

Artificial Intelligence and Entrepreneurial Decision-Making

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Abstract

Traditional, human-centric approaches to innovation management often fall short due to their limitations in fully addressing information needs and coping with complexity. This study explores how artificial intelligence (AI) systems can support innovation management by enhancing entrepreneurial decision-making and also examines the impact of Artificial Intelligence (AI) on entrepreneurial decision-making, investigating the mediating effects of data-driven insights, and organizational learning. Through a Mediation analysis, we investigate the impact of AI on entrepreneurs' decision-making, considering the mediating roles of customer preferences and industry benchmarks. AI-powered systems enable businesses to process and analyze vast amounts of data efficiently, leading to quicker and more informed decision making. Hence, the integration of AI in business decision making has the potential to drive organizational success and shape the future of business practices. Furthermore, this empirical study provides practical recommendations to organizations on enhancing various aspects related to proactiveness, innovativeness, and risk-taking. The study provides insights for researchers, entrepreneurs, and aspiring entrepreneurs on leveraging AI in entrepreneurial contexts and sets an agenda for future research in this emerging field.

Keywords: Artificial Intelligence, Entrepreneurship, Decision-Making, Customer Preferences, Industry Benchmarks

1.0 Introduction

Artificial intelligence (AI) is defined as human-produced, machine-assisted, structured, organized information. AI is a disruptive technology advancement that, together with robots, is altering every single fundamental aspect of how businesses operate (Akinyemi et al., 2018). AIs are created using human insight approaches including learning, reasoning, and self-healing. Artificial intelligence (AI) is transforming entrepreneurial decision-making, enabling data-driven approaches and augmenting human cognition. The future of marketing is artificial intelligence where Artificial intelligence makes it possible to make specific decisions, data collection, forecasting, and trend forecasting while also saving tons of time and money. In terms of technology, artificial intelligence is the process of integrating cloud technology, network devices, robots, computers, and the creation of digital content as well as multiple business methods, systems, and day-to-day activities. In the past, present, and future, artificial intelligence computers will flourish. Future marketing initiatives must embrace artificial intelligence's growth and development. Artificial intelligence software is being used by businesses every day to streamline operations, cut costs, speed up turnaround, and increase productivity. Technology is developing at an unheard-of rate and businesses who have already switched to advertising AI software will have a unique edge when the next breakthrough rolls along.

Entrepreneurial development studies are rapidly gathering momentum in the 21st century, due to the growing recognition of its potential in wealth creation and general economic development (Robson et al. 2009). Academics and practitioners acknowledge the immense

benefits accrued from entrepreneurial development. Entrepreneurs innovate, create new business ideas, and take financial risks in converting perceived opportunities to viable business ideas. As people who employ limited, heterogeneous resources under uncertain conditions in order to cater to customer preferences and make a profit, entrepreneurs engage in largely experimental processes, with context affecting this experimental process. (Shane and Venkataraman 2000). Entrepreneurs can change the economic situation of emerging economies with the right environment and technology tools. Entrepreneurs can utilize the appropriate technology tools to detect business trends and offer valuable insights, which are required for business decisions (Akinyemi and Adejumo 2018). Deep learning and machine learning are the two basic categories of AI learning. The learning method used by machines is analogous to human learning. By machine learning, AI-based experience, or gathering empirical data via expertise in existing in the environment, is building knowledge and storing it, and with each new cycle of learning, fixing the problem becomes more efficient and effective. Machine learning aims to identify the patterns on which algorithms are built. Deep learning is comparable to machine learning, with the exception that AI builds neural networks as it learns. The integration of artificial intelligence in business decision making has the potential to revolutionize how organizations operate and strategize. By enhancing efficiency, accuracy, and innovation, AI empowers businesses to harness the power of data and make informed decisions in a dynamic and competitive landscape. However, the responsible and ethical use of AI, along with considerations of data privacy, security, and workforce impact, must be carefully navigated. As businesses continue to embrace AI technologies, the landscape of decision making is set to undergo significant transformations, shaping the future of organizations across various industries. The goal of this study is to integrate artificial intelligence (AI) into organizational decision-making processes, investigate the main influence of intelligence on corporate decision making through multidimensional research and how data-driven insights, automation, and human cooperation may be used by AI to transform decision making.

2. Literature Review

2.1. Artificial Intelligence Artificial intelligence (AI) refers to a software system designed to conduct tasks that require human intelligence, hence, it refers to a system that can imitate human intelligence in the execution of specific tasks, for example, visual insight, speech recognition, recommendation, categorization, and decision-making (Huang and Rust 2018).

