

The Role of Managerial Accountants in Strategic Planning and Budgeting

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Abstract:

The managerial accountant must act in two ways routine and strategic. The managerial accountant has an extensive role in budgeting and planning for the organization, depending on the firm's business environment and available funding. The managerial accountant also has the role of changing the firm's management style according to the legislative conditions. They can change the firm's management between centralized and decentralized according to the business environment and size of the business firm. When the firm experiences lower profit or loss due to recession, managerial accountants must think strategically to make innovative ways that lower cost and increase the firm's profit. The standard style works well when an administrative account must decide in a short time with less information. The firm cannot rely on rigid practices and procedures that might be costly and time-consuming. Whereas strategically, accountants analyze the data and decide according to the statistics to handle the situation and increase the profitability of the performance.

Keywords —**Managerial accountant, artificial intelligence, budgeting.**

I. OVERVIEW

The managerial accountant has an extensive role in budgeting and planning for the organization, depending on the firm's business environment and available funding. When the firm experiences lower profit or loss due to recession, managerial accountants must think strategically to make innovative ways that lower cost and increase the firm's profit. The firm cannot rely on rigid practices and procedures that might be costly and time-consuming. The managerial accountant must act in two ways routine and strategic. The standard style works well when an administrative account must decide in a short time with less information. Whereas strategically, accountants analyse the data and decide according to the statistics to handle the situation and increase the profitability of the performance[1]. The managerial accountant also

has the role of changing the firm's management style according to the legislative conditions. They can change the firm's management between centralized and decentralized according to the business environment and size of the business firm[2]. The managerial accountant's role has been changing since advancements in technology led to incorporating cloud-based solutions, extensive data analysis, blockchain technology, and artificial intelligence[3].

II. BACKGROUND

A. Cloud-based Solution

Cloud-based solutions ease accountants to control, comply, monitor, and govern data through the internet by staying in a single place. Firms have shown the most interest in cloud services and receive most of the investment through cloud services. Cloud services are of four types: private,

public, community, and hybrid cloud. Firms provide public cloud service on pay-as-you-go or subscription business models. Many small and medium-sized enterprises (SMEs) take advantage of cloud services without any prior resources allocated[3].

B. Blockchain

Blockchain technology gained attention due to the emergence of cryptocurrencies, for example, Ethereum and Bitcoin. Cryptocurrencies are mainly utilized for international transactions where transparency and security are significant concerns. The main advantage of cryptocurrency is that both parties approve the transaction; it cannot be reversed. This ensures the integrity of the trade and ensures both parties receive accurate and identical details. Bitcoin was recently utilized by Tesla for their car purchase transactions[3].

C. Artificial Intelligence

Artificial intelligence or subsequently called machine learning is computer software designed for repetitive automated processes. It gives the advantage of lower human interruption resulting in more insufficient errors and high-quality results. It can reduce up to 25-50% of the labour cost and work for 24 hours 7 days a week 365 days. Software and machines might cost one third that of full-time employees. It can ultimately reduce the cost of the product, and cost-saving can be utilized for other significant implications by the accountant[4]. Artificial intelligence works on coded norms, and due to lower human interaction, it gives the advantage of detecting fraudulent activities and reduced processing time[3].

D. Big Data

As the name suggests, extensive data analysis deals with a high volume of data and a variety of information to improve the budgeting and decision-making of the firm. For example, Amazon utilizes cookies to analyse customers' preferences on the products and gather the unstructured product information to provide better product suggestions next time. Big data is going to change business tactics in the future. Large internet retailers and

well-organized firms have utilized it. Still, big data has advantages for small and medium-sized enterprises to access current business competition without investing in expensive hardware. It can directly work on the internet and software itself[3]. The primary concern is advanced technology comes with a greater risk of fraudulent data sharing, data breaching, and leak of important information. The utilization of artificial intelligence in budgeting in planning is at what level risk or an opportunity for the managerial accountant as per the firm's profit and security.

III. PURPOSE OF THE RESEARCH AND RESEARCH QUESTIONS

This research aims to analyze and research the data through various sources to conclude the risk and opportunities associated with the utilization of artificial intelligence in the business firm. The managerial accountant must consider the advantages associated with artificial intelligence for the firm and the risk associated with a cyberattack, possible errors in the outcome of the software utilized before adopting the technology. The disruption in the business that has come with artificial intelligence. Another primary concern is to include technological coursework so that new graduates will have knowledge of the current innovations and get employment quickly. The change in coursework is another purpose of this research. Research questions as follows:

1. What is strategic planning and budgeting and how it relates to artificial intelligence?
2. What are the advantages and disadvantages associated with the utilization of artificial intelligence in the strategic planning and budgeting process?
3. What are the risks and opportunities associated with the utilization of artificial intelligence in the strategic planning and budgeting process?
4. What is the role of the managerial accountant with artificial intelligence as it relates to strategic planning and budgeting?

