Presentation of the Model for the Impact of Human Capital and Open Innovation on Organizational Productivity Using the Qualitative Grounded Theory Method with Glaser's Approach

Farhang. Rahimi[1] , Naser. Seifollahi[2*] , Bahman. Kargar Shahamat[3] , Saeid Baghersalimi[4]

[1] Department of Management, Astara Branch, Islamic Azad University, Astara, Iran
[2] Associate Professor, Department of Business Management, Faculty of Social Sciences, Mohaghegh Ardabili University, Ardabili, Iran
[3] Assistant Professor, Department of Management, Islamic Azad University, Astara Branch, Astara, Iran
[4] Assistant Professor, Department of Public Administration, Islamic Azad University, Rasht Branch, Rasht, Iran

* **Corresponding author email address**: n.seifollahi@uma.ac.ir

Article Info	ABSTRACT

Article type:
Original Research

Objective: The aim of the present study was to present a model for the impact of human capital and open innovation on organizational productivity.

Methodology: This research gathered the necessary information by reviewing and evaluating previous studies in the field, as well as conducting in-depth interviews with experts and specialists in the areas of human capital, open innovation, and organizational productivity, who had practical experience at decision-making levels. Using the grounded theory analysis method, the study coded, categorized, and presented a conceptual model.

Findings: After conducting interviews with experts and specialists in the fields of human capital, open innovation, and organizational productivity, and implementing the coding process using the grounded theory method, a total of 3 selective codes, 24 axial codes, and 71 open codes were identified. To validate the extracted codes, a focus group consisting of 10 experts, who were initially interviewed, was formed. The extracted codes were presented to them, and they were asked to provide their opinions on these codes. The result of the focus group's evaluation and discussion on the extracted codes indicated that the suitable model for assessing the impact of human capital and open innovation on organizational productivity includes 3 dimensions: human capital, open innovation, and organizational productivity, and 24 components, including 1) individuals, 2) leadership, 3) knowledge management, 4) strategic decision-making, 5) organizational management and structure, 6) system reorganization, 7) process versus activities, 8) progress measurement, 9) organizational culture, 10) employees, 11) structure and process, 12) innovative performance, 13) outsourcing, 14) financial resources, 15) legal factors, 16) collaboration with competitors, 17) customer, 18) achieving positive productivity outcomes, 19) cultural development, 20) process orientation, 21) employee participation, 22) connection with supply chain actors, 23) learning, creativity, and innovation, and 24) organizational rules and regulations.

Conclusion: Organizational managers should define and design clear systems and structures, including appropriate promotion and reward systems, and financial regulations that monitor environmental changes and competitors' actions.

Keywords: *Human Capital, Open Innovation, Organizational Productivity, Qualitative Grounded Theory Method.*

1   Introduction

In the last decade, organizational management has recognized that human resources are of utmost importance in achieving sustainable and effective competitive advantage. In a world where knowledge and customer relations have become increasingly important, human capital, which represents the volume of knowledge, technical skills, creativity, and experience within an organization, has gained increasing significance. Consequently, the workforce is not viewed as costly assets but as productive assets (Gillman, 2021). The analysis of the human factor within the framework of capital analysis and the comparison between human skills and physical capital dates back to the distant past. The first serious application of the concept of human capital is attributed to William Petty, the first statistician and national accountant, who compared the damages of war in terms of equipment and military machinery losses with human losses. According to him, labor was the father of wealth. However, Adam Smith was the first to put the issue on the main track. In his book "The Wealth of Nations," Smith recognized the improvement of human skills as the primary source of progress and increased economic welfare, demonstrating how human capital and labor skills impact personal income and wage structures (Hamilton & Sodeman, 2020; Hong et al., 2019; Karamaty Tavallaei et al., 2023).

One of the most significant global discussions in the past decade has been about human capital. Human capital, or the quality of the workforce and the embedded knowledge within them, leads to increased productivity, production, and economic growth of countries. Although human capital has been a topic of discussion since classical economists' time, recent periods have focused on modeling and presenting frameworks that include human capital. In other words, beyond the classical view that production is solely a function of labor and capital, the qualitative factor of labor or human capital must be included as a variable in these functions (Han & Lee, 2020; Hilorme et al., 2019; Rangriz et al., 2021).

