Evaluating User Expectations and Satisfaction with the Islamic World Science Citation Center (ISC) Services: An Application of the Kano Model

Saeed Farsi[1] , Sedigheh Mohammadesmail*[2]
Fahimeh Babalhavaeji[3], Fatemeh Nooshinfard[4]

Received Date:03/11/2025 Accepted Date:15/12/2025
Pp: 54-70

Abstract

This study aimed to identify the expectations and satisfaction levels of PhD students in Humanities at Shiraz University regarding the services of the Islamic World Science Citation Center (ISC), utilizing the Kano model.

In terms of purpose, this study is applied; in terms of nature, it is exploratory; and regarding data collection, it is a descriptive-survey research. The statistical population consisted of all PhD students enrolled in the Humanities faculties of Shiraz University (N=528), with a sample size of 265 participants. The data collection tool was a researcher-made, dual-query questionnaire based on the Kano model. Its face and content validity were confirmed by experts in Library and Information Science, and its reliability was verified using Cronbach's alpha coefficient (α=0.85). The collected data were analyzed using Excel and SPSS software.

Among the 15 expectations examined, respondents categorized four expectations as Basic (Providing journal impact factors, providing citation information, providing view and download counts for each article), five expectations as Performance (Providing journal information by subject, holding online training workshops, providing information on reputable conferences, providing lists of highly-cited authors, and providing full-text articles for download), and six expectations as Attractive (Introducing universities and research institutions in Islamic countries and their contact details, introducing accredited journals for publishing articles derived from PhD theses, providing online expert support, showcasing the scientific output of PhD students in Islamic countries, holding in-person training workshops, and providing abstracts of foreign-language articles in Persian.

(It is essential for the managers of the ISC to understand the expectations and gauge the satisfaction of their student users. It is recommended that future service development plans and revisions take into account the full spectrum of these user expectations (Basic, Performance, and Attractive).

Keywords: Expectations, Users, Students, Graduate Education, Islamic World Science Citation Center (ISC), Kano Model.

[1]- PhD Candidate in Information Science; Department of knowledge and Information Science,slamic Azad University, Research Branch, Tehran, Iran.

[2]- Associate Professor, Department of Knowledge and Information Science, Science and Research Branch, Islamic Azad University, Tehran, Iran.

[3]- Department of Knowledge and Information Science. Science and Research Branch, Islamic Azad University. Tehran, Iran.

[4]- Associate Professor, Department of Knowledge and Information Science, Science and Research Branch, Islamic Azad University

* Corresponding Author: Sedigheh Mohammadesmail Email: m.esmaeil2@gmail.com

Introduction

The idea of establishing a citation system in the Islamic Republic of Iran was proposed in the 2000s (1380s AH). One of the initial prototypes was the proposed "Iranian Science Citation Index" (Farsi, 2001). The Islamic World Science Citation Center (ISC) was established in 2008 as the third independent international citation system after Scopus and the ISI (now part of Clarivate Analytics since 2016), tasked with evaluating the scientific and research performance of universities and research institutions in 57 Islamic countries (Islamic World Science Citation Center, 2017). Its primary missions include enabling the identification and analysis of the impact of scientific publications, developing information resources, creating comprehensive databases, providing citation reports to users (Mehrad, 2013), and ranking universities and research institutions in Islamic countries (University Rankings, 2019).

The current century can be termed the age of knowledge and wisdom, an era where scientific output is the primary tool for knowledge transfer. A significant share of knowledge management and dissemination falls upon information databases. Among these, citation databases not only provide bibliographic and general information about scientific works but also evaluate their citations, introducing prominent scientific works and leading journals in various scientific fields worldwide. These databases serve users from diverse backgrounds, making attention to their expectations and satisfaction levels critically important.

Expectations and satisfaction are closely interrelated. Expectations are perspectives and a form of belief (Hass, 1999). Satisfaction is the outcome of consuming a product or service that the user expects to receive, a pleasant state induced after service delivery. It is a feeling resulting from the evaluation of received services, based on the user's expectations and perception of the service. Every user has expectations from the received service, and if their perception of the service falls short of these expectations, they will be dissatisfied (Zivyar, Rezaei, & Nargesian, 2012). According to Abbott (1996), one crucial aspect of organizational performance evaluation is considering user satisfaction levels. Expectations are not always precisely predictable, and focusing solely on organizationally preset expectations can lead to dissatisfaction because user expectations are constantly evolving. If an organization makes claims through advertising, mission statements, etc., and creates expectations among its users but fails to fulfill them in practice, it sows the seeds of dissatisfaction.

Given its defined missions, the ISC, like other citation databases, serves users from various academic levels. Paying attention to their expectations and satisfaction levels seems essential after more than a decade since its official launch.

In today's information environment, PhD students are directed by their supervisors towards citation databases to fulfill part of their research needs and select the most highly-cited scientific information. In the current competitive landscape, information databases—whether offering services for profit or non-profit—must adapt their service delivery methods according to users' numerous and constantly changing needs and establish close connections with them.

