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Towards Intelligent Decision-Making Models in Organizations: Applications of Artificial Intelligence in the Organizational Work Environment

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Summary:. Artificial intelligence is a branch of computer science that aims to build systems capable of imitating or mimicking human mental abilities, such as learning, thinking, reasoning, perception, and adaptation, so that these systems can perform complex tasks without human intervention. In the contemporary world, artificial intelligence is emerging.(AI) is clearly a key driver of innovation and growth. Artificial intelligence is not just a theoretical concept, but is now an integral part of our daily lives, and it isbehaviorand certain characteristics that characterize itcomputer programs, makes itimitateHuman mental abilities and their working patterns, the most important of these characteristics is the ability tolearning And the conclusion reactionOn the conditions ofProgrammingodHowever, this term is controversial due to the lack of a specific definition.For intelligence.
Artificial intelligence research is highly specialized and technical, to the point that somecriticsThey criticize the "fragmentation" of the field, with subfields of AI centered around specific problems, the application of specific tools, and long-standing theoretical differences of opinion.
Key problems of AI include capabilities such as:logical thinking And knowledge and planning and learning And communication and perceptionThe ability to move and change things, as well as general intelligence or strong artificial intelligence, is still a long-term goal for someResearchIn this field. In thisThis is the research paper. We are tryingDefinition of the term artificial intelligence, the concept of decision-making, applications of artificial intelligence and its characteristics, as well asfor youAlso, learn about the importance and types of decisions taken in this area.

Keywords: Artificial intelligence, decision making,...
Jel Classification Codes :. C63;D81; D83; O33

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I-Introduction:

Artificial intelligence (AI) has become one of the most influential technological developments of the twenty-first century, reshaping economic systems, organizational practices, and decision-making processes across various sectors. As a branch of computer science, artificial intelligence focuses on designing intelligent systems capable of simulating human cognitive functions such as learning, reasoning, perception, and problem-solving. These capabilities enable machines to perform complex tasks autonomously, often with greater speed and accuracy than traditional computational systems.

In recent years, the rapid growth of data availability, advances in computational power, and the development of sophisticated algorithms have accelerated the adoption of artificial intelligence in both public and private sectors. AI-driven systems are now widely used in areas such as healthcare, finance, education, industry, and public administration, where they play a crucial role in supporting and enhancing decision-making processes. By analyzing large volumes of data and identifying

patterns that may not be apparent to human decision-makers, artificial intelligence contributes to more informed, efficient, and rational decisions.

Despite its increasing importance, artificial intelligence remains a concept surrounded by theoretical and practical debates, particularly regarding its definition, scope, and limitations. One of the central issues concerns the extent to which machines can truly replicate human intelligence and judgment, especially in complex and uncertain environments. This debate is closely linked to the concept of decision-making, which represents a fundamental function of both human and artificial intelligence systems.

This research paper aims to examine artificial intelligence from a conceptual and analytical perspective, with a particular focus on its role in decision-making. It seeks to clarify the concept of artificial intelligence, explore its main characteristics and applications, and analyze the importance and types of decisions supported or made by AI systems. Through this analysis, the study highlights the growing significance of artificial intelligence as a strategic tool for innovation, efficiency, and sustainable development in the contemporary world.

First: The research problem

Given the importance of this topic and the significant technological and administrative changes that are increasingly dependent on the use of artificial intelligence, it is imperative to monitor these changes in the field of decision-making. The problem can be addressed by answering the following questions:

1- Do you work?For institutionsOn the use of the latest technological means in general and especially the application of artificial intelligence.

2- Does the management of theInstitutionsBy applying artificial intelligence methods or not?

Third: Research questions

We can summarize the research questions as follows:

1- Is there an impact of applying artificial intelligence methods on decision-making?

2- Is there a discrepancy in decision-making in theInstitutionsAnd its application of artificial intelligence methods?

Fourth: Research hypothesis

We can summarize the research hypothesis as follows:

1- There is no statistically significant relationship between the impact of applying artificial intelligence methods on decision-making.

2- There is no discrepancy in decision-making.Institutional ManagementAnd its application of artificial intelligence methods.

3- The management does notInstitutionsBy applying artificial intelligence methods.

