

# The eminence of the 4th industrial revolution: how it transformed management accountants

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**ABSTRACT:** The awakening of modern technologies in the era of this 4th Industrial Revolution (4IR) has tremendously affected the whole landscape around the globe including the business sector. To be aligned with the technological advancements, management accountants have to keep proactive and prepare for any unexpected changes to ensure that their business remains lucrative and stays relevant in the industry. Nonetheless, the changing role of the management accountant due to the presence of 4IR is imminent. As a result, this paper deliberates on how the 4IR changes the role of management accountants, including what knowledge and skills are crucial for them to grasp in order to adapt adequately in this 4IR era. In addition, this paper also reviews the challenges that they have to face. The study can be of prime importance to business firms in identifying the role of the management accountant in this 4IR era and to prepare for the ubiquitous challenges that may perturb their efficiencies.

*Keywords:* management accountant, knowledge, skills

## 1 INTRODUCTION

The rapid evolvement of technology in this modern period of time has ushered the dawning era of the 4th Industrial Revolution (4IR), which serves as a means of seemingly allowing positive drivers for many kinds of activities. In addition, 4IR breaks the conventional traditions of people's lives including their work styles of which the business unit is no exception. It is worth reiterating that technology provides wide potentiality for performing business (Digilina *et al.*, 2019) as well as conferring an indicative impact on firms through quantum leaps in manufacturing technologies, production technologies and computer-aided design (Cooper and Dart, 2009). Although it is well-assured that such technological advancements promise a number of benefits, it also raises some perturbations within business firms who fail to tailor their work systems at an equal or appropriate pace with the technological headway.

Therefore, in concert with technological developments in the 4IR era, the role of the management accountant as one of the mainstays in business firms has also transformed from manual accounting to com-

puterized accounting (Damasiotis *et al.*, 2015). The role of accounting has become more extensive from simply historical reporting to predictive reporting in structuring the strategies and operations of a firm (Cokins, 2013) in order to habituate with the exponential development of technology in the business environment. As pinpointed by Tuanmat and Smith (2011), traditional accounting methods are becoming increasingly irrelevant to sustain a business nowadays. Further, the task of the management accountant is succinctly explained that the accountant is not merely involved in number crunching but also plays a vital role in influencing managerial decisions (Rowelaar *et al.*, 2018) by proffering financial and operational accounting information to the managers (Appelbaum *et al.*, 2017). As elucidated by Zainuddin *et al.* (2016), at the past, finance was just focused on cost but at the present, it is able to facilitate value creation and preservation in which the technology allows the finance teams to execute three key things simultaneously which are producing and creating value, structuring how it is achieved, and explaining comprehensively how it can be accomplished.

Nonetheless, questions have been posed whether management accountants can really cope with the dramatic change in the technology climate and what are the actual challenges that can hamper their efficacy in duly performing their tasks. Hence, this paper scrutinizes the impact of 4IR on the accounting sector, focusing on how 4IR changes the role of management accountants, including what knowledge and skills are crucial for the management accountants to grasp in order for them to adapt adequately in this new 4IR era. In addition, this paper also reviews the challenges that they have to face.

## 2 ROLE OF THE MANAGEMENT ACCOUNTANT

### 2.1 *Role of the management accountant in a business firm*

A senior management accountant works closely with the managing director or higher administrative personnel of the firm, whereas the management accountants at the midlevel and entry-level work closely with the managers at the respective levels.

In brief, the top management specifies the vision, mission as well as the objectives of the firm, and how to achieve them. At this level, the management accountants play the important role of planning. They will plan the short and long term budget to match the short and long term goals of the firm. The management accountant at this level would be a senior person who will coordinate accounting operations, as well as hire, train, and oversee employees. Such a person also performs financial analysis, builds a business strategy, and manages relationships with investors and auditors.

The midlevel and ground level managers of the firm are more concerned about the implementation of the short and long term goals that have been specified by the top management. The decisions made at this level are based on the day to day operations of the company. Hence, a more detailed level of cost information is needed here. The role of the management accountant at this level is to direct and motivate the employees to work according to the plans that have been made by the top management. For example, they direct the employees as to how to effectively manage the cost allocated for their division. They do tasks involving receivables and payroll, financial statements, and compliance audits. They also mobilize resources and employees to support the company's goals. After the plans have been determined and successfully executed by the midlevel and ground level managers, the management

### 2.2 *How does the management accountant cope with the demands of 4IR?*

With the passage of time, the rise of the 4IR era such as the presence of Big Data, cognitive computing, artificial intelligence, and other emerging technologies has demanded that the management accountants adapt themselves to the current climate. Heretofore, a strand of literature has discussed the role of management accountants (e.g.: Rieg, 2018; Vechalekar *et al.*, 2017; Burns and Baldvinsdottir, 2007) and also some studies have highlighted the key factors that lead to the changing role of management accountants including harmonization of accounting standards (Vechalekar *et al.*, 2017), organizational restructuring (Pietrzak and Wnuk-Pel, 2015) and rapid changes in technology (Zainuddin *et al.*, 2016) for instance the existence of the new industrial revolution.

