A STUDY OF BARRIERS AND BENEFITS OF ARTIFICIAL INTELLIGENCE ADOPTION IN SMALL AND MEDIUM ENTERPRISE

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ABSTRACT

The focus of the study of this paper is to understand the constraints and benefits of AI adoption in SMEs. In today's competitive business world, if SMEs do not upgrade with available technologies, they may lose their competitive position. Researchers have tried to address the issue by exploring questions related challenges and advantages of AI adoption in SMEs. Past research and literature on challenges and barriers to AI application in SMEs were reviewed and found that the factors such as AI technical competencies of human resources, poor financial position, size of the organization, the orientation of promoter of business, awareness of AI benefits, data quality are the foremost challenges and the customized AI technologies assist in improvement in the performance of decision making, acquisition, development, and retention of employees, management of inventory, creation of customer base and understanding of buying behavior and protecting SMEs from cyberattacks.

Keywords: Artificial Intelligence, SMEs, Challenges, Benefits, Technology.

INTRODUCTION

The primary scope of artificial intelligence is trying to gain a strategic advantage in e-business, human capital, operations, market research, customer relationship, accounting and finance, sales, marketing, etc. The fundamental aim of artificial intelligence is to improve operational efficiency in terms of organizational performance, increase sales volume, minimize the cost, automation of customer management, timesaving, and collection of advanced data and processing of data. The actual artificial intelligence is serving organizations in offering flexible, adaptable, and interactive alternatives to satisfy varied customer needs. In today's business scenario, artificial intelligence-based applications are the most suitable choices for both large-size organizations and SMEs. The AI-based applications enable functional marketing areas to identify the customer and their buying behavior (Sureka, 2020). AI adoption in the health care sector, such as patient handling systems, medicine supply, and other requirements of medicines (Kumar, Pujari, & Gupta, 2021). Artificial intelligence offers various opportunities for the marketing of enterprises. The small and medium enterprises are not affordable traditional means of advertising as like large organization, lack of data generation and storage. The AI solutions

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can play a very significant role in enabling SMEs to find out prospective customers in a most precise way, The SMEs must communicate required relevant information to customers and should align product and services as per buying behavior of the consumer, so they can get a competitive advantage (Huang, 2019).

The study conducted by Bunte, et al., (2021) found that lack of expertise, initial cost and time investment, infrastructure, resources, experience, and size of company are the significant challenges in the adoption of AI in SMEs. Artificial intelligence-based marketing solutions are the game changer for many SMEs around the world. AI allows business decision-makers to identify and understand the buying behavior of the customer, so the SME marketers formulate suitable strategies which match the target customers. AI-based marketing technologies are helping SMEs in the acquisition of potential customers and retention of existing customers. The AI-based call center can provide a standard solution to enquire related availability of product stock, opening hours, and cancellation of reservations (Google, 2020). The adoption of artificial-intelligence-based technologies in SMEs can add value and give a competitive advantage (Bhalerao, 2018).

Objectives

1. The aim of this study is to determine and discuss the factor affecting the adoption of AI in SMEs.
2. This study is undertaken to identify and analyze the benefits of AI-based solutions in SMEs.

RESEARCH METHODOLOGY

This paper is based on a literature review. The data was collected through various sources such as research papers, case studies, online reports, newspapers, etc. This secondary data is used to identify and analyze the barriers and benefits of AI adoption in SMEs.

REVIEW OF LITERATURE

Artificial intelligence-based technological solutions are used for a variety of business functions, including social media, data mining, customer growth, engaging consumers more effectively, collecting of data and segregating relevant data for further decision making, enhancing activities of logistics, and increasing efficiencies of various functions of the business. The survey conducted by Vistage found that 29.5% of CEOs of Small and medium-sized enterprises are in favor of AI applications. They strongly support the adoption of AI in SMEs to minimize expenses, reduction of risk, optimization of completion of a particular task, and increase the productivity and efficiency of the business functions (Entrepreneurship, 2021). Big data analytics and AI-based technologies are used for the analysis of data. However, the cost of adopting AI technologies and big data and the requirement of skilled human resources are significant obstacles for small and medium enterprises (Jung et al., 2021). The study conducted by Hansen & Bøgha (2021) found that SMEs lack in required knowledge about AI and other industry 4.0 technologies. However, SMEs need to acquire and adopt digital technologies to sustain their market position. The study carried out by Rönnberg & Areback (2020) identified that challenges faced in the adoption of AI by SMEs are cultural differences, poor external communication, insufficient resources, lack of AI strategy. The research study conducted by Ghobakhloo et al. (2019) has developed a model for the adoption and integration of digital and

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electronic technologies such as Artificial Intelligence (AI) and Big Data Analytics with related operations of the business.

