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**Research Article**

# Impact of AI Tools on Start-up Growth in Saudi Arabia: Case Study

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**ABSTRACT**

This study examines the effect of Artificial Intelligence (AI) applications on the development of enterprises in Saudi Arabia. This study seeks to understand how AI tools help in the development of entrepreneurship and the startup scene in Saudi Arabia. The qualitative research methodology used case studies and semi-structured interviews with founders/executives and artificial intelligence experts. This study aims to test three main assumptions regarding the utility of artificial intelligence: its influence on the rise in a startup's market percentage, client base expansion, and income increase. The results of the interviews proved that AI tools help startups gain new markets, customers, and revenues in Saudi Arabia. The introduction of AI technology in operations has assisted decision-making and enhanced the firm's market position, thus enhancing startup firms. A personalized experience, coupled with customer centricity, has helped companies customize their offers, offer targeted recommendations, and personalize offerings, resulting in growth in the customer base and loyalty. AI has contributed to the automation and optimization of processes, resulting in substantial cost reductions, higher productivity, and increased revenue. In summary, this study underlines the power or possibility that AI tools can have on startups in the Kingdom of Saudi Arabia.

**Keywords:** Artificial Intelligence, Startups, Market Share Growth, Revenue Growth, Customer Growth. lorem ipsum.

## INTRODUCTION

In recent years, Artificial Intelligence (AI) has grown rapidly and become a powerful tool for improving many aspects of everyday activities traditionally involving intelligence [1]. To generate insight from large amounts of data, AI tools use advanced algorithms, machine-learning techniques, and data-processing capabilities. There has been massive growth of AI start-ups in Saudi Arabia, which are becoming prominent players in the country's entrepreneurial ecosystem. With support from government interventions and youthful people who are technology users, they use artificial intelligence tools to invent solutions to tackle problems in different sectors. Other factors contributing to the growth of AI start-ups include a supportive atmosphere among Saudi schools that promotes AI education and research institutions [2]. AI tools are sophisticated software applications that are designed to support and enhance human capabilities in various fields. These tools use advanced algorithms, machine learning techniques, and the ability to process data to analyze enormous amounts of information and produce valuable insights A wide range of applications, including data analysis, can be delivered using AI tools, natural language processing, computing including vision, robotics, and prediction models [2]. One prominent category of AI tools is the data-analytics platform. These tools enable organizations to extract valuable information from complex and large datasets, thereby facilitating data-driven decision making. They employ machine-learning algorithms to identify patterns, correlations, and trends, enabling businesses to gain actionable insights and optimize their operations. Data analytics tools can also uncover hidden patterns and anomalies, detect fraud, and predict future outcomes, thereby contributing to improved efficiency and effectiveness across industries [3]. AI start-ups in the KSA are experiencing remarkable growth and becoming key players in the country's entrepreneurial ecosystem. The start-up scene in the KSA is witnessing a surge in AI-focused ventures, driven by the government's support for innovation and technology-driven initiatives. These startups leverage AI technologies to create innovative solutions that address various challenges across industries [4].

AI start-ups in the KSA also benefit from the country's young and tech-savvy population, which provides a talent pool of skilled professionals in AI and related fields. Universities and research institutions in KSA are actively promoting AI education and research, producing graduates equipped with the necessary skills to contribute to the AI start-up ecosystem. These initiatives provide a conducive environment for AI start-ups to thrive, with a focus on developing AI skills, infrastructure, and regulations to support their growth [2]. The use of AI tools in start-ups is therefore critical. This will help start-ups develop quantitative measures of market share, customer growth, and revenue growth. The availability of high-quality data and ensuring data privacy and security are additional considerations that startups must address [5].

