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Identifying the Best Practices of Knowledge Acquisition in the Field of Beekeeping Industry (Case Study: Beekeeping Industry Development Support Fund)

Leila Jabbari[1,*], Hassan Mantegh[2], Babak Akhgar[3]

[1] *PhD student in Information and Knowledge Management, Tarbiat Modares University, Tehran, Iran.*

[2] *PhD student in Information and Knowledge Management, Tarbiat Modares University, Tehran, Iran*

[3] *Professor, Department of Informatics, University of Sheffield Helm, Sheffield, England.*

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ABSTRACT

Purpose: This study aimed to identify the best methods of knowledge acquisition in the field of the beekeeping industry (Case study: Beekeeping Development Support Fund). **Method**: In this research, after studying documents and libraries, seven experts in the field of beekeeping were interviewed. After that, a questionnaire was developed to collect information. The statistical population of the study was eighteen managers and employees of the beekeeping fund. Due to the small size of the statistical population, a questionnaire was distributed among all the members of the statistical population using the census method. **Findings**: The results of the research showed that according to the opinions of 16.9% of the respondents, obtaining knowledge from customers and the resulting feedback is the most important and best method of acquiring knowledge in the beekeeping fund. Knowledge acquisition through interview and observation tools with 15.7% and acquisition of knowledge through learning (13.5%) were in the next priorities in terms of importance. Also, using the questionnaire method with 1.1% is the least important for gaining knowledge for the beekeeping fund. **Conclusion**: In general, the results showed that to succeed in acquiring specialized beekeeping knowledge and then disseminating it to beekeepers in the country, creating CRM (Customer Relationship Management), improving the specialized learning level of managers and employees, providing the possibility for them to participate in virtual classes (webinars); and specialized conferences on beekeeping and investing in social networks in the fund to support the development of beekeeping in the country is very necessary.

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***Corresponding Author:**
Email: le_jabbari@yahoo.com
ORCID ID: 0000-0002-0374-6364

1. Introduction

In a knowledge-based economy, organizations use knowledge management as a critical factor in achieving sustainable competitive advantage and better performance. In this regard, knowledge management components play a major role in improving organizational performance and innovation. Knowledge management is a process that helps organizations to identify, acquire, organize and disseminate their tacit knowledge, which is the most valuable organizational resource and usually exists in an unstructured state in the organization (Townley, 2001). In other words, the effective production, distribution, and reuse of up-to-date knowledge are critical success factors that are unfortunately difficult to achieve in practice. Entrepreneurs and professionals in every field strive to improve their products, processes, and business models. To be successful in the future, they must manage and use knowledge effectively at the individual, team, and organizational levels. In this regard, the acquisition of knowledge is of particular importance.

Knowledge acquisition includes the extraction, collection, analysis, modeling, and validation of knowledge for knowledge engineering and knowledge management projects. The term knowledge acquisition is defined as the process of Knowledge Capture, which includes various conceptualizations from various sources, including experts, experts, documents, instructions and regulations, case studies, etc. (Jafari, Akhavan, and Akhtar, 2012: 145-146).

Acquisition of knowledge by experts and entrepreneurs can be divided into two categories: tacit and explicit knowledge acquisition. Explicit knowledge is the knowledge that can be coded, presented in writings, and documented; but tacit knowledge is personal knowledge that is difficult to document (Jafarnejad et al., 2013).

Tacit knowledge exists within a person and is often difficult to describe and transmit. The sources and content of tacit knowledge are hidden in the mind and are not easily accessible and unstructured (Akhavan and Judy, 2012). Therefore, the real challenge of knowledge management is the ability to recognize and capture tacit knowledge, so that it can be retrieved when needed (Gandhi, 2004), Therefore, it is very important to use methods and techniques that, while establishing proper communication, can efficiently extract expert tacit knowledge.

On the other hand, there are several techniques to help experts acquire knowledge of the phenomenon. In other words, knowledge acquisition techniques are methods that help to acquire and extract valid knowledge. These are referred to as knowledge extraction or knowledge acquisition techniques; the term of knowledge acquisition techniques is commonly used in this regard. It is necessary to explain that the two words knowledge acquisition and knowledge extraction have been used in different texts that these two words overlap in many cases and together meet our needs for knowledge acquisition (Jafari, Akhavan and Akhtari, 2020: 145).

