Information Quality and SMEs Innovative Performance:
The Role of Knowledge Sharing and Business Process Management

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Abstract: In the current business environment and the post-corona era, quality information builds the foundation of knowledge sharing and facilitates business process management, and all of these play a fundamental role in the innovative performance of small and medium enterprises (SMEs). Therefore, the purpose of this research is to investigate the effect of information quality on the innovative performance of SMEs concerning the mediating role of knowledge sharing and business process management. The research method is applied in terms of the goal and the descriptive survey is in terms of the method. The statistical population of the research is 460 SMEs in Kerman, of which 210 companies were selected as a statistical sample based on Morgan's table. The sampling method is random sampling, and the research tool is a questionnaire whose validity and reliability were confirmed. Finally, 420 questionnaires were distributed among managers and vice presidents of companies. The data was analyzed with SPSS 26 and SmartPLS 3 software. The results of the research indicate that knowledge sharing and business process management play a mediating role in influencing the quality of information on the innovative performance of SMEs. Information

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quality has an impact on knowledge sharing, business process management, and innovative performance of SMEs. Knowledge sharing and business process management affect the innovative performance of SMEs. SMEs should continuously improve the quality of company information, and by using this information, and through knowledge sharing and business process management, improve innovative performance.

Keywords: Information Quality, Innovative Performance, Knowledge Sharing, Business Process Management, Small and Medium Enterprises (SMEs)

1. Introduction

Today and in the post-Corona era, almost all industries, organizations, and especially SMEs are developing new technologies, and the efforts of companies to use information-based technologies and quality knowledge have doubled and companies' efforts to use information-based technologies and quality knowledge have doubled. In this way, they can cope with multiple pressures related to limited resources, environmental pressures, and lack of innovation. In the face of these pressures, traditional management processes are no longer able to meet the innovative needs of companies, and subsequently, companies need quality information and share it with managers and appropriate management to access appropriate performance (Lyu et al., 2022).

In this sense, Priyono et al. (2020) suggested that SMEs accept the changes in knowledge and information technology to cope with the changes in the corona and post-corona era (Priyono et al., 2020). Nevertheless, there is an undeniable truth that the pressures resulting from the economic and political environment on SMEs are one of the main obstacles for these companies to use quality information, and to accept managerial, knowledge, and innovative developments (Crupi et al., 2021).

Information is an important factor for effectively supporting companies to acquire knowledge, move towards innovation, and improve performance (Boroumand and Panahi, 2023). Companies with superior information technology can acquire quality information and knowledge and be better in innovative performance by creating stronger connections. The use of information in many organizations and companies is useful today, and the provision of information has

become very valuable for organizations to achieve smarter business. Companies and organizations have begun to use the power of data to gain knowledge in various functional areas, including production management, customer analysis, product sales, compliance management, risk management, etc. However, they are often hesitant to build their knowledge environment because its usefulness is not yet well understood and factors such as business process, information technology, and organization are effective in creating this doubt (Kumar et al., 2020).

Meanwhile, many researchers have focused on the effect of information on performance, which has sometimes led to conflicting results. For example, Côrte-Real et al. found that investing in information technology does not affect the organization's performance, especially its productivity (Côrte-Real et al. 2017). According to other researchers, new technology has caused human confusion and has never improved the productivity and performance of commercial companies, and the amount of data that this technology imposes on people reduces the productivity of the organization and the effectiveness of human resources in the workplace (Naderi et al., 2014). On the contrary, many researchers believe that the use of quality information has a positive effect on performance. Ramezanian et al. (2016) believe that information technology improves organizational performance. Some people have found that the high quality of information technology has brought many benefits and caused organizational productivity and speeding up work (Ramezanian et al., 2016).

SMEs in particular need constant innovation in production, research and development, and sales processes to achieve transformation and optimal performance, which requires the use of quality information (Babaee et al., 2022). Unfortunately, in our country and due to various reasons such as economic and political challenges plaguing SMEs, as well as in the post-Corona period, many of these companies have faced shortages and lack of resources, and need to use business capabilities and quality information technology in the company to overcome these problems. Consequently, whether SMEs can improve their innovative performance in this era by using quality information and proper business process management capability is unclear. Researchers admit that information technology enables companies to create social networks (Naeiji et al., 2022) and

strengthens corporate relationships. Therefore, information and knowledge can be easily transferred and ultimately improve innovative performance (Sahebodari, 2020). However, in a situation compounded by the increase of information and the transformations of companies in the post-corona era, improving innovative performance with information is a vague and unknown issue that deserves a more detailed investigation.

On the other hand, in past researches, mainly the effects of social and functional variables in relatively stable environments have been analyzed and discussed (Fazel et al, 2023), and sometimes it is suggested that Innovation should be avoided in relatively stable environments. But in today's turbulent and unstable environment and especially in the post-Corona era, companies are trying to guide their organizational activities based on information and knowledge sharing. Knowledge is one of the unlimited, inexhaustible and valuable resources for organizations that think about survival in a competitive environment. Knowledge is at the disposal of the people of the organization, and to use it, conditions must be created in the organization so that people can share their knowledge with other people in the organization, and in this way, the performance of the employees and, as a result, the performance of the organization can be improved (Falah Kazemi & Atghia, 2022).

Researchers acknowledge that knowledge sharing is not only a goal, but is both a goal and a means that leads to the effectiveness of organizational efforts. In other words, brain is sharing knowledge, creating new knowledge and sharing knowledge of innovation, and thus improving the performance of the organization. Sheng and Hartman (2019) found that tacit knowledge sharing can affect the development of two-way innovative capabilities of the company (Sheng and Hartmann, 2019). Similarly, Duan et al. (2021) found that knowledge sharing can improve the quality of innovation in multinational companies in the presence of the moderating variable of organizational culture (Duan et al., 2021). In this sense, there is a close relationship between knowledge sharing activities and organizational innovation. Knowledge sharing can share explicit and tacit knowledge within the company, which itself leads to the creation of new ideas in the company (An et al., 2022).

In their research, researchers point out that the ability of companies to transfer

knowledge is their main strength for survival. Many organizations are facing problems in the field of knowledge sharing, and overcoming these problems can be possible considering many aspects related to this process (Mousa et al., 2019). Nevertheless, companies cannot operate and are not independent without interacting with stakeholders and using quality information and turning it into effective knowledge and sharing it. In such interactions, there are nodes that are interdependent. Meanwhile, knowledge sharing is a link that is formed by the balance of all parties in the network of interests, and it can originate from quality information and at the same time help businesses in creating innovation and innovative performance. Therefore, it can be stated that there is a potential close relationship between information quality, knowledge sharing and innovative performance.