Researchers have highlighted the potential of AI tools to enhance human capabilities and driving efficiency. Analyzing large amounts of information using these tools requires advanced algorithms, machine learning techniques, and data processing capabilities. Organizations can extract vital information from complex and large datasets using data analytics platforms, which are a prominent category of AI tools. The research question is how AI tools impact start-up growth in Saudi Arabia. The significance of this study lies in its potential to provide insights into the transformative potential of AI start-ups in Saudi Arabia's entrepreneurial ecosystem. Analyzing the current landscape can provide insight into the unique characteristics and drivers of success. Through this study, readers will gain a deeper understanding of how many AI tools influence start-up growth in Saudi Arabia. This study investigates how AI contributes to the growth and prosperity of startups in Saudi Arabia by analyzing the adoption and implementation of AI tools. The paper is divided on the basis of the literature review, hypotheses, methodology, and interview questions based on the hypotheses, results, discussion, and finally the conclusion.

## LITERATURE REVIEW

### AI

This section provides an overview of the field of Artificial Intelligence (AI), its ability to mimic human behavior, and its significant impact on various aspects of human life. While offering immense potential, AI presents challenges and ethical considerations that require a balance between innovation and responsible development.

Artificial Intelligence (AI) is a rapidly developing field that aims to develop the use of computers for tasks that traditionally require human intelligence. AI is an innovative technology across several fields that has been creating a splash; it is described as a machine's ability to mimic intelligent human behavior [1]. Machines can perceive, reason, learn, and make decisions based on their methods, algorithms, and techniques. In recent years, AI has significantly changed many aspects of human life. Machine learning can be used to evaluate vast volumes of data, make predictions, and automate complicated operations that are difficult to complete manually [6]. Machine learning, which is a subset of AI without explicit programming, enables computers to learn from data and improve their performance. As a result, developments in fields such as speech and image recognition, natural language processing, and autonomous systems have occurred. AI applications are diverse and span several industries. In healthcare, AI can assist with disease diagnosis, drug discovery, and personalized treatment plans. AI algorithms can analyze financial data, detect fraud, and optimize investment strategies. AI is also revolutionizing transportation through self-driving cars and optimizing traffic flows. Moreover, virtual assistants powered by AI, such as chatbots, enhance customer service and provide personalized experiences. AI's impact of AI is not limited to specific sectors; it permeates everyday life, from recommendation systems on streaming platforms to smart home devices and virtual assistants[7]. Although AI offers immense potential, it also presents challenges and ethical considerations. Ensuring the fairness, transparency, and accountability of AI systems is crucial for mitigating biases and avoiding unintended consequences. The growing use of personal data raises privacy issues for AI training and decision making. The ethical implications of AI in areas such as autonomous weapons and job displacement require careful consideration and regulations. It is imperative to strike a balance between innovation and responsible development and deployment of AI technologies [8].

### AI tools

This section discusses AI tools, including data analytics platforms, natural language processing (NLP) tools, computer vision tools, and predictive modeling tools. These tools leverage advanced algorithms and machine learning techniques to analyze data, interpret human language, process visual information, generate predictive models, revolutionize industries, and enable improved decision making.

According to a 2022 study, AI tools are sophisticated software applications designed to support and enhance human capabilities in various fields. These tools use advanced algorithms, machine learning techniques, and the ability to process data to analyze enormous amounts of information and produce valuable insights A wide range of applications, including data analysis, can be delivered using AI tools, natural language processing, computing including vision, robotics, and prediction models [2]. One prominent category of AI tools is the data-analytics platform. These tools enable organizations to extract valuable information from complex and large datasets, thereby facilitating data-driven decision making. They employ machine-learning algorithms to identify patterns, correlations, and trends, enabling businesses to gain actionable insights and optimize their operations. Data analytics tools can also uncover hidden patterns and anomalies, detect fraud, and predict future outcomes, thereby contributing to improved efficiency and effectiveness across industries [3].

Another significant AI tool is the NLP. NLP tools enable machines to understand, interpret, and generate a human language. These tools are utilized in various applications such as chatbots, virtual assistants, and language translation services. NLP tools can comprehend and respond to natural language queries, automate customer service interactions, and facilitate multilingual communications. Computer vision tools are another essential category of AI tools. These tools enable machines to perceive and understand visual information such as images and videos. Computer-vision tools are employed in fields such as object recognition, image classification, facial recognition, and autonomous vehicles. They have diverse applications ranging from medical imaging analysis to surveillance systems and augmented reality experiences [9].

