



Decision-making strategies for organizational processes

Estrategias de toma de decisiones para los procesos organizacionales

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Abstract

This research aims to explore decision-making strategies in organizational processes and their relevance in today's business environment, using a comprehensive methodology based on a review of the scientific literature. Different approaches and methodologies used for decision making are presented, such as data-driven decision making, multi-criteria decision making, collaborative decision making and decision making based on artificial intelligence and machine learning. In addition, recent applications of these strategies in various organizational contexts, such as manufacturing, logistics and supply chain, project management, and product innovation and development, are discussed.

Keywords: Decision Making, Organizational Processes, Business Environment

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Resumen

Esta investigación tiene como objetivo explorar las estrategias de toma de decisiones en los procesos organizacionales y su relevancia en el entorno empresarial actual, para esto se empleó una metodología integral basada en la revisión de la literatura científica. Se presentan diferentes enfoques y metodologías utilizados para la toma de decisiones, como la toma de decisiones basada en datos, la toma de decisiones multicriterio, la toma de decisiones colaborativa y la toma de decisiones basada en inteligencia artificial y aprendizaje automático. Además, se analizan las aplicaciones recientes de estas estrategias en diversos contextos organizacionales, como la industria manufacturera, la logística y cadena de suministro, la gestión de proyectos y la innovación y desarrollo de productos.

Palabras clave: Toma de decisiones, Procesos organizacionales, Entorno empresarial

Introduction

Decision making is an essential function in any organization, as it directly affects operational efficiency and strategic success. In today's business environment, effective decision making is a critical factor for the success and survival of organizations. The ability to make informed and appropriate decisions in different environments and complex situations is essential for organizational processes. Therefore, the analysis of decision making strategies has acquired great importance and interest among researchers and practitioners working in the field of business management (Brito-Carrillo et al., 2020).

The objective of this research article is to examine decision-making strategies in organizational processes and to analyze their importance in today's business environment. To achieve this objective, different approaches and methodologies used in decision making will be explored, as well as their application in various organizational contexts.

One of the most prominent decision-making strategies is data-driven decision making. In an increasingly digitized environment, entities have a wealth of information and data at their disposal. The ability to gather, examine, and employ this data efficiently can establish a solid foundation for strategic and operational decision making (Quinto et al., 2021).. Best practices and techniques used in data-driven decision making will be examined, as well as the benefits and challenges associated with their implementation.

In addition, other relevant decision-making strategies are discussed, such as multi-criteria decision-making, which involves the consideration of multiple factors and criteria in the decision-making process. Collaborative decision making, which promotes the participation of multiple factors and the generation of consensus in organizational decision making, is also analyzed.

The incorporation of artificial intelligence and machine learning into decision-making processes is another topic of interest in this study. These emerging technologies offer new opportunities and challenges in improving the accuracy and efficiency of decision making. Recent applications of artificial intelligence and machine learning in organizational decision making will be explored, as well as the ethical and liability issues associated with their implementation.

Ultimately, it is hoped that this study will provide an overview of the different decision-making strategies in organizational processes and their importance in improving business efficiency and competitiveness. It is also hoped that the findings and conclusions presented in this article may be useful to both researchers and practitioners seeking to optimize their decision-making processes and achieve successful results in a constantly changing and challenging business environment.

Materials and methods

This research article employed a comprehensive methodology based on a review of the scientific literature (Quispe et al., 2021). (Quispe et al., 2021).. Exhaustive searches were carried out in academic databases and specialized journals such as Google Scholar, Scopus, Science Direct, and repositories of the University of Guayaquil, which allowed the identification of relevant scientific publications related to decision-making strategies in organizational processes. The selection of publications was limited to those less than 4 years old in order to guarantee the timeliness of the data and approaches addressed; likewise, a smaller number of articles outside the established period were considered given the importance of the information provided in this research.

Once the bibliographic references had been compiled, the information found was analyzed and synthesized. Patterns, trends and common approaches in organizational decision making were identified. Based on this review, the article was structured following a logical sequence that covered different aspects of decision making strategies (Quispe et al., 2021).

