IMPACT OF ARTIFICIAL INTELLIGENCE ON SMALL BUSINESSES WITH A REFERENCE TO INDIAN RETAIL SECTOR

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ABSTRACT

A new era has evolved in the past few years. Technological features such as artificial intelligence (AI), blockchain technology, big data analytics, and machine are increasingly having an impact on our daily lives. The result of this technological revolution has meant that we are going towards a revolution that incorporates AI-powered support and decision-making systems on both professional and personal fronts. AI can be engineered to undertake complex tasks that in the past could not be efficiently done by human beings. In the contemporary world, AI is incorporated to enhance business operations of financial, healthcare, aerospace, automotive, and many other industries. AI intelligence is taking over jobs. A report by the McKinley Global Institute, projected that more than 375 million jobs — approximately 14% of the global workforce, would be affected by AI. The workforce would hence be required to evolve their skills to adapt to the impacts of AI. The impacts of AI are unlimited and entire business operations may be influenced significantly by the new technological revolution.

New technological platforms give small businesses a chance to survive in a competitive environment. AI technologies have significant impacts on various business outcomes. AI in the form of smart applications and devices is designed to understand consumer preferences, purchasing behavior, and needs in order to deliver customized experiences. Small businesses can reap big from the advances in AI and machine learning technologies. Due to their small-scale economies, small businesses face challenges such as marketing inefficiencies and less visibility. Such problems make it difficult for the business to compete in their respective industries; hence, a growing need for integration of AI into their operations. AI and other technological platforms enable small businesses to improve operations and competition efficiency.

INTRODUCTION

AI is a vital tool for marketers and can be especially useful for small businesses to take advantage of the ever-growing online shopping platforms. AI is referring to the programming of technological devices and platforms to mimic human actions and predict their thinking. In the contemporary business world processes are more complex involving inefficient and stressful activities carried out by humans. Businesses are dominated by data that is essential in formulating strategies aimed at acquiring a competitive edge. AI might be the answer to issues facing small businesses in Saudi Arabia, which also play a pivotal role in the economy.

AI tools in businesses play a central role in the generation of profits through more avenues. The technologies can be integrated into supply chain management and prediction of sales and marketing. In supply chain management businesses can track raw materials and ensure that suppliers are paid according to the products. By automating processes, AI reduces the potential of human bias and error enabling businesses to minimize losses and cut down on wasteful processes. With AI businesses can predict the shopping behaviors of clients which enable them to make personalized adverts based on what clients like. This way the chances of selling products increase and in turn the business can earn more revenue. Efficient marketing processes ensure that the businesses can reach a wide audience within a larger geographical area which in itself is a positive growth signal.

In the past, little attention has been paid at how small business establishment can take the advantage of the ever-changing technological environment, to attain sustainable and progressive growth. AI may have positive benefits for small businesses but may also act as the avenue through which they get more deprived. For instance, a small business that uses AI to engineer products and services according to customer's needs has the potential for increasing sales. On the other end, failure to incorporate these technologies gives larger businesses more room to navigate and control the market, further diminishing the potential of small businesses to attain their objectives.

Most of the challenges faced by small businesses can be traced to their small economies of scale. These challenges range from constrained access to finance inefficient databases, underdeveloped sales channels, small research and development expenditures, insufficient usage of information technologies, and low financial inclusion levels (Yoshino & Taghizadeh, 2016). These challenges act as barriers to accessing the market and affect the competitive advantage of microenterprises. Small businesses do not have robust marketing

strategies such as those implemented by large organizations which may hamper their performance in the market.

The advent of more efficient AI technologies may help small businesses to overcome some of the challenges and enhance their competitive advantage. The youth in most cases own the small businesses in a country and hence they need to be skilled for better services and additional experience for their businesses to flourish and in Saudi Arabia the case is different because they have few skilled people for their work hence, they end up employing highly skilled people from other countries. They lack the basic skills and might be the major challenge since experience is required in the business sector.

