than one language to facilitate more than one nationality.

3. Match between system and the real life

The experts highlighted some positive aspects:

- "I like the navigation bar on the left side and the small icons that go with each item. The brief pull-down menus at the bottom in the middle are fine and the site map is particularly useful".
• "Your title line is good – it explains immediately that the site is for tourists to Bahrain".

• "The images on the front page are beautiful, and give a rich impression of the country and the headings are clear and easy to read".

• "The drop down menus are also easy to read and quick. Make sure they work in all popular browsers (IE 5+, Netscape 4.7+)".

And the changes made are:

1. The logo was enlarged

2. The Visited links were made active, which mean if a visitor visits a page, the visited link appears purple as http://www.tour2bahrain.com. Visitors rely on this for navigation.

3. A Sitemap was added to the site to help users in their navigation

4. More international languages were added to the site to make it accessible to more than one nationality.

5. Information and shortcut categories were added in the middle of the homepage for example (enjoy the best of Bahrain in a week).

These changes were made as shown in Figure 11.7 and uploaded according to the experts’ recommendations.
Figure 11.7: The Site changes

11.13 The Prototype

After the site was completed, files were uploaded to the host computer, and the site can be accessed on: http://www.tour2bahrain.com

Figure 11.8: Tour2bahrain Site Map
As illustrated in Figure 11.8, the site has four levels. The BDIS prototype(Figure 11.9) is divided into eight sections: The Home Page, About Bahrain, Plan Your Trip, Places To Go, Things To Do, What’s New?, Links and Contact Us’ section.

**Figure 11.9 BDIS MAIN SECTION**

11.13.1- Level 1

The main page, the ‘gate’ to the entire system, has a variety of sub-divisions, as shown in Figure 11.9. These include: A logo, official name and designation of the web-site, pictures, the national flag, fixed drawings and graphic pictures of the destination, international and local links, and a search facility.

11.13.2 - Level 2

About Bahrain

The web site presents general information about the Kingdom of Bahrain, and this section includes official information about Bahrain, e.g. the political system, population,
geography and the media. ‘About Bahrain’ includes geography, visa requirements, Bahrain currency, working hours and the business week, and also a profile of the people of Bahrain. Holidays, facts and figures and annual statistical reports are also provided, and frequently asked questions are listed in this section.

**Figure 11.10: About Bahrain Features**

**Features**

**Plan Your Trip**

Tourists need access to services before embarking on a trip, and some of these services, such as attractions, online reservations for accommodation and flights, are essential components of the BDIS.
Figure 11.11: Plan your Trip Features

Places to Go

Planning Features

This section focuses on attractions in Bahrain, including shopping, both in souks (traditional markets) and modern shopping malls. Figure 11.12

Figure 11.12: Places to Go Features
Things to Do

Information about art and culture is provided in this section, including information on eating out, with a list of local and international restaurants in Bahrain. Sport is also included in this section. The last part details nightlife entertainment in Bahrain.

Figure 11.13: Things to Do Features

What’s New?

Up-to-date information and a calendar of events held in Bahrain.

Links

Links are essential for tourists interested in contacting other organizations for information e.g. for business purposes.

Contact

This section provides the visitor with project contact information.

Weather

Provide the user with live information about the weather.
11.14 BDIS Cultural Issues

BDIS is an information communication system incorporating all the communication features such as texts, pictures, images, video and audio, which changes the perceptions of, motivates and inspires the users to visit the destination. The BDIS emerges as a comprehensive and complete destination information system, assisting the destination to convey the cultural messages by utilising the vast range of multimedia. In order to enhance tourist satisfaction, multimedia used by The BDIS can assist tourists in understanding the Bahraini culture i.e. the video sequence show all the aspect of Bahraini lifestyle. It also provides the tourist with an idea of cultural rituals, greeting codes, dress styles and life in Bahrain. The text in BDIS provides rich information about the cultural issues in Bahrain.

11.15 Summary

This chapter covers the practical side of this research project. It attempts to provide an optimal match between the theoretical and empirical findings of the proposed system found in the previous chapters. This chapter involved the design and implementation of the proposed BDIS. The features of the BDIS were explored during the chapter. Empirical findings from users about the usefulness and effectiveness of the BDIS will be examined in the next chapter.
CHAPTER 12

USER EVALUATION QUESTIONNAIRE

Results and Discussion

12.1 Preamble

This chapter presents the results of the 'user evaluation' questionnaire, as detailed in the research methodology in Chapter 5, conducted to ensure the satisfaction of users inter-acting with the prototype during a search process. The Chapter is divided into three parts: descriptive analysis of the data, tests of 'significance' and, finally, comments and feedback from participants.

PART 1~ DESCRIPTIVE ANALYSIS

12.2 Profile of Respondents

12.2.1 - Nationality

This questionnaire aimed to obtain data on international tourists' opinions on the prototype proposed in this study. 27 nationalities participated in the project. In total 76 responses were received, with the highest number of 21 from British respondents. British responses were followed by other nationalities. Details are given in Table 12.1.

<table>
<thead>
<tr>
<th>Nationality</th>
<th>Number</th>
<th>Nationality</th>
<th>Number</th>
<th>Nationality</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brazilian</td>
<td>1</td>
<td>Indonesian</td>
<td>2</td>
<td>Pakistani</td>
<td>2</td>
</tr>
<tr>
<td>British</td>
<td>21</td>
<td>Irish</td>
<td>2</td>
<td>Qatari</td>
<td>2</td>
</tr>
<tr>
<td>Canadian</td>
<td>4</td>
<td>Italian</td>
<td>1</td>
<td>Saudi Arabian</td>
<td>2</td>
</tr>
<tr>
<td>Chinese</td>
<td>5</td>
<td>Kuwaiti</td>
<td>1</td>
<td>Scottish</td>
<td>1</td>
</tr>
<tr>
<td>Dutch</td>
<td>1</td>
<td>Malaysian</td>
<td>6</td>
<td>Singaporean</td>
<td>4</td>
</tr>
<tr>
<td>French</td>
<td>2</td>
<td>Mauritian</td>
<td>2</td>
<td>Spanish</td>
<td>3</td>
</tr>
<tr>
<td>Ghanaian</td>
<td>1</td>
<td>New Zealander</td>
<td>2</td>
<td>Tanzanian</td>
<td>1</td>
</tr>
<tr>
<td>Greek</td>
<td>3</td>
<td>Norwegian</td>
<td>1</td>
<td>Thai</td>
<td>2</td>
</tr>
<tr>
<td>Indian</td>
<td>2</td>
<td>Omani</td>
<td>2</td>
<td>TOTAL</td>
<td>76</td>
</tr>
</tbody>
</table>
12.2.2 - Status

Most responses, 25 (32.9%), were received from the research students category followed by 20 (26.3 %) postgraduates. Fewer responses came from undergraduates 16 (21.1%) with other diploma and certificate students of 14 (19.7 %).

<table>
<thead>
<tr>
<th>RESPONDENTS</th>
<th>FREQUENCY</th>
<th>%AGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undergraduate</td>
<td>16</td>
<td>21.1</td>
</tr>
<tr>
<td>Postgraduate</td>
<td>20</td>
<td>26.3</td>
</tr>
<tr>
<td>Research</td>
<td>25</td>
<td>32.9</td>
</tr>
<tr>
<td>Others</td>
<td>15</td>
<td>19.7</td>
</tr>
<tr>
<td>Total</td>
<td>76</td>
<td>100.0</td>
</tr>
</tbody>
</table>

12.2.3 - Age

Demographically, the respondents of this survey can be regarded as young participants, mostly international students at Loughborough. Survey participants, as per age categories of 18-24 and 25-34, participated with 27 (35.5 %) and 27 (35.5%) respectively. The 35-44 age category included 17 participants (22.4 %). From these statistics, it is evident that the majority of participants were, between 18 and 34.

<table>
<thead>
<tr>
<th>AGE</th>
<th>FREQUENCY</th>
<th>%AGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-24</td>
<td>27</td>
<td>35.5</td>
</tr>
<tr>
<td>25-34</td>
<td>27</td>
<td>35.5</td>
</tr>
<tr>
<td>35-44</td>
<td>17</td>
<td>22.4</td>
</tr>
<tr>
<td>45 plus</td>
<td>5</td>
<td>6.6</td>
</tr>
<tr>
<td>Total</td>
<td>76</td>
<td>100.0</td>
</tr>
</tbody>
</table>

12.2.4 - Sex

34 (44.7 %) of the sample were male and 42 (55.3%) were female.

12.2.5 - Computer Experience

56 (73.7%) of the respondents had 6-10 years computer experience, 10 (13.2%) respondents had 3-5 years computer experience, 5 (6.6%) had more than 10 years computer experience, while another 5 (6.6%) had less than two years.
Table 12.4: Respondent’s Computer Experience

<table>
<thead>
<tr>
<th>COMPUTER EXPERIENCE</th>
<th>FREQUENCY</th>
<th>%AGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 1 year</td>
<td>3</td>
<td>3.9</td>
</tr>
<tr>
<td>1-2 years</td>
<td>2</td>
<td>2.6</td>
</tr>
<tr>
<td>3-5 years</td>
<td>10</td>
<td>13.2</td>
</tr>
<tr>
<td>6-10 years</td>
<td>56</td>
<td>73.7</td>
</tr>
<tr>
<td>More than 10 years</td>
<td>5</td>
<td>6.6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>76</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

12.2.6 - Online Bookings

Respondents were asked (q4), if they had ever booked a holiday or a flight over the Internet; 54 (71.2%) said ‘Yes’ and 22 (28.9%) answered ‘No’s. This result shows that the majority of respondents were familiar with using the Internet for tourism information and services. When they asked how many times (q5, see appendix) 29 (38.2%) had used the Internet 2-4 times, and 15 (19.7%) had used the Internet 5-10 times, for booking purposes. This breakdown is shown below.

Table 12.5: Respondent’s Online Bookings

<table>
<thead>
<tr>
<th>NUMBER</th>
<th>FREQUENCY</th>
<th>%AGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>One time</td>
<td>9</td>
<td>11.8</td>
</tr>
<tr>
<td>2-4 times</td>
<td>29</td>
<td>38.2</td>
</tr>
<tr>
<td>5-10 times</td>
<td>15</td>
<td>19.7</td>
</tr>
<tr>
<td>More than 10</td>
<td>1</td>
<td>1.3</td>
</tr>
<tr>
<td>No answer</td>
<td>22</td>
<td>28.9</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>76</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

12.2.7 - Future Plans

Of the respondents who had not used the Internet before for booking holidays or flights 22 (28.9%) of them were affirmative that they are planning to use the Internet, for online

1 Not all participants answer this question only 54 out of 76 see question 5 appendix.
booking in future. The question about their future plan, to use the Internet for online booking was related to the previous questions that asked how many times they had booked a holiday over the internet. 54 out of 76 of the respondents had used this facility already, while the rest (22) who had not done so before answered the following question by showing willingness to use the Internet for this purpose.

Some one the respondents also showed their concerns about poor prior experiences of online purchases and security, but remained optimistic for the utility of this medium. Following is the qualitative analysis for respondent's future booking plans.

<table>
<thead>
<tr>
<th>FUTURE PLANS</th>
<th>FREQUENCY</th>
<th>%AGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>22</td>
<td>28.9</td>
</tr>
<tr>
<td>No answer</td>
<td>54</td>
<td>71.1</td>
</tr>
<tr>
<td>Total</td>
<td>76</td>
<td>100.0</td>
</tr>
</tbody>
</table>

**PART 2: DESCRIPTIVE FINDINGS**

This section presents the descriptive findings, based on the attitude of respondents towards the proposed prototype. Missing data were disregarded for the statistical analysis, whereas all the percentages are based on the actual replies for each individual item. The respondents were asked to rate their opinions on a five-point Likert scale.

**12.3 Prototype Content**

Users' perception of the prototype content — are they satisfied in terms of?

1. Content relation to the purpose of the prototype
2. Content usefulness
3. Content credibility
4. Content currency
5. The relevance of images to the content
12.3.1 - Content Relation to Prototype

The foremost purpose of the prototype is to provide online services and information about the destination of Bahrain. The prototype provides its users with as much related information as possible. The respondents were asked their opinions on the content in relation to the purpose of the prototype. As apparent from Table 12.7, 46 (60.5%) respondents selected 4 (Agree) and 27 (35.5 %) respondents answered 5 (strongly agree). Users had a positive opinion (Mean: 4.30; SD: 0.59) on the relation of the content to its purpose.

Table 12.7: Content Relation to the Prototype

<table>
<thead>
<tr>
<th>RATING</th>
<th>FREQUENCY</th>
<th>%AGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0</td>
<td>0</td>
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<td>35.5</td>
</tr>
<tr>
<td>Total</td>
<td>76</td>
<td>100.0</td>
</tr>
</tbody>
</table>

12.3.2 - Content Usefulness

Respondents were asked to rate their opinion, regarding the usefulness of the content, for themselves. 41 (53.9%) respondents found the site content useful, and 19 (25%) of the respondents strongly agreed that the site was very useful. The majority of respondents (78.9%) found the site content useful and informative for them (Mean: 4.01; SD: 0.74).

2 Options describes participants responses: 1=Disagree strongly, 2= Disagree; 3=Undecided; 4=Agree and 5= Agree strongly
Table 12.8: Content Usefulness

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</tr>
<tr>
<td>Total</td>
<td>76</td>
<td>100.0</td>
</tr>
</tbody>
</table>

12.3.3 - Content Credibility

Information content credibility of the DIS is an important aspect, and providing credible information is a basic requirement for a successful DIS. The respondents were asked to rank the site content credibility. The results indicate that over half the respondents 40 (52.6%) agreed, while 18 (23.7%) strongly agreed, that the site content is very credible. A total of 76.3% believed the site provides credible information. However 16 (21.1%) were undecided, and justified their uncertainty by saying they are not familiar with Bahrain, hence they could not decide about the credibility of the information presented in the site (Mean: 3.97; SD: 0.75).

Table 12.9: Content Credibility

<table>
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<td>23.7</td>
</tr>
<tr>
<td>Total</td>
<td>76</td>
<td>100.0</td>
</tr>
</tbody>
</table>
12.3.4 – Up-to-Date Content

Providing up to date information for the tourist is also very important for a DIS to attract tourists. It was thus crucial to ask the users (prospective tourists) for their opinion, on the latest information presented on the site. A high proportion of the sample, 47 (61.8%) agreed that the content of the site is current, while 15 (19.7%) strongly agreed, which indicates the majority of respondents feel that the latest information provided on the site is up-to-date (Mean: 4.00; SD: 0.65).

Table 12.10: Up to Date Content

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<td>19.7</td>
</tr>
<tr>
<td>Total</td>
<td>76</td>
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</tbody>
</table>

12.3.5 - Relevance of Images

Images are an extremely important element in a DIS. A picture is worth a thousand words (Sweeny 2000), particularly in the tourism sector, thus participants were asked to rank their opinion on the relevance of the images to the content. Half of the respondents 38 (50%) agreed, and 27 (35.5%) respondents strongly agreed that the images presented are highly relevant to the content. 85.5% of the sample had a positive attitude towards the images of the site (Mean: 4.20; SD: 0.71).
Table 12.11: Relevance of Images

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<td>Total</td>
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</table>

12.4 Navigation

Respondents were asked to rate the navigation process in the prototype for (1) ease of use, (2) link identification, (3) number of links, (4) accessing specific information, and (5) the attractiveness of the prototype in terms of its navigational aids?

12.4.1 - Ease Of Navigation

The respondents were asked to grade the ease of navigation on the site. 46 (60.5%) respondents agreed that it is easy to navigate the site and 23 (30.3%) strongly agreed. Clearly, it was easy to navigate as was stated by 69 (90.8%) respondents (Mean: 4.16; SD: 0.73).

Table 12.12: Ease of Navigation

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<td>30.3</td>
</tr>
<tr>
<td>Total</td>
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<td>100.0</td>
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</tbody>
</table>
12.4.2 - Link Identification

In response to link identification, 38 (50%) respondents found links on the site easy to identify, and 32 (42.1%) strongly agreed that the links are easy to identify. Therefore, 70 users (92.1%) had a positive response about link identification (Mean: 4.30; SD: 0.73).