Kotler and Keller (2019) noted that modern organizations face two phenomena: "hyper-competition" and "increased choice for customers." With the advancement of new technologies, service organizations, including the ISC, are no exception. In this digital age, user satisfaction has become a critical indicator for the survival and competitiveness of information institutions. Studies show that acquiring a new user costs five to twenty-five times more than retaining a satisfied one (Reichheld, 1996). Therefore, investing in understanding and enhancing user satisfaction is not only a desirable strategy but an economic necessity for information databases like the ISC.

Continuously investigating user expectations of the ISC is of paramount importance because users are the sole justification for these databases' existence. Without considering their expectations and satisfaction levels, the very philosophy, establishment, and development of an information database become meaningless and economically unjustifiable. Consequently, managers of service organizations need to understand how services impact user satisfaction (Finn, 2011). Every organization strives to meet user expectations to gain their satisfaction using specific strategies. This depends on the organization's creative power to satisfy users by introducing innovative ideas in its products or services (Žužnik Rotar & Kozar, 2017).

Assessing user satisfaction is a primary goal for any organization (Garibi, Gutierrez, & Figueroa, 2013). When examining customer (user) opinions, between the two general approaches of objective and subjective, the subjective approach—which is theoretical or conceptual—is used directly to measure the fulfillment of expectations and satisfaction and holds greater validity than objective methods (Maleki & Darabi, 2008; Sadeghi Shahdani, Tabatabaei Mazdabadi, & Alizadeh, 2013). Previous research has employed various methods to investigate and measure the fulfillment of expectations and user satisfaction in information centers. For instance, Bugs and Kleiner (1996) and Roslah and Zainad (2007) used the SERVQUAL model. LibQUAL was used by Thompson, Cook, and Heath (2003), and the Kano model has been utilized in numerous studies, examples of which will be mentioned. The Kano model, developed by Noriaki Kano in the 1980s, provides a framework for understanding and categorizing product or service features based on how they impact customer satisfaction. This model classifies customer expectations into five categories: 1. Basic Requirements (Must-be): Features whose absence causes severe dissatisfaction, but whose presence is taken for granted and does not increase satisfaction. 2. Performance Requirements (One-dimensional): Features where customer satisfaction increases linearly with their quality and extent of provision. 3. Attractive Requirements (Attractive): Unexpected features whose presence delights and highly satisfies users, but whose absence does not cause dissatisfaction. 4. Indifferent Requirements (Indifferent): Features whose presence or absence has no significant impact on user satisfaction. 5. Reverse Requirements (Reverse): Features whose presence causes dissatisfaction and whose absence leads to satisfaction (Kano, Seraku, Takahashi, & Tsuji, 1984). Using this model allows organizations to optimally focus their resources on attractive and performance features that most

significantly impact user satisfaction, rather than treating all features equally. A recent study by Mikaeili et al. (2022) also showed that applying the Kano model in evaluating digital library services can effectively prioritize user needs. Given the main objective of the present study, the Kano model was used as the framework for identifying the expectations of PhD students in Humanities at Shiraz University and investigating their satisfaction with the ISC.

Whenever new technology emerges globally, part of the research shifts towards investigating user satisfaction with that technology. User satisfaction with an information database and the search and retrieval process is a primary goal in designing and developing these databases (Fahimnia & Goodarziyan, 2014). Given the advanced development of modern information storage and retrieval systems and the remote access to information provided by search engines, evaluating user satisfaction should be the primary objective in organizing any database (Garibi, Gutierrez, & Figueroa, 2013). User satisfaction is a subjective variable and can be influenced by various factors, including system effectiveness, efficiency, user effort, and user characteristics and expectations, all of which must be considered in discussions of information retrieval satisfaction (Al-Maskari & Sanderson, 2010).

Zhu & et al. (2010) emphasized the risks associated with the late discovery of user expectations, requirements, desires, and preferred features, arguing that managers must consider user expectations during the design, development, and introduction stages of a product or service and be aware of their satisfaction and dissatisfaction levels to avoid risks such as redesign, delayed service delivery, incurring additional costs, wasting financial and human resources, and losing time. Hussain, Mkpojiogu, and Kamal (2015) believe that providing products and services with features users enjoy is attractive to them and is considered part of perceived quality. Therefore, considering user expectations even during the design, redesign, and introduction of a new service leads to cost savings and increased user satisfaction upon delivery. Mkpojiogu and Hashim (2016) also argue that user-perceived satisfaction with a software system cannot be neglected. Attention to satisfaction is a determining factor for organizational success (Zivyar, Ziaei, & Nargesian, 2011).

Despite over a decade of operation of the ISC and its key role in the scientific landscape of Islamic countries, few studies have specifically explored the expectations of student users using analytical frameworks like the Kano model. Most previous research has relied on traditional satisfaction measurement methods. This study, by employing the Kano model, seeks to fill this gap and provide a deeper, more practical analysis to aid the strategic planning and service development of the ISC. Accordingly, understanding the expectations and satisfaction levels of PhD students in Humanities at Shiraz University is the main issue of this research. Therefore, aligned with the defined objectives, the research questions are:

Research question

Into which categories of the Kano model (Basic, Performance, or Attractive requirements) do the expectations of PhD students in Humanities at Shiraz University from the ISC fall?

What is the satisfaction level of PhD students in Humanities at Shiraz University with the performance of the ISC?

