

eISSN: 2981-1554

Original Article (Mixed)

Analysis of the open innovation project management system in the organization

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Receive:

11 October 2025

Revise:

30 November 2025

Accept:

31 December 2025

Abstract

The main goal of this study is to examine how organizations can use the experience of implementing pioneering projects to create a systematic ability to manage open innovation projects. The innovation process and then their development and commercialization have in the past been dependent on internal organizational intellectual resources. Today, the open innovation paradigm invites companies to use external ideas and technologies in their business and allows others to benefit from their innovative ideas. In the present study, the case study is the Iranian Electronics Industries Organization, which operates in the field of open innovation. In other words, in the past, it has moved from a closed innovation mode to an open innovation mode through activities. In this study, the impact of open innovation on the field of project knowledge management will be examined, with an emphasis on aspects of project risk management, project time management, project human resource management, and project relationship management. In order to collect information from members of the statistical community, including organization experts in the field related to innovation management, 15 people were purposefully selected and a researcher-made questionnaire was used. The resulting data were structurally analyzed using the MiqMaq software. According to the effective and effected plan in the structural analysis method, the variables of shortening product development time, enriching project evaluations with different aspects, inefficiency in production and distribution, misuse of the organization's intellectual and physical assets, and coordination problems were identified as strategic research variables that affect slower product development, faster market entry, and risk diversification as research outputs.

Keywords:

Open innovation,
Pioneer project,
Closed innovation,
Project knowledge
management,
Dichotomous
variables,
Project risk
management

Please cite this article as (APA): Moradi, M., Hasani, A. and Bidgoli, D. (2026). Analysis of the open innovation project management system in the organization. *Journal of New Approaches in Management and Marketing*, 4(4), 46-69.



<https://doi.org/10.22034/jnamm.2025.565370.1221>



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Publisher: Research Center of Resource Management Studies and Knowledge-Based Business

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Extended Abstract

Introduction

Rapid technological change, increasing innovation costs, increasing competition in introducing new products and services, and shortening technology life cycles have led to an increased need for organizations to interact with their environment and stakeholders by opening up organizational boundaries to exchange innovative ideas (Khabaz et al., 2024). Henry Chesbro defines open innovation as follows: “Open innovation is a model based on the assumption that if an organization seeks to improve its technology level, it can and should use external technological ideas as well as internal ideas and use a variety of internal and external routes to the market (Bertello et al., 2024). “Closed innovation is the opposite of open innovation and considers success to depend on exercising control over the innovation process (Kanan et al., 2023). In closed innovation, all innovation activities are carried out within the company's boundaries and exclusively with internal resources (Ríos et al., 2024). However, due to the limited internal resources and the complexity of technology, closed innovation exposes the organization to numerous risks (Felin & Zenger, 2014).

This study attempts to present a systematic structure for managing open innovation projects, and for this purpose, a four-stage process including closed mode, open drive, leading project, and project to the organization will be used. Given that the Iranian Electronics Industries Organization, as the research case, has had extensive activities regarding the decision-making requirements for communicating with its external environment and has communicated with the external environment to receive resources and information, the four-stage open innovation process will begin with the third stage, namely the leading project. For this purpose, the company's experiences in the two stages of closed mode and open drive that are already available will be used. The research project in question is innovation in the knowledge domain of project management (project communication management, project human resource management, project risk management, project time management). Accordingly, the research question is: how does open innovation affect the knowledge domain of project management?

Theoretical foundations

Open innovation

Open innovation, as a key driver for organizational change, represents an efficient method for knowledge transfer and innovation at the organizational level and a necessary process for exploring the aforementioned opportunity by moving from closed to open systems and requires the development of organizational capabilities through specific processes (Andriyani et al., 2024). To ensure joint efforts for product development processes, the organization chooses co-creation, which can be examined from three perspectives (Wlazlak et al., 2018): (1) external innovation, (2) inside-out innovation, and (3) a hybrid approach to innovation. The relationship of these approaches can be understood through the creation of a knowledge base. The organization pursues a strategy that engages stakeholders to gain knowledge (Wlazlak et al., 2018). By using open innovation, the organization is moving towards shared products, shifting from individual to collective efforts to improve performance, and addressing potential risks associated with product development processes (Chang, 2019).

Research Background

Rezaei Sadrabadi et al. (2025) in their research entitled “Investigating the Effect of Open Enablers on the Agility of Selected Small and Medium-sized Enterprises in Yazd Industrial Park” have examined the role of open innovation, social capital, collaborative knowledge creation, and cooperation with foreign partners to increase agility in today's turbulent world,

and finally, they have presented a new model for applying open agility enablers in selected small and medium-sized enterprises in Yazd Industrial Park.

Khabaz et al. (2024) in their research entitled “Providing Effective Innovative Strategies in the Development of the Cosmetics and Health Products Industry with an Emphasis on International Entrepreneurship”, considering the importance of adopting new innovation strategies at the organizational level and moving away from the closed innovator, they have examined the strategies of aggressive innovation, technology absorption, pioneering innovator, and risk-taking innovator using thematic analysis and decomposition method. The results of their analysis show that innovative strategies of technology absorption will be of higher priority and risk-taking strategies will be of lower priority for an organization.

