Effectiveness of Artificial Intelligence in Management Accounting

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Abstract

This academic review paper aims to investigate the possibility of integrating artificial intelligence into the daily workflow of management accounting, and to what extent this would increase the effectiveness and efficiency of the business operations. By focusing on aspects such as management accounting, artificial intelligence, the advantages and disadvantages of utilising artificial intelligence for management accounting, ethical considerations of utilising AI while handling sensitive financial information, and various real-world businesses which use AI in their day-to-day operations, this paper is able to clearly identify and explain the possibility of human accountants and artificial intelligence working together in order to maximise the accuracy and efficiency of outcome. This paper also provides an overview regarding some of the essential accounting tools equipped with AI that are currently being used by management accountants, and also discusses the possibility of AI replacing human management accountants completely. By covering all of these components and providing necessary explanations, this academic review paper aims to answer the research question "To what extent will AI be more effective than traditional methods of management accounting?"

Keywords: Management accounting, Artificial intelligence, Business operations

Introduction to Management Accounting

Management accounting, also known as managerial accounting, refers to the process of generating and submitting all the necessary financial data and resources required for managers' decision-making. The data that is shared by management accountants is solely used by the internal team of an organisation, which makes it distinct from financial accounting. The aforementioned financial information refers to reports such as balance statements and invoices, and these reports are often used by senior management to make more accurate and appropriate financial decisions. Furthermore, management accounting does not have a fixed format as it is not required by law, therefore, the essential aspect of it is that it provides relevant and accurate data that assists in improved financial decision-making.

While both types of accounting have the key objectives of accumulating, analysing, and generating relevant financial reports, the main difference between them lies in whom these reports are intended for. While management accounting aims to provide financial reports for internal purposes of a business, such as to the senior management, financial accounting aims to provide reports to all the key stakeholders of the organisation, and this is deemed necessary by law. Therefore, the management accounting aims to assist key figures within the organisation with improved financial-decision making and strategic planning, thereby, increasing the opportunities for the business grow, while financial accounting aims to inform

stakeholders such as investors and creditors about the financial situation of the firm, and potentially persuade them to invest or engage in business operations.

The most crucial responsibility of a management accountant is to help with the management of finances within an organisation, and this is typically done by creating budgets, tracking expenses, and also making key-financial decisions which aim to grow the business. They manage the accounting operations, therefore, they must ensure that all financial reports generated by the organisation meet the regulatory requirements and comply with auditors. Overall, it can be understood that the main functions of a management accountant are to provide necessary decision-making information, assisting with the planning and controlling of financial resources, and generating reports and information regarding the financial performance of an organisation.

Introduction to Artificial Intelligence

The term "artificial intelligence" refers to the technology that allows computers and machines to mimic the problem-solving abilities and intelligence possessed by humans, and this ability allows it to perform tasks without the requirement of human intervention. AI is formed through the development of AI algorithms, which are decision-making processes which are developed based on how the human brain functions, thereby, enabling AI to learn from existing data and to make more accurate predictions as it gathers more relevant information. At this current moment, AI, more specifically, Generative AI, can analyse and produce data of various types apart from simply the human language, and this extends to images, videos, software code, and even molecular structure, thereby, showcasing the endless opportunities possible with AI, however, this also results in major discussions about the ethics and responsibilities surrounding this field of technology.

The aforementioned "Generative AI" refers to a deep-learning model which can input raw data and generate statistically probable outputs when requested, and it can also create new work that is similar to the original data that was shared. While this form of AI has been used in statistics for multiple years, due to the increased research and development within deep learning, generative AI can also analyse images, speech, and other complex data types, therefore, prompting enterprises to adopt it into their operations. By incorporating such technologies, businesses can generate accurate and efficient reports of large datasets, helping them with their ambitions of becoming a larger organisation.

Finally, there are two main types of AI, which are "Weak AI" and "Strong AI".

● **Weak AI**

This is also referred to as "Narrow AI", and it is mainly trained and focused on performing very specific tasks. This is the most prominent type of AI in this day and age, however, unlike what the name suggests, it is anything but weak. Weak AI is used in the development and functioning of applications such as Alexa, Siri, and self-driving cars.