On the other hand, closed innovation, where organizations discover, develop, and commercialize their technology internally (Hajiakhoondi et al., 2020; Nambisan et al., 2018; Naqshbandi et al., 2019), is not sufficient and

optimal for competitiveness and endangers organizational productivity. Therefore, it is necessary to shift strategies towards open innovation, where organizations can utilize both external and internal ideas. In open innovation, organizations explore the environment for technology and knowledge derived from research rather than relying solely on their R&D. Bergers, Chesbrough, and Molas (2018) define open innovation as the purposeful use of inflows and outflows of knowledge to accelerate internal innovation and, subsequently, expand markets for external use of innovation (Huggins et al., 2020).

Therefore, to analyze the extent of the impact of human capital management and open innovation on the productivity of agricultural cooperatives and unions, the variables of human capital management and open innovation and their influence on organizational productivity will be analyzed. A model will be designed based on semi-structured interviews with at least 30 managers (from the practical field) and experts. Human capital and open innovation factors will be developed in the grounded theory conceptual framework, and the collected information from experts will be tested through questionnaires.

2   Methods and Materials

The present study employs a mixed-method approach and falls under the category of qualitative research designs. The current research focuses on qualitative analysis, gathering necessary information by reviewing and evaluating existing studies on the research topic and conducting in-depth interviews with experts in the fields of human capital, open innovation, and organizational productivity.

The statistical population included specialists and experts in the fields of human capital, open innovation, and organizational productivity as potential participants for designing and developing the model. Factors such as experience, position, education, relevance to the topic, interest, and availability for interviews were considered in selecting these individuals. To extract codes, interviews were conducted using theoretical sampling until theoretical saturation was achieved. Theoretical saturation occurs when additional data does not contribute to completing and specifying a theoretical category, and samples appear

similar. In other words, the point of theoretical saturation refers to the repetition of data in research, indicating the method's reliability. In the present qualitative study, purposive theoretical sampling of key informants based on their specific information about the research topic was used. Theoretical sampling involves collecting data based on categories to develop a theory. Sampling from experts continued until the exploration and analysis process reached theoretical saturation.

Utilizing the grounded theory method, the study proceeds with coding, categorization, and the presentation of a conceptual model. Grounded theory is an inductive and exploratory research method that allows researchers in various subject areas to develop theories based on real data rather than relying on existing theories. This method is particularly useful in areas where knowledge is limited. The qualitative data analysis process in this method involves three stages: open coding, axial coding, and selective coding.

Open Coding: This analytical process involves identifying concepts and discovering their characteristics and dimensions. During this stage, the researcher identifies concepts and expands them based on their characteristics and dimensions. The researcher forms preliminary categories related to the phenomenon under investigation by breaking down raw data, asking questions about the data, and comparing cases, events, and other instances of phenomena to find similarities and differences.

Axial Coding: The researcher takes one of the categories as the core category (main dimension) and relates other categories (components) to it. This connection aims to identify the main dimensions and related components in this research.

Selective Coding: This involves systematically selecting the core category and relating it to other categories, validating the relationships, and filling in the gaps with categories that need refinement and expansion. In this stage, to assess the model's validity, seven questions regarding quality, content, the model's relevance to the goal, etc., were formulated and provided to experts. The responses were then analyzed using Hotelling's T-square test. Additionally, Cohen's kappa coefficient was used to evaluate the model's reliability.

3 Findings and Results

This section addresses the questions posed in the current research:

First Question: What are the dimensions, components, and indicators of the model for the impact of human capital and open innovation on organizational productivity?

Ten interviews were conducted with specialists and experts in human capital, open innovation, and organizational productivity. The Glaser approach was used for qualitative data analysis, with each interview's text being examined word by word during open coding. From the words and phrases of the interviews, concepts were extracted. During categorization, sub-codes from each interview were grouped into general levels of characteristics, and factors influencing the model for assessing the impact of human capital and open innovation on organizational productivity were selected. The qualitative analysis stages of the interviews using the grounded theory method with the Glaser approach are explained below. For each interview, sentences and phrases, concepts, categories, and characteristics are shown in a table.

Open Coding:

From the open coding process of the ten interviews, 871 open codes were extracted. Upon review and comparison, 655 of the initial 871 open codes were found to be duplicates or had similar equivalents. This indicates that the ten interviewees were sufficient to reach theoretical saturation for presenting the model for the impact of human capital and open innovation on organizational productivity.

