The effect of technology-task fit on the perceived performance of users of public libraries in Khuzestan given the mediating role of perceived ease

Sedigheh Jalali[1]

[1] *MA. IT management.Department of Information Technology, Faculty of Humanities, Science and ResearchAhwaz Branch, Islamic Azad University, Ahwaz, Iran.*

sedigheh1988jalali@gmail.com

Abstract

The present study investigated the effect of technology-task fit on the perceived performance of users of public libraries in Khuzestan given the mediating role of perceived ease. The statistical population of this study included all users of public libraries in Khuzestan. Among them, 410 employees were selected using a convenience sampling method. The study variables were collected using the questionnaire designed for this study and analyzed using the structural equations approach and path analysis in SPSS and LISREL software. In this regard, 204 questionnaires were distributed among the users of the public libraries' information system of Khuzestan. The results revealed that technology-task fit affects the perceived performance and perceived ease of users of public libraries in Khuzestan in using information technology. The effect of perceived ease on perceived performance given the mediating role of perceived ease was rejected.

Keywords: Technology-task fit, Perceived performance, Perceived ease, Public libraries

Introduction

One of the most fundamental uses of information technology is in the service sector. Service industries including banking, insurance, marketing, trade, education, tourism, etc. have greatly used information technology (Arastoo, 2012). Libraries are no exception in this regard and various parts of them are extensively using information technologies (Hajedris, 2021). The most obvious example of using these technologies is using websites as new portals with various services available to users. Developments in technology have provided new opportunities to provide services to users and affected libraries like other growing institutions. They have caused great changes in library services. Technology has increased the libraries' capabilities in providing services to users cost-effectively. Providing electronic services is nowadays an inseparable part of many library services. It has enabled traditional libraries to overcome their time and place limitations (Tsekhmister, et al., 2021). For example, organizations using the Internet and websites can adopt cost-effective methods that make them leading organizations in the market, production, and providing service (Esmailpour, 2016).

Websites are an example of new information technologies to generate income. They include product/service information. Users can acquire the necessary knowledge about the product/service through websites (Etemadi, 2016). Accordingly, managers involved constantly in making decisions to spend money or invest in using this type of technology in their organization should know how useful and effective the use of technology and information systems in the organization is (Tetiana, et al., 2021). It is essential to assess the level of adoption and effect of technologies on libraries. Following an increase in the development of technologies in new organizations, it is essential to pay attention to its impacts and determine its adoption rate by users based on useful theories. Despite the development and expansion of information

technologies in library environments, especially in the area of providing electronic services, determining its impact and adoption rate by users is considered a challenge. Determining the rate of success or failure of basic technology services is based on the technology adoption rate by users and the user community because the process of control and use is primarily done by the technology user. The process of control by the user of new technology means that communication theorists should use the theories that confirm the interactivity of new media (O'Locke, 1998).

One of the outcomes of these changes is that we need theories that emphasize less the impacts of technology and more on the way of using technology (Rahnema Fard, 2015). Since it is essential to examine the factors affecting the users' information-seeking behavior in the use of electronic services for its institutionalization, many theories have been proposed to facilitate the perception of the factors affecting users' behavior in adopting information technology. In this regard, we can refer to the theories proposed by "Davis", "Fishbein and Ajzen", "Taylor and Todd", "Deci and Ryan", "Triandis", "Rogers" and "Bandura." In this regard, different adoption models such as the Davis model, the Utaut model, or the theory of planned behavior have emphasized the issue of users' perception of the technology's usefulness and the ease of its use. Perceived usefulness refers to one's self-confidence concerning the ability to perform the necessary functions of information systems. Perceived ease refers to one's belief in the possibility of successful adaptation to the information system. There are more than public libraries in Khuzestan province and they use every organization's resource planning information system to provide services to clients and develop access to information for the public people. Hence, it is essential to identify the impact of technology-task fit on the perceived performance of users of public libraries in Khuzestan given the mediating role of perceived ease, so planners and managers of the organization can have a clear perspective in the development of the use of information technology in software, hardware, and infrastructure dimensions. Thus, the primary question of the present study is whether technology-task affects the perceived performance of users of public libraries in Khuzestan given the mediating role of perceived ease.