Theoretical aspect: general concepts

Chapter One: Defining Artificial Intelligence and Decision Making

First requirement: Definition of artificial intelligence

The second requirement: defining decision-making

Chapter Two: Application of Artificial Intelligence and its General Characteristics

First requirement: Application of artificial intelligence

The second requirement: General characteristics of artificial intelligence

Section Three: The Importance of Decision-Making and Its Types

First requirement: The importance of making decisions
The second requirement: Types of decision-making
Chapter One: Defining Artificial Intelligence and Decision Making
First requirement: Definition of artificial intelligence

Artificial intelligence is defined as the intelligence exhibited by machines and programs that mimic human mental abilities and patterns of operation, such as the ability to learn, reason, and react to situations not programmed into the machine. Through this, computers and programs can be created capable of adopting human behavior.(Ahmed Kazem, 2012, p. 17).

IntelligenceartificialIt is the field of computer science dedicated to solving cognitive problems typically associated with human intelligence, such as learning, creativity, and image recognition. Modern organizations then collect large amounts of data from diverse sources such as smart sensors, human-generated content, monitoring tools, and system logs (Wathiq Al-Musawi, 2019, p. 23).

Artificial intelligence is a branch ofComputer science. It defines manyPublicationsArtificial intelligence, as:study And design"Smart customers"and the smart clienthesystemaccommodatesHis environmentHe takes positions that increase his chances of success in achieving his mission or the mission of his team. This definition, in terms of goals, actions, and perceptionand the environmentReferred to (Russell & Norvink, 2003) and also includes other definitions such as knowledgeand learningAs additional criteria, computer scientist (John McCarthy)This term is basically in the year1956He defined it as "the science and engineering of making intelligent machines."Andreas KaplanMichael Heinlein defines artificial intelligence as "the ability of a system to correctly interpret external data, learn from that data, and use that knowledge to achieve specific goals and tasks through flexible adaptation" (Ihab Khalifa, 2022, p. 69).

Lahlah (2020) defined artificial intelligence as "the process of…Computer systems simulate human intelligence processes to achieve a goal. Companies often promote their services as artificial intelligence, but in reality, many of these services use an element of technology, such as machine learning. Using artificial intelligence requires an advanced hardware foundation.Specialized hardware and software developed specifically for this purpose. There is no specialized programming language for this technology yet, but a number of languages offer useful tools for this purpose, such as Python, Java, R, and C++ (Mohammed Lahlah, 2020, p. 36).

Some computer scientists believe that AI is a hypothetical computer program with human understanding and cognitive abilities. AI systems can learn to handle unfamiliar tasks without additional training in such theories. Instead, the AI systems we use today require extensive training before they can handle related tasks in the same domain. For example, you must fine-tune a large, pre-trained language model.(LLM) uses medical datasets before it can consistently operate as a medical chatbot. AI summarisers use machine learning (ML) models to extract important points from documents and generate understandable summaries. AI is thus a discipline in computer science that enables programs to solve new and challenging tasks with human-level performance (Mohammed Al-Ghamdi, 2023, p. 116).

Artificial intelligence has become a catch-all term for applications that perform complex tasks that once required human input, such as communicating with customers online or playing a game of chess. The term is often used interchangeably with its subfields, which include machine learning.(ML) and deep learning. However, there are differences. For example, machine learning focuses on creating systems that learn or improve their performance based on the data they consume. It is important to note that while all machine learning methods are artificial intelligence,

not all artificial intelligence is machine learning. To extract the full value from AI, many companies are making significant investments in data science teams. Data science combines statistics, computer science, and business knowledge to extract value from various data sources. (Ali Farghaly, 2016, p. 47).

As defined by Musa (2019), "Artificial intelligence allows a computer to think, act, and respond as if it were a human. Computers can be fed massive amounts of information and data and trained to identify patterns within them; they then become capable of making predictions, solving problems, and even learning from their mistakes. In addition to data, artificial intelligence uses a number of algorithms—a set of programming instructions and steps that must be followed in the correct order to complete a specific task." (Abdullah Musa 2019, p. 64).

Finally, Ismail (2017) defines it as, "the creation of self-learning systems that extract meaning from data. AI can then apply that knowledge to solve new problems in human-like ways. For example, AI technology can respond meaningfully to human conversations, generate authentic images and text, and make decisions based on real-time data inputs. Your organization can integrate AI capabilities into your applications to improve your business processes, enhance customer experiences, and accelerate innovation."(Abdul Raouf Ismail, 2017, p. 83).

