WILEY | Hindawi

Research Article

Future of Business Culture: An Artificial Intelligence-Driven Digital Framework for Organization Decision-Making Process

Navaneetha Krishnan Rajagopal,[1] Naila Iqbal Qureshi,[2] S. Durga,[3] Edwin Hernan Ramirez Asis [iD],[4] Rosario Mercedes Huerta Soto [iD],[5] Shashi Kant Gupta,[6] and S. Deepak [iD][7]

[1]*Business Studies, University of Technology and Applied Sciences, Salalah, Oman*
[2]*Department of Business and Administration, College of Business Administration, Princess Nourah Bint Abdulrahman University, Riyadh, Saudi Arabia*
[3]*KL Business School, Koneru Lakshmaiah Education Foundation, KL University, Vaddeswaram, Andhra Pradesh, India*
[4]*Universidad Señor de Sipan, Chiclayo, Peru*
[5]*Universidad Nacional Santiago Antunez de Mayolo, Huaraz, Peru*
[6]*CSE, Integral University, Lucknow, Uttar Pradesh, India*
[7]*Department of Accounting and Finance School of Business and Economics, Ambo University, Woliso Campus, P.O. Box 217, Ambo, Ethiopia*

Correspondence should be addressed to S. Deepak; deepak.sankaran@ambou.edu.et

Technological efforts are currently being used across a broad array of industries. Through the combination of consumer choice and matching principle, the goal of this paper is to investigate the prospective implications of artificial intelligence systems on businesses' outcomes. From an entrepreneurship standpoint, the research revealed that artificial intelligence systems can help with better decision-making. What impact does the introduction of AI-based decision-making technologies have on organizational policymaking? The quirks of human and AI-based policymaking are identified in this research based on five important contextual factors: precision of the choice search area, contribution to the innovation of the policymaking process and result, volume of the replacement collection, policymaking pace, and generalizability. We create a novel paradigm comparative analysis of conventional and automation judgment along these criteria, demonstrating how both judgment modalities can be used to improve organizational judgment efficiency. Furthermore, the research shows that, by involving internal stakeholders, they can manage the correlation among AI technologies and improve decision for businessmen. Furthermore, the research shows that customer preferences and industry norms can moderate the link between AI systems and superior entrepreneurial judgment. The goal of this work is to conduct a thorough literature analysis examining the confluence of AI and marketing philosophy, as well as construct a theoretical model that incorporates concerns based on established studies in the areas. This research shows that, in a setting with artificial intelligence systems, customer expectation, industry standards, and participative management, entrepreneurial strategic decisions are enhanced. This research provides entrepreneurs with technology means for enhancing decision-making, illustrating the limitless possibilities given by AI systems. A conceptual approach is also formed, which discusses the four factors of profit maximization: relationship of AI tools and IT with corporate objectives; AI, organizational learning, and decision-making methodology; and AI, service development, and value. This study proposes a way to exploit this innovative innovation without destroying society. We show real-world examples of each of these frameworks, indicate circumstances in which they are likely to improve decision-making performance in organizations, and provide actionable implications into their constraints. These observations have a wide variety of implications for establishing new management methods and practices from both academic and conceptual viewpoints.

1. Introduction

Organizational behavior and behavioral economics have long debated how to construct managerial decision that would be, where certain, but when, like, and how to originate and incorporate choices regarding classes of individuals. Herbert Simon defines the method of choosing the variant that is expected to occur in perhaps the most preferable option from a set of available options. This technique includes identifying and documenting the possibilities, assessing their significance, and assessing the appropriateness and insufficiency of each set of results. Businesses can be conceived of as "judgment systems" that must be organized to meet organizational goals. Identifying the right judgment framework for your company, for instance, deferring choices to specialists or combining the judgments of a bunch of participants, has a big impact on how well it runs. While the challenges of developing judgment frameworks that influence actual participants are very well, a primary motivating factor underlying AI's explosive development has been the prospect of speedy, specific, reproducible, and minimal decisions with accuracy surpassing human understanding. While AI's rising usage bears witness to its multiple verifiable positives, its usage in executive decision necessitates a complete understanding of its abilities and weaknesses. Executives that employ AI to make judgments are eventually responsible for their choices. Current revelations and evidence suggesting from the research showed, however, that using AI-based judgment may introduce and worsen a plethora of major and often concealed biases and barriers to evidence brought, responsibility, and openness, jeopardizing faith in AI-based decisions. Despite the attractiveness of intelligent decision-making, institutional culture development is a topic of discussion.

Certain businesses have embraced a "statistics" perspective to operational decision-making. Analytics can assist you in making smarter judgments, but you will need the right technology to do so. Many individuals assume that the processor is a human being. According to the term "information," data are vetted by—and summarized for—humans to comprehend. Firms should, nevertheless, adopt artificial intelligence (AI) into their activities and, in some situations, eliminate individuals from the mix in order to fully comprehend the value of data. Processes based on data must make room for AI-driven frameworks. Firms in the electronic era need to know long waits and, as a result, a better awareness of a dynamic market than in past eras. Depending upon the perspective, numerous companies have implemented advancing technology to attain high effectiveness and a strategic edge [1]. Between all these advancements, AI has taken center stage [2], garnering the attention of both research and industrial applications. The potential of a machine to adapt from its lessons, respond to different inputs, and conduct human-like behaviors is described as AI [3]. AI may now be one intellectual force with the fullest chance for upheaval, as per [3]. Likewise, AI is a critical multipurpose technology in the area of [4]. In the latest period, the vast volume of data generated in various formats has been quicker now than ever. It advocated for the use of new technologies in order to accelerate technological developments such as computing processing capacities and the development of new AI techniques [5]. Businesses can utilize AI to process in the form of these breakthroughs [6, 7].

AI is less susceptible to selection dissonance than people. Even if the results are counterintuitive to our multiple viewpoints, AI can be taught to locate population sections that better describe variation at delicate levels. Thousands, if not millions, of categories are no problem for AI. And AI is perfectly capable of dealing with nonlinear relationships of any kind, including exponentially dynamic equations, geometrical sequences, and binomial probabilities.

The approach shown in Figure 1 provides an excellent use of the evidence and draws more reliable and unbiased inferences. It can assist in finding the optimum ad creativity, commodity quantities, and investment portfolios to make. While individuals are no longer affiliated, it is important to note that AI-driven activities are not just about mechanization. Sure, it might save money, but that is just a bonus. The value of AI stems from its ability to make better decisions than humans. As a result, effectiveness is significantly improved, and new possibilities are introduced.