Predictive modelling tools powered by machine learning algorithms are extensively used in forecasting and decision-support systems. These tools analyze historical data, identify patterns, and generate predictive models that can forecast future events and outcomes. Predictive modelling tools have applications in areas such as sales forecasting, risk assessment, demand prediction, and personalized recommendations. AI tools are revolutionizing industries by augmenting human capabilities, automating tasks, and driving innovation. Their widespread adoption has the potential to enhance productivity, improve decision-making processes, and unlock new possibilities in various domains. However, ethical considerations such as transparency, privacy, and bias mitigation must be carefully addressed to ensure the ethical use of AI tools [10].

### The start-up in Kingdom of Saudi Arabia

This paragraph highlights the remarkable growth of AI start-ups in the KSA driven by government support and initiatives. These start-ups have leveraged AI technologies across various industries, revolutionizing healthcare, finance, transportation, and autonomous systems. The supportive ecosystem, including funding, mentorship, and a skilled talent pool, fosters the growth of AI start-ups in the KSA, aligned with the country's Vision 2030 goals for innovation and digital transformation.

AI start-ups in the KSA are experiencing remarkable growth and becoming key players in the country's entrepreneurial ecosystem. The start-up scene in the KSA is witnessing a surge in AI-focused ventures, driven by the government's support for innovation and technology-driven initiatives. These start-ups leverage AI technologies to create innovative solutions that address various challenges across industries and are actively working on developing cutting-edge AI algorithms, machine learning models, and data analytics platforms. They apply AI in diverse fields such as healthcare, finance, transportation, education, and e-commerce. These startups are revolutionizing healthcare delivery by developing AI-powered diagnostic tools, telemedicine platforms, and personalized treatment solutions. In the finance sector, AI start-ups focus on developing fraud-detection systems, robo-advisory services, and risk assessment models. They are also making significant strides in autonomous systems, self-driving cars, and smart city technology [4]. The start-up ecosystem in KSA is supported by various initiatives and programs that encourage entrepreneurship, such as The Public Investment Fund (PIF). These organizations provide funding, mentorship, and networking opportunities for AI start-ups, enabling them to scale their operations and attract investments. Moreover, the government's commitment to fostering innovation and digital transformation is evident through initiatives such as Saudi Vision 2030 and NTP [9]. These initiatives are under Saudi Arabia’s Vision 2030 pillars: a thriving economy, vibrant society, and ambitious nation [11], [12].

These initiatives provide a conducive environment for AI start-ups to thrive with a focus on developing AI skills, infrastructure, and regulations to support their growth. AI start-ups in the KSA also benefit from the country's young and tech-savvy population, which provides a talent pool of skilled professionals in AI and related fields. Universities

and research institutions in KSA are actively promoting AI education and research, producing graduates equipped with the necessary skills to contribute to the AI start-up ecosystem [4].

### AI tools on the performance of start-up businesses

This paragraph emphasizes the profound impact of AI tools on the performance and success of start-up businesses. AI-powered analytics platforms enable data-driven decision making and provide valuable insights into product development, marketing strategies, and customer acquisition. Chatbots and virtual assistants automate customer interactions and improve customer satisfaction. AI tools also enhance start-up security and integrity by enhancing operational efficiency, risk assessment, fraud detection, and cyber-security.

According to Basri, AI tools have a profound impact on the performance and success of start-up businesses. These advanced technologies provide start-ups with the ability to make data-driven decisions, automate processes, and gain valuable insights. One key area in which AI tools significantly contribute is data analytics. Start-ups can leverage AI-powered analytics platforms to quickly and accurately process large volumes of data. This allows them to extract valuable insights, identify market trends, and make informed decisions about product development, marketing strategies, and customer acquisition. AI tools can also enhance customer relationship management by reviewing consumer information and making individualized recommendations and targeted marketing campaigns, leading to improved customer satisfaction and retention [13]. Numerous examples of the use of generative AI in sales sector marketing, for example, a site such as InvestGlass, uses a text conversion form to create personalized marketing campaigns based on customer data [14].