● **Strong AI**

This can be separated into two more forms of AI, which are "artificial general intelligence" (AGI) and "artificial superintelligence" (ASI). Neither of them currently exist and are purely theoretical. AGI allows machines to possess intelligence that is on par with humans, which would make them self-aware, allowing them to learn, solve problems, and plan for the future. ASI would allow machines to possess intelligence and ability beyond the capabilities of the human brain, and while both of them are purely theoretical, research and development of Strong AI is still ongoing.

AI being used in businesses

It is very evident that artificial intelligence possesses outstanding abilities even in its current form, and due to its capabilities, businesses all around the world have started incorporating it in their day-to-day operations. By taking advantage of AI, firms are able to improve their efficiency, reduce decision-making time, decrease costs, and improve aspects such as cybersecurity, fraud management, content production, and customer support.
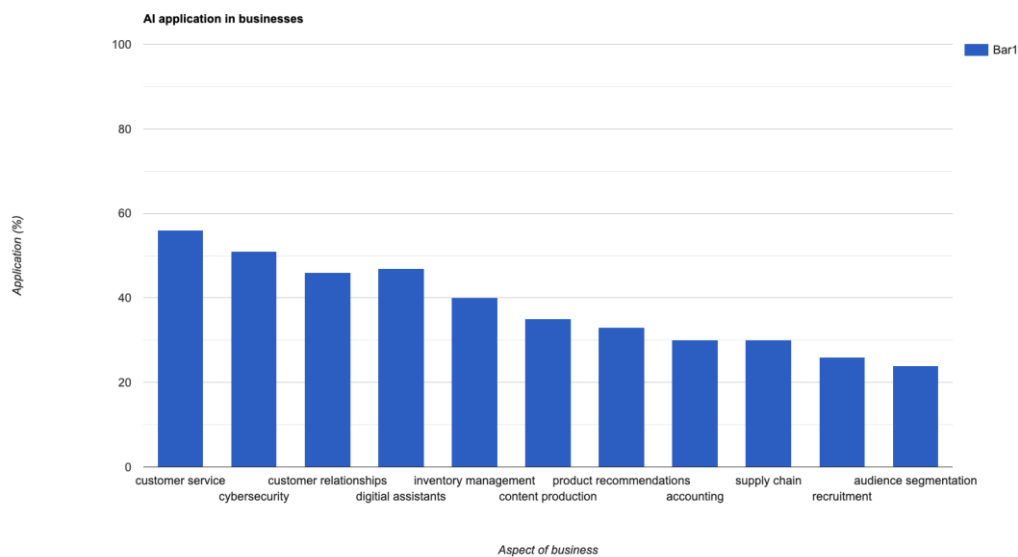

Figure 1

Figure 1 showcases the results acquired by Forbes following a survey of 600 business owners and the application of AI in their businesses. From the findings of the survey, it can be understood that a substantial number of businesses have already started to implement AI into a vast range of their daily operations, from customer service to audience segmentation. By integrating AI into these various aspects, businesses are aiming to enhance customer experiences, increase efficiency, and increase productivity, as through these technologies, firms are able to automate tedious and routine tasks, and assign more challenging and strategic objectives to humans, as their analytical insights would be more appropriate there.

However, along with the growing application of AI in the business activities, the owners of these organisations have also shown growing concerns about how AI might negatively impact them. Results from the same study by Forbes has shown that approximately 43% of the business owners are concerned about the firms and employees becoming too reliant on AI, leading to complacency within the organisation. 35% of the employees are anxious about the fact that they might be lacking the required technical abilities to operate AI technologies, and 77% of the respondents are concerned about the possibility of losing their employment due to the significant developments made in the field of artificial intelligence. Finally, there are also questions being raised regarding the reliability and validity of information that is generated and shared by AI, and how these firms aim to tackle these issues in the future, as integration of AI into businesses looks to become the norm.

AI in Management Accounting

Major accounting firms, such Deloitte, Ernst & Young, PricewaterhouseCoopers, and Klynveld Peat Marwick Goerdeler, have all started to integrate AI into their operations, and rather than simply enhancing their daily functions, it is believed that this change could potentially be innovative and redefining for the entire accounting industry. This mainly comes down to the simple fact that AI helps increase efficiency within the workspace. It helps management accountants, and all other types of accountants, to analyse large sets of data with precision and speed, thereby, reducing the amount of time and resources spent on completing mundane and routine tasks. Therefore, it allows management accountants to focus more on their strategic and more impactful work, such as financial decision-making.

