

Original Article



Designing a Pattern of Recorded Experiences in the Organization in Facing and Dealing With the COVID-19 Crisis: A Case Study

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Abstract

Background: Empiricism is one of the important components of knowledge management. In empiricism, an attempt is made to document and publish the tacit knowledge of individuals and their teachings. The purpose of this study was to design a model for recording organizational experiences in facing and dealing with the COVID-19 crisis.

Methods: The present study is an exploratory mixed study that was conducted to design a model for recording the experiences of the organization in facing and dealing with the COVID-19 crisis. In the first step, the main dimensions and concepts of the subject were formed by reviewing studies and consulting with experts and specialists. In the second step, the basic items of the model were developed. In the last step, psychometric properties, as well as validation, were examined.

Results: In this model, first, critical occasions were identified. In the next step, the face and content validity of the instrument were determined both qualitatively and quantitatively (content validity ratio [CVR]=0.84 and content validity index [CVI]=0.76). Kendall's coefficient of concordance was used to assess the unwavering quality of the instrument. In the present study, a coefficient of 0.90 indicates substantial agreement among the experts.

Conclusion: Factors influencing experience recording and related questions can provide a good model for organizational empiricism. The results of this research can be used as a basis for managers' planning in implementing experience documentation in the organization.

Keywords: Pattern of empiricism, Lessons learned, Organization

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Introduction

Today, organizational growth and development depend on the sources of knowledge and intellectual capital. Knowledge is a reality that is highly dependent on time and its holder, and its difference with science is that science is less dependent on time, place, and its holder (1). Accordingly, knowledge management means the identification, optimization, and active management of intellectual assets to create value, increase productivity, and maintain competitive advantage (2). Tacit knowledge is the knowledge that is in the minds of employees and the memory of the organization. This knowledge is not visible

and depends on the person who creates it and its place in people's minds (3). Technical skills and experiences, mental patterns, paradigms, perspectives, beliefs, and attitudes that are formed through the mental analogies of individuals fall into this category (4). The importance of tacit knowledge for the organization and employees is as great as explicit knowledge, but it is not easy to express, it is not a transfer of modeling, and it is extremely difficult for the organization to capture and conquer it. This knowledge is objectified in the form of ideas, facts, assumptions, understandings, questions, decisions, conjectures, stories, experiences, skills, work perspectives, and value systems



of human beings and organizations and helps managers in solving problems and making decisions (5). Empiricism is one of the knowledge management processes that seek to collect and operate knowledge to turn the gained experiences into knowledge. Empiricism is one of the main goals of learning organizations (6-8). 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 of the expert are described and his/her tacit knowledge is transformed into explicit knowledge. Tacit knowledge management is the process of capturing the experience of the people in the organization and making it available to the people who need it (9).

According to the World Health Organization (WHO), COVID-19 broke out on December 30, 2019, in Wuhan, China, and quickly spread to many Chinese people (10). This potentially deadly disease spread very rapidly and affected a large number of people. It also had irreversible effects and consequences on the health systems of different countries (11,12). On January 30, 2020, the WHO declared COVID-19 as a global concern that required a coordinated international response to control (10). Over time, the knowledge obtained from the outbreak of this disease and the recording of experiences from different countries, different strategies have been proposed to reduce the prevalence of COVID-19, indicating that learning from experiences has an effective role in controlling diseases. This action, if well documented, can lead to improved organizational performance. Finally, by learning from these experiences, it becomes clear how similar problems should be dealt with and what results are expected. Therefore, to better identify a lesser-known phenomenon such as COVID-19, the extraction of tacit knowledge and empiricism during the occurrence of the phenomenon can lead to the identification of more practical solutions and help. Baqiyatallah University of Medical Sciences and its affiliated hospitals have conducted various studies in the fields of research, education, treatment, public and private support, and command and leadership in facing the COVID-19 crisis. Undoubtedly, during the service period, employees face many organizational problems and issues. They make decisions based on their knowledge and mental models and take appropriate actions. Accordingly, the present study was conducted to design a model for recording the experiences of the Baqiyatallah University of Medical Sciences in facing and dealing with the COVID-19 crisis.

