

Loughborough University Institutional Repository

Why financial managers need to know the risks and opportunities of robotic technology

This item was submitted to Loughborough University's Institutional Repository by the/an author.

Citation: HERBERT, I. and DHAYALAN, A., 2016. Why financial managers need to know the risks and opportunities of robotic technology. *Financial Management*, February 2016.

Additional Information:

- This article was published in *Financial Management* magazine and the website is at: <http://www.cimaglobal.com/>

Metadata Record: <https://dspace.lboro.ac.uk/2134/24463>

Version: Accepted for publication

Publisher: Chartered Institute of Management Accountants

Rights: This work is made available according to the conditions of the Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International (CC BY-NC-ND 4.0) licence. Full details of this licence are available at: <https://creativecommons.org/licenses/by-nc-nd/4.0/>

Please cite the published version.

Why financial managers need to know the risks and opportunities of robotic technology (Financial Management)

Herbert, I.P. and Dhayalan, A. (2016) Why financial managers need to know the risks and opportunities of robotic technology, Financial management (online edition) February.

<http://fmapp.cimaglobal.com/seven/financialprototype/index.html#issue/february2016/portrait/11>

Automation and robotic technology is rapidly becoming 'business as usual' in a wide range of service sectors from health care; transport & logistics to home maintenance. Predictably there is a lot of hype, both in terms of our relationship with humanised machines and the extent of what could be significant loss of jobs at all levels in society.

For business support functions such as management accounting we suggest that to balance the challenges there are significant opportunities in working towards a vision of 'lights out processing' followed by 'data-driven decision making'. But, we also suggest that without a carefully thought-out and co-ordinated strategy at an organisation level, there is a significant risk that opportunities for new business models will not be grasped. For management accountants, there is a risk that present jobs will be eliminated unless they can create new ways of using the evolving management information control and decision making systems.

In accounting an automated process performs a series of tasks to a pre-written script with minimal human intervention. E.g. running the monthly gross to net payroll processes for 50,000 employees in 50 different countries; complicated but programmable.

Automated systems might also self-regulate (feedback control) to achieve rules-based outcomes, where inputs might vary and some degree of outcome balancing/optimisation is required. E.g. making decisions on what Accounts Payable amounts to pay each day given the need to, say,

- pay all amounts over 50 days;

- pay all accounts labelled as critical (e.g. all new accounts plus, manual interventions from Procurement executives);

- but, only send one remittance to any one supplier in any one week;

- but, restrict the daily total cash outflow to a maximum of 5% of the total Accounts Payable figure.

Whilst, the system is dynamic it is a closed system. A robotic process takes this a step further because it can learn from previous experience given the human interventions to approve or amend the automatic outcomes. In the example above, the system produces payment schedules which the Credit Controller then reviews manually. He or she runs a credibility check on the 'suggestions' and may further check with the Treasury and Procurement teams before giving the final authorisation to start the payment run. The robot learns from these extra checks and, with access to the Treasury's forward projections, might rebalance the payments run to accommodate potential cash flow problems and also match opposite currency transactions to mitigate transaction costs and translation risks. We would refer to this as an 'open system'.

It is this ability to respond to situations which enables 'computer code' to act in a human manner in terms of decision making capabilities. This is what we classify as a robotic process, even though the

system is neither, anamorphic (with arms legs, head, etc.) nor limited to slavishly following predetermined instructions in a dumb manner.

Davenport and Kirby frame the human v. automation issue as being about augmentation. The key difference being the proportion of human effort employed in performing an activity.

While automation is focused on reducing the workforce and displacing them for other jobs, augmentation assists the present workers in carrying out their tasks in a more efficient manner, or providing them with time to think about how the business and its products/services could be improved. Davenport and Kirby suggest a number of ways in which humans have various opportunities to work with machines as partners and collaborators in knowledge work.

Robotic computer programmes are then in a position to replace many of the decisions that middle managers have traditionally made either intuitively or more scientifically (with management accounting support). For example, in a hotel scenario, deciding how to optimise overall revenue yield through occupancy rates v. room prices? what promotions to run? what discounts to give to frequent guests? how to balance cash flow? etc., etc. The system can also report real-time dashboard information and highlight control exceptions or opportunities for forward action to management. All this analysis could be done with robotic software that accumulates and curates data on all aspects of the hotel's operation along with wider information sources, such as what sports and entertainment events are in the locality for the next weeks and months? What is trending on social media feeds around the hotel and its neighbourhood? What is the weather forecast? etc. etc. in conjunction, web crawling bots could be checking out rates at other local hotels. This data rich environment enables robotic software to learn from past experience and thus, fine tune its own operating model.

The possibilities are endless for optimising the hotel's revenue streams, whilst largely dispensing with much of the 'seat-of-the-pants' input by middle management in terms of both forward planning decisions and operational control. Some senior management attention will always be necessary to set overall strategy and to react to system exceptions, but the point we are making is that in this 'uber'-style environment the business model has subtly changed to high tech facilities with high personal service levels, driven by robotic data-driven decision making and control on 24/7/365 basis.

Management accountants have a unique opportunity to be the designers of these new data-rich, dynamic, accounting information and systems, but if you are still producing spreadsheet based information for traditional middle managers then you might need to be concerned.

Ian Herbert and Aravindhan Dhayalan are with the Centre for Global Sourcing and Services at the School of Business and Economics, Loughborough University.

The SSC research project is supported by the General Charitable Trust of the Institute of Chartered Management Accountants. Visit the research programme website at www.shared-services-research.com