IV. LITERATURE REVIEW

The role of the managerial accountant in budgeting and planning is broader in the present day. A managerial accountant can implement their knowledge in personal budgeting, organization budgeting, multinational company budgeting, and a country's budgeting and planning. Budgeting is a process to gather information on assets, financial resources, and income resources, including tangible and intangible resources, to allocate them to provide profitable future business. The recent innovation in budgeting and planning brings new opportunities to the company and managerial accountants. Furthermore, the utilization of artificial intelligence in business comes with new opportunities, advantages, and risks for the managerial accountant. This literature describes utilizing advanced technology by the managerial accountant to illustrate the importance and dangers.

A. The Role of Managerial Accountant

A managerial accountant plays a crucial role in budgeting and planning and changing the firm's business strategy and models. The managerial accountant must deal with financial pressure, pressure from competition authorities, pressure from taxation authorities, and pressure from government legislations. Government legislation is subject to change over time—the person in charge to keep track of volatile government legislation and taxation rule change. According to the type of firms, their activities are divided into taxable and tax-exempt. Most of the private firms show taxable activities, whereas non-profitable firms get the benefit of tax-exempt activities. One of the research articles showed that the non-profitable healthcare sector in Finland was struggling due to changes in tax authorities. Tax-exemption of the non-profitable healthcare sector prevented private providers from competing because they can give the same service at a reduced price than the private firms. Due to this fact, the government changed the tax legislation to allow private firms in the market. The change in the scenario had an impact on the pricing strategy of the non-profitable healthcare firms. Therefore, the managerial accountant had to change the firm's

process from a business-like function to firm-style management control[2].

It is merely an example of the functions of the managerial account for the firm. They have a crucial role in the public budgeting of any nation that comes once a year. It draws the attention of all the sectors, including accounting, general science, public administration, psychology, management, and others. Public budgeting is influenced by New Public Management (NPM) in both terms research and practice. For example, the global financial crisis, lower economy due to COVID-19 in the year 2020 caused the problem with the decision-making of funding and required adjustment in the budgeting process. Public budgeting concentrates more on transparent transactions, accountability, and communication with public organizations. Budgeting plays a crucial role in the international market. Thus, the role of a managerial accountant in the public sector is significant. The various factor may impede his decision-making. The managerial accountant must analyse all the correct financial data, analyse the information, and implement a better fiscal year for the citizens[5].

The role of a managerial accountant is getting easier and, at the same time challenging with the advanced technology. Accounting is becoming digital with cutting-edge technology. Accounting software had made the decision-making abilities more accurate for the managerial accountant. Accounting evolved to gain information and undertake high-frequency trading. The advanced features allow the managerial accountant to gather essential data with one touch on the laptop or a smartphone and decide for the organization's future. It can enable the accountant to analyse the market environment to make meaningful implementation in the budgeting and future planning. Funding can be allocated according to the need of the resources. A managerial accountant can get the customer's requirements and decide which company needs more funding to invent a new product line. Enterprise Resource Planning (ERP) has revolutionized accounting with more knowledgeable and visible data and multiple loci controls. The product's pricing includes labour cost, raw material cost, production cost, and other overhead costs. The

software can quickly analyse all the data, including missing aspects, by an accountant to give profitable pricing for the firm. Implementing new technology is advantageous to the managerial accountant as it can reduce the time consumption, and accountant can pay attention to other essential aspects of the firm. Budgeting and planning can be more accessible than ever with new technology intervention[6]. Advanced technology includes the utilization of big data, cloud analysts, blockchain technology, and artificial intelligence[3].