AI is the most significant general-purpose technology that has found many uses in the business world (Brynjolfsson & Mcafee, 2017). The advent of new technologies in the form of the internet and smartphones, while on the other side economic developments and financial crises, compounded with the changing customer needs and purchasing behaviors have placed significant pressure on businesses who try to compete for this new market. (Dirican, 2015). The digital age is pushing businesses to open their stores on the web and in the cloud to take advantage of the wider online market. Online business operations are characterized by e-payments, mobile banking, internet, e-commerce, e-invoices, and e-signatures all of which result in efficient corporate and individual business life (Dirican, 2015). These e-processes are what encompass AI activities. AI enables businesses to collect a huge amount of data that can be analyzed to formulate marketing strategies and help small businesses beat the competition.

Technology gives every business person an equal opportunity to work flexibly in different areas of choice and hence it gives them equal chances with the other developed business on how to market their products and on how to deliver their services. The internet also allows small businesses to set up their stores and shops online hence allowing all customers to review their products and that helps the businesses to grow tremendously. Small businesses are able to offer coaching to the employees therefore it becomes easy for efficient growth of the business. And it is economically cheaper and time saving. Emails have become the easiest way for small businesses to communicate with their customers because they get a chance to send and receive immediate feedbacks.

REVIEW OF LITERATURE

In the past few decades, the world has witnessed a significant evolution in AI and robotics. Future prospects of AI are set to be even more exciting and most authors predict that the technologies would transform work and business around the globe (Brynjolfsson & McAfee, 2014; McKinsey Global Institute, 2017). AI is the mimicking of human intelligence by technologically advanced machines and computer systems. AI is applied in natural; language processing (NLP), machine vision, expert systems, and speech recognition. By simulating human intelligence processes, AI programming focuses on reasoning processes, learning, and self-correction.

Businesses can rely on all three aspects of AI processes. The learning process aspect of AI programming intends to acquire data and formulate rules that turn the data into actional information. The rules are known as algorithms and provide the computing devices with step-by-step instructions on how to execute a given task. AI devices have the capacity to reason which in this case is the ability to select the right algorithm and execute the correct function to give desired outcomes. In order to provide accurate information, AI devices have the capacity to continually fine-tune the algorithms. These aspects of AI make the technology efficient in the collection of important data regarding business processes such as customer shopping trends and supply chains.

AI has also enabled small businesses to have an efficient method of storing and recording of data involving the business hence it is easy for them to revisit their information on orders made customers reviews ,recording of data on either good sold or services made and the recording of the financial flow in the business It is also not so confidential due to the cyberattacks that lead to loss of millions .It is only preferable because of quick retrieval of information and accuracy of calculations.

Businesses are striving to incorporate AI into their processes in order to promote their products. Machine learning is a significant component of AI that most businesses refer to. However, to operate effectively and efficiently, AI requires specialized hardware and software to write and translate machine learning algorithms. AI is not one technology and bringing all components together may be costly especially for small businesses. AI cloud offers by companies such as Google AI, Amazon AI, and Microsoft Cognitive Services offer businesses with AI as a service which allows businesses to sample various platforms before making a commitment on the best AI tool to use.

AI can be simply described as the simulation of human beings' intelligence processes using computer systems (Tucci, 2021). The industrial revolution brought about significant

change in the world. Since the industrial revolution period factories have continued to do rapid and inexpensive mass production to meet the demand of the ever-growing human population. Manufacturers and other businesses in the contemporary world are however facing waves of new challenges including: high production costs, supply chain bottlenecks, and equipment failure (Davenport & Ronanki, 2018). AI has the potential to help businesses overcome such challenges.

The potential of AI is significantly high; however, few businesses have adopted the technologies. A 2018 study conducted by PwC in 26 countries around the world showed that only 9% of manufacturers have integrated AI in their processes to enhance operational decision-making (PwC, 2018). So, before investigation the impacts of AI on small businesses it is imperative to look into its potential and drivers for AI adoption.

Business applications can be considered as the major starting point for the implementation of an AI strategy. Business establishments should ask themselves how and where they want to apply AI systems in the near, mid, and long-term future and then aggregate all the use cases across all their functions in a structured manner. Businesses can group operations based on functions and prioritize programs based on expected business goals and implementation efforts. By doing this, businesses will be able to identify potential pilot use cases to lead the company in its AI plans. The early pilot progress are key success factors as they play a vital role in driving AI adoption across the entire business platform. Once businesses establish cases, organizational and technology will follow on.

