



A STUDY OF PROBLEMS AND PROSPECTS IN THE ADOPTION OF ARTIFICIAL INTELLIGENCE IN SMALL AND MEDIUM ENTERPRISES

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Abstract

The current paper focuses on the adoption of AI in the SMEs to make this sector more competitive and make it more fruitful for the economic development of the nation. In today's competitive business, it is necessary for the small businesses still fighting with some problems in terms of good infrastructure, size of the business, competent human resources, bad financial position, and poor technical know-how. This paper deals with the advantages and disadvantages of AI in SMEs. Artificial intelligence helps the small businesses with its tools such as machine learning, natural language processing, etc., which not only optimize the business functions as well as give a boost to employee productivity and improve the value of the business, but still Indian SMEs are lagging behind in using it because of certain reasons such as lack of AI competence, lack of IT competence and its knowledge, resistance to change, etc. It is necessary for the SMEs to accept AI in their business for the development of the economy as a whole and as an individual. The information was gathered from government websites and secondary sources following a thorough analysis of numerous papers. The aim of this paper is to provide insight to SMEs on the ways in which these AIs have aided how to handle their inventories and raised their awareness of cyber security.

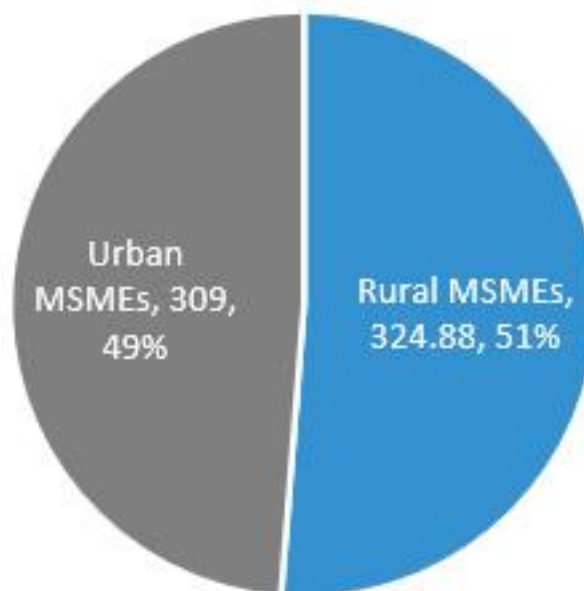
Keywords: Artificial Intelligence, Cyber security, SMEs, Competency

Introduction:

Small, and medium enterprises are considered the engine of the Indian economy, where they play a pivotal role in the development of the country by generating 40% of employment as well as contributing 30% of the country's GDP. There are a total of 51% of SMEs located in rural areas, and the remaining are in urban areas. As per the statistics, it can be seen that a large number of SMEs are in rural areas where these businesses are not getting the proper facilities that they require for their business growth. SMEs are encouraged to use the e-commerce sites to list their products online, but still they are hesitant to incorporate the internet in their business because of certain reasons, such as less knowledge about the internet, less skilled labour, fear of payments, etc. If SMEs don't use AI, they may suffer from decreased market share and competitiveness, a decline in their economic clout, and a reduction in job possibilities (Baabdullah et al., Citation2021). Medium enterprises compose 55,488, or around 0.8% of all registered companies, while small enterprises make up 6,08,935, or nearly 1.5% (IBEF, 2024). The concept of digitalization and

industry 4.0 came up with many positive avenues for the MSMEs, where it has opened many doors for the small businesses and helped them by increasing their efficiency and productivity; it also helps in accessing new markets and helps in improving the customer experience. The introduction of the internet in MSMEs has made this sector more active by low operational costs, optimizing resource utilization, and improving inventory management. Advancement in the technology comes with many positive benefits for the SMEs, such as helping the small businesses to compete with the large enterprises. These days, companies use AI chatbots to interact with their customers. Artificial intelligence (AI) tools have aided in the analysis of consumer data in order to generate useful information and in the formulation of strategic decisions based on a variety of facts (Verma et al., 2021).