The second requirement: defining decision-making

The decision-making process can be defined as the selection based on some criteria for one alternative from among two possible alternatives or several alternatives. The selection is based on some criteria before gaining a larger share of the market, reducing costs, saving time, and increasing the volume of production and sales. These criteria are numerous because all decisions are made in the mind of the person performing the process. Some of these criteria are used, and the selection of the best alternative is affected by the criteria used (Ibrahim Al-Faqih, 2012, p. 76).

Decision-making is defined in a variety of technical terms, depending on the direction and origin of the process. According to those who classify it as a thinking process or a higher mental skill, the decision-making process is defined as one of the complex thinking processes aimed at choosing the best alternative, or the optimal and most appropriate solution to achieve the goal, in line with the characteristics of the situation and the diversity of alternatives. According to this pattern, it is also described as a planned and organized mental process that relies on comparing all the alternatives and solutions proposed to resolve a situation, problem, or state of imbalance. This is done to choose the most appropriate and successful solutions in achieving the goal, based on studied initial information, adopting diagnostic skills, exploring and evaluating all possible alternatives, then implementing them in a pre-planned process, then evaluating and evaluating the results of the selected decision.(Abdul Jalil Muhammad, 2020, p. 203).

Decision-making is the process of identifying and selecting alternatives based on the values, preferences, and beliefs of the decision maker. Therefore, decision-making is considered a cognitive process resulting from choosing a belief or action among several possible options. Each decision-making process presents a final option, which may or may not lead to action. Decision-making can be considered a problem-solving activity that ends with an optimal or at least satisfactory solution. Therefore, it is considered a process that can be rational, less rational, or irrational, and can be based on explicit or implicit knowledge and beliefs (Nawal Abdel Karim, 2019, p. 112).

Decision-making can be defined as a process by which an alternative is chosen to work towards solving a problem, or a process by which managers identify organizational problems and attempt to solve them. It is also a process of searching for a compromise, meaning that there is no alternative capable of achieving the goal other than the alternative that is chosen, and it is usually the best alternative within the prevailing circumstances, as environmental and societal constraints limit the number of available alternatives.(Rababa'a, 2021, p. 139).

Arabic dictionaries indicate that the term "decision-making" is associated with administrative systems. They define it as the manager's job and concern. Decision-making in Arabic means

choosing an approach, path, or mechanism for behavior from among a number of possible or available alternatives and choices, or it is the opinion of those who have the power to choose and express it (Jamal al-Din et al., 2010, p. 235).

Decision making is also defined as the selection based on certain criteria for one alternative from among two or more possible alternatives. The selection is based on certain criteria, such as acquiring a certain characteristic or several characteristics, with the goal of saving time and increasing the value through which the best alternative is chosen using the criteria used. Therefore, the first task in the decision-making process is to find and define the real problem. This definition is of great importance because it in turn determines the effectiveness of the following steps. If the real problem is not known, the decision that will be made will be unsound because it is not appropriate for the problem for which it was issued. (Mohamed Abdel Fattah, 2013, p. 96).

Some management writers and scholars believe that decision-making is the foundation and heart of management. Trainers often view decision-making as their primary job, as they must constantly choose what to do, who will do it, where, and how. Therefore, decision-making is by nature an ongoing process that permeates the basic functions of management. These functions of planning, organizing, directing, and controlling cannot exist on their own, but rather their existence is a result of decision-making. Therefore, management specialists have based their definition of a decision in general on its general characteristics, in terms of expressive content, expressive form, and theoretical or intellectual content of the situation or content related to the decision. Through these characteristics, they have defined a decision as a thoughtful selection process for one of the available alternatives, carried out according to an extensive analysis of all aspects of the situation or problem related to the decision. Thus, the decision-making process, from a management perspective, is characterized by being an expanded and analytical process of comparison, aiming to choose one alternative from among a group of available and proposed alternatives. To achieve a goal or set of goals in line with the elements and factors of the situation. (Muayyad Abdul-Hussein, 2016, p. 159).