Humans are not outdated only because they are removed from processes that only entail the analysis of structure data. Many business choices are based on factors other than organized data. Long-term goals, business strategies, organizational ideals, and competitive dynamics are all instances of knowledge that exists only in our thoughts and is transmitted through heritage and other quasichannels. This information is unavailable to AI but crucial to business decisions. For instance, AI could identify the optimal inventories realistically in order to optimize revenues. In a competitive setting, however, a corporation may choose to keep higher inventory levels to deliver a better customer experience at the expense of earnings. In other circumstances, AI may calculate that increasing marketing spending will provide the best return on investment among the options accessible to the organization. However, in order to maintain quality standards, a corporation may choose to limit growth. Individuals have more knowledge in terms of tactics, ethics, and economic conditions; hence they may deviate from AI's objective reasonableness. In such cases, AI can be used to generate possibilities from whom individuals can select the best one depending on the supplementary information available. The order in which such operations are carried out is case-specific. Sometimes AI is the first to relieve human workload. Human judgment can also be used as an input to AI processing in some situations. There may be iteration between AI and human processing in various circumstances (see Figure 2). The point is that people are interacting with the possibilities created by AI's data processing rather than the data itself. Our approach to reconciling our decisions with objective rationality is through values, strategy, and culture. This is best accomplished in an
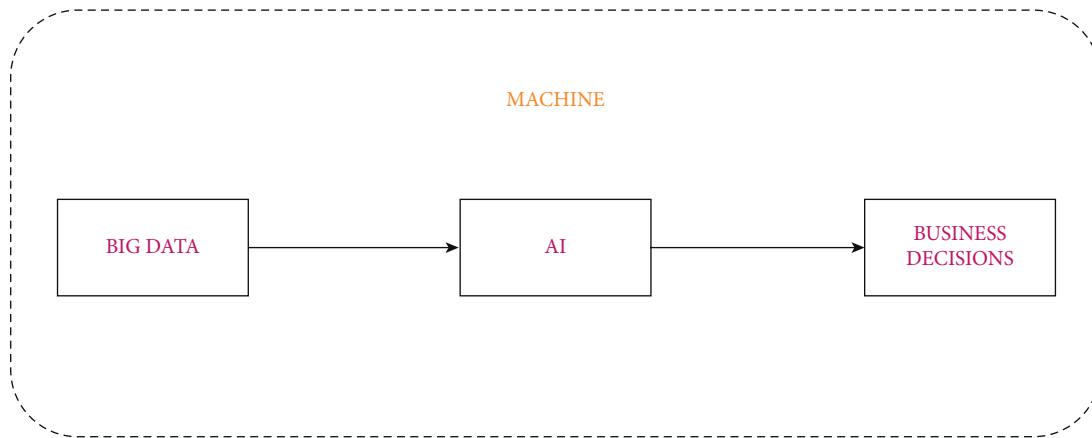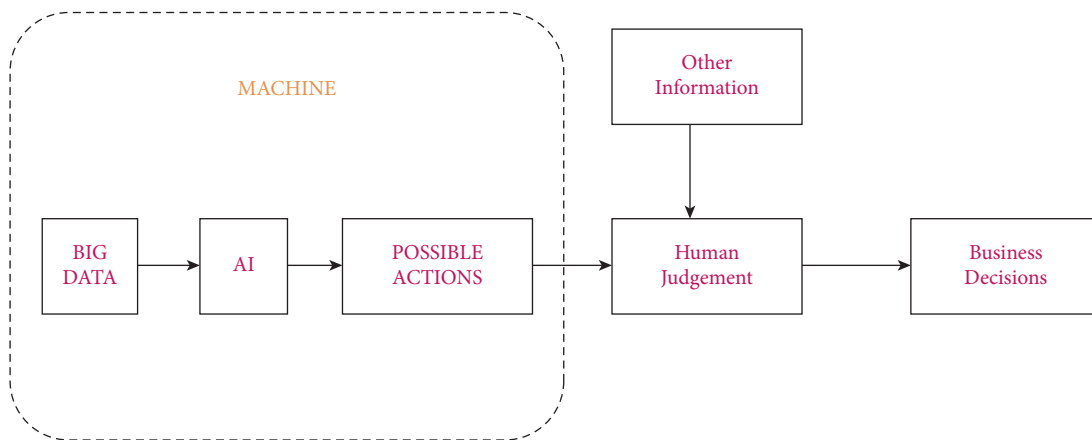
FIGURE 1: AI-driven workflow.

FIGURE 2: AI and human judgment-based DM model.

open and knowledgeable manner. We can make better decisions by combining AI and humans, rather than relying solely on one.

Firms are born and formed as a result of the serious consequence up and define their strategy. Strategy implementation is a continual and sophisticated process since companies invest in diverse systems, and decisions can have explicitly or implicitly consequences on participants [8]. Choices made in the presence of risk are distinguished from those made in the face of uncertainty, according to conventional causal inference. In the first group, all conceivable outcomes, including their chances of occurring, are known and statistically or empirically available. Several factors, however, influence the level and kind of uncertainty in strategic organizational choices that fall into the latter group [9]. To handle complexity, such decisions must be made in an adaptive way, which organizations enable by introducing hierarchies and departments to specify roles. While this enhances operational decision speed and efficiency, it has been discovered that having a variety of perspectives, experiences, and knowledge improves the quality of strategic judgments [9].

1.1. Research Gap and Challenges.

Recently, the study of AI has become a growing field. AI and organizations, AI and judgment, and AI within KIFs, yet let alone AI with structuring organization and judgment within KIFs, have received little interest from scholars. Many academics studied the topic of ES, an AI methodology, in the 1980s and 1990s, but it appears that the current tendency is to research the AI technologies world in general. Because of this, when studying the literature on AI, we noticed a surge in the publication of studies discussing ES and AI in the 1980s and 1990s, but this surge subsided until this past decade. Due to the Second Machine Age's restricted computing power and storage, as well as a dearth of data, AI faced a winter throughout the 1990s and the first decade of 2000. To the state of the art, the survey has thus far mostly concentrated on the use of AI in certain sectors or functional departments. According to Martnez-López and Casillas (2013), who performed an outline of AI-based implementation within business markets, and Syam and Sharma (2018), who looked at the effect of AI and machine learning on profits, some researchers have performed a thorough search about the use of AI inside a singular purpose of the venture. Design and research approaches have recently encouraged the

establishment of innovative management practices as well as program management, civic engagement, marketing, and use of social media, among other things.

According to this perspective, the term "change initiatives" refers to a concept that covers cutting-edge problems and procedures for innovative processes [10]. The term "intellectual capital" relates to the governance of expertise, the administration of process innovations within organizations, and the innovation-centered processes that draw on outside ideas to promote effective innovation. Therefore, open innovation advises businesses to go beyond their comfort zones while developing their strategic innovations by collaborating and forming collaborations with various institutions, individuals, and specialists. The boundaries of open innovation, according to some writers, need to be studied and debated in terms of risk, processes and practices, administration, communication, economics, or techniques, even if open innovation has been thoroughly researched in academic study.

McCarthy originally used the phrase artificial intelligence in 1956, defining it as "the science and engineering of creating intelligent machines." Since then, there have been moments of false optimism and cycles of success. AI researchers were confident in their projections of their success in the near future from the start, based on intriguing findings. Instead, the development of AI took longer than anticipated and was dependent on shifting research priorities throughout time, including eras where new approaches were introduced and old ones were improved. However, in the past ten years, the enormous amount of data being produced at a faster rate than ever before necessitated the creation of new technologies, which sped up the advancement of science and technology, including an increase in computational processing. Performing tasks that are simple for a human to complete but difficult to formalize in terms of numerical constraints was (and remains) a major difficulty for AI in its early stages [11]. The challenge of formulating guidelines to explain this kind of activity suggested that AI systems needed the capacity to spot trends in information and develop their own knowledge. Machine learning is the capability that allows computer-based programs to intuitively recognize trends in information and to behave without being explicitly programmed. As a result, AI research has progressed not only in the direction of process rules that humans previously specified for replicating people's behavior to make judgments but also in the path of emulating human experience.

Today, fresh data are produced quickly, providing possible input for developing strategies. This easy access to a lot of data comes with its own set of complications. Large amounts of data must be transformed into workable options as part of the strategy-building process in order for decisions to be made. Strategic decision-making, however, continues to be a cognitively taxing process that necessitates the accurate identification of and selection from among viable possibilities. Human decision-makers frequently choose from limited possibilities based on their existing knowledge base in the interest of time rather than optimizing. On the other side, AI offers a methodical capacity for data

processing and interpretation and learns to accomplish certain objectives by permitting suitable adaptability [12]. In fact, the use of AI is more and more ingrained in our daily lives, and its applications in the corporate world are growing in importance. Human attention is a finite resource in and of itself, and AI has already started taking over jobs that formerly required administrative involvement. According to McKinsey (2017), useable AI is "the next frontier," and its emergence has been dubbed one of the most significant evolvements ever since industrialization. Today, AI is starting to become an essential part of company expansion, driving a significant increase in mechanization. Some judgments in the promotional interaction with stakeholders are already automated by AI. The paper makes the claim that AI can be used as an efficacious response to external uncertainties of big datasets and unclear climatic circumstances and was an appropriate reaction to the situational factors of insufficient management consciousness, based on the preliminary research results of [12]. It would be worthwhile to look into the use restrictions, such as corporate culture and digital readiness. The idea that all businesses are created equally surfaced during the interviews. Further investigation is required to determine the conditions under which businesses will truly profit from utilizing AI and more specifically if the expense and effort required to implement change would be worthwhile.

The pace of innovation and intelligent systems has had a significant impact on the B2B ecosystem over the past ten years. The adoption of methods and software that make use of artificial intelligence (AI) to improve operational efficiencies and effectiveness by autonomous algorithms or networks has been one of the most massive modifications. Integrated environments, where research methodology is essential for effective approaches and where AI plays a significant role, decide the next business problems (Saura and Ribeiro-Soriano) [13]. Since data-driven decision-making processes are becoming more prevalent in the corporate world, it is crucial for business success to develop and use customer relationship management systems (CRMs) correctly. However, despite its potential and advantages for businesses, AI is difficult to deploy technically. There is a void in the literature surrounding the identification of the uses that specifically AI-based CRMs can offer to the B2B digital marketing ecosystem, despite the fact that the use of CRM in B2B marketing has been investigated and debated in the past, as was previously mentioned.

