The Role of Artificial Intelligence in Supporting Quality Decision-Making in Organizations

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Abstract. The decision-making process is one of the administrative processes taken by the departments in the organizations. In fact, it is one of the challenges they face. Indeed, the quality of decision-making process may not be completed as required if it is done in a traditional way. The use of modern technology in organizations has contributed to raising the quality of decisions, and here comes the role of artificial intelligence in its ability to solve problems and to predict the future to know the appropriate decisions that the organization must take to raise its level in all marketing, financial and organizational fields. This systematic review aims at knowing the role of artificial intelligence in improving the quality of decision-making in organizations, and the extent to which organizations are prepared to face challenges and obstacles when adopting artificial intelligence techniques in their organizations. This is done by surveying and analyzing studies that dealt with this topic in terms of importance, objective, methodology and what they reached as results and knowledge of the most important proposed models that help organizations measure their readiness and apply some algorithms and techniques to raise the quality of decisions in organizations. One of the most important findings of the study was that the application of artificial intelligence techniques helps organizations analyze clients and review data to help them make the right decision to support customers and deal with their complaints. In fact, artificial intelligence provided organizations with a comprehensive understanding regarding the accuracy of prediction and appropriate decision-making. It was also found that some organizations are ready to employ artificial intelligence in several areas within the organization in order to make decisions, raise efficiency, reduce costs, and increase profits. It also helps in the process of detecting crises related to the company's events. Thus, we find that these results have a great impact on the community of organizations and it motivates them to quickly prepare for the application of artificial intelligence techniques to support the quality of their decisions to obtain sustainable development. The most important recommendations are that organizations and their decision-makers must ensure their readiness to apply artificial intelligence techniques while providing models and special work methods for organizations' decision support programs to help them in how to apply and implement them to reach the desired goals of high-quality decisions that raise the level and performance of organizations.

Keywords: artificial intelligence, quality of decision-making, expert systems, decision-making, organizational performance, applications of artificial intelligence.

1 INTRODUCTION

The decision-making process in organizations is one of the essential and important processes to the success and progress of organizations. In fact, artificial intelligence has entered all administrative fields that need logical thinking, knowledge, study of information and data and their analysis to provide correct solutions based on realistic data. Thus, the decision-making process is the most important of these areas that decision-makers in the organizations must take into account. When using artificial intelligence in the decision-making process in the organizations, we take advantage of digital technology to reach high quality decision-making

with more ease and lower costs. Artificial intelligence has played a fundamental role in the performance of business within organizations, and has become part of its goals and strategy through which business achievements are made.

The term "artificial intelligence" was used for the first time in a proposal presented at a summer research workshop at Dartmouth College in New Hampshire. The workshop defined "the artificial intelligence program as"making a machine that behaves in ways that you can call "intelligence" if a person behaves in this way (Howard, 2019). There is no doubt that during recent years there has been a revolution in the field of artificial intelligence as the latest qualitative leap in improving the performance of organizations. Despite all this, we find that most organizations are not prepared and not ready to adopt these technologies to work with them. They undergo challenges when applying them which they must know in order to be able to overcome them. In addition, since relying on artificial intelligence provides decision-makers in organizations with essential information that helps them in ease to make decisions, it became necessary to know the readiness of organizations to adopt artificial intelligence techniques and to know what challenges they face when applying these technologies.

This paper consists of seven sections starting with an introduction, then the study problem, followed by the study Methodology, the Previous studies, the results, the discussion, and finally the conclusion and recommendations.

2 THE STUDY PROBLEM

The decision-making process is one of the most important factors that help organizations develop, progress and achieve the desired goals of increasing financial returns and reducing costs, and an essential element in understanding and studying clients and how to attract them. We find that some managers and decision-makers in organizations resort to using artificial intelligence techniques in forecasting and choosing appropriate decisions for the benefit of the organizations, but others are still not ready to apply it because they are not aware of the extent of the organizations 'readiness to adopt such assistive technologies to make accurate and high-quality decisions.

Based on the above about the importance of applying artificial intelligence techniques in organizations and its role in decision-making processes, the study problem emerged in answering the following question: How does artificial intelligence contribute to the support and quality of decision-making in organizations? The following sub-questions are derived:

- What is the challenge that organizations face when applying artificial intelligence techniques?
- What are the readiness of organizations in applying artificial intelligence techniques to achieve quality in decision-making?
- What are the artificial intelligence techniques that contribute to supporting the decision-making process?

