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## **Artificial intelligence application in the adoption of e-commerce in small and medium enterprises in Libya**

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### **Abstract**

Throughout the age of globalization and the recent technology revolutions, the importance and usage of technology has grown, mainly because of its integration into all types of businesses, such as small and medium-sized ones. These enterprises now have access to cutting-edge, technical means to implement and carry out company operations, as well as to develop a comprehensive digital transformation, which includes artificial intelligence applications in numerous business areas. The adoption of artificial intelligence will be beneficial for SMEs in marketing, finance, data capturing, employees' relationship and all the other business domains. Moreover, E-commerce is becoming a key component of the global transition of some nations to an information society. Although integrating e-Commerce to the developing countries seems promising, it has significant drawbacks. It is possible to argue that organizational inertia, management perspectives on e-Commerce, and SMEs infrastructure within businesses are the primary causes of this issue. Hence, the primary goal of this research is to examine how artificial intelligence is used to expand business operations in SMEs and the variables that led to that acceptance, as well as the reality of using Artificial Intelligence and E-commerce in developing countries with concentration on Libya.

**Keywords:** *E-Commerce, SMEs, Artificial Intelligence, Developing Countries, Libya.*



## 1- Introduction:

The impressive advancement of technology has sparked the explosive growth of a number of industries, including banking, customs and trade. Therefore, standard commercial procedures are no longer able to meet the needs of the modern world. Thus, contemporary commercial techniques are required to carry out business operations and commercial organizations.

Individuals and businesses are attempting to use cutting-edge digital technologies in the twenty-first century for the convenience of their activities, including the internet of things (IoT), cloud computing, machine learning (ML), artificial intelligence (AI), and many internet-based services. Additionally, the rise of data flows, which is important for achieving global sustainable development goals, makes internet-based services much more relevant today (United Nations, 2019).

On the other hand, E-commerce is the modern art of purchasing and selling goods or services through the Internet, and it has helped businesses by allowing them to reach a wider market without being constrained by geographic limits. Additionally, e-commerce has made a significant contribution to the global Gross Domestic Product (Foneska et al., 2022).

Hence, business owners changed their perspective and began to use digital technology to survive and keep their market share. Businesses have also modified their growth strategy by implementing cutting-edge technology advancements especially that the difficult element for managers is to



develop a durable competitive edge, as many organizations struggle to survive in the market because of the global digital transformation, and this is can only be done by combining the most recent technological advancements in their business.

Equally important, SMEs in developing nations are the foundation of the economy, as they are considered the major economic players and driving forces behind economic growth. Moreover, due to a lack of awareness of its benefits, the majority of SMEs in developing nations are hesitant to embrace and benefit from e-commerce technologies (Nather et al., 2020). For example, there is very limited usage and growth in E-Commerce in Libya (Hunaiti et al., 2009). Accordingly, this research aims at contributing towards an understanding of the adoption of E-commerce applied in SMEs in Libya.

## **2- Research Problem & Questions:**

The Internet and e-Commerce technologies have not been fully utilized by the Libyan SMEs and businesses. Even while there are websites that employ e-commerce, companies have not yet been able to develop efficient e-commerce in Libya, thus it is primarily used for publicity and product advertising. This is due to various factors, including laws, customer awareness levels, a decline in electronic payments, and a lack of prior experience with e-commerce. Online transactions have been attempted by a few individuals in Libya, but they have not been successful because the environment is not favorable to the growth of electronic commerce in the country (Mrabet, 2017).



Therefore, this study aims to look into some of the causes of these phenomena. Understanding the factors that influence e-Commerce adoption inside SMEs. Since there is limited research on the adoption of e-Commerce in developing nations like Libya, it is crucial to look at how e-Commerce is being adopted and disseminated inside businesses. Especially that the complete strategic use and utilization of Internet applications can result in a significant development in the SMEs in Libya.

Hence, the problem addressed in this research study can be posed through the following questions:

- 1- What are the main Artificial Intelligent applications used in E-commerce?
- 2- What are the main difficulties and challenges faced by SMEs when adopting artificial intelligence applications?
- 3- What are the aspects of E-Commerce adoption in SMEs in developing countries?
- 4- What is the reality of using AI and E-commerce in developing countries such as Libya?