Materials and Methods

Study Design

The present study is an exploratory mixed study that was conducted to design a model for recording the experiences of the organization in facing and dealing with the COVID-19 crisis. Exploratory sequential design starts with qualitative data collection and analysis and builds to

quantitative data collection and analysis, which leads to interpretation. In this design, the qualitative results are used to develop a new instrument or taxonomy for the quantitative strand.

The study was conducted in 3 steps as follows: item generation, theoretical analysis, and psychometric analysis. In the first step, the main dimensions and concepts of the subject were developed through an extensive review of studies and consultation with professors and experts. In the second step of the study, the initial items were examined and developed. Thus, the initial format of the design is a model for recording organizational experiences in facing and dealing with the COVID-19 crisis. In the last step, the psychometric properties of the instrument were evaluated. After designing the initial format of the tool, its psychometric evaluation began. Generally, the psychometric properties of an instrument are assessed to determine how it measures the intended purpose. In the current study, both qualitative and quantitative methods were used to determine validity.

The sample size of this study was determined using non-probability sampling and a combination of targeted and snowball methods. The statistical population included academic experts, managers, and executive experts. Finally, 24 people were selected to participate in different stages of the research. The research process was followed in the first step, during the study of the library and the organization of various meetings with the research working group, following the knowledge of the relevant categories, the principles, concepts, and various dimensions. In the second step, the opinions of experts were extracted using the Delphi method and a questionnaire. Finally, a group consensus was reached. MaxQDA 2020 software and SPSS version 26.0 were used for data analysis.

Results

Demographic Characteristics

The demographic characteristics of the participants in this study are shown in [Table 1](#).

Validity

The psychometric properties of the instrument were evaluated using different methods. Content validity ratio (CVR) and content validity index (CVI) were used to evaluate the quantitative content validity. CVR aimed to explore the necessity of an item from the experts' viewpoints, while CVI aimed to determine the relevance of the item to the study objectives. To determine CVR, we asked 13 experts to respond to each item based on a three-point Likert scale as follows: "necessary, useful but not necessary, and not necessary". Then, the responses were evaluated according to the following formula and Lawshe table for 13 people with a minimum score of 0.54. After calculating CVR for all items, items with a score of at least 0.54 were retained for the next step, and items with a score of less than 0.54 were excluded (13). In this formula, N stands for the total number of experts and Ne stands

Table 1. Demographic Characteristics of the Participants

Variable		No. (%)
Gender	Male	91.7
	Female	8.3
Age (y)	35-40	20.8
	41-50	41.6
	51-55	12.5
	56-60	20.8
	61-70	4.2
Education level	Postdoc	20.8
	PhD	75.0
	Master's degree	4.2
Academic rank	Professor	25.0
	Associate professor	4.2
	Assistant professor	54.2
	Other	16.7
Organizational unit	University headquarters	8.3
	Institute	25.0
	Deputy of research and technology	8.3
	Selected crisis management	4.2
	Hospital selected	37.5
	Nursing school	12.5
	School of health	4.2
Membership type	Faculty member	83.3
	Non-faculty member	16.7
Work experience	1-10 years	29.4
	11-20 years	8.3
	21-30 years	25.0
	31-40 years	37.8

for the total number of experts rated the intended item as essential (Formula 1).

$$CVR = \frac{Ne - \frac{N}{2}}{\frac{N}{2}} \quad (1)$$

Table 2 shows the CVR of each item based on the opinions of 13 experts. Only one out of 21 items did not obtain the required minimum score, which was eliminated. Thus, 20 items entered the next stage.

Waltz and Bausell's method was used to evaluate CVI. In doing so, the tool was given to 10 experts. Then, they were asked to rate the relevance, clarity, and simplicity of each item based on a 4-point Likert scale (scores ranging from 1 to 4). Then, CVI was computed using the formula 2 (14).

$$CVI = \frac{\sum \text{Number of Answers 3 or 4}}{\text{Total Number of answers}} \quad (2)$$

After calculating CVI based on the total number of agreed points for each item (scores three and four on the four-point scale), scores above 0.79 were considered to be

suitable and acceptable, scores between 0.70 and 0.79 were regarded as questionable and requiring correction, and scores less than 0.70 were determined as unacceptable (15). At this stage, all items achieved the required minimum score (Table 3).