In light of the aforementioned, our study intends to provide knowledge relating to the role of AI in developing marketing strategies and to offer managerial and academic insights by exploring whether and how AI might influence the development of marketing strategies [4, 14]. The authors answer this question using a contingency theory approach, doing an exploratory investigation to confirm the current situation, and looking for any potential insights into potential future applications. The following is the structure of this paper. The methods used to carry out the literature review based on the gaps identified are described in Section 2. The results of the article analysis are then provided in

Section 3. The final portion discusses the findings and future research directions.

2. Research Survey and Methodologies

As stated in the media, the state of the art is not necessarily ready for every application. The hype curve, which Gartner publishes on a regular basis, has proved very useful in defining the readiness of various technologies. The hype curve indicates when a technology is ready and when it reaches a high level of production. The graph in Figure 3 depicts the hype curve for new technologies based on a 2019 assessment. Many of the terms associated with artificial intelligence are still a few years away from becoming commonplace.

In terms of developing financial returns, Borges et al. [15] undertook academic analysis to evaluate the association between AI and policy. In view of this, the objective of this report was to narrow the gap by undertaking a thorough systematic review concentrating on the interplay of AI and market tactics, incorporating modern practice with frameworks, showcasing anticipated results, complexities, and possibilities, and kicking off a conversation about future studies. By picking publications from peer-reviewed journals and conference proceedings, they developed a system for introducing research gaps.

Caner and Bhatti [16] analyzed peer-reviewed scientific journal manuscripts to construct a conceptual framework for predicting AI organizational strategy. Only research articles between 2015 and 2019 were considered. They found that AI capabilities and constraints, economic arrangements and AI, organizational units and AI, personnel, sectors, and AI, and AI laws and morals are the crucial parts of the AI business model.

A literature evaluation by Trunk et al. [17] examined the correlation between AI as well as decision-making in quickly transforming company scenarios. The writer completed a textual evaluation of peer-reviewed newspapers to provide an introduction to the preexisting scientific studies which investigated the possibility of linking AI to difficult factors. Results are provided inside a conceptual viewpoint, which demonstrates exactly how people are able to make use of AI within powerful scenarios in addition to consequences and hurdles to look at.

Models are referred to as AI when compared with traditional quantitative theories, which is described as corporeal and precise software applications which could deal with intricacy. There are different research and opinions on whether AI may be just like the man mind in decision-making; however, the methods taken into account differ in terms of focus, expertise, and then purpose. Models are components of manufacturing operations to help human beings for ages; therefore, including know-how straight into company is not a brand new occurrence. Devices, nonetheless, are much more of something completely handled by people as well as much less unique compared to groups in genuine cultural connection scenarios. AI proposes that devices respond and also respond to people, a change within the human-machine connection. Possibilities as well

chances are not agreed upon or perhaps analyzed extensively, necessitating additional studies.

Figure 4 depicts an equivalent curve, presuming that observation is more closely linked to planned rationality, whereas understanding and reacting necessitate the inclusion of other experienced and recording systems. There is no comprehensive definition of an AI application. Different aspects of intelligence are thought to exist in humans, and according to Nilsson's description and the rational behavior continuum (see Figure 4), AI applications span from simple to complicated [18]. Table 1 shows the literature carried out on various dimensions of AI application in an organizational context.

3. AI-Driven Framework Methodologies and Analysis

By improving consumers' perception and engagement with digital strategy-based applications, AI solutions can help businesses gain a competitive advantage. Entrepreneurial orientation through the development of new products will supply innovative features focused on the social cognitive capabilities of the AI age. The end result is often that combat and mental preparation should focus on securing the introduction of AI to produce ground-breaking goods and providers. Incorporating next-generation AI technologies having a well-defined electronic Internet business strategy that features company objectives, efficiency, and legislation can give businesses competitive by nature benefits. The preexisting research has determined a good base, and the literature comment could today be utilized to create a theoretical style. It assisted the audience with a definite indication of the problem by utilizing a suitable experimental method to evaluate the information in thirteen posts together with the aim of isolating the suggestions to become incorporated within the categorization of all of the publications (Figure 5).

As previously stated, tactical policymaking falls under the heading of uncertain conclusions. Apiece substitute is given a probability and utility level in order to make the optimal decision, and the option with the uppermost biased value is picked. Coherence, conditionalization, and completion are characteristics of probability levels. The influence of frequency is referred to as coherence. Expertise grows as a result of a huge recurrence of analogous claims in analogous situations, which molds the assessment in a given direction. The amount of people included is referred to as convergence. The control body is expected to rise as this number grows. We try comparing the characteristics of AI along five key decision-making circumstances before attempting to address the administrative models by which mortal and AI-based decision-making can be merged: precision of the search area, understandability of the policymaking processes and outcomes, size of the alternate solution collection, policymaking tempo, and replicability. The features of human and AI-based policymaking under these settings are summarized in Table 2.

Our comparability of standard, as well as AI-based strategic preparation, indicates a framework that

Gartner Hype Cycle for
Emerging technologies, 2019

Biochips
AI PaaS
Edge Analytics
Autonomous Driving Level 5   5G
Low-Earth-Orbit Satellite Systems
Edge AI   Graph Analytics
Explainable AI
Personification
Knowledge Graphs   Next-Generation Memory
Synthetic Data   3D Sensing Cameras
Light Cargo Delivery Drones
Transfer Learning   Emotion AI
Flying Autonomous Vehicles
Augmented Intelligence   Autonomous Driving Level 4
Nanoscale 3D Printing
Decentralized Autonomous
Organization   DigitalOps
Generative Adversarial   Adaptive ML
Networks
Decentralized Web
AR Cloud   Immersive Workspaces
Biotech - Cultured
or Artificial Tissue

Expectations

Innovation   Peak of   Trough of   Slope of   Plateau of
Trigger   Inflated   Disillusionment   Enlightenment   Productivity
                    Expectations

Time

Plateau will be reached: As of August 2019

○ less than 2 years

● 2 to 5 years

● 5 to 10 years
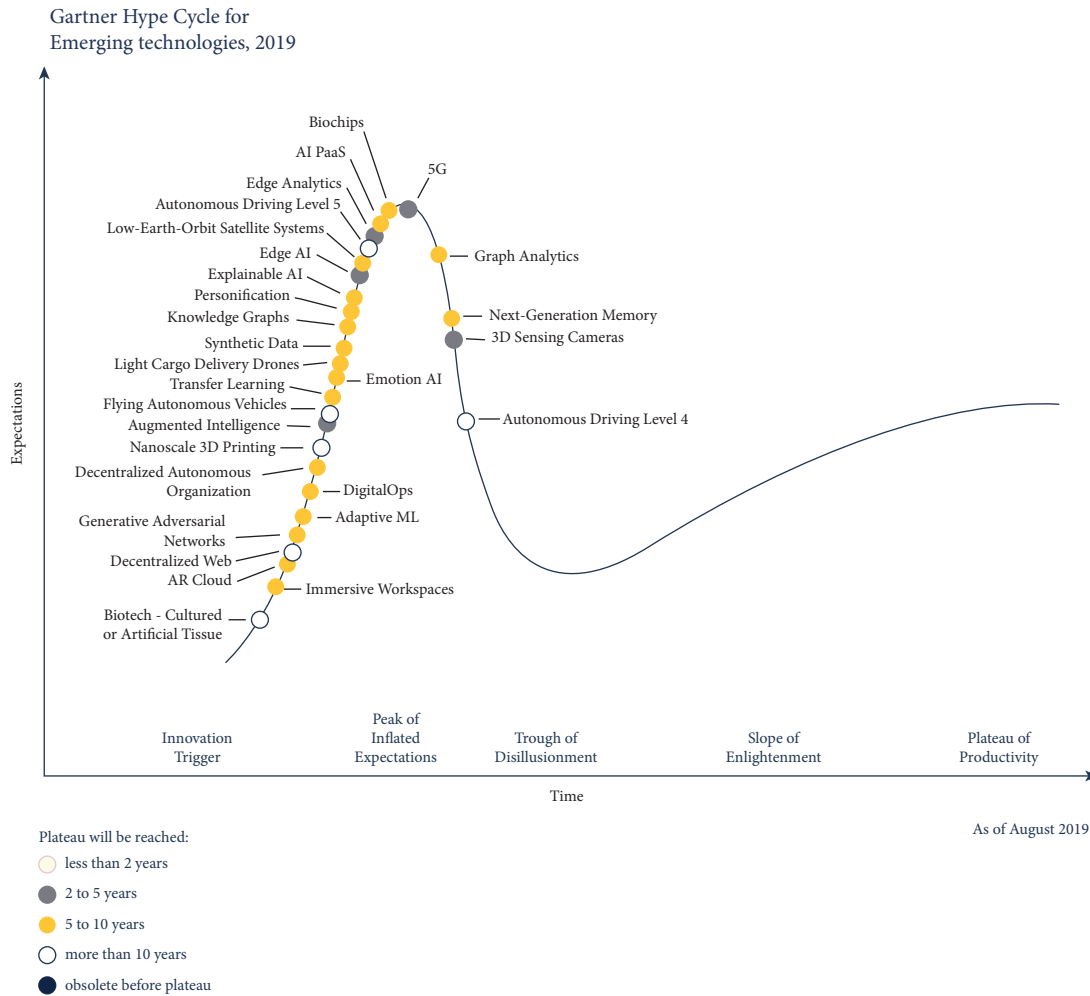
○ more than 10 years

● obsolete before plateau

FIGURE 3: Gartner hype chart.