Technology-task fit model

The fit of technology with the task depends on the conformity of new technology with the task supported by the technology. Tasks are actions done by people and convert inputs into outputs. Job characteristics in terms of variety, difficulty, and interdependence can be associated with people's trust in using technology. If people realize that technology helps their performance, they will perceive technology as a useful and significant tool. In organizations, the technology-task fit is the level to which technology can help the employee in doing the work or services (Zarei, 2011). A higher level of fit results in better performance. The technology-task fit refers to the conformance between the characteristics of work, the abilities of employees, and the characteristics of technology in organizations. It refers to the degree that the innovation is compatible with the existing values, past experiences, and perceived needs of the adopters. Perceived mobile fit refers to the degree to which mobile phone innovations are compatible with the behavioral pattern and values, needs, and past experiences of adopters (Zamani, 2016).

The information technology role in libraries

New technology has caused librarians to be known as network experts, information intermediaries, and system designers. Each of these titles represents an aspect of information expertise and the multifaceted transformation that the library profession is going through. Librarians should keep up with the developments and advances in information technology to be the first people to take advantage of new forms of information and networks. This goal is achieved through education and formal education. Library education should take steps to develop communication skills, interpersonal communication skills, exploration skills, specialized subject knowledge, analysis skills, modern information technology skills, flexibility, and foresight in library students (Gholami, 2012). Moreover, the rapid development of information technology, which started years ago, has resulted in its extensive application in various aspects of society. This issue is more evident in libraries and information centers, as information dissemination centers more than other social institutions. Information technology imposes much cost owing to its capability in transforming information transfer methods and optimizing the ways of doing activities in libraries and information centers (Zavaraghi, 2016).

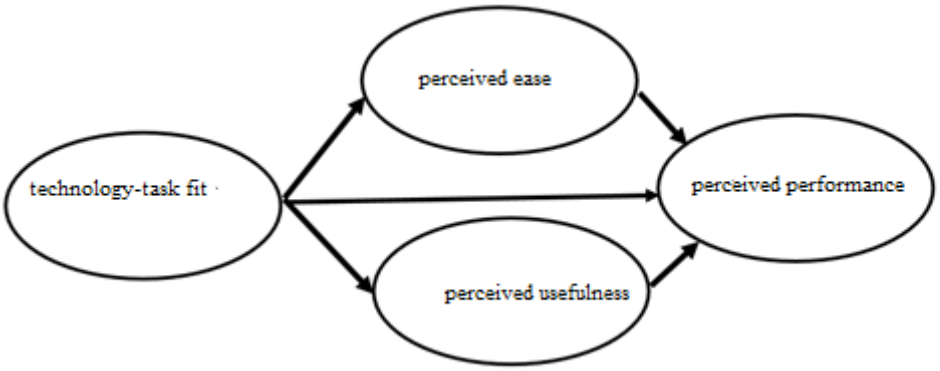

Figure 1- The proposed model of the study

Methods

The present study is applied in terms of aim and descriptive-correlational in terms of method. The statistical population of the study includes the users of public libraries in Khuzestan. According to the statistics obtained from public libraries in Khuzestan, their number is 410. Since the size of most populations is large, it is impossible to perform statistical calculations based on the total members of the population. In such conditions, the researcher selects a sample. The sample should be estimated and selected so it can be representative of the whole population. The sample size of this study was estimated at 204 people using Cochran's formula.

Table 1: The results of Cronbach's alpha test

	Components	Scale and items	Cronbach's alpha
Performance	Performance	38-40	0.74
Ease	ease	41-42	0.85
	Task-technology fit	1-37	0.92

Results

Based on the results, regarding the subjects' gender, 70 (34.3%) were female and 134 (65.7%) were male. Regarding the subjects' age group, 3 (1.5%) were in the age group of less than 20 years, 19 (9.3%) were 21 to 30 years old, 107 (52.5%) were 31 to 40 years old, 66 (32.4%) were 41 to 50 years old, and 9 (4.4%) were 50 years and older. Regarding their employment history, 15 (7.4%) had an employment history of 5 years and less, 122 (59.8%) had an employment history of 6 to 10 years, 29 (14.2%) had an employment history of 11 to 15 years, 15 (7.4%) had an employment history of 16 to 20 years, 23 (11.3%) had an employment history of 21 to 25 years, and 15 (7.4%) had an employment history of 26 years and more. Regarding their employment status, 38 (18.6%) had an official employment status, 120 (58.8%) had a project-based employment status, and 46 (22.5%) had a contractual employment status. Table 2 shows the mean, standard deviation, and minimum and maximum scores of the variables (technology-task fit, perceived ease, and perceived performance) for the subjects.

