

## Presenting the Effective Factors Model on the Establishment of Knowledge Management with the Approach of Interpretive Structural Equations (Case Study: Rowing Federation)

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**Purpose:** Considering the role and importance of establishing knowledge management in various organizations, the purpose of this research was to provide a model of factors affecting the establishment of knowledge management in the sailing federation.

**Methodology:** This study was of applied method in terms of purpose and quantitative in terms of execution. The study community was the employees of the Iran Rowing Federation in 1401, 20 of whom were selected as a sample using targeted and snowball sampling methods having conditions to enter the study. The samples responded to the researcher-made questionnaire of the factors affecting the establishment of knowledge management in the sailing federation (44 items) and its validity and reliability were evaluated appropriately. Data were analyzed with exploratory factor analysis and structural equation modeling methods in SPSS and Smart PLS software.

**Findings:** The findings showed that the factors affecting the establishment of knowledge management in the sailing federation have 14 factors of understanding and insight in employees, expertise of employees, committed managers, participation of employees, motivation of human resources, expertise in knowledge management processes, strategic processes, rules and internal processes, functional processes, innovative processes, technological capabilities, technological infrastructures, technological communication and recognition of knowledge management technologies. Also, the factor load of all factors was higher than 0.50, the convergent validity of all factors with the average variance extracted method was higher than 0.40, and the reliability of all factors with the combined method was higher than 0.70. In addition, the model of factors affecting the establishment of knowledge management in the sailing federation had a good fit, and the effect of all paths was evaluated as appropriate.

**Conclusion:** According to the results of this study, an effective step can be taken to improve the establishment of knowledge management in the sailing federation through the identified factors.

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## 1. Introduction

Today's world is rapidly moving from a production-based economy to a knowledge-based economy, in which knowledge is the core of competition for today's organizations that creates a competitive advantage for them (Ferreira, Fernandes, Guo and Rammal, 2022). In the last few decades, the speed of knowledge creation has exceeded the speed of learning by teachers and textbooks, and this issue has caused the change of the boundaries of knowledge on one hand, and on the other has caused the need to adapt to continuous changes in knowledge (Martins, Rampasso, Anholon, Quelhas and Filho, 2019). Knowledge management is one of the most important effective factors for the success of various organizations in today's competitive conditions and the age of information and communication technology (Rabhi, Bandara, Lu and Dewan, 2021). Today, attention to knowledge and its management is considered as a strategic asset, and considering the society's encounter with a knowledge-based economy, knowing how to effectively manage knowledge and the integration of all types of knowledge can create a competitive advantage for the organization (Mikovic, Petrovic, Mihic, Obradovic and Todorovic (2020). In modern organizations, knowledge is the most important factor that creates competitive advantage and success, and the organization guarantees its survival if it acquires knowledge and a deep understanding of the field (Uzelac, Celic, Petrov, Draskovic and Beric, 2018). Maintaining and expanding the competitive advantage is one of the main concerns of organizations, and today, to realize it, knowledge as one of the key factors of organizational success and competitiveness is emphasized a lot (Xin, Ojanen and Huiskonen, 2019). Two types of explicit and implicit knowledge can be identified in any organization. Implicit knowledge is unwritten and abstract knowledge whose sources and content are hidden in the mind and difficult to achieve. Explicit knowledge is objective and written knowledge that can be expressed formally and in the form of language that this type of knowledge exists in computer information systems, books, documents and organizational documents (Antunes and Pinheiro, 2020).