Since the range of experts' knowledge is very wide and includes different types of knowledge, so to extract the knowledge of experts, different techniques and methods are used. Acquisition of knowledge can be done through various means such as social networks, management practices, training, and learning, which has a significant effect on the innovation of entrepreneurs and professionals. An entrepreneur with high entrepreneurial awareness becomes more sensitive to the information in his environment and acquires useful information and knowledge to generate the right idea (Tong et al., 2012).

In an organization, the acquisition of tacit knowledge focuses on the question of how to effectively acquire and extract the knowledge required by the organization in such a way that the knowledge identified and acquired facilitates the exploitation of opportunities and Increases the necessary preparation to optimize existing processes, performance and services. As a result, if an organization fails to acquire the required

knowledge, it will most likely lose the chance to identify important entrepreneurial opportunities and take advantage of them (Probst, Gilbert; Steffen Raub & Kai Romhardt., 2006). Therefore, today the process of using knowledge resources that can ensure the survival of agricultural industries in a competitive world is a very important issue; Therefore, how to acquire and represent the knowledge of experts to reuse it has always been the focus of researchers in industry and leading organizations in that industry.

Iran's beekeeping industry, like other agricultural sub-sectors, more than ever needs to acquire useful knowledge and move towards productive and competitive production. Therefore, moving in this direction is possible by acquiring new knowledge and disseminating its knowledge through the Fund for Supporting the Development of Beekeeping in the country. The Fund for Supporting the Development of the Beekeeping Industry of the country benefits from efficient, committed, and specialized human capital, with the help of which it builds capital, strengthens the capacity, and improves the quality of investment and optimal management of financial resources. It also provides quality and effective financial, consulting, trading and investment services to producers, entrepreneurs, operators and producers' organizations, and other natural and legal persons related to the beekeeping industry throughout the country.

The Beekeeping Industry Development Fund can accelerate the promotion, development, and production of knowledge in new areas such as bee venom mining. Also, this fund can create products with an entrepreneurial, and export nature for the country by creating innovations in various products. Due to the important role of this industry, it is necessary to research to identify the best methods of acquiring knowledge in the beekeeping industry, and the results of this research can be very useful for fund managers and provide them with the necessary policy in the process of acquiring knowledge. Beekeeping specialist and help remove existing obstacles. Therefore, considering the importance and necessity of the subject, the present study is conducted to identify the best methods for acquiring knowledge in the field of the beekeeping industry in the country.

2. Literature Review

Knowledge acquisition began in the mid-1990s with the knowledge engineering of expert systems, and the term knowledge acquisition was coined by researchers in the field of expert systems. Knowledge acquisition is the process of interpreting the knowledge of a particular field through which one performs the activities of that field (Cooke, 2005). Milton (2003) argues that knowledge acquisition involves the extraction, collection, analysis, modeling, and validation of knowledge.

Dalkir(2005) states that knowledge acquisition is the process of extracting, transforming, and transferring expertise from a source of knowledge. On the other hand, the acquisition of knowledge is the process of interaction with experts, during which the expertise and experience are described, and tacit knowledge is the process of gaining the experience of people in the organization and making it available to people who need it (Nezafati, Rashid, and Taghavifard, 2014: 65).

Kidd (1987) considers knowledge acquisition to include the acquisition, analysis, and interpretation of knowledge from experts that are used to solve problems. Hua (2008) describes knowledge acquisition as a five-step process involving the acquisition, collection, analysis, modeling, and validation of knowledge. According to Smith (1996), knowledge acquisition involves extracting knowledge from the expert, analyzing and inferring it, and creating a model of expert knowledge. In general, the transfer of problem-solving knowledge from various sources such as humans, books, databases, sites, etc. in the form of a program is called knowledge acquisition (Hayes-Roth, 1983). The purpose of knowledge acquisition is to gather the body of knowledge of the desired problem and codify it in the expert system. The sources of this work can be books and

reports, etc., but the most important source is the expert in the field (Durkin, 1994).