demonstrates the way in which the modalities could be mixed to improve the usefulness of strategic preparation. Within our strategy, the 3 important organizations are complete human AI delegation, crossbreed human AI as well as AI human sequential choice producing, and also aggregated human AI choice-generating (see Figure 6).

3.1. AI Structures. Complete abdication frameworks, which are equivalent to organizational contexts where leaders transmit choice authority to personnel professionals, use AI-based techniques to make choices without human assistance. But on the other hand, intellect retains influence over the conclusion. When the dimensionality on the realization is now much less valuable compared to the generalization reliability, the substitute approach established is great, the decision-making speed is crucial and brought on by organic verdicts, and the total envoy is very beneficial. There are severe drawbacks to deferring decision-making to AI. Scientific studies show that printer mastering algorithms are able to master from Internet textual materials and then replicate concealed man prejudices from gender and race, to come up with insights as well as generate choices (see Figure 7).

Resolving these challenges will involve the collaboration of lawmakers, academics, corporate executives, and computational decision-making system designers. A starting place for this kind of try will be the realization that supervisors are able to designate power to AI, however, not accountability. Enterprise supervisors have to find out how growing authorized buildings such as *RB_IN* the European General Data Protection Regulation (GDPR) is able to change algorithmic quality, fairness, openness, and accountability as well as attend a hands-on method of guaranteeing the moral page layout of computational choice producing realizing the benefits of total envoy to AI-based stakeholders while reducing the chances. Types of these pursuits incorporate switching to fresh new details constructivist coaching strategies as well as leading to the development of completely new methods for reasonable, transparent, and responsible algorithms.

People as well as AI-based solutions can make options to come down with diverse selection methods consecutively, using the end result of just one policy developer moving in the ingestion of other people. The company planners are able to take advantage of the strengths of equally AI as well as man strategic preparation of crossbreed methods, though
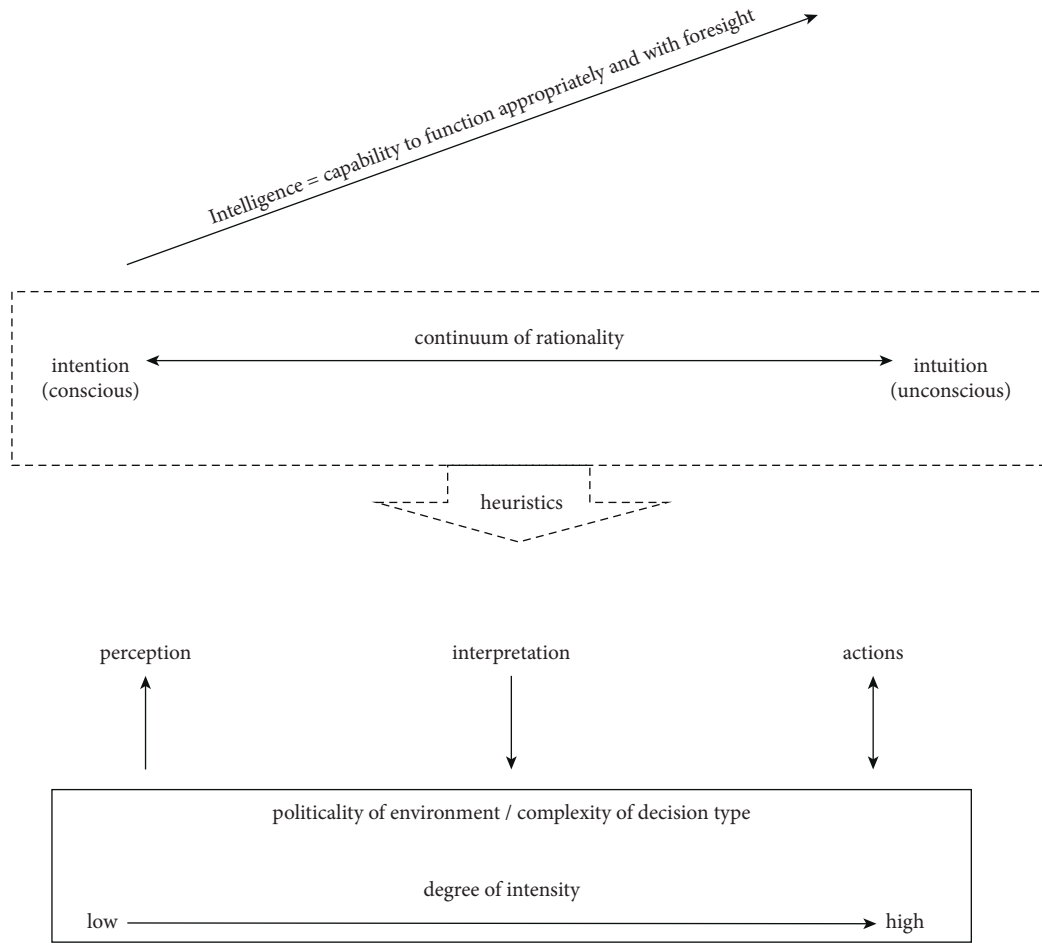
Figure 4: Continuum of rational behavior.

Table 1: Categorization of publications based on organizational environment and the implementation of AI component.

Feature of AI domain	References cited
Decision-making process	Akthar et.al., 2019, and Duan et al. [3]
Stakeholder relationship	Carbone et al. [8], Trunk et al. [17], and Sujata et al. [7]
Machine-to-machine communication	Balog et al. [2] and Lich et al. [4]
AI and machine learning in organization	Yin et al. [14] and Goralski and Tan, 2020

they might additionally earn more intense every other's flaws. The analytic options as inputs to man choice producing and man choices as inputs to computational strategic preparation are 2 stylized crossbreed components that are analyzed.

Information gathering technique for human decision-making: strategic options. This particular building moves within 2 phases. Within the initial action, the original group of options is put through AI-based policymaking. AI provides a filtering system, getting rid of identical or maybe unsuitable choices, as well as delivering in the 2nd stage a subset of practical alternatives which a man policy developer picks because of one of them.

Strategic planning uses human decisions as input. In this structure, people policymakers first target a specific number of possibilities from a higher proportion and additionally send out the mailing list to AI algorithms for selection and estimation of the smartest choice. The framework pertains nicely to instances in which man choice creators work with a top self-belief within a tiny group of ideal options, but analyzing that little established efficiently demands the computation of big details sets or maybe the thing to consider of crucial stakeholders more than an extended time period. The places where people are unsure regarding the perfect option are coming from a few of choices; this particular framework is able to take advantage of the predictive opportunity of algorithms effectively.