### 3-Background Review:

- **Artificial Intelligent applications in SMEs:**

Artificial intelligence, more commonly known as AI, has established benchmarks for efficiency, usefulness, and accuracy. The lack of problem-solving abilities, adaptability, and knowledge management in earlier computers and robots made them entirely reliant on humans in terms of intelligence. In the past, computers were restricted to a specific level of performance and remained ineffective in unknown situations. However, modern computers are now capable of managing knowledge and learning from their experiences, opening up a world of endless possibility (Kumar & kalse, 2021).

Small and medium-sized businesses (SMEs) have a variety of opportunities to compete more fairly with larger companies, improve performance, foster innovation, and increase productivity thanks to artificial intelligence applications. These opportunities include economies of scale, lower operation and transaction costs, reduced information asymmetries, increased capacity for product differentiation, business intelligence, or automation, expanded customer (OECD, 2021).

Small and medium-sized businesses (SMEs) frequently outsource solutions when they digitize their operational processes. This is done partially to make up for internal capacity gaps and for financial reasons. For instance, digital platforms (such as social networks, e-commerce marketplaces, etc.) can be used to optimize a number of tasks for a very low cost, such as business intelligence and data analytics services. Similar to this, SMEs frequently depend on outside consultants or security-by-



design components in the goods and services they employ to manage their digital security threats. In addition, they obtain artificial intelligence (AI) solutions from knowledge markets and advance to new AI systems (OECD, 2021).

Moreover, the majority of industrial tasks, from improving industrial research to optimizing multi-machine systems, can be done with AI. Retail, transportation and logistics, tourism, automotive and assembly, and consumer-packaged products are industries where AI might significantly add value. Several industries, including transportation, banking, marketing, and advertising, as well as research, healthcare, security, and the public sector, are quickly adopting AI technology, according to the OECD study on artificial intelligence. The following are some examples of business applications of AI in SMEs dominated sectors (OECD, 2021):

- Agriculture sector: Agri robots and drones that use satellite data, computer vision, image recognition and predictive analytics.
- Construction sector: Drones and sensors on construction sites, 3D building information modeling (BIM), and digital twins of buildings that can be used as simulators and data analytics based on on-site real-time data collection.
- Health sector: tools and trackers for self-monitoring, real-time feedback and data analytics using electronic health records are merged. Use of IoT devices, smart applications, and high-resolution medical imaging for more individualized healthcare and the prescription of precision medicine.

- Wholesale trade: Using sensors and radio-frequency identification in conjunction with machine learning on data from supply operations.
- Transportation sector: Utilization of autonomous vehicles and ride sharing by employing better traffic and trajectory prediction using sensor networks.
- Marketing and advertising sector: Through machine learning (e.g., natural language processing) and big data (e.g., social network postings, user reviews, emails, site navigation, etc.), personalized advertising and pricing, as well as click prediction systems. In addition, augmented reality has improved the experience of purchasing online.

A further method to consider how AI might help SMEs is through the modifications it can make along the internal value chain of businesses. AI can have an impact on a variety of business processes, changing both the cost structure and the way the company creates value. Business functions where AI may have the biggest effects include marketing and sales, supply chain management, and production (Mckinsey & Company, 2018).

However, when technology becomes more complex or mass matters for execution, the SME adoption gap widens. For instance, a critical scale is necessary for enterprise resource planning software to handle the complexity and the significant amount of resources required. Furthermore, the adoption of AI by SMEs is hampered by a number of issues, some of which are universal to other digital technologies, such as a lack of



understanding and preparation, and some of which are primarily caused by the very nature of machine learning techniques (Hansen & Bogh, 2020).

- **Challenges and Difficulties in adopting AI in SMEs:**

The following are the most important difficulties faced by SMEs when adopting AI (El-mnawi, 2005: Mrabet, 2017):

- High costs of AI applications

An AI system's development continues to be expensive investments. Large amounts of data are needed for training AI systems, as well as human processing of the data to make it machine-readable. SMEs may lack the cash flow and financing to cover these capital needs despite the availability of open-source AI tools and the lowering training costs of AI algorithms, particularly since estimating the cost of developing AI systems and their benefits is frequently difficult.