Table 12.13: Link Identification

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<tr>
<td>Total</td>
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12.4.3 - Number of Links

When respondents were asked whether the links provided on the site are sufficient, 43 (56.6%) respondents agreed, and 16 (21.1%) strongly agree. A total of 59 persons (77.7%) were happy with the number of links provided on the site (Mean: 3.87; SD: 0.88).

Table 12.14: Number of Links on the Site

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<tr>
<td>Total</td>
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<td>100.0</td>
</tr>
</tbody>
</table>
12.4.4 - Accessing Specific Information

47 (61.8%) respondents agreed that it is easy to access specific information within the site, and 15 (19.7%) strongly agreed in this regard. A total of 62 (81.5%) of respondents were positive about easy access to, specific information (Mean: 3.91; SD: 0.84).

Table 12.15: Accessing Specific Information

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<tr>
<td>Total</td>
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</table>

12.4.5 - Attractiveness of the Site

Another important issue concerning the site is the attractiveness of the site. 39 (51.3%) respondents agreed that the site is very inviting to visit and 24 (31.6%) of them agreed strongly with this statement. A total of 82.9% of the sample found the site attractive (Mean: 4.07; SD: 0.85).

Table 12.16: Attractiveness of Site

<table>
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<td>31.6</td>
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<tr>
<td>Total</td>
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</tr>
</tbody>
</table>
12.5 Design and Layout

This section asked how do users assess the effectiveness of the design and layout, in terms of:

1. The overall appearance of the prototype; 2. The layout organization; 3. The functionality of multimedia; 4. The colours and fonts used in the prototype; 5. Layout consistency

12.5.1 - Overall Appearance

Respondents were asked to rate their opinion on the overall appearance, and ‘feel’ of the site. Findings showed that 42 (55.3%) respondents agreed that the overall look and feel of the site is pleasing to them, and 28 (36.8%) of them strongly agreed in this regard. Finally, (97.1%) respondents agreed, the overall look of the site had a positive appearance (Mean: 4.26; SD: 0.68).

<table>
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<tr>
<td>Total</td>
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</tbody>
</table>

12.5.2 – Clarity of the prototype

A majority (81.5%) of the sample had a positive opinion on layout clarity. 47 (61.8%) of respondents agreed that the layout and organisation of the site are very clear and 15 (19.7%) strongly agreed (Mean: 4.00; SD: 0.65).
12.5.3 - Usage of Colours

38 (50%) of the respondents agreed that the colours used on the site are pleasing to them. 27 (35.2%) of the respondents agreed strongly. A total of 65 (85.5%) of the sample found the site pleasing (Mean: 4.12; SD: 0.89).

Table 12.19: Usage of Colours

<table>
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<td>35.5</td>
</tr>
<tr>
<td>Total</td>
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</tbody>
</table>

12.5.4 - Multimedia Usage

31 (40.8%) respondents agreed that the multimedia used, adds the interest in the site. 14 (18.4%) respondents agreed strongly. 22 (28.9%) respondents remained undecided, due to some blurry images in the film and poor sound in some cases, but overall, the results suggested that a total of 59.2% (more than half the respondents) of the sample had a positive opinion, on the multimedia used (Mean: 3.63; SD: 0.98).

To avoid low connection speed the researcher used minimum multimedia in BDIS site.
### Table 12.20: Usage of Multimedia

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<tr>
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<td>18.4</td>
</tr>
<tr>
<td>Total</td>
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</table>

#### 12.5.5 - Readability of Fonts

The readability of the site fonts is an essential element in the design of the site, therefore respondents were asked to answer whether the fonts were easy to read. 45 (59.2%) respondents agreed that the fonts used in the site are easy to read, and 25 (32.9%) strongly agreed. 92.1% of the sample were satisfied with the fonts used in the site (Mean: 4.10; SD: 0.78).

### Table 12.21: Font Readability

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<tr>
<td>Total</td>
<td>76</td>
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</tbody>
</table>

#### 12.5.6 - Page Consistency

Web pages should have a consistent layout to avoid confusion users. Respondents were asked to rank the statement "The layout from page to page is very consistent" 48 (63.2%) of the respondents agreed, and 18 (23.7%) strongly agreed. A total of 84.2% of the sample remained optimistic in this regard (Mean: 4.04; SD: 0.77).
12.6 Access

This section asked how much satisfied the users are with the accessibility of the system, in terms of: loading speed, clearness of the main menu, the ability to access the prototype from multiple points.

12.6.1 - Loading Speed

Respondents were asked to rate their opinion on the loading speed of the pages. 33 (43.4%) respondents agreed that the pages load very quickly, and 31 (40.8%) strongly agreed with this process. A total of 84.2% of the sample had a positive attitude regarding the loading speed of the pages (Mean: 4.12; SD: 1.01).

Table 12.23: Loading Speed of Pages

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<td>Total</td>
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</tbody>
</table>
12.6.2 - Clarity of the Main Menu and Indexes

While considering the variable — the main menu and indexes are very clear — more than half, 39 (51.3%) agreed that these features are clear to use and 30 (39.5%) strongly agreed (Mean: 4.25; SD: 0.77). A total of 90.8% of the sample agreed that the main menu and indexes were very clear.

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Table 12.24: Clarity of the Main Menu and Indexes

12.6.3 - Multiple Access Points

Interestingly, 46 (60.5%) respondents agreed that the ability to access information through multiple ways and various points was excellent, and 18 (23.7%) strongly agreed. A total of 84.2% of the respondents were happy with the multi-accessing points, provided on the site (Mean: 4.07; SD: 0.66).

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</table>

Table 12.25: Multiple Access to Site

12.7 Online Services

This asked how do users rate the on-line services presented in the prototype, in term of, easiness to book online, ticketing, accommodation and transportation rental, the
usefulness of multi-languages services, and instant information about the weather, currency, world time and feedback features like e-mails and FAQ?

12.7.1 - Booking Flights Online

An online service is one of the major features, offered by the DIS. Respondents were asked to rate their opinion on booking flights online. 42 (55.3%) of the respondents found it very easy to book a flight via this site, and 16 (21.1%) strongly agree. (Mean: 3.78; SD: 1.08). A total of 76.4% of the sample were happy with the online services provided by the prototype.

Table 12.26: Booking a Flight Online

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<td>Total</td>
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</tr>
</tbody>
</table>

12.7.2 - Booking Accommodation Online

Although it is difficult to complete an actual reservation process in this prototype, the design provides online accommodation reservation services to help users. 41 (53.9%), agreed that it is very easy to reserve accommodation online, and 16 (21.1%) strongly agreed. This indicates that a total of 75% of the sample were satisfied with this service (Mean: 3.86; SD: 0.92).

Table 12.27: Booking Accommodation Online

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</tr>
</tbody>
</table>
12.7.3 - Car Rental Online

A total of 81.6% of the sample had a positive attitude towards the online services of car rental. 42 (55.3%) agreed that car rental is easy to book on this site, and 20 (26.3%) strongly agree that this service is very easy to book (Mean: 3.99; SD: 0.89).

Table 12.28: Car Rental Online

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<tr>
<td>Total</td>
<td>76</td>
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</tbody>
</table>

12.7.4 - Usage of Languages

The usage of multiple languages on the site failed to achieve clear satisfaction. The range of opinions can perhaps be explained by the diversity of nationalities that answered the questionnaire, while the system provides only four languages. 25 (32.9%) of the respondents agreed that the language service provided is excellent, and 19 (25%) agreed strongly. Yet, 17 (22.4%) respondents were undecided (Mean: 3.51; SD: 1.28). A total of 64.9% of the sample were agreed with using multi-languages option provided in the prototype.

Table 12.29: Usage of Languages

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<tr>
<td>Total</td>
<td>76</td>
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</tbody>
</table>
12.7.5 - Providing External Information

Providing diverse information, such as weather, currency and world time is very important for users. Respondents were asked to rate their opinion regarding this information. Most respondents, 43 (56.6%), agreed that the external information provided is excellent, with 28 (36.8%) strongly agreeing (Mean: 4.26; SD: 0.7). A total of 93% of the sample were agreed that the information provided in the site like weather, currency and world time were excellent.

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<td>36.8</td>
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<tr>
<td>Total</td>
<td>76</td>
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12.7.6 - Suitability of Online Service for International Tourists

A significant number of respondents, 46 (60.5%), agreed that the services provided are ideal for international visitors, and 23 (30.3%) of the respondents strongly agreed. A total of 90.8% of the sample believed that the online services provided in this site are ideal for the international tourist (Mean: 4.18; SD: 0.67).

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<tr>
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</table>
12.7.7 - Additional Features

37 (48.7%) respondents agreed that features provided, such as e-mail and FAQ, are excellent, while 19 (25%) respondents strongly agreed. A total of 56 (73.7%) of the sample were satisfied with the additional or value added features of the site conversely, 18 (23.7%) were undecided, possibly due to different interests (Mean: 3.96; SD 0.77).

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<td>Total</td>
<td>76</td>
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</table>

Table 12.32: Additional Features

12.7.8 - Encouragement to Visit Bahrain

The basic aim of the BDIS is to encourage and attract international tourists to visit Bahrain. When surveyed, more than the half, 40 (52.6%) respondents, agreed that online services provided on the site encouraged them to visit Bahrain, and 22 (28.9%) of the respondents strongly agreed. A total of 81.5% of the sample were encouraged by the site to visit Bahrain. This indicates that the proposed BDIS succeeded in its main objective of encouraging international tourists to visit Bahrain (Mean 4.04; SD: 0.84).

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<tr>
<td>Total</td>
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</tbody>
</table>

Table 12.33: A Visit to Bahrain
12.8 General Comments

The researcher aimed in this section to glean more information regarding the DIS, in general, and international tourists' attitudes in particular. These questions centered on issues like the users' interest in visiting the destination, their opinion in comparison to conventional media and this new system and, finally, whether the proposed system meets their requirements?

12.8.1 - Inter-active Systems and Tourists

This section asked whether an inter-active system like DIS encouraged potential international tourists to visit destinations.

The respondents were asked; whether inter-active systems, with comprehensive up-to-date information, encouraged them to visit destinations. 49 (64.5%) of the respondents agreed that an inter-active system, like BDIS, providing comprehensive up-to-date information, encourages international tourists to visit the destination, and 22 (28.9%) strongly agreed in this regard. Destination systems are clearly able to attract international tourists to destinations (Mean: 4.18; SD 0.67). A total of 93.4% of the sample agreed that an inter-active system like DIS encourages potential international tourists to visit destinations.

Table 12.34: Inter-active Systems and Tourists

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<th>RATING</th>
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<tr>
<td>Total</td>
<td>76</td>
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</table>
12.8.2 - Online Services and Conventional Channels

When asked whether online services provided in a DIS serve users quicker than the conventional channels, such as tour operators and travel agencies, 40 (52.6%) of the respondents agreed that online services provided in the system, such as online reservations, serve customers faster than conventional channels, and 25 (32.9%) of the respondents strongly agreed in this regard. (Mean: 4.11; SD: 0.84). A total of 85.5% of the sample agreed with the question.

Table 12.35: Online Services and Conventional Channels

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<th>RATING</th>
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<td>32.9</td>
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<tr>
<td>Total</td>
<td>76</td>
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</table>

12.8.3 - The System and Tourist Requirements

Does the proposed BDIS meet international tourists' requirements? Respondents were asked to rank their opinion on whether, 'this proposed system is able to meet my requirements as a tourist'. From the results, 48 (63.2%) agreed that the proposed BDIS meets their requirements as international tourists, and 19 (25%) of them strongly agreed with the statement. A total of 67 (88.2%) of the sample considered that BDIS is an ideal channel to meet their requirements. (Mean: 4.12; SD 0.63)

Table 12.36: The System and Tourist Requirements

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<tr>
<td>Total</td>
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</table>
PART 3~ STATISTICAL TESTS

12.9 Preamble

The nine research hypotheses presented in Chapter 1 suggest that there is no significant difference between the research variables. These relationships were examined by testing their significance, and using statistical techniques for making comparisons. The majority of data were ordinal; however, demographic data such as gender and age were also collected. The Mann-Whitney significance test was used to compare two-independent-samples, and the Kruskal-Wallis H Test for K. Independent samples used to compare three or more groups – an alternative test to ANOVA. H1, H2, H3, H4, and H7 were tested by using Kruskal-Wallis H Test for K Independent Samples, whereas H5, H6 and H9 were found unsuitable for any statistical significance test as discussed in previous sections and H8 was tested using the Mann-Whitney significance test to compare two-independent-samples, the ‘Yes’ group and the ‘No’ group.

12.9.1 – Kruskal-Wallis H Test & Mann-Whitney Test

The following null hypotheses were tested during the prototype evaluation:

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Description</th>
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<tbody>
<tr>
<td>H1</td>
<td>NO significant differences in terms of participants’ status and attitude toward the prototype</td>
</tr>
<tr>
<td>H2</td>
<td>NO significant differences in terms of participants’ age and attitude toward the prototype</td>
</tr>
<tr>
<td>H3</td>
<td>NO significant differences in terms of participants’ gender and attitude toward the prototype</td>
</tr>
<tr>
<td>H4</td>
<td>NO significant differences in terms of computer experience and attitude toward the prototype</td>
</tr>
<tr>
<td>H5</td>
<td>NO significant differences in terms of participants’ web experience and attitude to the prototype</td>
</tr>
<tr>
<td>H6</td>
<td>NO significant differences in terms of ability to find information on the web and attitude toward using the prototype</td>
</tr>
<tr>
<td>H7</td>
<td>NO significant differences in terms of participants’ experience of booking holiday or flights over the Internet and their attitude toward the prototype</td>
</tr>
<tr>
<td>H8</td>
<td>NO significant differences in terms of participants’ number of times of using the internet for booking a holiday or a flight and their attitude toward the prototype</td>
</tr>
<tr>
<td>H9</td>
<td>NO significant differences in terms of participants’ future plan to use the internet for online booking and their attitude toward the prototype</td>
</tr>
</tbody>
</table>

Table 12.37: The Null Hypothesis
H1: The hypothesis, as mentioned in the above table, was used to investigate significant differences between the status of the participants. The results of the Kruskal-Wallis test indicate that there is no significant differences (\(P>0.05\)) between the status of the participants, (undergraduate, postgraduate research students, and others i.e. diploma and certificate) using the BDIS prototype and the prototype factors. This negative relationship indicates that the respondents' attitude towards using the prototype is not influenced by their status. See (Appendix 19) for all Kruskal-Wallis test results.

H2: A comparison of the results of the Kruskal-Wallis K independent samples test reveals that there are no statistically significant differences (\(P>0.05\)) between the age groups of respondents (18-24, 44-45+) and the prototype elements, which suggests the null hypothesis is true and there is no relation between age and attitude toward the prototype. See Appendix 19.

H3: The Mann Whitney significance test found no difference between sex and attitude towards the prototype. See Appendix 20.

H4: The Kruskal-Wallis H Test does not reveal any significant differences (\(P>0.05\)) between the participants' computer experience, (<1 year; 1-2 years; 3-5 years; and 6-10 years), and their attitude towards the prototype. In other words, those who have one year or less than one year experience have the same attitude towards the prototype as those who have more than ten years of computer experience, which means the prototype is applicable to all sorts of users; novice, medium and experienced. See Appendix 19.

H5: All participants in the question related to web experience selected the answer 'More than 10 times per month'. Thus the Kruskal-Wallis H Test and other statistical techniques for making comparisons tests are not applicable in this case.
H6: Every participant, in the question related to the difficulty of finding information on the web selected either 'easy' or 'average'. Therefore, it is tested by using the Mann Whitney significance test, as shown in Appendix 20.

H7: In this hypothesis, two independent-groups were tested ('Yes' and 'No'), and the Mann-Whitney significance test was used to examine this hypothesis. The data reveal no statistically significant difference between the participant's experience of booking a holiday or flight over the Internet and their attitude towards use of the prototype. See Appendix 20 for the results of the Mann-Whitney test.

H8: The Kruskal-Wallis test results reveal that there was no significant difference between the participants' number of times using the Internet to book a holiday or flight online and their attitude towards the prototype, and the experience or the number of times using the Internet didn't have any influence on the participants' attitude towards the prototype. See Appendix 19.

H9: As evident from the data related to this hypothesis, all participants in the 'No' group answered 'Yes', and it is thus difficult to test the significance of this question.