Equally, individuals and AI policymakers are given portions or choices of choices in between the distant relative abilities in this particular product. AI-based judgments and the person are next incorporated utilizing an aggregation method like democratic greater part or maybe typical right into a communal judgment. In this regard, the AI-based policy developer could be viewed together with the reasoning crew's choice that influences
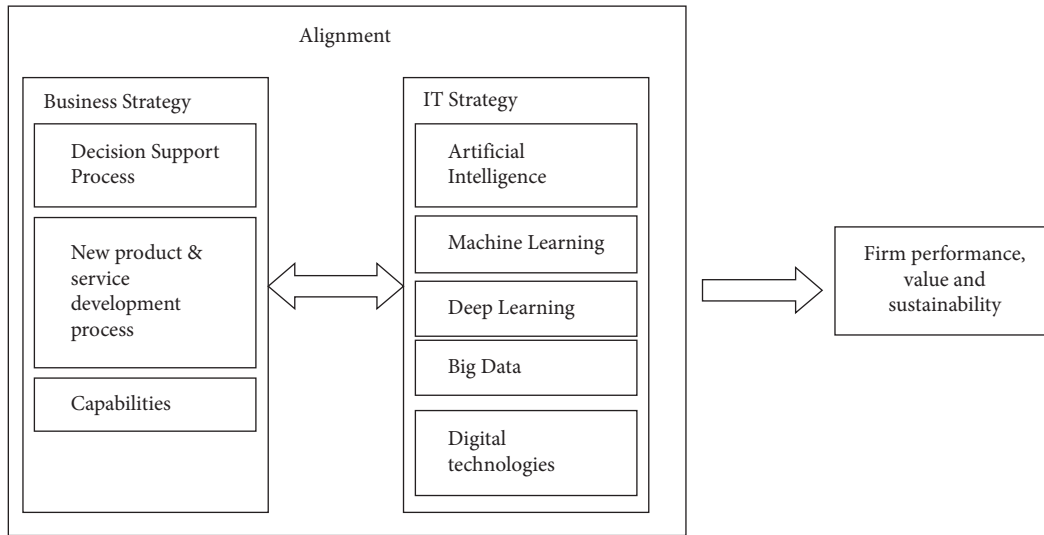
FIGURE 5: Conceptual framework.

TABLE 2: Personnel versus AI-policymaking process.

| Conditions	AI	Human
Specificity	A well-defined selection feature selection with precise optimization algorithms is required.	It allows for a broad and vague decision-making environment.
Interpretability	The intricacy of the representations might make interpreting the choice and consequences challenging.	Decisions can be explained and interpreted; however, they are susceptible to retrospective interpretation.
Size	Massive variant combinations can be handled.	Insufficient ability to analyze a wide variety of choices consistently.
Speed	Speedy in comparison. There is a minimal balance among precision.	Slow in comparison. There is a massive trade among exactness.
Replicability	Because of the regular computational approach, the decision-making process and outputs are highly repeatable.	Interpersonal and transcharacteristics such as variances in knowledge, attentiveness, background, and the judgment producer's psychological response make replication susceptible.
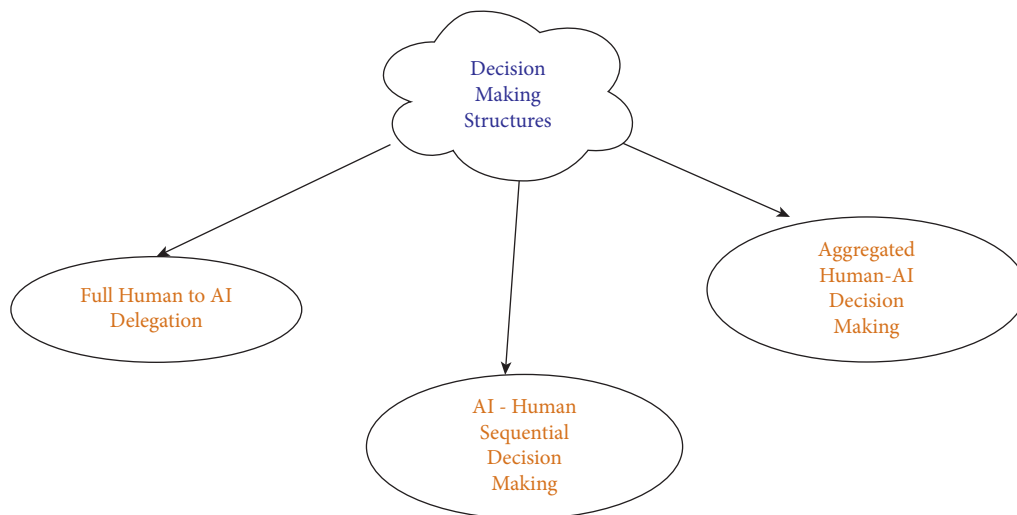
FIGURE 6: Structures related to AI.

the end result of a situation. Because of the pros and cons of individuals in addition to AI-based policymakers, individuals and AI-based policymakers are able to concentrate on different or even disagreeing facets of the options.

3.2. Key Challenges in Using AI-Frameworks in Organization Decision-Making Process. Although "it is not like every strategic decision requires the use of science," AI knowledge has been shown to be essential in understanding when,
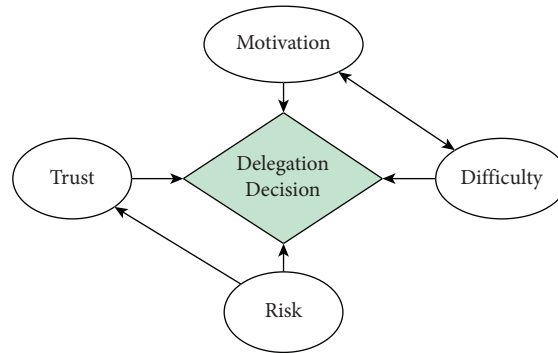
Figure 7: Data delegation process.

where, and why to include AI into operating models. AI literacy, according to researchers, is a deep awareness of the technology and its capabilities and limitations, which is often lacking. Scholars have stated that involving personnel who would be exaggerated by AI incorporation, rather than just top administration, is critical to increasing AI literacy because acceptability varies at different levels. Stakeholders have been shown to need to feel a sense of ownership, and they can define their position by acquainting themselves with the skill and energetically contributing to the integration. As a result, according to the literature, education and training are critical tasks. Capabilities, in particular, have been stated towards becoming extremely relevant as AI enters managerial decision, with an emphasis on employee training in collaboration, inventiveness, and excellent reasoning. AI should be introduced progressively as expertise and comprehension of the technology increase. Personnel get used to using it for jobs that used to be done by computers. Clarity, which is described as "documentation insight into the nature and exchange of information, and also the circumstances with which it is interpreted" to reach a consensus, is also necessary for successful adoption and use. The publications in this genre recommend assembling a varied introductory team composed of new and seasoned business managers, as well as individuals who have obtained adequate guidance. Governance, according to scholars, is responsible for establishing an appropriate introductory team and giving guidance throughout the approach.

By presenting the material of the techniques for dealing, the paradigm examines the recent academic debate on activities and, on the other hand, has been proven to be dependent on the AI application in question, as seen in Figure 8. Furthermore, while utility calculations are claimed to be human-dependent, researchers argue that AI can predict how each option alternative will affect the company or its partners. This could have an impact on the weighing of options, for which AI can also perform pure mathematical calculations. The final choice, on the other hand, must be made solely by the human decision group.

Organizational architecture and resource distribution have an impact on application selection. However, research reveals that this effect is reciprocal, meaning that AI applications have an impact on the definition of organizational structures. Like a nutshell, utilizing AI to aid in this essential

organizational process implies a shift in rational decision roles. According to the study, they become managers.

AI deployment considerations at agencies are based on the operational aim that the innovation is advancing. As illustrated in Tables 3 and 4, the administration may achieve better successful outcomes by using a three-part structure in which AI risks vary depending on the requirement for human decision.

The sophistication of the task grows, and so does the need for effective prevention technologies; according to the report's findings, "confiscating the possibilities and trying to mitigate the dangers connected with trying to adopt automated tools includes paying great consideration to the contest among innovation and endeavor." This continuous spectrum approach can assist government in determining which tasks can be automated rapidly and which ones demand more preparation and collaboration with professional and corporate Allies.

4. Results and Discussions

The Gartner AI survey showed that 17% of firms use AI-based tools for managing HR activities, and this percentage will increase to 30% by 2023. 60% of firms that employ AI use it for the decision-making process (see Figure 9.)

Based on the above structures involved in the effective decision-making process in firms, it is evident that AI performs better when compared to decisions upheld by professionals. Figures 10 and 11 and Table 5 depict the effectiveness of AI tools in the decision-making process.

