

미디어선택이 최종사용자의 만족도에 미치는 영향 : SERVQUAL 연구 틀을 이용한 실증적 연구

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The Impact of Media Selection on End-user Satisfaction :
An Empirical Study Based on SERVQUAL Framework

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■ Abstract ■

In this paper, we investigate the relationship between the use of different media and customer satisfaction in help desk service. Different dimensions of customer satisfaction were derived based on SERVQUAL : reliability, empathy, assurance, tangibles, and responsiveness. The results support our hypotheses that use of conventional media (face-to-face and telephone) is related to help desk satisfaction through reliability and empathy and electronic media (e-mail and internet) users show higher satisfaction in tangibles and assurance. Also, hybrid media users (multi-media users by task) show a higher level of satisfaction in reliability and responsibility. The results suggest that automating help desks should be considered as a way to provide more options to end-users.

Keyword : SERVQUAL, Media Selection, Help Desk, Communication Media

1. Introduction

Information technology (IT) support for end-

users has emerged as one of the leading concerns of organizations. Continuous adapting and updating of new technologies have made development

논문접수일 : 2001년 11월 2일 논문게재확정일 : 2002년 10월 24일

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of effective and efficient help desk services challenging for organizations (Whiting, 1997). Organizations must actively search for new ways to provide better help desk services to satisfy growing customer demands and expectations. A number of commercial products using artificial intelligence techniques such as expert systems and case-based reasoning have become popular. Outsourcing the help desk function has also become a viable option for many organizations (Chalos & Sung, 1998). The move to help-desk automation and remote on-line troubleshooting using Internet-based products usually means that more and more help-desk services are computer-based rather than human-based.

Since end user satisfaction has become the strategic imperative in business, the primary concern here is how to evaluate these new technology-enabled tools (e.g., e-mail and the Internet) with conventional media support (e.g., telephone and face-to-face) in an effort to provide more effective and efficient end-user support.

The main purpose of this article is to investigate the effects of different media on end-user satisfaction in help desk service. More specifically, we will relate the use of different media use along the dimensions of reliability, empathy, assurance, tangible, and responsiveness based on SERVQUAL (Parasuraman et al., 1985, 1988, 1991). The major theme of this paper is to show that use of each media is related to different dimensions of customer satisfaction. The results of this study should enable organizations to better design their help desk functions.

2. REVIEW OF RELEVANT LITERATURE

Most previous studies on media choice have

focused on social presence and media richness theory. The researchers define social presence as “the degree to which a medium permits communicators to experience others as being psychologically present” (Short et al., 1976 ; Fulk et al., 1987), or “the degree to which a medium is perceived to convey the actual presence of the communicating participants” (Short et al., 1976). According to social presence theory, communication media are perceived as rating in social presence. Social presence, then, is determined by the degree to which one medium transmits information about facial expressions, directions of looking, postures, dress, nonverbal and vocal cues. For example, conventional media such as face-to-face and group meetings are perceived as ranked high in social presence. By contrast, electronic media such as e-mail and computer-based written documents are poorly perceived in terms of social presence. Therefore, social presence theorists argued that conventional media are more appropriate for tasks requiring high social presence, whereas electric media and written letters are more appropriate for tasks with low social presence requirement.

Similar to social presence theory, media richness theory focuses on the nature of media characteristics, but in addition it also deems significant their match with task characteristics (Hiltz & Turoff, 1981 ; Rice, 1984, 1992 ; Rogers, 1986 ; Daft & Lengel, 1984, 1986 ; Lengel & Daft, 1988). This theory is based on task variety and task analyzability : Task variety is “the frequency of unexpected and novel events that occur in the conversation process (Daft & Lengel, 1986, p. 554)” and task analyzability refers to “the degree to which tasks involve the application of objective, well-understood procedures that do not

require novel solution.”