Data is the backbone of any AI dream for businesses. To effectively apply AI algorithms in the company's management processes, accurate and reliable data acquisition, governance, and management is imperative. For example, in the manufacturing industry, sensor data is acquired from connected equipment is central to establish the efficiency of production lines and machines used which can then be used to make the necessary adjustments. Enterprises also adopt data lakes to pool raw data from multiple sensors, maintenance processes, quality checks, and Manufacturing Execution Systems in a single central place. Enriching such data with external data plays a significant role in getting an all-round perspective of the products and production processes efficiency.

AI systems extract data from multiple sources. For instance, in marketing, AI systems used to read the preferences of consumers based on their browsing history and other factors resulting in a large pool of data. Large data management systems require proper cataloging of data as well as data lineage to all tracking of all the available information, and make the data accessible to multiple users. Small manufacturers for instance should map their major

data objects, for example, production facilities, products, and machinery as well as the related data sources to comprehend the information varieties, velocities, and volume they will be dealing with. Moreover, the businesses should monitor the data quality measures and systematically monitor such to build awareness of their importance, which is also a major barrier for implementing AI technologies.

METHODOLOGY

The study sample was from (76) small companies, they were selected from the study population by random method, where (80) electronic questionnaires were sent, and (76) valid questionnaires were retrieved for statistical analysis, with a recovery rate of (95%).

Table shows the frequency distribution and percentages of the total study sample according to the gender variable:

Category	Frequency	Percentage
Male	35	46.1%
Female	41	53.9%
Total	76	100%

We note from Table that the number of male employees from the study sample who answered the questionnaire reached (35) employees with a percentage of (46.1%), while the number of female employees reached (41) employees and with a percentage of (53.9%), and they are the most present category in the study sample.

DATA ANALYSIS

How would you describe your company's earnings before and after the integration of artificial intelligence and other computing technologies?

To answer this question, the frequencies and percentages of the answers of the study sample members were calculated, and the table 1 illustrates this.

tiforp ynapmoC	Frequency	Percentage
Increased	60	78.9%
Remained the same	13	17.1%
Decreased	3	3.9%
Total	76	100%

Table 1: Frequencies and percentages of the answers of the study sample members to the seventh question

We note from Table No. 1 that the number of companies in the study sample whose profits increased after the integration of artificial intelligence and other computer technologies reached (60) companies and a percentage of (78.9%), while the number of companies

whose profits remained the same after the integration of artificial intelligence and technologies The other computer companies amounted to (13) companies with a percentage (17.1%), while the number of companies whose profits decreased after the integration of artificial intelligence and other computer technologies reached (3) companies with a percentage (3.9%). The following figure (4.1.6) shows the percentages of that:
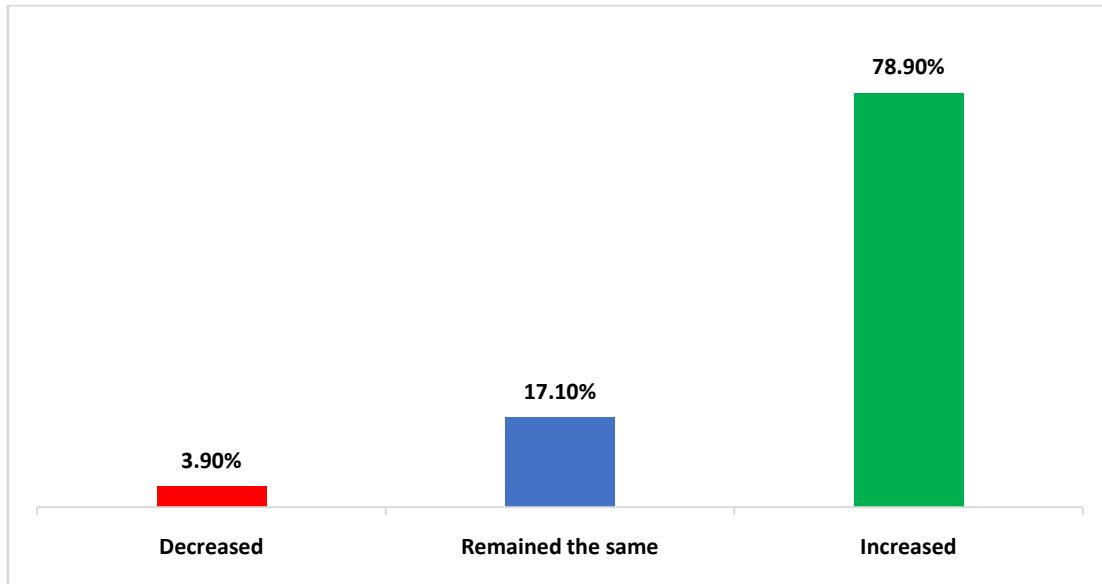

Figure 1: And the percentages of answers of the study sample members to the seventh question

Presentation and discussion of the results of the eighth question: How many sites does the company provide its products BEFORE integrating artificial intelligence tools?