Reliability

The pattern of recorded experiences in the organization in facing and dealing with COVID-19 crisis with 5 dimensions and 20 components measured on a 5-point Likert scale are shown in Table 4. The results of the Friedman test for ranking the indicators in the field of recording the experience of the organization in facing and dealing with the COVID-19 crisis showed that the difference between the rankings was statistically significant ($P > 0.05$). Table 4 also shows that the average ranks from the highest to the lowest rank include: results and consequences, problems, events, lessons learned, measures, and decisions. Kendall's coefficient of concordance was used to evaluate the reliability of the instrument in this study. Kendall's coefficient of concordance is a non-parametric test which is used to determine the degree of coordination between opinions and its value varies between -1 and 1. A coefficient of -1 indicates a complete disagreement and a coefficient of 1 indicates a complete agreement (14). In the present study, a coefficient of 0.90 indicates a relatively high agreement among the experts.

In this research, first, important events were identified. Then, the issues of statistics, measures, and decisions were extracted, the results of which will be results and consequences. Finally, the suggestions, scenarios, modeling, and lessons learned were identified.

Discussion

This study aimed to design a model for recording organizational experiences in facing and dealing with the COVID-19 crisis. This pattern of empiricism was designed through an extensive review of studies and consultation with experts, followed by psychometric evaluation and validation. The tool consists of 5 sections (events, problem, measures and decisions, results and outcomes, and lessons learned) and 20 items. The lessons learned section with 7 items and the event section with 1 item had the highest and lowest number of items in this template, respectively.

In 2019, Farrokhyar et al conducted a study entitled "Designing a Model for Distribution of Intensive Care Beds in Iranian Hospitals". The sample of this study included 340 healthcare managers in 10 centers of medical universities in the country. Based on the results obtained from the exploratory factor analysis, as well as vertical rotation and Varimax rotation, the main components of the factors affecting the distribution of intensive care beds were determined. The results of this study were categorized into 6 main sections and 34 sub-sections. In this study, 6 categories of economic, organizational, socio-political, structural, demographic, and geographical were identified as the main dimensions and 36.59% of the total variance

Table 2. Content Validity Ratio

Variable	Item Number	Items	CVR	Status
Events	1	What has caused you problems in your field of work during the COVID-19 crisis?	0.84	Accepted
	2	What problem did the mentioned event lead to and what problems did you face?	0.53	Omitted
Problem	3	Describe the problem and issue caused by the event in terms of spatial, temporal, and situational dimensions.	0.64	Accepted
	4	Describe the factors that exacerbate or alleviate the problem.	0.82	Accepted
Measures and decisions	5	What has been your role as an experimenter in problem-solving?	0.54	Accepted
	6	What solutions have come to your mind to solve the problems that have arisen?	0.92	Accepted
	7	What do you think was the best solution?	0.68	Accepted
	8	In your opinion, what were the advantages of the final decision?	0.81	Accepted
	9	What do you think was the innovative solution to this problem?	0.72	Accepted
	10	What was the most important practical action after the decision was made?	0.64	Accepted
Results and outcomes	11	What are the positive and negative results of the actions taken and decisions made?	0.93	Accepted
	12	What are the factors influencing the success or failure of problem-solving measures?	0.59	Accepted
	13	What do you think is the reason for not achieving the expected result?	0.85	Accepted
	14	To what extent (quantity) has the final solution solved the problem?	0.65	Accepted
Lessons learned	15	What lessons have you learned from this event?	0.92	Accepted
	16	What are your suggestions for the use of this experience in similar situations?	0.89	Accepted
	17	How did your creative decision and action affect the current processes of the organization?	0.69	Accepted
	18	What change has this experience made in the dimensions (behavioral, structural, contextual, and semantic) of the organization?	0.88	Accepted
	19	If you were in that situation again, would you change your decision-making process?	0.57	Accepted
	20	What is your practical suggestion for similar events?	0.54	Accepted
	21	What vacancy did you feel at this event?	0.92	Accepted

CVR, content validity ratio.