On the other hand, it should be acknowledged that the quality of information and knowledge sharing is insufficient for company innovation. That means, for successful innovative performance, companies need to use many capabilities, one of the most important of which is the ability to manage business processes (Norouzi et al., 2023).

Today, businesses are facing rapid changes, and in the current competitive environment, an organization can continue to exist if it has the necessary mechanisms to face these changes. One of the new approaches that helps organizations survive in today's competitive environment is the process-oriented approach and process-based management. Processes are the core of the organization's business. Organizations in the past prepared separate systems for each process within that process, which were known as island systems. However, due to the impossibility of communication between these systems and the design of the systems for only one separate department, the overall goals of the organization were not being met optimally (Haddadi et al, 2019). Finally, business process management was proposed, which, with the many models required by organizations, provides an integrated method for defining, implementing, reviewing, and managing the business processes of organizations, and by using the relevant methods and tools, the workload It minimizes and makes management easy and efficient. Today, business process management is the foundation of continuous progress. Many companies have learned from experience that business process

management is a strong investment in rapidly meeting the changing needs of today's dynamic world (Zare et al., 2023).

In the current competitive environment, an organization can continue to exist if it has the necessary mechanisms to face these changes. The business process management system provides a platform to carry out organizational procedures, or in other words, the organization's workflow based on processes in a fully mechanized and automatic way (Saadat et al., 2023). By using this system, managers and planners of the organization can define the executive processes of the organization according to their opinion and change them at any time and lead to organizational innovation. Those responsible for the execution of the processes have received complete and up-to-date information about the execution of the processes under their responsibility, and at any moment they can have a temporary effect on the execution of each of the processes, and by obtaining quality information, the company's innovative performance upgrade (Zare et al., 2023). In fact, the quality of information facilitates communication, joins companies, creates value networks, fades the boundaries of the industry, and improves innovative performance by emphasizing on business process management capabilities.

In the current business environment and with new developments in the era of artificial intelligence and post-Coronavirus, it is assumed that the quality of information of companies plays an important role in sharing knowledge and innovation of the company. The quality of information builds the foundation of knowledge sharing, and leading SMEs can effectively share explicit and implicit knowledge. In addition, the quality of information can improve the business process management of companies, which helps them to transform the acquired information into new products and services, and subsequently, the innovative performance of companies is improved. This research has several innovations, which include:

- ◇ Because this research was conducted for the first time and with this scope and based on research variables, it is completely innovative.
- ◇ Also, in the past research, the relationship of these variables as a combination and mediation of business management and knowledge sharing has not been addressed, and therefore, in this respect, it has innovation in research.

◇ Such a research, with such variables and in SMEs, is done for the first time, which can open the way for these companies for their innovative performance, and therefore has innovation in this sense.

2. Research background

2-1. Information Quality and Innovative Performance

Performance, literally, means the state or quality of functioning. Performance refers to the action and its result. Performance is known as one of the most important components of measuring productivity in organizations. This element is one of the fundamental concepts in management. Because many management tasks are formed based on it (rostami et al., 2021). Also, the success of organizations can be seen in the mirror of their performance. According to the current turbulent business environment, using conventional methods will not provide a good share of the market to business owners, and the need for innovative methods is strongly felt in the market (Ziyae et al., 2021).

Innovative performance is a combination of the overall success of the organization as a result of the efforts made to renew and improve and apply different aspects of innovation in the organization (Salehian et al., 2021). In the literature on the subject, innovative performance is considered as one of the most important drivers of other functional aspects of the organization due to the continuous efforts that are made in order to improve, renew, explore, learn from mistakes, compromise with the rapidly changing competitive environment. (Chang et al., 2024). Meanwhile, researchers consider the dimensions of innovative performance in innovative performance in the field of service, process, behavioral, and strategic (Kumar et al., 2024).

On the other hand, the researchers admit that today the meaning of the term information technology has become very broad and includes many aspects of computing and information. The umbrella of information is almost large and covers many fields, and information has been widely considered as an important infrastructure for the survival and growth of companies (Chang et al., 2024) and an important influence on the performance of companies, especially innovative performance. Information quality is a central point that enables companies to improve their organizational performance. The quality of information indicates the

quality of the output from the information system in the form of reports or data (Behbudi & Badin, 2023), And it has various dimensions and components such as time dimension (timeliness, up-to-date, time period, frequency), content (accuracy, relevance, completeness, brevity, specific area) and structure (accessible, free from bias, appropriate, clarity, ability to be detailed) (Delavi et al, 2013).

In a study, Rostami et al. (2021) investigated the effect of information on performance, emphasizing the moderating role of patience of the majority shareholders in the Tehran Stock Exchange. The results of this research showed that information management has a negative and significant effect on the company's performance, but the patience of the majority of shareholders strengthens the relationship of information management on the company's performance (rostami et al., 2021). Boroumand and Panahi (2023) in a study aimed at investigating the effect of information technology on organizational performance with the mediating role of innovation performance in the National Company of Southern Oil Regions showed that with the improvement of information technology, organizational performance and innovation performance in the organization increases, because the use of information technology In the company, it causes the transfer and access of information to be implemented well, and this causes the scope for innovation in the organization and employees to increase (Boroumand & Panahi, 2023).

Ramezanian et al. (2016), in a study aimed at investigating the impact of information management capability on organizational performance and explaining the role of organizational capabilities, showed that information management capability plays an important role in developing customer management ability, process management, and performance management. These three capabilities are effective on human, financial and customer resources and the effectiveness of organizational performance (Ramezanian et al., 2016). Pirayesh et al. (2023) in a research investigated the impact of information technology on human resource management functions and thus on the performance of Zanjan University employees. The findings showed the significance of the effect of "information technology" on "human resource management functions", and the significance of the direct effect of "information technology" on "employee performance" and the significance of the effect of information technology on the performance of employees through human resource management functions (Pirayesh et al.,

2023). In a study, Badin and Behboudi (2023) analyzed the relationship between big data analysis capabilities and innovative performance and analyzed its results on the performance of Mashhad Future Bank. Based on the results, data diversity and data speed have a positive and significant effect on the innovative performance and, accordingly, on the performance of the future bank. But the impact of data volume on innovative performance and future bank performance was not confirmed (Badin & Behbudi, 2023). Mahmoudi (1402) in a study aimed at the effect of information quality and green play on the consumer trust of cultural products showed that the quality of information and green play have a significant effect on perceived usefulness and ease. Also, perceived usefulness plays a mediating role in the relationship between information quality and green performance with consumer trust in cultural products. Also, the mediating role of perceived ease of use in the relationship between information quality and green gaming with consumer trust of cultural products was significant (Mahmoudi, 2023). Jahanpour et al. (2019) conducted a study with the aim of evaluating the quality of the data of the hospital information system of the teaching hospitals of Zahedan University of Medical Sciences. These researchers concluded that due to the fact that all dimensions were at a favorable or relatively favorable level, it seems necessary to pay attention and improve the quality of data in hospital information systems (Jahanpour et al., 2019).