This category includes many similar definitions, the most important of which are what researchers have come up with to explain and make decisions, according to the following: (The process of consciously choosing an alternative among possible alternatives in a given situation, the final decision and clear and explicit will of the decision maker regarding what he should do or leave; to reach a specific and final goal regarding a particular matter; the process related to accessing and processing information; to achieve the goals specific to a given situation; and finally, it is a study, analysis, and discrimination of available alternatives based on values and connotations to test a single alternative, consistent with the decision maker's confidence and the factors of the situation) (Iman Al-Khafaf, 2018, p. 44).

Chapter Two: Application of Artificial Intelligence and its General Characteristics

First requirement: Application of artificial intelligence

There is no doubt thatartificial intelligenceIt is the most advanced and rapidly expanding field in the world of technology, with artificial intelligence applications being the most significant technological breakthrough of our time. These applications closely mimic human intelligence and its extraordinary abilities in terms of learning, development, and creativity, playing a significant role in elevating the humanities to a higher level. In other words, artificial intelligence programs attempt to simulate the best possible method.To act and think like humans, thus significantly reducing the time and effort required to complete a particular task or project.artificial intelligenceArtificial intelligence, defined as the intelligence exhibited by machines, has numerous applications in contemporary society (Fatima et al., 2023, p. 62).

Artificial intelligence has been used to develop and advance many fields and industries, such as:Financing, healthcare, education, transportation, and more. In an era teeming with technological innovations and the rapid advancement of artificial intelligence, AI technologies offer...AI itself is

a powerful driver of social and technological transformations in our daily lives. These applications, with their immense diversity and versatility, bridge human communication in unconventional directions, transporting us to a new world where dimensions overlap.technologicalIn an unparalleled way with our daily lives, despite the concerns that impose themselves on the margins of that overlap, including concerns related to the conflict betweenhuman intelligenceAnd artificial. DividedApplications artificial intelligenceIn key categories, generative AI is emerging as an unparalleled transformative force.

This type of application is taking the field of electronic production to new heights, as innovative systems can produce advanced content in innovative ways.These applications can range from creating texts to generating images and videos usingalgorithmsArtificial intelligence. In this context, the use ofApplicationsIn the field ofWord processing, where it is analyzed and understood.the languageNaturallyDeeper. These technologies enable language translation and the generation of accurate and understandable text content more effectively.(Muhammad Harb, 2022, p. 154).

As for the field ofthe pictures And the videoThe main innovations lie in applications that rely on image and video analysis using artificial intelligence-based algorithms. These applications can recognize shapes and faces, and even analyze the emotions expressed in images. These technologies contribute to the development of the concept of augmented reality and improve the user experience when interacting with visual media. In this context, these applications manipulate digital reality and open up new horizons for the human experience.

We have the ability to interact in a rich and sophisticated way with content generated by artificial intelligence, enhancing our daily experience and giving it a new and exciting dimension.Beyond the fears and risks they raise, these diverse categories of AI applications contribute to broad transformations in our lives, as technology is increasingly integrated into the fabric of our social and daily lives. These applications open up new horizons for communication.and interaction, casting new shadows on how the nature of life is shaped and embodied in the advanced digital age.(Saeed Al-Kalbani, 2017, p. 241).

Most used artificial intelligence applications

First: Computer Science Tools

Artificial intelligence researchers have developed numerous tools to solve the most difficult problems in computer science.computerMany of their inventions are not considered part of artificial intelligence. The following technologies were originally developed in artificial intelligence laboratories: time-sharing, interactive interpreters, graphical user interfaces, the computer mouse, rapid application development environments, linked list data structures, automated storage management, symbolic programming, functional programming, dynamic programming, and object-oriented programming. Artificial intelligence can be used to identify the developer of anonymous binaries, and artificial intelligence can also be used to create other artificial intelligence applications.

Second: Economic and social challenges

The AI for Good program is an ITU initiative that supports organizations using AI to address some of the world's biggest economic and social challenges. For example, the University of Southern California launched the Center for AI in Society, which aims to use AI to address relevant social issues such as homelessness.(Ihab Khalifa, 2022, p. 129).

Third: Agriculture

New AI developments in agriculture are demonstrating improvements in yield and increasing research and development in crop cultivation. New AI predicts the time it will take for a crop like tomatoes to mature and be ready for harvest, increasing efficiency.AgricultureThese developments also include crop and soil monitoring, agricultural robotics, and predictive analytics. Crop and soil monitoring uses new algorithms and data collected in the field to manage and track crop health, making it easier and more sustainable for farmers.