Knowledge management means creating knowledge and managing an environment that encourages people to create, share, learn, and organize knowledge to increase organizational productivity (Schaefer and Makatsaria, 2021). In other words, knowledge management means the processes of creating, collecting, organizing, disseminating, refining and exploiting knowledge in an organization, which consists of a set of strategies and processes that can meet the needs of the entire organization, employees and customers (Wang, Zheng, Tian, Qiu and Li, 2017). Knowledge management was seriously proposed since the late 1970s and sought to capture the knowledge, wisdom and value-added experience of employees, as well as the implementation, recovery and maintenance of knowledge as the most important asset of the organization (Abbas and Sagsan, 2019). Knowledge management strategy is a planned and real coordination of the organization's main goals, which continuously coordinates and adapts knowledge resources to the environment, and effective knowledge management practices in organizations are focused on knowledge creation and knowledge transfer activities (Ode and Ayavoo, 2018). In fact, knowledge management is planning to create and make available the knowledge needed by the organization so that it can be provided to employees when needed to become more efficient in their daily activities (Pacheco, Castillo, Manotas and Arevalo, 2022). The secret of the success of today's organizations is knowledge management, which is used as a competitive advantage through the development of human resources. Therefore, in today's age, which is called the age of wisdom, it is necessary to achieve a sustainable competitive advantage by applying knowledge in various ways, to use organizational resources in the best way, and to pave the way for the growth and promotion of the organization (Santoro, Vrontis, Thrassou and Dezi, 2018). In general, knowledge is a kind of perception and understanding that is created through experience, reasoning, direct understanding and learning, and when knowledge is used to make decisions in different life situations changes into wisdom (Gast, Gundolf, Harms and Collado, 2019). The most important goal of applying knowledge and knowledge management in organizations is to quickly adapt to environmental changes and developments. Because the continuous changes and evolutions of knowledge create a state of imbalance for

organizations, only those organizations can continue to exist that can maintain their competitive advantage through knowledge and its management (Nakayama, Hustad and Sutcliffe, 2021).

In the new era, knowledge management has created many changes and transformations in management topics, and the management of organizations should provide the possibility of making more logical and reasonable decisions in various topics and issues by relying on wisdom (Bootz, Durance and Monti, 2019). In fact, knowledge management means gathering successful experiences inside and outside the organization and recording and sharing it, which guarantees that the organization pays special attention to its knowledge reserves and plans so that this reserve is available to employees at the right time (Kunkel, Weibenberger, Belousow, Sokollek and Dopper, 2022). Knowledge management is one of the tools that can help organizations achieve their goals and is a conscious strategy to acquire knowledge at the right time, trying to share it to improve the organization's performance (Wu, Gao, Xia, Tseng, Chiu and Zhang, 2019). This structure can be a leader in providing new services, improve the quality of work, have up-to-date information, improve decision-making, increase the ability to respond to the needs of clients and customers, and provide the possibility of high compatibility with the environment (Thomas, 2021). Knowledge management helps organizations to identify, select, organize and disseminate important information and skills that play an important role in organizational memory, reduce errors and prevent rework as well (Koloniari and Fassoulis, 2017).

There have been studies about the pattern or model of establishing knowledge management in which most of them in this field were qualitative ones, so no studies were found in sports federations.

Baghban, Aflakifard, Motamed and Hamrahi (2022) introduced six factors in a quantitative research affecting the establishment of knowledge management in civil registry offices, including employees, managers, rules and regulations, organizational structure, organizational culture, and facilities and costs, all of which have a direct effect, being significant on the establishment of knowledge management.

Rahimian, Abbaspour and Zarrin (2021) conducted a qualitative research on the establishment model of knowledge management in schools concluding that the mentioned model includes five dimensions of knowledge creation and absorption (with the components of education, visits, expert presence, knowledge registration, research and professional groups), knowledge organization (with the components of documentation, refining and ontology of knowledge), knowledge stock (with the components of creating an interactive environment and using technology), knowledge spread (with the components of individual factors, organizational factors and training human capital) and knowledge application (with the components of individual factors and organizational contexts).

Shabani, Rafati Asl and Sohrabi (2021) conducted a qualitative study on the factors affecting the establishment of knowledge management in a technology-oriented smart organization, including organizational culture, organizational structure, human resources, information technology infrastructure, training and retraining, and strategic and leadership aspects.

Al-Kurdi, El-Haddadeh and Eldabi (2020) conducted a quantitative study on the role of organizational climate in knowledge management sharing in higher education concluding that information systems which have a positive effect on knowledge activities in an educational institution are a means of acquiring information, sharing, collecting, dissemination and communication of knowledge.