An artificial intelligence-based technological solution support humans in reducing manual work and improves productivity. AI can be used by both large as well as SMEs. To gain a competitive advantage, SMEs need to adopt artificial intelligence and machine learning-based solutions. However, artificially intelligent solutions perform better with less time (Srivastav, 2019). Artificial intelligence is supposed to be the fastest-growing business opportunity in today's growing economy, projected AI contribution to global economy up to 15.7 trillion in 2030, more than the combined current output of China and India (Rao & Verweij, 2017). In today's age of industry 4.0, worldwide companies are making efforts to achieve competitive advantage by adopting advanced technologies Table 1 such as Artificial Intelligence (AI), Big Data Analytics, Robotics, Machine Learning, Internet of Things (IoT) (Wittenberg, 2016) & (Monostori et al., 2016).

Table 1
ARTIFICIAL INTELLIGENCE

S. No.	Author	Title of Paper	Findings
1	Cubic (2020)	Drivers, barriers, and social considerations for AI adoption in business and management: A tertiary study	Challenges faced by AI implementation in a business organization are socio-economic and technology related.
2	McKinsey (2019)	How Artificial Intelligence will transform Nordic businesses	AI strategy formulation and execution are the significant challenges faced by the organization
3	Lorica & Nathan (2019)	AI Adoption in the Enterprise.	The lack of relevant data is the primary reason behind the low adoption of AI in business.
4	Mehta & Rajendran (2020)	The future of artificial intelligence adoption in India	The poor financial condition of SMEs, limited awareness of AI benefits, and limited availability of skilled human resources are significant sources of barriers
5	Gartner (2019)	Gartner: Three Barriers to AI Adoption.	Investigated three significant factors like skill level of employees, understanding level of benefits of AI adoption, and availability of quality data are the challenges to AI implementation in SMEs.
6	Ulrich, Frank, & Kratt (2021)	Adoption of Artificial Intelligence in German SMEs – Results from an Empirical Study.	Awareness about AI benefits, size of the organization, and entrepreneurial orientation.
7	Polachowska (2019)	12 challenges of AI adoption	The lack of information about AI and AI adoption requires the setting of suitable objectives, identification of key performance indicators, tracking of Return on Investment

Challenges of AI Adoption In SMEs

Artificial intelligence is the future of the industry; it may be a small or large organization. However, AI faces many challenges in adoption. The study conducted by Cubric (2020) found that AI implementations in a business organization are facings challenges like economic, technology-related, and social. The survey conducted by McKinsey (2019) Investigated that the significant challenges in AI acquisition and implementations are a lack of suitable strategy

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formulation and execution, a dearth of skilled human resources, insufficient physical and technological infrastructure, and insufficient availability of data. The study found that AI strategy is the major challenge faced by the business organization. According to Lorica & Nathan (2019), the availability of relevant data is the second most crucial challenge in the adoption of AI. A study conducted by Mehta & Rajendran (2020) found that the weak financial condition of SMEs, limited awareness of AI benefits, and limited availability/ supply of trained or skilled human resources are significant sources of barriers to AI adoption. The study conducted by Gartner (2019) found that there are three crucial factors like skill level of employees, understanding level of benefits of AI adoption, and availability of quality data are the barriers to AI adoption in SMEs. The German SMEs do not fully know the importance of AI technologies; the size and entrepreneurial orientation also become barriers in AI implementations in SMEs (Ulrich, et al., 2021). The lack of information about AI is hindering the adoption of AI, and AI adoption requires the setting of suitable objectives, identification of key performance indicators, tracking of Return on Investment (Polachowska, 2019).

Benefits of AI In SMEs

The improvement in artificial intelligence and machine learning technology-based solutions are more relevant and accessible to small and medium-sized companies. Like large size organizations, AI now equally benefits small and medium enterprises. Attending and solving customer queries, automation in repetitive job works, talent acquisition, and improvement in advertising and other marketing function are the few benefits of AI. The successful adoption of AI gives a competitive advantage to SMEs Figure 1.