5. Implications for Further Research and Practice

5.1. Implications. To effectively use and utilize the potential of AI to manage knowledge, it is crucial to understand how AI enables various categories of knowledge. The authors of this paper want to advance knowledge and open up new avenues for investigation into the application of AI to strategy development. The outcomes show that AI may support, replace, or supplement human decision-making when developing marketing strategies. It particularly serves to emphasize the possibility of a beneficial partnership between management and machines. The study has offered
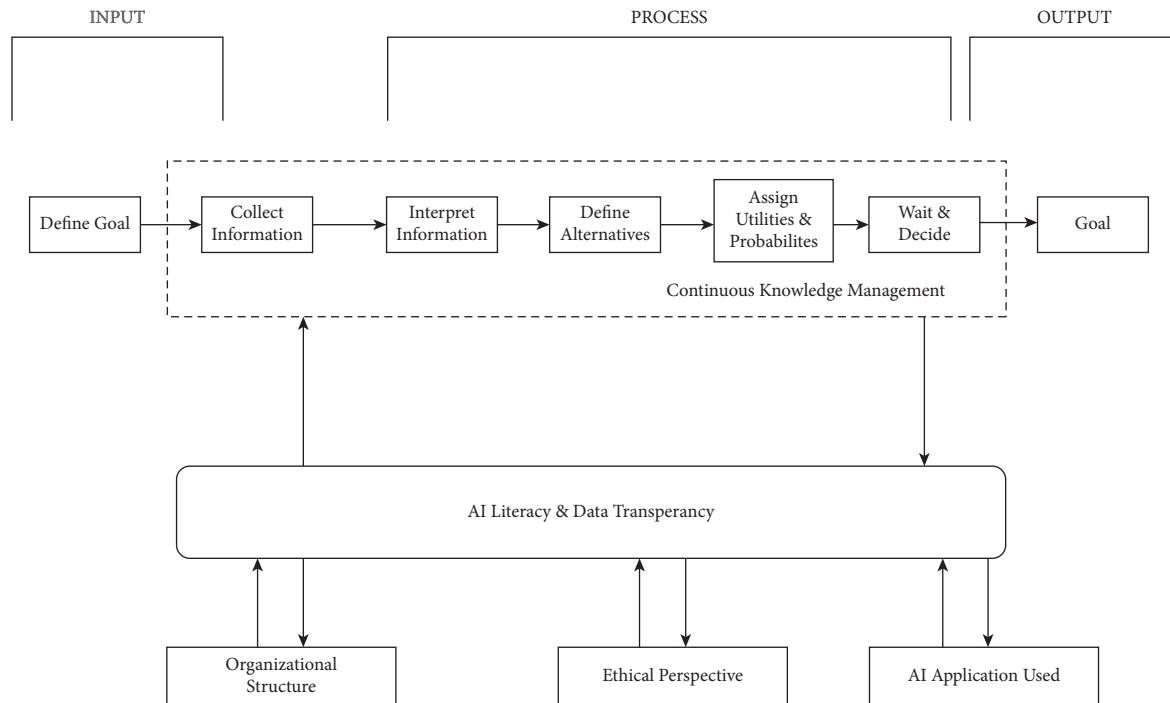
Figure 8: Conceptual model for AI.

empirical proof that AI can be used as a tool for developing marketing strategies. What the paper advises to refer to as a creative-possibility perspective is one topic that emerged from the interviews. The authors are hoping that this creative-possibility perspective opens up a new line of inquiry into how managers may collaborate with AI during the process of formulating strategies. Additionally, the expert interviews underline the chance in terms of business school curricula. They noted how many businesses are still ill-prepared for the changes AI would bring about. The establishment of a connection between academia and industry is the primary aspect that will aid in fostering change. For instance, this started in Italy with the establishment of eight competence centers and a number of projects financed by the Italian government. The evidence of how AI may be a tool for developing marketing strategies may be used as input for upcoming business school partnerships and projects.

Furthermore, the current study suggests that this point of view could guide the inclusion of a pragmatic analysis maturity stage dubbed Creative Analytics to the GAAM viewpoint. This suggests the potential for Prescriptive Analytics ("how can we make it happen") to develop into AI ("what innovation can we envisage") used for creative strategy design. It takes both science and art to formulate a campaign. In the world we live in today, data is widely accessible and can be used to influence advertising. Instead, the authors argue that, by providing ways in which AI can supplement human attention for alternative creation, human cognition is "freed up" to provide the art. This is because current AI is suitable for automating some tasks requiring managerial attention. Instead of asking "what is

the appropriate response" tactically, managers need to strategically concentrate on "what are the proper questions." This exploratory work suggests that this is feasible by allowing AI to assist in both the rational view it offers and the creative identification and analysis of the current issue.

The findings of the current investigation have relevant conceptual ramifications. First, additional researches could use research methods outlined in the original investigation as a foundation for fresh proposals for intellectual capital and the excavation of perspectives from significant social networks, taking into account the dearth of prior research that would investigate the innovation process using machine learning strategies. Second, using predictive modeling that aims for statistical significance, the themes found in the current study can be operationalized and investigated as variables. To put it another way, the open innovation and Twitter-based insights learned in this study can be used as factors in further empirical studies. Since our goal was to find characteristics that may be employed in the formulation of future hypotheses in empirical research rather than testing them, the present investigation, despite its explorative, can serve as a forerunner of future statistical inquiries on open innovation.

The findings of this investigation are really useful. As a result, managers of businesses or organizations—both public and private—can effectively use our findings as a guide for developing new organizational or communication norms that would support the growth of open innovation in their own organizations. The many emotions that were discovered in this study also provide us a better grasp of how employees or outside experts feel about open innovation and related issues. Additionally, our findings shed light on how

Table 3: Analysis of task by level and decision degree.

Level/degree	Low	Medium	High
Micro	Filling of data	Foster care	Response to emergency
Meso	Operational capabilities	Recruitment process	Decisive planning
Macro	Constitutional responsibilities	Creation of policy	Problem recital and management

Table 4: Provision for AI paradigms for tasks by degree of decision.

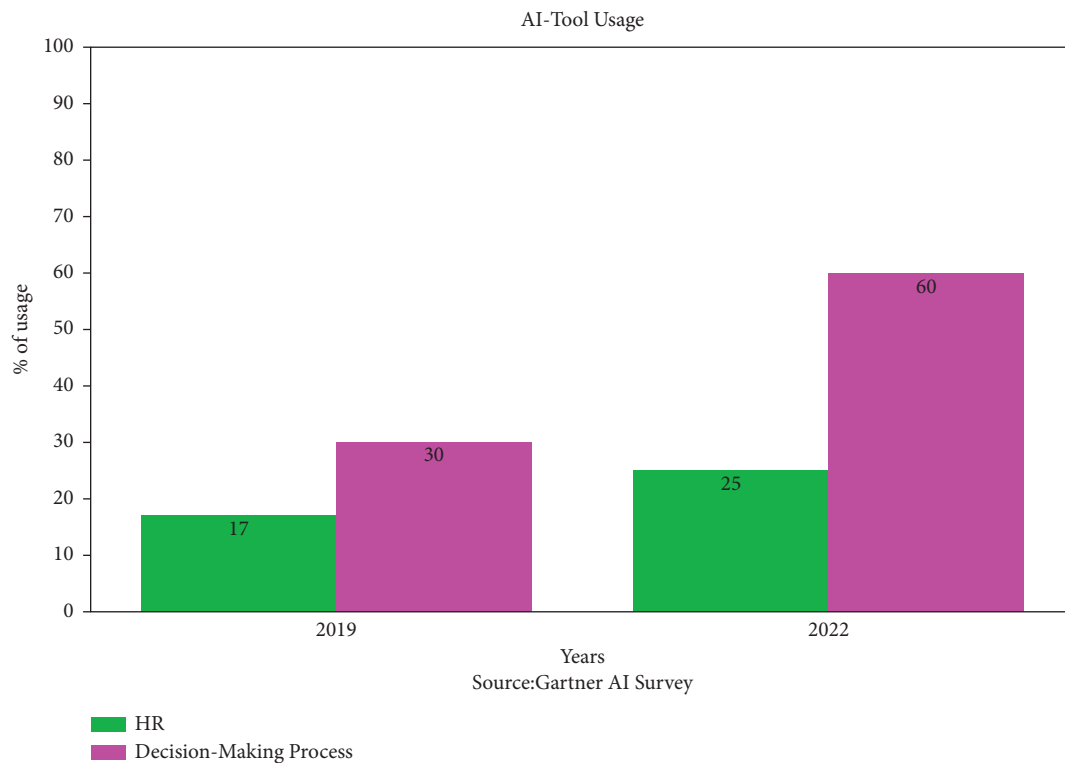| Low	Medium	High
Automation	Predictive analytics	Relationship inventory

Figure 9: Gartner AI survey of AI tools usage.

businesses should structure and promote their cultures, communities, project development and management, support for entrepreneurial endeavors, organization and promotion of ideas, team structure and organization, the use of technology in organizations, and the significance of business models and management for open innovation. In particular, the practitioners can comprehend the idea of open innovation from numerous analysis viewpoints and not just those linked to restrictions, dangers, and characteristics based on our results and the 8 highlighted subjects. More specifically, businesses can use these findings to enhance creative concepts, facilitate knowledge sharing among the company's stakeholders, foster employee innovation, and hence support the development of internal open innovation initiatives or both. Finally, by providing fresh approaches to foster creativity and produce value through open innovation, CEOs and executives of organizations might advise enhancements to their business models and conventional procedures. By

answering the research questions put forth in each of the subjects chosen as pertinent for open innovation strategies, businesses can also apply open innovation.