- Legal and reputational risks

One of the barriers to greater acceptance of machine learning-based AI systems is their lack of applicability, which could provide problems for both consumers and developers of AI solutions. While this is equally true for big IT companies, SMEs are notably worse off, even if they are unknowingly utilizing AI. For instance, it is very possible that SMEs will not be able to respond quickly to a problem with an AI solution offered by a third party and will not have the power or capability to check the algorithm. Additionally, SMEs run the risk of developing a negative reputation and being held legally liable, particularly if the AI model utilized is seen as immoral and exhibits discriminatory behavior (Capgemini research unit, 2019).





- Weak data management procedures and a lack of a data culture

The ability to value data is less advanced in SMEs. Small firms frequently lack the capacity to gather, manage, and safeguard data despite the fact that SMEs produce and handle a large volume and variety of data. In addition to the data that are not collected, the data that are collected and stored could not be sufficient in volume or quality to produce insightful results.

- **E-Commerce Adaption in SMEs:**

E-Commerce includes every aspect of conducting business over the Internet or any other electronic network. Despite the fact that the name "e-Commerce" is relatively new, the industry has been around for more than 25 years. In the late 1970s, electronic financial transfers were first made available. Early forms of E-Commerce also include the use of ATMs, telephone banking, and the acceptance and expansion of credit cards in the 1980s. However, the most well known application of modern e-Commerce is undoubtedly electronic data exchange.

Moreover, E-Commerce is a kind of innovation in which parties communicate electronically to carry out one or more of the following functionalities: the use of technology to automate business transactions and workflow; the satisfaction of business and management desires to reduce service costs while improving the quality of goods. Also, increasing the speed of service delivery, and focusing on the provision of the capability of buying and selling products on the Internet (Kabanda & Brown, 2017).



Excessive hopes for what e-commerce may accomplish in terms of development should be discouraged while it has the potential to alter the structure of the economy and speed up social transformation. However, e-commerce does not provide an immediate fix for the problems that plague any economy. Huge expectations should not, however, be mistaken for universal skepticism regarding the value of e-Commerce in light of the difficulties Libya and other emerging economies face. The significance of e-Commerce for development rests in the fact that it allows individuals and organizations engaged in a wide range of social activities to become significantly more efficient and productive (El-mnawi, 2005).

Furthermore, e-commerce contributes to the enhancement of marketing procedures by enhancing online payment capabilities, supplying real-time stock availability, and enhancing employee productivity and business profit. Because of the process improvement brought about by e-commerce, organizations are able to operate more profitably. Additionally, e-commerce usage enhances both financial and non-financial aspects of company performance (Phiri, 2019).

However, the accelerated economic growth that the Internet and e-Commerce can bring about may also have a more direct and long-lasting impact on the fight against poverty and the advancement of the economy. Arab nations, for instance, can benefit from e-Commerce potential by taking use of competitive advantages not possible before the rise of E-Commerce. Due to low transaction costs and other market access restrictions, e-commerce allows businesses to enter markets that were previously out of reach (Foneska et al., 2022).



• **The reality of using AI and E-commerce in developing countries (Libya):**

Artificial intelligence has a big impact on SMEs in developing nations since it is linked to technology bureaus and data-driven approaches that boost businesses' processing power, improve the effectiveness of algorithmic data, and underpin their operational logical foundations. This makes it possible for the business to adopt contemporary automation, data analytics, algorithmic language processing, and predictive capabilities.

Businesses in developing countries can automate company procedures thanks to artificial intelligence, which boosts efficiency and productivity by reviving business plans and putting an emphasis on higher value-added functions while cutting expenses. Additionally, SMEs may utilize AI to provide predictive analytics by automating business processes with real-time data, reducing risk exposure, and improving asset management efficiency. Additionally, the application of AI extends beyond algorithms to include other departments of SMEs, bringing benefits to the company by utilizing external AI knowledge and identifying solutions using predictive data that is gathered from the resource marketplaces (Faruk et al., 2022).

The transition from traditional corporate culture to current technology procedures that combine digital media and AI is challenging for SMEs, especially those in developing countries, mainly because they are both technologically and economically backward. Additionally, compared to major corporations, SMEs are particularly unstable in developing nations.