Mehdizadeh, Dopeykar, Ghaed, Akbari and Koohestani (2020) conducted a quantitative study on the underlying factors of the establishment of knowledge management in insurance organizations concluding that the five factors of organizational culture, employees, information technology, organizational structure and strategy and leadership have a significant impact on the establishment of knowledge management.

Ramezani, Madhoshi, Fallah Lajimi and Razeghi (2019) came to the conclusion during a qualitative study that the pattern of establishing knowledge management in the university includes 98 sub-indices in 14 indicators and 3 main dimensions; So that the dimensions include human resources (with 5 indicators of understanding and insight of employees, expertise of employees, committed managers, employee participation and motivation of human resources), process (with 5 indicators of expertise in knowledge

management processes, strategic processes, internal rules and processes, functional processes and innovative processes) and technology (with 4 indicators of innovative processes, technological capabilities, technological infrastructures, technological communication and recognition of knowledge management technologies).

Dehghani, Yaghoubi, Mooghali and Vazife) 2019( in a mixed research about the comprehensive model of factors affecting the effective establishment of knowledge management came to the conclusion that the factors include human resources (with the components of a knowledge-based approach in recruiting and employing, empowerment with a knowledge-based approach, knowledge-motivating stimuli, teamwork and knowledge culture), infrastructure (with the components of knowledge-supporting organizational communication, knowledge structure of the organization and knowledge management processes), structure (with the components of hardware, software, network, knowledge repositories and security policy in knowledge management) and strategy (with the components of socialization, externalization, combination and internalization) and the effect of all four factors on the effective establishment of knowledge management was significant.

Raudeliuniene, Davidaviciene and Jakubavicius (2018) conducted a qualitative research about the knowledge management process in the university and concluded that eight effective factors included goals, knowledge, identification, acquisition, development, distribution, retention, use and measurement.

Ghorbani, Beikzad, Nejad Iranian and Behlouli (2018) in a quantitative study about the design of the optimal model for the establishment and institutionalization of knowledge management in the employees of the executive bodies of East Azarbaijan province concluded that the causal conditions include the need for change, the promotion of knowledge services and business strategy, contextual conditions including leader, cultural and structural factors, intervening conditions including information technology, human resources and organizational characteristics, central category including knowledge management, strategies including knowledge incentives, developing knowledge map, training and empowerment, and consequences including productivity, organizational learning and innovation. In addition, in this study, it was found that causal conditions had a positive and significant effect on phenomenon-centered, background conditions, intervening conditions, phenomenon-centered on strategies and strategies on consequences.

Wang and Wang (2016) conducted a quantitative study on the factors affecting the implementation of the knowledge management system of companies and concluded that the factors affecting it include technology innovation factors (perceived benefits, complexity and compatibility), organizational factors (senior management support and organizational culture) and environmental factors (competitive pressure), all of which had a significant impact on the implementation of the knowledge management system.

If knowledge is not fundamentally managed and individual knowledge is not transformed into collective knowledge so that the so-called knowledge management does not happen, society and its organizations cannot be considered as developed ones. So it is time to pay serious attention to knowledge management and its establishment, and also it is necessary to conduct many studies about knowledge management in different organizations. One of the gaps that led to the topic of this research was that no research was found on the establishment of knowledge management in sports federations. In other words, many researches had been done about the establishment of knowledge management in different organizations, but no research in this field was found on sports federations, including the rowing federation. Another important point about the significance and necessity of the current study is that conducting this research can help the managers, officials and planners of the sailing federation in designing and implementing programs to improve the establishment of knowledge management. In other words, by using the results and findings of the present study and the factors extracted from it, they can provide the basis for improving the status and position of the organization through the factors affecting the establishment of knowledge management. As a result, considering the role and importance of establishing knowledge management in different organizations, the aim of the present study was to provide a model of factors affecting the establishment of knowledge management in the sailing federation.