As one of the key factors that precipitated the role transformation, in fact, the accounting industry was disrupted by 4IR as early as the 1990s with the launch of desktop accounting software such as Quickbooks, Financio, SQL Account amongst others. In addition, this abrupt change in technology affected the accountants due to the altered way that data is collected, how the data is stored and processed as well as the way it is disseminated between the pertinent stakeholders (Damasiotis *et al.*, 2015). Furthermore, an extensive literature has discussed how this technology has changed the role of the accountant. For example, technology has overtaken much of the manual and mundane accounting tasks such as number crunching (Zainuddin *et al.*, 2016; Rowelaar *et al.*, 2018) while over and above, it has subsequently further developed to involve 'cloud accounting' solutions that have significantly reduced infrastructure costs (Shimba, 2010).

Businesses are largely affected by 4IR through changing consumer behavior and expectations and changes in organizational context (Zainuddin *et al.*, 2016). As such, the senior management accountants who are responsible for planning the financial aspects of the firm must be able to visualize the whole picture of how 4IR is impacting the firm, and subsequently, formulate a strategy that is agile, taking into consideration the various changes that are happening. Moreover, the new technology also allows for faster and greater precision in business analysis, and hence accountants are positively changing their role from bookkeeping and stewardship to becoming strategic business partners of the company (Skoulding, 2018). Advances in cloud technology are also a game changer for the accounting profession (Skoulding, 2018; Lamboglia *et al.*, 2018). It enables mobile working and seamless updates of information, anytime, from anywhere in the world (Skoulding, 2018). A

more efficient system will also be built which means that the accountants will have more time to increase the profitability of their clients, and also more time to serve their customers' real needs, thus, adding more value to customer services.

### 3 CHALLENGES CONFRONTED BY MANAGEMENT ACCOUNTANTS

Due to the abundance of opportunities ahead, indeed many imminent challenges are posed that the management accountants need to confront. The challenges may be divided into two, namely internal challenges and external challenges where the former reflects the challenges that occur at the organizational level while the latter arise due to the acts of external parties.

#### 3.1 Internal challenges

According to Skoulding (2018), security is one of the key challenges in maintaining the efficacy of management accountants. For security reasons, they have to be vigilant by taking specific initiatives to protect the data from being spied upon or missed. This is because at current, targeted malware attacks have increased (San *et al.*, 2019) with various types of attack such as Trojan horses, phishing, and illegal felonious access by outsiders to steal confidential information along with the firm's intellectual property (Srinivas *et al.*, 2019). Therefore, it is important for all types of users within an enterprise to always be aware and prepare for the worst case whereby the management accountants are obliged to equip themselves with knowledge of risks of data corruption, as well as fraud detection and disaster management.

Another challenge faced by management accountants is training. People need time to grasp the new technology and run a system smoothly. The management accountants thus have to enhance their directing and motivation skills in order to ensure that the employees eliminate any fear or distrust that they may feel with regard to the new system (Marr, 2017). Instead, the requirements in order to become an accounting professional nowadays are viewed with regard to competencies as compared to knowledge (Bots *et al.*, 2009). Bots *et al.* (2009) highlighted that the main level of competencies now consist of cognitive and behavioral skills for which they found that many of the young generation of management accountants stated that they have to know how to apply finance technologies in order to be competent. Lawson (2017) in his study deemed the skills of management accountants such as being creative and innovative in managing changes as well as being competent in advanced data analytics, are obligated to evolve in order to coincide with the new technology as well as to maintain relevance within their

organizations. In addition, Krumwiede (2017) suggested the skills that management accountants should be equipped with are business analytics, programming and data visualization

#### 3.2 External challenges

As stated by Zainuddin *et al.* (2016), because of globalization, firms do not merely have to compete with local firms but they also have to fight against international firms to be sustained in the industry. Thus, they have to ascertain that they offer competitive prices, best quality products, and prioritize customer service to entertain the demands and expectations of customers. As the main information providers of the firm, management accountants have to play their role effectively in order to overcome this challenge. Additionally, Sulaiman *et al.* (2008) conducted a study and found that the role of management accountants has changed due to the need to focus on fulfilling the expectations and needs of the customers.

## 4 CONCLUSION

In particular, technology confers an abundance of benefits to the accounting industry specifically to management accountants. The rapid changes in the whole environment demand that the accountants customize their approach in concert with the abrupt changes. This is because they are no longer conservative accountants as they were formerly. On those grounds, it is vital for accountants to develop their skills from this time forward, possessing data and programming skills can potentially become as crucial as accounting skills (Krumwiede, 2017).