3 STUDY METHODLOGY

In this study, we will conduct an analysis and critique of published studies that dealt with the role of artificial intelligence in achieving quality in decision-making processes and knowing the extent of organizations' readiness to apply artificial intelligence techniques to achieve quality in decision-making processes. Therefore, we will use the descriptive, analytical, documentary approach to analyze and criticize the studies to extract conclusions and implications that are relevant to answering the study's questions. The studies were reached through the search engine google scholar, and through the databases available in the Saudi Digital Library like IEEE and Since Direct:

4 PREVIOUS STUDIES

This section aims at reviewing a number of studies related to the topic of artificial intelligence and its role in the quality of decision-making in organizations to review them critically. The studies will be arranged in descending chronological order from the most recent to the oldest, which fall within the period between 2012 and 2020. The total number of studies that will be reviewed is 10 studies distributed as follows:

Study (Melati et al., 2021) entitled "Decision-Making Quality of Public Managers: Contributions from Intelligence and Knowledge Management"
This paper aims at analyzing how general managers can apply knowledge and intelligence management to achieve the highest quality in decision making, by conducting interviews with seventeen public directors in southern Brazil. For the purpose of analysis, a qualitative comparative analysis technique was applied using ambiguous groups. The results of the paper indicated the importance of effective data and information and the importance of knowledge management to ensure the quality of decision-making for general managers, which indicates that the absence of quality decision-making depends on the absence of knowledge management and the absence of elements of intelligence in public administration. In addition to analyzing circumstances and suggesting ways to lead to greater quality in the decision-making process of the General Directors, it was possible to contribute to the issue of knowledge and intelligence management in public administration and to the benefit of government paths to strengthen decisions and make the best explorations. Here, we stress the importance of artificial intelligence in achieving quality decision-making in companies and organizations.

Study (Jöhnk, 2021) entitled "Ready or Not, AI Comes — An Interview Study of Organizational AI Readiness Factors."
The paper aims at conducting a comprehensive investigation of the organizations' readiness to apply artificial intelligence organizationally, practically and conceptually. The paper also provided additional experience on the role of technology dependence and preparation for it in general.
Furthermore, the AI readiness factors in this paper are used as a necessary basis for making decisions to be prepared and for the alert process. Hence, it provides us with a set of descriptive knowledge on AI readiness and provides an initial building block for informative knowledge for organizations towards relying on successful AI. This paper was divided into two parts, the first with artificial intelligence being a technological innovation and the other with research related to organizational readiness. This paper used a qualitative research approach to understand the factors of artificial intelligence readiness. These factors of artificial intelligence readiness include strategic compatibility, culture, knowledge, information, data sources, and information for re-engineering and implementation of new processes, as shown in Fig. 1 below:
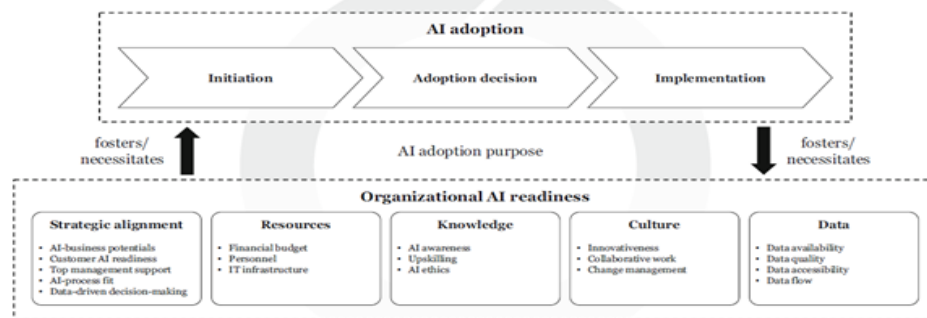

Fig. 1. How to adopt artificial intelligence based on the five proposed factors (2)

In fact, artificial intelligence facilitates the adoption of data that helps in decision-making as artificial intelligence systems are fundamentally data-driven and require openness to integrate these ideas for databased decision-making. Artificial intelligence enhances this dependence because both the use of data and statistical methods help in obtaining insights into financial resources. The study concluded that organizations must continue to evaluate and develop their readiness for artificial intelligence and rely on it in matters of analysis, storage and technology, one of which is the decision-making process.

