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IMPACT OF ARTIFICIAL INTELLIGENCE ON STRATEGIC AND OPERATIONAL DECISION MAKING

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Abstract

Artificial intelligence (AI) is being widely used in both operational and strategic decision-making processes in the modern world. These choices have a major impact on how companies develop and, ultimately, how successful they are. Although managers are generally aware of the benefits that AI offers in various domains of decision-making, they frequently run against unanticipated obstacles that prevent them from achieving their goals. Thus, it becomes necessary to investigate the positive and negative effects of AI on operational and strategic decision-making. Such investigation helps determine whether AI is appropriate in a variety of decision scenarios and clarifies the complex consequences of the technology. In order to facilitate the wise deployment of AI in various decision scenarios, this research aims to disentangle the complex relationship between AI and decision-making.

Key words: *Artificial Intelligence, Strategic decision-making, and operational decision-making.*

1. Introduction

To get a comparative advantage and generate a new revenue stream most organizations in the world can integrate artificial intelligence into their business decision-making. In an organization, the role of the manager is to make decisions and then become responsible for decision outcomes. Making informed choices is an ability of the manager (Sayegh, Anthony & Perrewé, 2004). In the research, there is a huge interest in the topic of decision-making because of the most important role of decision-making in the organization's success along with the decision-making's complex and challenging nature. Lammers (2019) stated that within an organization flow of decisions, information, operations, and control are represented through the central line of formal authority. At each level of an organization, the data related to the performance of the operations within an organization are

collected. All of the data related to the operation performance are collected and then developed structure report which is sent to the upper authority to make a decision which is called the management information system. Management information systems are used in the decision-making process within an organization. From identification of a need to decide on the commitment to the action contains a different phase and this process is called the decision-making process (Perkins & Rao, 1990). Chiheb, Boumahdi and Bouarfa (2019) mentioned that there are different steps and three phases of the decision-making process.

Identification: In the decision process, there is a recognition of an opportunity and the problem at the identification phase. At this phase, the problem is identified.

Development: In the second phase of the decision process, the design of tailor-made solutions or ready-made solutions is searched.

Selection: In the case of a group decision, bargaining, analysis of alternatives, and personal judgment are used to select the best solution for a problem.

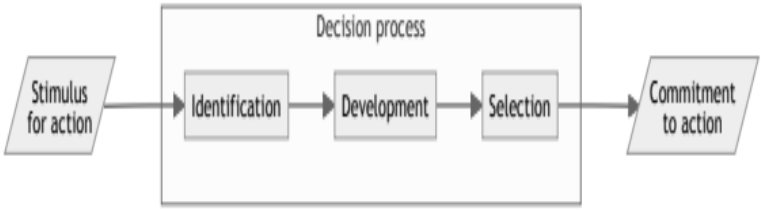

Figure 1.1. Mintzberg's Structure of Decision-Making Chiheb, Boumahdi and Bouarfa (2019)

A large number of the decisions we make at the lower level of an organization and the decisions that are made at the lower level are ambitious, less elastic, and shorter duration. They were more structured decision-making at the lower level within an organization (Papadakis, Lioukas & Chambers, 1998). There is no classification of the decision rather there are certain criteria based on which the decisions can be classified. Criteria of decision-making include importance, process, functional area, frequency, and structure (Beckers & Bsat, 2002). Mostly there are three types of decisions within an organization;

Strategic: Organizations are greatly affected by the strategic decision making including the decisions related to acquisition and investment (Alzoubi & Aziz, 2021).

Administrative: Administrative decision-making has not a significant impact on the success of an organization. Administrative decision-making is an unstructured process. these are the decisions which are taken on a routine basis. Administrative decision-making includes the decisions related to the budgeting of an organization's planning and coordination (Aguinis & Burgi-Tian, 2021).

Operative: With the readymade solution there is a predetermine phases in an operated decision making and operating decision-making has a limited impact. Operating decision-making includes librarians searching for a reference and workers starting a machine (Khalifa, 2021).