Axial Coding:

The goal of axial coding is to create relationships between the categories generated during open coding. This process typically follows a paradigmatic pattern and helps the theorist facilitate the theory development process. The foundation of the connection in axial coding is the expansion of one category.

Selective Coding:

Selective coding involves systematically selecting the main category, relating it to other categories, validating these relationships, and completing categories that need further refinement and development. Based on open and axial coding results, the selective coding stage is the primary theory development phase, where the core category is systematically linked to other categories, relationships are presented within a narrative framework, and categories needing further development are refined. Consequently, the components and indicators for designing the model for the impact of human capital and open innovation on organizational productivity were obtained. The model was reviewed and evaluated by experts again, and from the 216

extracted open codes, 145 less important ones were removed, leaving 71 codes for quantitative evaluation.

Table 1

Final Refined Open, Axial, and Selective Codes of the Model for the Impact of Human Capital and Open Innovation on Organizational Productivity

Selective Code	Axial Code	Open Code
Human Capital	Individuals	Cognitive abilities of employees; Employee loyalty; Employee risk-taking
	Leadership	Management's commitment to organizational mission; Management's commitment to productivity; Support for employee creativity and innovation
	Knowledge Management	Proper training process; Employee skill development; Transfer of appropriate behaviors to new employees
	Strategic Decision Making	Focus on human capital for employee growth, learning, and skill development; Good relations between managers and employees; Decision-making and problem-solving ability
	Organizational Management	Utilizing human capital in relevant positions; Recruitment and employment process; Focus on scientific and specialized efficiency
	System Reorganization	Creating a pleasant work environment; Increasing employee motivation and interest; Existing human conditions in the organization
	Process vs. Activities	Compatibility between management style and employee temperament; Employee participation and cooperation; Process improvement for task completion
	Progress Measurement	Information evaluation and development; Performance management and evaluation; System synergy
	Organizational Culture	Existence of a friendly atmosphere among employees; Balancing work and life; Quality of work-life
Open Innovation	Employees	Employees' adequate information about the activities; Gaining experience from the surrounding environment; Attention to employees' intellectual assets
	Structure and Process	Creating a culture for open innovation; Transferring open innovation skills to all organizational levels; Increasing knowledge and skills in methods, principles, and practical fields of open innovation
	Innovative Performance	Utilizing the capacity of conferences and exhibitions; Identifying innovative opportunities; Networking capability
	Outsourcing	Improving the organization's outsourcing approach; Using feedback from others' utilized ideas; Utilizing the experiences and outputs of others' activities
	Financial Resources	Investment to increase organizational productivity; Financial incentives for open innovation as R&D; Incentives for hiring R&D personnel
	Legal Factors	Using policy tools to support open innovation; Facilitating laws; Legal and intellectual property rights and technological standards
	Collaboration with Competitors	Benefiting from others' external open innovation; Organization's capabilities in collaboration with other organizations; Familiarity with industry pioneers
	Customer	Attention to the role of consumers in open innovation; Using consumer feedback in open innovation processes; Integrating company customers to generate innovative ideas
Organizational Productivity	Achieving Positive Productivity Outcomes	Optimal use of existing organizational resources; Employees' abilities, talents, knowledge, experience, social and intellectual intelligence; Expanding and developing physical infrastructure and incentive policies
	Cultural Development	Focus on social and cultural development in the organization; Designing and implementing appropriate reward and punishment mechanisms; Friendly relations and cooperation in the work environment
	Process Orientation	Providing infrastructure; Precision in arranging and positioning equipment and tools; Utilizing and promoting contemporary knowledge within the company
	Employee Participation	Organizational employee competitiveness; Attention to employees' mental and psychological beliefs; Positive attitude towards job and organization
	Relationship with Supply Chain Actors	Establishing regulations by the government; Creating trust in the private sector
	Learning, Creativity, and Innovation	Proper utilization of employees' talents and skills; Employees' capability in idea generation; Employees' ability to participate in decision-making
	Organizational Rules and Regulations	Flexibility of laws and regulations; Valuing work in related laws; Laws and executive guarantees

Therefore, from the text of the ten conducted interviews, 871 open codes were extracted. Since theoretical saturation was achieved after ten interviews, and interviews eight to ten were conducted to ensure theoretical saturation, 655 duplicate codes were removed, resulting in 216 open codes for the current study. The developed model was reviewed and evaluated by experts again, reducing the 216 open codes to 71 codes deemed of higher importance, which were subjected to quantitative evaluation. Consequently, using the grounded theory method with the Glaser approach, 3

selective codes, 24 axial codes, and 71 open codes were obtained.