To answer this question, the frequencies and percentages of the answers of the study sample members were calculated, and the table 2 illustrates this.

Number of sites	Frequency	Percentage
1	17	22.4%
2	16	21.1%
3	23	30.3%
4	14	18.4%
5	1	1.3%
Over 5	5	6.6%
Total	**76**	**100%**

Table 2: The frequencies and percentages of the answers of the study sample members to the eighth question

We note from Table No. 2 that the number of companies in the study sample that have only three sites to supply their products before integrating artificial intelligence tools has reached (23) companies and a percentage of (30.3%), which is the largest percentage

among the rest of the percentages, while the number of companies in the sample The study that has only five sites to supply its products before the integration of artificial intelligence tools (1) company and a percentage (1.3%), which is the smallest percentage among the rest of the percentages. The following figure 2 shows the percentages of that:
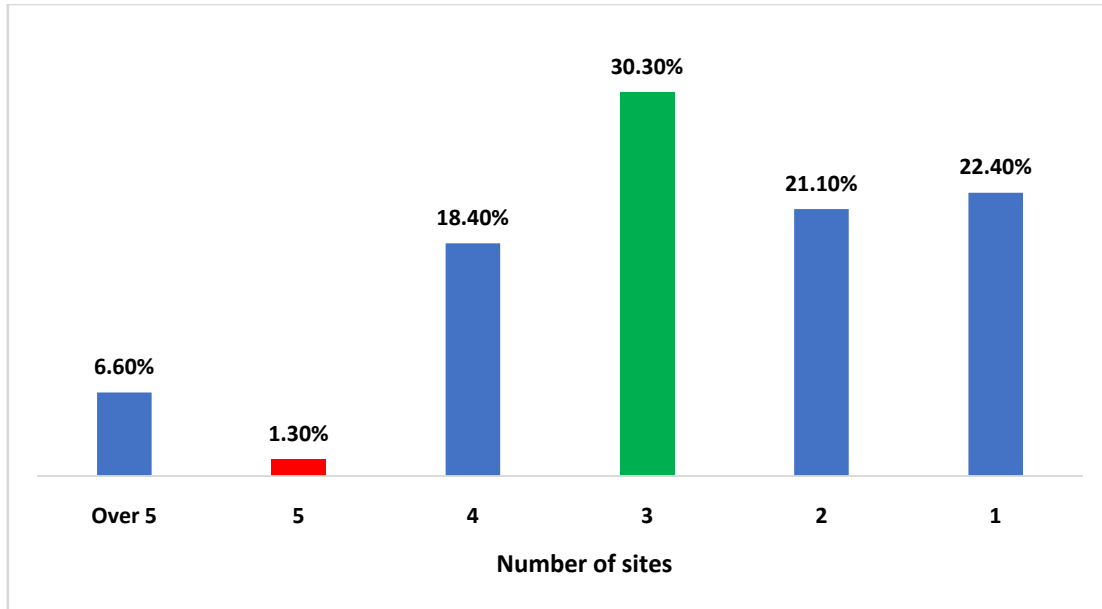

Figure 2: And the percentages of answers of the study sample members to the eighth question

Presentation and discussion of the results of the ninth question: How many sites does the company provide its products AFTER integrating artificial intelligence tools?

To answer this question, the frequencies and percentages of the answers of the study sample members were calculated, and the table 3 illustrates this.