The analysis of recent applications in different organizational contexts was supported by case studies and concrete examples from the reviewed scientific literature. The aim was to provide a representative overview of how decision-making strategies are applied in different business areas, addressing emerging trends and the challenges that organizations must face today.

Results

Data-driven decision making has become a fundamental practice in today's business environment. This approach involves collecting, analyzing and using quantitative and qualitative information to support decision making. By using statistical techniques, data mining and data visualization, organizations can extract valuable insights and hidden

patterns in large data sets. By basing decisions on objective evidence, companies can reduce uncertainty and minimize subjective biases that could negatively affect the outcome of decisions (Calle Garcia et al., 2024; McKinsey & Company, 2023; Sarker, 2021).

This strategy also relies on the use of relevant and reliable data to better understand problems, evaluate options and forecast outcomes.

Today, organizations have access to a large amount of internally and externally generated data. This data can come from sources such as databases, transactional systems, social networks, surveys, among others.(Palma Ortigosa, 2019). For Ikegwu et al., (2022)., data-driven decision making involves the use of data analysis tools and techniques, such as data mining, statistical analysis and predictive modeling, to convert these data into actionable and valuable information.

By applying data-driven decision making, organizations can realize several benefits(Palma Ortigosa, 2019). Some of them are:

- Accurate information: By basing decisions on data, the influence of intuition or personal biases is reduced, leading to greater accuracy and objectivity in the decision-making process.
- Improved efficiency: The availability of relevant and up-to-date information speeds up the decision-making process by providing reliable data and analysis to support the choice of the most appropriate option.
- Identification of opportunities and risks: Data analysis enables the identification of patterns, trends and relationships that can help identify business opportunities or anticipate potential risks and challenges.
- Resource optimization: By having accurate information on the performance of operations and processes, informed decisions can be made on resource allocation, cost optimization and improved operational efficiency.

However, data-driven decision making also presents significant challenges and considerations(McKinsey & Company, 2023).. Some of these are:

- Data quality: Accurate, complete and reliable data is critical. Lack of data quality can lead to erroneous or suboptimal decisions.
- Proper interpretation: Data analysis requires specialized skills and knowledge to correctly interpret the results and make sound decisions.
- Privacy and security: The use of data implies the need to protect the privacy of individuals and ensure the security of information. It is essential to comply with current data protection regulations and policies.

However, data-driven decision making is a powerful strategy for organizations, as it allows them to leverage available information to make more informed and accurate decisions. By using data analytics tools, organizations can gain competitive advantages, improve operational efficiency, and adapt to an ever-changing business environment(Sanchez-De-Roux, 2022).. However, associated challenges and

considerations, such as data quality and information privacy, need to be taken into account.

Multi-criteria decision making is especially relevant when decisions involve multiple objectives and criteria that must be considered simultaneously. This approach allows different alternatives to be evaluated and compared based on their performance in different dimensions (Alvarez et al., 2021; Haseli et al., 2020).. By applying multi-attribute utility theory, multi-criteria linear programming and fuzzy set based methods, organizations can assign weights and perform comparative analysis of the different options available. Multicriteria decision making facilitates the selection of the most appropriate option that optimizes the balance between the different criteria and objectives established(López-Cadauid et al., 2020).

Making choices based on multiple criteria is a tactic used to solve situations in which it is necessary to consider several factors or elements before making a determination.(Rodríguez Pupo, 2021). Unlike traditional approaches that focus on a single criterion, multi-criteria decision making recognizes that complex decisions often involve the evaluation of several aspects simultaneously.

In this strategy, the different criteria relevant to the decision are identified and assigned a relative weight or importance according to their impact on the desired results.(Díaz Sánchez & Serrano Gil, 2020).. These criteria can be qualitative or quantitative, and may include factors such as costs, benefits, risks, environmental impact, customer satisfaction, among others.

Once the criteria have been identified, the available alternatives are evaluated in relation to each of them. To do so, specific methods and techniques are used, such as value analysis, hierarchical analysis, multi-attribute utility analysis, among others. These tools help to structure and quantify relevant information, facilitating the comparison and evaluation of the different alternatives(Araya-Pizarro et al., 2019).