5.2. Limitations and Future Research Perspectives. The current study contains a number of drawbacks. First, because we utilized a nonprobability sampling design, the results cannot be applied to other settings or samples on the same topic. However, they can be used to explain the UGC components that make up the sample. The second restriction of the present study is the number of tweets we utilized to train our model because all machine learning models are concerned with the accuracy of the findings (i.e., the more trained the machine learning model is, the better the results are). Another drawback of the current study is that we only focused on the information that was taken from one social network (Twitter). Therefore, it would be required to
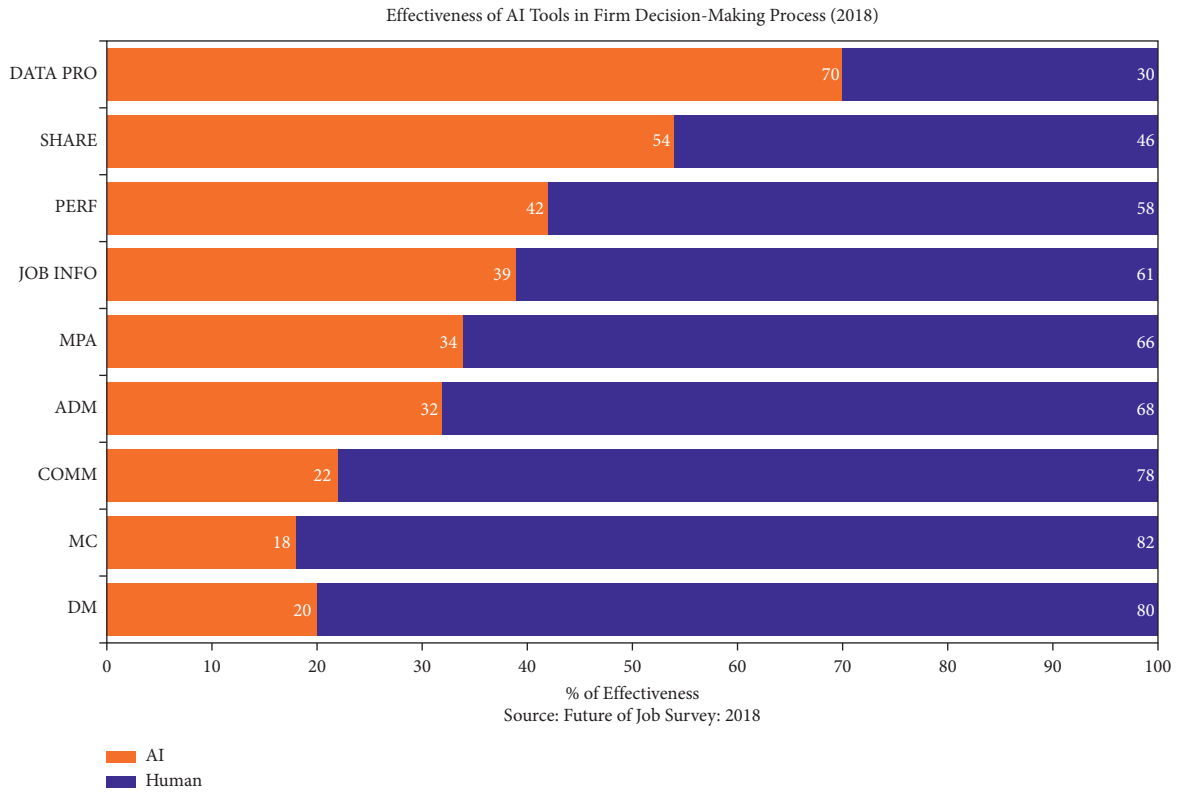
Effectiveness of AI Tools in Firm Decision-Making Process (2018)

Figure 10: Effectiveness of AI tools in firm decision-making process (2018).

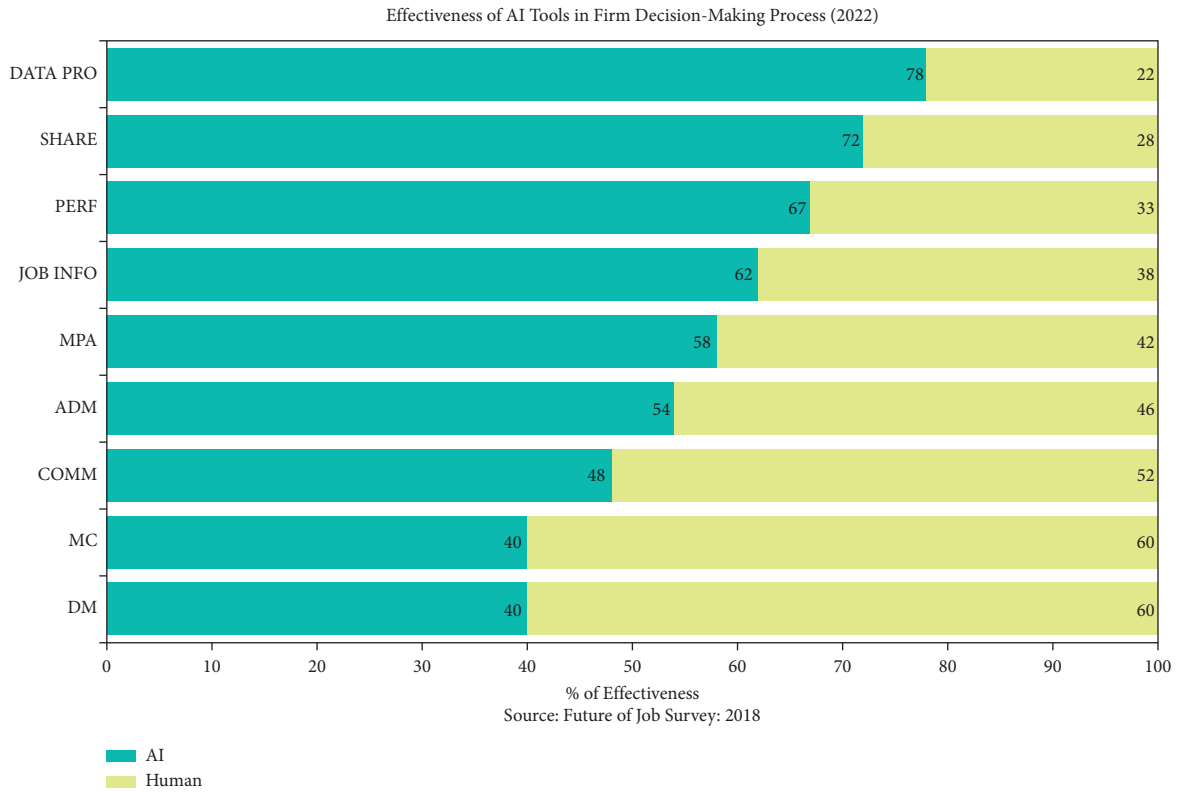Effectiveness of AI Tools in Firm Decision-Making Process (2022)

Figure 11: Effectiveness of AI tools in firm decision-making process (2022).

TABLE 5: Effectiveness of AI tools in firm decision-making process.

Factors	Human proportionate hours		AI proportionate hours	
	2018	2022	2018	2022
Reasoning and decision-making	80	60	20	40
Managing and coordinating	82	60	18	40
Communication	78	52	22	48
Administration	68	46	32	54
Mental and physical activities	66	42	34	58
Identifying job-related information	61	38	39	62
Complex activities performance	58	33	42	67
Job-related data sharing	46	28	54	72
Data processing	30	22	70	78

confirm our findings using information from other significant social network platforms in future research. Thirdly, this study was an exploratory examination that produced high-quality findings. It is therefore necessary to conduct more quantitative research to quantitatively test the variables found in the current study.