Therefore, based on the stated content, the first hypothesis of the research is as follows:

◇ H1: The quality of information affects the innovative performance of SMEs.

2-2. Information Quality and Knowledge Sharing

Managers of progressive and knowledge-oriented organizations use information as a driving force and effective factor in the progress and success of knowledge management and overcoming challenges. For this reason, quality information is considered one of the main facilitators of knowledge sharing (Mousa et al., 2019(. Quality information acts as a strong enabler and provides effective and sufficient tools for all aspects of knowledge sharing (Najafpour et al., 2023). The effectiveness of knowledge sharing requires the rational integration of technical, cultural and human infrastructures. Quality information, as the most important enabler of the

knowledge sharing process, has significantly improved the implementation of this process with great speed and accuracy. It must be acknowledged that the biggest success factor of knowledge sharing in this era is the capacities that information creates on it (Falah Kazemi and Atghia, 2022). Knowledge sharing is a targeted process that includes information technology and human communication at the same time, in order to increase the intellectual capital of the organization (Mousa et al., 2019). Despite the emphasis that many authors have on the use of information, the evidence for the effective role of quality information in creating or sharing knowledge is limited. The evidence points to three main limitations for using information for knowledge management: the embedding of knowledge in social networks, the importance of face-to-face interaction for knowledge sharing, and the importance of informal environments for knowledge creation (Falah Kazemi and Atghia, 2022). Facilitating the process of knowledge sharing depends on the supporting role of information, and information tools have created a complex and dynamic structure in companies and organizations that strengthen knowledge sharing in an easier, faster and wider way (Ahmad et al., 2020).

Kumar et al. (2022) investigated the impact of organizational information technology and knowledge sharing behavior on service innovation performance in the hospitality industry. The results of the study show that the information technology support of the organization has a positive effect on knowledge sharing and service innovation performance. Knowledge sharing behavior facilitates the impact of organizational information technology on service innovation performance (kumar et al., 2022). Ahmed et al. (2021) investigated the effect of file sharing factors of perceived enjoyment, perceived mutual benefit, information and communication technology, availability of technology, on knowledge sharing among undergraduate students of Erbil World University of Iraq. The results of their research showed that file sharing has a positive effect on perceived enjoyment, perceived mutual benefit, and information and communication technology on knowledge sharing among students. However, the availability of technology has not affected knowledge sharing among students. The results of this research also indicate that universities should use the mutual benefits of knowledge sharing and encourage knowledge sharing among students (Ahmed et al., 2021). Mousa et al. (2019) investigated the effect of subjective norm attitude and information communication

technology on knowledge sharing performance among university employees. In this research, the effect of the main variables of attitude, mental norm and information communication technology on the dependent variable of knowledge sharing was investigated. The findings of the mentioned research showed that all three variables have a positive and significant effect on the knowledge sharing performance of academic staff (Mousa et al., 2019). Mugo (2018) investigated the impact of information and communication technology on knowledge sharing. The results of this study showed that the infrastructure of information technology and the structure of information and communication technology are significant in explaining knowledge sharing in organizations (Mugo, 2018). Nisar et al. (2018) investigated the effect of trust, attitude and use of information and communication technology in knowledge sharing. Their findings praised that trust, attitude and use of information and communication technology are the main factors of knowledge enhancement in students, and also the use of information and communication technology is a very important predictor and predictor of knowledge sharing (Nisar et al., 2018). Khalatbari and Hashemianzadeh (2020) in their research analyzed the antecedents of knowledge sharing in Iranian organizations, and came to the conclusion that the prerequisites for knowledge sharing are a comprehensive perspective, in which soft and hard factors should be considered simultaneously; Also, information technology and reward system were identified as effective factors on knowledge sharing (Khalatbari and Hashemian zadeh, 2020). In their research, Falah and Atghia (2020) examined the relationship of information technology to knowledge sharing: with the mediating role of communication satisfaction. The results of this research showed that there is a significant relationship between information technology and knowledge sharing, information technology and communication satisfaction, communication satisfaction and knowledge sharing (Falah and Atghia, 2020). In this sense and according to the mentioned contents, the hypothesis is as follows:

◇ H2: The Quality of Information Affects the Knowledge Sharing of SMEs.

2-3. Information Quality and Business Management Process

In today's era, the quality of information is known as a key competitive asset and a valuable factor for the transformation and flexibility of the organization

and the improvement of processes and operations within the organizations, which is the basis of sustainable growth and the key to maintaining a sustainable competitive advantage of an organization (Zare et al., 2023). Quality information and knowledge, and removing obstacles and unnecessary processes can affect customer orientation and efficiency within the organization and can ultimately create value for the organization. In fact, knowing the relationship between information quality and business process management guarantees higher growth, efficiency and effectiveness (Haddadi Harandi et al., 2019). In fact, the quality of information is the central point that enables companies to improve their business management processes. The quality of information reflects the quality of the output of information technologies within the organization that affect business processes in the form of reports or data (Ghonji and Hafezi, 2107). In their study, Zare et al. (2023) acknowledged the impact of information quality on business processes (Zare et al., 2023). Haddadi Harandi et al. (2018) showed in their study that information security with the aim of ensuring the continuity of operations and minimizing cyber threats and damages, maintains and improves business credibility, and maximizes investment opportunities throught he development of new markets (Haddadi Harandi et al., 2018). According to the stated content, the relevant hypothesis is as follows:

- ◇ H3: The quality of information affects the business process management SMEs.