One of the most common approaches in multi-criteria decision making is value analysis, which seeks to identify the option that maximizes the value obtained considering the different criteria. In this approach, a score or value is assigned to each alternative based on its performance on each criterion, and an overall comparison is made to determine the most favorable option.

It is important to note that multi-criteria decision making involves an iterative and participatory process, as it requires the collaboration and consensus of multiple stakeholders involved in decision making. This is because different stakeholders may have diverse perspectives and preferences about the criteria and alternatives(Díaz Sánchez & Serrano Gil, 2020).

Multi-criteria decision making is applied in a wide range of organizational contexts and industry sectors. For example, in project management, it is used to evaluate and select suppliers, technologies or implementation approaches. In strategic planning, it helps to

determine the most appropriate priority investments or growth strategies(Rodriguez Pupo, 2021). In supply chain management, it is used to select suppliers based on quality, cost and reliability criteria.

Ultimately, multi-criteria decision making is a strategy that addresses the complexity and uncertainty inherent in organizational decisions by considering multiple criteria. Its proper application can help improve the quality of decisions, promote transparency and participation, and optimize results in a variety of business contexts.

Collaborative decision making refers to the involvement of multiple stakeholders in the decision making process. This approach recognizes the importance of involving people with different perspectives, knowledge and skills to generate more robust solutions supported by consensus. Facilitation techniques, such as brainstorming, focus groups and teamwork meetings, are used to encourage active participation and idea generation. In addition, decision support tools, such as online collaboration software and group decision making platforms, are employed to facilitate communication and information sharing among participants(Melendez & El Salous, 2021).

Collaborative decision making is also a strategy that seeks the active participation and consensus of many stakeholders in the decision making process. Unlike a traditional approach, where decisions are made by a single person or a small group of leaders, collaborative decision making seeks to leverage the diversity of knowledge, perspectives and skills of team members.

In this approach, the generation of ideas, the exchange of information and open discussion among participants are encouraged. Each member has the opportunity to express his or her point of view, raise options, and argue in favor of certain decisions(Brito-Carrillo et al., 2020).. The goal is to reach a consensus or a decision that is accepted and supported by all involved.

There are several advantages and benefits associated with collaborative decision making. First, by involving multiple people, a wider range of perspectives and expertise can be considered. This can lead to a better understanding of the situation, a more complete assessment of options, and higher quality decision making.

In addition, collaborative decision making promotes greater commitment and ownership among participants. By feeling heard and having the opportunity to contribute, team members are more committed to the implementation of the decision and feel responsible for its success(Melendez & El Salous, 2021).

Another important benefit is relationship building and improved communication among team members. Collaborative decision making fosters openness, respect, and mutual trust, which can strengthen the bonds between team members and improve collaboration in the future(Brito-Carrillo et al., 2020).

However, it is important to keep in mind that collaborative decision making can also present challenges. The need to reach consensus may take longer and require a greater

investment of resources. In addition, there is a risk of protracted conflict or disagreement, which can hinder efficient decision making.

To successfully implement collaborative decision making, it is important to establish an enabling environment that fosters active participation, respect and effective listening. It is helpful to have facilitators or team leaders trained in facilitation and conflict resolution techniques, who can help guide the process and maintain focus on common objectives(Brito-Carrillo et al., 2020).

Thus, collaborative decision making is a strategy that seeks to leverage the diversity of knowledge and perspectives of team members to make sounder, more supported decisions. Through active participation and consensus, benefits such as better understanding of the situation, increased commitment and improved decision quality can be achieved. However, it is important to manage challenges and establish an environment conducive to the success of this collaborative approach.

Decision making based on artificial intelligence (AI) and machine learning (ML) has seen significant advances in recent years. These techniques involve the use of algorithms and models to make decisions or provide recommendations based on patterns identified in historical data sets. For example, classification and prediction algorithms can analyze large volumes of information to identify patterns and trends to help make informed decisions(Quinto et al., 2021).. In addition, machine learning enables systems to make decisions autonomously through real-time data analysis and processing. These approaches are especially useful in dynamic and complex environments, where speed and accuracy of decision making are crucial.