Number of sites	Frequency	Percentage
1	10	13.2%
2	13	17.1%
3	13	17.1%
4	15	19.7%
5	8	10.5%
Over 5	17	22.4%
Total	**76**	**100%**

Table 3: Frequencies and percentages of the answers of the study sample members to the ninth question

We note from Table No. 3 that the number of companies in the study sample that have more than five sites to supply their products after integrating artificial intelligence tools has reached (17) companies and a percentage of (22.4%), which is the largest percentage among the rest of the percentages, while the number of companies in The study sample that has only five sites to supply its products after integrating artificial intelligence tools (8) companies and a percentage (10.5%), which is the smallest percentage among the rest of the percentages. The following figure 3 shows the percentages of that:
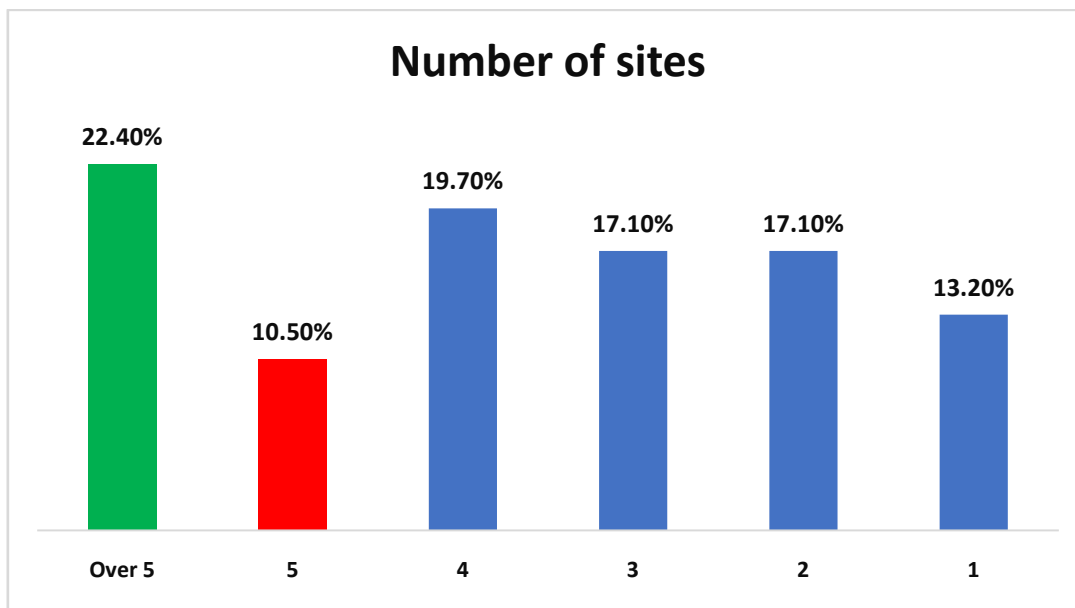

Figure 3: And the percentages of answers of the study sample members to the ninth question

Presentation and discussion of the results of Question: What is the assessment of the number of customers you have before and after the integration of AI tools?

To answer this question, the frequencies and percentages of the answers of the study sample members were calculated, and the table 4 illustrates this.

Evaluate the number of clients	Frequency	Percentage
Reduction	7	9.2%
Number has remained the same	27	35.5%
The number has gone up	42	55.3%
Total	**76**	**100%**

Table (4): Frequencies and percentages of the answers of the study sample members to the tenth question

We note from Table No. (4) that the number of companies in the study sample whose number of customers decreased after the integration of artificial intelligence tools

amounted to (7) companies with a percentage (9.2%), while the number of companies whose number of customers remained the same after integrating artificial intelligence tools It reached (27) companies with a percentage of (35.5%), while the number of companies that increased the number of their clients after integrating artificial intelligence tools reached (42) companies with a percentage of (55.3%). The following figure (4) shows the percentages of that:
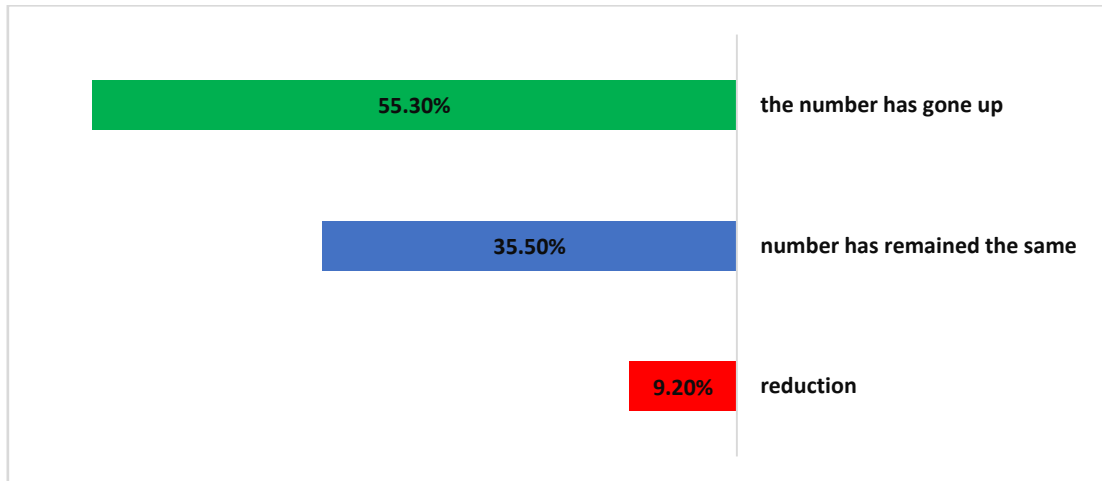