B. Scope of Artificial Intelligence in Budgeting and Planning

Artificial intelligence (AI) is a computer program programmed by specialists or programmers that can perform the repetitive task with automation. It can learn from the examples without any human interactions. With the evolution of AI in 1950, many researchers and scientists believed in the business sector within a few years. Artificial intelligence gives a broader scope of automation in the auditing, budgeting, and planning to the managerial accountant role. AI lacks errors because of low human interventions. AI can analyse the inventory data and implement the inventory valuation method. It can give a better projection of future budgeting and planning for the managerial accountant. AI can predict future earnings from the tone of forward-looking-statement and identify fraud in the financial statement. AI can aid managerial accountants in budgeting for a profitable business in the future. AI can save the cost by an automated process and empower the decision-making process. AI can learn from the existing data and is impacted by the discriminatory data generated by humans. If the accountant generates data with errors, artificial intelligence will adapt the information and produce biased information, inaccurate prediction[3].

Digital revolution with artificial intelligence gives market insiders the advantage of predicting customer's behaviour for the product and making decisions accordingly. AI can use a predictive algorithm that can forecast the customers' future requirements for the products and decide to allocate funding. Accounting and budgeting are the

organization's engines to boost their business, and financial models give accurate information about future forecasting[6].

Artificial intelligence can minimize human effort and, thus, is said to impact the employment of humans. But artificial intelligence can benefit with profitability with automation in the system. A company will need only half or less than half of the employees to complete one task with AI because it has automated processes. The upfront cost of labour can cut down to half of the original and increase the firm's profitability. For example, a managerial accountant can provide better and cheaper data that support decision-making. AI can help accountants analyse more data to get better insight into the business[7].

AI can displace some important accounting jobs with complete automation, such as bookkeeping, revenue forecasting, financial account reporting, and extensive data analysis. Bookkeeping is the most time-consuming and essential part of accounting, which needs to be automated. A double-entry system entered through specific coding in the program. It can improve the transaction system by separating the segregated transactions. Artificial intelligence can quickly detect fraud in the business, such as tax avoidance, asset theft, cash theft, and many more activities. AI works on a predetermined set of rules and acts straightforward. Revenue forecasting is an essential aspect of the budgeting process. Artificial intelligence can improve revenue forecasting by analysing the given data. It can use predictive models working on a machine-learning algorithm to derive accurate budgeting. Thus, it can improve the budgeting and strategic planning process. The risk involved with future asymmetric and inherent risk can be reduced with automated models. A large amount of data such as emails, contracts, graphs, and financial information can be easily analysed through a deep learning program called Big data. Unstructured data can be easily diagnosed and aid decision-making and strategic business solutions[7].

Auditing firms implemented artificial intelligence programs to automate the auditing process, which can process extensive data analysis and cognitive learning technologies. The advancement in

technology must be implemented in the university curriculum. It can generate potential candidates for the companies[8]. Automation in the process can directly reduce the cost of labour and increase the intangible asset size. A research study shows that a conservative business strategy will fail unless the managerial accountant takes preventive actions to automate the AI process. Automated learning programs can reconcile the transaction history of credit cards, debit cards, and bank transactions to perform the closing activity. It can provide internal and external financial performance to help accountants monitor the firm's performance properly[4]. Artificial intelligence can enhance the problem-solving activity of managerial accountants by providing them the accurate output of the given data. If managerial accountants interlink extensive data analysis with artificial intelligence, they can perform successful implementation because everything revolves around exchanging data. The automation of the accounting process will eventually result in better management process, reducing the firm's financial risk and better decision process of an accountant[9].

C. Advantages and Disadvantages of Artificial Intelligence

There are many advantages to implementing artificial intelligence in budgeting and planning than disadvantages. A managerial accountant can get a better roadmap to maintain, validate, and ethically implement the financial outcome of the AI. When a managerial accountant works with AI, it can raise many questions which can be beneficial to improve the profitability of the business firm. AI works on the given algorithm and learns from the provided data. A managerial accountant is held responsible for inputting accurate data for AI to learn to provide accurate future data for the firm. AI can be implemented with natural language processing for screening the employees and determine their performance. High-risk employees with low profitability can be terminated to lower the financial burden[3].