The most important part of knowledge acquisition methods is acquiring knowledge from experts. Expert experience is one of the most important sources of organizational knowledge and training. Explaining tacit knowledge becomes difficult or sometimes impossible. Experts are busy and valuable people and should not be separated from their work for the process of acquiring knowledge. Acquiring tacit knowledge is a costly and time-consuming process. In large organizations, experts are not concentrated in one building or one city, and knowledge users may be in a wide geographical area. In acquiring knowledge, it should be noted that most of the knowledge is in the minds of experts; implicit knowledge is difficult to describe, an expert does not know everything, and the uninformed person must learn knowledge (Akhavan and Shahabipour, 2016). To overcome these problems and extract the desired knowledge, especially the acquisition of knowledge from experts in each field, various methods have been developed, which are briefly discussed below:

Interview: Interviewing is the most common way to gain knowledge from an expert. Studies have shown that 77% of the development of knowledge-based systems is done through interview methods (Smith, 2001).

Interviewing techniques are questioning experts. These techniques are useful for acquiring basic knowledge. Three different types of these techniques are:

Unstructured interview: An Unstructured Interview requires very little planning and is a free chat with an expert. Such an interview can be conducted in the early stages of knowledge acquisition to acquire basic knowledge in a particular field, but this method is not very useful and efficient in the advanced stages of knowledge acquisition.

Semi-structured interview: In this technique, pre-designed questions are sent to the expert, and additional questions are asked during the interview session.

Structured interview: The structured interview only includes pre-designed questions. In this technique, there is always a questionnaire that is completed during the interview session. Structured interviews are commonly used to explicitly expose a person's key tacit knowledge. In most organizations, this technique is used in the form of output interviews for experts and scholars on the verge of retirement. Structured interviewing requires high levels of comprehension, imagination, and communication skills. In addition, the interviewer must have a good understanding of the subject of the interview (Dalker, 2005).

Questionnaire: The questionnaire is one of the common research tools and direct methods for extracting knowledge from knowledge experts. The questionnaire is defined as a document that includes questions and other types of items to design appropriate and necessary information for analysis (Babi, 1990). Questionnaires are written in different ways for use in different situations and with different methods of distribution among respondents to collect data. The role of the questionnaire in all cases is to provide a standard interview on the subject. Therefore, all respondents are faced with questions that are appropriate for them. These questions are also asked in the same way by different people. Asking questionnaire questions in the same way from different people is a key point for most research (Ghalafi Safar, 2019: 22-23).

Observation: Acquisition of knowledge usually begins with observing one's performance in a particular field. Observation can provide an overview of a particular area of expertise, form an initial understanding of the field of knowledge, and identify issues and limitations that may be encountered in later phases of knowledge acquisition (Hamdan and Alsaiyd, 2010).

Storytelling: A good way to acquire and codify tacit knowledge. Storytelling is the skillful presentation of stories that are used to provide anecdotal evidence, clear up ambiguity, support perspective, and crystallize ideas. A story can present material that the results of the research cannot provide (Blanc and Hogg, 2022: 77). Storytelling has many unique benefits that most other

knowledge management tools and techniques do not have. These advantages are (quoted by Yang, 2013: 42):

- Storytelling conveys the hidden part of knowledge; Because compared to other methods of knowledge management,storytelling has a richer background.
- Storytelling has the power to convey empirical knowledge to a highly experienced person in any field. Storytelling strengthens appropriate human relationships; When a person tells their own story, they also convey a great deal of personal information through the story itself, changes in facial appearance, tone of voice, body movements, and the like. This aspect of storytelling strengthens the trust between the narrator and the listener and often becomes the basis for creating a working community that enables the acquisition, sharing, and creation of knowledge.
- Storytelling evokes the emotions of the audience; a big part of storytelling is that it can change the way people think and behave and lead to more knowledge sharing and creation than ever before.

Brainstorming: One of the methods of preparing the mind to do great and various things is brainstorming (Montazeri and Barabadi, 2021: 123). Brainstorming is an approach to generating ideas about an issue; for example, by inviting two or more experts to a meeting to discuss and exchange ideas or in a meeting where a discussion and different opinions are expressed. The agenda includes introducing the brainstorming session, presenting a problem for experts to think about, encouraging them to generate ideas, and looking to see convergence (Awaz and Ghaziri, 2019: 303).