## 2. Methodology

This study was practical in terms of purpose and quantitative in terms of execution method. The research community was the employees of the Iran Rowing Federation in 2022, 20 of whom were selected as a sample using targeted and snowball sampling methods and only if they have the conditions to enter the study. In this study, the conditions for entering the study include having an executive position in the headquarters of the rowing federation, willingness to participate in the study, having a master's degree or higher, no addiction and taking psychiatric drugs in the last three months, and having at least 5 years of management experience in the rowing federation. And the conditions of withdrawal from the study included refusal to continue cooperation and failure to respond to at least 10% of the items. In the sampling methods of the present study, researchers first selected a number of employees who qualified to enter the study as a sample (targeted sampling method) and then asked them to introduce other employees who qualified to enter the study to the researchers, and these employees introduced were having the conditions to enter the study, moreover they were also selected as a sample (snowball sampling method).

The tool of the current study was a researcher-made questionnaire of factors affecting the establishment of knowledge management in the rowing federation, which had 44 items. The staff of the sailing federation used a five-point Likert scale including very good with a score of five, good with a score of four, average with a score of three, poor with a score of two, and very poor with a score of one to answer each of the items of the questionnaire mentioned. The researcher-made questionnaire of the factors affecting the establishment of knowledge management in the sailing federation was made based on the review and study of 20 related articles out of 170 articles identified about the research topic. The duration of responding to the researcher-made questionnaire on factors affecting the establishment of knowledge management by the employees of the sailing federation was 15-20 minutes. The form and content validity of the questionnaire was evaluated using triangulation methods and experts' opinions, and its reliability was evaluated using a suitable combined method.

The process of conducting the research was that first, the articles related to the establishment of knowledge management were reviewed, and the results indicated the existence of 170 domestic and foreign articles in this field. Then, each of the 170 articles were evaluated based on the following criteria. These criteria included being in Farsi or English or not in a language other than these two mentioned languages, not being before 1995, being solely about knowledge management, and not being conference papers or personal opinions. At this stage, 102 articles were removed and 68 articles were selected for review. In the next step, the abstracts and findings of the articles were examined, and unrelated, repetitive, or inconsistent with the current research were removed. At this stage, 31 articles were removed and 37 articles were selected as samples. In the next step, 37 selected articles were examined by the samples in terms of appropriateness and relevance. For this purpose, a criterion of 50 points was used; So, they showed a very poor score of 0-10, a poor score of 11-20, an average score of 21-30, a good score of 31-40, and a very good score of 41-50. At this stage, 17 articles were removed due to poor and very poor scores, and finally 20 articles were selected as the final sample of the present study. By reviewing the articles and identifying the effective components and sub-components in the establishment of knowledge management, a questionnaire of factors affecting the establishment of knowledge management was designed for the sailing federation and 20 employees were asked to answer the questionnaire. The data obtained from completing the questionnaire were analyzed with the methods of exploratory factor analysis and structural equation modeling in SPSS and Smart PLS software.

## 3. Findings

The frequency and frequency percent of education, management experience and work experience of Iran Rowing Federation employees are presented in Table 1, based on which most of them have PhD education

(75 percent), management experience of 11-15 years (45 percent) and work experience were higher than 25 years (40%).

**Table 1.** Frequency and frequency of education, management experience and career history of Iran rowing Federation employees

variable	level	Frequency	frequency percentage
education	MSc	10	0.25
	PhD	15	0.75
Management experience	6-10	3	0.15
	11-15	9	0.45
	Above 20 years	3	0.15
	6-10	1	0.05
Work experience	11-15	4	0.20
	16-20	3	0.15
	21-25	4	0.20
	Above 25 years	8	0.40

Before analyzing the data with exploratory factor analysis, the results of the KMO test for each of the variables were higher than 0.50 and The Bartlett's test of Sphericity was highly significant at  $p < 0.001$  which indicated sufficient correlation and sample adequacy. The results of the exploratory factor analysis of the knowledge management deployment model in Iran Rowing Federation were presented in Table 2, based on which, for the model mentioned, 14 factors of understanding and insight of employees, expertise of employees, committed managers, employee participation, motivation of human resources, expertise in knowledge management processes, strategic processes, internal rules and processes, functional and innovative processes, technological capabilities, infrastructure, and communication and recognition of knowledge management technologies were identified; So that the factor load of all factors was higher than 0.50, the convergent validity of all factors with the average variance extracted method was higher than 0.40, and the reliability of all factors with the combined method was higher than 0.70.