AI can help reduce the time consumption of the bookkeeping process in accounting work. Data accuracy can be improved with time recording. It can help the managerial account get some extra

time to focus on other necessary tasks for the firm, which can enhance the business's profitability. Artificial intelligence works on the algorithm set by programmers, so it does not get tempted with money or bribe as human beings. It can easily detect any fraud in the financial data, compared with average activity records. Detection of fraudulent activity is another significant advantage of AI. Revenue forecasting is a crucial activity of operational budgeting and planning. A managerial accountant can implement predictive models to project the firm's future budgeting, which works on a machine learning algorithm. It can improve the quality of projection to increase the profit of the firm. Since it is a machine learning program, a managerial accountant must pay attention to enter accurate data to get bias-free output. Financial accounting and reporting can be improved with automation. It can earn cash flow analysis, business combination analysis, and regulation of financial reports. A significant disadvantage is creating an algorithm to increase the number of rules to transform into rules. Big data analysis gives the advantage of handling a large amount of data on a single screen effectively. But the major challenge is to create skills in the accountant to utilize the software effectively through training or education. Managerial accountants must have thorough knowledge of artificial intelligence to provide guidance and support to other employees in understanding the complex model and get the desired result. Managerial accountant's involvement in the decision-making process is essential. They can participate in the firm's strategic management to advise them valuable information, which can strengthen the social bonding of the firm with society and increase the profit of the business[7].

Artificial intelligence can analyse the information and give new recommendations. AI can detect the condition change in the business environment to draw new recommendation patterns to profit the firm. Artificial intelligence can increase production efficiency in reduced time because they can work 24 hours, seven days a week, unlike humans. An increase in production can increase the profitability of the business. For example, a managerial accountant can improve product pricing with the

implementation of artificial intelligence. AI calculates all the costs including labour cost, raw material cost, overhead cost, production cost, storage, and handling cost to come up with the most profitable price for the firm and affordable price for the customers. Different products from the same production line will not be over-charged or under-charged as well[4].

Artificial intelligence gives various advantages to the managerial accountant to improve their activity within the firm. It has many benefits, but there are always two sides to the coin. The major disadvantage is the data entry for artificial intelligence to learn from must be accurate. The managerial accountant must check the data before entering to AI software to get error-free results. In addition, AI software works on the internet. Therefore, the managerial accountant must protect the confidential data of the organization from cyber-attack. Data theft and data security are primary concerns interlinked with AI software.

D. Opportunities for Managerial Accountant with Utilization of Artificial Intelligence

A managerial accountant can provide crucial managing data to the firm, which can improve the firm's profitability. Artificial intelligence can redefine the role of a managerial accountant by providing accurate forecasting of budgeting and planning. It can help managerial accountants take part in management activity and help decide business strategies that can improve the quality of products and increase revenue. Reduction in cost of management activity can lead to having free time to bring innovative ideas to the firm. Budgeting and planning of a country can also be performed based on the artificial intelligence model to get accurate public budgeting data. It can help to develop the underdeveloped sectors of the public firms. Artificial intelligence has opportunities not only limited to a business firm but also, it's a holistic concept. The linkage of managerial accounting and artificial intelligence can revolutionize the business in an effective way to get profitable business.

V. ANALYSIS

Technology has become an integral part of life. The introduction of artificial intelligence was part of scientific research in the beginning. As technology advances, artificial intelligence became a valuable tool for business firms for budgeting and accounting. The role of managerial accountants changed with artificial intelligence because it needs technical knowledge to utilize budgeting and planning software. The radical change disrupted the budgeting system. The literature reviewed the evolution of artificial intelligence in budgeting and planning and its scopes, advantage, and disadvantages.

A. Artificial Intelligence Interlinked with Planning and Budgeting

The managerial accountant has an essential role in budgeting and planning any firm, organization, and country. With the inclusion of artificial intelligence, the activity of managerial accountants had been enhanced. Research study represents software such as BibExcel is an effective tool to analyze and interpret a large amount of data and review it. The result produced by BibExcel can further be transferred to Pajek, Gephi, and Excel and can be utilized by another accounting professional[9]. RPA technology and artificial intelligence can cut down unnecessary labour costs in budgeting calculation. It can increase intangible assets and cash available that managerial accountants can utilize for beneficial activities. The improvement in the budgeting system also becomes part of the reconstruction of it. It can enhance the decision-making process in budgeting and planning action because it can perform short-term scenarios that give the future image of the business. The effectiveness of short-term and long-term budget planning is increased with the advanced forecasting system of RPA[4]. The adoption of automation in the budgeting process can reduce the workload of the managerial accountant. Firms need to engage accountants to develop an automated system for budgeting because they can add value to certain circumstances and legitimate the process[3].