---

4The Mann Whitney Significance test was used to compare the two-independent-sample or two groups only. Since "easy" and "average" are two groups, Mann Whitney was used to test this hypothesis. All participants selected these two choices.

5All the participants in this question answered yes. More than one group is needed to test the hypothesis for group comparison.
12.10 Preamble

This section presents comments and feedback from participants in the evaluation process. These comments have provided a wealth of information to the author. Open-ended questions - aimed at collecting as many constructive comments as possible, from these prospective tourists - were intentionally placed at the end of each section of the questionnaire, for the participants to freely express their opinions.

12.10.1 - Prototype Content

Respondents were unanimous about the prototype content, and almost all participants agreed that the site is well informed and well supplied with credible and current information. Respondents felt that images provided on the site reflect the destination's culture and history. Despite the newness of information, especially for those who don't know Bahrain, contained within the site, participants did not find it confusing or overwhelming. However, some asked for more information, furnished with interactive pictures of the destination. Overall, the respondents found the information content clear, concise and easy to digest.

"I personally think that the site is well equipped with necessary travel information that would be required by tourists/travellers."

"Current news and business reports aided the sense that the site was official and therefore worth browsing through. Current information helps make one feel they have a form of personal contact with the place they are about to visit."

The respondents' comments support the results in part 3 of this chapter. Therefore it is clear that the well organised, up-to-date and user friendly content of the prototype influenced their attitude towards the prototype.

"The design of the website is very easy and user-friendly. All the information is very new to me so I think the content is very good."
"The content is very good. Normally, it is better to have interactive pictures of the destination placed aesthetically here and there."

12.10.2 - Navigation

The site contains many pages providing both internal and external links, therefore, participants managed to navigate easily. According to some participants, 'it is not easy to get lost within the site'. The main menus on the site with the identical style of the pages make it easy to navigate. Almost all participants agreed that the home page is well marked, making it easy for a visitor to get back without problems. The site also saves a lot of the respondents' time by getting important information through external links, and to come back again to the home site, which certainly makes navigation simpler and easier. Some comments in this regard were:

"The links were straightforward and set out well throughout the site."

"Have been known to spend about 3hrs looking for information before that only took at the most a few minutes to access on this one. Very easy to navigate".

"Overall, the navigation is ok - Basically the navigation is fine. Interaction with the pictures helps".

The participants seem to be happy with the prototype navigation. Their positive comments confirm that there is a consistency between the statistical and the qualitative results of the survey.

"I found the navigation of the site very easy for a tourist like me."

"The site is well laid-out and attractive. It makes you want to access other areas to find out more."

"It is easy to navigate as all the necessary links are located in the main/same page."

"The colours used, made the site very visually pleasing, and, the combination of the ancient and modern aspects of the country, used in the advertising, would help attract a broad range of tourist besides; I navigate easily in this site."
12.10.3 - Design and Layout

Participants said that the site demonstrates sound practice. It is clear and straightforward, and clearly sets out the provision of different facilities, such as the multi-lingual module for languages. The classification of information with ‘drop down’ boxes containing subheadings is noteworthy. The site is well presented and well organised; furthermore, there is no cluttering of information and images on the site, all the pages are colourful, and fonts used on the site are readable. Conversely, some respondents were not happy with the film presented on the site, and complained that the film does not play well. Overall, the basic idea was mostly liked, and the design and layout of the site was found consistent.

The findings show that a total of 97.1% of the respondents had a positive attitude toward the overall look of the site. The comments below back this interesting result:

"The design and layout are clear, concise, and straight to the point"
"The top part is good, it contain something related to the destination."
"The layout of the site is very good. I liked the continual use of the flag. Aided familiarity and gave a sense of continuity."

The design and layout of the prototype provided the respondents, a feeling of a real experience of the system, which is reflected in their comments:

"The design and layout of the site and the domain name make me feel that the site is an actual site and not a prototype - well done!!"
"I like your catchey domain name and of course I like your design – its well organised for a prototype."

12.10.4 - Access

Most respondents expressed their categorical approval of the accessibility of the site via access points provided. They found it easy to access and move from one page to
another, using the sitemap and access points. They agreed that the site loads quickly, and the menus provided in the site are sufficiently clear.

"Moving through and within the site is very fluid."
"I like the fact that information is accessible from various points"

Accessibility is one of the main features in Web design. The majority of participants were satisfied with the accessibility provided on the site. A glance at the results concerning accessibility shows that, the total of the constructive results ranged between 84.2% and 90.8% of the population in each feature related to accessibility and mentioned in the questionnaire.

"The quick download time is a strong advantage."
"I am using a JANET connection which is perhaps a good thing (given the number of pictures there are), it loads very quickly on my machine."
"Accessing the web is very quick."
"Note that the page loads quickly even though my machine is fairly old"  
"The access is easy and fast. (The good thing is that the main menus and indexes are always there, no matter which page you are visiting.)"

12.10.5 - Online Services

"Good services" remained the theme of most respondents. Almost all agreed that the online services provided on the site are very good (in spite of the booking process not being fully operational), and the online information definitely encourages them to visit Bahrain. Respondents' satisfaction with the proposed DIS reflects the positive results regarding online services.

"These good services, if provided in the real one, will make me put Bahrain in my travelling list."

"This is the best part of the page. Congratulations!!!"

To avoid disconnections the site was hosted in the USA and affordable for the researcher.
“Use of hints for international visitors is very good e.g. needs to get a visa. I like the suggested itinerary with phone numbers next to items and the online booking.”

“Car-rental booking is very good as I have family and I prefer to hire a car and explore by myself.”

“I never considered visiting Bahrain until evaluating this site, specifically the section about hotels bookings - but now I would like to.”

“I tried only HOTEL booking but I think this section is not yet completed. However the design for hotel is very good and useful.”

“The on-line services are very useful and we need them, but they are not working. I assume because it is only a prototype but I like the way they presented.”

“It was clear there was a facility to book flights etc. which I like”.

“I found booking a flight is quite easy in this site.”

“I think online services are very good, almost as if it is in a full operational system.”

12.11 General Comments

In this section the respondents had the freedom to list both negative and positive aspects of the prototype.

12.11.1 - Negative Aspects

“It is slow sometimes perhaps my machine!!! But I found the form to book flight is very good.”

“A greater range of booking services and information would have also been useful - especially lower cost options (for students!).”

“On the whole I like the idea of the site, but instead of offering the services such as car rental etc, I would just link to those web sites, which carry out these searches exclusively.”

“The colours were appealing. The font size could be a little larger for people with visual impairment?”
"The quality of video is not as good as other content. I think if you decrease the opening size of the video window then it will become clearer."

"More Links could be provided to some other site e.g. links to the companies (tour operators) that manage the tourist for more detailed information."

"Need more images about Bahrain"

12.11.2 - Positive Aspects

"Easy access to different sorts of information."
"You cover almost everything."
"The visual presentation is excellent. The language is reasonable to understand."
"I have just been to Bahrain, and this site would have been very useful for me to see before I left. It gives good general information."
"Colour, moving text, list of contents on left hand side, search facility, graphics has all the information, and I could imagine needing! Great layout and colours."
"The layout of the site attractive and inviting."
"The layout of the site is good as it is clear and easy to access. It also has extra information within the sites such as visas and currency exchange, which are useful and often neglected by other sites."
"Lots of information about Bahrain can be accessed in an easy way."
"It is very informative and clear."
"Information (different languages)."
"Colour layout photos representing your country."
"It is easy to find information."
"Very informative, includes all the things a tourist is interested in. Nice colours, etc."
"All the information about Bahrain is great; weather, video, currency exchange."
"Easy to find the information we need."
"The page layout, colour, font selection is very much interesting."
"Attractive website - simple and clear to the point."
"Good organisation and clear way of expressing the idea."
"Beautiful pictures, clear format, easy to use."
"The content very simple, easy to navigate. Most of the things I’d want to know, if I was going there."
"Links to useful information (currency converter, weather page), travel tips are very useful."

"It sounds like it is written by someone who really knows the destination. This manifests itself in e.g. the suggested itinerary."

"Quick download time. Simple format that is not too cluttered with graphics."

"Utilise the other links and information which shows that the information are reliable”.

"1) It’s very quick. 2) Good information about different places to visit. 3) Good information about bossiness. 4) Good links with other pages from the country. 5) Good information about local costumes (e.g. incident in the shopping centre)."

**12.12 Comments for Development**

This section presents the participants’ ideas and suggestions for further development of the prototype. These provided the author with many interesting and good ideas for future development. Comments are as follow:

"It could offer some business related information, and on the ongoing business and cultural events. The site can offer a single window solution to people. It could cross-market different services and products in Bahrain."

"I would have liked to know a little more about what is appropriate in terms of behavior; perhaps I missed it? i.e. as the population is Muslim, what should a tourist from Europe not do in terms of not wanting to offend local people."

"Have a link with T.V. and Radio of Bahrain. You can have chat rooms."

"Provide info to schedule trip according to the seasons."

"I think that anyone, generally, who wants to visit Bahrain for business include an index for business establishment and industrial factories. Good luck."

"The tourist attractions need to be more informative and need more photographs. Need transportation information besides car rental."

"Accommodation and eating choices needs to be more."

"I think it would be a good idea to also have links to a generic flight search engine like travelocity.com, so that people can search for the cheapest flight from their area. I always prefer to check these before I go to specific airlines."
"You probably don't want to put too many pictures on the site as it takes too long to load, but I would put an interactive map of Bahrain in a more prominent location on the site. It is nice to know which country you are visiting online."

"Maybe some famous food in Bahrain to attract people's attention."

"Add more links."

"Type of booking - two persons, or a family. Any discount for that."

"More information about that shows how Bahrain can be a unique tourist experience. More local culture must be obvious to attract people from different cultures."

"May be information about shopping centre details would be nice."

"The most important thing for someone who wants to visit a place at random is that why he should visit this place and not another one. I thus think some very unique aspects of Bahrain must be presented. The cuisine, some exotic places. Most important."

"Would like to have more information on accommodation (greater range of options, perhaps including B and Bs and hostels) and more information about public transportation in Bahrain. I would also like to see a guide listing the top recommended experiences."

"It's a very good site. Very simple and easy to navigate. It would be cool to have a reviews section and more pictures alongside your daily what to do guide."

"The information should be updated on a regular basis. As I know most of the times people don't update the information and loses the site visitors."

"A world map may encourage people who are travelling around the world to incorporate Bahrain into their journey. Description of different resorts and tourist attractions in each place would help visitors to plan where to stay."

"Could have a whole section on e.g. Food, specific resort information."

"Inclusion of more location maps. The inclusion of feedback from people who have visited Bahrain previously could be a good addition."

"Make balance between the modern site of Bahrain, and the ancient traditional culture and life of Arabic Jazeerah in general. The Kingdom life. The Empire, etc. That is the kind of thing that tourist actually look for."
“Need information on health aspects for visitors.”

“There are different languages, so it means different culture background. It would be good to provide different information.”

“Add a link to Travelocity.com. Also, maybe a list of tour operators depending on where you are accessing the information from (for example, UK tour operators, North American Tour operators, etc.). Also, self-catering accommodation.”

“If a package of 3 days’ sightseeing plan can be provided, that will give more choices to tourists. It’s better to provide some addresses of main police stations or hospitals in famous sites there. Bahrain national telephone code should be shown.”

“The site seems very usable and convenient. I think it needs more pictures or a better audio clip to really sell the country.”

“My main concern would be whether or not there are any local customs that should be observed, which might otherwise upset the people of Bahrain. Comment on these should be added.”

“Maybe add prices of food, drinks etc and the English equivalent, perhaps.”

“You can use an intro page to add good impression.”

“I think it would be good to have other news from Bahrain, not just the link to the business news. And is there such an organisation as a cultural exchange centre where you can arrange to meet local people and other visitors.”

“Possibly generate further awareness of the Country by using links on better well known sites, for example, STA or ebooker.com. Alternatively, generate fantastic offers for a limited period, in order to induce people to talk about how fantastic.”

“Provide information about security and crime rate in your destination!”

12.13 Discussion of Results and Conclusions

The main objective of this project is to develop and evaluate an advanced interactive online destination information system for the Kingdom of Bahrain, referred to as the Bahrain Destination Information System (BDIS). The BDIS is intended to assess and meet customer requirements; to attract international tourists by promoting the wide range of
available private and public sector services; and to meet the requests, expectations and demands of international visitors and tourists to Bahrain.

A prototype was developed after surveying the requirements for the system, and was used as a vehicle for designing the final version. Although a prototype has a humble start, it becomes the first of its kind by the time it is completed. So when the prototyping process ends, the prototype has become the system (Lantz 1987).

As the prototype has been used to develop the requirements of the system users, and as the system is built to assess and meet customer requirements, it is important that users confirm their agreement with the proposed system. In this project, this was done by involving users in evaluating the modified version of the prototype via an online questionnaire. This questionnaire sought to ascertain users’ perceptions and opinions of the prototype’s features, and its continuing professional development. The prototype has gender sensitivity and age restriction, and also facilitates people with different levels of computer experience. Interestingly, the data received from different nationalities, provided a real wealth of information for the research and future development of the prototype.

Participants were positively satisfied with the information content of the prototype - an important element in the development of any successful DIS - and also with the navigation and links of the prototype site. The results show very positive results regarding the design and layout, which suggests that the prototype succeeded in its major aim, that is to present a successful version of the prospective system.

The questionnaire results on accessibility indicate that participants were very satisfied with this aspect of the prototype. Online services provided in the prototype received positive opinions and also, results show that the prototype managed successfully to attract visitors to the destination of Bahrain. Although the prototype was not fully operational, the test mode was well received, and deemed highly suitable by participants.
CHAPTER 13

CONCLUSIONS AND RECOMMENDATIONS

13.1 Conclusions

The study focuses on developing an interactive advanced online destination information system to serve Bahrain national tourism and suggests how to meet international visitors' and tourists' requests, expectations and demands.

To provide the subject with a proper context, the study reviews current trends in the application of Information Technology in the Tourism Industry. The author explores the impact of IT on the tourism industry, presenting different types of causal relationships starting with the emergence of Computer Reservation Systems (CRS), in the 1950s, and Global Distribution Systems (GDS), till the mushrooming of the Internet and the World Wide Web in the 1990s, which has changed the whole direction of development.

Information and communication technology, particularly the Internet, plays a critical and radical role in not only changing and conditioning the evolution of tourist behavior and demands, but also in generating important changes in the services and strategies of tourism organizations.

The Internet has become a significant reality across the world and is widely recognised as an increasingly important method of achieving organisational marketing goals. It is also seen as the only practical way to reach large and remote populations. In short, the Internet has fundamentally changed the equation of 'what is' and 'what is not' possible.

As the author strongly believes that tourism services cannot be properly utilised without IT involvement, an emphasis is placed on the relationship between the two and their effect on each other. An overview, from literature, of current and future developments is used as a reference point to assess the position, characteristics, trends, pace, and the direction of current developments in the tourism industry.

The Internet provides tourist destinations with a cost-effective marketing channel that enables destinations to reach out to their customers without the high cost of
conventional media. Whilst many emerging destinations have, as yet, little interest in introducing the advantages of the Internet, they are not using it to its full potential.

As we enter a new era such “disadvantaged destinations” need to understand the potential of the Internet and other emerging technologies and to find an effective way of capitalising on these channels. The advantages to be gained include cost-effective global distribution, new opportunities in new markets, and partnerships between the public and private sectors.

There is a marked tendency among the designers to emphasise more on the technology while ignoring the human factor. Impressive graphics, confusing colour schemes, lesser attention on the quality of content and poor accessibility are common problems affecting tourism Websites. It is also a matter of common observation that ignoring the end users has a reason in the availability of technology as well as lack of sensitivity on the part of developers towards the importance of a user-centred approach for the DIS portal development.

While the growth of the Internet creates a threat to some systems, it also creates opportunity for others, including Destination Information Systems. The core of this research project, Destination Information Systems, benefits from Internet technology that has changed from static comprehensive databases to an interactive, dynamic and comprehensive source of information. Although it is difficult to evaluate and anticipate new technologies, studying other examples raises awareness and gives a clear insight for future proposals. In this project, the case of TlScover, the Austrian Destination Information System, is just such an example.

The potential role of the Internet in the Tourism Industry is to act as a promotional and distribution channel that serves to meet marketing objectives of the destination. The Internet can empower tourism suppliers throughout the destination and give them the chance to have an equal visible international presence. As this study confirms there is an intimate relationship between tourism and information technology.