**Table 2.** Results of exploratory factor analysis of knowledge management establishment model in Iran Rowing Federation

factor	number of items	factor loading	AVE	composite reliability	R2
Understanding and insight of employees	4	0.68	0.48	0.72	0.65
Staff expertise	3	0.59	0.73	0.81	0.50
Committed managers	4	0.53	0.50	0.80	0.49
Employee participation	3	0.66	0.56	0.79	0.53
Manpower motivation	4	0.72	0.52	0.82	0.63
Expertise in knowledge management processes	3	0.54	0.63	0.79	0.57
Strategic processes	3	0.58	0.51	0.74	0.71
Internal laws and processes	3	0.67	0.54	0.76	0.43
Functional processes	3	0.60	0.54	0.89	0.55
Innovative processes	3	0.59	0.35	0.85	0.63
Technological capabilities	3	0.51	0.64	0.86	0.41
Technology infrastructure	3	0.75	0.56	0.76	0.52
Technological communication	2	0.61	0.57	0.79	0.63
Knowledge of knowledge management technologies	3	0.57	0.65	0.76	0.62

In the structural equation modeling of the current study for the knowledge management establishment model in the rowing federation, the results of the R2 value were higher than 0.40 (Table 2) and the GOF

index value was equal to 0.45, which indicates the appropriate fitness of the model of factors affecting the establishment of knowledge management in the sailing federation. The results of the modeling of the structural equations of the knowledge management deployment model in the Iran Rowing Federation were drawn in Figure 1, based on which the effect of all paths was evaluated as appropriate.