Study (Bosco, 2020) entitled "A Study on Artificial Intelligence Interaction with Organizational Performance."
The study aimed at finding out the relationship between artificial intelligence and the performance of organizations. The study also aimed at analyzing the threatening challenges that the organization faces when applying artificial intelligence. This study used the descriptive approach based on electronic questionnaires and interviews with a sample of 100 employees in order to know the impact of artificial intelligence on raising the efficiency of the performance of organizations, and the possibility of employing artificial intelligence in organizations to make better and accurate decisions in order to achieve the goals of the organization. This study came to bridge the gap related to employing artificial intelligence in organizations in order to raise performance, facilitate decision-making and raise its efficiency and quality. The results found that organizations are ready to employ artificial intelligence in several areas within the organization in order to make decisions, raise efficiency, reduce costs, and increase profits. However, there are obstacles to the application of artificial intelligence techniques, which are namely challenges related to cybersecurity, protecting customer data, and insufficient budgets.
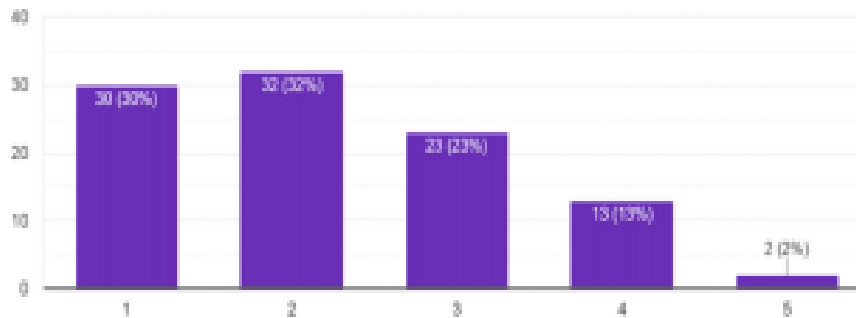

Fig. 2. Employees' acceptance level for applying artificial intelligence (3)

The previous bar graph in Fig. 2 shows the level of acceptance from employees (x) on the possibility of applying artificial intelligence (y) to shape the future of the organization. That is, 32% of the respondents followed by 30% of the respondents who were employees strongly agreed that AI will be the future of the upcoming organizations. It is expected to shape and increase the standard of living for both the people and the economy.

Study (Albrecht et al., 2021) entitled "Call me maybe: Methods and practical implementation of artificial intelligence in call center arrivals' forecasting"
This paper aims at providing a starting point for the transformation of the traditional call center for prediction and decision making through the systematic evaluation of predictive potential using artificial intelligence with machine learning models as compared to the traditional

methods used. The remainder of the paper was on a theoretical background on artificial intelligence methods that assist in customer analysis and a status review of call center research. This study investigates the capabilities of using artificial intelligence through machine learning models in the expectations of call center arrivals during the day regarding prediction accuracy and workability. This study analyzed two sets of online data, the first was on customer support from retailers, and the second was on the complaints waiting list, which included hourly text notes over a period of 174.5 weeks. The study suggested a two-step approach, the first step is a comprehensive understanding of the accuracy of predicting the use of artificial intelligence by means of machine learning methods in predicting the arrival of calls. The second step makes the process latent and possible to choose from decision-makers, and specifically an in-depth analysis of the expectations and accuracy of machine learning models based on data. The methodology of the paper was like the initial analysis of the data, where the data of the call center of the leading German online retail stores were analyzed as the call center includes four branches: customers, complaints, customer support, and a personal consulting service to take advantage of artificial intelligence by improving the internal decision-making process.
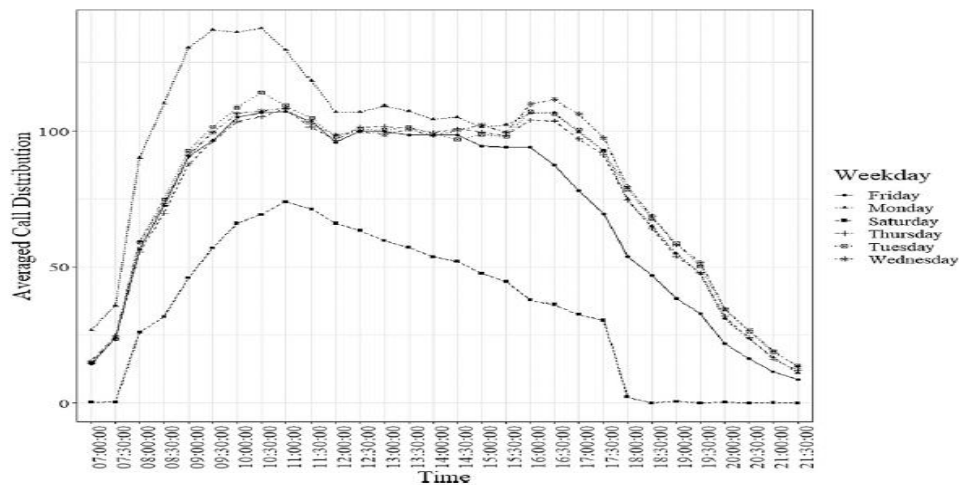

Fig. 3. the extent of communication flow (4)

Fig. 3 shows the volume of access to the customer support queue during 174.5 weeks, and it is clear that the volume of call arrival remains more or less constant throughout the period considered. Regarding the average call distribution per day, it is clear that Monday is the busiest day with a high peak too early in the morning hours on weekdays and there are few calls coming on Saturdays.