This relationship was substantiated and proven by showing how Internet technology provides opportunities for destinations regardless of their sizes. For example a DIS which is a web-based system, helps those destinations to replace their traditional
methods of information provision with more efficient ones (discussed in chapter 2). However, it must be realised that Internet technology alone cannot achieve wonders, as this is only one dimension of the complex nature of a destination. For Internet technology and tourism to play their part in destination development, they must be viewed in the larger context and include other aspects, such as stakeholders and funding. It is clear that the best way to bring all the players together is by developing a Destination Information System (DIS), thus creating an information centre on the Internet marketplace where all stakeholders are represented at one website address with a single shared homepage, under one policy strategy and a partnership for funding.

The potential tourist gains many advantages by accessing such a DIS directly, for instance both search time and effort is significantly reduced, they gain access to a wide variety of information, and are served online. The DIS meets customers' demands as a convenient, cost-effective and comprehensive source of information. Suppliers gain through a strategic alliance with other stakeholders and other organisations at the destination on a national level. Clearly an effective DIS requires the development of a set of protocols set by the public sector that unifies all the stakeholders under one umbrella. The successful development of a DIS requires advanced Internet technology, the integration of all stakeholders’ information, good design, efficient links, partnerships with private sectors for funding, and the involvement of the public sector for policies and regulations.

Information systems are critical to the success of any organisation and have a major influence on day-to-day operations. In return organisations increasingly require information systems to keep pace with rapid-fire and major changes in this field. As the proposed system in this project is developed for 'people', it requires an understanding of the sociology of users' environments. Users don't perform tasks in isolation, and for a designer to develop a successful system a good understanding of the human/computer interaction is needed. User-centred Design (UCD) is another fundamental issue as the involvement of the user in the development of the system is critical to the success of any system, and the relationship between the UCD and Web development is a key to a successful computer-based system.
The study also suggests that a DIS is the ideal medium for providing organisations with good service, firming customer relations, providing better information for decision making, strengthening productivity and promoting global competitiveness. Information systems come in different types, with different components, and go through different trends with a wide variety of approaches and methodologies. The conclusion is also reached that a ‘prototyping’ methodology is the ideal approach for this research project, as users need to see and feel the system they are going to use. The least expensive, easiest and fastest way to do this is to develop a prototype, where the designer and users can test the potential system. To ensure the satisfaction of users and to reduce the cost of development and the calendar of time necessary, a prototyping methodology was chosen as the basic tool for this research project.

The centuries old Bahraini culture needs to be projected utilizing the technology of the Internet. Any web designing to promote tourism must accommodate features covering various aspects of the country and culture, informing tourists worldwide of its uniqueness as well as its norms and values. So, the proposed DIS intends to provide information on history, archaeology, lifestyles and all that would make Bahrain a place worth visiting. It would also highlight the norms and values of the society; it is important for the visitor to know the likes and dislikes of the people to avoid confrontation. On the other hand, internal resistance against tourism demands governmental involvement to make the project successful keeping in view its cultural promotion and socio-economic aspects.

As a tourist destination Bahrain is not fully presented in the Internet marketplace, and there is a need to introduce the Internet to other stakeholders in the industry, especially small enterprises, as only a few of the suppliers at the destination have engaged in Internet marketing. In the absence of certain stakeholders, the destination as a whole suffers from limited marketing, and evidence clearly shows that the Internet is not being adopted at a local level. There is no policy, or set of standards, which can act as a basis for tourism information on the Internet in Bahrain, and the present website lacks presence and uniformity. Local tourism suppliers need guidelines and encouragement from the Department of Tourism Affairs in Bahrain to take an active role in Internet marketing activities.
The present website does not match the requirements of international tourists, and unfortunately the lack of an advanced inter-active Internet system for Bahrain reduces the effectiveness of marketing. There is no structure or clear strategy for Internet adoption and development for Bahrain as a destination.

This study has endeavoured to develop an inter-active destination information system and to suggest possible means by which a system like a DIS can be developed for a developing tourist destination like The Kingdom of Bahrain. Based on the evidence collected and deduced throughout the study, together with the author’s own perceptions, experience and understanding of the issues under investigation, a prototype was developed to replicate the proposed system, and to visualise the system experientially not theoretically, to discover early design problems, to meet users’ needs and requirements by involving them in the development process, to reduce the cost of development, to reduce the project time calendar and to produce the right system the first time.

As the BDIS aims to attract and serve international tourism, this prototype is designed around the needs and motivations of the target audience. The information gathered from the web-based questionnaire and from interviews helps to form clear ideas on the type of information required. In addition, practical tips, gathered from similar sites, helped in the design of the BDIS. To ensure system usability the system was technically tested, with the first version evaluated by experts. User involvement in this project is important towards tailoring a suitable and successful system, and ‘actual’ users evaluated the modified version of the BDIS.

Null Hypothetical Statements were used to investigate whether the socio-demographic factors of prototype users had an influence on their decisions towards the proposed BDIS. The test revealed that the users perceived the proposed system as a successful system without influence of age, sex, status, computer experience or Internet experience.

The conclusion of the study regarding the development of BDIS is that designing a prototype for such a system is not an easy task as user-diversity differs in computer background, Internet experience, as well as other personality characteristics such as reading speed, attention span, and learning style. Patience is a big challenge to any system designer, and with the complicated tasks, technologies and different types and sources of information the job becomes more challenging. Developing such a system requires a
skilful team. Expert testing of the system is important to ensure the usability of the system.

Designers used to pay little attention to user involvement in the development of a system but, as the success of the system depends heavily on user satisfaction, this project involves the user in the evaluation of the modified version of the BDIS to ensure their satisfaction and that the system meets their needs. The empirical evidence provided by the study reveals that the majority of participants agreed that proposed system met their requirements as tourists, and that the BDIS is an ideal system for attracting international tourists. Chapter 12 concludes that the proposed BDIS system succeeded as a successful destination information system and in attracting and encouraging participants to visit Bahrain, and thus meets the requirements of international tourists.

Securing a position in the Internet marketing place for a developing or emerging destination is critical. Literature reveals that only developed destinations use Internet technology to its full potential, and emerging destinations lack a deep understanding of the Internet phenomenon. This research project shows that Internet technologies can be used as an ideal marketing tool for a developing destination such as Bahrain. It would appear from the literature that there is no earlier study dealing with this specific issue in Bahrain, and this project is a significant contribution to tourism studies on developing destinations.

13.2 Recommendations - Kingdom of Bahrain

1. It is imperative that the Kingdom of Bahrain in general and Tourism Affairs in particular, place a Destination Information System for Bahrain on their agenda. They should act immediately to plan and implement the BDIS, taking advantages of the developed prototype in this research project and the experience of other advanced destinations information systems.

2. Deficiencies in the present Internet application for the tourism industry in Bahrain are primarily due to absence of structure, strategy, funding and cooperation between the private and public sector. Based on this conclusion, the author recommends that a strategic national committee should be established to form the administrative and technical bodies required to play a fundamental role
in the development of the national DIS. This strategic committee should consist of stakeholders from concerned organisations such as the Ministry of Information, Tourism Affairs, the Economic Development Board, and representatives of hotels, small and medium enterprises, travel agencies and tour operators.

3. An in-depth understanding of the Internet implications is required in the light of the foregoing conclusion, and Tourism Affairs should reconsider its Internet policy to counteract deficiencies by re-evaluating its existing Website services, technologies and the information content offered in this site.

4. Because of the dearth of research available on tourism in Bahrain in general and about tourism and information technology in particular, coupled to out-dated information available on the Internet, it is recommended that Tourism Affairs encourage and backs such research, by establishing a research section or outsourcing research.

5. The study had shown that there is a need for the involvement of the private sector in the DIS, especially for funding and system maintenance, and the author recommends that Tourism Affairs build a partnership with the private sector to secure a successful DIS, and involve small and medium enterprises who are marginalized on the present Website.

6. The study had shown that utilising the latest technologies software (like site-mapping software) new techniques and system guidelines is a necessity for building a good DIS in general and the BDIS in particular.

13.3 Recommendations for other Stakeholders

1. Stakeholders should start building their own databases and adopt the guidelines about software and systems recommended by this research project.

2. Stakeholders should create a presence on the Internet, and develop their own sites following the rules and regulations of the national committee.

3. Stakeholders should understand the potential implications of the Internet and placing it in their future agendas.
4. Stakeholders should provide the BDIS with up-to-date information.

13.4 Contribution of the study

Methodology Contribution

Internet-based Evaluations

Applying Internet-based survey methodology to research the effectiveness of tourism websites is a methodological challenge. Few projects have employed this technique to study the effectiveness of tourism Websites. The author applied these techniques in two stages: firstly for gathering information, and secondly for evaluating the BDIS. Despite certain limitations this technique will be very useful for future application in methodology in general and specifically in the tourism industry.

Site-mapping Technique

Studying the structure of large-scale Websites is a tiresome job for both designers and researchers, and using the site-mapping technique is an ideal solution for this problem, as site-mapping software provides an overview of the entire site in a short period of time. To the author's best knowledge, this is the first study of its kind to use the site-mapping technique for studying the structure of tourism sites.

Contributions to Knowledge

DIS Web Integrative Model

During the literature review it was found there is a dearth of theoretical models for developing a successful DIS. A new conceptual model, termed the DIS Integrative Model was consequently developed (chapter 4), and its characteristics detailed. This model consists of fourteen core variables influencing the process and development of a DIS including: Web Internet Technology; Content Management; Organisational Characteristics; Information Technology Infrastructure; Services; Destination Culture; Public Sector (initiation policies and guidelines); Private Sector (funding and maintenance); Stakeholders; Design Elements; The User; Global Issues; Marketing
Strategy; and Promotion Strategy. The model integrates all factors with a major influence on the development of a Destination Information System. The model explored local Bahrain organisational issues using a series of figures to identify various aspects of the model.

**Detailed Literature Survey**

Due to the relative youth of Destination Information Systems in the field of tourism and information technology, there is a lack of detailed knowledge in this field, and the literature search is valuable from this aspect.

**DIS Application ~ The Development of the BDIS**

The most important contribution to knowledge by this research project is the development of the Bahrain Destination Information System. Most of the tourism studies reviewed in Bahrain deal with tourism from a theoretical perspective, while this project handles it from a practical perspective. Therefore, one of the challenges of this research project is to impress on the government and the general public the importance of this system by referring to international success stories and how these examples could be the guidance for building a practical and accepted system despite the absence of recent studies in the same field. This research focuses on the application of the DIS, and the development of the BDIS as an operational prototype to serve the destination of Bahrain. This research project is, to the best of the author's knowledge, the first of its kind in Bahrain and makes a significant contribution to the development of the BDIS.

**13.5 Study Limitations**

During the period of this research, particularly the BDIS evaluation stages, a compromise was made between involving sufficient numbers of subjects at each stage of the prototype development, and making sure of sufficient user-involvement in each of the relevant stages. Due to limited funding, it was quite difficult to select sufficient numbers of subjects during the initial stages of the prototype, and the project used survey incentives (£10 book tokens) to encourage subjects to participate in the later stage. Thus the project was not able to employ as high a population in the evaluation stages as was desired. The nature of sample (students) is a limitation they did not represent a broad
cross section of international tourists. Because of limited funds and tight time frame of the research project, the researcher tested the prototype as a whole rather than testing each of the 5 individual components. The nature and the purpose of the prototype compelled the researcher to test it as a whole because each participant needs to go through the whole prototype as if it is in a real situation. Users cannot see the portal as individual components, but do like to see a complete picture of the system. Testing the system as whole sometimes leads to misleading answers: for instance, some users tend give the same answer for two different open questions, especially if the questionnaire is a long one. Another limitation is that some users tend to be very polite and write superficial answers that may also give the wrong impression to the researcher. In the case of this project, the researcher advised the users that their opinions, both negative and positive were critical to the project and would be highly respected.

Using an online survey is another limitation; the researcher found difficulty in avoiding duplicated answers in the first questionnaire. This was due to the sensitivity of the questionnaire form buttons and there is no capability for deleting the duplicated answers.

The project highlights that, in this relatively new area, there is a scarcity of literature resources available at Loughborough University library in the field of tourism and information technology, which compelled the author to make visits to the British Tourism Authority library in London. There is also, in general, a scarcity of resources on Destination Information Systems. There was a significant shortage of information on tourism in Bahrain, especially those related to tourism and information technology in general, and Destination information systems in particular being a new phenomenon.

Another limiting factor was the scope of the BDIS prototype that is relatively simpler in term of design and complexity when compared to other fully functioning DISs. Some parts of the prototype are not fully operational, for example, online booking, as this requires e-commerce features.

The limited budget for the project hindered the author in obtaining more advanced software for developing the BDIS, which limits the functionality of parts of the prototype.
This prototype evaluation approach is also limited because it is influenced by variables beyond the control of both the user and the researcher. In this case, factors such as problems with connection speed which caused by virus and Internet traffic may have affected the time that the system takes to completely display a web page or process a request. These constraints may have had a negative impact on the answering process of the evaluator.

In hindsight, to avoid the prototype limitations mentioned earlier, the researcher would suggest using direct inspection methods such as protocol analysis. These consist of asking the users to perform a specific task through the web site and "think aloud" as they work. The process of verbalisation reveals the assumptions, inferences, misconceptions and problems that the users face when interacting with a web site. Although other methods based on direct observation may be quicker and less expensive, protocol analysis is the most systematic and valid, according to Ericsson and Simon (1996). This approach can pinpoint important usability problems and explain why and when they occur.

Another suggestion is to conduct group discussions about the main components of the system to know how users feel about each component, and to understand how and when usability problems occur. This approach is time consuming, but it would be helpful for any research, especially with small groups in prototype initial stages.

Lengthening the timeframe devoted to the online questionnaire for more than three months would help a researcher to generate more responses and information and would give him or her more chances to pinpoint more usability problems of the evaluated system.

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1 The site was infected with a virus during the evaluation process. This infection slowed down the speed of the prototype, so the author uploaded the site several times to avoid slowness.
13.6 Further Research

The development of a Destination Information System on the Internet is subject to changes in technological developments and in the global tourism industry. Because of this many questions are left unanswered, especially where related to the future of Internet technology, and further research is needed to explore applications of technologies in the context of the DIS.

The relationship between emerging destinations and the Internet merits further investigation. It would be valuable to undertake a comparative study between available developed DIS sites and developing sites to gain a better understanding of deficiencies in developing destinations, and to benefit from the experience of developed destinations.

The experts are of the view that besides learning lessons from the experience of others, it is important as well to give due considerations to the contextual factors that have proved their worth in making some solutions work. There is chance that some state-of-the-art technologies may not yield the desired solutions. What is needed is the additional capability of adopting integrated operation and strategy.

Businesses have to keep pace with the fast changing world. The logic of globalisation dictates that destinations need to be highly flexible as well as specific. Comparative studies of international successful destinations can serve as an effective tool for planning and implementing change processes aimed at organisational improvement; the knowledge needs to be converted into a detailed action plan to improve competitive advantage. The destinations need to be studied carefully to identify and improve ways to meet customer needs and get cost-effective innovative ideas. The exercise will lead to the identification of the destination strengths and weaknesses, opportunities and challenges and the improvement processes. Comparing advanced DIS will provide DMOs with best practice as well as innovative solutions for building the right infrastructure.

There is no doubt that an understanding of consumers’ information-seeking behaviour plays a major role in the management and development of tourism projects thus there is an urgent need to deepen our conceptual understanding of how actual users seek and use the information if we want sustainable tourism projects, especially those projects related
to information technology. There has been an increased demand for an understanding of the WWW audience in general, and travellers and tourists in particular, especially with the rapid growth of a new breed of travellers (independent travellers), who plan their own itineraries online.

Although some studies exist that determine demographics and some behavioural characteristics of WWW users, they provide only high-level trends in Web use, while navigation strategies and interface usage remain unstudied. Thus, the surveys provide estimations of who is using the WWW, but fail to provide detailed information on exactly how the Web is being used.

To foster the development of a DIS requires deep understanding of information-seeking behaviour that goes beyond traditional approaches such as surveys and interviews. The new DIS generation stresses the need for system developers to incorporate value-added approaches that match the information needs of the real users for instance using log file analysis, which can provide developers with clear and up-to-date understanding of Web users. Log file analysis also yields design and usability guidelines for WWW pages, sites and browsers.