Additionally, AI-powered chatbots and virtual assistants can automate customer interactions, providing 24/7 support and improving overall customer experience. In terms of operational efficiency, AI tools can automate repetitive tasks, streamline workflows, and optimize resource allocation. This frees up valuable time and resources for startups to focus on core business activities and innovation. Moreover, AI tools can assist in risk assessment, fraud detection, and cybersecurity, ensuring the security and integrity of start-up operations [15].

### Challenges and Limitations of AI Adoption for Start-ups

This paragraph highlights the challenges and restrictions faced by startups in adopting AI technologies. The high cost of integration, talent gap in AI expertise, limited access to quality data, data privacy and security concerns, ethical considerations regarding biases, complexity of AI technology, and compliance requirements pose obstacles for start-ups. These challenges include financial constraints, difficulty recruiting skilled individuals, data availability and privacy issues, addressing biases, updating with evolving technology, and navigating industry-specific regulations and standards.

As stated by S. Battisti et al. the use of AI has enormous promise for start-ups, there are a number of obstacles and restrictions that must be taken into account. One of the main challenges is the high costs of integrating AI technologies. For startups with limited funding, developing AI systems and purchasing the required equipment can be expensive. Additionally, there is a talent gap in AI, which makes it challenging for start-ups to recruit and hire qualified individuals with AI experience. This talent gap exacerbates the challenges of adopting AI. Adoption [16].

Another significant challenge is the availability and quality of the data. Algorithms require a large amount of high-quality data for training and improvement. Start-ups might lack the necessary access to, or means for, collecting and processing sufficient data. Data privacy and security concerns pose significant challenges. Start-ups must ensure that the data they collect and process are handled in a secure and compliant manner, complying with legal and ethical standards [17]. Ethical considerations also come into play. AI algorithms are susceptible to biases present in the data on which they are trained, which can lead to discriminatory outcomes. Start-ups must be vigilant and invest in techniques to address these biases and ensure fairness and transparency in their AI systems [18].

Moreover, the complexity of AI technology and its constant evolution present a learning curve for startups. Understanding and effectively implementing AI tools and algorithms require expertise and training. Start-ups must devote time and money to staying abreast of the most recent developments and industry best practices [19].

Challenges and compliance requirements can pose obstacles to start-ups that adopt AI. Depending on the industry and geographical location, specific regulations and standards may need to be met, adding complexity and potential legal barriers to the adoption of AI [20].

### Practical Implications for Start-up Entrepreneurs

Start-up entrepreneurs have several practical implications in incorporating AI into their business operations. First, entrepreneurs need to carefully evaluate the specific areas of their business where AI can bring the most value. Identifying the correct use cases and understanding how AI can address key challenges or enhance existing processes is crucial. This requires a thorough understanding of the startup's goals, target market, and customer needs [21].

Once potential use cases have been identified, entrepreneurs must consider the resources required for AI implementation. This includes not only financial resources but also human capital and expertise. Start-ups may need to allocate a budget to acquire AI tools, infrastructure, and talent. Collaborating with AI expert data scientists or partnering with AI-focused startups can help entrepreneurs navigate the complex landscape of AI technology and implementation [22].

Data availability and quality are important practical considerations. Start-ups need to assess whether they have access to the necessary data to effectively train AI algorithms. They may need to invest in data collection, cleaning, and storage to ensure the availability of high-quality data. Furthermore, entrepreneurs must consider data privacy and security measures to safeguard sensitive information and adhere to applicable requirements. Another practical implication of this study is the need for continuous learning and adaptation. AI technology is rapidly evolving, and entrepreneurs must keep up with recent developments, industry trends, and best practices. This may involve investing in training programs for employees, participating in AI-focused events and conferences, and engaging with AI communities and networks [23].

Furthermore, entrepreneurs should be mindful of the ethical implications of adopting AI. They must consider fairness, transparency, and accountability in their AI systems to mitigate biases and ensure responsible use of AI technology. In summary, practical implications for start-up entrepreneurs adopting AI include identifying relevant use cases, allocating resources, ensuring data availability and quality, staying abreast of technological advancements, and addressing ethical considerations. By effectively navigating these practical implications, entrepreneurs can use AI to spur innovation, improve efficiency, and achieve long-term success in their start-ups [24].