Although it has several limitations, this exploratory effort seeks to scratch the surface of whether and how AI may be used in the development of marketing strategies. First, the study has solely examined the purposeful process of strategy design. Only some strategies, or those that are proactively developed by patterns of strategic decisions, are purposeful, according to Mintzberg (1978). By virtue of initially unconscious patterns of strategic decision-making, further strategies emerge. Furthermore, Hart (1992) suggested that organizational actor autonomy and management intentionality (the extent to which marketing strategy is intentionally generated) be used to establish a practically applicable strategy formulation process (the degree of involvement of organizational actors in the strategy creation process).

The research is limited by the number of studies included in the sample, the databases used to conduct the systematic review of the literature, and the researchers' in-depth analysis of the chosen studies. Additionally, it can be argued that the MAC process's visual outcome interpretation is a restriction. Last but not least, since the technology corresponding to the growth of AI-based CRMs in B2B digital marketing is constantly changing, future studies should keep going in the directions of research that have been suggested so far to continue building strong foundations for the use of AI-based CRMs in B2B digital marketing.

Although the literature study demonstrates how AI is used in relation to business goals and strategies, the findings show that the academy has not given much attention to this confluence and that there are still many unanswered concerns and difficulties. The new generation of AI (or cognitive technologies), which incorporate cognition-related technologies and largely rely on or do away with humans for labor-intensive tasks, was only discussed in specific application-related contexts without any emphasis on the tool-related aspects of AI or for introducing conceptually managerial implications. Based on the findings of the literature assessment, difficulties and potential areas for further research were identified.

Thus, in terms of the sources of value creation with the application of AI and its connection with business strategy, knowledge gaps and research propositions were developed.

6. Conclusion

Managers and organization experts have long been concerned about how to design organizational decision-making frameworks. Algorithmic choice creators are starting to be more and more essential organizational players together with the fast development of AI. The furnished paradigm sets the groundwork for understanding how you can incorporate computational and human choice producing to take full advantage of the advantages of every tactic and talk to greater conclusions. This may improve businesses, though it should be completed with extreme caution. The study discovered that the conventional perspective of devices as tools is contradictory to AI. To make usage of the technologies efficiently, man decision-makers should shift their functions to be interpreters and translators on the results, in the place of merely managing the device inside the delivery associated with a fixed procedure. This means an increased shift and responsibility inabilities. As a result, exactly how people view AI is going to be substantially affected by the way they see themselves, while the context, as well as goal, is going to be seriously affected by AI. Based on present scientific studies, nonetheless, the presumption that computer systems, as well as people, are the same is neither realistic nor honest.

Our paper starts up brand new studies' concerns: Just how can we determine exactly how effectively an AI constitutes a choice? Just how does algorithmic reasoning influence managing accountability? Just how does our framework influence organizational results? Exactly how crucial would be the decision-making context within figuring out the suitability of alternate tactics? What will function as the effect on accountability and trust for a realm in which AI is starting to be more and more vital only in decision-making? By dealing with these along with other issues, supervisors, as well as organizational scholars as well, are going to be much better ready for an unsure long term.

In corporate environments, AI technologies have taken center stage. This enthusiasm is in part because of the potential, which has been shown in reports from top consultancies, technological companies, and white papers. In turn, the business competitive environment is tied to high

expectations. Research on the strategic application of AI to gain competitive advantages is thus becoming more and more in demand. This research also provides a theoretical foundation that identifies these areas for future research and aids in comprehending how company strategy and the deployment of AI technologies interact. This interaction was described in the framework in terms of the sources used to create financial returns. The suggested framework can serve as a guide for management and organizational practices with regard to managerial implications, necessitating new models for managerial decision-making and transforming organizational culture. Additionally, by showing how AI and business strategy are related, executives will be better able to implement these new technologies while being more aware of the opportunities, difficulties, and potential advantages that AI may present for their companies. This work has several limitations even though it makes contributions, such as the state of the field today and potential directions for future research on the subject at hand. Without mentioning other business strategy dimensions like operational strategy and financial strategy, the research was conducted using terminology linked to business strategy or IT strategy. Future research might broaden the search criteria and take these viewpoints into account. Furthermore, the dimensions shown in the conceptual model may serve as a catalyst for further study going in a certain direction. Future field studies that can investigate these claims should ideally be vital to the issues and hypotheses raised by this study.

Data Availability

No data were used to support this study.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

References

[1] P. Akhtar, J. G. Frynas, K. Mellahi, and S. Ullah, "Big data-savvy teams' skills, big data-driven actions and business performance," *British Journal of Management*, vol. 30, no. 2, pp. 252–271, 2019.

[2] K. Balog, "The concept and competitiveness of agile organization in the fourth industrial revolution's drift," *Strategic Management*, vol. 25, no. 3, pp. 14–27, 2020.

[3] Y. Duan, J. S. Edwards, and Y. K. Dwivedi, "Artificial intelligence for decision making in the era of Big Data–evolution, challenges and research agenda," *International Journal of Information Management*, vol. 48, pp. 63–71, 2019.

[4] U. Lichtenthaler, "Building blocks of successful digital transformation: complementing technology and market issues," *International Journal of Innovation and Technology Management*, vol. 17, no. 01, p. 2050004, 2020.

[5] K. Božič and V. Dimovski, "Business intelligence and analytics use, innovation ambidexterity, and firm performance: a dynamic capabilities perspective," *The Journal of Strategic Information Systems*, vol. 28, no. 4, p. 101578, 2019.

[6] X. Chen and K. Siau, "Business analytics/business intelligence and IT infrastructure: impact on organizational agility," *Journal of Organizational and End User Computing*, vol. 32, no. 4, pp. 138–161, 2020.

[7] J. Sujata, D. Aniket, and M. Mahasingh, "Artificial intelligence tools for enhancing customer experience," *International Journal of Recent Technology and Engineering*, vol. 2, pp. 700–706, 2019.

[8] E. Carbone, K. Georgalos, and G. Infante, "Individual vs. group decision-making: an experiment on dynamic choice under risk and ambiguity," *Theory and Decision*, vol. 87, no. 1, pp. 87–122, 2019.

[9] D. M. Rousseau, "Making evidence-based organizational decisions in an uncertain world," *Organizational Dynamics*, vol. 49, no. 1, p. 100756, 2020.

[10] J. R. Saura, D. Palacios-Marqués, and D. Ribeiro-Soriano, "Exploring the boundaries of open innovation: evidence from social media mining," *Technovation*, vol. 4, p. 102447, 2022 ISSN 0166-4972.

[11] A. F. Borges, F. J. Laurindo, M. M. Spínola, R. F. Gonçalves, and C. A. Mattos, "The strategic use of artificial intelligence in the digital era: systematic literature review and future research directions," *International Journal of Information Management*, vol. 57, p. 102225, 2021 ISSN 0268-4012.

[12] T. Eriksson, A. Bigi, and M. Bonera, "Think with me, or think for me? On the future role of artificial intelligence in marketing strategy formulation," *The TQM Journal*, vol. 32, no. 4, pp. 795–814, 2020.

[13] J. R. Saura, D. Ribeiro-Soriano, and D. Palacios-Marqués, "Setting B2B digital marketing in artificial intelligence-based CRMs: a review and directions for future research," *Industrial Marketing Management*, vol. 98, no. October 2021, pp. 161–178, 2021a.

[14] J. Yin, S. Wei, X. Chen, and J. Wei, "Does it pay to align a firm's competitive strategy with its industry IT strategic role," *Information Management*, vol. 57, no. 8, p. 103391, 2020.

[15] A. F. Borges, F. J. Laurindo, M. M. Spínola, R. F. Gonçalves, and C. A. Mattos, "The strategic use of artificial intelligence in the digital era: systematic literature review and future research directions," *International Journal of Information Management*, vol. 57, p. 102225. in press, 2020.

[16] S. Caner and F. Bhatti, "A conceptual framework on defining businesses strategy for artificial intelligence," *Contemporary Management Research*, vol. 16, no. 3, pp. 175–206, 2020.

[17] A. Trunk, H. Birkel, and E. Hartmann, "On the current state of combining human and artificial intelligence for strategic organizational decision making," *Bus. Res*, vol. 13, pp. 875–919. in press, 2020.

[18] N. J. Nilsson, *The Quest for Artificial Intelligence: A History of Ideas and Achievements*, Cambridge University Press, Cambridge, 2010.