Study (Wu,Junyi and Shang,Shari, 2020) entitled "Using artificial intelligence to detect crisis related to events: Decision making in B2B by artificial intelligence"
The study aimed at finding out the role of artificial intelligence factors that are reached by the computer in detecting crises related to the events in the company. The crisis threatens organizational performance. Therefore, the data-driven strategy will lead to timely and effective thinking, increasing the success of crisis management. The study expands situational crisis communication theory and attribution theory frameworks based on big data and machine learning capabilities for early detection of crises in the market. This research proposes a structural model as shown in Fig. 4 below.
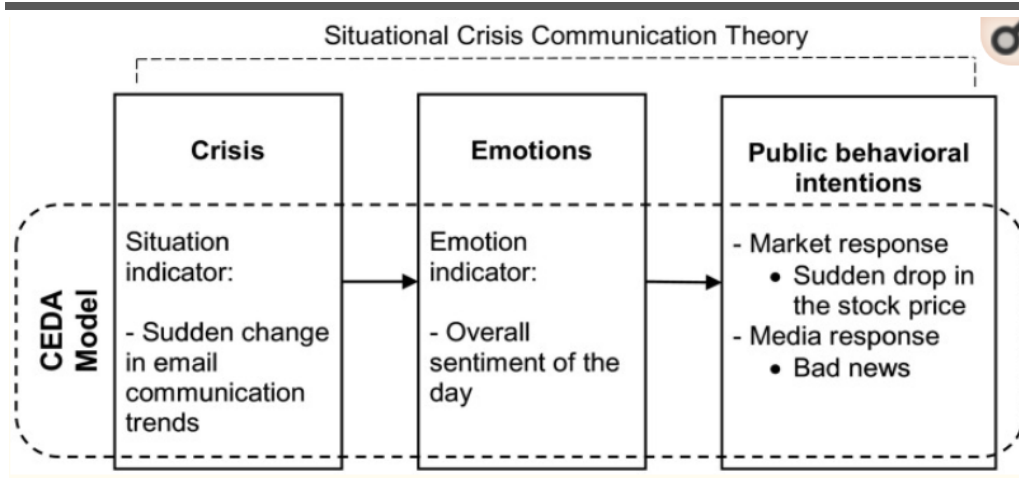
Fig. 4. Situational Crisis Communication Theory (5)

It consists of a statistical and emotional big data analysis approach. Results of empirical research indicate that knowledge extracted from everyday data communications such as corporate email communications can lead to sensing critical events related to business activities. To test our model, we used a publicly available dataset of 517,401 items belonging to 150 users, most of them senior Enron company managers, during the 1999 and the 2001 crisis. The results indicate that the model is reasonable in early detection of Enron's critical events, which could support decision making in the market.

Study (Wu et al., 2020) titled "Management Uncertainty in Al-Enabled Decision Making and Achieving Sustainability."

This research aims at clarifying how artificial intelligence can be used to assist organizations in decision-making tasks, and to identify uncertainties in decision-making applications that support artificial intelligence and some methods for managing different types of uncertainty. This paper also describes three dimensions of uncertainty, which are informational, environmental and intentional. To understand how to manage uncertainty in the decision-making applications that support AI the study used a content analysis methodology through a review of the topic related literature. The study reached a proposal for a mechanism related to these methods to manage different types of uncertainties in the decision-making process that depends on artificial intelligence. Fig. 5 shows the final results. It summarizes the decision-making mechanism for managing uncertainties in the dissemination of decision-making using artificial intelligence. This mechanism also includes three approaches for each type of uncertainty. It is noted that the study did not look at the technical methods in artificial intelligence nor in the administrative methods. It focused in particular on the pre- and post-implementation phases in designing the decision-making mechanism using artificial intelligence. Among the findings of the study, it is found that the implementation of the management mechanism in addition to the continuous updates of decision-making applications that support artificial intelligence contribute to enhancing the smoothness and accuracy of the comprehensive decision-making process and its components. It also added that the application of artificial intelligence requires the investment of resources and assistance from research and development teams, including setting goals, problems and defining system standards to ensure satisfactory results. Then, the maintenance mechanism established by human teams must be included while measuring the decision-making performance of artificial intelligence applications.
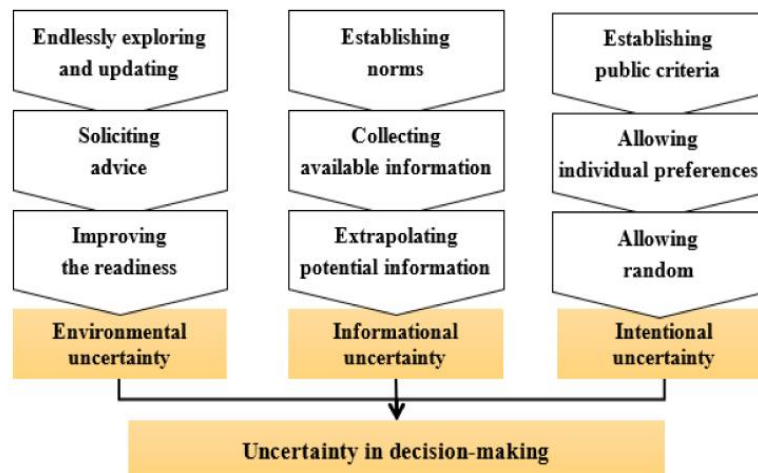
Fig. 5. The Decision Making Management Mechanism Using Artificial Intelligence Wu et al., 2020)