Ford and Gioia (2000) stated that judgment at the basic factor behind business decision-making around 50 to 70 years ago. Intuitions of professionals are used to decide on an organization. Organizations rely on the experience of professionals to approve financial investments and determine the optimal inventory levels. To differentiate the risky or safe business decisions, high or low, and good or bad business decisions, one of the primary ways which was used by businesses in the past was gut instinct. Due to cognitive biases, intuitions are not a good decision-making instrument. To make operational decisions, many organizations use the data-driven approach these days. A central processor in the data given decision-making is also human judgment. There are certain limitations to this approach. Artificial intelligence helps in structuring the data which makes the decision effective. Without error, large amounts of the data are summarized by artificial intelligence which is used in decision-making (Wong & Wang, 2003).

Overview

This work discusses the following topics:

1. Reasons behind the use of AI in decision-making.
2. Role of AI in strategic and operational decision making.
3. Challenges companies face while implementing AI in decision-making
4. Strategies used to deal with the challenges faced while implementing AI in decision-making.

Decision

To determine the impact of artificial intelligence on strategic and operational decision making, an interview is conducted. This is an structured

interview and interview is taken from those mangers which used the AI in strategic and operational decision making. From the data collected through interview, it is determined that AI is most effective in which types of decisions(strategic or operational decisions).

Conclusion

Artificial intelligence play a very important role in doing the repetitive tasks and has positive impact on the operational decision making. While strategic decision making required the critical thinking and considered many other factors and AI is not an effective outcome in strategic decision making.

References

1. Wong, A. K. C., & Wang, Y. (2003). Pattern discovery: a data driven approach to decision support. *IEEE Transactions on Systems, Man, and Cybernetics, Part C (Applications and Reviews)*, 33(1), 11–124.

2. Nonlinear Natural Scientific Thinking and Ecological Consciousness for Sustainability (2023) Trusina, I., Jermolajeva, E., Gopejenko, V. *Journal of Teacher Education for Sustainability This link is disabled*., 2023, 25(2), pp. 165–186. DOI: 10.2478/jtes-2023-0022

3. Ford, C. M., & Gioia, D. A. (2000). Factors influencing creativity in the domain of managerial decision making. *Journal of management*, 26(4), 705–732.

4. Khalifa, A. S. (2021). Strategy and what it means to be strategic: redefining strategic, operational, and tactical decisions. *Journal of strategy and management*, 14(4), 381–396.

5. Aguinis, H., & Burgi-Tian, J. (2021). Measuring performance during crises and beyond: The Performance Promoter Score. Business Horizons, 64(1), 149–160.

6. Alzoubi, H. M., & Aziz, R. (2021). Does emotional intelligence contribute to quality of strategic decisions? The mediating role of open innovation. *Journal of Open Innovation: Technology, Market, and Complexity*, 7(2), 130.

7. Beckers, A. M., & Bsat, M. Z. (2002). A DSS classification model for research in human resource information systems. *Information systems management*, 19(3), 41–50.

8. Papadakis, V. M., Lioukas, S., & Chambers, D. (1998). Strategic decision-making processes: the role of management and context. *Strategic management journal*, 19(2), 115–147.

9. Perkins, W. S., & Rao, R. C. (1990). The role of experience in information use and decision making by marketing managers. *Journal of Marketing Research*, 27(1), 1–10.

10. Chiheb, F., Boumahdi, F., & Bouarfa, H. (2019). A new model for integrating big data into phases of decision-making process. *Procedia Computer Science*, 151, 636–642.

11. Lammers, C. J. (2019). Power and participation in decision-making in formal organizations. *In Managing Democratic Organizations I* (pp. 129–144). Routledge.

12. Sayegh, L., Anthony, W. P., & Perrewé, P. L. (2004). Managerial decision-making under crisis: *The role of emotion in an intuitive decision process. Human resource management review*, 14(2), 179–199.