1. Decision Making: Decision-making is one of the fundamental functions of managerial people. We generate data through various digital solutions, but these solutions have no tools to analyze such massive data. The customized AI-based solutions are enabling SMEs to analyze data and extract certain important information. This extracted information is helping SMEs in better business decision-making.
2. Customer Engagement: AI-based automated chat is helping SMEs to engage customers more effectively and efficiently. AI technologies are supporting SMEs to understand the needs of customers, determine the buying behavior of customers, and offering of various kinds of relevant rewards and features. Artificial intelligence can solve customer inquiries very diligently by using the database of perceptions of customers. In this way, AI helps SMEs in responding to customer quarries without wasting much of the time and improves customer satisfaction and increases revenue.
3. Human Resources: Talent acquisition, talent development, and talent retention are a function of human resource management, and such parts are often difficult to manage by SMEs. Most SMEs are not in a position to establish an HR department. The customized AI solutions are helping small businesses in automating functions such as searching for a suitable candidate, organizing various training sessions, managing compensation and benefit, and handling of performance management of an employee. AI-based solutions are enormously helping the HR department in avoiding human errors such as biases, subjectivity, and discrimination. AI-based technologies enhanced the effectiveness and efficiency of HR.

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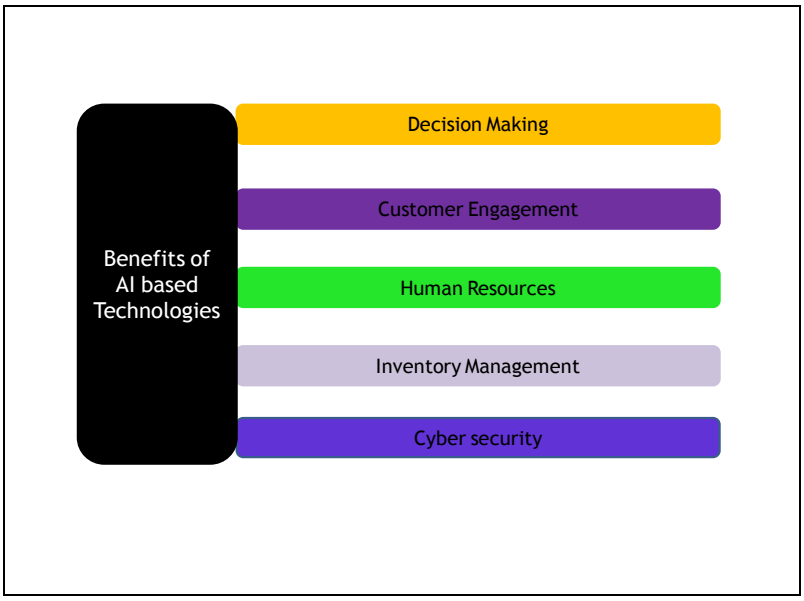

FIGURE 1
BENEFITS OF AI TECHNOLOGY

4. Inventory Management: Managing inventory is one of the complex tasks for small businesses, especially for retail companies. By using AI-based technological solutions, retailers can track and manage inventory effectively and efficiently. AI helps SMEs in the procurement of material, material handling, warehousing, and improvement in productivity and maintenance of stock.
5. Cyber security: Cyber security is one of the growing concerns of individuals as well as an organization around the world. Such cyber-attack affects both the business operations and the brand image of the firms. Both large and small organizations are adopting AI technologies to protect data and fight threats for ensuring the security of data. AI and ML applications are enabling organizations to detect strange behavior and spot security exposures. SMEs are highly insecure due to inadequate security checks in place than large organizations. AI technologies help SMEs in managing cybercrime efficiently.

CONCLUSION

The undertaken study concluded that there are many factors such as awareness about AI benefits, information technology skill level of employees, weak financial position, organization's size, entrepreneurial orientation, and quality of data available are the significant reasons of barriers AI adopting in SMEs. Though this discouraging scenario of business, there are customized AI solutions that meet the requirement of the SME sector. The customized AI solutions enable in enhancing the efficiency and effectiveness of various functions of SMEs such as decision making, human resources, customer engagement inventory control, and cyber security. SMEs need to understand the importance of AI and overcome the barriers and take strategic advantage.

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