To date, one of the major gaps in tourist information search behaviour literature is the lack of a cross-cultural perspective. So there is an urgent need to deepen our conceptual understanding of how real tourists actually seek and use information through the most widely used information retrieval tool the Internet.


Al-Mahmood, A., 2002. Opening the door for tourism with the plea that tourism will uplift the standard of living is a myth. Akhbar Al Khalej, Issue No. 8814, 11 May, p. 7. (Arabic title)


Bahrain Executive Briefings, 1999. Bahrain Promotion Board. Manama, Bahrain.


Buhalis, D., 1997. Information technology as a strategic tool for economic, social, cultural and environmental benefits: Enhancements of tourism at destination regions. Progress in tourism and hospitality research, 3 (1) pp. 71-93.


CIA, 1996. *CIA World fact Book*: USA.


Eurostat, 2000. Methodological manual on the design and implementation of surveys on inbound tourism, office for official publications of the European Communities, appendix A, classification and glossary, Luxembourg.


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Georgia Tech Research Corporation, 1998. GVU’s WWW user surveys.  


Hamill, J. 1997. The Internet and international marketing: On-line modules for M.S.C international marketing. <web.ukonline.co.uk/Members/jim.hamill/topic1.htm>, [accessed 9.10.2000]


Mubarak, A.S., 1993. New communication technology as an educational aspect for social development in Bahrain. MA dissertation, University of Manchester, Britain.


Remenyi, D. & Williams, B., 1996. The nature of research: Qualitative or quantitative, narrative or paradigmatic? *Information system journal*, 6, pp. 131-146.


Takahashi, K & Liang, E., 1997. Analysis and design of web-based information systems. Proceedings of the sixth international world wide web conference, 7-11 April, SantaClara,California, USA.


UKAIS, 1997. UKAIS Newsletter, 3 (4) December. <scs.leeds.ac.uk/ukais/Newsletters/vol3no4.html#Board>, [accessed 22. 2. 2002].


Vitos-Rowe, I., 1992. Destination databases and management systems. Travel and tourism analyst, 5, pp. 84-108.


World Tourism Organisation (WTO), 2000. Data collection and analysis for tourism management, marketing and planning a manual for managers and analysts Madrid: WTO.


<1upinfo.com/country-guide-study/Bahrain/Bahrain33.html>, [accessed 22.5.2003].
APPENDIX 1

Tourism Research Invitation

Dear

I am PhD student in the Department of information science at Loughborough University working with Prof. Charles Oppenheim.

The title of my research is:
"An interactive web-based prototype for developing a Destination Information System (DIS) For the Kingdom of Bahrain".

I obtained your e-mail details from your departmental web site and from the Tourism Society membership directory. Your name was chosen as someone teaching or researching into tourism development.

I would be grateful if you would be willing to fill in the questionnaire at:

http://www.infopoll.net/live/surveys/s7721

Your response will assist in contributing to the development and understanding of the requirements for an effective DIS.

Naturally, your responses will be kept confidential and will not be attributed to you or to your organisation. If you have any questions about this research, please contact me, or Professor C. Oppenheim (C.Oppenheim@lboro.ac.uk)

Thank you for your kind co-operation

Aysha Salem Al-Mubarak

A.S.Mubarak@lboro.ac.uk
Department of Information Science
Loughborough University
Notes for guidance on completion of the questionnaire

Definitions:

The following are definitions of some concepts and terms used in this questionnaire.

**DIS:** Destination Information System. This is a system that contains comprehensive information about a destination's facilities and tourism products and accessible by travellers or by travel planners.

**DBA:** A Database Administrator is responsible for maintaining as well as overseeing the function of the system.

**GDS:** A Global Distribution System distributes travel reservations and information services to sales outlets around the world.

**EM:** Electronic Markets systems are interorganisational systems that automate and support information exchange on price and product offering, and negotiation and settlement of market transactions among consumers, intermediaries, and suppliers.

**EDI:** Electronic Data Interchange technology is the standards-based computer to-computer exchange of intercompany business documents and information.

**Interactive TV:** Two-way communications between the TV viewer and service providers.

**Internet TV:** An Internet service for home TV use. It uses a set-top box that connects the TV to a modem and telephone line.

**WAP:** (Wireless Application Protocol) A standard for providing cellular phones, pagers and other handheld devices with secure access to e-mail and text-based Web pages.

If you are interested in consulting a national DIS before starting answering the questionnaire you can consult the following:

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<th>Africa.com</th>
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<td>New Asia Singapore</td>
<td><a href="http://www.newasia-singapore.com">http://www.newasia-singapore.com</a></td>
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<tr>
<td>TIS, Austria</td>
<td><a href="http://www.tiscover.com">http://www.tiscover.com</a></td>
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In case you require further information about this questionnaire or if you experience any difficulties with accessing the questionnaire site please E-mail me at: A.S.Mubarak@lboro.ac.uk or Professor C. Oppenheim (C.Oppenheim@lboro.ac.uk).

Thank you
APPENDIX 2

1. General Issues:

1.1 Which of the following do you consider to be effective medium for attracting international tourists?

☐ Leaflets and brochures
☐ Tourism information centres
☐ Radio &TV
☐ DIS
☐ Tour operators
☐ Other, mediums

1.2 why?

1.3 How important is information technology for distributing tourist information to potential tourists?

☐ Not important  ☐ Important  ☐ Very important

Note:

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<tr>
<td>not important</td>
<td>important</td>
<td>very important</td>
</tr>
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1.4 Do you think that developing a national DIS helps developing a country's tourist industry?

☐ Yes  ☐ No.

1.5 Which of the following do you think should be in a DIS?

Please tick all that apply

☐ General destination information
☐ Reservation function
☐ Accommodation information
☐ Information about attractions, weather, etc
☐ Other information like cultural, medical
2. Organisational requirements:

2.1 In order to define national DIS strategies, guidelines and procedures do you believe that a national committee should be formed  □ Yes  □ No

If No please go to section 3

2.2 If "yes", which of the following bodies are the most appropriate for establishing a national DIS?  
□ Government Organisation (tourism boards, national tourist office etc)  
□ A private company  
□ Local tourism boards  
□ Other bodies SMEs

2.3 why?

2.4 which of the following tasks do you think the DIS committee should do?  
Please tick all that apply.

□ Obtain the necessary funds for the DIS  
□ Ensure information comprehensiveness  
□ Negotiate with external EM  
□ Manage the DIS

3. Financial requirements:

3.1 Where do you think that development funding for the DIS should come from?  
Please tick all that apply.

□ Government  
□ Local tourism boards  
□ Private company

3.2 Do you think that DIS should be operated by?  
□ Government agency
3.3 Which of the following methods are appropriate for funding the operational costs?

Please tick all that apply.

- Government funds
- Annual fees for membership
- Commission per booking
- Advertising revenues
- Private-public partnership

3.4 Please note any additional suggestions regarding the financial requirements

4. Information content and sources:

4.1 What sort of information do you think should be available in the DIS?

Please tick all that apply.

- Comprehensive information of the entire destination
- Accurate and up to date information
- Information supplied by both public and private sectors
- Other, about international organisation

4.2 Which of the following bodies should be responsible for quality control of the DIS information?

- National tourism office
- Chamber of commerce
- Private organisation
- Other, please specify ______

4.3 why?
4.4 Which of the following should be responsible for updating the information on the DIS?

Please tick all that apply:

- Individual suppliers of tourism information
- The database administration team (DBA)
- National tourism office

4.5. If you have any additional comments concerning the information content and sources please give them here.

3. Technical requirements:

5.1 In order to draft guidelines for a national DIS do you think an information system workgroup should be created?

- Yes
- No

5.2 Which of the following systems is appropriate for a national DIS?

- Centralised system
- Distributed databases at a state level or local level
- Others, distributed database at regional international level.

5.3 Do you think a DIS should be available through the WWW?

- Yes
- No

5.4 In order to enter the international market, do you think a national DIS needs to interface with global distribution systems (GDS)?

- Yes
- No
5.5 Do you think the use of EDI technology is an advantage for national DIS?
☐ Yes  ☐ No

5.6 Do you think DIS databases should handle heterogeneous databases?
☐ Yes  ☐ No

5.7 In order to access DIS, which of the following is the appropriate channel?
Please tick all that apply.
☐ Public access kiosk
☐ Teletext
☐ Internet (Web pages)
☐ Hand held or mobile devices (WAP, etc)
☐ Interactive TV

6. Additional services:

6.1 Do you think DIS should include services such as zooming and image browsing for viewing maps, buildings, etc)?
☐ Yes  ☐ No

6.2 Do you believe that DIS should include a multilingual module, which allows users to select a language for interaction?
☐ Yes  ☐ No

6.3 Do you think DIS should offer remote booking?
☐ Yes  ☐ No

6.4 Do you think DIS should offer booking confirmation?
☐ Yes  ☐ No

6.5 Do you think DIS should offer remote ticketing and payment?
☐ Yes  ☐ No

6.6 What other services do you think a national DIS should provide?
7. DIS Testing

7.1 Do you think the DIS should go through a comprehensive usability testing before launch?

☐ Yes  ☐ No

7.2 If yes which of the following do you suggest to undertake this test?

☐ University or research institute
☐ Government
☐ Private company
☐ Other, please specify

7.3 If you have any suggestions regarding testing usability please write them down below.

7.4 Please note down any additional comments you may like to make about the requirements for developing a national DIS.

Thank you for your co-operation.
APPENDIX 3: Example of the survey live report

Welcome to survey on:
The requirements for developing a National Destination Information System

Live Report

24-Aug-2000 2:07:30 PM

There are total of 170 respondents from 04-May-2000 to 18-Aug-2000

Which of the following do you consider to be the most effective medium for attracting international tourists?

The Results:

<table>
<thead>
<tr>
<th>Percent</th>
<th>Count</th>
<th>Answers</th>
</tr>
</thead>
<tbody>
<tr>
<td>21%</td>
<td>37/170</td>
<td>Leaflets and brochures</td>
</tr>
<tr>
<td>14%</td>
<td>24/170</td>
<td>Radio &amp; TV</td>
</tr>
<tr>
<td>23%</td>
<td>39/170</td>
<td>DIS</td>
</tr>
<tr>
<td>29%</td>
<td>50/170</td>
<td>Tour operator</td>
</tr>
<tr>
<td>11%</td>
<td>20/170</td>
<td>Other, mediums</td>
</tr>
</tbody>
</table>

Why?

1. Depending on the type or category of tourist you are trying to attract, all forms of promotion are geared to different segments

2. Tourism Information Centres (TICs) are an indication that you are interested in that particular market where you have them. While Web site and Internet response centres are the most important things. You can send information within second and you can response their questions within hours. In this cyber world where you do have super highway of information, why should you think about anything else?

3. Wider coverage, easy to access, direct view

4. They are potentially in close contact with local people

1 As mentioned earlier in page 150 chapter 5
Dear 

**Interview Invitation**

I am a PhD student in the Department of Information Science at Loughborough University. The title of my research is "An Interactive Web-based Prototype for Developing a Destination Information System DIS: for the Kingdom of Bahrain."

The purpose of this letter is to request your assistance with this research project. The research in its first year involves two phases; phase one was a web-based survey to academics in the tourism field, and phases two involves carrying out interviews with tourism professionals to provide an in-depth understanding of the problem being investigated.

A small number of professionals from several tourism boards have been selected to comprise the sample for interview, and your name is amongst those. The selection criteria included the experience, and innovation of the tourism board.

I am contacting you to ask you for a brief interview of around 45 minutes in case you don't have time for face-to-face interview, the interview could be conducted by telephone or by e-mail, you can choose the most convenient way for you. I would appreciate it very much if you could fill in the relevant option in the attached form and return it to me in the envelope I have provided. Naturally your response will kept confidential and will not be attributed to you or to you organisation. If you have any questions about this research, please contact me.

Thank you for your kind co-operation

Aysha Salem Al-Mubarak

A.S.Mubarak@lboro.ac.uk
Department of Information Science
Loughborough University
Interview Form

Name________________________________________
Organisation _______________________________
Position_____________________________________

Kindly tick the appropriate option

I am willing to participate in the interview

☐ Yes  ☐ No
1. Face to face interview
2. Telephone Interview
3. E-mail Interview

I would like to receive the interview questions in advanced

☐ Yes  ☐ No

Please suggest the date and the time most convenient for you:

Date__________________________
Time__________________________

Contact:

E-mail _________________________
Fax ___________________________

Aysha Salem Al- Mubarak
A.S.Mubarak@lboro.ac.uk
Department of Information Science
Loughborough University
Aims and objectives:

The aim of this phase is to solicit in-depth opinions of planners and policy makers regarding the requirements for developing a national Destination Information System. These opinions will help in identifying the present and future needs and trends as well as technical, organizational and financial needs of the DIS. Future plans also will be discussed in detail with planners and policy makers to draw a clear futuristic picture for the development of DIS.

Discussion issues:

The interview questions raised the following key issues:
Organizational issues; financial issues; Technical issues; Information issues and Future plans.

Interview questions:

General issues:

Q1 Does your organization takes advantage of online technologies such as Destination Information System? If "yes", what kind of tourism services the system offer?

Q2 Do you think tourist perception of your destination has changed as a result of accessing the information provided in your Destination Information System? If "yes", what evidence do you have for this change in perception?

Q3 In your opinion, what are the main requirements for pre design stage of a DIS?

Q4 What about the main requirements for installation stage?

Q5 What are the essential requirements for the operational stage?
Organisational Issues:

Q1 Is a national DIS necessary or desirable? If "necessary", what should be its relationship with regional DIS?

Q2 What kind of organizational structure is required for a national DIS? Should it be centerlised, or some kind of cooperative network?

Q3 Do you think closer co-operation and inter-sectorial linkage within the local tourist boards are essential for the development of the national DIS?

Q4 What kind of training is required for the staff working in the DIS?

Q5 What are your current plans for the development of your organization tourism Information services?

Q6 Are financial issues likely to hinder the development of the DIS? If yes, how do overcome this problem?

Q7 In your opinion, what is the ideal method for funding such a development system?

Technical Issues:

Q1 From your experience what are the technical needs required for a Destination Information System?

Q2 How important is design to your DIS?

Q3 What is your system design strategy?

Q4 What design principles do you follow in your DIS?

Q5 Does the design of your system consider the needs, trends and requirements of the sophisticated customers?

Information Issues:

Q1 which of the following information strategy is needed for the national DIS?

Local to local strategy (information flow within the destination).

Local to global strategy (destination information flow to the external world).

Global to local strategy (destination information flow from other international destination to the national destination via links and co-operation with international destination).
Q2 Do you think a government body should act as a regulator to ensure the quality, or should each tourism zone have to put in practice its own policy regarding quality control?

Q3 Who should be responsible for updating the information content in a national destination information system?

Future plans:

Q1 What steps do you think need to be taken nationally to help the development of a National Destination Information System?

Q2 What are your organization’s future plans regarding your own DIS?

Q3 Finally any other comments on these issues?
APPENDIX 6

Interview Timetable:

National Tourism Organisations

<table>
<thead>
<tr>
<th>ORGANISATION</th>
<th>INTERVIEWEE NAME</th>
<th>POSITION</th>
<th>DATE</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
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<tr>
<td>3.</td>
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<tr>
<td>4.</td>
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<td>5.</td>
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<td></td>
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<tr>
<td>6.</td>
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<td></td>
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</tr>
</tbody>
</table>
APPENDIX 7

Interview Reminder

Dear

About one month ago, I sent you a letter requesting an interview about your National Destination Information System (DIS).

If you have already replied, please take no notice of this email and accept my sincere thanks. If not, I would appreciate very much if you participate in this research project.

Your participation would certainly add to the quality of my research, and will assist in contributing to the development and understanding of the requirements for the design and development of DIS.

I assure you that your responses will be kept strictly confidential and will not be attributed to you or to your organisation. If you have any questions about this questionnaire; please do not hesitate to contact me.

Thank you for your kind co-operation

Aysha Salem Al-Mubarak
A.S.Mubarak@lboro.ac.uk
Department of Information Science
Loughborough University
Thank you Letter

Dear

I am sending you this letter in order to express my gratitude for the time you have dedicated in providing me with the valuable data for my research.