2-4. Knowledge Sharing and Innovative Performance

In today's organizations, cooperation and information exchange among colleagues and active teams in the organization is vital for the realization of organizational goals. When the work is done as a team and group, it can even be said that the transfer of knowledge that is in the possession of one member of the group will make other members of the group perform their duties better; Therefore, innovative performance will be improved (Lyu et al., 2022). By sharing knowledge, people can achieve results beyond their individual results. Knowledge sharing is an important tool to achieve proper performance in the organization. In fact, according to the dynamics of the organization's environment, achieving goals depends on acquiring new knowledge and sharing it among members; And the degree of

success of the organization in achieving its goals is the same as performance, and this means the importance of sharing knowledge in creating better performance in the organization (Philsoophian & Akhavan, 2017). Researchers acknowledge that knowledge sharing can have a significant impact on a firm's performance and is therefore an important priority for many firms (Hasun Alkhafaji et al., 2023).

Babaee et al. (2022), in a research aimed at analyzing the relationship between innovation quality, knowledge-based leadership, customer knowledge management and the performance of SMEs, showed that the intensity of competition does not moderate the relationship between customer knowledge management and innovation quality; But innovation quality has mediated the relationship between customer knowledge management and company performance (Babaee et al., 2022). Ziyae et al. (2021) in a research with the aim of investigating the effective factors on knowledge transfer and its effect on the innovation performance of international strategic alliances showed that the use of systems based on information technology, learning strategy, trust culture and flexible structure on knowledge sharing in alliances International strategic alliances have an impact, and knowledge sharing also has an impact on the innovation performance of international strategic alliances (Ziyae et al., 2021). Nasrabadi et al. (2024) in a study aimed at investigating the relationship between knowledge network management and product innovation performance, showed that product innovation performance is created from knowledge network management (Nasrabadi et al., 2024). Zadeh Gorgan and Mohaghegzadeh (2022) in a study aimed at the effect of innovation capability and knowledge sharing on innovation performance and marketing performance of Parsian Bank of Tehran showed that innovation capability has an impact on innovation performance, innovation performance on marketing performance, knowledge sharing on innovation performance; Also, organizational innovation has a positive and meaningful effect on innovation performance, process innovation on innovation performance, service innovation on innovation performance, and marketing innovation on innovation performance (Zadeh Gorgan & Mohaghegzadeh, 2022). Filsofian and Akhwan (2017) in a study aimed at investigating the effect of knowledge sharing (according to the factors of desire, intention and behavior) on organizational performance showed that desire has a positive and significant effect on intention and intention has a positive and

significant effect on behavior. Also, knowledge sharing has a relatively large effect on performance in the organization(Philsoophian & Akhavan, 2017). In this sense, based on the mentioned contents, the fourth research hypothesis is as follows:

◇ H4: Knowledge sharing affects the innovative performance of SMEs.

2-5. Business Process Management and Innovative Performance

Business process management was identified in the academic world of the 50s and 60s as an improvement implementation in the quality management approach. In the 80s, researchers directed business managers to process management, process reengineering, and workflow management. Researchers consider the dimensions of business management process capabilities to include customer orientation, efficiency within the organization, and communication with suppliers (Mirfallah et al., 2019). In fact, process-oriented management is knowing the management of business processes, making them efficient, and effective communication with suppliers whose goal is to meet the needs of customers (Ghiyasabadi et al, 2019). Business process management provides an integrated and systematic method for designing, implementing and managing business processes of organizations by having multiple models required by organizations. The business process management system provides a platform to carry out the organizational procedures and workflow of the organization based on the processes in a completely systematic and automatic manner. By using this system, organizational managers and planners can define the executive processes of the organization according to their opinion and change them at any time. Those responsible for the implementation of the processes receive complete and up-to-date information on how to implement the processes under their responsibility, and at any moment they can influence the implementation process of each of the processes and thereby improve the performance of the organization. The managers of the organization closely monitor the implementation process of the current procedures in their organization and the statistical reports provided provide valuable information for the purpose of re-engineering the work and business processes of the organization and improving the methods and ultimately better performance. Therefore, business process management is known as a competitive differentiation factor. However, this depends on the ability to use all

available information (Ghonji et al., 2017).

Saadat et al. (2023) in a study with the aim of investigating the impact of business strategies on innovative performance in order to achieve effective performance in defense industry subsidiary companies concluded that there is a significant relationship between the variables of business strategy and innovative performance, and Predictive and control capabilities and flexibility of business strategies are effective in promoting innovative performance (Saadat et al., 2023). Ghiyasabadi et al. (2018) in a study designed a business process management culture model on financial performance in the banking system, and the results indicated that customer orientation, superiority, responsibility and teamwork on the business process management culture has an effect, and also the culture of business process management has an effect on financial performance (Ghiyasabadi et al, 2019). In this sense and according to the stated content, the fifth hypothesis is as follows:

- ◇ H5: Business process management has an impact on the innovative performance of SMEs.

2-6. Information Quality and Innovative Performance: the Role of Knowledge Sharing and Business Process Management

The unique capabilities of information technology can realize the integration of information technology with management processes and improve the performance of companies. This integration will be effectively strengthened when companies are more active in the field of using quality information and use it in order to increase knowledge and improve their management processes and ultimately their performance (Haji Asl et al., 2020). Information quality is the central point that enables companies to improve their organizational performance. The quality of information reflects the quality of the output of the information system in the form of reports or data, and the purpose of business management processes is to improve the information used in the decision-making process. The quality of decisions is mainly based on the quality of information used in business process management. In addition, using quality information using business process management is one of the possible ways to achieve innovative performance. Also, the role of information will cause knowledge to be shared within the organization. With the information

and knowledge shared through the quality information of the internal network, the employees will be able to improve and progress their activities while exploiting this information in order to synergize organizational knowledge and provide effective suggestions, and ultimately improve the innovative performance of the company. With the use of information, the process of complying with changes is easier and more accepted. Therefore, nowadays, strengthening performance based on information is necessary for every organization and at every level (Zadeh Gorgan & Mohaghegzadeh, 2022).