B. Pros and Cons of Utilizing Artificial Intelligence

Some significant advantages and disadvantages can be carried out through the research work, but the most important is the role of managerial accountant increase for the firm. They can improve the profitability of the business. Artificial intelligence can enhance the proficiency of managerial accountant's work. It can work rapidly for the time-consuming process such as bookkeeping. It works on an algorithm set by the programmer to detect fraudulent activity in the budgeting easily or any wrong data entered in the system. Accountants can process massive data at the time at a single workplace with extensive data analysis. Artificial intelligence gives accurate data results, so the accountant can participate in the decision-making process with higher authorities to provide meaningful advice and future path[7]. It is programmed software, so managerial accountants must enter correct data to get error-free results each time. It can help to keep a record of the time and accurate data. The major disadvantage of artificial intelligence is that managerial accountants must have proficient knowledge to work with the software. Technical skills and good computer knowledge are essential to work with this software. Many accountants might lose their job because of a lack of technical expertise. There is a risk of IT professionals taking managerial accountant's jobs. Many firms introduce the automation process without proper knowledge of the risks and benefits of the process. Firms have chances to lose money with implementation. It reduces the manual skills of the accountants with automation processes such as chatbots[9].

C. Opportunities and Risk of Artificial Intelligence

Artificial intelligence allows producing a practical roadmap for future budgeting and planning. It can analyse the tangible and intangible assets that can be utilized for profitable work instead of wasting money on time-consuming work. The time consumption reduces because of automation and the fast processing of artificial intelligence software, giving managerial accountants a chance to work on essential aspects to increase profitability. Leisure time can be a good

time for firms. Risks associated with artificial intelligence are the lack of technical knowledge to utilize the software. The managerial accountant must learn to develop the skills necessary to make them a future asset for the firms in the recent market to hire them. In addition, a managerial accountant must enter accurate data to get precise results. The significant risk is the cyber-attack, ransomware attack, and data theft with utilizing the software.

D. Role of Managerial Accountant Utilizing Artificial Intelligence

Accountants can successfully achieve program management through some conventional work and automated work through the internet[3]. A managerial accountant can help in the policymaking process by using various theme clusters. The managerial accountant must pay attention to whether interlinking artificial intelligence is beneficial for the business or not. They can survey all the employees and analyse if the technology disrupts the business strategy or diminishing proficiency[9].

VI. CONCLUSION

It can be concluded from the finding that artificial intelligence is beneficial for the managerial accountant in forecasting budgeting and planning of the firm that can expand the business. Artificial intelligence has some disadvantages that can limit the utilization in firms due to confidentiality and security reasons. Still, future research can be developed to enhance the security feature of the software. Artificial intelligence is a relatively new technology, so research work hinders due to the lack of availability of journal papers. A managerial accountant who graduated from an older syllabus lacks recent software and must improve the skills to use the software. The lack of knowledge is another factor that hinders managerial accountants from utilizing them in budgeting.

A. Research Recommendation

Future researchers need to focus on utilizing tools other than Gephi and BibExcel, improving strategic decision-making and planning process

with cluster data technology. The challenges that arise in involving technological advancement in the traditional accounting work is a primary concern of the research[9]. Researchers must develop a system that can effectively utilize technological managerial positions with human administrative work to get efficient results because human knowledge and experience are superior to computers. Artificial intelligence is implemented in many firms for budget forecasting by managerial accountants, but lack of reliability hinders its utilization. In addition, the researcher must develop a secured software or system to improve the firms' confidential data.

B. Limitations of Research

Research on artificial intelligence is relatively new, and the lack of resources is the major limitation. Technological innovations and artificial intelligence are first introduced for a scientific research study; they started to utilize in the accounting work with MS Excel. However, the limitation of software available for accounting hinders the effectiveness of the research work of this paper. Another limitation is the lack of knowledgeable managerial accountants who can effectively utilize artificial intelligence and adaption of artificial intelligence in the traditional administrative accounting system. Opportunities and risks cannot be demonstrated effectively in the research paper because less artificial intelligence is utilized in the budgeting process. Advantages and disadvantages can be described based on the facts obtained from the research paper and knowledge.

C. Managerial Implications

Managerial accounting has many implications for artificial intelligence, from accurate forecasting to detect fraudulent activity in accounting. It can ease the work of managerial accountants and analyse data quickly for a rapid decision-making process. The result given by artificial intelligence is without human interference so that it can provide beneficial business outcomes. A research study cannot determine the effectiveness of artificial intelligence in the budgeting and planning forecast for the managerial accountant. An administrative role can be enhanced or diminished depending on

the knowledge of the managerial accountant. Future research is needed to understand the managerial position with artificial intelligence as it is a novel concept.

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