You will be pleased to know that the status of my research has improved enormously due to the information you have provided. I will get back to you if I need further information on the topic.

Looking forward to your continuous Co-operation.

With kind regards

Aysha Salem Al Mubarak

A.S.Mubarak@lboro.ac.uk
Department of Information Science
Loughborough University
APPENDIX 9

Prototype pilot study

Dear

You will recall that, about a year ago, I visited you and had an in-depth interview with you regarding your views about the requirements for developing a National Destination Information System (DIS).

I have designed a prototype for a Destination Information System for The Kingdom of Bahrain based on the findings of web based questionnaire with international tourists and experts. Your name was chosen as an expert in the field of Destination Information System. I obtained your e-mail details from “Information technology & Strategic Tourism Management” Seminar list which was held at the University of Westminster London 9-10 March 2000.

I would like to invite you to examine the prototype and inspect the various interface elements and compare them with Nielsen’s selected usability heuristics which I attached see page 2. You may also consider any additional usability principles that are relevant to this prototype. Please email me with any comments you have about the prototype. The prototype can be accessed at: www.http://tour2bahrain.com

If you require any further information, please do not hesitate to contact me.

Thank you for your kind co-operation

Yours Sincerely,

Aysha Salem Al- Mubarak
A.S.Mubarak@lboro.ac.uk
Department of Information Science
Loughborough University
Selected Usability Heuristics

1. Visibility of system status

   The system should always keep users informed about what is going on, through appropriate feedback within reasonable time.

2. Match between system and the real world

   The system should speak the users' language, with words, phrases and concepts familiar to the user, rather than system-oriented terms. Follow real-world conventions, making information appear in a natural and logical order.

3. Consistency and standards

   Users should not have to wonder whether different words, situations, or actions mean the same thing. Follow platform conventions.

4. Flexibility and efficiency of use

   Accelerators -- unseen by the novice user -- may often speed up the interaction for the expert user such that the system can cater to both inexperienced and experienced users. Allow users to tailor frequent actions.

5. Aesthetic and minimalist design

   Dialogues should not contain information which is irrelevant or rarely needed. Every extra unit of information in a dialogue competes with the relevant units of information and diminishes their relative visibility.
Dear colleagues,

I am a PhD student in the Department of information science at Loughborough University working under the supervision of Prof. Charles Oppenheim.

The title of my research is "An Interactive Web-based Prototype for Developing a Destination Information System (DIS): for the Kingdom of Bahrain."

I need some subjects for testing a web site front-end prototype. I'm looking for novice, intermediate and expert users on web searching, preferably people with international travelling experience who use the web for planning their travelling. This study involves approximately 30-45 minutes of fun by accessing the following address:


You will be asked to evaluate the prototype site and to confirm whether it is easy to use it for international tourist like you. This will be done by filling in the online-questionnaire available in the prototype.

Your response will assist in contributing to the development of the DIS and the understanding of user requirements for an effective DIS.

All participants will be given a £10 pounds Book Token for their participation. Don't miss it!

If you have any questions about this research, please contact me, or Professor Oppenheim (C.Oppenheim@lboro.ac.uk).

Thank you for your kind co-operation

Aysha Salem Al-Mubarak
A.S.Mubarak@lboro.ac.uk
Department of Information Science
Loughborough University
As part of my PhD research I have designed a website prototype for a proposed Destination Information System. Part of the critical reflection on my work involves considering the comments from you, and using your opinions to gain further insight into the balanced construction and content of this system. Please note that this system is a prototype and not the actual system, so you may find some information is incomplete. I would be grateful if you would browse through the site for at least 20 minutes and then complete the questionnaire below: -

Please tick boxes where appropriate ...

### Personal Information:

- **Department:**
- **Nationality:**

### Optional

*Please provide your name and e-mail address to contact you for the £10 Book Token*

<table>
<thead>
<tr>
<th>Name:</th>
</tr>
</thead>
<tbody>
<tr>
<td>E-mail:</td>
</tr>
</tbody>
</table>

**Status:**

- Postgraduate
- Undergraduate
- Research Students
- Others, please specify

**Age:**

- 18-24
- 25-34
- 35-44
- 45 / 45+

**Sex:**

- Male
- Female

1. **How long have you been using the computers?**

   - Less than 1 year
   - 1-2 years
   - 3-5 years
   - 6-10 years

2. **How often do you use the World Wide Web (WWW)?**

   - 0-1 times per month
   - 2-4 times per month
   - 5-10 times per month
   - More than 10 times per month

3. **How easy do you feel it to find information on WWW?**

   - Easy
   - Average
   - Hard

4. **Have you ever actually booked a holiday or flight etc over the Internet?**

   - Yes
   - No

5. **If yes, how many times?**

   - 0-1 times
   - 2-4 times
   - 5-10 times
   - More than 10

6. **If no are you planning to use it in the future?**

   - Yes
   - No
Please circle the option which best describes your response
Please note that: 1=Disagree strongly 2=Disagree 3=Undecided 4=Agree 5=Agree strongly.

Part 1 Content:

<table>
<thead>
<tr>
<th></th>
<th>1. The content of the site matches its purpose.</th>
<th>2. I found the site content is very useful for me.</th>
<th>3. The site content is very credible.</th>
<th>4. The site content is very current.</th>
<th>5. The site images are very relevant to the content.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Disagree strongly</td>
<td>Disagree</td>
<td>Undecided</td>
<td>Agree</td>
<td>Agree strongly</td>
</tr>
<tr>
<td></td>
<td>Disagree strongly</td>
<td>Disagree</td>
<td>Undecided</td>
<td>Agree</td>
<td>Agree strongly</td>
</tr>
<tr>
<td></td>
<td>Disagree strongly</td>
<td>Disagree</td>
<td>Undecided</td>
<td>Agree</td>
<td>Agree strongly</td>
</tr>
<tr>
<td></td>
<td>Disagree strongly</td>
<td>Disagree</td>
<td>Undecided</td>
<td>Agree</td>
<td>Agree strongly</td>
</tr>
<tr>
<td></td>
<td>Disagree strongly</td>
<td>Disagree</td>
<td>Undecided</td>
<td>Agree</td>
<td>Agree strongly</td>
</tr>
</tbody>
</table>

12. If you have any comments about this section please write them down.

Part 2 Navigation:

<table>
<thead>
<tr>
<th></th>
<th>1. It is very easy to navigate within the site.</th>
<th>2. The links are very easy to identify.</th>
<th>3. The links to other sites are very sufficient in number.</th>
<th>4. It is easy to access specific information within the site.</th>
<th>5. The site is very inviting.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Disagree strongly</td>
<td>Disagree</td>
<td>Undecided</td>
<td>Agree</td>
<td>Agree strongly</td>
</tr>
<tr>
<td></td>
<td>Disagree strongly</td>
<td>Disagree</td>
<td>Undecided</td>
<td>Agree</td>
<td>Agree strongly</td>
</tr>
<tr>
<td></td>
<td>Disagree strongly</td>
<td>Disagree</td>
<td>Undecided</td>
<td>Agree</td>
<td>Agree strongly</td>
</tr>
<tr>
<td></td>
<td>Disagree strongly</td>
<td>Disagree</td>
<td>Undecided</td>
<td>Agree</td>
<td>Agree strongly</td>
</tr>
<tr>
<td></td>
<td>Disagree strongly</td>
<td>Disagree</td>
<td>Undecided</td>
<td>Agree</td>
<td>Agree strongly</td>
</tr>
</tbody>
</table>

http://www.tour2bahrain.com/qst-back.htm
18. If you have any comments about this section please write them down.

<table>
<thead>
<tr>
<th>Part 3 Design and Layout:</th>
</tr>
</thead>
<tbody>
<tr>
<td>19. The overall look and the feel of the site is pleasing.</td>
</tr>
<tr>
<td>Disagree strongly</td>
</tr>
<tr>
<td>20. The site layout and organisation are very clear.</td>
</tr>
<tr>
<td>Disagree strongly</td>
</tr>
<tr>
<td>21. The use of audio/video added to what I learnt from the site.</td>
</tr>
<tr>
<td>Disagree strongly</td>
</tr>
<tr>
<td>22. The use of colours is pleasing.</td>
</tr>
<tr>
<td>Disagree strongly</td>
</tr>
<tr>
<td>23. The fonts are very easy to read.</td>
</tr>
<tr>
<td>Disagree strongly</td>
</tr>
<tr>
<td>24. The layout from page to page is very consistent.</td>
</tr>
<tr>
<td>Disagree strongly</td>
</tr>
<tr>
<td>25. If you have any comments about this section please write them down.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Part 4 Access:</th>
</tr>
</thead>
<tbody>
<tr>
<td>26. The pages load very quickly.</td>
</tr>
<tr>
<td>Disagree strongly</td>
</tr>
<tr>
<td>27. The main menus and indexes are very clear.</td>
</tr>
<tr>
<td>Disagree strongly</td>
</tr>
<tr>
<td>28. The ability to access information in multiple ways and from various points is excellent.</td>
</tr>
<tr>
<td>Disagree strongly</td>
</tr>
</tbody>
</table>

http://www.tour2bahrain.com/qst-back.htm
29. If you have any comments about this section please write them down.

Part 5 Online Services:

30. I found it very easy to book a flight online in this site.
   Disagree strongly  Disagree  Undecided  Agree  Agree strongly

31. I found it very easy to reserve accommodation online in this site.
   Disagree strongly  Disagree  Undecided  Agree  Agree strongly

32. I found it very easy to book car rental from this site.
   Disagree strongly  Disagree  Undecided  Agree  Agree strongly

33. The ability to access in different languages is excellent.
   Disagree strongly  Disagree  Undecided  Agree  Agree strongly

34. Information provided in this site like weather, currency and world time is excellent.
   Disagree strongly  Disagree  Undecided  Agree  Agree strongly

35. The services provided in the site is ideal for international visitors.
   Disagree strongly  Disagree  Undecided  Agree  Agree strongly

36. Features such as feedback e-mail, FAQ, etc are excellent.
   Disagree strongly  Disagree  Undecided  Agree  Agree strongly

37. On-line services like the services mentioned in this section will encourage me to visit Bahrain.
   Disagree strongly  Disagree  Undecided  Agree  Agree strongly

38. If you have any comments about this section please write them down.

Part 5 General Comments:

39. Interactive system like this provided with comprehensive up-to date information will encourage international tourist like me to visit the destination.
   Disagree strongly  Disagree  Undecided  Agree  Agree strongly

http://www.tour2bahrain.com/qst-back.htm
41. The online services provided in this system like online reservation will serve me quicker than the conventional channels like travel agencies and tour operator.

<table>
<thead>
<tr>
<th>Disagree strongly</th>
<th>Disagree</th>
<th>Undecided</th>
<th>Agree</th>
<th>Agree strongly</th>
</tr>
</thead>
</table>

42. This proposed system is able to meet my requirements as a tourist.

<table>
<thead>
<tr>
<th>Disagree strongly</th>
<th>Disagree</th>
<th>Undecided</th>
<th>Agree</th>
<th>Agree strongly</th>
</tr>
</thead>
</table>

43. List the most negative aspect(s) of the site.

44. List the most positive aspect(s) of the site.

45. Please add your comments on how you think the site could be enhanced to provide suitable information for visitors to Bahrain.

Submit  Reset

Click on the Submit button to send your comments to us
Questionnaire Terms:

Bahrain: an island located in the Arabian Gulf Sea

Prototype: "An interactive analysis technique in which users are actively involved in the mocking-up of screens and reports" (Ambler 2000, p. 4).
Kingdom of Bahrain Tourism Legislative Decrees
APPENDIX 12

Decree Law No. (1) For The Year 1985
Pertaining to The Establishment of
Supreme Council For Tourism

We, Isa Bin Salman AL khalifa, Amir of the State of Bahrain, having
Examined the Constitution; and upon the submission of the Minister for
Information; and with the agreement of the Council of Ministers; Do hereby
enact the following:

Article - 1 -
A council for the invigoration of the Tourism in the State of Bahrain shall be
incorporated and be entitled “The Supreme Council for Tourism”.

Article - 2 -
The Supreme Council for Tourism shall be constituted under the Presidency of
the Minister of Information, whereby a resolution for it establishment and duration
of membership shall be issued by the Prime Minister.

Article - 3 -
The Supreme Council shall convene once every three months at least. Such
convention shall be made by the President or Vice President of the Council.

The Council shall hold its Council Sessions with the presence of the absolute
majority of its members. The resolutions of the Council shall be adopted with a
majority of votes of the members present at the meeting. In the event the votes and
in a tie, the President shall have a casting vote.

Article - 4 -
The functions of the Supreme Council for Tourism shall be as follows:

1. To suggest development and invigoration of Tourism movement in the Country
and to raise the efficiency of the authorities and organisations concerned with
internal and external affairs of tourism.

2. To suggest ways and means for the maintenance development and preservation of
the archaeological milestones with the collaboration of the Directorate of
Archaeology and Central Municipal Council.
3. To study the plans and projects submitted by the Ministry of Information, and to find out the suitable resolutions for the problems and difficulties, which may obstruct the development, growth and flourishing of tourism movement.

4. To suggest the legislation necessary for the facilitation and promotion of tourism movement.

5. To develop and encourage the tourism perception among citizens.

**Article - 5 -**

Minister of Information shall implement the provisions of this law, which shall become effective from the date of its publication in the Official Gazette.

---

Isa Bin Salman Al Khalifa
*Amir of the State of Bahrain*

Issued at Riffa Palace,
Dated: 18th Jamada AL Thani, 1405 H
Corresponding to: 10 March 1985.
APPENDIX 13

LEGISLATIVE DECREE No. (15) OF 1986 GOVERNING TOURISM

We, Isa Bin Salman Al Khalifa, Amir of the State of Bahrain, having examined the Constitution, and Amiri Order No. 4 of 1975, and Decree No. 1 (Finance of 1961 Regarding the Establishment of the Register of Commerce as amended by Legislative Decree No. 34 of 1976 and Legislative Decree No. 12 of 1978), and Amiri Decree No. 1 of 1985 with respect to the setting up of the High Tourism Council, and upon the submission of the Minister for Information, and with the approval of the Council of Ministers, DO HEREBY ENACT THE FOLLOWING LAW:

CHAPTER ONE
Tourism Services and Sites

Article - 1 -
(a) For the purpose of enforcing the provisions of this Law, tourist services are defined as the following:
- hotel, inns and rest - houses.
- restaurants intended for providing tourist services.
- furnished apartments available at daily or weekly rentals.
- tourist and travel agencies and companies and tourist transport firms.
- services of tourist guides.

(b) Any other activity to be added by the Minister for Information to such tourist services subject to the approval of the Council of Ministers.

Further, tourist sites are defined for the purpose of enforcing this Law as the land and offshore areas and building which are determined by an order of the Minister for Information upon a proposal from the High Tourism Council, subject to the approval of the Council of Ministers.

CHAPTER TWO
Tourism Licenses

Article - 2 -
The caring on of the tourist service business shall only be authorised by a license to be issued by the Ministry of Information.
An order of the Minister for Information shall determine the conditions and procedure governing the issue of such licenses and renewal thereof.

**Article - 3 -**
The Ministry of Information shall supervise tourist sites, and no tourist site may be exploited in any manner whatsoever except by a license to be issued by the Minister for Information.
The Minister for Information shall regulate by an order the grant of licenses and terms and conditions thereof.

**Article - 4 -**
The Minister for Information shall be empowered, upon a recommendation from the Director of Tourism, to decide the suspension of any tourist service license or to refuse the renewal thereof for a certain period not exceeding three months, if it is proved that the person undertaking the provision of the service has failed to carry out his obligations towards his customers, tourists or other operators of tourist services in a manner that adversely affects the interest of the profession or puts into disrepute, or if he commits an act that prejudices the interest of national tourism.

A license shall be cancelled if any of the violations referred to in the above paragraph recurs more than twice.

The Suspension of a license or refusing its renewal for a specific period or the cancellation thereof shall not bar the imposition of the penalties provided for in this law.

The Tourism Directorate shall have the right to notify local and international tourist organisations of the suspension, non-renewal or cancellation of any tourism license.

**Article - 5 -**
The Concerned party shall be entitled to appeal against the decision to refuse renewal of a license for the operation of any tourist service or exploitation of any tourist site before the High Civil Court. Besides, he may appeal against the resolution for the suspension or cancellation of a tourist service or exploitation of any tourist site.