Social network: A social network is a social structure that consists of groups (usually individual or organizational) that are connected by one or more specific types of affiliation, for example, prices, inspirations, ideas, and financial exchanges, friends, relatives, businesses, weblinks, etc. The resulting structures are often very complex. Social network plays a key role in understanding the process of knowledge creation. Social networking provides communication between people and their access to knowledge resources. The development of social networks has led to the development of the process of knowledge creation and sharing and has expanded the culture of knowledge sharing and learning, and reduced resistance to change and knowledge transfer. Therefore, according to the needs of today's organizations and the creation and dissemination of new knowledge, analysis and needs assessment of social networks have become an important organizational issue (Rabiee and Ma'ali, 2015: 231-232).

Databases: More or less obvious knowledge can be displayed in the form of databases. A database contains structured recorded information that can be stored and accessed. Usually, in a database, the database manager centrally updates and maintains the information. A database is usually centrally controlled and information flows one-way from the holder to the users (Young, 2012: 77).

Various researches have been done in different fields of acquiring knowledge in Iran and other countries. In their research, Bouarfa and Abed (2003) presented two steps to acquire knowledge. In the first step, the documents of the organization were reviewed to develop communication and expertise models, and in the second step, the interviews with the experts were conducted to identify the knowledge gaps in the documents. Dalkir (2005) states that knowledge acquisition is the process of extracting, transforming, and transferring expertise from a source of knowledge.

On the other hand, he believes knowledge acquisition is the process of interaction with experts, during which expertise and experience are described, and tacit knowledge is the process of gaining the experience of people in the organization and making it available to people in need.

Hilo (2008) proposed a web-based conceptual model for knowledge acquisition. According to this model, Knowledge was

acquired during the process of extracting explicit and tacit knowledge, ethnicizing the knowledge extracted for use in web-based software, evaluating knowledge to ensure its accuracy, designing and implementing a knowledge base, and sharing and reusing knowledge.

Akhavan et al. (2011) in a study explored methods of acquiring knowledge in the Iranian tunnel industry. The main purpose of this study was to determine the appropriate knowledge acquisition techniques for the knowledge of tunnel specialists. In this study, the proposed sampling method was used and data were collected through face-to-face interviews based on a valid knowledge acquisition questionnaire (KAQ). A total of 33 experts in the tunnel industry presented by the Iranian Tunnel Association were identified and selected. The result of this study showed that interview, interpretation, training, concept map, process map, matrix, and observation are effective techniques in extracting the knowledge of Iranian tunnel industry experts.

Research also has focused on expert experience techniques, interviews, complex networks (such as network models), visual diagrams, social media, and cognitive mapping techniques, and concept maps for knowledge acquisition. (Marin, 2011; Echeverri, 2012; Leonardi, 2015; Akhavan and Shahabipour, 2016; Delugach et al., 2016; Arruda et al., 2017; Tulai, Haghighi and Ahmadi, 2019)

In their research, Okuthe and Manoj (2018) have proposed various methods such as interviews, questionnaires, observation, photos, video and audio recording, and computer animation in converting tacit knowledge into explicit knowledge.

Nezafiti et al. (2016) examined the views of knowledge management experts on criteria and techniques of knowledge acquisition. The results showed that experts' knowledge can be acquired in six stages: knowledge of the field of expert knowledge, interaction and pre-interview, knowledge acquisition sessions, implementation of interviews and analysis, classification, and coding of knowledge. This process resulted in a hybrid method that consists of four methods: interview, reverse training, Stepping a hierarchical classification, and network of concepts.

Makoundi, Mehr Alizadeh, and Hosseinpour (2015), in a study, examined and explained how to extract and document the tacit knowledge of managers and employees of production companies in the Arvand Free Zone based on the data theory method of the foundation. In this research, data coding and analysis were performed in three stages open coding, axial coding, and selective coding. Methods of acquiring tacit knowledge include an interview, organizational storytelling, learning by listening, observation, documentary case study, interpretation, reverse instruction, description of learning events, and practical learning that almost all manufacturing companies believe in.

In general, a review of the literature and research background shows that in previous research, different methods and techniques for acquiring and extracting knowledge of experts have been mentioned, each of which has been used according to specific conditions and considering the type of knowledge, the expert and following environmental characteristics. The reason for a large number of methods and techniques lies in the fact that there are different types of knowledge in the minds of experts that different methods must be used to acquire their knowledge experiences. Experts have proposed several categories of knowledge acquisition techniques due to the variety of knowledge acquisition methods. Table 1 shows the most important categories made.