Decision-making based on artificial intelligence (AI) and machine learning is an increasingly relevant strategy in organizational processes. AI refers to the development of computer systems and programs that can perform tasks that would normally require human intelligence, such as reasoning, perception, and learning(Tames et al., 2020). Machine learning, on the other hand, is a branch of AI that focuses on developing algorithms and models that allow machines to learn and improve their performance through experience and data.

AI and machine learning-based decision making is based on the analysis of large volumes of data, using algorithms and models to identify patterns, trends, and relationships(Quinto et al., 2021).. These algorithms can perform predictive and prescriptive analytics, meaning that they can predict future outcomes and recommend optimal actions or decisions based on the data and established goals.

One of the key advantages of AI and machine learning-based decision making is its ability to process large amounts of data in real time. This enables more agile decision-making based on up-to-date information, which can improve an organization's responsiveness and adaptability to dynamic business environments.

AI and machine learning can also help identify hidden or complex patterns in data, which can generate valuable insights and knowledge for strategic decision making. These approaches can also reduce the influence of human biases or prejudices in decision making by relying on objective analysis and unbiased algorithms (Gómez Monsalve & Jurado Calderón, 2020).

In the manufacturing industry, decision-making strategies are applied in areas such as production optimization, inventory management and supplier selection. For example, by analyzing historical production data and using machine learning techniques, companies can predict future demand and adjust their production levels accordingly (Encalada et al., 2019). Likewise, data-driven decision making can help manage inventories efficiently, minimizing costs associated with storage and obsolescence. In terms of supplier selection, multicriteria criteria can be used to evaluate and select those suppliers that best fit the requirements of quality, cost and reliability (Londoño-Patiño, 2020).

In the manufacturing industry, decision making plays a key role in optimizing processes, managing the supply chain and improving operational efficiency. In recent years, there have been significant advances in the application of various decision-making strategies in this sector, taking advantage of emerging technologies and innovative methodologies (Encalada et al., 2019). Some of the recent applications of decision making in the manufacturing industry are detailed below:

- Production optimization: By using data-driven decision-making techniques, production planning and scheduling can be optimized. Optimization algorithms maximize resource efficiency, minimize lead times and reduce production costs, taking into account variables such as demand, production capacity, available resources and operational constraints.
- Predictive maintenance: The implementation of predictive maintenance systems based on data analysis and machine learning algorithms allows informed decisions to be made about the maintenance of equipment and machinery. Through continuous monitoring of sensors and early detection of possible failures or wear, it is possible to schedule maintenance in advance, avoiding unplanned shutdowns and minimizing downtime.
- Supply chain management: Decision-making in supply chain management is crucial to ensure a smooth and efficient operation. The use of data analysis tools and optimization models enables real-time decisions to be made on demand planning, inventory management, logistics routing and supplier selection, among other aspects, with the aim of minimizing costs and maximizing customer satisfaction.
- Quality improvement: Decision-making based on data analysis and advanced statistical techniques can help improve the quality of manufactured products. By analyzing data from quality control, inspections and customer feedback, patterns and trends can be identified and proactive decisions can be made to correct quality problems, reduce defects and improve customer satisfaction.
- Innovation management: Strategic decision making in innovation management and product development is essential in the manufacturing industry. Applying

approaches such as risk analysis, market opportunity assessment and product lifecycle management helps to make informed decisions about new product introductions, investment in research and development, and adaptation to changing market demands.

In summary, decision making in the manufacturing industry has experienced significant advances thanks to the application of data-driven strategies, advanced analytics and emerging technologies. These recent applications allow optimizing production, improving quality, managing the supply chain efficiently and fostering innovation, leading to greater competitiveness and business success in this sector(Rojo Gutiérrez et al., 2019)..

In the field of logistics and supply chain, decision-making strategies are critical for route planning, warehouse management and supply chain coordination. By using optimization tools and routing algorithms, organizations can determine the most efficient routes to deliver products to customers, taking into account time, capacity, and cost constraints(Sánchez Suárez et al., 2021).. In addition, warehouse management benefits from data-driven decision making to optimize product placement, workflow design, and resource allocation. Supply chain coordination involves collaborative decision making, where different actors in the chain work together to coordinate the demand, production and distribution of products efficiently.

