Journal of Iran Futures Studies
Print ISSN: 6365-2423
Online ISSN: 2676-6183

Statistics of Evaluation Indicators of Observation Models and their Scoring

Ali Esmaeilpour
PhD candidate of Futures Studies of Hazrat Waliasr Research Institute, Imam Hossein University, Tehran, Iran.
esmaeilpourali@ihu.ac.ir

Mohammad reza Arab bafrani*
Assistant Professor of Futures Studies, Imam Hossein University, Tehran, Iran. marabbfn@ihu.ac.ir

Mehrdad Moemeni zahed
Assistant Professor of Futures Studies, Imam Hossein University, Tehran, Iran. m.mz110@chmail.ir

Mohamad reza Mohammadkhani
Assistant Professor of Futures Studies, Imam Hossein University, Tehran, Iran.
mohammadreza.mohammadkhani1978@gmail.com

Abstract

Purpose: Observation is one of the important pillars of futures studies and the introduction of projects and researches. If it likened to a building, correct observation will be like a solid and reliable foundation for it. Different researchers have presented several observation models. These models are presented based on the surrounding conditions and characteristics of each research and are different from each other. The main purpose of the current research is to calculate the evaluation indicators of observation models and to identify the characteristics, strengths and weaknesses of 36 existing models, focusing on last ten years and common models in the past based on the aforementioned indicators, and, other goals Like determining the scoring relationship, observation models were also followed.
Method: This research is practical from the point of view of the goal and is considered as mixed research and it uses the methods of library studies, expert panel and questionnaire.
Findings: In this research, 36 models were extracted and explained from among the existing observation models, and twelve final indicators were determined based on the opinion of experts in order to evaluate them. The mentioned indicators were weighted based on their importance by experts and a relationship was presented to score the observation models and finally 36 observation models were scored based on it.
Conclusion: The results show that the three observation models of Momenizahed, Sakalidis and Cuhls got the most points. Based on the final evaluation indicators, observation models were introduced that had more strengths in each of them.

Keywords: Futures studies, observation, environmental scanning, horizon scanning, monitoring.

Cite this article: Esmaeilpour ,Ali. Arab bafrani,Mohammad reza. Moemeni zahed,Mehrdad& Mohammadkhani, Mohamad reza.(2024) Statistics of evaluation indicators of observation models and their scoring,Volume9, NO.1 Spring & Summer 2024,1-31
DOI: 10.30479/jfs.2024.20502.1555
Received on: 15 June 2024 **Accepted on**: 7 October 2024

Publisher: Imam Khomeini International University
Corresponding Author/ E-mail: Mohammad reza Arab bafrani / marabbfn@ihu.ac.ir

Introduction

Due to the importance of observation, various methods, models and steps for observation have been designed by different researchers, most of them are optimized and used according to their user environment and some of them have gained international fame and are prescribed in different versions for different countries. On the other hand, in various projects, a combination of observation methods has been investigated and implemented and has been used in various fields including political, economic, science and technology, security, social, etc. Therefore, an organization needs to identify future opportunities and threats in accordance with its environmental characteristics, field of activity and basic assets, and in order to achieve this, it is necessary to pay attention to its surrounding environment and the depth and speed of changes in it, and to design and implement an observation model.

With this introduction, the question is raised, what should be done to better recognize, select and integrate observation models? The answer to this question is to know the existing conventional observation models and to be aware of their strengths and weaknesses. In case of accurate knowledge of the coordinates and features of different observation models, it is possible to use the appropriate model (combination of models) according to the existing features of the organization/project under investigation.

Now, the basic question facing this research is that "What are the evaluation indices of observation models and the characteristics and strengths and weaknesses of conventional observation models in the world based on them?". In order to answer this question, the following questions should be answered:

1- What is the world's conventional observation models?
2- What are the evaluation indicators of observation models?
3- What is the relationship (formula) of scoring observation models based on the calculated indicators?
4- What is the score of the identified observation models based on the determined relationship? And what are the strengths and weaknesses of the identified observation models (based on these indicators)?