Sahebodari (2020) in a study aimed at investigating the effect of competitive strategy on innovation performance, by mediating knowledge absorption capacity and knowledge sharing, showed that knowledge sharing mediates the relationship between competitive strategy and innovative performance (Sahebodari, 2020). Hassun al-Khafaji et al. (2023) in a study with the aim of investigating the effect of organizational knowledge sharing on the innovation performance of SMEs Iraqi companies with the mediating role of innovation capability and the moderator of relationship strength and networking scale showed that the effect of organizational knowledge sharing on innovation performance with Mediation is meaningful innovation capability (Hassun alKhafaji et al., 2023). In a study aimed at investigating the moderating role of strategic knowledge management in the relationship between intellectual capital dimensions and the performance of dairy companies, Naeiji et al. (2022) showed that intellectual capital dimensions have a positive effect on innovative performance and innovative performance can help improve market performance and financial performance. Also, the moderating role of strategic knowledge management in the relationship between two dimensions of intellectual capital (human capital and relational capital) with innovative performance was confirmed (Naeiji et al., 2022). Norouzi et al. (2023) in a study aimed at investigating the effect of information and communication technology capabilities on the performance of companies by explaining the mediating role of knowledge management capabilities, product innovation flexibility and innovation capability, showing that the impact of information and communication technology capabilities on innovation capability was rejected. But this variable has a positive and significant effect on the innovation performance of insurance companies directly and indirectly through knowledge management capabilities and product

innovation flexibility (Norouzi et al., 2023). Salehian et al. (2021) in a study with the aim of investigating the impact of open innovation on innovation performance through the analysis of the mediating role of innovation strategy and knowledge sharing in Mobarakeh Steel Company of Isfahan, showed that the highest beta coefficient is related to the path of open innovation to knowledge sharing. Also, knowledge sharing and innovation strategy have completely mediated the relationship between open innovation and innovation performance (Salehian et al., 2021). Zare et al (2023) in a study entitled "Evaluation of the impact of business analysis on the economic performance of companies with the mediating role of information quality, innovation capability and agility" (case study: tile and ceramic factories of Yazd province) showed that the capabilities of Business analysis is effective on information quality and innovation capabilities (Zare et al., 2023). Haji and Rahimi (2020) in a study with the aim of investigating the impact of health information technology investment on financial performance with the mediating role of business process in the hospitals of Kohgiluyeh and Boyer Ahmad provinces showed that health information technology investment had a significant effect on financial performance, and the business process played a mediating role in the path between these two variables (Haji & Rahimi, 2020). Mirfallah et al. (2019) in a study titled the effect of information technology capability on company performance: the mediating role of business process management capability and supply chain integration capability showed that information technology capability on company performance through two mediating variables of management capability Business process and supply chain integration capabilities have a positive impact (Mirfallah et al., 2019). Ghonji and Hafezi (2017) in a study with the aim of investigating the mediating role of business process capability and supply chain management capability in the impact of information technology on the company's financial performance in Pegah Fars Company, showed that information technology has a direct impact on the company's financial performance. It does not have any influence, but it has a positive and significant effect on the company's financial performance indirectly and with the mediating role of business process management and supply chain management. The results also confirm the positive and significant impact of information technology on business process management. The results also show that business process management and

supply chain management have a positive and significant effect on the company's financial performance (Ghonji & Hafezi, 2017). Therefore, the sixth and seventh hypotheses of the research are as follows:

- ◇ H6: Knowledge sharing mediates the effect of information quality on the innovative performance of SMEs.
- ◇ H7: Business process management mediates the effect of information quality on the innovative performance of SMEs.

Also, in Figure 1, the conceptual model of the research is shown by mentioning the relevant variables and components.

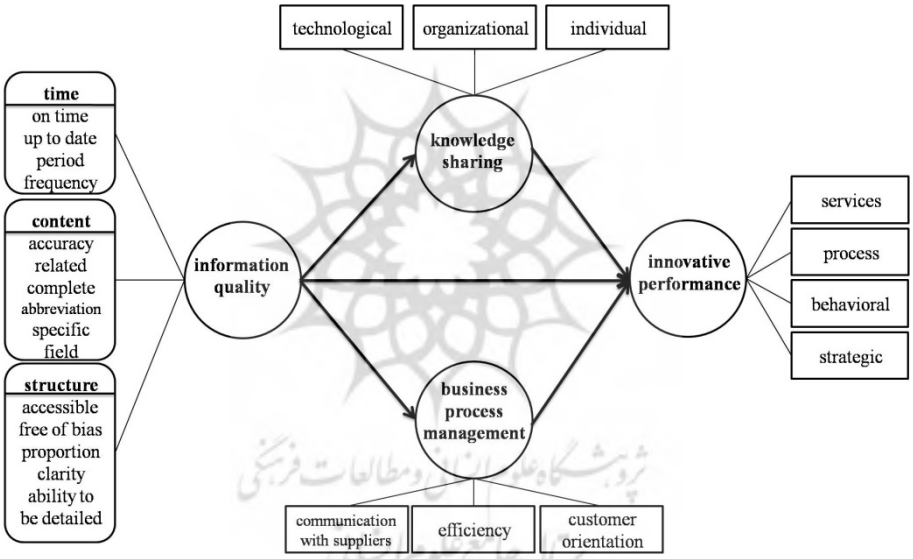

Fig 1. Research conceptual model

3. Research Method

This research is applied in terms of purpose, and a combination of library and field methods. In terms of time, it is a type of cross-sectional research. The present research method is a descriptive survey. The statistical population of the research is all the SMEs of Kerman city, with an approximate number of 460 companies. To obtain the sample size, Morgan's table was used, and the number of samples was 210 companies. As a result, with the determination of the sample size, 420

questionnaires were randomly distributed in 210 companies, and among the managers and assistants, due to their relative nobility towards the research variables, the performance of the company under their management and the importance of the subject for them.

In this research, a researcher-made questionnaire based on the research literature and according to the research done in this field was used to collect data. In Table 1, the variables of the research, the type of measurement and their source are shown.

Table 1. Measurement of research variables

Variable	Measurement	References
Information quality	14 questions	Delavi et al., (2013)
Innovative performance	12 questions	Rastgar et al., (2022)
Knowledge sharing	9 questions	Philsoophian and Akhavan (2017)
Business process management	9 questions	Mirfallah et al., (2019)

Questionnaire questions were designed based on a 5-point Likert scale. To measure the validity of the questionnaire, face validity and content validity methods were used, and therefore, the questionnaires were given to 10 experts, and professors of the university, so that the importance of information and the relationship between the variables can be examined in the appropriate place, and clearly whether the questionnaires are in line with the purpose of the study or not. By projecting their views, a change in the writing process and the meaning of some questions, face validity and content validity were achieved.

Also, for more certainty in this research, the content validity of the questionnaire was also checked. For this purpose, content validity ratio (CVR) and content validity index (CVI) were used. According to the fact that the value of CVR obtained by experts (10 people) is more than 0.62, therefore, from this point of view, the validity of the questionnaires was confirmed. To check the CVI index, a questionnaire was used that determined the degree of relevance of each item with a four-part spectrum of unrelated, needing fundamental revision, relevant but needing revision, completely relevant. Since the values obtained for this index for all questions were higher than the critical value of 0.79, therefore, the validity of the questionnaire was confirmed from this point of view.