Andriyani et al. (2024) in their study titled "Designing an Adaptive Innovation Model: Integrating Agile and Open Innovation in Regional Innovation", examined the open innovation framework from the perspective of three key organizational capabilities of knowledge absorption, sharing, and creation to enable efficient open innovation as key dimensions. The results of their study indicate that a company's open innovation capability can be defined as a dynamic ability to manage the knowledge base using input and output information flows and to transform internal and external knowledge and ideas into new products, services, processes, structures, and business solutions.

Kanan et al. (2023) in their research entitled "Identifying the Components of the Open Innovation Maturity Model in Iranian Defense Industries Based on the Metasynthesis Method", used the metasynthesis method to identify key dimensions and components based on the targeted use of knowledge flows, in the form of ideas, science, or technology, in order to create value.

Bauj Khushmian et al. (2022) in their research entitled "Presenting a Basic and Strategic Innovation Model in Petrochemical Design and Manufacturing Companies", presented a hybrid innovation model using a mixed research method and emphasized components such as revolutionary technologies, market innovation, innovation in human resource development and planning, the component of the birth of new industries, innovation in organizational processes and organizational structure, product innovation, and operational capability.

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Research Methodology

The present research is of the applicable research type based on its purpose; and the type of research in terms of data collection is descriptive and survey-type. Also, in terms of method, the present study is a narrative study using event structure analysis, which is a network consisting of closed-mode, open-drive, lead project, and project-to-organization stages. The research stages include observing and collecting documents, constructing a narrative, semi-structured credit interviews, and a questionnaire, and analyzing the event structure. The sample members are 15 organization experts in the field related to innovation management and with more than 10 years of work experience. Structural analysis also seeks to determine key variables and the relationships between them, the steps of which include extracting variables, determining relationships between variables, and identifying key variables.

Research findings

The key results of the study indicate that based on the method of identifying strategic variables in the effective and effected map, with the organization focusing on implementing open innovation, these activities lead to reducing organizational costs, improving knowledge management and organizational culture, and filling internal knowledge gaps by collaborating

with outsiders in the field of project management knowledge. The classification of variables based on the structural analysis method is:

- Dichotomous variables: Shortening the product development time is the only dichotomous variable identified, which is the strategic variable.

- Influential variables: Improving the organization's knowledge management, collaborating with customers and benefiting from their opinions, knowledge and information available in the organization, lack of coordination between partners' behavior and their interests, conflicting goals of open innovation, innovation during the process, increasing job satisfaction, choosing the wrong partner, leaving knowledge workers and joining a partner, inefficient allocation of resources, limiting the development of internal skills, filling internal knowledge gaps with collaboration and absorbing information from outside, lack of clear information about the market and customer needs, and improving culture. Planners are unable to apply changes to influential variables (environmental variables).

- Independent variables: Coordination problems, misuse of the organization's intellectual and physical assets, better forecasting of developments, inefficiencies in production and distribution, complexities of cooperation, and enriching project assessments with different aspects. Independent variables have little influence and cannot be strategic.

- Dependent variables: faster market entry, risk diversification, and slower product development

Conclusion

From the perspective of the general dimension of project management knowledge, the results of the present study show that open innovation processes, especially with inter-organizational collaborations and the use of external resources and knowledge, significantly affect the management of risk, time, communication, and human resources of the project. These findings are in line with the results of Audretsch & Belitski (2023). From the perspective of the key dimension of dichotomous variables, the findings presented by Sikandar & Abdul Kohar (2022) show that shortening the product development time can be the beating heart and key connecting point of the open innovation system, or in other words, the same dichotomous variable that is consistent with the results of the present study. From the perspective of the key dimension of influential variables, the findings presented by Almeida (2024) warn that failure to properly manage open innovation processes can lead to problems such as the departure of knowledge workers and limitations in the development of internal skills, which is also clearly stated in the present study. From the perspective of the key dimension of independent variables, according to the study results of Livieratos et al. (2022), choosing appropriate strategic partners and using external knowledge have an impact on improving product development time, which is also consistent with the findings of this study. On the other hand, existing analyses show that if open innovation is not implemented properly, it may lead to problems such as conflicting goals, increased complexity, and reduced productivity, which is similar to the result of Lazarenko (2019). From the perspective of the dependent variable, the results of the study conducted by Farjam et al. (2023) indicate that open innovation can lead to reduced project risks and increased speed to market.

The results of the research indicate that if the organization communicates with the external environment to carry out its projects, the following set of scientific recommendations are provided to the organization in the field of risk management, human resources, time, and project communication:

- Integrated management of innovation goals: Although open innovation and communication with the environment and external resources such as human, intellectual, and physical

resources shorten the product development time, the organization must be careful in selecting the right organization to jointly implement its innovative activities. The discrepancy between the organization's innovation goals with each other causes problems in creating the necessary interdepartmental coordination and will not only shorten the product development time and rapid market entry and reduce risk, but will also increase costs, inefficient allocation of resources, and even stakeholder dissatisfaction.

•Integrated management of the partner network: If the organization carries out its activities in cooperation with external factors, the evaluations of a project will be richer in various aspects. At this stage, choosing the right partner for the organization to implement its activities is important. If this choice is not correct, there will be no change in the knowledge and information available in the organization and the organization's internal knowledge gaps will not be filled properly. Also, evaluations of open innovation projects will not be done properly.