Methodology

This study is applied in purpose, exploratory in nature, and employs a descriptive-survey method for data collection. The foundational step in applying the Kano model involves the discovery of desired customer prerequisites through an exploratory approach (Matzler & Hinterhuber, 1998).The Kano model is characterized as a qualitative, interpretive, non-linear, and fundamental methodology (Dominici, Palumbo, & Basile, 2015). Originally proposed by Kano et al. (1984) as a theory for product development and enhancing consumer loyalty, the model's conceptual origins can be traced back to Herzberg's Two-Factor Theory on motivation and hygiene (Madic & et al., 2019).The insights derived from this model empower organizational management to conduct a thorough analysis of deficiencies. By establishing definitive relationships between key customer requirements, management can make strategically informed decisions (Schaffeld, 2016). A significant strength of the Kano model is its generalizability to normal situational conditions (Coleman, 2015), and it provides a direct illustration of the relationship between consumer loyalty and specific quality components (Zhu & et al., 2010). Also known as the Attractive Quality theory, this model defines quality characteristics based on the correlation between the level of quality execution and subsequent consumer loyalty. It effectively determines the degree to which a quality component influences the customer's perception and their overall loyalty (Lai & Wu, 2011).The Kano model categorizes customer requirements into the following distinct types: Basic Requirements (Must-be): These are fundamental prerequisites considered essential by customers. Their presence is taken for granted and does not increase satisfaction; however, their absence causes significant dissatisfaction. They represent the minimum service standard an organization must provide (Taib, Iteng, & Lazim, 2018; Madic et al., 2019). Performance Requirements (One-dimensional): These are typically explicitly demanded by customers and relate directly to standard goods and service performance (Taib & et al., 2018; Madic & et al., 2019). Customer feedback on these attributes is often termed the "Voice of the Customer," as users are readily able to articulate their expectations, thereby providing direct suggestions for organizational improvement (Mehragan & Ghasemi, 2002). Attractive Requirements (Attractive): These features are unspoken and unexpected by customers. Their fulfillment leads to a disproportionate level of delight and exceptional satisfaction, while their absence does not cause dissatisfaction. Indifferent Requirements (Indifferent): For this category, users are ambivalent. The fulfillment or non-fulfillment of these needs has no significant effect on increasing or decreasing their satisfaction levels (Li, Lin, & Wang, 2011). Reverse Requirements (Reverse): The presence of these attributes actually

causes customer dissatisfaction, whereas their absence leads to satisfaction (Bagheri, Sharif, & Taheri, 2017). For greater clarity, the structural relationships of these categories within the Kano model are illustrated in Figure 1.

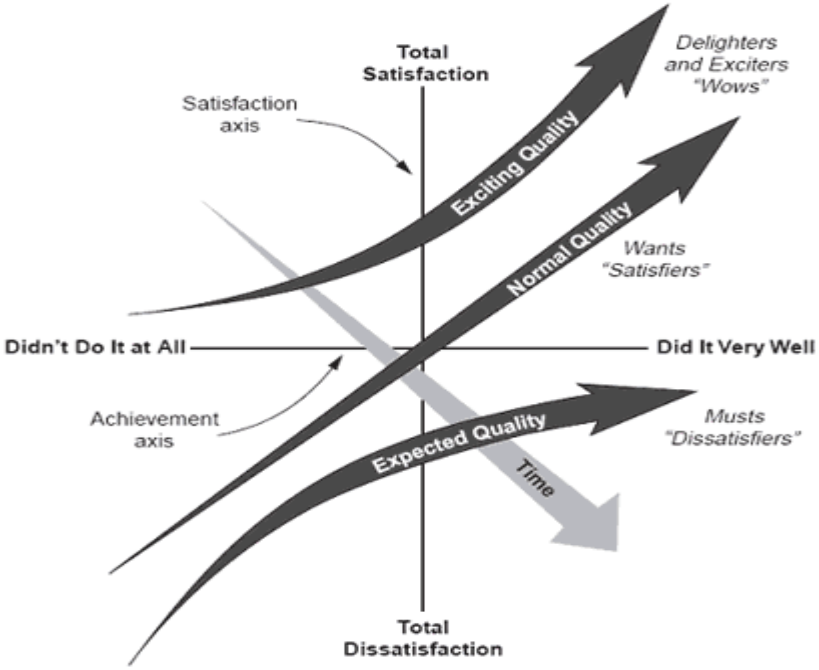

Figure 1 - The Kano Model (Shahin & Salehzadeh, 2011)

According to Figure 1, customer needs are divided into five categories, all displayed on a two-dimensional graph. The highest point on the vertical axis (Y) represents maximum customer satisfaction/delight, and the lowest point represents customer dissatisfaction. The horizontal axis (X) indicates the degree of fulfillment of the desired quality requirement. The right side of the horizontal axis (Quadrants 2 & 4) represents where expected customer wants are supplied, and the left side (Quadrants 1 & 3) indicates their absence in the product or service. The intersection of the vertical and horizontal axes represents the point where the customer is in a state of equilibrium regarding satisfaction and dissatisfaction (Taherikia, Fakharian, & Lajevardi, 2011).