Methodology

The current type of research is practical from the point of view of the goal and is considered as a mixed method. Also, the current research is a single cross-section from the point of view of the time frame of the research. In order to answer the questions of this research, 4 steps were taken. First, with the literature review method and through library studies, the conventional observation models in the world were identified and the evaluation indicators of the models were extracted. Then, with the formation of an expert panel consisting of 7 experts, including four professors in the field of futures studies and three experts who have experience in conducting various observation projects, the extracted indicators were evaluated and after combining them, a list of final indicators was obtained. In the next step, the mentioned indicators were given to 32 experts in the form of a closed questionnaire to weight each of the

indicators (from 1 to 4) and the weight of each index was determined on the basis of their opinion (mode) and based on that, the scoring relationship for the models was extracted. Finally, the observation models in the form of a questionnaire were given to the aforementioned 32 experts to be scored based on the final indicators (from 0 to 10) and the score of each model in each index was calculated based on the average opinions of experts (rounded to the nearest whole number).

Results

Based on the output of the expert panel, the final evaluation indicators were obtained as follows:

- Simplicity and comprehensibility (D01)
- Upgradability (D02)
- Adaptability (D03)
- Scientific, methodical and systematic analysis of information (D04)
- Depth and sensitivity of analysis and warning (D05)
- Capacity building (proposing strategy, solution, alternative, etc.) (D06)
- Use reliable and trustworthy sources (D07)
- Completeness and completeness of received information (D08)
- Matching the output with the need (D09)
- Provide understandable and practical output (D10)
- Agility and speed of response (D11)
- Affordable (D12)

The twelve final indicators were given to the experts and it was decided to be weighted by them. The experts had to assign a number between one and four to each of these indicators. The number one means low importance, the number two means medium importance, the number three means high importance and the number four means that the indicator is vital. After collecting the opinions of all the experts, the highest number of repetitions of each number (mode) was considered as the weight of that index based on the opinion of the experts. The output of this section is shown in Table1.

Table1- The weight coefficients of the final indicators based on the opinion of experts

Abbreviated Index title	The number of expert votes			
	Weight factor 4	Weight factor 3	Weight factor 2	Weight factor 1
D01	8	4	16	4
D02	16	12	2	2
D03	8	12	8	4
D04	18	10	2	2
D05	18	10	4	0
D06	6	16	2	8

D07	18	8	2	4
D08	12	16	2	2
D09	18	8	6	0
D10	12	16	4	0
D11	11	8	13	0
D12	6	6	9	11

According to Table 1, the following relationship was obtained as the scoring relationship of observation models.
Observation model score =
4*(D02+D04+D05+D07+D09) + 3*(D03+D06+D08+D10) + 2*(D01+D11) + 1*(D12)

Then, 36 observation models were evaluated by experts based on 12 final evaluation indicators, and the rounded average of their points was considered as the score of each model in each of the indicators. Based on this and by applying the aforementioned scoring relationship, the final score of 36 observation models was obtained, which is shown in Table2.

Table2: Scores of observation models

Num	Model name	Final score obtained
1	Momenizahed model	304
2	Tsakalidis et al model	302
3	Cuhls model	289
4	Andreasson & Bolvede model	275
5	Marangi et al model	267
6	Euroscan horizon scanning steps	261
7	Hines et al model	259
8	Gordon & Glenn model	247
9	Chowdhury model	246
10	STT future observation model in the Netherlands	240
11	Connery observation steps	237
12	Aaker model	233
13	Ilmola-Sheppard & Kuusi model	231
14	Zhang et al model	227
15	Hideg et al model	226
16	Choo model	222
17	Shoemaker et al model	218
18	The observation steps of Cuhls et al	217
19	Amanatidou et al model	206
20	Costa model	202
21	Day and Shomaker model	199
22	Cliff Caleb Merc model	197
23	Dialmrz model	197
24	Moultrie et al model	196
25	The first model of Mendonca et al	191
26	Guion model	187