Fourth: Cybersecurity

The field of cybersecurity faces significant challenges in the form of major hacking attacks of various types that harm organizations of all types and cause billions of dollars in business damage. Security companies have begun to use artificial intelligence and natural language processing (NLP)—such as security information and event management (SIEM) solutions. The most advanced of these solutions use AI and NLP to automatically sort network data into high-risk and low-risk information (Abdullah Musa 2019, p. 104).

Fifth: Education

AI tutors can allow students to get direct, one-on-one help.They can also reduce anxiety and stress for some students, which may be caused by teacher labs or human instructors. Ambient informatics could play a beneficial role in future classrooms. Ambient informatics is the idea that information is ubiquitous in the environment and that technologies automatically adapt to your personal preferences.

Study devices may be able to create lessons, tasks, and games tailored to a student's specific needs and provide immediate feedback. However, AI can also create an unhealthy environment with retaliatory effects, which occurs when technology hinders progress and causes unintended negative effects on society.

Sixth: The government

Artificial intelligence in government consists of applications and systems. AI paired with facial recognition systems can be used to monitor the public. Crowd surveillance is already in use in some parts of China, and AI was also involved in the 2018 Tama City mayoral election. This system involved using cameras to monitor traffic density and then calculate the time needed to decompress traffic, which would then determine the signal duration for vehicles to move through the streets..(Muhammad Lahlah, 2020, p. 77).

Seventh: The Army

The United States and other countries are developing AI applications for a range of military missions. The primary military applications of AI and machine learning are to enhance command and control (C2), communications, sensors, integration, and interoperability. AI research is currently underway in intelligence gathering and analysis, logistics, cyber operations, information operations, command and control, and a variety of semi-autonomous and autonomous vehicles. AI technologies enable the coordination of sensors and effectors, threat detection and identification, enemy location tagging, target acquisition, and the coordination and deconfliction of distributed joint fires between interconnected combat vehicles and tanks and within manned and unmanned teams.(Ahmed Kazem, 2012, p. 133).

Eighth: Health care

AI is often used in healthcare for classification, whether to automate the initial assessment of CT scans or ECGs or to identify patients who pose a high risk to the health of the population. The range of applications is rapidly expanding, and AI is also being applied to the problem of high-cost dosing.(Wathiq Al-Moussawi, 2019, p. 49).

The second requirement: General characteristics of artificial intelligence

Artificial intelligence has many characteristics that make it an effective investment in many fields. We will recall some of them (Al-Hadi, 2015, p. 241):

Firstly: Applying artificial intelligence to devices and machines enables them to plan and analyze problems using logic.

secondly: Recognizes sounds and speech, and the ability to move objects.

Third:AI-powered devices can understand and analyze inputs well to deliver outputs that efficiently meet user needs.

Fourth: It enables continuous learning, as the learning process is automatic and self-paced, without being subject to monitoring or supervision.
Fifth: He is able to process the massive amount of information he is exposed to.
Sixth: It can notice and analyze similar patterns in data more effectively than human brains.
Seventh: Can find solutions to unfamiliar problems using his cognitive abilities.
There are also some other important characteristics of artificial intelligence and also characteristics of applications.Artificial intelligence is enlisted below in the following form (Basil Al-Khatib, 2022, p. 71):
1. Use intelligence to solve the problems presented.
2. The ability to think, perceive, acquire and apply knowledge.
3. The ability to learn and understand from previous experiences and expertise.
4. The ability to use old experiences and employ them in new situations.
5. The ability to use trial and error to explore different things.
6. The ability to respond quickly to new situations and circumstances.
7. The ability to deal with difficult and complex situations and deal with ambiguous situations in the absence of information.
8. The ability to distinguish the relative importance of the elements of the presented cases.
9. The ability to imagine, create, understand and perceive visual matters.
10. The ability to provide information to support administrative decisions..

Characteristics of artificial intelligence applications

One of the most important characteristics of artificial intelligence applications is that they (Ghassan Murad, 2019, p. 114):
1. It works at a scientific and advisory level, without fluctuation.
2. Its construction requires the representation of huge amounts of domain-specific knowledge.
3. Process non-numeric symbolic data through logical analysis and comparison operations.
4. It aims to simulate human thought and style.
5. Interested in stimulating new ideas that lead to innovation..
6. Immortalize human experience.
7. It works to provide more than one version of the system to compensate for experts.
8. The feeling of tiredness and boredom disappears.