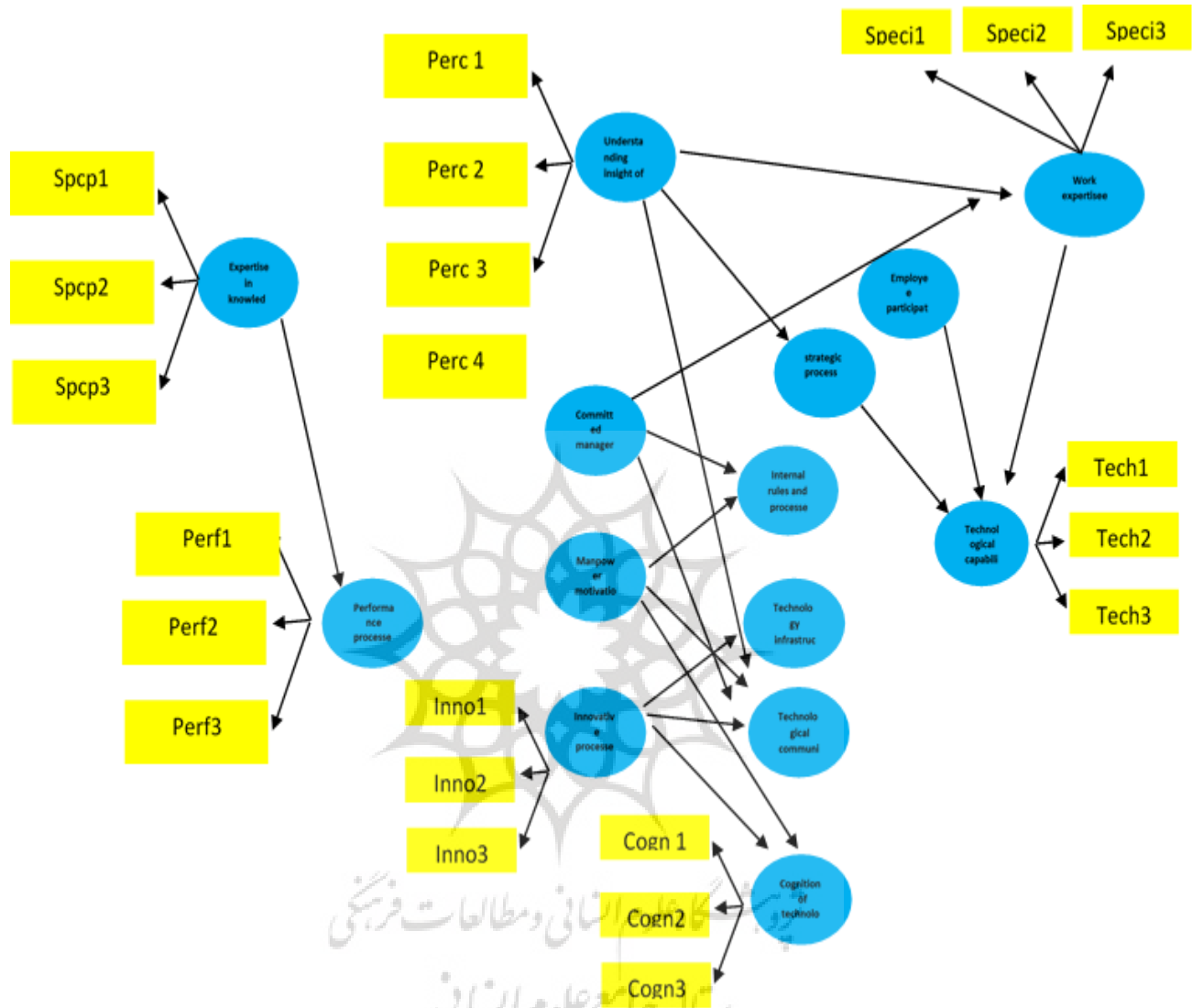


Figure 1. Structural equation modeling results of knowledge management establishment model in Iran Rowing Federation

#### 4. Discussion

Knowledge management is one of the most recent and key topics of management, which is considered as a reaction to the increasing changes and transformations of the internal and external environment of the organization. As a result, the establishment of knowledge management in organizations plays an important role in improving organizational performance, and based on this, the aim of the present study was to provide a model of factors affecting the establishment of knowledge management in the sailing federation. The findings of the present research showed that the factors affecting the establishment of knowledge management in the sailing federation have 14 factors of understanding and insight of employees, expertise of employees, committed managers, employee participation, motivation of human resources, expertise in knowledge management processes, strategic processes, rules and internal processes. Functional and

innovative processes, technological capabilities, infrastructures, and communication and recognition of knowledge management technologies, and the validity and reliability of all of them were confirmed. In addition, the model of factors affecting the establishment of knowledge management in the sailing federation fitted well, and the effect of all paths was evaluated as appropriate. Although most of the studies about the establishment of knowledge management were of a qualitative type and no study in this field was found in the rowing federation, but the findings of the present study are in agreement with the findings of the studies of Baghban et al (2022), Rahimian et al (2021), Shabani et al (2021) , Al-Kurdi et al (2020), Mehdizadeh et al (2020), Ramezani et al (2019), Dehghani et al (2019), Raudeliuniene et al (2018), Ghorbani et al (2018) and Wang and Wang (2016).