AI has four key elements: 1. Expert systems; 2. Heuristic problem solving; 3. Natural language processing; and 4. Vision. Natural language processing offers an interaction between people and machines in their natural language. An expert system is a mechanical system where valuable human knowledge is embedded into machine memory to provide intelligent guidance, clarify, and justify its choices or needs. Expert systems handle situations and deliver performance by relying on a vast dataset of precise, specialized knowledge concerning a specific field of interest. Heuristic problem solving is intended to assess a limited scope of solutions and may comprise certain presumptions to find the best solutions. Vision is the capacity to identify shapes and features, to mention a few, automatically. Artificial intelligence (AI) is defined as “the science and engineering of making intelligent machines”. The scientific goal of AI is to comprehend intelligence by designing computer software programs that display intelligence utilizing symbolic inference or cognition inside the machine. AI systems are designed to work with their own created programming language to employ information more efficiently. These programming languages employ declarative knowledge, particularly with claims whose truth-value is autonomous of the algorithmic context. Additionally, the AI system can induce, abstract, and occasionally predict data. The AI system can reevaluate decisions using backtracking of

solutions through recollection of past experiences in providing good inference power and quick responses to enable better decision-making. In essence, the idea of AI is to integrate large volumes of data with rapid procedures and better algorithms which enables the systems to learn from patterns without the need for re-programming.

2.2 Artificial Intelligence and Entrepreneurship

The approach adopted to understand the relationship between artificial intelligence and entrepreneurship is contextual. This is because artificial intelligence technology operates under rules and objectives established in a contextual and predefined manner. Artificial intelligence can be defined as human-like cognitive capabilities demonstrated by machines, or the examination of how computers and digital algorithms perform tasks and solve complex problems that would normally require or exceed the rational or cognitive capabilities of human persons. Currently, the phenomenon of artificial intelligence is characterized by the process of the limited rational capacity of people, surpassing itself through a download of human cognitive work, based on computers, establishing this type of intelligent machines and software as agents with cognitive abilities similar to humans, and with the ability to learn and solve problems. In this way, artificial intelligence is configured as a tool that supports decision-making and evaluations, providing suggestions based on data of increasing volume. In the beginning the applications of artificial intelligence in business were focused on the automation of routine tasks, but nowadays the generative and machine learning technological advances, together with the availability of Big Data and the exponential increase of computational power, allow artificial intelligence to be applied to complex tasks traditionally intended for people with high specialized cognitive capabilities, transforming artificial intelligence into a strategic capability for the competitiveness of organizations, increasing the relevance of these new technologies for business development.

Human capabilities for entrepreneurship is understood as the processes by which people explore and take advantage of new business opportunities through the founding of companies, can be enhanced with artificial cognitive resources. These resources allow for coping with large volumes of information and uncertain scenarios more competently. In the field of business entrepreneurship, this generates a new competence that requires artificial intelligence for successful development. Hence, organizations will increasingly use technologies associated with artificial intelligence. It is predicted that more than 80% of executives surveyed in a global survey plan to invest heavily in this area in the next three years, significantly changing the context of entrepreneurship. Thus, artificial intelligence systems are being applied in various functions of an organization, improving performance and raising the competitiveness of companies, which affects the configuration of the workforce, requiring a lower cost, which is a solution to one of the challenges of entrepreneurship and its entry barriers, capturing the attention of decision makers because it is possible to create hybrid resources that optimize workflows, using an increasingly larger set of data, thus generating evidence-based management supported by artificial intelligence, which allows streamlining the uncertainty processes associated with business and particularly with the start of new ventures.

2.3 Artificial Intelligence and Entrepreneurial Decision-Making

The term decision-making refers to the process of identifying and choosing a plan to manage or solve specific challenges or exploit opportunities. It is the process where managers respond to opportunities and challenges that they encounter by assessing the available options and making judgments or decisions concerning specific organizational goals and plans. This process includes identifying challenges, collecting data, creating options, and selecting a course of action. Additionally, decision-making refers to the process of defining and selecting options depending