Registered MSMEs in India in FY22 (lakh units)



Source: Ministry of Micro Small and Medium Enterprises

Fig:1

Concept of Artificial Intelligence

The American physicist John McCarthy coined the phrase "Artificial Intelligence" in 1956. Artificial intelligence (AI) is considered the backbone of innovation in technology for an individual as well as for business. AI is a set of technologies where the computer and machines act and work like a human being, such as learning, comprehending, problem solving, decision-making, etc. Applications of artificial intelligence (AI) are computer programs that employ AI methods to carry out a range of activities, from straightforward and repetitive to intricate and cognitive. Technical systems can sense their surroundings, solve issues, and take action to accomplish a certain objective; it's all because of artificial intelligence. Most of the people are not aware of the existence of AI and its importance. According to a study by Chan et al. (2018), AI improves SMEs performance efficiency by raising their products.

Objectives of the Study:

- 1) The paper aims to study the factors affecting the adoption of AI in SMEs
- 2) To identify the problems and prospects of the AI in SMEs.

Research Methodology

This paper is based on the secondary sources such as government reports, Online reports, census report, newspaper etc.

Factors Affecting AI Adoption in SMEs

1) Financial Resources and Cost Barriers:

AI tools, platforms, training, and maintenance can be prohibitively expensive for SMEs with limited resources, both initially and over time. The cost of adopting AI, including purchasing AI software, infrastructure and hiring skilled employees, can be a major barrier for Indian SMEs, who often operate within budgetary limitations.

2) Technological Infrastructure

SMEs still rely on legacy systems that are not compatible with AI technologies. Upgrading infrastructure to support AI solutions can be both costly and complex. While urban areas in India have robust internet access, rural areas may face connectivity challenges, limiting the ability to implement cloud-based AI solutions.

3) Lack of Skilled Workforce

There is a significant gap in Artificial Intelligence related skills in India. Many SMEs lack in-house expertise in AI, data science, and machine learning, which makes the adoption process more challenging. Even when AI talent is hired, retaining skilled professionals can be a challenge due to competition from larger firms or startups that offer better pay and career growth opportunities.

4) Government Support and Policy

The Indian government has made significant strides in promoting AI adoption, such as launching the **National AI Strategy** and offering financial incentives to encourage AI innovation. However, many SMEs are not fully aware of these programs or lack the means to access them.

5) Market Demand and Competitive Pressure

As consumers in India become more tech-savvy and demanding, SMEs are increasingly pressured to adopt AI to provide personalized experiences, faster services, and better customer support. SMEs operating in highly competitive sectors (e.g., e-commerce, retail, manufacturing) may adopt AI to stay competitive with larger players or to leverage AI in optimizing their operations, supply chains, or marketing efforts.

Role of AI in SMEs

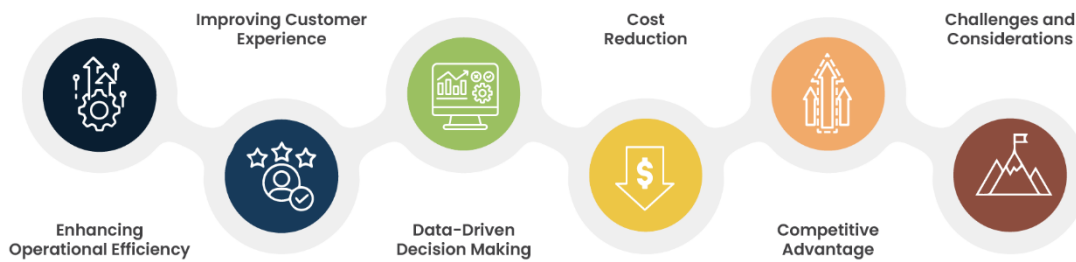


Fig:2

Source: Nasscom Community

PROBLEMS IN THE ADOPTION OF AI IN SMEs

1) Deficiency of qualified workforce:

AI necessitates a specialized workforce, which is frequently lacking in data scientists, machine learning engineers, and IT specialists. Due to the strong demand for such expertise in the labour market and their inability to pay competitively when compared to larger organizations, SMEs usually have difficulty attracting and keeping such talent.

2) Resistance to Change:

Many small business owners and employees may be hesitant to embrace new technologies because they are afraid of losing their jobs, don't comprehend them, or are generally uneasy with artificial intelligence. The successful integration of AI tools may be impeded by this opposition.

3) Cybersecurity and Data Privacy Concerns:

There is a greater chance of security flaws when AI is used more frequently. SMEs may not have the resources necessary to defend AI systems and critical data against cyberattacks, endangering trust and business continuity.