Study (Elliot et al., 2020) entitled "Artificial Intelligence for Decision-Makers"
This paper aims at learning how to include artificial intelligence in decision-making by presenting a simple approach to teach students and practitioners how to use artificial intelligence for the purposes of strategic decision-making. This curriculum consists of a set of training courses that aim to teach students and practitioners how to think about entering decision data and its impact on the strategy. It also proposes exercises to develop the infrastructure that supports the dissemination of knowledge about artificial intelligence. This exercise aims to help current and future decision-makers understand the advantages and weaknesses of big data, and how to make use of artificial intelligence for strategic decision-making purposes. The study explains the steps of the training program. The first plan is to introduce the participants to a set of data, the second step includes analyzing the data using a business intelligence program for decision-making purposes, for example trading algorithms with artificial intelligence, and using algorithms such as a decision tree in order to understand related concepts and track how to learn algorithms. In the third and final step, participants use the same data set to create their own neural network and then work to compare the results of their business intelligence analysis and analysis of their neural network. The study concluded that this training is important as it helps the bottom line, such as fund managers and auditors, to use solutions ranging from data visualization software packages to coding in order to extract and analyze vital information to make informed decisions. It also recommended that participants should work to create their own measures to compare issues in the companies' disclosures for use with other data.

Study (Ningchang, 2019) entitled "Application of Artificial Intelligence Technology in Decision Support Software"
This study aims at overcoming the limitations of artificial intelligence and decision support systems without expressing the complex decision-making process. The study developed a proposed scheme for the decision support system on the basis of data mining, and adopted the method of decision support system characteristics for artificial intelligence technology. A programming tool - MATLAB - was used through which the link base algorithm is implemented on the basis of the decision tree to give the required structure as in Fig. 4. An intelligent decision support system based on a knowledge-based methodology is designed to assist in the decision-making process through recommendations that have been provided by the experts. The proposal is based on the design of a multi-feature decision support system platform and the introduction

of the decision support system solution based on data extraction technology. The system platform has been realized. In addition, the correlation base algorithm was implemented based on the decision tree in the platform, and the validity and applicability of the improved algorithm and the platform were verified by a specific problem. According to the functional requirements and based on the characteristics of the decision tree classification, the correlation rules, and the characteristics of the proposed algorithm in this study, the structure of the experimental system is summarized in the following functional units in Fig. 6.
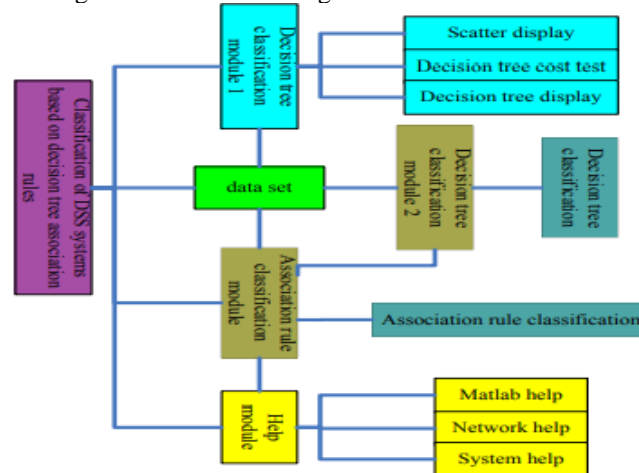

Fig. 6. Study (8) System General Structure

The study found that the overall structure of the proposed scheme and implementation platform have good portability and can provide a new platform for further research on new data extraction algorithms. It recommended the need for continuous development of new technologies in the field of artificial intelligence, and that combining the advantages of ES and Agent and machine learning in building IDSS is one of the most important issues in the future development of IDSS.