Cronbach's alpha method was used to check the reliability of the questionnaires and a statistical sample was used among 30 managers, and the Cronbach's alpha value was more than 0.7 for all the investigated variables, which confirms the reliability of the questionnaires. Finally, statistical methods and structural equation models and SPSS 26 and Smart Pls3 software were used to analyze the data and test the hypotheses.

4. Research Findings

Inferential statistics and structural equation method were used to check the research hypotheses and the research model. For this purpose, the model fitting was first done. Several criteria are used to check the fit of the research structural model in the PLS method. The reliability of the model is evaluated by composite reliability and Cronbach's alpha. As shown in Table 2, since the values obtained for these two indicators are more than 0.7, therefore, the fit of the model has been confirmed from the perspective of these two indicators. The R^2 criterion is the second criterion used to fit PLS models. Three values of 0.19, 0.33 and 0.67 are considered as criteria for weak, medium and strong values. According to the obtained values of the research variables, this criterion is strong and according to the value of the appropriate criterion, the fit of the structural model is confirmed.

Convergent validity is another criterion used to fit measurement models in PLS method. According to the researchers, the criterion value for the acceptance level for AVE is 0.4. The results of this criterion are shown in Table 2. As it is known, all AVE values are greater than 0.4 and this confirms that the model is acceptable from the point of view of this index.

Table 2. Model fit criteria

Variable	Alpha	CR	AVE	R^2
Information quality	0.767	0.822	0.609	--------
Knowledge Sharing	0.752	0.764	0.527	0.717
Business process management	0.835	0.900	0.750	0.695
Innovative performance	0.738	0.759	0.559	0.940

The GOF criterion is related to the general part of structural equation models.

This means that by this criterion, the researcher can control the fit of the overall part after checking the fit of the measurement part and the structural part of the overall research model. Researchers have stated that the model with a good fit has a value higher than 0.36. The value of the GOF formula is calculated as follows.

Formula1: $$\mathrm{GOF} = \sqrt{\overline{\mathrm{R}^2} * \overline{\mathrm{AVE}}}$$

Using the formula and values in Table 2, the value of GOF = 0.692 was obtained. According to this value, the appropriate fit was confirmed from this point of view.

After checking the fit of the model, the hypotheses were tested. In examining the hypotheses, and in the PLS method, when the t values are greater than the critical value of 1.96, it indicates the significance of the relationship and consequently the hypothesis is confirmed. Figure 2 shows the significant coefficients of the paths related to the research model.

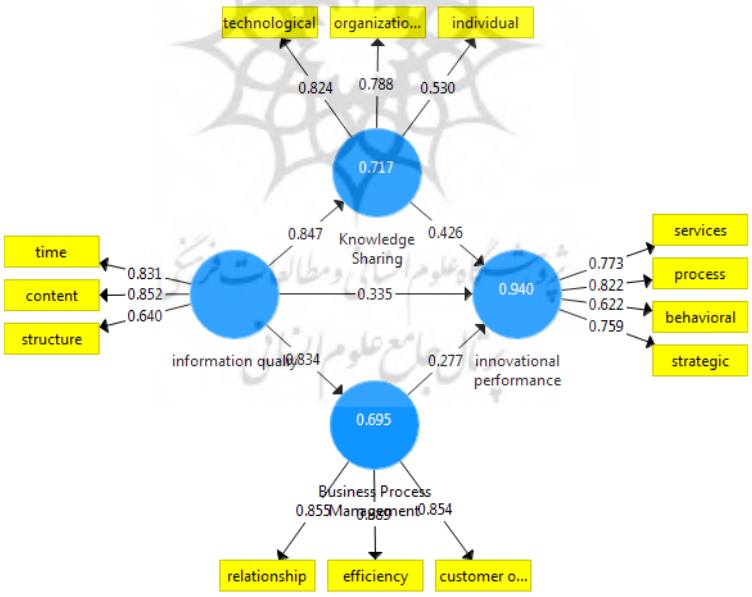

Fig 2. Path coefficient results of SMEs

Also, the t coefficients of the research model are shown in Figure 3.

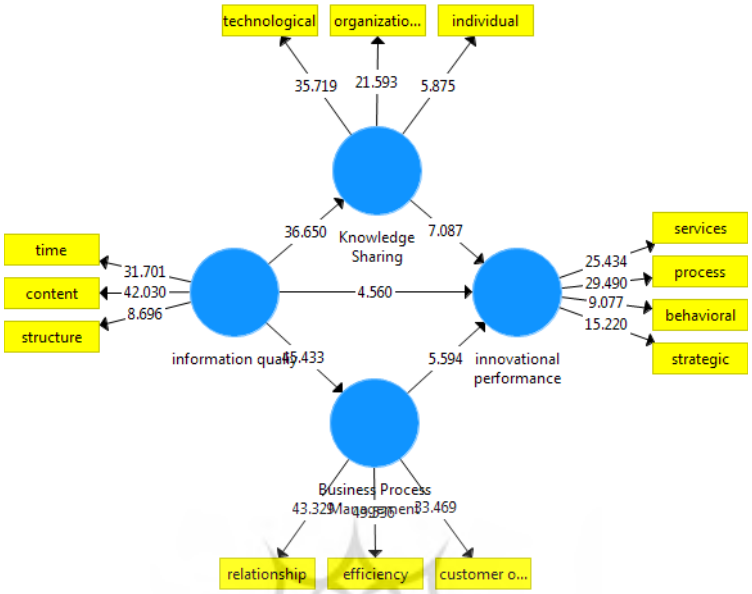

Fig 3. The results of the t-statistics of the SMEs research model

As can be seen from the figures above, all the coefficients of the path are confirmed in the sense that the t values are higher than 1.96. In this sense, the first to fifth hypotheses of the research are confirmed, and the results are shown in Table 3.