The ultimate goal of using the Kano model in this research was to provide an evaluation tool for identifying the expectations of the studied users and measuring their satisfaction with the services of the Islamic World Science Citation Center (ISC). Initially, using semi-structured interviews with 11 volunteer PhD students in Humanities at Shiraz University – according to Hauser and Clausing (1988), interviewing 10 to 20 customers identifies approximately 80% of their requirements – the desired items for developing the Kano-based questionnaire were identified.

To achieve the research objective in the second step, a researcher-made questionnaire based on the Kano model was prepared. It consisted of 30 paired questions: 15 functional (positive) and 15 dysfunctional (negative). The

questionnaire had two parts: the first part collected demographic information, and the second part contained the target items. The design of the questions was adapted from existing literature on the Kano model with minor modifications. Using a five-point Likert scale, respondents were asked to select one of the provided options. The combination of the functional (positive) and dysfunctional (negative) responses in the Kano survey is matched with the Kano evaluation table. Qualitative components in this table are classified into six states: Attractive, Performance, Basic, Indifferent, Reverse, or Questionable. Accordingly, a 5x5 matrix is formed, offering 25 possible response combinations for the positive and negative questions (Table 1)

Table 1. Evaluation of Responses in the Kano Model

Functional Question (Positive)	Like	Must-Be	Neutral	Live
Like	Q	A	A	A
Must-Be	R	I	I	I
Neutral	R	I	I	I
Live With	R	I	I	I
Dislike	R	R	R	R

A=Attractive, O=One-dimensional (Performance), M=Must-be (Basic), I=Indifferent, R=Reverse, Q=Questionable

Source: (Witell & Löfgren, 2007)

The response evaluation table (Table 1) is used as follows: For example, if a respondent selects "Like" for the positive question and one of "Must-Be," "Neutral," or "Live With" for the negative question, their choice is considered an Attractive (A) requirement. Finally, a classification table of user requirements is formed based on the highest response frequency, recording the number of respondents selecting each option per column.

To assess face and content validity, the questionnaire was reviewed by 10 professors in Library and Information Science. After their confirmation, Cronbach's alpha was used to measure reliability. Analysis yielded an acceptable alpha coefficient of 0.85.

The statistical population consisted of all PhD students enrolled in the Faculties of Literature and Humanities; Economics, Management, and Social Sciences; Law and Political Science; and Education and Psychology during the second semester of 2018-2019 (according to the Vice Chancellor for Education at Shiraz University, totaling 528 students across these four faculties). Using Morgan's table, 225 individuals were selected as the research sample. A total of 269 confirmed questionnaires were distributed among the sample using an available sampling method, with a 20% oversampling to ensure sufficient completed questionnaires. Distribution involved making the questionnaires available for one month (late April to late May 2019) to PhD students visiting

the faculties who were willing to participate. They were requested to complete the questionnaire. After collection and review, 4 incomplete questionnaires were discarded, and 265 correct questionnaires were analyzed using the SPSS statistical software package. Subsequently, Microsoft Excel was used for categorizing the requirements.

Research Findings

The demographic information of the respondents, including frequency distribution and percentages, is presented in Table 2.As shown in Table 2, in terms of gender, the majority of participants were female PhD students (54.23%). Regarding faculty affiliation, the highest overall participation came from the Faculty of Education and Psychology (40.75%), followed by the Faculty of Literature and Humanities (28.30%). Furthermore, the highest participation rate for male PhD students belonged to the Faculty of Economics, Management, and Social Sciences (54.90%).After conducting a total of 15 interviews with professors who had good experience in the field and studied them several times, four main topics and 19 sub-topics in the form of opportunities and challenges were found including.

Table 2.Frequency and Percentage Distribution of Respondents by Gender and Faculty

Facuhty	Female (N)	Female (%)	Male (N)	Male (%)	Total (F&M)	Total (F&M%)
Litreature & Humanities	44	58.66	31	41.34	75	28.30
Ecinomics, management & Sicial Science	23	45.09	28	54.90	51	19.24
Law & Political Science	15	48.38	16	51.62	31	11.69
Education & Psychology	62	57.40	46	42.59	108	40.75
Total	144	54.23	121	45.77	265	100

As shown in Table 3, 40.00% of respondents (106 individuals) reported using the Islamic World Science Citation Center (ISC) permanently. In total, 73.20% of users (194 individuals) are frequent users (permanent and most of the time). Furthermore, 40.75% of respondents (108 individuals) cited "staying informed about the latest research" as their most important reason for using the database. Given this level of engagement, examining the expectations of PhD students in Humanities at Shiraz University from this database is highly important.