The main reason why AI is able to provide financial analysis more quickly, and with greater accuracy, is because it can identify anomalies and patterns within the datasets very easily, and this is much more challenging for humans. By doing this, management accountants are able to generate higher standard of financial reports which have deeper and broader analysis. By shifting the focus of work from the routine and mundane tasks to a more strategic one, the skill set required to become a management accountant is also shifting drastically. Nowadays, in order to be a successful management accountant, one needs to be tech-savvy, have a solid understanding of the functionalities of AI tools and its applications in various accounting scenarios. This breeds professionals that are flexible, proactive, and enforces a culture that believes in continuous learning and innovation.

- **Ernst & Young (EY)**

EY has integrated AI into their auditing services, thereby, allowing them to review and analyse contracts and documents with greater speed and accuracy. While reducing errors, it has also allowed the firm to be more compliant with regulations, and also increased their effectiveness in completing business operations.

- **KPMG**

KPMG's AI platform, "KPMG Ignite", is used by the accounting firm for data analysis, strategic guidance, and to provide detailed insights regarding financial decisions, all of which would not be possible by utilising traditional management accounting methods as these tasks would all require large amounts of resources and time.

- **Deloitte**

Deloitte's AI, "Cognitive Advantage Initiative", is also being used to reinvent the way the organisation conducts its business operations. It has allowed the firm to automate routine tasks, thereby, allowing employees to focus on more complex and judgement-intensive tasks which would not entirely be possible by AI. By doing this, it has allowed the business to offer deeper and greater insights regarding strategic advice, and has allowed the management accountants to transform into a role more correspondent with a business advisor.

AI trends in Management Accounting

1. Data summarisation, organisation, and analysis

One of the most tedious tasks that all accountants, including management accountants, need to do is working with raw data in spreadsheets. In order to reduce the amount of human resources and time spent on these tasks, organisations have started to automate this responsibility through the use of AI. By doing this, management accountants are able to analyse large volumes of financial data with greater speed and depth, and are able to provide real-time insights regarding the financial position of the organisation to the senior management. Additionally, studies have shown that AI's proficiency in tasks such as bookkeeping

and accounting would mean that 59% of professionals believe these tasks would most likely be taken over by AI.

2. Predictive data analysis

Business have started to utilise AI algorithms to analyse large data sets, and this has allowed them to identify patterns within the data, and to detect any potential risks that are present, which are often overlooked by humans. Through predictive analytics, AI has allowed management accountants to shift from the role of generating financial reports, and into a role of an evaluator, where they review the reports that are produced by AI, and utilise their insights and judgement in order to make strategic decisions, or to identify any errors that are present within the reports that were created by the AI.

3. End-to-end practice management solutions

Businesses have understood that AI tools are more effective when integrated with existing tools. This is because it would require less switching between the various applications used by these organisations, and would also provide AI the necessary context for the workflow, which it can obtain by accessing current and historical data required to work with. By doing this, management accountants are able to achieve a more streamlined workflow as the applications and tools are familiar to them, and there is also a reduced risk of data loss as there is no requirement for data transfer between applications. Furthermore, by continuing to use familiar applications and tools, management accountants are able to successfully share AI-generated reports and insights directly from these applications, and are able to maintain transparency and clear communications with clients.

Essential AI Accounting Tools

As the interest around AI in different business fields has been growing, numerous businesses have already started using certain AI tools in their accounting department, and some of the most prominent ones include Karbon AI, Vic.ai, and Docyt. All of these applications possess their own set of beneficial tools and technical drawbacks, which will briefly be discussed. Karbon AI uses Generative AI and GPT technology in order to assist an organisation with email management and task management. It assists clients with summarising long email conversations and internal discussions by highlighting what are the most important components of the discussions, and by providing this information, it allows the user to decide whether they want to dig deeper into the conversation. The main advantages of this tool are that it is a part of the Karbon platform, therefore, allowing users to have all of their tools and resources in one place, it has exceptional data security and reliability due to its integration with Microsoft, and it is built by a team of accountant industry experts who clearly understand the needs and wants of accountants. However, the main drawback of the application is the fact that apart from focusing on email management, it doesn't necessarily assist accountants with any other aspects of their profession, therefore, it is very likely that most other AI tools would be preferred over this.