Table 3. Test results of the first to fifth hypotheses

	hypothesis	t	path coefficient	result
H1	The quality of information affects the innovative performance of SMEs.	4.560	0.335	Supported
H2	The quality of information affects the knowledge sharing of SMEs.	36.650	0.847	Supported
H3	The quality of information affects the business process management SMEs.	45.433	0.834	Supported
H4	Knowledge sharing affects the innovative performance of SMEs.	7.087	0.426	Supported
H5	Business process management has an impact on the innovative performance of SMEs.	5.594	0.277	Supported

Sobel's test is used to check the mediation hypotheses and to check the

significance of the mediation effect. Mediation occurs when the intensity of the main relationship between predictor (X) and criterion (Y) variables decreases with the addition of the mediator variable. Sobel published an article in 1982 in which he presented a statistical test to check the significance of the reduction. Sobel's proposed test is also called the significance test of indirect effect ab. Because the mediator role is determined through the indirect effect of ab. This test is the most well-known and widely used method. Based on this test, we can conclude whether the reduction in the size of the direct effect of variable X on variable Y was enough to be considered statistically significant.

In the Sobel test, a Z-value is obtained through the following formula, and if this value exceeds 1.96, it can be confirmed that the mediating effect of a variable is significant at the 95% level.

Formula 2: $$z - \text{value} = \frac{a*b}{\sqrt{(b^2*sa^2)+(a^2*sb^2)+(sa^2*sb^2)}}$$

In this formula:

a: path coefficient value between the independent variable and the mediator

b: Path coefficient value between mediating and dependent variable

sa: standard error of the path between the independent variable and the mediator

sb: standard error of the path between the mediator and dependent variable

In addition, to determine the indirect effect through the mediator variable, a statistic called VAF is used, which takes a value between 0 and 1. The closer this value is to 1, the stronger the effect of the mediating variable.

VAF is a statistic that determines the mediating effect of a variable in the relationship between the independent variable and the dependent variable. Based on the value of this statistic, it is determined how the effect of a mediating variable is. Before implementing the mediator effect, the model without the mediator variable must be implemented. In this case, the effect of the independent variable on the dependent variable should be significant. Otherwise, the investigation of the mediator's role is ruled out. If the effect of the independent variable on the dependent variable is significant, the model is implemented with the presence of the mediator variable. In this case, the effect of the mediator variable on the dependent variable should be significant, if not, then the role of the mediator is ruled out. Finally, if all the conditions are met, the results can be interpreted using

VAF. In fact, this value measures the ratio of the indirect effect to the total effect.

The method of calculating VAF is through the following formula.

Formula 3: $\mathrm{VAF} = \frac{a*b}{(a*b)+c}$

a: path coefficient value between the independent variable and the mediator

b: path coefficient value between the mediator and the dependent variable

c: path coefficient value between independent and dependent variable

Therefore, according to the above formulas, mediation hypotheses have been examined, and the results are shown in Table 4.

Table 4. The results of mediating hypotheses test

	hypothesis	sobel	VAF	result
H6	Knowledge sharing mediates the effect of information quality on the innovative performance of SMEs.	6.969	0.519	Supported
H7	Business process management mediates the effect of information quality on the innovative performance of SMEs.	5.725	0.408	Supported

According to the table and the calculation of the Sobel coefficients, which are all higher than the permissible limit, all the mediating hypotheses are confirmed.

5. Discussion and Conclusion

Despite the increase in companies' knowledge and the use of different innovative methods and processes for better performance, especially in SMEs, there are few studies on the quality of information and innovative performance with regard to knowledge factors and business management in these companies. Considering the importance of the topic and by guiding the questions and hypotheses in this research, the researchers tried to investigate and explain the relationship between the quality of information and the innovative performance of SMEs. It has also been tried to analyze the mediating effect of knowledge sharing and business process management variables in this regard.

By confirming the first, fourth and fifth hypotheses of the research, the results show that the quality of information, knowledge sharing, and business process management of SMEs significantly and positively affects their innovative

performance. Researchers acknowledge that the quality of information obtained from information systems and information technology within the company can effectively facilitate the transfer of knowledge within the organization to increase innovation performance and can be effective in improving the innovative performance of the company even if the company's resources have been consumed(Maurer et al., 2011). In addition, communication with suppliers and customer orientation of companies ensures the management of the business process in the company, and the free flow of knowledge, information and other resources is strengthened.

This important thing brings diverse knowledge and information for the development of technologies of SMEs and optimal innovative performance (Badin & Behbudi, 2023). In addition, it seems that in today's economy and in the post-corona era, intangible resources play a more important role in the market value of companies. While tangible resources are bought and sold in the free market and can be easily copied by competitors, intangible resources cannot be easily duplicated by competitors. As a result, it is assumed that intangible resources are the main source of optimal performance. Information, knowledge and its intangible assets and management processes not only increasingly stimulate businesses, but as a whole or part of the company's products, they affect the company's innovative performance, and in this sense, SMEs should pay special attention to these variables in order to improve their innovative performance. In addition, researchers have stated that despite the fact that scarce resources, communication barriers, and a sharp decrease in profit due to economic, political and social challenges can lead to operational pressure on SMEs, nevertheless, companies with Superior information technology companies perform better in creating innovative performance than low technology companies (Hassun alKhafaji et al., 2023). In this sense, the research findings show that SMEs should actively create and use up-to-date information technology even under environmental pressures. Better information technology and consequently more quality information can facilitate the flow of knowledge and the sharing of information resources among companies. Therefore, despite limited resources, it allows to create more value (such as innovative performance) for companies. In this sense, it is very important to create and use quality information for SMEs in order to improve their innovative

performance.

In order to achieve a suitable level of quality, satisfaction and ultimately innovative performance in SMEs, it is necessary to use reliable information, change and modify processes and share knowledge. The results of the research literature indicate that in the near future, the use of reliable information and knowledge and their sharing and the business management process will be one of the important organizational challenges of SMEs. If the necessary conditions are provided, we can expect to facilitate the company's implementation process, achieve goals, and improve innovative performance. Quality information, knowledge sharing and business process management show that by creating appropriate interactions, and using different tools, and information integration programs with business rules, monitoring and optimizing activities can be done easily, and the information required for innovative performance and other related matters will gain speed. The obtained results are in line with the results of Rostami et al., (2021), Boroumand and Panahi (2023), Ramezanian et al., (2016) and Pirayesh et al., (2023) in terms of the impact of information on performance. Also, the results are consistent with the research of Hernaus et al., (2012), Yarmohammadian et al., (2013), Nabi zadeh and Nobari (2019) in terms of the impact of business process management on performance. The results are consistent with the researches of Philsoophian and Akhavan (2017), Babaee et al. (2022), Hasun Alkhafaji et al., (2023), Ziyae et al., (2021) and Salehian et al. (2021) in terms of the effect of knowledge sharing on performance. In this regard, due to the ever-increasing changes, no different study was found in explaining the findings of these hypotheses.