27	Calderon et al model	174
28	Porter's five forces model	173
29	Saxby et al model	173
30	The monitoring steps of Ernstsen et al	168
31	Grunig & Kuhn model	154
32	The second model of Mendonca et al	153
33	Slaughter model	148
34	Juhari & Stephens model	147
35	Quest observation model	133
36	Khazaei model	123

Conclusion

Observation models have been used in various projects and organizations, and there is no doubt about their high importance. In the present study, an attempt was made to identify the models with strengths in each index by evaluating 36 existing observation models based on different indicators from the perspective of experts, so that researchers can take advantage of this in various researches and projects and in designing their desired observation model.

In fact, what distinguishes this research from other researches in the field of observation models is that in this research, the goal of designing an observation model for a specific problem was not, but an attempt was made to identify a large number of observation models available inside and outside by examining many reliable sources and based on various indicators and based on the opinion of experts, their characteristics, strengths and weaknesses should be identified and explained. In addition, by benefiting from the views of many experts, the weight and importance of each indicator in an observation model is extracted and based on that, a relationship for scoring observation models is presented and 36 existing observation models are scored based on this relationship. Based on this, this research has made the path smoother for researchers who intend to design an observation model for a specific problem or project and has made it easier for them; Because they can know the strengths of other observation models by referring to the output of this work and use one or a combination of several observation models in the design of their desired model based on their needs.

References

Adema. K. L. & Roehl, W. S. (2010) “Environmental Scanning the Future of Event Design", International Journal of Hospitality Management, 29, 199-207.

Albright Kendra S. (2004), “Environmental Scanning: Radar for Success”, Information Management Journal, 38 (3).

Amanatidou, E., Butter, M., Carabias, V., Konnola, T., Leis, M., Saritas, O., Schaper-Rinke, P., van Rij, V. (2012) “On Concepts and Methods in Horizon

Scanning: Lessons from Initiating Policy Dialogues on Emerging Issues", Science and Public Policy, 39(2): 208–221.

Andreasson, E., & Bolvede, N. (2022). Keeping up with the environment: A method for environmental scanning towards sustainability strategies for construction client.

Bengston, D. N. (2013) "Horizon scanning for environmental foresight: A review of issues and approaches", United States Department of Agriculture, Forest Service, Northern Research Station.

Bishop, P. (2009) "Horizon Scanning, why is it so hard?", Retrieved from http://www.law.uh.edu/faculty/thester/courses/Emerging%20Tech%202011/Horizon%20Scanning.pdf

Blackman Deborah A & Henderson Steven (2004), "How foresight creates unforeseen futures: the role of doubting", Futures, 36 (2).

Brown, A., & Weiner, E. (1985). Super managing: How to harness change for personal and organizational success. New York: Mentor.

Calderon, A., Garner, D., Palermo, J., & Tangas, J. (2003). Environmental Scanning Guide. RMIT University-Institutional Research Consultancy Unit.

Calof, J. and Smith, J. (2010) "the Integrative Domain of Foresight and Competitive Intelligence and Its Impact on R&D Management", R&D Management, 40: 1, 9-31.

Choo, C. W. (2001) "Environmental scanning as information seeking and organizational learning", Information Research, 7(1), 1-7.

Choo, C. W. (2003). The art of scanning the environment. Reframing environmental scanning, 7.

Chowdhury, T. D. (2021). Theory Development and Validation of The AHSWSMD Active Horizon Scanning Weak Signal Mining and Decisioning Framework (Doctoral dissertation, Alliance University).

Connery, D. (2012) "Horizon Scanning: Bringing strategic insight to national security policymaking", Occasional Paper, (5).

Coates, J. (1985). Issues Identification and Management: The State of the Art of Methods and Techniques.