Table 3 **- Usage Status and Primary Reasons for Using the ISC Database**

Using the Islamic World Science Citation Center (ISC)

Usage Status	**Female**	**Female(%)**	**Male**	**Male(%)**	**Total (F & M)**	**Total(%)**
Have never used it	0	0.00	0	0.00	0	0.00
I use it constantly	58	54.71	48	45.28	106	40.00
I use it most of the time	54	61.36	34	38.63	88	33.20
I use it sometimes	34	47.88	37	52.11	71	26.79
Total	**146**	**55.09**	**119**	**44.90**	**265**	**100**

Most Important Reason for Using the Islamic World Science Citation Center (ISC)

Most Important Reason for Use	**Female**	**Female(%)**	**Male**	**Male(%)**	**Total (F & M)**	**Total(%)**
To learn about the latest research	57	53.77	51	47.22	108	40.75
To check the status of existing journals	44	59.45	30	40.54	74	27.92
To check university ranking status	32	54.23	27	45.76	59	22.26
To download required articles	13	54.16	11	45.83	24	9.05
Total	**146**	**55.09**	**119**	**44.90**	**265**	**100.00**

Categorizing the Expectations of PhD Students Based on the Kano Model To answer the question, "Into which category of the Kano model's requirements do the expectations of PhD students in Humanities at Shiraz University from the Islamic World Science Citation Center (ISC) fall?", the collected data (described earlier in the Methodology section) were analyzed in Table 4.

The fundamental basis for analyzing the Kano questionnaire is statistical methods and response frequencies (Kano et al., 1984). In the first step, the frequency of responses for each feature across the six categories of the Kano model was calculated. The "Maximum Frequency Rule" was used to determine the final category for each feature. Accordingly, features with the highest frequency in the Must-be (M) category are given the highest priority for service development and maintenance (Azizi & Shafiei Rudposhti, 2012).

In cases where the final categorization was not clear based solely on the maximum frequency (e.g., when frequencies for two categories were close), the priority order rule of I < A < O < M was applied (Sauerwein et al., 1996). This rule implies that, all else being equal, a feature with a higher frequency in M takes priority over O, O takes priority over A, and A takes priority over I. For a more detailed analysis, the second and third highest frequencies for each feature were also considered.

Furthermore, to increase the accuracy of the analysis, the "Modified Mode Index" proposed by Ou, Li, and Gong (2006) was utilized. The formula for this index is as follows:

If (f(A) + f(M) + f(O) > (f(R) + f(Q) + f(I))

Then Final_Category = Category of Max(f(A), f(M), f(O))
Else Final_Category = Category of Max(f(R), f(Q), f(I))

This formula ensures that the final categorization is based on the most important categories affecting satisfaction (A, M, O), unless the sum of responses related to dissatisfaction (R, Q, I) is greater.

The final results from these analyses, showing the classification of the 15 examined features, were presented in the previous section (Table 4).

Table 4: Categorization of User Expectations Based on the Kano Model

PhDStudents' Expectations from the Islamic World Science Citation Center (ISC)	A	M	O	Q	R	I	Total	Category	Satisfaction Coefficient	Dissatisfaction Coefficient	Total Satisfaction
1-Easy and free registration via the website	30	121	93	10	5	6	265	M	0.49	-0.86	-0.37
Frequency Percentages for Item 1	11.3%	45.6%	35.1%	3.8%	1.9%	2.3%	100%				
2-Free and unrestricted access to download article texts	22	99	118	10	9	7	265	O	0.57	-0.88	-0.31
Frequency Percentages for Item 2	8.3%	37.4%	44.5%	3.8%	3.4%	2.6%	100%				
3-Providing citation information for viewed articles	11	130	102	8	4	10	265	M	0.45	-0.92	-0.47
Frequency Percentages for Item 3	4.1%	49.1%	38.5%	3.0%	1.5%	3.8%	100%				
4-Availability of an online specialist for guidance	116	45	83	6	10	5	265	A	0.80	-0.51	0.30
Frequency Percentages for Item 4	43.8%	17.0%	31.3%	2.3%	3.8%	1.9%	100%				
5-Providing the Impact Factor of the desired journal	32	136	80	5	8	4	265	M	0.44	-0.86	-0.42
Frequency Percentages for Item 5	12.1%	51.3%	30.2%	1.9%	3.0%	1.5%	100%				
6-Providing view and download	42	121	88	4	7	3	265	M	0.52	-0.83	-0.31

counts for each article											
Frequency Percentages for Item 6	15.8 %	45.7 %	33.3 %	1.5 %	2.6 %	1.1 %	100 %				
7- Providing abstracts of foreign language articles in Persian	105	60	90	2	3	5	265	A	0.62	-0.52	0.10
Frequency Percentages for Item 7	39.6 %	22.6 %	34.0 %	0.8 %	1.1 %	1.9 %	100 %				
8-Holding in-person training workshops by ISC experts upon university entry	106	69	81	3	4	2	265	A	0.72	-0.58	0.14
Frequency Percentages for Item 8	40.0 %	26.0 %	30.6 %	1.1 %	1.5 %	0.8 %	100 %				
9- Introducing approved journals suitable for publishing dissertation articles	121	44	90	1	3	6	265	A	0.81	-0.51	0.30
Frequency Percentages for Item 9	45.7 %	16.6 %	33.9 %	0.4 %	1.1 %	2.3 %	100 %				
10- Conducting online training workshops by ISC	32	87	136	6	1	3	265	O	0.65	-0.86	-0.21
Frequency Percentages for Item 10	12.1 %	32.8 %	51.3 %	2.3 %	0.4 %	1.1 %	100 %				
11- Providing information on scientific output of PhD students in Islamic countries	112	61	87	1	2	2	265	A	0.76	-0.56	0.20
Frequency Percentages for Item 11	42.2 %	23.0 %	32.8 %	0.4 %	0.8 %	0.8 %	100 %				
12- Providing information on journals covered by ISC, categorized by subject and country	18	99	138	2	1	7	265	O	0.60	-0.90	-0.30
Frequency Percentages for Item 12	6.8%	37.3 %	52.1 %	0.8 %	0.4 %	2.6 %	100 %				