### The impact of AI tools on the performance of start-up businesses

This section discusses the practical implications that start-up entrepreneurs face when incorporating AI into their business operations. They must identify the right use cases, allocate resources for implementation, assess data availability and quality, stay updated with AI advancements, and address ethical considerations. By effectively navigating these implications, entrepreneurs can leverage AI to drive innovation, enhance efficiency, and achieve long-term success in their start-up.

The impact of AI tools on the performance of start-up businesses is transformative, revolutionizing the way these ventures operate and compete in the modern business landscape. Start-ups have access to a variety of skills that improve productivity, efficiency, decision making, and client engagement through AI tools [25].

The ability to use data efficiently is one of the main advantages of AI solutions for organizations. Start-ups typically generate and collect large volumes of data, and AI tools enable them to extract valuable insights and patterns from this data. Using AI-powered analytics platforms, start-ups can learn more about their clients, market trends, and company processes. These insights empower start-ups to make data-driven decisions and develop targeted growth strategies [26].

AI tools also contribute to operational efficiency by automating repetitive tasks and streamlining workflow. Start-ups can use AI-powered chatbots and virtual assistants to handle customer inquiries, freeing valuable time and resources for core business activities. Automation of manual processes allows start-ups to scale their operations without a proportional increase in human resources [27].

Customer experience is another area in which AI tools have a significant impact. Start-ups can employ AI to personalize their interactions with customers and tailor their products or services to individual preferences and needs. AI-powered recommendation systems analyze customer data to offer personalized suggestions and improve cross-selling and upselling opportunities. This degree of personalization increases client satisfaction and loyalty. This eventually led to increased sales and business growth [28].

Moreover, AI tools enhance the marketing and sales efforts of start-ups. By analyzing customer data and behavior, start-ups can create marketing efforts specifically aimed at proper audiences and time periods. AI-powered algorithms can optimize ad placements, content creation, and customer segmentation, resulting in higher conversion rates and improved return on investment (ROI) [13].

AI tools can also assist start-ups in lead generation and sales forecasting, thereby providing valuable insights for optimizing sales strategies. Furthermore, AI tools contribute to risk management and cybersecurity in start-ups. AI algorithms can detect anomalies and patterns in data that indicate potential security breaches or fraudulent activity. This proactive approach helps start-ups to identify and mitigate risks, safeguard their operations, and protect sensitive information. Cybersecurity systems driven by AI can continuously monitor network activity, identify weaknesses, and react to threats in real time [5].

It is crucial to remember that using AI tools in start-ups can be challenging. Start-ups may face initial implementation costs, including acquiring AI tools, hiring AI experts, and integrating AI systems into the existing infrastructure. The availability of high-quality data and ensuring data privacy and security are additional considerations that startups must address [5].

## METHODS

In this section, we describe what we did and why we took certain measures regarding the methodology used, along with a work plan that can be useful for anyone who wants to investigate this subject further.

This study applied mixed-method research using both qualitative and quantitative techniques to examine the influence of artificial intelligence (AI) on start-up growth from a cross-country perspective in Saudi Arabia. The following methods were used:

- Case studies: This method involves in-depth investigations of individual startups that have successfully leveraged AI tools to achieve growth. Case studies provide a detailed understanding of the context, processes, and outcomes of AI adoption in startups.
- Semi-structured interviews: This method involves conducting in-depth interviews with startup founders, executives, and AI experts to gain insight into their experiences and perspectives on how AI tools have impacted their growth. Interviews allow for flexibility and exploration of unanticipated themes that may emerge during the conversation.

## RESEARCH HYPOTHESES

In this section, we discuss and present the methodology applied in our research, aiming to explain the choices made and a blueprint of the process followed. This research focused on testing a conceptual framework that includes several hypotheses related to the perceived usefulness of AI tools and their influence on startups' market share growth, customer growth, and revenue growth. Thus, the following hypotheses were examined:

H1: The perceived usefulness of AI tools will positively influence startups' market share growth

H1a: The perceived usefulness of AI tools positively influences startups' attitudes towards adopting AI tools.