Study (Shrestha et al., 2019) entitled "Organizational Decision-Making Structures in the Age of Artificial Intelligence"

This study aims at identifying the most appropriate organizational structure for decision-making related to artificial intelligence, and to know how the process of comparing decision-making based on humans and artificial intelligence is carried out. The study shows that before addressing the organizational structures that individuals put in place, the decision-making process can be combined with artificial intelligence comparing its characteristics on the basis of five main conditions for decision-making as in Fig. 7.

Decision-Making Conditions	AI-Based Decision Making	Human Decision Making
Specificity of the decision search space	Requires a well-specified decision search space with specific objective functions.	Accommodates a loosely defined decision search space.
Interpretability of the decision-making process and outcome	Complexity of the functional forms can make it difficult to interpret the decision process and outcomes.	Decisions are explainable and interpretable, though vulnerable to retrospective sense-making.
Size of the alternative set	Accommodates large alternative sets.	Limited capacity to uniformly evaluate a large alternative set.
Decision-making speed	Comparatively fast. Limited trade-off between speed and accuracy.	Comparatively slow. High trade-off between speed and accuracy.
Replicability of outcomes	Decision-making process and outcomes are highly replicable due to standard computational procedure.	Replicability is vulnerable to inter- and intra-individual factors such as differences in experience, attention, context, and emotional state of the decision maker.

Fig.7. Comparison between human-based and artificial intelligence-based decision-making Study (9)

Fig. 7 shows the decision-making conditions in the light of which a comparison is made between decision-making based on artificial intelligence and human decision-making. The comparison is based on five basic conditions for decision-making, namely the specificity of the research area, the interpretability of the decision-making process, the result, the size of the alternative group and the speed of decision-making, and the possibility of repeatability. It summarizes the advantages of both human-based and artificial intelligence-based decision-making. The study adopted a new framework that clarifies how it is possible to combine both decision-making modes to achieve the optimum benefit from the quality of the organizational decision as in Fig. 8.

Organizational Structure	Specificity of the Decision Search Space	Interpretability	Size of the Alternative Set	Decision-Making Speed	Replicability	Examples
Full human to AI delegation	High (required for AI to function)	Low (due to absence of human involvement)	Large (not restricted by human capacity)	Fast (not restricted by human capacity)	High (computationally standardized)	Recommender systems, digital advertising, online fraud detection, dynamic pricing.
Hybrid 1: AI to human sequential decision making	High → Low (high in the first phase, low in the second phase)	High (due to human involvement in the final decision)	Large (due to involvement of AI in the first phase)	Slow (due to human decision-making as a bottleneck)	Low (vulnerable to human variability)	Idea evaluation, hiring.
Hybrid 2: Human to AI sequential decision making	Low → High (low in the first phase cue to human involvement, and high in the second phase for AI)	Low (due to AI involvement in the final decision)	Small (due to human involvement in the first phase)	Slow (due to human decision-making as a bottleneck)	Low (vulnerable to human variability)	Sports analytics, health monitoring.
Aggregted human–AI decision making	Low (for decisions allocated to humans) High (for decisions allocated to AI)	High (for decisions allocated to AI) Low (for decisions allocated to humans)	Small (same set of alternatives are evaluated by both humans and AI)	Slow (due to human decision-making as a bottleneck)	Partial (replicability only guaranteed in decision elements allocated to AI)	Top management teams, boards.

Fig.8. Organizational decision-making structures that include algorithms Study (9)

Fig. 8 shows the proposed framework three structural categories through which decisions of organizational members can be combined with decisions based on artificial intelligence. These categories are Delegating the whole human being to artificial intelligence, Hybrid - human-to-AI and AI-to-human - sequential decision-making, and combined decision-making between humans and artificial intelligence. It summarizes how to combine human-based decision-making and artificial intelligence through the three proposed decision-making structures.

The study found that the framework in which it was developed provides a basis for understanding the ways in which human and algorithmic decision-making can be effectively combined to exploit the advantages of each approach and enable better decision-making. Also, when designing hybrid decision-making structures between humans and artificial intelligence, managers must take into account the specificity of the decision-search space, the interpretability of decision-making and results, the size of the alternative group, the speed of decision-making and the possibility of replication of decisions. The study recommended the necessity of conducting future research by answering questions such as: What are the implications of different decision-making structures in the framework of organizational performance? How might the loss of AI decision-making authority affect the motivations and performance of human decision-makers? It has recommended that these questions should be addressed in future research to prepare for an unpredictable future.