By confirming the second and third hypotheses of the research, the results show that the quality of information has a significant and positive effect on knowledge sharing and business process management of SMEs. Researchers believe that quality information is a form of strategic assets that enhance organizational knowledge and institutionalize individual, organizational, and technological knowledge sharing in companies. The long-term goals of the organization are improved in terms of competitiveness and management processes and have strategic applications in dynamic environments such as SMEs (Ghonji et al., 2017). Therefore, these intangible organizational capitals, such as quality information, must be competently managed, directed and used. Because organizations that

can use their information assets successfully, guarantee optimal knowledge sharing and successful management of their business processes. Therefore, in order to share effective knowledge and manage business processes, the quality of information in companies should be appropriate and desirable from the point of view of time, structure and content. Business process management, when combined with the implementation of information technology, is a structured approach to analyze and continuously improve basic activities in SMEs, including providing optimal innovative services, marketing, creating trust in receiving services and products, innovation in processes, and will ultimately lead to successful innovative performance. The results of examining these hypotheses are in line with the results of Mousa et al. (2019), Falah and atghiya (2022) and Jamal and Ahmad et al., (2021) in terms of the impact of information quality on knowledge sharing. Also, the results are in line with the results of Zare et al. (2023), Ghonji et al. (2019) and Haddad Harandi et al. (2019) in terms of the impact of information on the business management process.

By confirming the sixth and seventh research hypotheses, the results show that knowledge sharing and business process management mediate the relationship between information quality and innovative performance of SMEs. The mediation value of knowledge sharing is 52% and the mediation of business process management is 41%, which indicates moderate and significant mediation by these two variables. Researchers admit that one of the problems of using information in the direction of innovative performance is the lack of employee participation and compassionate cooperation for greater productivity (Jahanpour et al., 2019). Here, process management systems can solve this problem by using individual, organizational and technological knowledge sharing, and by creating a suitable management process and knowledge sharing, the relationship between information quality and innovative performance is successful. Also, one of the problems in creating innovation using quality information is building value co-creation paths between companies, customers and suppliers. Fortunately, companies that have improved knowledge sharing and use business management process capabilities efficiently can effectively overcome this problem. By using quality information and synergy and sharing the efforts of employees and improving the business management process, realize innovative performance

and create value. In fact, the existence of quality information in the company and among the company members leads to the facilitation of trust-based interactions among the employees. This, in turn, will lead to the transfer of knowledge and experiences of the members of the organization to each other, and the process of converting implicit knowledge into explicit knowledge is facilitated. In addition, diverse knowledge resulting from knowledge sharing and business management processes gives new life to the company's innovation, and expands the company's knowledge base, which is the key to improving innovative performance in SMEs. In this sense, knowledge sharing is an effective way to acquire and share knowledge in the company, and business process management is a useful tool to guide the company's activities in the direction of innovation, and both of these mediate the relationship between information quality and innovative performance. In fact, the quality of information, and consequently knowledge sharing and business process management, improves communication among members of organizations with a flexible structure that operate in dynamic environments - like many SMEs. This, in turn, improves the amount of contacts and common points of people, and they become variables influencing the improvement of innovative performance in these companies. In today's competitive world and in the post-corona era, smeS use quality information and share the knowledge obtained from this information and absorb this information into their research and development units and the business management process which can produce innovative products and services and guarantee their survival. Due to the existence of SMEs, innovation in these companies is the main factor in maintaining their survival and improving their performance, and the quality of information, knowledge and business processes has a significant effect on it.

Since knowledge sharing and business process management are the basis for continuous improvement of the organization, therefore the organization must be able to create new business processes and improve existing processes according to environmental changes. During the business process lifecycle, different types of data are needed for different purposes. Therefore, it is important to integrate all types of data and present them as internal features of the business process management system. Companies that use information technology to carry out their organizational mission have to cope with changes in various aspects of their

information system, including processes, user access rights rules, and its data model to change. organization and communicate between the processes with the strategies of the organization and the organization of the strategy management process should be established. SMEs should coordinate and focus their business process management system, human resources, information technology and knowledge sharing based on quality information towards their organization strategies and strategic processes from a multitude of discovered processes to achieve innovative performance. The results of these hypotheses with the research of Mirfallah et al., (2019), Saadat et al., Hasun Alkhafaji et al (2023), Naeiji et al. (2022), Ghonji et al. (2017) are consistent.

Finally, it is expected that the findings of this research will provide the necessary knowledge for SMEs in improving innovative performance through information quality, knowledge sharing and business management process. In addition, this research helps to expand the theoretical foundations regarding the effect of information quality on the innovative performance of SMEs, in the post-corona era, as an area in which less work has been done. With the help of the changes caused by the advancement of information, knowledge and business processes, and with the optimal use of information technology and computer systems in the management of companies, it is possible to transform the management and leadership of organizations in a favorable way. Meanwhile, SMEs should prepare themselves to be in sync with new information systems, so that by having new information systems, in addition to optimal management of business processes and knowledge acquisition and sharing, they can achieve appropriate innovation in the company.

This study has several limitations that should be considered. Firstly, the design of this research is a cross-sectional one that was adopted to determine the causal relationships among the variables, and therefore it is subject to the inherent limitations of this design. Secondly, the research findings are from the survey data collected only from SMEs in Kerman, which is limited in this respect. Thirdly, this study uses respondents' subjective evaluation to measure innovative performance. Nevertheless, the utmost effort was made so that the validity and reliability of the research would not be damaged.

Considering the stated limitations, other researchers are suggested to

investigate the variables of this research through longitudinal or experimental studies. In other industries and companies, study in depth in this field, and in future research, in order to eliminate the subjectiveness of the respondents' evaluations in measuring the company's innovative performance, use other criteria, such as objective data, for a more detailed investigation.

According to the analysis and confirmation of all the hypotheses, it is suggested to SMEs to use up-to-date, timely, correct and clear information to provide opportunities for knowledge sharing among employees and by using appropriate business processes in the post-corona era can inspire the company's innovative performance. It is also suggested to SMEs to share knowledge and improve business process management in the company, and by developing and continuing the quality of information in combination with the mentioned variables, create a positive performance in the innovation process of the company. In addition, in order for SMEs to overcome economic problems and pressures and lack of resources, especially in the post-corona era, it is suggested that companies develop information technology systems in the company, and at the same time pay attention to knowledge sharing. and business management process, so that they can enjoy the benefits of innovative performance.

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