H1b: Startups' attitudes towards adopting AI tools will positively mediate the relationship between perceived usefulness and intention to use AI tools.

H1c: Startups' intentions to use AI tools positively influence their market share growth.

H2: The perceived usefulness of AI tools will positively influence startups' customer growth

H2a: The perceived usefulness of AI tools positively influences startups' attitudes towards adopting AI tools.

H2b: Startups' attitudes towards adopting AI tools will positively mediate the relationship between perceived usefulness and intention to use AI tools.

H2c: Startups' intention to use AI tools positively influences customer growth.

H3: The perceived usefulness of AI tools will positively influence startups' revenue growth

H3a: The perceived usefulness of AI tools positively influences startups' attitudes towards adopting AI tools.

H3b: Startups' attitudes towards adopting AI tools will positively mediate the relationship between perceived usefulness and intention to use AI tools.

H3c: Startups' intention to use AI tools positively influences revenue growth.

### Explanation of the Conceptual Framework

The conceptual framework suggests that startups' adoption and utilization of AI tools will positively impact their growth in terms of market share, customer base, and revenue. This positive impact is expected to be mediated by factors such as improved decision making, enhanced operational efficiency, and personalized customer experience.

The TAM-based conceptual framework explains how the perceived usefulness of AI tools can lead to improved performance and market share growth in startups. The model suggests that startups that believe AI tools can be beneficial are more likely to adopt them and that this adoption can lead to improved performance outcomes. This is because AI tools can help startups improve their products or services, reduce costs, and increase their efficiency.

**Figure 1** shows the hypothesized relationships between the key variables in TAM- and TAM-based hypotheses. The direct effects are indicated by solid arrows and the mediating effects are indicated by dashed arrows.

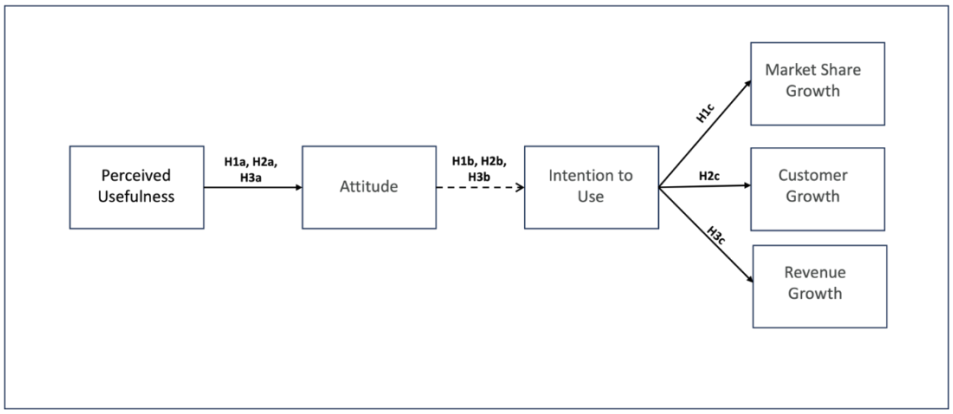


**Figure 1.** The proposed model with the study hypotheses.

### Interview questions for each hypothesis

In this section, we discuss and present the methodology applied in our research, aiming to explain the choices made and a blueprint of the process followed. This research focused on testing three hypotheses related to the perceived usefulness of AI tools and their impact on startup market share growth, customer growth, and revenue growth. The following research questions were addressed for each hypothesis.

Hypothesis 1: Perceived Usefulness (PU) and Startup Market Share Growth:

- How do you perceive the usefulness of AI tools in enhancing a startup's market share growth?
- Can you describe specific examples in which AI tools have contributed to market-share expansion?
- How has the adoption of AI tools influenced market positioning and competitive advantage?