13- Introducing universities and research institutions in Islamic countries with contact details and subject categorization	124	43	92	1	3	2	265	A	0.83	-0.52	0.31
Frequency Percentages for Item 13	46.8 %	16.2 %	34.7 %	0.4 %	1.1 %	0.8 %	100 %				
14- Providing information on reputable domestic and Islamic countries' conferences	32	91	124	6	7	5	265	O	0.62	-0.85	-0.23
Frequency Percentages for Item 14	12.1 %	34.3 %	46.8 %	2.3 %	2.6 %	1.9 %	100 %				
15- Providing information on the most cited authors in the relevant field	39	90	121	4	6	5	265	O	0.63	-0.83	-0.20
Frequency Percentages for Item 15	14.7 %	33.9 %	45.7 %	1.5 %	2.3 %	1.9 %	100 %				

As observed in Table 4, out of the 15 requirements examined, six were classified as Attractive Requirements (A). Among these, the feature "Introducing universities and research institutions in Islamic countries" (Row 13) had the highest frequency percentage in this category, at 46.8%.

To better understand the overall priorities of the users, the weighted average of expectations based on the three main Kano categories (Basic, Performance, Attractive) was calculated using the formula proposed by Azizi and Shafiei Rudposhti (2012) and Najjari et al. (2017). The results of this calculation are presented in Chart 1.

This deeper qualitative analysis reveals subtle insights. For instance, the feature "Free and unrestricted access to full-text articles for download" (Row 2 in Table 4), while formally categorized as a Performance Requirement (O), shows a significant tendency towards Basic Requirements (M) based on the weighted average. This indicates a shift in user perception; given the ISC's public funding and comparison with other national information databases (such as the Scientific Information Database - SID), users have developed the expectation for free and unrestricted access to full-text articles as a fundamental prerequisite.

Satisfaction Level of PhD Students with the Performance of the ISC

To determine the satisfaction level of PhD students in Humanities at Shiraz University with the performance of the Islamic World Science Citation Center

(ISC), after calculating the frequencies, the Satisfaction Index (SI) and Dissatisfaction Index (DSI) of the respondents were calculated using formulas (1) and (2), respectively, and the Total Satisfaction Index (TSI) was calculated using formula (3) (Sauerwein, 1999).

Quantitative Indices for Satisfaction Analysis:

Satisfaction Index (SI): This index ranges from 0 to 1. A value closer to 1 indicates a strong effect of that feature on increasing user satisfaction when fulfilled. A value closer to 0 signifies a low impact on increasing satisfaction.

Dissatisfaction Index (DSI): This index ranges from -1 to 0. A value closer to -1 indicates a strong effect of that feature on increasing user dissatisfaction when not fulfilled. A value closer to 0 means that the absence of that service does not create significant dissatisfaction (Vazifehdoust & Atallahee, 2007; Mkpojiogu & Hashim, 2016).

In simpler terms, these coefficients reveal whether fulfilling an expectation leads to user delight or merely prevents user dissatisfaction. Since users have diverse needs, a single feature can affect their satisfaction in different ways. For an accurate assessment, the average effect of each requirement on the overall user satisfaction, calculated using formula (3) or the 'Total Satisfaction Index (TSI)', must be considered (Gharibnavaz & Zomorodian, 2011; Kalini Mamaghani & Izadpanah, 2012).

Accordingly, the quantitative results from the Kano questionnaire analysis, indicating the level of satisfaction and dissatisfaction of the respondents with the performance of the ISC, are presented in Table 4 (columns for 'Satisfaction Coefficient', 'Dissatisfaction Coefficient', and 'Total Satisfaction').

(Referred Formulas):

1): SI = (A + O) / (A + O + M + I) 2): DSI = -1 * (M + O) / (A + O + M + I)

3): TSI = (A + O - M - I) / (A + O + M + I) OR TSI = SI + DSI

Discussion and conclusion

This study, employing the Kano model, explored the expectations and satisfaction levels of PhD students in Humanities at Shiraz University regarding the services of the Islamic World Science Citation Center (ISC). The analysis of 15 features provides a strategic roadmap of user priorities for the database managers. The key findings are as follows:

Basic Requirements (M): Four features, including "Easy and free registration," "Providing citation data," "Providing journal Impact Factors," and "Providing view/download statistics," were classified in this category. The high dissatisfaction coefficients (close to -1) for these features (Table 4, Rows 1, 3, 5, 6) clearly indicate that these services are non-negotiable prerequisites for users. The ISC's acceptable performance in meeting these basic needs has prevented widespread dissatisfaction. However, excessive investment in these already satisfactorily met features will yield diminishing returns.

Performance Requirements (O): Five features, including "Free and unrestricted article download," "Holding online training workshops," and "Providing journal information by subject," fell into this group (Table 4, Rows 2, 10, 12, 14, 15). The balanced satisfaction and dissatisfaction coefficients for these attributes suggest that their improvement has a linear and direct impact on

user satisfaction. Focusing on these factors will significantly enhance the database's success and competitiveness.