Figure (4): And the percentages of answers of the study sample members to the tenth question

Discussion

Based on the analysis of the results using regression analysis and paired sample t-test, there is correlation between integration of AI and business outcomes. There is a more a 95% probability that when small businesses adopt AI technologies, they are likely to increase their profitability. With an R-value it means there is a relationship between the adoption of AI technologies and profits although the relationship between the two variables is not as strong. The R-value is positive which means that as companies increasingly adopt AI technologies, so does their technologies increase. The t-value is higher which means that there we have confidence in the relationship between the variables. The adoption of AI tools ultimately leads to increased profits which can be explained by increasing efficiency and innovation in a highly competitive environment.

Managing employees may be a daunting task for small businesses. According to data presented, 30% of small businesses employed more than 100 workers while 11% employed less than 100 but more than 50 individuals. Artificial intelligence techniques can be used in the human resources to ensure that the employee performance is efficiently tracked.

Managing more than 100 workers in a small business may be a source of losses that may interfere with the growth of the business. AI improves efficiency in the hiring process and management of routine tasks thus reducing the need for real human beings handling such repetitive operations. HR in small businesses can also leverage on real-time data to measure troubled areas and determine how appraisals are given out. The number of employees that is available to manage may be a contributory factor to the failure of small businesses a situation that may be solved by integrating AI technologies.

The integration of AI tools varies between industries. The classification of small businesses based on the industry. Most businesses use AI tools for serve or product development, marketing and sales, analysis of risks, supply chain management, human resources, and corporate or strategy finance among others (McKinsley, 2020). Some of the industries such as manufacturing requires optimization of processes for maximum production which may indicate high adoption of AI tools in this industry.

Most small businesses use internet-based platforms such as social media and websites to facilitate various operations. However, the number of small businesses that have integrated AI systems is quite low. It should be noted that 79% of the respondents reported having a website or a social media platform. In contrast, 51% of the small business indicated that they had integrated AI tools in their operations. Adoption of AI technologies may not be as straightforward and small businesses may lack the resources to run the systems. Challenges to implementing AI include lack of necessary talent and organizable structure to run the system (Davenport & Ronanki, 2018). Furthermore, 70% of the same businesses indicated that they use these platforms for marketing their products, which means that some businesses own the websites but do not actively engage clients through those online sites. Social media platforms open new avenues of doing business based on innovative concepts such as co-creation, collaboration, and sharing content (Cesaroni & Consoli, 2015). However, without integrating AI tools to study the behavior of consumers using social media platforms and websites, small businesses cannot make the most out of them meaning that sales might still remain down despite reaching a wider population. AI tools enables targeting the online users with personalized ads which increases their chances of purchasing the products which subsequently influences profitability. Therefore, most small business adopts such online platforms but do not move on to integrate more aggressive technologies such as AI tools and machine learning.

Conclusion

This study has established positive relationship between AI and business performance. The adoption of AI businesses improves the profitability of businesses and enhances efficiency in other areas such as supply chain management. Small business fails mostly because they can't keep up with competition. By implementing AI in their marketing processes, small businesses can be able to take advantage of the market by targeting customers with personalized products increasing chances for making sales. Owners of small businesses should therefore look into integrating AI systems as a strategy to increase productivity and profitability. However, more research needs to determine the impacts of AI in various business processes and adopt another methodology to get better results.

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