Second Question: What is the appropriate model for examining the impact of human capital and open innovation on organizational productivity?

To answer this question, after conducting interviews with specialists and experts in human capital, open innovation, and organizational productivity, and executing the coding process using the grounded theory method, a total of 3 selective codes, 24 axial codes, and 71 open codes were identified. To validate the extracted codes, a focus group consisting of 10 experts, who were initially interviewed, was formed, and the extracted codes were presented to them for their opinions. The result of the focus group's evaluation and discussion indicated that the suitable model for assessing the impact of human capital and open innovation on organizational productivity includes three dimensions:

human capital, open innovation, and organizational productivity, and 24 components including 1) individuals, 2) leadership, 3) knowledge management, 4) strategic decision-making, 5) organizational management and structure, 6) system reorganization, 7) process vs. activities, 8) progress measurement, 9) organizational culture, 10) employees, 11) structure and process, 12) innovative performance, 13) outsourcing, 14) financial resources, 15) legal factors, 16) collaboration with competitors, 17) customer, 18) achieving positive productivity outcomes, 19) cultural development, 20) process orientation, 21) employee participation, 22) relationship with supply chain actors, 23) learning, creativity, and innovation, and 24) organizational rules and regulations. The evaluation model for the impact of human capital and open innovation on organizational productivity using the qualitative grounded theory method with the Glaser approach can be presented as follows:

Figure 1

Model of the Impact of Human Capital and Open Innovation on Organizational Productivity

IJIMOB

Rahimi et al.　　　International Journal of Innovation Management and Organizational Behavior 4:4 (2024) 139-146

Third Question: What is the validity of the proposed model for developing organizational citizenship behavior among managers in the education system?

In the present research, the researcher ensured the validity of the proposed theory by adhering to principles such as careful selection of key participants, integrating data collection methods (e.g., interviews, note-taking, memos), allocating sufficient time for interviews, continuously reviewing data and categories for similarities and differences, peer review of analyses, and reviewing writings by participants.

Validity refers to the extent to which a method measures the study's objective, reflecting the degree to which the researcher's observations can capture the phenomenon or variables under study. To ensure research validity, the researcher employed member checks, data source triangulation, and peer review, which are elaborated upon below.

Data Source Triangulation: This involves investigating a specific question using different sources and methods to obtain findings through various channels to make better judgments about their accuracy. Data source triangulation prevents biases that might arise from using a single data source, method, observer, or theory in studies. This method involves using multiple data sources to analyze a single phenomenon. In the present research, three main sources - experts, managers, and academic specialists in the research topic - were used to gather comprehensive information from different perspectives involved with the topic. This approach improved the breadth and depth of data, demonstrating proper triangulation by examining the phenomenon from various sources.

Peer Review: This process involves sharing the data analysis process and results with specialists and colleagues involved in the research to validate the process and findings. Peer review ensures the accuracy of the analysis and results, increasing the confidence in their validity. In this research, alongside obtaining opinions from advisors and consultants, data analysis and results were reviewed by several specialists. As a result, from the 216 extracted open codes, 71 were accepted, and the final conceptual model included 3 selective codes, 24 axial codes, and 71 open codes.

Member Checks: This quality control process involves revisiting interviewees to confirm or re-evaluate the findings. The researcher summarized the analyzed data and presented it to some interviewees for review. This step aims to verify the correct interpretation of interviewees' comments, assess the fit of findings with their actual intentions, and ensure the logical coherence of findings. Interviewees were asked to point out and specify any discrepancies between the researcher's interpretation and their actual views for correction.

Reliability refers to the consistency of research findings. In interviews, reliability involves stages such as interview context, transcription, and analysis. Interview reliability relates to how questions are directed, transcription reliability ensures consistency during typing, and classification reliability focuses on the agreement between coders during analysis. In this research, retest reliability and inter-coder reliability were used to calculate interview reliability. These methods are described below.