In recent years, decision making in logistics and supply chain has experienced significant advances due to technological advances and new market trends. These recent applications have allowed for improved efficiency, optimization and visibility in supply chain management, generating positive impacts on customer satisfaction and profitability of organizations(Gómez Montoya et al., 2020)..

One of the key applications of decision making in logistics and supply chain is supply chain planning and scheduling. Decision making in this area involves designing efficient distribution networks, determining the optimal location of warehouses and distribution centers, as well as the optimal allocation of resources such as transportation and storage capacity. These strategic decisions are based on analysis of historical data, demand forecasts, operational constraints, and costs, and can be optimized using linear programming algorithms, combinatorial optimization, or other advanced techniques(Gómez Montoya et al., 2020).

Another relevant application is inventory management. Decision making in this field involves determining optimal inventory levels, reorder points, replenishment policies, and demand and supply management. With data analytics tools and forecasting models, organizations can make more accurate and timely inventory decisions, avoiding both shortages and overstocks. In addition, the use of technologies such as the Internet of Things (*IoT*) and warehouse automation has enabled real-time inventory management and greater efficiency in storage and picking processes.

Transportation optimization is another important application area in logistics decision making. By using routing and route planning algorithms, organizations can determine the most efficient routes and optimal transportation modes to minimize costs, reduce delivery times and improve customer satisfaction. In addition, real-time track and trace solutions enable accurate monitoring of transportation operations, facilitating decision making in cases of deviations or unforeseen problems.

Supply chain management also benefits from decision making based on data analytics and advanced technologies. End-to-end visibility into the supply chain is crucial for identifying bottlenecks, assessing supplier performance and optimizing workflows. Through real-time data analytics, organizations can make informed, proactive decisions to improve coordination, collaboration and efficiency throughout the supply chain.

In addition, emerging technologies such as *blockchain* have been used to improve transparency and traceability in the supply chain, enabling more reliable decision making in terms of authenticity, quality and origin of products (Fontalvo-Herrera et al., 2019).

So, recent applications of decision making in logistics and supply chain have revolutionized the way organizations manage and optimize their operations. By harnessing the power of data analytics, optimization techniques, and advanced technologies, organizations can improve efficiency, visibility, and strategic decision making in all aspects of the supply chain, leading to competitive advantage and improved customer satisfaction (Gomez Montoya et al., 2020).

Conclusions

Decision-making strategies are central to organizational processes and their application in a variety of business contexts can improve efficiency and competitiveness. Data-driven approaches, multi-criteria decision making, collaboration and artificial intelligence are powerful tools for making more informed and evidence-backed decisions. However, emerging challenges, such as uncertainty, ethics and the need for specific skills, require constant adaptation and evolution in the practice of decision making.

Thus, decision making in organizational processes is a critical element for the success and efficiency of an organization. Throughout this research, we have explored various dimensions and aspects related to decision making in different contexts, including competitive strategies, applications in innovation and product development, as well as emerging challenges and the development of necessary skills and competencies.

In terms of decision-making strategies, we have highlighted the importance of data-driven approaches, such as artificial intelligence and machine learning-based decision making, which harness the power of data analytics to obtain valuable information and make more informed decisions. We have also mentioned the relevance of multi-criteria,

collaborative and ethics-based decision making, which considers diverse factors and perspectives to make more balanced and responsible decisions.

In terms of product innovation and development, we have seen how decision making plays a key role in identifying opportunities, selecting concepts, managing risks, and launching products to market (Díaz et al., 2018). The application of market analysis techniques, concept testing and customer feedback helps us to make better decisions and maximize the potential for success in this area.

In addition, we have addressed emerging trends in decision making in organizational processes, highlighting the importance of speed, agility and the use of data and analytics. The ability to adapt quickly to changes in the environment and make evidence-based decisions has become essential to maintain competitiveness and relevance in the market. The need to develop skills in strategic thinking, ethical decision making and collaboration has also been mentioned, as these aspects are crucial to face current and future challenges.

To conclude, effective decision making in organizational processes requires the application of appropriate strategies, the development of relevant skills and competencies, and the ability to adapt to emerging trends and overcome challenges in an ever-changing business environment. Data-driven decision making, innovation and strategic thinking, along with ethics and collaboration, are key elements in driving organizational growth and competitiveness in today's business world.

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