Attractive Requirements (A): Six features, such as "Introducing universities and research institutions," "Online expert support," and "Introducing accredited journals for publication," were identified as attractive factors (Table 4, Rows 4, 7, 8, 9, 11, 13). The high satisfaction coefficients (close to 1) and near-zero dissatisfaction coefficients indicate that delivering these features can generate delight and maximum satisfaction, fostering user loyalty. These elements are the key differentiators for ISC and crucial for achieving an "exceptional user experience."

Managerial and Research Implications:

Aligning with Rezainia and Zandian's (2007) view on creating emotional satisfaction through new technologies and Zhu et al.'s (2010) warnings about the risks of delayed attention to user expectations, this study emphasizes the need for ISC managers to continuously monitor evolving user expectations. As Mkpojiogu and Kamal (2015) noted, providing delightful services enhances attractiveness.

Echoing Garibi et al.'s (2013) stance that user satisfaction is the primary goal of any information organization, and considering the subjective and dynamic nature of this variable (Al-Maskari & Sanderson, 2010), continuous satisfaction assessment is a strategic necessity for ISC.

The Kano model empowers managers to optimally allocate limited resources by first ensuring Basic requirements are met, then improving Performance requirements, and finally investing in innovation for Attractive requirements. In the current competitive landscape, a "user-centric" approach is the most beneficial strategy for ensuring the longevity and growth of the Islamic World Science Citation Center. Future studies are recommended to conduct comparative analyses of ISC user expectations with other international citation databases and to implement periodic satisfaction assessments with larger samples.

References

Abbott, M. (1996). The measurement of customer satisfaction and its role in performance measurement. Managing Service Quality: An International Journal, 6(4), 44–49.

Al-Maskari, A., & Sanderson, M. (2010). A review of factors influencing user satisfaction in information retrieval. Journal of the American Society for Information Science and Technology, 61(5), 859–868. https://doi.org/10.1002/asi.21300

Azizi, Sh., & Shafiei Rudposhti, M. (2012). Application of the Kano model in identifying and prioritizing bank service quality factors: A case study. Business Management Perspectives, 11(3), 127-147. (Original work in Persian)

Bagheri, M., Sharif, M., & Taheri, M. (2017). Application of the Kano model in identifying the educational needs of students. Journal of Educational Innovations, 16(3), 145-166. (Original work in Persian)

Bugs, G., & Kleiner, B. H. (1996). Using SERVQUAL to measure information service quality. Journal of Services Marketing, 10(2), 44–56.

Coleman, S. (2015). The Kano Model: A review of its application in marketing. Journal of Marketing Management, 31(15-16), 1658–1680. https://doi.org/10.1080/0267257X.2015.1052936

Dominici, G., Palumbo, F., & Basile, G. (2015). The Kano model and the experience economy. The TQM Journal, 27(5), 514-530. https://doi.org/10.1108/TQM-04-2015-0050

Fahimnia, F., & Goodarziyan, A. (2014). Investigating factors affecting user satisfaction with scientific databases. Research on Information Science & Public Libraries, 20(1), 89-110. (Original work in Persian)

Farsi, J. (2001). Proposed plan for the Iranian Science Citation Index. Iran Research Institute of Science and Technology. (Original work in Persian)

Finn, A. (2011). The impact of service quality on customer satisfaction in the public sector. International Journal of Public Sector Management, 24(5), 446-456. https://doi.org/10.1108/09513551111147179

Garibi, M., Gutierrez, E., & Figueroa, A. (2013). Evaluating user satisfaction of information systems: A review study. Information Management Journal, 8(3), 15-34. (Original work in Persian)

Gharibnavaz, M. R., & Zomorodian, G. (2011). A hybrid approach of Kano model and gap analysis for information systems success evaluation. Journal of Information Technology Management, 3(1), 1-20. (Original work in Persian)

Hass, R. W. (1999). Industrial marketing management. Dryden Press.

Hauser, J. R., & Clausing, D. (1988). The house of quality. Harvard Business Review, 66(3), 63–73.

Hussain, A., Mkpojiogu, E. O. C., & Kamal, F. M. (2015). The role of usability and functionality in user satisfaction for mobile health applications. Journal of Theoretical and Applied Information Technology, 81(3), 556-563.

Islamic World Science Citation Center. (2017). About us. Retrieved from [URL ISC]

Kalini Mamaghani, N., & Izadpanah, M. (2012). Prioritizing the improvement of e-banking quality services using Fuzzy Kano model: A case study of Saman Bank. Journal of Business Management, 4(13), 1-20. (Original work in Persian)

Kano, N., Seraku, N., Takahashi, F., & Tsuji, S. (1984). Attractive quality and must-be quality. The Journal of the Japanese Society for Quality Control, 14(2), 39–48.

Kotler, P., & Keller, K. L. (2019). Marketing management (15th ed.). Pearson.

Lai, X., & Wu, Y. (2011). A hybrid approach using Kano model and QFD for improving service quality. In 2011 IEEE 18th International Conference on Industrial Engineering and Engineering Management (pp. 1282–1286). IEEE.