Retest Reliability: This method evaluates the stability of the researcher's coding by selecting several interviews and coding each one twice at a specified interval. The codes identified at both intervals are compared, with matching codes termed as agreement codes and non-matching ones as disagreement codes. After recoding by the researcher, retest reliability was calculated at 87%, indicating high reliability of the conceptual model.

Inter-Coder Reliability (Cohen's Kappa): This measures the agreement between coders on the codes applied to a portion of the interview text. The value of the kappa coefficient ranges from -1 to +1, where a value close to +1 indicates high reliability, close to -1 indicates disagreement, and close to zero indicates lack of reliability. A kappa coefficient between +0.6 and +0.8 indicates acceptable reliability. In this research, two experts reviewed the work, and based on their opinions, the kappa coefficient was calculated at 0.84.

Additionally, to evaluate the theorizing of the qualitative content analysis conducted, the researcher posed seven questions using a 5-point Likert scale regarding the quality of the conceptual model presented through qualitative content analysis and provided these to 10 experts. Since these seven questions examine the model from seven different perspectives, Hotelling's T-square test was used to assess the experts' opinions. The results are presented in

Table 2

Hotelling's T-Square Test Results

Row	Question	Mean	Standard Deviation	T-Square Statistic	Significance Level
1	The concepts presented in the model are derived from the content analyzed.	4.283	0.683	14.567	0.021
2	The extracted concepts are systematically related.	4.133	0.738		
3	There are conceptual links between concepts and categories, and categories are well-formulated.	4.271	0.801		
4	The theory is formulated to encompass changing conditions.	3.972	0.769		
5	Broader conditions that may affect the main phenomenon (designing the model for the impact of human capital and open innovation on organizational productivity in agricultural cooperatives and unions) are explained.	3.988	0.798		
6	Process change is considered in the theory.	4.033	0.667		
7	The theoretical findings appear significant.	4.106	0.629		

The mean values for all seven evaluated questions exceed the score of 3 (equivalent to "neutral" or "average" in the questionnaire), and the standard deviation of the obtained values is less than 1. Furthermore, the T-square statistic (14.567) is significant at a significance level of less than 0.05 (0.021), indicating a significant difference from the mean score of 3. Therefore, the acceptance level of all seven questions assessing the model's quality is high among experts. It can be concluded that, from the perspective of knowledgeable experts in the research topic, the presented model is of high quality.

4   Discussion and Conclusion

Ten interviews were conducted with experts and specialists in the fields of human capital, open innovation, and organizational productivity. The Glaser approach was used for the qualitative analysis of the interviews. In this method, during the open coding stage, the text of each interview was examined word by word, and concepts were extracted from the words and phrases of the interviews. In the categorization stage, the sub-codes of each interview were grouped by placing similar initial codes into general levels of characteristics, selecting the factors influencing the model for evaluating the impact of human capital and open innovation on organizational productivity. The steps of qualitative analysis of the interviews using the grounded theory method with the Glaser approach are detailed. For each interview, a table was created to show sentences and phrases, concepts, categories, and characteristics.

During the open coding process of the ten interviews, 871 open codes were extracted. The goal of axial coding is to create relationships between the categories generated during open coding. This process usually follows a paradigmatic pattern and helps the theorist facilitate the theory development process. The foundation of the connection in axial coding is the expansion of one of the categories. Selective coding is the process of systematically selecting the main category, relating it to other categories, validating these relationships, and completing categories that need further refinement and development. Selective coding, based on the results of open and axial coding, is the main stage of theory development. In this stage, the core category is systematically linked to other categories, these relationships are presented within a narrative framework, and categories that need further development are refined. Consequently, based on this selective coding, the components and indicators for designing the model for the impact of human capital and open innovation on organizational productivity were obtained as follows. The developed model was reviewed and evaluated by experts again. Of the 216 extracted open codes, 145 were of lesser importance and were removed, leaving 71 codes for quantitative evaluation.

Organizational managers should define and design clear systems and structures, including appropriate promotion and reward systems, and financial regulations that monitor environmental changes and competitors' actions. Such measures require selecting organizational managers and leaders with a broad perspective and high organizational ability to identify environmental changes, facilitate organizational convergence, and align individual adaptation with organizational goals. Establishing an organizational career path that includes the mentioned variables and encourages a comprehensive performance evaluation system aligned with organizational goals is essential for a human resource performance evaluation system aligned with organizational goals. It is recommended that organizations and human resource managers pay more attention to the importance and role of individuals in the performance evaluation process. They should create opportunities for creativity and the generation of new ideas and strengthen

actions that lead to individual learning and greater collaboration within the organization.