Table 3. Content Validity Index

Variable	Item number	Items	CVI	Status
Events	1	What has caused you problems in your field of work during the COVID-19 crisis?	0.85	Accepted
Problem	2	Describe the problem and issue caused by the event in terms of spatial, temporal, and situational dimensions.	0.85	Accepted
	3	Describe the factors that exacerbate or alleviate the problem.	0.79	Accepted
Measures and decisions	4	What has been your role as an experimenter in problem-solving?	0.83	Accepted
	5	What solutions have come to your mind to solve the problems that have arisen?	0.85	Accepted
	6	What do you think was the best solution?	0.92	Accepted
	7	In your opinion, what were the advantages of the final decision?	0.84	Accepted
	8	What do you think was the innovative solution to this problem?	0.89	Accepted
	9	What was the most important practical action after the decision was made?	0.91	Accepted
Results and outcomes	10	What are the positive and negative results of the actions taken and decisions made?	0.92	Accepted
	11	What are the factors influencing the success or failure of problem-solving measures?	0.79	Accepted
	12	What do you think is the reason for not achieving the expected result?	0.89	Accepted
	13	To what extent (quantity) has the final solution solved the problem?	0.81	Accepted
Lessons learned	14	What lessons have you learned from this event?	0.86	Accepted
	15	What are your suggestions for the use of this experience in similar situations?	0.85	Accepted
	16	How did your creative decision and action affect the current processes of the organization?	0.92	Accepted
	17	What change has this experience made in the dimensions (behavioral, structural, contextual, and semantic) of the organization?	0.91	Accepted
	18	If you were in that situation again, would you change your decision-making process?	0.79	Accepted
	19	What is your practical suggestion for similar events?	0.85	Accepted
	20	What vacancy did you feel at this event?	0.92	Accepted

CVI, content validity index.

Table 4. Pattern of Recorded Experiences in the Organization in Facing and Dealing with the COVID-19 Crisis

Number	Type	Mean (1-5)	Standard Deviation	Friedman Test	Chi-square	Degree of freedom	P Value	Kendall's Coefficient of Concordance
1	Event	4.48	0.311	3.12				
2	Problem	4.49	0.313	3.23				
3	Measures and decisions	4.32	0.393	2.10	15.63	4	0.003	0.90
4	Results and outcomes	4.51	0.266	3.38				
5	Lessons learned	4.47	0.287	3.11				

covered the variables. In this study, the demographic dimension had the greatest impact and the economic dimension had the least impact on the distribution of intensive care beds (16).

In 2004, Elahi et al conducted a study entitled "Designing a Model of the Organizational Experience of Managers and Explaining its Main Elements." In this study, the main components of experience were reviewed in the literature, and after statistical analysis, the main model of experience was obtained. In this study, the parts of experience analysis were considered, which included insight, the ability to define data interaction, the ability to record information, the ability to measure data and observations, the ability to prove topics, and the effect of judgment and feeling after analyzing an evaluated event. After the analysis, the stages of experience from the experts' point of view, a model with the dimensions of the occurrence of an event, acquiring and understanding the subject, analysis and review, conclusion, and use of the results of the expert review were presented (17).

Alvaani and Shahgholian conducted a study entitled "Designing a Model for Evaluation of Knowledge Management Level in Industrial Organizations of Iran (Auto Industry)." In this study, effective factors in knowledge management were determined, and based on these factors, a model for evaluating knowledge management in industrial organizations in Iran were presented. These factors included knowledge recognition, knowledge acquisition, knowledge application, knowledge sharing, knowledge development, and knowledge retention. Then, after collecting the information, the final analysis was performed and the results were presented in the form of a final model (18).

The mentioned studies show the importance of empiricism and its registration in the form of tools, patterns, and questionnaires in various fields that can be very useful for relevant organizations or communities. The present study was conducted considering the importance of the subject of empiricism and the lack of studies and evaluation tools.

Conclusion

The pattern of recorded experiences in the organization in facing and dealing with the COVID-19 crisis was designed and psychometric properties were evaluated using the findings of studies and scientific sources in the fields of empiricism, lessons learned, and COVID-19. Moreover,

considering features such as proper validity and reliability, simple scoring, ease of use, comprehensiveness, and, most importantly, the unavailability of similar tools and models, it is a suitable tool for recording experiences in the organization in facing and dealing with the COVID-19 crisis, which can be used in all medical centers affected by this disease.

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Competing Interests

None declared.

Ethical Approval

The present study was approved by the Ethics Committee of Hamadan University of Medical Sciences (Code of ethics: IR.BMSU.REC.1400.121).