Li, Y., Lin, Z., & Wang, Y. (2011). A Kano model based analysis of customer needs for product development. In 2011 IEEE 18th International Conference on Industrial Engineering and Engineering Management (pp. 1277–1281). IEEE.

Madic, M., Antucheviciene, J., Radovanovic, M., & Petkovic, D. (2019). Determination of service quality elements in higher education using Kano model and AHP method. Sustainability, 11(22), 6316. https://doi.org/10.3390/su11226316

Maleki, M., & Darabi, A. (2008). Comparison of objective and subjective methods in measuring customer satisfaction. Industrial Management Studies, 6(15), 77-96. (Original work in Persian)

Matzler, K., & Hinterhuber, H. H. (1998). How to make product development projects more successful by integrating Kano's model of customer satisfaction into quality function deployment. Technovation, 18(1), 25–38. https://doi.org/10.1016/S0166-4972(97)00072-2

Mehragan, M. R., & Ghasemi, A. (2002). Quality function deployment and Kano model: Two complementary techniques for identifying customer needs. Management Research in Iran, 6(3-4), 1-22. (Original work in Persian)

Mehrad, J. (2013). Citation databases and scientometric indicators. Samt. (Original work in Persian)

Mikaeili, N., Fallah, V., & Ghasemi, S. (2022). Analyzing user expectations of the University of Tehran digital library using the Kano model. Library and Information Science Research, 12(1), 45-66. (Original work in Persian)

Mkpojiogu, E. O. C., & Hashim, N. L. (2016). Understanding the relationship between perceived usability and user satisfaction in software systems. Journal of Engineering and Applied Sciences, 11(4), 785-790.

Ou, Y., Li, Z., & Gong, B. (2006). A modified mode method for categorizing quality attributes in the Kano model. In 2006 IEEE International Conference on Management of Innovation and Technology (Vol. 2, pp. 956–960). IEEE.

Reichheld, F. F. (1996). The loyalty effect: The hidden force behind growth, profits, and lasting value. Harvard Business School Press.

Rezainia, M., & Zandian, F. (2007). The impact of using online databases on user satisfaction in academic libraries. Library and Information Science, 10(1), 55-72. (Original work in Persian)

Roslah, M. Y., & Zainad, N. H. (2007). Measuring service quality in academic libraries using SERVQUAL. Journal of Library and Information Science, 12(1), 45-60.

Sadeghi Shahdani, M., Tabatabaei Mazdabadi, S. M., & Alizadeh, M. (2013). Evaluating user satisfaction with digital library services using a subjective approach. Library and Information Science Quarterly, 16(4), 123-145. (Original work in Persian)

Sauerwein, E. (1999). The Kano model: How to delight your customers. In Proceedings of the 10th International Working Seminar on Production Economics, Igls, Austria (Vol. 1, pp. 313–327).

Schaffeld, K. (2016). Application of the Kano model for requirements analysis in software engineering. In 2016 IEEE 24th International Requirements Engineering Conference (RE) (pp. 364–369). IEEE.

Shahin, A., & Salehzadeh, R. (2011). Developing the Kano model: A new approach for classifying product and service attributes. Industrial Management Journal, 3(7), 55-70. (Original work in Persian)

Taherikia, M., Fakharian, A., & Lajevardi, M. (2011). Identifying and prioritizing customer requirements using Kano model and quality function deployment (QFD) approach: A case study in automotive industry. Journal of Industrial Engineering, 45(2), 193-205. (Original work in Persian)

Taib, C. A., Iteng, R., & Lazim, N. A. (2018). Integrating Kano model and SERVQUAL for service quality improvement: A case study in higher education institution. International Journal of Engineering & Technology, 7(3.25), 299-303.

Thompson, B., Cook, C., & Heath, F. (2003). The LibQUAL+ gap measurement model: A review and application. Library & Information Science Research, 25(2), 145–162. https://doi.org/10.1016/S0740-8188(03)00004-8

Vazifehdoust, H., & Atallahee, M. (2007). Measuring service quality in the insurance industry using the Kano model. Journal of Management Sciences, 2(7), 87-110. (Original work in Persian).

University Rankings of Islamic Countries. (2019). Introduction. Retrieved from [URL ISC Ranking]

Witell, L., & Löfgren, M. (2007). Classification of quality attributes. Managing Service Quality: An International Journal, 17(1), 54-73. https://doi.org/10.1108/09604520710720665

Zhu, X., Wang, J., & Li, Y. (2010). The risks of late discovery of user requirements in software development. Journal of Software Engineering and Applications, 3(12), 1155-1162.

Zivyar, A., Ziaei, M., & Nargesian, A. (2011). Measuring the quality of university library services using the LibQUAL model. Academic Librarianship and Information Research, 45(2), 1-20. (Original work in Persian)

Zivyar, A., Rezaei, M., & Nargesian, A. (2012). Investigating the relationship between service quality and customer satisfaction in university libraries. Library and Information Science Studies, 4(8), 45-66. (Original work in Persian)

Žužnik, M., Rotar, L., & Kozar, M. (2017). The role of creativity in achieving user satisfaction. Journal of Business Research, 70, 345-353. https://doi.org/10.1016/j.jbusres.2016.08.014

Websites