Vic.ai is an AI platform which helps all types of accountants, including management accountants, with streamlining their workflows. The platform automatically processes invoices and automates the process of data extraction, coding, and approval of invoices, which make it extremely valuable for organisations that operate with large volumes of invoices. Moreover, it helps with in-depth and fast financial reporting as it can cross-check expenses with company policies and compliance rules, therefore, easily detecting any violations or discrepancies. This ability also plays a key role with auditing. Overall, the main strong points of this AI tool are that it has a strong emphasis on data extraction and compliance, it has a large range of customisation options which can adapt to the unique requirements of each individual firm, and it

can handle extremely large datasets, making it useful for organisations of all sizes. The main weaknesses of the platform are that it doesn't allow for coordinating work between teams and projects, it has a significantly high setup cost, and it has limited integration with less popular accounting systems and softwares, all of which make it less likely for small or medium-sized businesses to opt for it.

Finally, Docyt is an accounting automation software that consists of both Precision AI and Generative AI. Through Precision AI, users can automate General ledger data entry, processing of accounts payable and receivable, categorisation of transactions, payment of bills, and reconciliation. Additionally, through Generative AI, users can summarise and contextualise both internal and external conversations into accounting actions and coding. Therefore, through the combination of both of these AI technologies, users can easily store financial data, and can generate personalised and informative financial reports with ease. The main advantages of this software are that it is extremely customisable to specific business operations, it has a user-friendly interface, and it has a robust security system that can store and organise large amounts of data. On the contrary, the main limitations of the system are that it can be extremely expensive for medium and small-sized firms, and there have been numerous reports of delayed system responses, which can hinder the workflow significantly.

Reasons to continue traditional management accounting

1. High implementation costs

The initial investment required for including AI in daily business operations is extremely high, and is not sustainable for most small-sized and medium-sized organisations, therefore, making traditional management accounting a more viable option for them.

2. Complexity and technical challenges

Implementing AI systems into pre-existing systems can be an extremely challenging process, and can pose multiple technical disruptions which must be addressed. If firms do choose to transfer to new AI systems, there are often risks associated with data loss and employee dissatisfaction. Additionally, more often than not, organisations don't always possess the necessary resources to make the AI integration seamless and successful.

3. Security and privacy concerns

As integrating AI would mean that it would be handling large volumes of sensitive financial information regarding various clients and the organisation as a whole, it would raise major security and privacy concerns from key internal and external stakeholders that must be addressed. In most scenarios, this would result in the implementation of robust security systems and data protection measures, which will all be of significant cost to the company.

4. Change management

Through the introduction of an AI system into the workflow, it would change how daily operations would take place, and would alter the workflow of most of the employees. This could result in resistance from both employees and managers, and could hinder with the creation of an AI assisted workplace.

5. Human insights

Regardless of the various benefits that AI provides, such as data analysis and pattern identification, it still lacks the intuition and experience possessed by humans. Therefore, by introducing AI and over-relying on it, it could mean that the scope for human insights and judgement would be lost.

Reasons to Integrate AI Into Management Accounting

1. Efficiency

AI plays a key role in automating manual accounting processes that are labour-intensive and time-consuming, therefore, allowing firms to be more efficient with their resources, and to keep up with data processing and analysis.

2. Reduced human error

As traditional methods force manual data entry and analysis, there is a greater scope of error as humans are forced to repeatedly do these tedious tasks. However, through the use of AI, these tasks can be automated, and more accurate results can be generated, thereby, ensuring that financial reports and decision-making is more effective and precise.

3. Broader data analysis

AI possess the capabilities to identify patterns and anomalies within datasets that humans generally can not, and this allows it to provide advanced analytics such as predictive modelling, which generates greater insights and more accurate forecasts that organisations can use. Without such technologies, organisations would be forced to rely on rudimentary analytical methods.