Section Three: The Importance of Decision-Making and Its Types

First requirement: The importance of making decisions

Decision-making is a vital process in the field of management and leadership positions. Decision-making is a daily process that individuals perform at simple, automatic levels, such as deciding what to eat for lunch, or at high levels, such as leaving work. This requires many skills and training, and it is also an important process. The following explains the importance of decision-making.(Abdul Jalil Muhammad, 2020, pp. 182-183):
Achieving goals: Decision-making contributes to achieving the goals of an institution or organization, and good decisions can direct efforts and resources toward strategic priorities and objectives..
Improve management: Effective management requires making sound decisions regarding strategic direction, planning, organizing, and controlling..
Outperform competitors: Smart decisions can give an organization a competitive advantage over competitors, whether by reducing costs, improving quality, or introducing new products or services..
Achieving efficiency: Good decisions can contribute to improving the efficiency of an organization's internal operations, increasing its productivity and reducing waste..
Enhancing transparency: When decisions are made accurately and based on clear information, transparency within the organization can be enhanced and trust among members can be increased..

Investment guidance: Properly directed investment decisions can help achieve better financial returns and achieve investment goals..

Sustainable learning: By evaluating and analyzing the outcomes of decisions, an organization can learn from mistakes and improve its performance in the future..

Learning from mistakes: Making a wrong decision is something that anyone can make. Making a mistake is the way to identify the mistakes that led to a bad or inappropriate decision. Therefore, you can learn how to take the right steps to make a sound decision and correct mistakes.

Reaching high-quality decisions: Making decisions helps a person gain experience in the decision-making process in general, which influences the achievement of higher-quality decisions over time. Making a bad decision and having to deal with the consequences of that decision contributes to making better-quality decisions in the future.

Essential life skill: Decision-making is an important and essential life skill that should be taught to children from an early age. The child must make the decision and bear the consequences and responsibility that result from it. It is worth noting that major family decisions can change the entire course of the family, such as changing jobs for another, which contributes to improving the family's situation or vice versa. Hence the importance of mastering this skill.

Decision-making methods: The decision-making process is carried out by identifying a set of available options and possible alternatives, in addition to collecting the necessary information.(Muayyad Abdul-Hussein, 2016, p. 98)The following is an explanation of the recommended decision-making steps:

First: Determine the decision: Determining the decision is one of the most important and first steps in making the right decision, as the nature of the decision that can be made must be determined.

Second: Collecting relevant information: In this step, relevant information is gathered on the selected topic before making a decision. This step includes accessing information through self-assessment, in addition to obtaining external information by accessing it through books, the Internet, or from other people.

Third: Identify possible alternatives: Gathering information about a problem or a specific event helps you find many possible paths or alternatives. It's worth noting that you can use additional information or imagination to find new possible alternatives.

Fourth: Determine the most appropriate alternative: In this step, the proposed alternatives are sorted and prioritized to make it easier to choose the most appropriate one first, and then the most appropriate alternative is chosen.

Fifth: Take appropriate action: After selecting the appropriate alternatives, making the appropriate decision becomes possible by taking some actions to achieve or strive to implement that decision.

Sixth: Review the decision and its consequences: Reviewing the decisions made and their consequences is the final step in the decision-making process. This step is extremely important in monitoring the results of the decision made. The decision can be reviewed by evaluating whether it is appropriate for the situation or not, whether it meets the specific need for which it was made or not, and other matters.

In addition, in everyday life, decision-making helps solve problems and make the right choices in a variety of contexts. It can also help build self-confidence and teach responsibility. In parenting as well, children should be encouraged to make small decisions to foster the development of their self-confidence and skills.Ultimately, decisions must be made based on accurate information and analysis, and the outcomes of these decisions must be regularly evaluated to ensure the desired goals are achieved and to learn from past experiences.(Ibrahim Al-Faqih, 2012, p. 119).