Consequently, the economic and financial crises have a significant impact on SMEs in developing nations (Yousaf et al., 2021).

E-commerce has mostly evolved in western countries, which are considerably different from developing nations. People's usage of technology determines how successfully it is embraced, and this depends on how well users and technology fit together. Therefore, it is unexpected that poor countries usually adopt technology rapidly.

As for Libya, late 1998 saw the first of internet connectivity in the country. Access was first restricted to officials then starting in the early 2000s, citizens were gradually given access. This rise was made possible by the thousands of seminars and training sessions that were held in universities, colleges, and other institutions to enable a smooth transfer to the online space (Hunaiti et al., 2009).

The Libyan postal system is unreliable even though the wireless networking is well-developed (i.e., it is an expert at providing last mile connectivity for high-speed internet and intranet; public and private enterprises, government and educational institutions, and internet service providers all use its highly-secure wireless broadband products in Libya). Indeed, it takes a long time for packages to reach their destination, and there is a good chance that they may go missing. Thus, the Universal Postal Union started working together to enhance postal services with the Libyan Authority.



Furthermore, The Central Bank of Libya has come to understand the advantages of putting new technologies into practice, growing them, and enhancing banking operations. An ambitious endeavor to integrate information technology advancements into the National Payment System has been launched by the Central bank of Libya and other commercial banks.

Recently, the government of Libya has taken steps to liberalize and privatize the nation's information technology industry. Because only the government can invest money in it now, this state monopoly has led to a number of issues. Such as extremely low usage rates, expensive costs when compared to other nations, poor telecoms services, a lack of clear policies or plans, and a shortage of employment opportunities or an oversupply of labor in the sector (Mrabet, 2017).

Additionally, E-commerce in Libya improve the quality of its products, increase customer service, and strengthen the nation's economy. E-government efforts also make the government more effective and efficient and strengthen its relationships with both the public and commercial sectors. It may also erect barriers that society will have to find a way to get over through altered business practices. As a means of boosting the economy, e-commerce is also quickly changing governmental regulations and internet communication techniques in Libya.

Overall, E-commerce is not widely used in Libya, it is not as well established as conventional trade, and it only poses a danger to businesses who do not provide excellent customer care. As a result, Libya has no



official electronic commerce system. This is mainly because of the following reasons (Mrabet, 2017):

- 1- The lack of digital literacy in Libyan culture.
- 2- Lack of awareness of the facts of the electronic jump.
- 3- Shortage of qualified employees and specialists in Libya's electronic commerce sector.
- 4- The lack of a true financial market that supports online commerce.
- 5- Mistrust of this kind of trading among Libyans.
- 6- Fear of manipulation and frauds when using E-Commerce.

In consequence, in order to create the ideal environment for e-commerce, the government sector as well as the private one should work together. More importantly, the Libyan Government must establish the laws and policies that acknowledge this fact while safeguarding consumers and producers from manipulation, fraud, and intellectual property theft.

Nonetheless, electronic document interchange and contract signing are among the forms of e-commerce that would be best suited for growth in Libya. In addition to giving the access to the news and data, the announcement of the company's items and describing the business and its products in details can also be applied when using E-Commerce in Libya.



#### **4-Conclusion and Recommendations:**

To sum up, Artificial Intelligence, particularly for SMEs in developing countries, offer an efficient marketing platform, an infrastructure receptacle for increased sales and revenues, a creative forum for SMEs to reduce costs and increase profits, and an explicit platform for direct communication with customers, retailers, wholesalers, and other stakeholders while automating the entire business.

However, there has been less adoption for AI applications among SMEs, and the reason for this is that SMEs in developing nations are less equipped to accept this fast expanding innovation, as well as a lack of experience. Hence, artificial intelligence is still in its infancy in Libya. Moreover, less employee training and skill development is one of the biggest obstacles to SMEs adopting new technologies.

Based on the above, this study recommends the following to adopt AI applications successfully in E-commerce area in SMEs:

- 1- SMEs could employ experts and professionals in technology, resulting in more technological advancement in their businesses.
- 2- SMEs must use digital media and AI into their operations and increase their investments in technology.
- 3- The development of e-commerce in Libya might benefit from developing and executing a national framework, which tries to address the aforementioned problems.





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