on the standards and preferences of the leader. The approach to making decisions suggests that there are several options to be considered. Decision-making ensures that the best solution or plan is executed by businesses. Decision-making is the fulcrum of the entrepreneurial process. Entrepreneurial decision-making is vital for a better comprehension of the process employed by persons to create and exploit new business opportunities. Entrepreneurs consistently have to make different decisions. Many of these decisions are critical and may have long-lasting consequences on the success and performance of the enterprise. Entrepreneurs choose to explore opportunities based on their information, knowledge, and experience. Entrepreneurs pursue novel opportunities to create value for society. The idea of creating value for society by improving the decision-making process of entrepreneurs indicates that sustainability issues that affect both consumers and firms in the circular economy must be considered by AI. The specific knowledge base of entrepreneurs can also influence opportunity discovery and exploitation.. Entrepreneurs usually deal with new and unclear business concepts whose commercial implementation may not yet be fully explored. This suggests that entrepreneurial activities entail regularly making decisions concerning the opportunities worth pursuing and the available solutions worth exploring, which are influenced by the entrepreneur's knowledge. Modern technologies enhance entrepreneurs' knowledge, and artificial intelligence (AI) provides a credible means to correct the interpretation of external data, demonstrate institutional memory, and facilitate better decision-making. The adoption of artificial intelligence (AI) appears likely to influence better entrepreneurial decision-making through a more efficient business automation process. The adoption of artificial intelligence (AI) directly and positively influences better entrepreneurial decision-making and can help entrepreneurs adopt modern circular economy systems that factor sustainable development as part of firms' goals.

2.4 Big Data Analysis

Data are an essential ingredient of the digital space. The routine capture of digital information through different applications creates massive data streams of customers, and the expected commercial usage of modern technologies has dramatically expanded the volume and scope of the data gathered by businesses. These data contain valuable customer information that can enhance the strategic development of businesses. Additionally, as data increasingly play a central role in business organizations, entrepreneurs aim to harness them for better decision-making. The volume of acquired data enables entrepreneurs to recognize new business opportunities or future markets using, for instance, household consumer profiles. Big Data has evolved as a term that includes both the technical and commercial components of increased data collection activity. Big Data is the fundamental notion of gathering vast amounts of data from consumers and refers to the ability to aggregate and separate comprehensive datasets with very little manual labor. Big Data is the explosive growth of data, which is mainly due to advancements in data storage technology. Big Data refers to vast amounts of data, which traditional data management approaches cannot handle and process due to their complexity and massiveness. The idea of Big Data has grown to comprise of size of datasets, dataset characteristics and data management methods. The decision-making process in an organization requires the assessment of large datasets to comprehend trends and developments in business growth. Therefore, Big Data analytics provides solutions for better entrepreneurial decision-making, enabling the achievement of good returns on investments. Big Data analytics can recognize growth opportunities in new and existing businesses, predict customers' behavior, and assist businesses in making better and more strategic business decisions. Big Data analytics can transform data into value, process, and evaluate how the data that can improve decision-making for the benefit of businesses are handled. Big Data analytics offers valuable insights that could improve entrepreneurial

decisionmaking, particularly in recognizing growth patterns and creating growth opportunities for entrepreneurs. Utilizing Big Data analytics tools makes entrepreneurs more knowledgeable and puts them in a position to make better decisions and invest wisely.

2.5 Data Mining

Data mining is the study of gathering, cleaning, processing, evaluating, and acquiring valuable knowledge from data. Many challenges exist in domains, applications, formulations, and data depictions of real applications. The raw data might be arbitrary, unstructured or in a form that is not instantly fit for computer processing. Data mining analysts utilize a processing pipeline in order to extract the existing data for application-specific objectives, where raw data are gathered, cleaned, and refined into a standard form. The data could be kept in a commercial database system and processed for insights using analytical methods. This processing pipeline is theoretically similar to mining from a mineral ore to a polished product. Data mining aims to find valid, new, possibly valuable, and clear connections and patterns that are present in data. Data mining aids firms in concentrating on the most valuable data present in their current databases. Data mining has provided value to a wide variety of industries and has been used to boost profits by decreasing costs and increasing revenue. Several firms utilize data mining to facilitate the customer life cycle management, including obtaining new customers, growing profits from existing customers, and keeping good customers. When a firm knows the qualities of good customers (profiling), it can focus on potential customers with similar qualities. By profiling customers who purchased a specific product, a company can concentrate on customers with similar qualities who have not purchased that product (cross-selling).