Table1.
Types of classifications made on knowledge acquisition techniques

Source	Categories provided	Technique
Milton (2007)	Interview techniques	Structured Interview, Semi-Structured Interview, Structured Interview
	Modeling techniques	Construction steps, reverse training, process mapping, concept mapping
	Specialized techniques	Twenty questions, the key decision-making method of limited information about the task, scripting, brainstorming, storytelling, triple extraction, concept skepticism, concept sorting
Parsi (1998)	Interviews with experts	Interview with open and closed questions
	Learning by utterances	Task and scope analysis, process drawing and tracking, and protocol analysis and simulation, prototyping, and storytelling.
	Learning by observation	Presenting a scenario or a case study and recording it.
Hart (1992) and Scart et al. (1991)	Manual	Interview-based practices
	semi-automatic	The methods in which the expert has no connection with the knowledge engineer and extracts and edits knowledge himself, and the methods in which the knowledge engineer can extract and encode knowledge without the need for close and continuous communication with the expert.
	Automatic	Knowledge discovery (data mining)
Olson and Router (1987)	Direct	Interview, observation, protocol analysis
	indirect	Multidimensional scrolling, hierarchical categorization, network of concepts, etc.
Jones et al. (1996)	Survey	Card sorting and grid concepts
	Non-Survey	Interview and observation
Nezafati et al. (2015)	Protocol techniques	Interview, questionnaire, individual reporting, interpretation and thinking aloud, reverse instruction and observation
	Protocol analysis techniques	Stepping and creating a hierarchical classification of knowledge
	Matrix-based techniques	Network of concepts
	Sorting techniques	Card sorting and Triple extraction
	Diagram-based techniques	Concept map, flowcharts and process map
	Limited information processing techniques	Twenty questions

3. Research method

The method in this article includes:

First, we have searched through documentary or library methods for print and Internet resources related to knowledge acquisition. In this regard, we have studied and reviewed many articles and books in the field of methods of acquiring and extracting knowledge.

Then, based on the review of studies, interviews were conducted with seven experts in the field of beekeeping to more accurately identify the method of acquiring knowledge. The text of the interviews, after being implemented in the login software,

was coded and the main theme or components of acquiring knowledge such as interviews, questionnaires, observations, communications, participation in scientific conferences, training courses, customer information feedback, stories Sarai and brainstorming were identified. Then, based on this, a questionnaire was developed to collect information from the statistical population of the research. The statistical population of the study was eighteen managers and employees of the beekeeping fund. Due to the small size of the statistical population, a questionnaire was distributed among all the members of the statistical population using the census method. Questionnaire data were also analyzed using Spss23 statistical software.

4. Research findings

A). *Findings of the type of knowledge acquisition methods in the fund*

In this study, 9 items were used to identify the various methods of acquiring knowledge used in the fund. These items were in the four-choice range and were rated as follows: I completely agree (score 4); I agree (3); I disagree (2); I completely agree (1).

Table2.

Frequency distribution of item responses related to the type of knowledge acquisition methods used in the beekeeping fund

Option / Items	Strongly Agree		Agree		Disagree		Strongly Disagree		Median & Mode indices	
	Frequency	Valid percentage	Frequency	Valid percentage	Frequency	Valid percentage	Frequency	Valid percentage	Median	Mode
1- In the fund, in order to benefit from the experiences and knowledge of veterans and experts in the beekeeping industry, the interview method (interview with beekeeping experts and veterans) is used.	13	72.2	5	27.8	-	-	-	-	4	4
2- In order to extract knowledge from experts and veterans of beekeeping industry, the questionnaire method is used. (Presenting a questionnaire to experts and veterans)	2	11.1	16	88.9	-	-	-	-	3	3
3- Observation methods (participatory, non-participatory) are to acquire beekeeping knowledge. (View competitors' activities, etc.)	2	11.1	16	88.9	-	-	-	-	3	3
4- The fund acquires knowledge through communication. (Communication with research centers, universities and domestic and foreign competitors)	15	83.3	3	16.7	-	-	-	-	4	4
5- The fund acquires knowledge by participating in domestic and foreign conferences.	6	33.3	12	66.7	-	-	-	-	3	3
6- The fund organizes entrepreneurship training courses for the development of the beekeeping industry.	14	77.8	3	16.7	1	5.6	-	-	4	4
7- The fund acquires knowledge from customers' opinions and feedback from them.	3	16.7	15	83.3	-	-	-	-	3	3
8- The method of storytelling (expressing experiences in the form of stories) is used to obtain the experimental knowledge of beekeepers.	1	5.6	2	11.1	14	77.8	1	5.6	2	2
9- Brainstorming method is used to acquire beekeeping knowledge. (Holding meetings within the organization)	3	18.8	11	68.8	2	12.5	-	-	3	3