Study (Phillips, 2012) entitled "AI tools in decision making support systems: a review"
This paper aims at reviewing decision-making theories, artificial intelligence tools, and smart decision systems resulting from the integration of these concepts. It also reviews the current AI tools used in IDSS which is referred to by multiple and different terms including active DSS, knowledge-based DSS, expert systems, intelligent decision systems, and shared cognitive systems. This paper presents a review of artificial intelligence tools used to improve decision-making processes by discussing the decision-making process and decision support systems in general with or without artificial intelligence tools. It also demonstrates more advanced IDSS implementations supported by the examples provided in the literature. Then, it reviewed the basic artificial intelligence tools included in IDSS, such as neural networks, fuzzy logic, evolutionary computing, and intelligent agents. The study stated that the decision-making process consists of four stages: intelligence, design, selection and implementation. During the first stage, the decision-maker collects information and develops an understanding of the problem. In the design stage, standards are defined, the model is developed, alternatives are researched. The choice or decision-making takes place during the selection stage, and in the implementation stage the decision-maker acts according to the decision and learns meanwhile. Thus, the process continues in a generally sequential manner, taking into account the feedback in all stages. Technology can assist in human judgment, for example, identifying and selecting relevant inputs, selecting appropriate data, resolving the decision model under a set of circumstances, presenting results to the decision maker, or helping the decision maker to interpret results from the decision model. The study found that the opportunities related to the decision-making process are great, especially in complex problems in which the environment exceeds the ability to understand and develop relationships between variables, and that the challenge lies in designing smart systems to support the decision that are cost-effective, provide tangible benefits and produce results acceptable to humans. However, the biggest challenge in applying smart decision support systems to real problems is confidence in this independent organization. The study recommended the necessity of answering several questions about conducting future research related to the application of artificial intelligence tools to support decision-making such as what decisions are we willing to allow computer systems to make independently? What evidence of accuracy do we need to assign a decision to an autonomous system? Will we allow independent regimes to make decisions and act on this decision, and under what conditions? What security is required so that computer systems do not exceed our comfort level with their decisions?

5 RESULTS

Through a review of previous studies, the two researchers reached many conclusions and results, the most important of which are:

- Previous studies (Melati et al., 2021)**,** (Albrecht et al., 2021), and (Wu et al., 2020) have shown that the quality of decision-making depends on the application of artificial intelligence and knowledge management elements due to the importance of effective data and information in the decision-making process as shown in study (Melati et al., 2021)**.** In addition, the application of artificial intelligence techniques help organizations in analyzing customers and reviewing data to help them make the right decision to support customers and look at their complaints as mentioned in study (Albrecht et al., 2021), as artificial intelligence provided them with a comprehensive understanding of the accuracy of predicting and taking appropriate decisions.
- Some studies such as studies (Jöhnk, 2021)**,** (Bosco, 2020) and (Wu,Junyi and Shang,Shari, 2020) have shown the extent of organizations 'readiness to adopt artificial intelligence and what are the most important basic factors that are a necessary

basis for relying on artificial intelligence in decision-making processes as in study (Jöhnk, 2021) and how organizations must continue to evaluate and develop their readiness for artificial intelligence and rely on it in matters of analysis, storage and technology for making high-quality decisions. The study reviewed the five basic factors () to define and develop the goal of the appropriate artificial intelligence readiness to know the mandatory levels in order to derive actionable measures to successfully adopt artificial intelligence for investments and allocate resources and priority setting. It was also found that some organizations are ready to employ artificial intelligence in several areas within the organization, as stated in study (Bosco, 2020), in order to make decisions, raise efficiency, reduce costs, and increase profits. It also helps in the process of detecting crises related to company events, which increases the success of crisis management as stated in study (Wu,Junyi and Shang,Shari, 2020).
• Study (Wu et al., 2020) also developed a mechanism using artificial intelligence to assist organizations in decision-making tasks. What distinguishes this study is that it did not only look at technical methods, but it also dealt with administrative methods.

− Some studies have shown some obstacles and challenges when applying artificial intelligence techniques, as stated in study (Bosco, 2020), namely challenges related to cybersecurity, customer data protection, and insufficient budgets. Study (Phillips, 2012) mentioned one of the most prominent challenges which was the effectiveness of decision support systems that are designed in terms of cost. It showed tangible and acceptable benefits and results, and it mentioned that the biggest challenge lies in confidence in smart decision support systems.