The aforesaid appeal shall be filed within 60 days from the date of receiving notice by registered mail of the decision for non-renewal of the license or cancellation or suspension of a license within sixty days of learning of the decision if notice is not given thereto.
Article - 6 -
The High Court shall examine cases related to tourism on a summary basis.

Article - 7 -
A committee or several committees shall be formed at the Ministry of Information as may be needed for tourist requirements. The formation of such committees shall take place by a resolution of the Minister for Information and they shall discharge their duties under the supervision of the Director of Tourism.

The resolution regarding the setting up of such a committee shall determine its terms of reference, functions, number of its members and term of office, provided that each committee shall include in its members representatives from the other ministers.

CHAPTER THREE
Penalties and Final Provisions

Article - 8 -
Any person who contravenes the provisions of Articles (2), (3) and (4) of this Law or the Orders issued for the implementation of the provisions of these Articles, shall be liable for imprisonment for a period not exceeding three months and a fine of no more than BD 500, or either penalty, together with the possibility of passing a verdict for the closure or terminating the business of the establishment.

Article - 9 -
The officers of the Tourism Directorate designated for this purpose by the Minister for information shall have the authority to ascertain the enforcement of the provisions of this Law and its Implementing Orders. For this purpose, they shall be empowered to have access to tourist establishments and preparing statements for persons contravening the provisions of the Law and referring them to the Public Prosecution.

Article - 10 -
The persons involved in the business of tourist services shall notify their business affairs in compliance with the provision of this law within 6 months from the effective date of the Implementing Orders for this Law.

Article - 11 -
In addition to the Orders provided for in the preceding Articles, the Minister for Information shall issue the necessary Orders regarding the following matters:
1. Classification of tourist services.
2. Fixing the fees for issuing tourist services and sites licenses and fees for renewal thereof.

3. Determining the prices and charges of tourist services.

The approval of the Council of Ministers shall be obtained as regards the decisions of the Minister for Information regarding the fees specified in Clause (2).

Article - 12 -
The Ministers, each in his respective capacity, shall implement this law, which shall come into force from the date of its publication in the Official Gazette.

Isa Bin Salman AL Khalifa
Amir of the State of Bahrain

Issued at Riffa Palace on:
9 Thilhijja, 1406 H
Corresponding to: 14 August 1986
Every licensed hotel should fulfill the following requirements:

1. The building should be constructed according to the general specifications for building and construction projects issued by the Projects Directorate of Public Work Affairs.
2. The building should be specially designed and originally constructed as a hotel to meet the various requirements of the internationally recognized standards of the hotel industry.
3. To receive all guests, at any time of the day or night and to supply them with food, drink and accommodation, upon their request.
4. To take reasonable precautions for the safety of visitors.
5. To be liable for the safety of the property of all persons for whom accommodations has been offered.
6. A reasonable standard of exterior and interior decoration.
7. Prompt and courteous service guests.
8. Lighting must be sufficient and of a suitable nature in guestrooms and private bathrooms.
9. Adequate lighting in public areas and corridors.
10. Proper maintenance of corridors, stairs, etc and the safety measure necessary for operating machinery and equipment.
11. The cleanliness of all furniture, fixtures and fittings.
12. The temperature should be maintained between 16 and 25 degrees centigrade in guestrooms and other public areas.
13. Enough ventilation in all hotel areas to ensure and adequate supply of fresh or purified air.
15. Sanitary and washing facilities with adequate supply of hot and cold running water soap and clean towels or equivalent must be provided. Not only this, but also toilets for visitors (ladies as well as gentlemen) in lounges and other public areas.
16. Drinking water and suitable drinking vessels (except in the case of supply of water jet) must be made available.

17. Private bathrooms must be furnished with the following items:
a. Washbasin with hot and cold running water, soap, towel, and mirror over the washbasin with a glass shelf, a glass tumbler for each person.
b. Lidded toilet, shower and shower curtain, toilet paper, toilet flush, hook or hanger for clothes, non-slipmats, towel rail, soap holder, waste paper basket and curtains on windows.

18. Guest bedrooms should be provided with the following items:

   a. Single beds should be at least 2m x 1m with a quality mattress and necessary bed linen and cover.
   b. Thick curtains, Venetian blinds, or shutters with drapes.
   c. Bedside or bed head table, cabinet or shelf.
   d. Dressing table or vanity unit.
   e. A chair for each person.
   f. A cupboard or other provision for hanging clothes.
   g. Drawers or shelves.
   h. Carpet or rug for each bed.
   i. Means of securing the door from inside and outside.
   j. A direct dialling telephone and telephone directory.
   k. A writing and / or coffee table.
   l. Guestrooms must be made as secure ad possible, wide-angle viewing lenses must be built into bedroom doors and adequate door chains provided at a relatively low cost.

19. Safety and Security Precautions:

   a. All hotels must make necessary arrangements to secure the health and safety of all hotels residents and staff.
   b. All hotels must fulfil the rules and regulations provided by the Civil Defence Directorate concerning the safety precautions. Among these requirements are the followings:
      b1. The hotel should be provided with the appropriate fire alarm system (smoke, heat, flame or temperature change detectors) depending on location. Any system must be properly maintained and tested.
      b2. The alarm should be clearly audible and recognized by everyone. Alarm systems can have bells, buzzers, or horns that are activated by one or more of the fire detectors.
      b3. All hotels should be properly equipped with fire fighting equipment such as hose reels, portable fire extinguishers, sprinkler system, etc. depending on the area. Such equipment must be serviced regularly and staff should be trained in their use.
      b4. Main area a copy of the fire procedure should be displayed.
b5. There should be at least two escape routes clearly signposted and lighted and kept free from obstruction.
b6. There should be a display of fire instruction notices for both staff and guests.
b7. Notices in all bedrooms and public places instructing guests in what they should do and where they should go in the event of fire.
b8. Waste and rubbish should be collected regularly and placed in safe receptacle.
b9. ‘No smoking’ rules must be rigorously enforced in such places as the storerooms.
c. Guests must be protected against any possible hazards, such as worn carpets, slippery tiles, insecure handrails, faulty electrical wiring or unreliable lifts, etc.
d. Guests' property must be safeguarded and the hotel is obliged to accept valuables for safe keeping.
e. A member of staff should be appointed as security officer to coordinate all aspects of security and encourage security vigilance among the staff.

20. Additional Conditions:

a. The adequacy of installation, space and standard of general service areas for food preparation, food service, maintenance, administration and staff rooms should comply with the category of the hotel.
b. The quality of building materials, furniture decoration, table and bed linen, loose coverings, soft furnishings, wall and floor finishes, carpeting, lighting, etc. should comply with hotel category.
c. Availability of suitable means of communication including telephone, postal services, fax, telex, etc.
d. Availability of first aid kit and provision of medical service when required.
e. All sockets for electric shavers should have a clear indication of voltage and provided with electric safety devices.
f. A call bell must be available in all guestrooms.

21. Selection of Staff:

a. The hotel management should select the right staff, and give them the equipment, train them properly and apply the appropriate control process to monitor their performance.
b. Hotel staff (especially those who have direct contact with the guests) must possess qualities such as honesty, good manners, common sense,
adaptability, smart appearance and above all have adequate knowledge of at least one foreign language, preferable English.

c. Staff should always look well-groomed and thus help to create the right image. Uniform or working clothes should be kept clean, in good repair and well-pressed.

d. All staff should undergo a medical check-up and hold a valid medical certificate as per the rules and regulations of the health authorities.

e. The hotel proprietor should follow all labour laws and regulations applied in the Kingdom of Bahrain concerning staff welfare, insurance, indemnities, etc.

22. Legal Obligations:

Hotelkeepers have a legal obligation to maintain records and books required by law and obtain certain information from all persons staying at the hotel for one night or more. Such information may be given by the visitors either in writing by filling in a registration form, verbally, or by a third person. Additional information such as passport information, date of departure, next address, if known are to be taken from guests. These records are to be retained and be made available for inspection by any authorized person.

Classification of Hotels

ONE – STAR HOTELS

Hotel Building:

1. Separate building or independent part of a building with a separate entrance. It is imperative that the building is specially designed and originally constructed as a hotel to satisfy the various requirements of the internationally recognised standards of the hotel industry.

2. Minimum number of rooms: 30 rooms.

3. Adequate parking space for a minimum of 20 cars.

4. Air-conditioning in all rooms (the temperature must be maintained between 16 and 25 degrees centigrade).

5. Complete private bathrooms with hot and cold running water in all rooms.

6. Public lavatories for visitors in lounges and public areas (with separate toilets for ladies and gentlemen).

7. Direct telephone in all rooms.
8. Television in all rooms.

9. Area of bedrooms (excluding bathrooms, entrance and balcony) 20 square meters for a double room and 15 square meters for a single room.

10. Minimum furniture in bedrooms consist of a single bed of at least 200 cm long and 100 cm wide, a table, two chairs, a mirror, a cupboard and bedside rug.

11. Window with either shutters with drapes or thick double curtains.

12. Lighting must be sufficient and of a suitable nature in bedrooms and bathrooms. This included ceiling and bedside lighting in bedrooms and washbasin lighting in the bathroom. Other electrical installations include shaving sockets and a call bell in bedrooms.

Other Hotels Facilities and Services:

13. A life where there are four floors or more.

14. Room's service until midnight.

15. Well-furnished lobby.

16. Laundry arrangements.

17. Reception desk size 3 m x 2 m.

18. Total reception area including lounge or lobby is 50 square meters.

19. Availability of coffee shop or restaurant to open during all meal hours.

20. Availability of safe deposit facilities.

21. Availability of a luggage store.

Hotel Staff:

22. All hotel staff should wear uniform.

23. Receptionists must know at least one foreign language preferably English.

24. Enough number of staff that should possess the personal attributes and professional skills that qualifies them to render good service.
TWO – STAR HOTELS

Hotel Building:

1. Separate building or independent part of a building with a separate entrance. The building must be specially designed and originally constructed as a hotel to meet the various requirements of the hotel industry and insure the convenience of its guests.
2. Minimum number of rooms: 45 rooms.
3. Adequate parking space for a minimum of 30 cars.

Guest Rooms' Facilities

4. Heating and air-conditioning facilities in all rooms.
5. Complete private bathrooms with hot and cold running water in all rooms.
6. Toilets for visitors in lounges and public areas, one for ladies and another for gentlemen.
7. Direct – dialling telephones in all rooms.
8. Television in all rooms.
9. Area of bedrooms (excluding bathrooms, entrance and balcony)
   20 square meters for a double room and 15 square meters for a single room.
10. Minimum furniture of each bedroom consists of a single bed at least 200 cm long and 100 cm wide, a table, two chairs, a mirror, a cupboard and a bedside carpet.
11. Window with either shutters with drapes or thick double curtains.
12. Electrical installations include independent lights for ceiling and washbasin and bedside light for each guest.

Other Hotels Facilities & Service:

13. A life where there are two floors or more.
14. Room service until midnight.
15. Furnished lobby or public lounge.
16. Laundry arrangement.
17. Reception desk size 3 m x 2 m.
18. Total reception area is 80 square meters.
19. Coffee shop or restaurant facilities to open during all meal hours.
20. Availability of safe deposit facilities.
21. Availability of a luggage store.
22. Left – luggage facilities.
23. Stationery available on request.
24. Business facilities on request.
25. In-house telephone.

Hotel Staff:

26. All hotel staff should wear uniform.
27. Receptionists must know at least one foreign language preferably English.
28. All staff should possess the personal attributes and professional skills that qualify them to render good service.

THREE – STAR HOTELS

Hotel Building:

1. A specially designed separate building or independent part of a building with a separate entrance. The building should be specially designed and originally constructed as a hotel to satisfy the well-recognized international requirements of the hotel industry and to ensure the convenience of its guests.
2. Minimum number of rooms: 100 rooms.
3. Adequate parking space for a minimum of 50 cars.

Guest Rooms’ Facilities:

4. Efficient heating and air-conditioning facilities in all rooms.
5. Complete private bathrooms with hot and cold running water in all rooms.
6. Toilets for visitors in public lounges, or areas, for ladies and gentlemen.
7. Direct – dialling telephones in all rooms.
8. Television in all rooms.
9. Area of bedrooms (excluding bathrooms, entrance and balcony) 20 square meters for a double room and 15 square meters for a single room.
10. Minimum furniture of each bedroom: single beds at least 200 cm long and 100 cm wide, a table, two chairs, a dressing table that
can be used as writing table, a luggage rack, a mirror, a cupboard and bedside rug.

11. Window with either shutters with drapes or thick double curtains.

12. Electrical installations include independent lights for ceiling and washbasin and bedside light for each guest.

Other Hotels Facilities & Service:

13. A life where there are two floors or more.

14. Lobby, public lounges and corridors to be well furnished with the appropriate wall and floor coverings.

15. Room service until midnight.

16. Laundry and valet service.

17. The total check-in and lobby area is at least 2500 square meters.

18. The reception desk should be at least 5 m x 3 m.

19. Coffee shop opens until midnight.

20. Well-equipped restaurant serving both a la carte and table d'hote menus. To serve all meals (breakfast, lunch and dinner)

21. Availability of safe deposit boxes.

22. Availability of a luggage store.

23. Left luggage service.

24. Stationery available on request.

25. Businessmen's facilities in request.

26. In-house telephone.

27. Availability of postal and reading material services.

28. Availability of security office.

29. Availability of a housekeeping department.

30. Availability of sporting facilities including a swimming pool.

31. Music in rooms and lounges.

Hotel Staff:

32. All hotel staff should wear uniform.

33. All main staff members—especially those with direct contact with guests at the reception office, management, housekeeping restaurant etc—must know at least one foreign language preferably English.

34. All staff should possess the personal attributes and professional skills that qualify them to render efficient service.
FOUR - STAR HOTELS

Hotel Building:

1. A specially designed separate building with a spacious open area and nice surroundings, a common terraces and gardens. The building should be specially designed and originally constructed as a hotel to satisfy the major requirements of the well-recognized international standards of the hotel industry and to ensure the full convenience of its guests.

2. Minimum number of rooms: 120 rooms.

3. A spacious parking area for a minimum of 100 cars.

Guest Rooms Facilities:

4. Efficient central heating and air-conditioning systems in all rooms and public areas at a temperature between 18-25 degrees centigrade.

5. Complete private bathrooms with hot and cold running water in all rooms. (Minimum length of bathtub 160 cm).

6. Gents and ladies' toilets and cloakrooms for visitors in lounges and other public areas.

7. Direct dialling telephones in all rooms.

8. Internal communication facilities for visitors in public areas.


10. Colour TV and in-house video service in all rooms.

11. Radio and central in-house music system in all guest rooms and public areas.

12. Area of bedrooms (excluding bathrooms, entrance and balcony, if any) 25 square meters for a double room and 20 square meters for a single one.

13. High quality furniture in guest bedrooms including single beds at least 200 cm long and 100 cm wide, bedside tables, two easy armchairs, a dressing table, a writing table, a coffee table, a luggage rack, a cupboard and bedside rug, wall-to-wall carpeting and a mini bar.

14. Enough stationery and telephone directories in guest rooms.

15. Bedroom with double-glazed windows to provide soundproofing, even temperature and quiet undisturbed relaxation for hotel residents.
16. Windows must be provided with either shutters with drapes, venetian blinds or thick double curtains.
17. Enough independent lighting in guest rooms and private bathrooms and reading lamp at bedside.