As Table 2 shows the results of the frequency distribution of the first item, 72.2% of the fund respondents completely agree that the fund uses the interview method (interview with beekeeping experts and veterans) to benefit from the experience and knowledge of the beekeeping industry veterans and experts. 27% of the respondents agreed. Regarding the second item, 50% of the respondents were completely opposed to the fact that the fund uses the questionnaire method to extract knowledge from experts and veterans of the beekeeping industry, and 22.2% also indicated the opposite option. However, only 11.1% of the respondents completely agreed and 16.7% just agreed.

In relation to the third item, 88.9% of the respondents agreed with the fact that the fund uses observation methods (participatory, non-participatory) and observes the activities of competitors, etc. to acquire beekeeping knowledge, and 11.1% agreed completely with this statement. Also, the results of the fourth item show 83.3% of the respondents completely agree that the fund acquires knowledge through communication (communication with research centers, universities, and domestic and foreign competitors) and another 16.7% indicated the agreeing option. Regarding the fifth item, 66.7% of the respondents agree that the fund acquires knowledge by participating in domestic and foreign conferences, and another 33.3% indicated a completely agreeing option. In relation to the sixth item, 77.8% of the respondents completely agreed with the fact that the fund for the development of the beekeeping industry offers entrepreneurship training courses, and 16.7% also agreed. However, only 5.6% of them were against this. Also, the results of the seventh item show 83.3% of the respondents agree with the statement that the fund acquires knowledge from customers' opinions and the feedback received from them, and another 16.7% expressed their complete agreement. 77.8% of the respondents disagreed with the fact that the fund uses the method of storytelling (expressing experiences in the form of stories) to gain the experimental knowledge of beekeepers, and 5.6% indicated they completely opposite with this statement. However, only 5.6% of respondents completely agreed and 11.1% agreed. In relation to the ninth item, 68.8% of the respondents agree that the fund uses the brainstorming method to acquire beekeeping knowledge, and 18.8% indicated a completely agreeing option. However, only 12.5% of respondents were against it.

1. In general, by examining the frequency distribution of items as well as the Median and Mode values obtained for each item, the following results can be mentioned:
2. According to the majority of respondents, the fund uses the interview method (interviews with beekeeping experts and veterans) to benefit from their experience and knowledge in the beekeeping industry.
3. According to the majority of respondents, the fund does not use the questionnaire method to extract knowledge from experts and veterans of the beekeeping industry.
4. According to the majority of respondents, the fund uses observation methods (participatory, non-participatory) and observes the activities of competitors, etc. to acquire beekeeping knowledge.
5. According to the majority of respondents, the fund acquires knowledge through communication (communication with research centers, universities, and domestic and foreign competitors).
6. According to the majority of respondents, the fund acquires knowledge by participating in domestic and foreign conferences.
7. According to the majority of respondents, entrepreneurship training courses are held in this organization.
8. According to the majority of respondents, the fund acquires knowledge of customers' opinions and feedback.
9. According to the majority of respondents, the fund does not use

the method of storytelling (telling experiences in the form of stories) to gain the experimental knowledge of beekeepers.

10. According to the majority of respondents, the fund uses the brainstorming method to acquire beekeeping knowledge.

B). Findings of respondents' use of knowledge acquisition methods

In this study, 5 items were used to evaluate the respondents' use of knowledge acquisition methods. These items were in the four-choice range and were rated as follows: High (score 4); Medium (3); Low (2); None (1).

Table 3.