− Some previous studies suggested models, methods, and algorithms that help in the decision-making process, including:
• Study (Wu,Junyi and Shang,Shari, 2020) that proposed a structural model consisting of a statistical and emotional big data analysis approach that helps sense critical events related to business activities. The study was based on the situational crisis communication theory as the model captures information. The methodology was developed to capture the sudden change in communication patterns via e-mail in an organization, and it was on the Enron company e-mail data set available to the public. This data set was initially collected and prepared for the CALO project. It contains 517 401 items belonging to 150 users, most of whom are senior Enron administrators. Email data is organized into files and folders. Originally, the email data set was made public by the Federal Energy Regulatory Commission during its investigations. The proposal revealed many integrity problems, and it helped correct these problems for the public interest.
• Study (Albrecht et al., 2021) relied on machine learning algorithms to predict, know expectations, analyze customers 'expectations, and respond to their complaints. Study (Shrestha et al., 2019) also suggested a framework to support decision-making processes. This framework was distinguished for providing a basis to understand the way in which decision-making and algorithms can be combined effectively.
• Study (Ningchang, 2019) is one of the important studies, as it presented a proposal to design a platform for a multi-feature decision support system and to put forward a decision support system solution based on data extraction technology, and this was achieved in the system platform.

− Studies (Shrestha et al., 2019) and (Phillips, 2012) were distinguished by the fact that they developed future research proposals by setting some questions that can be answered in the future through conducting future research.

- Study (Phillips, 2012) was distinguished as the only study that developed a training methodology to teach how to use artificial intelligence for the purposes of strategic decision-making, and worked on designing a set of training courses for students and practitioners.
- Study (Shrestha et al., 2019) is one of the important studies as it sought to reach an appropriate organizational structure for decision-making processes related to artificial intelligence.
- Study (Phillips, 2012) is one of the studies that is characterized by a review of the decision-making theories, artificial intelligence tools, and smart decision systems. The study provided a review of artificial intelligence tools used to improve decision-making processes.
- Some studies reviewed artificial intelligence tools as in study (Ningchang, 2019) that used a programming tool -MATLAB- through which the correlation base algorithm is implemented on the basis of a decision tree to give the required structure. Also, study (Phillips, 2012) reviewed basic artificial intelligence tools included in IDSS, such as neural networks, fuzzy logic, evolutionary computing, and intelligent agents.
- Study (Wu et al., 2020) showed that the use of artificial intelligence in decision-making processes contributes to identifying uncertainties and therefore enhancing the accuracy and smoothness of decision-making processes.

6 DISCUSSIONS

The results of the scientific study showed the following:

1. After referring to the previous studies, it became clear that the application of artificial intelligence in organizations and companies improves the quality of decision-making and helps in identifying customer needs.
2. According to studies (Shrestha et al., 2019) and (Phillips, 2012), more future research should be conducted related to the application of artificial intelligence tools to support decision-making. Conducting such research greatly contributes to helping organizations identify the tools and approaches used to apply artificial intelligence in their companies.
3. The two researchers have found, after reviewing previous studies, the existence of several gaps, namely:
4. The lack of studies related to the readiness of organizations to apply artificial intelligence in quality decision-making processes in organizations.
5. Lack of clarity in the methodology of some studies.
6. Based on the models that have been reviewed in the studies, the two researchers found that the existence of proposed frameworks or models that support decision-making by applying artificial intelligence may contribute significantly to assisting organizations to improve decisions and improve performance.
7. All studies agree with the current study, as it aims at stressing the importance of applying artificial intelligence in organizations to raise the organizations 'performance and predicting and good management of crises before they happen.

7 CONCLUSION AND RECOMMENDATIONS

This scientific study aimed at finding out the role of applying artificial intelligence to the quality of decision-making in companies and organizations and the extent of the ability and willingness of organizations to adopt artificial intelligence. After analyzing the most important and recent studies related to the topic, and as a result of what was reached by the two researchers represented in the fact that the quality of decision-making depends on the application of

artificial intelligence elements and the importance of managing knowledge, information and data due to their great importance in the application of artificial intelligence processes. Thus, organizations must continue to evaluate and develop their readiness for artificial intelligence and rely on it in matters of analysis, storage and technology to improve the quality of decision-making.

Henceforth, the two researchers recommended the following:

- The necessity of conducting more studies that will help organizations in their rapid move towards adopting artificial intelligence techniques in decision-making processes.
- The need to know the latest developments in this field by informing organizations and decision-makers about seminars and publications in an adequate and continuous manner.
- Providing models and working methods for companies' decision support programs to help them in how to implement and execute them.
- Organizations and their decision-makers must ensure that they are ready to apply artificial intelligence techniques.

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