Typically, people face the advancement of technology with angst and fear because people think that the machines will take over their jobs. In reality, there is nothing that can supersede the emotional intelligence which humans possess and administer in their job (Marr, 2017), plus the decision making consultation that must be performed by humans as such ability is impossible to be overridden by automation. From another point of view, the qualified accountants will always carry out their job by checking the figures and numbers produced by automation to ensure that the information is errorless (Skoulding, 2018). Under these circumstances, management accountants have to consider the pervasive technological breakthroughs today as their great helper as opposed to their opponent.

**REFERENCES**

- Appelbaum, D., Kogan, A., Vasarhelyi, M., & Yan, Z. 2017. Impact of business analytics and enterprise systems on managerial accounting. *International Journal of Accounting Information Systems* 25: 29-44.
- Bots, J. M., Groenland, E., & Swagerman, D. M. 2009. An empirical test of Birkett's competency model for management accountants: Survey evidence from Dutch practitioners. *Journal of Accounting Education* 27(1): 1-13.
- Burns, J., & Baldvinsdottir, G. 2007. The changing role of management accountants. *Issues in management accounting* 3: 117-132.
- Cokins, G. 2013. Top 7 trends in management accounting. *Strateg. Finance* 95 (6): 21-30.
- Cooper, P., & Dart, E. 2009. Change in the management accountant's role: drivers and diversity. *University of Bath, School of Management, Bath*.
- Damasiotis, V., Trivellas, P., Santouridis, I., Nikolopoulos, S., & Tsifora, E. 2015. IT Competences for Professional Accountants. A Review. *Procedia-Social and Behavioral Sciences* 175: 537-545.
- Digilina, O., Teslenko, I., & Abdullayev, N. 2019. Prospects for digitalisation of the Russian economy. In *2nd International Scientific conference on New Industrialization: Global, national, regional dimension (SICNI 2018)*. Atlantis Press.
- Institute of Management Accountants 2008. *Definition of Management Accounting*. Retrieved from <https://www.imanet.org>.
- Krumwiede, K. 2018. *How to keep your job?* Retrieved from <https://www.imanet.org/insights-and-trends/the-future-of-management-accounting/how-to-keep-your-job>
- Lamboglia, R., Cardoni, A., Dameri, R. P., & Mancini, D. 2018. Business Information Systems in a Networked, Smart and Open Environment. In *Network, Smart and Open*: 1-20. Springer, Cham.
- Lawson, R. 2018. *Management accounting competencies: Fit for purpose in a digital age?* Retrieved from <https://www.imanet.org/insights-and-trends/the-future-of-management-accounting/management-accounting-competencies---fit-for-purpose-in-a-digital-age?>
- Marr, B. 2018. *The digital transformation of accounting and finance-artificial intelligence, robots and chatbots*. Retrieved from <https://www.forbes.com/sites/bernardmarr/2018/06/01/the-digital-transformation-of-accounting-and-finance-artificial-intelligence-robots-and-chatbo>.
- Pietrzak, Ż., & Wnuk-Pel, T. 2015. The roles and qualities of management accountants in organizations—evidence from the field. *Procedia-Social and Behavioral Sciences* 213:285.
- Rieg, R. 2018. Tasks, interaction and role perception of management accountants: Evidence from Germany. *Journal of Management Control*: 1-38.
- San, C. C., Thwin, M. M. S., & Htun, N. L. 2019. Malicious Software Family Classification using Machine Learning Multi-class Classifiers. In *Computational Science and Technology*: 423-433. Springer, Singapore.
- Shimba, F. 2010. Cloud computing: Strategies for cloud computing adoption.
- Skoulding, L. 2018. *How the fourth revolution is impacting accountancy*. Retrieved from <https://www.accountancyage.com/2018/02/26/fourth>
- Srinivas, J., Das, A. K., & Kumar, N. 2019. Government regulations in cyber security: Framework, standards and recommendations. *Future Generation Computer Systems*, 92: 178-188
- Sulaiman, S., Ramli, A., & Mitchell, F. 2008. What factors drive change in management accounting in Malaysian organisations? *Malaysian Accounting Review*, 7(1).
- Ten Rouwelaar, H., Bots, J., & De Loo, I. 2018. The influence of management accountants on managerial decisions. *Journal of Applied Accounting Research* 19(4): 442-464.
- Tuanmat, T., Smith, M. 2011. Changes in management accounting practices in Malaysia, *Asian Review of Accounting* 19(3): 221-242.
- Vechalekar, N. M., Cherukupallis, U. R., & Joshi, P. L. 2017. The changing role of management accountants: An Indian perspective. In *The Role of the Management Accountant*: 89-116. Routledge.
- Zainuddin, Z. N., & Sulaiman, S. 2016. Challenges faced by management accountants in the 21st century. *Procedia Economics and Finance*, 37: 466-470.