Table 2: Descriptive results related to model variables of the study (n=204)

Variables	Mean	SD	Min	Max
technology-task fit	3.526	.63366	1.39	4.33
perceived ease	4.220	.77069	1.50	5
perceived performance	3.643	.74684	1.33	5

As shown in Table 2, the mean and standard deviation of the technology-task fit variable are 3.52 and 0.63, the mean and standard deviation of perceived ease are 4.22 and 0.77, and the mean and standard deviation of perceived performance are 3.64 and 0.74, respectively.

Table 3: Descriptive results related to the dimensions of technology-task fit for the sample of employees (n=204)

Variables	Mean	SD	Min	Max
Quality	3.62	.669	1.83	5
Locating/finding capability	3.53	.66	1.80	4.80
Accessibility	3.75	.94	1.50	5
Adaptability	3.27	.802	1.50	4.50
Being timely in providing information	3.85	.97	1.50	5
System reliability	3.51	.887	1	5
Ease of working with the system	3.57	.755	1	5
Communication with the user	3.07	.860	1	5
Complexity of tasks	3.62	.66	1.83	5
Dependency of tasks	3.53	.66	1.80	4.80

As shown in Table 3, regarding the mean and standard deviation of the dimensions of the technology-task fit variable, the mean and standard deviation of the quality are 3.26 and 0.66, the mean and standard deviation of the locating capability are 3.53 and 0.66, the mean and standard deviation of the accessibility are 3.75 and 0.94, the mean and standard deviation of the adaptability are 3.27 and 0.8, the mean and standard deviation of being timely in providing information are 3.85 and 0.97), the mean and standard deviation of the system reliability are 3.51 and 0.88, the mean and standard deviation of the ease of working with the system are 3.57 and 0.75, the mean and standard deviation of the communication with the user 3.07 are 0.86, the mean and standard deviation of the complexity of tasks are 3.62 and 0.66, and the mean and standard deviation of the dependency of tasks are 3.53 and 0.66, respectively .

Table 4: Correlation matrix between variables of the research model in the sample of employees

Row	Research variables	1	2	4
1	technology-task fit	1	**0.537	**0.717
2	perceived ease		1	**0.575
4	perceived performance			1

**0.001<P

As shown in Table 4, all correlation coefficients obtained for the research variables are significant at P<0.01 level.

Table 5 shows the fit indices of the proposed model and the fit indices of the final modified model.

Table 5: Comparison of the fit indices of the proposed model and the modified model

Fit indices	X^2	df	χ^2/df	GFI	AGFI	IFI	TLI	CFI	NFI	RMSEA
Proposed (initial) model	217.628	1	217.62	0.75	-1.47	0.62	-1.41	0.59	0.62	1.03
Final modified model	2.207	1	2.207	0.99	0.94	0.99	0.98	0.99	0.99	0.077

Based on the results presented in Table 5, in the initial proposed model, the value of the root mean square error of approximation (RMSEA) index is 1.03, the value of the Tucker-Lewis index (TLI) is 0.41, and the value of adjusted goodness of fit index (AGFI) is -1.47. They indicate the poor fit of the proposed model. They show that the proposed model should be modified. After applying the modifications, the model was re-tested. The results presented in Table 5 show that in the modified model, the value of the chi-square index (χ2) is 2.207), the value of χ /df is 2.207, the value of goodness of fit index (GFI) is 0.99, the value of adjusted goodness of fit (AGFI) is 0.94, the value of the comparative fit index (CFI) is 0.99, the value of the incremental fit index (IFI) is 0.99, the value of Tucker-Lewis index (TLI) is 0.98, and the value of root mean square error of approximation (RMSEA) is 0.077. They indicate an excellent fit for the modified model. Thus, the modified or final model has a good fit. In the modified model, the direct path of the perceived ease variable to employees' perceived performance was removed. The output of the modified model with AMOS is presented here.

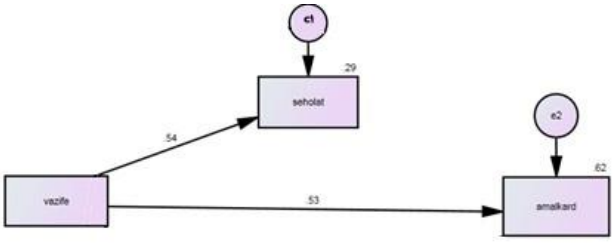

Figure 2: Output in the standard mode of the proposed modified model by AMOS software

Table 6: Structural model: paths and standard coefficients related to direct effects between research variables in the final model

Path	Initial proposed model		Final modified model	
	β	*P*	*β*	P
task-technology fit → perceived ease	0.537	0.001	0.537	0.001
task-technology fit → perceived performance	0.527	0.001	0.528	0.001
perceived ease → perceived performance	-0.125	0.136	---	-----

According To the results shown in Table 6, all path coefficients related to the final modified model are significant.