The second requirement: Types of decision-making

There are several types of decision making that can be summarized as follows:

Programmed and unprogrammed decisions: Programmed decisions are decisions that relate to recurring or routine problems. These decisions are made by managers at lower levels than top management and include decisions such as purchasing raw materials, supplying goods and tools to employees, or granting an employee leave. Programmed decisions are routine and repetitive in nature and address common and recurring problems. For example, these decisions might include imposing penalties for various types of workplace violations, or purchasing decisions and wage increases.On the other hand, unprogrammed decisions relate to difficult situations for which there is no easy solution. These are very important decisions for the organization, such as opening a new branch or introducing a new product to the market. Such decisions are made by senior management. Unprogrammed decisions are those that are not routine and do not follow specific guidelines or routines. These decisions usually relate to problems that arise as a result of unexpected changes in the environment or market, such as declining market share or increased competition.

Routine and strategic decisions: Routine decisions relate to the overall performance of the organization and can be made quickly, as they do not require extensive evaluation and analysis. Lower levels of management are authorized to make these decisions in accordance with organizational policies. Strategic decisions, on the other hand, are important because they impact organizational goals and involve matters such as large investments. Such infrequent events are decided upon by higher levels of management, after careful analysis and evaluation of numerous alternatives.Strategic decisions are based on planning for the future and deal with matters such as expanding the scope of business or entering new markets (Sami Tayseer, 2006, p. 104).

Tactical (policy) and operational decisions: Decisions related to various policies of the organization are tactical decisions made by top management, and have a long-term impact, such as decisions related to factory location, production volume, and distribution channels.Operational decisions relate to the company's day-to-day performance and are made by middle- and lower-level managers. For example, the decision to award a bonus to employees is a political or tactical decision, while calculating the bonus each employee receives is an operational decision. Therefore, operational decisions address current issues and problems and focus on achieving high work efficiency. These decisions include matters such as appropriate working conditions and how to use existing resources effectively (Saleem Boutros, 2009, p. 65).

Organizational and personal decisions: When an individual in an organization makes a decision in his capacity as an executive, it is known as an organizational decision. However, if that person makes a decision in his personal capacity, it is considered a personal decision.Organizational decisions are made collectively and with the organization's objectives in mind. Personal decisions, if made by an individual, may impact their personal life and can sometimes also affect the organization's performance. Sometimes, these decisions may impact the organization as a whole. For example, if an executive leaves the organization, this will impact the entire organization.

Primary and secondary decisions: Decisions related to big things like buying a new factory are primary or major decisions made by top management. Primary decisions are those that relate to big and important matters, like buying a new factory, while those related to buying office supplies are minor decisions that can be made by the manager's office. Secondary decisions are less important and relate to simple matters like buying office stationery..

Individual and collective decisions: When a single individual makes a decision, it is an individual decision, a routine decision made by the individual within the framework of the organization's general policy. On the other hand, collective decisions are made by a group of individuals within a committee, and the goal of these collective decisions is to involve the largest possible number of individuals in decision-making. Collective decisions are made collectively and with the organization's objectives in mind (Al-Tarawneh and Musa, 2020, p. 141).

Recommendations:

Below are a number of proposed recommendations for leveraging fintech and AI innovations to improve decision-making in the future of banking services:

1. Calling on banks and financial institutions in the Kurdistan Region to establish legal frameworks for payment institutions that contribute to the development of technological financial products and help promote financial inclusion services by enabling marginalized groups to access the payment system.
2. The necessity of investing in modern technological techniques in the context of developing electronic financial services to reduce traditional methods of using cash.
3. The need for various components of the banking sector to focus on training their employees on the mechanisms and techniques of financial technology and artificial intelligence, given their role in diversifying economic activity and developing banking operations to become more responsive to the changing and diverse needs of the broadest segments of those dealing with this pioneering and vital sector.
4. Working to develop human resources through qualification and training in line with the modernization and development process and the requirements of modern banking technology, which provides the best services to customers.
5. It is necessary to move towards electronic banking in line with emerging developments in other countries, and to develop the quality of banking services within electronic banks, as this will enhance customer confidence in the quality of services provided by these banks.
7. Increase spending on artificial intelligence to improve banking services for customers, particularly through electronic applications and technologies.
8. Linking banking services to internet technology makes it easier for customers to interact and receive personalized services, given the availability of advanced smart mobile devices. Keeping up with the latest electronic technologies contributes to the development of the bank and makes it more attractive to customers.

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