Frequency distribution of item-related responses related to respondents' use of knowledge acquisition methods

Option / Items	High		Medium		Low		None		Median & Mode indices	
	Frequency	Valid percentage	Frequency	Valid percentage	Frequency	Valid percentage	Frequency	Valid percentage	Median	Mode
1- To what extent do you use reading tools to acquire beekeeping knowledge?	1	5.6	2	11.1	5	27.8	10	55.6	1	1
2- Have you ever participated in specialized beekeeping training and courses to acquire beekeeping knowledge?	1	5.6	-	-	-	-	17	94.4	1	1
3- To what extent have you acquired beekeeping information and knowledge from social networks (such as: WhatsApp, Telegram, etc.)?	1	5.6	4	22.2	13	72.2	-	-	2	2
4. Do you use database search tools to gain knowledge of beekeeping? (e.g, Agricultural Jihad Database)	1	5.6	12	66.7	-	-	5	27.8	3	3
5. Have you gained beekeeping information and knowledge through personal experience?	1	5.6	9	50	2	11.1	6	33.3	3	3

Regarding the results of the frequency distribution of the first item in Table 3, 27.8% of respondents use reading tools to acquire beekeeping knowledge to a small extent, 11.1% to a moderate extent, and only 5.6% to a large extent. While the majority of respondents, 55.6% of them, do not use this tool at all. Regarding the second item, 94.4% of the respondents have not participated in any specialized training and learning courses to acquire beekeeping knowledge, and so far only 5.6% of them have participated in these courses. Also, the results of the frequency distribution of the third item show that 72.2% of the respondents use a small amount and 22.2% a moderate amount, and only 5.6% of them highly use social networks to obtain information and beekeeping knowledge.

Concerning the fourth item, 66.7% of the respondents use database search tools (such as the Jihad Keshavarzi database) to acquire knowledge on an average level and 5.6% to a large extent. Also, 27.8% of them do not use these tools at all.

To the fifth item, 50% of the respondents have obtained beekeeping information and knowledge to a moderate extent, 11.1% to a small extent, and 5.6% to a large extent through personal experience. Also, 33.3% of them have not used their personal experience in any way to gain information and knowledge of beekeeping.

C). Findings of the most important methods of acquiring knowledge in the beekeeping industry

Table 4 and Figure 1 show the results of the frequency distribution of the most important methods of acquiring knowledge of the beekeeping industry. In the following, we will review the results obtained.

Table 4.
Frequency distribution of the most important methods of acquiring knowledge in the beekeeping industry

Items	Frequency	Percentage
Learning	12	13.5
Brain storming	4	4.5
Connections	5	5.6
Customers' viewpoints	15	16.9
Observation	14	15.7
interview	14	15.7
Questionnaire	1	1.1
Social Networks	7	7.9
Personal experience	9	10.1
Reading and studying	8	9
Total	89	100

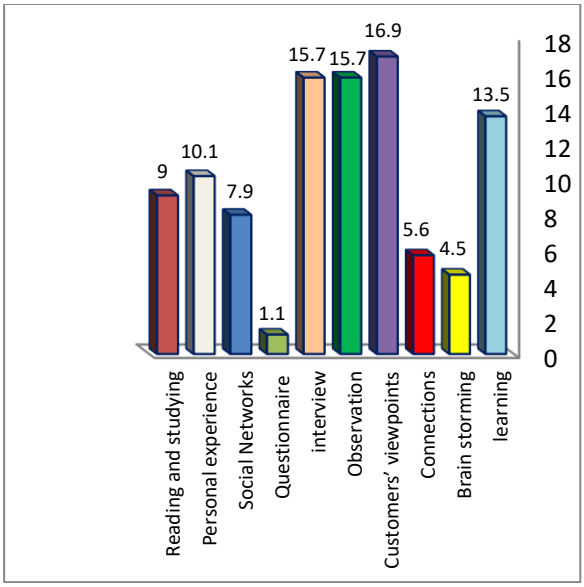

Figure1. Frequency distribution of the most important methods of acquiring knowledge in the beekeeping industry

The results in the table and figure above show that the most important or in other words the best methods of acquiring knowledge in the beekeeping industry based on the opinions of the respondents are in order of importance:

1. Acquiring knowledge from customers' opinions and feedback (16.9%);
2. Acquiring knowledge through observation (15.7%) and interview (15.7%);
3. Acquisition of knowledge through learning (participation in formal training courses, in-service, service, etc.) equal to 13.5 percent;
4. Acquiring knowledge through personal experience (10.1%);
5. Acquiring knowledge through reading and studying (9%);
6. Acquiring knowledge using social networks such as WhatsApp, Telegram, etc. (7.9%);
7. Acquiring knowledge by communicating with competitors, customers, and suppliers (5.6);
8. Acquiring knowledge using brainstorming method (5.4%);
9. Acquiring knowledge using the questionnaire method (1.1%).