Hypothesis 2: Perceived Usefulness (PU) and Startup Customer Growth:

- How has the utilization of AI tools impacted your startup's ability to attract and retain customers?
- Can you provide examples of how AI tools have helped to improve customer acquisition and engagement?
- How do you perceive the role of AI in enhancing customer satisfaction and loyalty?

Hypothesis 3: Perceived Usefulness (PU) and Startup Revenue Growth:

- How have AI tools contributed to your startup's revenue growth?
- Can you share specific instances in which AI-driven insights or automation have led to increased sales or revenue generation?

- How do you perceive the impact of AI on a startup's overall financial performance?

## RESULTS

In the following section, we examine how our findings came from the interviewed respondents. Two interviews were conducted with a startup CEO and AI expert. The interviews were conducted based on research hypotheses regarding startup market share growth.

### Startup Market Share Growth

During the interview (Zoom meeting on 29 Nov 2023), the CEO stated, "Artificial intelligence tools have proven to be instrumental in enhancing market share for emerging companies in Saudi Arabia. Using automation and machine learning, these tools provide valuable insights and capabilities that give companies a competitive edge". Artificial intelligence utilization by start-up companies enables them to tap into the untapped market share. Hence, using AI algorithms, big data analytics in business operations, and machine learning capabilities, firms can interpret extensive datasets on buyers' habits, tastes, and spending habits, thus enabling a better comprehension of consumer behavior. As such, it will help them develop tailored marketing strategies and individualized product recommendations, which will boost customer involvement and result in more sales.

The expert emphasized in the interview (via Zoom meeting on 5 Dec 2023) that the strategic allocation of resources towards AI expenses positively influenced the company's market share growth. The expert stated,' Investing in AI technologies has allowed us to enhance our operational efficiency and gain a competitive advantage in the market. By leveraging AI tools, we optimized our processes, improved decision-making, and expanded our market presence".

The interview findings show that e-commerce companies benefit from AI tools by leveraging them for product suggestions, retargeting customers, and improving sales and customer retention. Such capabilities make businesses distinctive in a competitive environment because of their unique personalized experiences based on AI-based algorithms. Lastly, incorporating AI, automation, and machine learning into e-commerce operations has greatly enhanced the market share. He said that aspects such as product recommendations for customers and retargeting particular customers are directly associated with AI.

### Startup Customer Growth

During the interview, the CEO expressed, "The system retargets her if she enters a specific page and does not complete the purchase... It knows her name, what she bought, and gives her a discount based on her behaviors". Artificial intelligence tools have revolutionized customer interaction and retention strategies for start-up companies. Companies can provide 24/7 customer support through conversational interfaces such as AI-driven chatbots and virtual assistants, who quickly respond to inquiries and address issues at that instant without the need for lengthy delays. It creates a better customer experience, and hence high satisfaction and loyalty.

During the interview, the expert emphasized the implementation of AI tools that enabled the company to improve customer experience and attract new customers. The expert mentioned, "AI-powered solutions have played a significant role in our customer growth. Through AI-driven personalization, we have been able to tailor our offerings to individual customer preferences, provide targeted recommendations, and deliver personalized and engaging experiences. This has helped us attract a larger customer base and foster customer loyalty".

Based on the interviews, the upselling and cross-selling techniques powered by AI algorithms allow companies to make personalized recommendations to customers, increasing the likelihood of additional purchases. I also found that AI-driven reminders for product refills or renewals help maintain customer engagement and encourage repeat business. Additionally, during the interviews, I discovered that retargeting customers through AI-powered advertising campaigns helped attract new customers and retain existing ones.

### Startup Revenue Growth

During the interview the CEO stated, "Artificial intelligence tools have a direct impact on revenue growth. By automating processes and leveraging AI-driven strategies, emerging companies can drive sales and increase their bottom line".

In interviews with experts, the highlighted integration of AI technologies positively affected the company's revenue growth. The expert explained, "AI-driven automation and optimization of processes have resulted in significant cost savings and improved productivity within our organization. By automating repetitive tasks and streamlining workflows, we were able to allocate resources more efficiently and focus on high-value activities. This has directly contributed to the company's increased revenue generation. The implementation of AI-driven automation and process optimization in an organization has had a direct impact on startup revenue growth. Artificial intelligence has enabled companies to cut costs and improve their efficiency.