Researchers always face limitations in their studies, some of which become apparent even at the beginning of the work. One of the main pillars of research is access to statistics and information. There are issues in this area that have made it difficult to access research services such as books, journals, statistics, databases, etc., in the country. Part of this problem is due to the lack or shortage of these research services, and on the other hand, incorrect culture has led to the private perception of these items, resulting in individuals and institutions refraining from sharing their findings with others. Moreover, unwanted variables that may result from special plans and methods used in the research often jeopardize the internal and external validity of the research in various ways. It should be noted that in behavioral science research, it is impossible to completely control or eliminate these factors. However, researchers strive to predict, identify, and take all necessary precautions to reduce these factors as much as possible.

Authors' Contributions

All authors have contributed significantly to the research process and the development of the manuscript.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

Acknowledgments

Declaration of Interest

The authors report no conflict of interest.

Funding

Ethical Considerations

In this research, ethical standards including obtaining informed consent, ensuring privacy and confidentiality were observed.

References

Gillman, M. (2021). Steps in industrial development through human capital deepening. *Economic Modelling*, *99*, 105470. https://doi.org/10.1016/j.econmod.2021.02.011

Hajiakhoondi, E., Hashemzadeh Khorasgani, G., & Boushehri, A. (2020). Identify the Major Factors Affecting the Success of Open Innovation in the Digital Knowledge-based Business Ecosystem. *Industrial Management Journal*, *12*(2), 344-372. https://doi.org/10.22059/imj.2020.312769.1007796

Hamilton, R. H., & Sodeman, W. A. (2020). The questions we ask: Opportunities and challenges for using big data analytics to strategically manage human capital resources. *Business Horizons*, *63*(1), 85-95. https://doi.org/10.1016/j.bushor.2019.10.001

Han, J.-S., & Lee, J.-W. (2020). Demographic change, human capital, and economic growth in Korea. *Japan and the World Economy*, *53*, 100984. https://doi.org/10.1016/j.japwor.2019.100984

Hilorme, T., Perevozova, I., Shpak, L., Mokhnenko, A., & Korovchuk, Y. (2019). Human capital cost accounting in the company management system. *Academy of Accounting and Financial Studies Journal*, *23*, 1-6. https://www.researchgate.net/profile/Tetiana-Hilorme/publication/340105521_HUMAN_CAPITAL_COST_ACCOUNTING_IN_THE_COMPANY_MANAGEMENT_SYSTEM/links/5e7911c64585158bd501ab27/HUMAN-CAPITAL-COST-ACCOUNTING-IN-THE-COMPANY-MANAGEMENT-SYSTEM.pdf

Hong, J. F. L., Zhao, X., & Stanley Snell, R. (2019). Collaborative-based HRM practices and open innovation: a conceptual review. *The International Journal of Human Resource Management*, *30*(1), 31-62. https://doi.org/10.1080/09585192.2018.1511616

Huggins, R., Prokop, D., & Thompson, P. (2020). Universities and open innovation: the determinants of network centrality. *The Journal of Technology Transfer*, *45*(3), 718-757. https://doi.org/10.1007/s10961-019-09720-5

Karamaty Tavallaei, S., doaei, h., & kazemi, a. (2023). Presentation and validation of the human resources recruitment model in the country's government organizations based on upstream documents. *Iranian journal of management sciences*, *18*(69), 78-104. http://journal.iams.ir/article_396_8b77257cc2cd66702d7e63110fb564f7.pdf

Nambisan, S., Siegel, D., & Kenney, M. (2018). On open innovation, platforms, and entrepreneurship. *Strategic Entrepreneurship Journal*, *12*(3), 354-368. https://doi.org/10.1002/sej.1300

Naqshbandi, M. M., Tabche, I., & Choudhary, N. (2019). Managing open innovation. *Management Decision*, *57*(3), 703-723. https://doi.org/10.1108/MD-07-2017-0660

Rangriz, H., Hassanpoor, A., Abasiyan, H., & Sajjad, A. (2021). Identify the Key Success Factors of the Implementation of Human Capital Analysis System. *Journal of Research in Human Resources Management*, *13*(4), 115-156. https://hrmj.ihu.ac.ir/article_206710.html