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References

- Garvin DA, Edmondson AC, Gino F. Is yours a learning organization? *Harv Bus Rev.* 2008;86(3):109-16.
- Maier R, Hadrich T. Knowledge management systems. In: *Encyclopedia of Knowledge Management.* 2nd ed. IGI Global;

2011. p. 779-90.
3. Collins HM. What is tacit knowledge? In: *The Practice Turn in Contemporary Theory*. Routledge; 2005. p. 115-28.
 4. Haddadpoor A, Taheri B, Nasri M, Heydari K, Bahrami G. Process documentation: a model for knowledge management in organizations. *Mater Sociomed*. 2015;27(5):347-50. doi: [10.5455/msm.2015.27.347-350](https://doi.org/10.5455/msm.2015.27.347-350).
 5. Baumard P. *Tacit Knowledge in Organizations*. SAGE Publications; 1999.
 6. Jalali Farahani A, Mohammadan M, Shakibae A, Fallah MS, Esmaeili Gouvarchin Galeh H, Bahadori MK. Designing and compiling a comprehensive empirical program for Baqiyatallah University of Medical Sciences in confronting the COVID-19 crisis. *J Mil Med*. 2022;22(6):589-98. doi: [10.30491/jmm.22.6.589](https://doi.org/10.30491/jmm.22.6.589). [Persian].
 7. Solomon M. *Social Empiricism*. MIT Press; 2007.
 8. Riggert SC, Boyle M, Petrosko JM, Ash D, Rude-Parkins C. Student employment and higher education: empiricism and contradiction. *Rev Educ Res*. 2006;76(1):63-92. doi: [10.3102/00346543076001063](https://doi.org/10.3102/00346543076001063).
 9. Jennex ME. *Knowledge Management: Concepts, Methodologies, Tools, and Applications*. IGI Global; 2008.
 10. Sohrabi C, Alsafi Z, O'Neill N, Khan M, Kerwan A, Al-Jabir A, et al. World Health Organization declares global emergency: a review of the 2019 novel coronavirus (COVID-19). *Int J Surg*. 2020;76:71-6. doi: [10.1016/j.ijssu.2020.02.034](https://doi.org/10.1016/j.ijssu.2020.02.034).
 11. Chatterjee P, Nagi N, Agarwal A, Das B, Banerjee S, Sarkar S, et al. The 2019 novel coronavirus disease (COVID-19) pandemic: a review of the current evidence. *Indian J Med Res*. 2020;151(2 & 3):147-59. doi: [10.4103/ijmr.IJMR_519_20](https://doi.org/10.4103/ijmr.IJMR_519_20).
 12. Daniel SJ. Education and the COVID-19 pandemic. *Prospects (Paris)*. 2020;49(1-2):91-6. doi: [10.1007/s11125-020-09464-3](https://doi.org/10.1007/s11125-020-09464-3).
 13. Polit DF, Beck CT, Owen SV. Is the CVI an acceptable indicator of content validity? Appraisal and recommendations. *Res Nurs Health*. 2007;30(4):459-67. doi: [10.1002/nur.20199](https://doi.org/10.1002/nur.20199).
 14. Waltz CF, Strickland OL, Lenz ER. *Measurement in Nursing and Health Research*. New York: Springer; 2010.
 15. Rostami K, Sharif F, Zarshenas L, Ebadi A, Farbood A. Design and psychometrics of measurement tool of health needs in patients with chronic back ache. *Rev Latinoam Hipertens*. 2018;13(3):284-91.
 16. Farrokhyar N, Alimohammadzadeh K, Maher A, Hossieni SM, Bahadori MK. Designing a model for distribution of intensive care beds in Iranian hospitals. *Sadra Med J*. 2019;7(3):225-36. doi: [10.30476/smsj.2019.82379.1025](https://doi.org/10.30476/smsj.2019.82379.1025). [Persian].
 17. Elahi S, Azar A, Rajabzadeh A. Designing a model for the managers' organizational experiences and verifying the relative components. *Commercial Strategies*. 2020;11(8):65-79. [Persian].
 18. Alvaani SM, Shahgholian K. Designing a model for evaluation of knowledge management level in industrial organizations of Iran (auto industry). *Management Studies in Development and Evolution*. 2007;13(52):1-16. [Persian].