4) Issues with Scalability:

It might be difficult to scale AI solutions to the unique requirements of SMEs, even though larger businesses can gain from AI technologies by automating processes and increasing efficiencies. SMEs may have trouble scaling as their operations expand or customizing AI solutions to fit their particular business settings.

PROSPECTS IN THE ADOPTION OF AI IN SMEs

1) Helps in the improvement of customer experience:

Artificial Intelligence has the potential to analyse the data to customize the marketing campaigns, anticipating the needs of the customers which helps to uplift the customer experience, and help them in tailoring the marketing messages, it also provides the recommendations of the products to the customers and make them engage buy the products which helps in the increment of the sales.

2) Data driven Decision making:

Using AI algorithms one can forecast the market condition, demands of the customer for a particular product, it also helps the business to manage the inventory. AI has the tools where analysis of customer behaviour, analysis of large datasets are possible.

3) Cost savings:

With the advancement in the technology AI has helped in reducing the labour cost which helped the business to put more efforts on the products and make it more productive. AI also help the small SMEs to track the down inventory as well as it assist in making the use of the optimum utilization of the resources.

4) Assists in Product development:

Artificial Intelligence has boomed the small and medium enterprises by providing them assistance in market trends, customer feedbacks and about the competitors.

REVIEW LITERATURE

1) **Pamungkas et al., (2023)** concluded in his study that artificial intelligence has advanced quickly to the point where it is now seen as a personal assistant that helps people with their everyday duties. The advancement level of artificial intelligence has helped in innovating as well as helping in cost-cutting solutions to support the business sectors.

2) **Kumar et.al., (2022)** concluded that application of AI in Workforce Management in the MSMEs helped the decision makers to generate revenue, reduction of workforce risk, intelligent way of market risk as well as marketing of the business, innovation in business and safe information exchange.

3) **Santosa & Surgawati, (2024)** says that being the MSMEs plays a pivotal role in the economic development of the Indonesian economy, but still the usage of the AI is restricted because of certain cons. It has been observed that the application of AI will help in the enhancement of economic growth through improvements in productivity, cost reduction, and competitive advantage. The finding says that top management commitment, employee adaptability, perceived usefulness, and perceived ease of use are the important encouraging factors for MSMEs to adopt AI.

4) **Bhalerao et al., (2022)** concluded that if, in today's competitive business world, the SMEs are not upgrading with the current trends, then they will keep lagging in terms of their economic development. The researcher found that the labourers are not fully aware of the AI technology, organizations are not financially sound, and they are not big in terms of its size. It is also observed that the use of AI will help in improving the performance of decision-making, retention of the employee, acquisition, inventory management, safety from cyber attacks, etc.

5) **Ulrich et al.(2021)** concluded that German SMEs are not fully aware about the benefits of AI; these SMES are having the habit of using their outdated or older version of technology because they are using that same technology for a longer duration.

6) **Paul et.al. (2023)** says that the growth in the acceptance and the adoption on AI technologies in SMEs because of the certain benefits which comes from after the acceptance of the AI such as cost saving, operational efficiency and enhanced competetiveness. The findings also says that the benefits of AI is not restricted to the large companies but it also helped in the development of the smaller companies too.

Findings:

The findings of studies on AI adoption in SMEs indicate that while there are significant challenges such as financial constraints, skill shortages, and resistance to change there are also clear prospects and benefits for

SMEs that successfully implement AI. Overcoming these challenges requires a combination of government support, access to affordable AI solutions, collaboration with larger firms, and efforts to improve AI literacy and awareness. As AI technologies become more accessible and SMEs recognize the strategic advantages of AI, it is expected that more businesses will begin adopting AI, thereby contributing to enhanced competitiveness and growth in the SME sector.

CONCLUSION:

Artificial Intelligence offers a variety of platforms the Small and Medium Enterprises to boost up the customer interaction where they can solve the queries of the customers, it has also helped in maintaining the balance between the output and input ratio. AI offers SMEs a strong chance to boost customer interaction, increase operational efficiency, and make data-driven decisions that can spur expansion. The long-term advantages of AI adoption in SMEs are significant, despite the initial outlay and certain difficulties being noteworthy. The growing accessibility of scalable, reasonably priced AI solutions, especially through cloud computing, is assisting in leveling the playing field for big organizations and startups. It is anticipated that SMEs would embrace AI more frequently as it develops, which could change sectors and open up new opportunities.

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