4. Competitive advantage

As most organisations have already started to utilise AI tools and softwares in their business operations, the remaining firms which do not, are at a competitive disadvantage as they are not able to employ the detailed and accurate financial forecasts and reports which can be produced using AI. This would mean that businesses operate with lower efficiency, and are impacted greatly by human error. Additionally, as AI integration becomes the industry norm, by not using such technologies, companies can risk negative customer perceptions and dissatisfaction.

5. Reduced risk of fraud and non-compliance

AI can assist firms in improving their fraud detection systems, and also help them to comply with all the necessary legal regulations through continuous monitoring and analysis. Therefore, by implementing AI systems into the organisation's workflow, businesses can be less vulnerable to compliance issues, fraud, and cybersecurity threats.

Ethical Considerations of AI in Management Accounting

1. Employment

By integrating AI systems into the workflow, organisations risk having to displace employees, as some of them would no longer be required. Therefore, organisations must consider the impact of utilising AI on employees and must aim to provide support to those who are displaced or are transitioning into new roles.

2. Transparency

As large amounts of confidential and sensitive financial information are being run through AI algorithms, it is imperative that organisations inform all stakeholders in a transparent and understandable manner, so that they are clear on how the systems work and how the decisions are made.

3. Consent

In relation to the previous point, due to the use of sensitive and confidential financial data, organisations must inform all stakeholders, including employees and clients regarding how their data will be used, and also must take their consent prior to going forward with the business operations.

4. Fairness

AI systems are also vulnerable to being influenced by biases that are present in the data that they are

trained with, therefore, businesses must focus on carefully evaluating and mitigating any businesses that are present within the AI systems in order to ensure that all outcomes generated are accurate and fair.

5. Security

AI systems and all other business operations must be equipped with robust security systems against cybersecurity threats and unauthorised access, as these firms will be handling confidential financial data.

AI Replacing Human Management Accountants

While this was a strong possibility between 2015 and 2019, following the Covid-19 pandemic, and the increase of AI in management accounting, it has become very clear that rather than fully replacing humans, it would be more appropriate if AI was used to assist existing management accountants, and there are various reasons behind this. Firstly, management accounting requires a strong understanding of complex business transactions, regulatory frameworks, and business industries. While AI is advanced and has a brief understanding of all of these elements, it lacks the human experience, judgement, and ethics which are required to handle unique and complex accounting decisions. Secondly, management accounting not only relies on financial analysis and strategies, but also on trust and intuition. Therefore, it is necessary to have strong interpersonal and communication skills which help management accountants to understand the unique goals and challenges of clients, and this is something AI can't replicate. Finally, while AI can automate data entry and analysis, it can't interpret the results, provide context, and provide strategic financial advice like humans can, therefore, it is necessary for both humans and AI to work in synergy in order to maximise their strengths, and to maximise efficiency.

Conclusion

Taking into account all of these points, it is extremely evident that there are distinct advantages and disadvantages associated with incorporating artificial intelligence within business operations, more specifically management accounting operations. However, it can also be seen clearly that the advantages of integrating AI are far greater and far more effective than the limitations posed by it, therefore, it can be understood that businesses must strive towards using AI in their management accounting activities, especially if they have the necessary financial and human resources to make it possible. By doing this, firms can gain significant competitive advantages as they become more efficient, have access to deeper and broader financial analysis, and they are allowing their management accountants to focus more on the strategic financial decision-making of the organisation, rather than on mundane and tedious routine task such as data entry. However, by making such a substantial change in the workflow of managerial accountants, companies are also putting themselves at major risks which they need to address, and will have various responsibilities which they must consider and respect. By utilising AI, management accountants must ensure that they are using the financial data responsibly, and inform all stakeholders about how the data analysis and decision-making will be done. Most importantly, businesses must aim to implement the most secure and reliable security systems in order to protect the sensitive and confidential financial data, and to avoid any cyberattacks that the AI systems might be susceptible to. Overall, in a world focused around technological developments and perfection, it is important for all factors of an organisation, most importantly, management accountants, to ensure that they are utilising their financial resources in the best possible way, and one major step towards ensuring this, is by adopting a workflow which enforces both human intelligence and artificial intelligence working in cohesiveness.

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