The organization has successfully managed to reduce or eliminate duplication in operations through automation of repetitive tasks and optimized workflows. This implies that employees can concentrate on tasks of added value such as strategic management, new ideas, and consumer interaction.

Additionally, during the interview, I discovered that AI-powered feedback collection and response systems allow companies to address customer concerns promptly, leading to improved satisfaction levels. Furthermore, during the interview, personalized offers, such as birthday greetings and targeted discounts based on customer preferences, fostered a sense of loyalty and strengthened the customer-company relationship.

The cost savings achieved through AI-driven automation have allowed organizations to invest resources in other critical areas, such as marketing, product development, and expanding their customer base. Startups have experienced noticeable growth in financial performance by reallocating funds and focusing on revenue-generating activities.

## DISCUSSION

In this section, we discuss the results of the interviews conducted with a startup CEO, an AI expert provides valuable insights into the impact of AI tools on startup market share growth, customer growth, and revenue growth in Saudi Arabia. The findings support the hypotheses and align with existing literature on the subject.

Previous literature supports this statement by the CEO regarding the role AI tools play in increasing market share. Studies have established that artificial intelligence platforms such as automation and learning offer valuable information and leverage startup operations [29]. Startups utilizing AI technologies can automate various operations, make better decisions, and broaden their market penetration, resulting in a higher market share.

It goes hand-in-hand with the literature emphasizing resource commitment to AI investment to expand a company's market share [30]. The use of AI in startups can help them create an effective strategy through a fair approach to allot resources to AI. By doing so, they will perform better in the market and attain higher market share. In addition, previous literature supports the role played by AI devices in startup customer growth in interviews. Studies have shown that AI-based personalization helps businesses capture new markets and avoid customer churn. The CEO's reference to AI-powered systems for retargeting customers based on their behaviors, providing them with personalized discounts and recommendations, is in line with these studies [31].

The focus of the expert in making offers according to the preferences of specific customers and enabling a better experience fits in with what is known from research on how AI-driven prisonization can positively influence customer growth [32]. Through the use of AI technologies, start-ups can assess consumer information and tailor recommendations for specific individuals, thus boosting customer acquisition and retention.

Existing research on this topic also provides evidence in line with the interview findings. AI researchers have provided various pieces of evidence, some of which include sales drives and enhanced profitability owing to AI [33]. Using process automation technologies and optimizing workflow by incorporating AI tools will allow startups with limited resources to focus more on things that matter most, such as generating more revenue for the organization.

According to the literature, AI can be used to drive automation and optimization, thereby achieving cost reduction, high productivity, and efficient use of resources. By using AI technologies, startups can minimize operational costs, distribute their available resources effectively, and make informed decisions that will culminate in an increase in profitability [30].

In addition, startups use different AI-driven tactics, including providing individual product recommendations or upsell/cross-sell operations and advertisements with the help of AI [34]. This complies with previous studies regarding the utilization of AI technologies to boost customer engagement, augment sales, and draw clients [35].

Personalized approaches enabled by AI, recommended products, marketing programs help improve consumer's journey, increase sales and corporate development as well [36].

## CONCLUSION

The results showed that AI-based tools play an important role in the development and success of startups in Saudi Arabia. This has enhanced the market share for startups, attracted and retained customers, and driven revenue growth based on the adoption and implementation of AI technologies. Startup firms have also taken advantage of automation, machine learning, and artificial intelligence-driven strategies to maintain their market competitiveness. Through AI, companies have offered personalized experiences and recommendations, enabling them to stand out in this competitive industry and win customer loyalty. They also entail the use of artificial intelligence to enhance automated production and optimize operations, leading to more cost savings and heightened productivity. This study demonstrates the significance of AI tools for startups in Saudi Arabia and calls for increased AI education and provision. It also recommends enhanced facilities and policies to bolster Saudi start-up growth and development. This study finds important information that can help entrepreneurs, policymakers, and potential investors in the Saudi startup ecosystem.

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