Table 7: Standard and non-standardized coefficients of the path coefficient of the direct effect of technology-task fit on perceived performance

Standard coefficients B	Non-standardized coefficients B	Standard error	Critical ratio	Significance

		S.E	C.R	P
0.527	0.622	0.059	10.53	0.001<

Based on Figure 2 and the standard coefficients mentioned in the table above, the path coefficient of the direct effect of technology-task fit on the perceived performance of users of public libraries in Khuzestan in using information technology is significant (β=0.527, P<0.01). This result confirms the first hypothesis of the proposed structural model.

Table 8: Standard and non-standard coefficients of the path coefficient of the direct effect of technology-task fit on perceived ease

Standard coefficients B	Non-standardized coefficients B	Standard error S.E	Critical ratio C.R	Significance P
0.537	0.653	0.072	9.073	0.001<

Based on Figure 2 and the standard coefficients reported in Table 8, the coefficient of the direct effect of technology-task fit on the perceived ease of users of public libraries in Khuzestan in using information technology is significant (β=0.537, P<0.01). This result confirms the second hypothesis of the proposed structural model.

Table 9: Standard and non-standardized coefficients of the direct path of perceived ease to perceived performance

Standard coefficients B	Non-standardized coefficients B	Standard error S.E	Critical ratio C.R	Significance P
-0.125	-0.126	0.085	1.49	0.05> 136

Based on Figure 2 and the standard coefficients reported in the table above, the path coefficient of the direct effect of perceived usefulness on the perceived performance of users of public libraries in Khuzestan in using information technology is significant β=-0.125, P<0.05). This result rejects the fifth hypothesis of the proposed structural model. Based on the results of fitting the proposed research model and rejecting the direct path of perceived ease on the perceived performance of users of public libraries in Khuzestan in using information technology, the above hypothesis is not confirmed. However, given the significance of the rest of the paths and the final confirmation of the modified model in Figure 2, the bootstrap method can be used to examine the mediating relationships between the research variables. This method is one of the repeated sampling methods that involve a large number of samples with permutations from the original sample. Sampling with permutation means that although the bootstrap samples have the same size as the original sample, some numbers may not be included at all or some numbers may be repeated several times in the sample. The desired model is estimated in each bootstrap sample which is a part of the original data. The distribution of the estimated statistics in each bootstrap sample can be used to perform the significance of tests or to form a confidence interval.

Conclusion

The present study investigates the effect of technology-task fit on the perceived performance of users of public libraries in Khuzestan given the mediating role of perceived ease. The results revealed that based on the standard coefficients

reported in the path coefficient, the direct effect of technology-task fit on the perceived ease of users of public libraries in Khuzestan in using information technology is significant (β = 0.537, P<0.01). It means that changes in the independent variable of technology-task fit will cause fluctuations in the dependent variable of perceived ease. In other words, by increasing technology-task fit among employees, the perceived ease will increase among users. Salari (2005) found that technology-task fit positively affects the users' perceived ease. According to the standard coefficients, the path coefficient of the direct effect of perceived usefulness on the perceived performance of users of Khuzestan public libraries in using information technology is significant (β=-0.125, P<0.05). It means that perceived ease does not affect the perceived performance of Khuzestan public library users in using information technology. Zarghami (2012) found that perceived ease does not affect the perceived performance of users. Based on the results of fitting the proposed research model and rejecting the direct path of perceived ease on the perceived performance of users of public libraries in Khuzestan in using information technology, the bootstrap method can be used to examine the mediating relationships between research variables. The method is one of the repeated sampling methods and includes drawing a large number of samples with permutation from the original sample. Sampling with permutation means that although the bootstrap samples have the same size as the original sample, some numbers may not be included at all or some numbers may be repeated several times in the sample. The desired model is estimated in each bootstrap sample which is a part of the original data. The distribution of estimated statistics in each bootstrap sample can be used to perform significance tests or to form a confidence interval (Amel, 2019). Given the role of technology-task fit in promoting perceived performance success, users are recommended not to focus their attention merely on technologies. Users are recommended to provide favorable conditions for perceived ease.

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