Respondents also suggested the following in connection with the question "Introduction of other tools they intend to acquire knowledge":

1. Use of foreign articles;
2. Launching beekeeping tourism tours in the country and internationally for more familiarity and exchange of beekeeping information;
3. Investing in social networks and providing free training in these networks to improve beekeeping knowledge;
4. Participate in virtual classes (webinars);
5. Participate in conferences and exhibitions related to the beekeeping industry;
6. Traditional education: going to apiaries to gain knowledge and practical training.

5. Conclusion

This study aimed to identify the best methods of knowledge acquisition in the field of the beekeeping industry (Case study: Support Fund for Development of Beekeeping Industry. (In this research, after studying documents, an interview was conducted with experts in the beekeeping industry and then a questionnaire was designed and distributed to managers and employees of the beekeeping fund to collect information.

The results of the research were presented in three parts: the findings of "type of knowledge acquisition methods in the Fund", "respondents' use of knowledge acquisition methods" and the findings of "the most

important knowledge acquisition methods in the beekeeping industry".

The results from the study of knowledge acquisition method' type in the Fund showed that the majority of respondents believe that the Fund to acquire knowledge from customers' opinions and feedback, as well as other methods of acquiring knowledge such as interviews with experts and veterans of beekeeping, observation (participatory and Non-participation), communication with research centers, universities and domestic and foreign competitors, participation in domestic-foreign conferences and seminars, taking entrepreneurship training courses and brainstorming methods to gain knowledge.

The results of the survey of respondents' use of knowledge acquisition methods showed that the majority of respondents did not use reading and study methods and participated in training and learning courses to acquire knowledge. Also, the majority of respondents use social media to a lesser extent and, to a lesser extent, database search tools (such as the Jahad Keshavarzi database) to acquire knowledge. Fifty percent of the respondents also gained information and knowledge of beekeeping through personal experience.

The results of the findings of knowledge acquisition methods in the beekeeping industry also showed that based on the opinions of managers and employees of the beekeeping Fund, knowledge acquisition from customer opinions and feedback (customer knowledge), knowledge acquisition through observation and interview, knowledge acquisition by Learning (participating in formal university training courses, in-service, etc.), and acquiring knowledge through personal experience are the most important and best ways to acquire knowledge in the beekeeping industry.

Using the interview tool, comparing the results of the present study with the findings of previous research shows that the results of this research are in line with the results of the majority of previous research, such as Abed (2003); Brotherhood et al. (2011); Ercus and Manouchehr (2018); Marian, 2011; Achiviri, 2012; Leonardi et al., 2015; Akhavan and Shahabipour, 2016; Delugach et al., 2016; Kane et al., 2017; Arruda et al., 2017; Tulayi, Boroujeni and Ahmadi, 2019); Makoundi, Mehr Alizadeh and Hassanpour (2019) and Nezafiti et al. (2016).

Also regarding the use of observation tools, the results of the present study are evaluated in line with the results of the Brotherhood et al. (2011) and Okus and Manoucheh (2018), and Makoundi, Mehr Alizadeh, and Hosseinpour (2019). The results of research by Makoundi, Mehr Alizadeh, and Hosseinpour (2019) and Akhavan et al. (2011) show that the use of education and learning to acquire knowledge is of particular importance and in this study, it has been approved by 13.5 percent of respondents.

Of course, the important point that was obtained in the findings of the present study is about acquiring knowledge from customers (feedback) of the beekeeping fund to the highest extent (16.9 percent), which is different from the results of previous research. The reason for this difference may be due to the fact that customers and users of beekeeping products have more interaction with members of the beekeeping fund and bee honey producers in the country. This interaction can be due to the effective activity of the communication unit with the customer of the beekeeping fund and also the holding of a direct exhibition of agricultural and industrial goods in the country.

In general, according to the results of the present study, the Beekeeping Development Support Fund to gain a competitive advantage needs to expand continuous communication with domestic and foreign consumers and then improve customer relationship management programs. It is also recommended to take the following measures to improve the scope of specialized learning of managers and employees:

- Presenting the latest specialized articles (domestic and foreign)
- Participate in virtual classes (webinars) and specialized bee conferences
- Launching beekeeping tourism tours in the country and internationally
- Investing in social networks and providing free training in these

networks to improve beekeeping knowledge.

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