Other Hotel Facilities & Services:

18. Lifts where there are two floors or more.
19. Lobby, public lounges and corridors to be well furnished with the appropriate wall and floor coverings.
20. 24-hours room service.
21. In-house laundry and valet service.
22. The total check-in and lobby area is at least 500 square meters.
23. The reception area, with cashier and information desks, should be at least 6m x 3m.
24. A coffee shop with a capacity of at lest 50 covers are to open round the clock.
25. Well-furnished restaurant serving a wide range of international dishes within the “a la Carte” and “table d’hôte” menus.
26. Availability of safe deposit facilities including safe deposit envelops and boxes.
27. Availability of a luggage store to provide left-luggage service.
28. Stationery must be on request.
29. Business facilities should be on request (the hotel must be prepared to provide typists and stenographers).
30. Availability of different means of communication including telephone, telegram, postal services, and telefax.
31. Availability of a well equipped conference hall seating at least 100 guests.
32. Availability of a well-furnished function hall seating at least 100 guests.
33. In-house telephone for the use of resident guests and visitors.
34. Availability of a well-stocked bookstore with a variety of reading materials to satisfy the requirements of different nationalities.
35. Availability of a souvenir shop, money exchanger on the premises.
36. Bell-service department to handle luggage and paging services and provide some staff members such as bell captain, bellboys, porters, pageboys and lift porters.
37. Availability of security office rendering 24-hour service.
38. Availability of a separate housekeeping department well provided with the necessary equipment.
39. Availability of sporting facilities including a health club and a swimming pool.
40. Availability of emergency medical service with a resident nurse to offer first aid and a doctor on call, if necessary.
41. Availability of service and luggage lifts.
42. Availability of a good number of communication rooms with connecting doors between them.

Hotel Staff:

43. All hotel staff should wear uniform.
44. All main staff members—especially those with direct contact with guests at the reception office, management, housekeeping, catering outlets—must have adequate knowledge of at least one foreign language preferably English.
45. All staff should possess the personal attributes and professional skills required to render efficient and courteous service
FIVE - STAR HOTELS

Hotel Building:

1. A specially designed building with an open area and nice surroundings, a common terrace and garden. It is imperative that the building designed and originally constructed as a hotel so as to satisfy the well-recognized international standards of the hotel industry & to ensure the full convenience of its guests.

2. Minimum number of rooms: 200 rooms (including a convenient variety of room types such as single rooms, double rooms, twins, studio rooms, communication rooms, self-contained, beautifully styled VIP suites function and exhibition rooms, well equipped conference rooms etc).

3. A spacious parking area for a minimum of 200 cars.

Guest Rooms Facilities:

4. Central heating and air-conditioning systems in all rooms and public areas at a temperature between 18&25 degrees centigrade. Guests must have independent control of the air conditioning.

5. Complete private bathrooms with hot and cold running water in all rooms. (Minimum length of bathtub 160 cm).

6. Gents and ladies’ toilets and cloakrooms for visitors in lounges and other public areas.

7. Direct dialling telephones in all rooms.

8. Internal communication facilities for visitors in public areas.


10. Colour TV and in-house video service in all rooms.

11. Radio and central in-house music system in all guest rooms and public areas.

12. Area of bedrooms (excluding bathrooms, entrance and balcony, if any) 30 square meters for a double room and 25 square meters for a single one.

13. Luxurious furniture in guest bedrooms including beds at least 2m × 2m wide for single rooms and 2m × 2.5m for double rooms, bedside tables, two easy armchairs, a dressing table, a writing table, a coffee table, a luggage rack, a cupboard and bedside rug, wall-to-wall carpeting and a mini bar.

14. Enough stationery and telephone directories to be provided in guest rooms.
15. Bedroom with double-glazed windows to provide soundproofing, even temperature and quiet undisturbed relaxation for resident guests.

16. Windows must be provided with either shutters with curtains, or venetian blinds or thick double curtains.

17. Enough independent lighting in guest rooms and private bathrooms and reading lamp at bedside armchair and writing table.

Other Hotel Facilities & Services:

18. 24-hour service for reception, information desk, guest relations, telephone and security services.

19. Lifts where there are two floors or more. There must be separate lifts for baggage and service

20. Lobby, public lounges and corridors to be well furnished with the luxury wall and floor finishes.

21. 24-hours room service.

22. In-house laundry and valet service.

23. The total check-in and lobby area is at least 750 square meters.

24. The reception area, with cashier and information desks, should be at least 6m x 3m.

25. A 24-hour service coffee shop with a capacity pf at least 80 covers.

26. Well-furnished restaurant serving a large variety of international dishes within the “a la Carte” and “table d’hôte” menus.

27. Availability of safe deposit facilities including safe deposit envelops and boxes.

28. Availability of a luggage store to provide left-luggage service.

29. Stationery must be available on request.

30. Business and conference facilities should be available on request (the hotel must be prepared to provide typists, stenographers).

31. Availability of different means of communication including telephone, telegram, postal services, and telefax.

32. Availability of a well equipped conference hall seating at least 100 guests.

33. Availability of a well-furnished function or banqueting seating at least 200 guests and offering facilities for international conferences and outstanding social functions.

34. Well-equipped dining rooms and lavatory facilities for hotel staff.

35. In-house telephones for the use of residing guests and visitors.
36. A well-stocked bookshop with a variety of reading materials to satisfy the requirements of different nationalities.

37. An executive or mezzanine floor including some facilities such as men’s and women’s boutiques, a souvenir shop, beauty salon, hairdresser, car rental agency, travel agency, flower shop, foreign exchange etc, on the premises.

38. A well-furnished ballroom and / or nightclub seating at least 500 guests.

39. Bell-service department to handle luggage and paging services including some staff members such as bell captain, bellboys, porters, pageboys, doormen, and lift operators.

40. A concierge to offer such services ad arranging for transportation inside and outside Bahrain including taxis, airport limousines, and sightseeing buses for tours of the country. This besides assisting guests with entertainment plans, or in providing babysitting service or helping guests sends their mail and packages.

41. Availability of a security office rendering 24 – hour service.

42. Availability of a separate housekeeping department well provided with the necessary equipment.

43. A separate maintenance and engineering department to keep the hotel’s facilities in perfect functioning order.

44. Availability of sporting facilities including a health club, a gymnasium, sauna bath and swimming pools for children and adults.

45. Availability of emergency medical service with a resident nurse to offer first aid and a doctor on call, in necessary.

46. Availability of a good number of communicating rooms with connecting doors between them for the convenience of the guests.

Hotel Staff:

47. All hotel staff should wear uniform with nametags.

48. All main staff members- especially those with direct contact with guests at the reception office, management, housekeeping, catering outlets – must have adequate knowledge of a least on foreign language preferably English. All staff should have the personal qualities and professional skills required to render efficient and courteous service.
APPENDIX 15:

Ministry of Information

MINISTERIAL ORDER NO. (2) OF 1987
WITH RESPECT TO DETERMINING FURNISHED FLATS DEEMED AS TOURIST ESTABLISHMENTS, CONDITIONS AND PROCEDURES FOR LICENSING THEM.

The Minister for Information, Having reviewed Legislative Decree No. 15 of 1986 with respect to the Organization Tourism, and with the approval of the Higher Tourism Council, and upon the submission of the Director of the Directorate of Tourism and Archaeology, HEREBY ORDERS:

Article - 1 -
Furnished flats intended for the accommodation of tourists shall be regarded as the tourist services subject to the provisions of Legislative Decree No. 15 of 1986 hereinabove referred to.
Such flats shall be located in independent buildings at the areas specified by the Tourism and Archaeology Directorate and the leasing thereof shall be restricted to families only.

Article - 2 -
Every tourist establishment shall have a manager in charge of organizing the activities thereof in accordance with the applicable service and management rule. An operator of a tourist establishment may act as the manager in charge thereof.

Article - 3 -
The operation of a furnished flat of the type referred to in Article 1 shall not be allowed except by a license to be issued by the Minister for Information upon an application to be submitted by the operator containing the following particulars:

1. Name of the operator of the tourist establishment.
2. Residential address.
3. Location of the tourist establishment and a statement of the address of the property wherein the establishment is located.
4. A list provided in duplicate of the contents of the establishment duly endorsed by the Ministry of Information. A copy of the said list shall be delivered to the operator to act in accordance therewith, provided always those contents shall always be similar at least to the contents of three-star hotels.
5. Giving the name of the person in charge of managing the establishment.
6. Approval of the owner of the property wherein the establishment is located to the operator for subletting the flat as a furnished apartment in the events permitted by the law.

7. A receipt voucher for payment of the prescribed fees.

**Article - 4 -**

In order to be granted a license, a tourist establishment operator shall fulfil the following conditions:

1. He shall be a person of good repute and conduct.
2. He shall not have been subject to a court judgment for a crime or felony affecting his honour or integrity unless he has been reinstated.
3. The application for the license submitted by him shall fulfil the terms and conditions set forth in this Order.

**Article - 5 -**

In case of sanctioning the application, an operator shall be granted a license within one month from the date of filing the application.

**Article - 6 -**

A tourist establishment operator shall be bound to satisfy the following:

1. To comply with the safety procedures stipulated under the civil defence regulations applicable in similar hotels.
2. To adhere to the rates of prices fixed for tourist services.
3. To enter into agreement with a local medical fractioned for providing medical services to the tourist establishment emergencies.
4. To permit representatives of the Tourism and Archaeology Directorate to enter the tourist establishment for ascertaining the implementation of the Tourism Law and its Implementing Regulations.
5. To maintain a special register in which shall be recorded the names of the tourist establishment’s guests, each tourist’s passport number and full details, date of leasing the flat and date of departure. The Tourism and Archaeology Directorate shall be furnished on a monthly basis with a statement of the number of guests and their particulars obtained from the aforesaid records.

**Article - 7 -**

The owners of currently licensed furnished tourist flats shall modify their status in compliance with the provisions of this Order within three months from the effective date thereof.

**Article - 8 -**

The Director of Tourism and Archaeology shall implement this Order, which shall come into effect from the date of its publication in the Official Gazette.
Tariq Abdul Rahman Al-Moayed

Minister of Information

Issued on: 5 Jamada Al Thani, 1407 H
Corresponding to: 4 February 1987.
The Minister of Information. After the review of Decree Law No. (15) of 1986 pertaining to the Tourism Regulation, and after the approval of the Supreme Council of Tourism, and having considered the submission of the Assistant Undersecretary for Tourism & Archaeology, Resolves as follows:

**Article -1-**

**LICENSING OF COMPANIES & BUREAU OPERATING IN TOURISM AND TRAVEL**

The Companies and bureaus operating in Tourism Operating in Tourism and Travel are considered in the application of the Provisions of Decree Law No. (15) Of 1986 mentioned above, and are divided into three kinds:

(a) Airlines Companies Agencies.

(b) Travail Bureau.

(c) Tourisme Bureau.

(d) The agencies and bureaus indicated in the aforesaid paragraph shall not be permitted to practice their business unless obtaining a license from Ministry of Information.

**Article - 2 -**

Airlines Companies Agencies are agencies representing airlines companies and in order to be licensed they must fulfil the following conditions:

(a) That the establishment has been in business for a period not less than two years in the scope of travel and tourism.

(b) That the establishment’s capital is not less than (BD. 60,000/-) Sixty Thousand Bahrain Dinars.

(c) That the location of the establishment should be approved by the Directorate of Tourism and Archaeology provided that it should be not less than Sixty-five square meters in area.

(d) That the establishment has a Manager with not less than five years of experience and obtains a high qualification. He should have completed two training courses in travel and tourism organization accredited by “IATA” organization. However, in case of such high qualification not available in the Manager, should have an experience of not less than ten years in the scope of travel and tourism.
(e) That an insurance to cover all employment against violation of their financial liabilities for the interest of the establishment should be made in case of its representation of an airline company whose airplanes using Bahrain Airport.

**Article – 3 –**

**TRAVEL BUREAUS**

The Travel Bureau are those bureaus specified in selling air tickets of various airlines & companies and in order to be granted the license it is stipulated as follows:

(a) That the establishment’s capital should be not less than (BD. 20,000/-) Twenty Thousand Bahrain Dinars.

(b) That the location of the establishment should be approved by the Directorate of Tourism & Archaeology and it should not be less than forty-five square meters in area.

(c) That the establishment should have a Manager whose experience is not less than three years in case he possesses a high qualification, and in case of not possessing a high qualification then he should have an experience for not less than five years. By no means, it is stipulated that he obtains a training course from an organization recognized in the scope of airlines companies, travel and air tickets.

(d) That the number of employees should not be less than three persons.

**Article – 4 –**

**TOURISM BUREAUS**

The Tourism Bureaus are specified in the preparation of external tourism programmes from and to Bahrain and programmes inside Bahrain. In order to be licensed, it is stipulated as follows:

(a) That the establishments capital should not be less than (BD20,000) Twenty Thousand Bahrain Dinars.

(b) That the establishments premise should be located in a Commercial Centre and approved by the Directorate of Tourism & Archaeology and its area should not be less than forty-five square meters.

(c) That the Bureau should have a Manager whose experience should not be less than three years in the scope of the organization or collective and comprehensive tours in case he possesses a high qualification, and five years in case he does not possess a high qualification.

(d) That out of the establishment’s employees there should be two tourist guides and a consort for outside and inside tours and travel arrangement who should have an experience of not less than one year.
Article – 5 –
GENERAL PROVISIONS

Any establishment indicated in this Resolution should have more than one activity indicated in Article (1) of this Resolution and should be autonomous once it fulfills the conditions specified for each.

Article – 6 –
The provisions of this Resolution shall be effective with respect to all airlines companies, travel bureaus and tourism bureaus presently licensed. They should amend their status to adhere to the provisions of this Resolution during a period of Six months from a date of implementation.

Article – 7 –
The provision of this Resolution shall not contradict with the necessity to pursue the procedures and obtain the licenses and approvals imposed by laws and regulations pertaining to establishment indicated therein.

Article – 8 –
Those who violate the provisions of this resolution shall be punished pursuant to Article (8) of Decree Law No. (15) of 1986 pertaining to Tourism Regulation which is an imprisonment for a period not exceeding three months and fine not exceeding Five Hundred Bahrain Dinars or by any of such punishments in addition to the legality of judgment to close the said establishment or its removal.

Article – 9 –
The Assistant Undersecretary for Tourism and Archaeology shall implement the provisions of this Resolution, which shall become effective from the date of its publication in the Official Gazette.

Tariq Abdul Rahman Al-Moayed
Minister of Information

Issued on: 24 Jamada Al Aoula, 1411 H
Corresponding to: 11 December 1990.
### APPENDIX 17 Project Work Plan

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APPENDIX 18

Test Plan

Date: 16.4.2001
Test No: 1
Objective: Change the errors in the main page

Interface ID:
1. Tour2 bahrainF1

Task
1. check links in the top main menu

Site: Tour2bahrain.com
Page URL: http://www.tour2bahrain.com

☐ Cosmetic  ☐ structural/ Navigational  ☐ Hardware  ☐ coding  ☐ Usability
☐ Software

Severity
☐ Critical  ☐ Moderate  ☐ Minor

Notes: Expected result
No missing links

Notes: Actual result -
A missing link found in menu “Things to DO” in eating out section

Recommendation:
Check the functionality of the link and upload the page
APPENDIX 19
Kruskal–Wallis Test Results
H1, H2, H4, H8
HYPOTHESIS 1

NO significant differences in terms of participants’ status and attitude toward the prototype.
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b. Grouping Variable: Status
HYPOTHESIS 2

*NO significant differences in terms of participants' age and attitude toward the prototype.*
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c. Kruskal Wallis Test

d. Grouping Variable: age groups
HYPOTHESIS 4

*NO* significant differences in terms of computer experience and attitude toward the prototype.
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f. Grouping Variable: Computer experience
HYPOTHESIS 8

NO significant differences in terms of participants' number of times of using the Internet for booking a holiday or a flight and their attitude toward the prototype.
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H3, H6, H7
HYPOTHESIS 3

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HYPOTHESIS 6

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<td>-.026</td>
<td>-1.325</td>
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<tr>
<td>Asymp.Sig (2tailed)</td>
<td>.770</td>
<td>.980</td>
<td>.185</td>
<td>.291</td>
<td>.990</td>
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<table>
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<tr>
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<th>Q33</th>
<th>Q34</th>
<th>Q35</th>
<th>Q36</th>
<th>Q37</th>
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<tbody>
<tr>
<td>Mann-Whiteny U</td>
<td>533.500</td>
<td>551.000</td>
<td>542.000</td>
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<td>2036.000</td>
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<td>2068.000</td>
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<td>-.679</td>
<td>-.145</td>
<td>-.501</td>
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<td>.442</td>
<td>.611</td>
<td>.497</td>
<td>.884</td>
<td>.616</td>
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### Test Statistics

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<tr>
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<th>Q38</th>
<th>Q40</th>
<th>Q41</th>
<th>Q42</th>
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</thead>
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<td>579.500</td>
<td>523.500</td>
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<td>0.855</td>
<td>0.337</td>
<td>0.031</td>
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a. Grouping Variable: experience of booking holiday or flights over the Internet