2.6 Employee Involvement in Entrepreneurial Decision-Making with Artificial Intelligence

Employee involvement in an organization is an environment where all employees are unique (Aliyu, 2019). Every employee engages in aiding the organization to attain its goals. The employees' input is all requested and esteemed by their management. The employees and management acknowledge and cherish each other's involvement and contribution to the organization's success (Aliyu, 2019). Moreover, employee involvement entails allowing an organization's employees to participate actively in its affairs and empowering them to attain higher individual and firm performance. Involvement is viewed as employees' participation in decision-making and problem-solving, as well as increased independence in work processes. Entrepreneurial decision-making may be regarded as a function of the involvement of employees in an organization. Employees' participation in decision-making is crucial to firms as it impacts their quality and competitiveness. Employee involvement motivates workers to volunteer and take responsibility for organizational goals (Aliyu, 2019). Engaging an organization's staff in decision-making encourages them to have a sense of workforce membership, which may create a cozy environment where leaders and managers willingly communicate to ensure a stable industrial relationship (Aliyu 2019). Employee engagement enables workers to engage and inspire each other in order to utilize their actions to attain higher personal and corporate productivity. Likewise, employee involvement is usually seen as employees' increased collaboration or contribution in supporting an organization in order to realize its policy document and primary goals by employing their internal ideas, skills, and strategies for critical thinking and decision-making (Aliyu 2019). Employee involvement in decision-making is a significant driver of organizational excellence. Employee involvement is a cognitive and emotional reproduction for attaining organizational goals and objectives (Aliyu 2019). Therefore, organizations must create an environment where their employees influence the decisions and actions that impact their roles (Aliyu 2019). Employee participation is regarded as a critical component in

successfully introducing unconventional management methods and an essential factor in assessing employees' level of accountability (Aliyu, 2019). Employee involvement is essential in adopting modern technology systems in organizations (Aliyu, 2019). Therefore, it influences artificial intelligence to moderate better entrepreneurial decision-making. Encouraging employee participation is considered a significant shift from a goods-centered logic to a service-centered logic regarding marketing; it may be the next frontier for competitive advantage creation and effectiveness.

3. Methodology

In this study, the research design and data collection and setting involved the use of mixed methodologies which involved the use of qualitative and quantitative techniques. This involves the use of primary and secondary data. Questionnaires were given to experts in a wide range of disciplines, including manufacturing, finance, and medicine to gather very important information on opinions, knowledge and understanding in the use of AI in decision making. Secondary data from research articles, trade journals and academic articles were also used in this study. The combinations of data have made the result of the research study more trustworthy and robust and demonstrate how artificial intelligence can be utilized to boost performance, enhance decision-making, and produce better outcomes. These polls seek to comprehend respondents' opinions on artificial intelligence, including how they view its potential advantages, challenges and limitations which will give a strong basis of understanding that complements the research literature, appealing to a wide spectrum of professionals. Data control procedure was also applied to guarantee the validity of the study by drawing significant correlations and associations by performing quantitative analysis of the research data including descriptive statistics.

6. Conclusion

The result of this study demonstrates that AI facilitates better decision-making in several ways which may include advances in automation, pattern recognition, and data analytics, empowering businesses to make better decisions. Also, the adoption of AI in critical decision making process leads to efficiency, risk reduction, strategic planning and greater creativity. However, there are several difficulties with AI integration, such as ethical issues, bias, and data privacy issues. The adoption of AI can reshaping the future or redefines the future as AI transcends conventional boundaries, allowing businesses to use data-driven insights to achieve superior outcomes. AI also promotes flexibility, innovation, and effectiveness, empowering firms to confidently traverse uncertain conditions with the increasing prevalence of human-AI collaboration human intellect and changes processes can be enhanced leading to a new degree of competitiveness among organization. It is therefore, recommended that further research on algorithmic transparency, bias-reduction techniques, and successful AI-human collaboration methods. Research on workplace transition challenges, ethics, and the societal effects of AI-driven decision making will also help us better grasp the role of AI in enterprises. In conclusion, the incorporation of AI into decision-making is a crucial step in the organization's transformation process. Organizations may use AI's capability to help establish a future in which human and artificial intelligence coexist by recognizing the revolutionary promise of AI and tackling its obstacles.

7. Limitations and Challenges of using AI for decision-making

The application of AI into decision-making process comes with several problems for which the business enterprises must proffer solutions. The initial capital investment needed to use AI is a major hindrance to deployment of AI in decision making process. In addition, the high costs of buying or building AI system involves huge money and effort, training of employees, and

incorporate AI into current operations. Again, the Additionally, individuals who use conventional decision-making techniques may have difficulties due to the learning curve involved with understanding AI technology. Also cultural shift from manual decision making to AI driven operations may become difficult to manage as employees can be worried about switching jobs or interfering with algorithmic decision-making but the adoption of AI however depends on effective change management. Data biases can be found by AI systems trained on historical data which may have a negative effect on some demographic groups and these prejudices may promote inequality and compromise the objectivity of judgment. The adoption of AI in processing data may suffer when faced with challenges that call for creativity, intuition, or a thorough understanding of how people interact

8. References

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