In interpreting the findings, it can be said that knowledge management in Iran as a scientific field is still in its infancy era. Therefore, there are many unknown issues in this field and many organizations, including the organization or the sailing federation, slowly realized the importance of knowledge management in their organization, but there is still a long way to put it into practice. The different units of the sailing federation should consciously enter this category, i.e. knowledge management, and make maximum use of this situation and opportunity. In this study, for the establishment model of knowledge management in the sailing federation, 14 factors including understanding and insight of employees, expertise of employees, committed managers, employee participation, motivation of manpower, expertise in knowledge management processes, strategic processes, internal rules and processes, functional processes, processes Innovativeness, technological capabilities and infrastructures, technological communication and recognition of knowledge management technologies were identified that had appropriate psychometric indicators and their effect was confirmed. Therefore, in order to improve the understanding and insight of employees, the sailing federation can improve employees' understanding of the importance of knowledge management through practical training, develop their understanding of the role of implementing knowledge management, explain the importance of intellectual capital for employees, and improve employees' understanding of the concept of It increased the preservation and maintenance of knowledge and its management. In the field of employee expertise, the importance of organizational knowledge for long-term success should be explained, the role and power of knowledge workers should be clearly explained, and different learning channels should be used to acquire knowledge. In the factor of committed managers, one can take advantage of the transparency of the role and power of senior knowledge managers and their commitment to knowledge management, holding regular meetings for the knowledge sharing program, allocating funds for the implementation of the knowledge management system, and the existence of incentive and reward systems for knowledge sharing. To improve employee participation, it is possible to increase coordination in the implementation of knowledge sharing and management, the participation of people in expert associations, and the existence of a culture of creativity and innovation in the organization. In the field of human resource motivation, the existence of a clear and official knowledge management strategy and vision, the existence of knowledge management training and information programs, the existence of key performance indicators in the evaluation of knowledge management, and the existence of the return on investment index in the evaluation of knowledge management should be used. In the factor of expertise in knowledge management processes, employees' understanding of the knowledge related to themselves and the organization, the ability to stock external knowledge and its application in organizational activities, and understanding the description of tasks, mission and organizational vision can be used. To improve strategic processes, it is possible to create a planning committee and improve knowledge management, create a strategy and implement knowledge management, and create a connection between the task description, mission, and organizational vision with the knowledge management strategy. In the field of internal rules and processes, it is necessary to create regulations and processes for collecting, storing, sharing and documenting organizational knowledge and its management, improving the quality and efficiency of the knowledge management system, and creating rules and processes for acquiring knowledge from internal and external organizational sources and encouraging employees to apply and benefit from it in



the organization. In terms of functional processes, it is possible to use the quantitative and qualitative measurement of knowledge management processes, the existence of knowledge management evaluation methods related to organizational performance management and the effective and active application of knowledge management system in the organization. In order to improve innovative processes, it is possible to act through the adaptation of existing knowledge management processes to create new business, the decision-making process for the return of knowledge management investment and providing creative ideas for products, services and work processes. In the field of technological capabilities, employees' ability to use e-mail, internet and search sites should be improved, infrastructure and technology to support knowledge management should be upgraded and also databases should be updated with reliable content. In terms of technology infrastructure, it is possible to benefit from the existence of electronic learning systems or related educational systems, the existence of data stock systems, data stock and data transfer and sharing, and creating a process for knowledge sharing and individual and group support for knowledge management. In order to improve technological communication, it is possible to act through creating a system connection in daily work and creating a system connection with other organizational systems. In the field of knowledge management technologies, it is necessary to use the support of the knowledge management system for the entire organization and its departments, the preparation of basic knowledge systems and their continuous improvement, and the integration of the knowledge management system with organizational processes.

Among the limitations of the current research, we can mention the use of a questionnaire to collect data, a relatively small sample size to complete the questionnaire, the limitation of the research community to the employees of the sailing federation, the use of non-random, targeted and snowball sampling methods, and the cross-sectional nature of the research. Therefore, in order to check the adequacy of the current research model and to investigate the relationships between knowledge management establishment factors, it is suggested that the current research questionnaire be implemented in other federations, especially sports federations, and its results be compared with the results of the present study. If possible, researchers should use random sampling methods and increase the sample size in future studies. According to the results of this study and according to the 14 factors of employee understanding and insight, employee expertise, committed managers, employee participation, human resource motivation, expertise in knowledge management processes, strategic processes, internal rules and processes, functional processes, innovative processes, technological capabilities and infrastructure, technological communication and recognition of knowledge management technologies, an effective step can be taken to improve the establishment of knowledge management in the sailing federation through the identified factors.

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