Media richness theorists suggested that rich media, such as face-to-face and telephone, facilitate the immediate exchange of a wide range of communication cues, while leaner media such as e-mail, written roles and regulations, letters, and written notes allow exchange of a restricted range of such cues over a longer period (Daft & Lengel, 1986). Then, the media richness theorists posed that richer media are more appropriate for unanalyzable tasks such as resolving disagreements, making important decisions, generating ideas and exchanging confidential/sensitive information, whereas leaner media are more appropriate for analyzable tasks such as exchanging routine information, clarifying confusing viewpoints, and exchanging urgent/timely information. They suggest that when equivocality is high, organizations allow for rapid information cycles among managers, typically face-to-face and telephone, and prescribe fewer rules for interpretation (Weick, 1979 ; Daft & Lengel, 1984).

Although these two theories tried to explain end users media choices, the authors of many empirical studies have suggested that media choice cannot be logically explained or predicted by considering only the inherent richness or social presence of the medium and the characteristics of the task (Markus, 1988 ; Rice & Shook, 1990 ; Zmud et al., 1990 ; Yates & Orlikowski, 1992 ; Trevino & Webster, 1992 ; King & Xia, 1997). For instance, Ngwenyama and Lee (1997) found that electronic media increase their richness through messenger services such as call and page functions.

Since media richness theory has been only partially supported by empirical research, it is likely that other factors or dimensions might

affect end-user's media choices. In order to overcome criticism leveled on media richness theory, we adopted service quality (SERVQUAL), created by Parasuraman et al. (1985), as representative characteristics that are associated with each medium. Parasuraman et al. (1988) developed a 22-item scale consisting of five service quality dimensions. They theorized that regardless of the type of service, customers use basically similar criteria in evaluating service quality and that these criteria span virtually all aspects of service. Those dimensions are :

- Reliability : ability to perform the promised service dependably and accurately.
- Empathy : the provision of caring individualized attention to customers.
- Assurance : knowledge of employees and their ability to inspire trust and confidence.
- Tangible : physical facilities, equipment, and appearance of personnel.
- Responsiveness : willingness to help customers and provide prompt service.

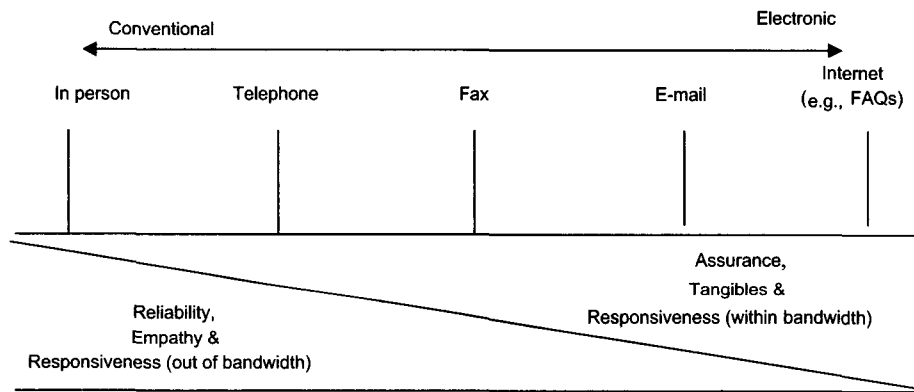
3. HYPOTHESES DEVELOPMENT

To investigate the relationship between media choice and end-user perceptions of help desk functions, a research model was developed as shown in <Table 1> and <Figure 1>. In this model, we used five constructs from SERVQUAL (Parasuraman et al., 1991) that are thought of as being closely related to end-user satisfaction with help desks : reliability, empathy, assurance, tangibles and responsiveness

We first adopted Kydd and Ferry's (1991) and Daft and Legal's (1986) continuum of communication media, and then developed a new matrix

based on SERVQUAL measures. This serves as the basis for our belief that communication media differ in their relative abilities to increase reliability, empathy, assurance, tangibles and responsiveness (see <Figure 1> and <Table 1>). As presented in <Table 1>, the five media including conventional and electronic media offer combinations with various strengths and weaknesses. On the basis of the literature, we derive the relationship between media choice and different aspects of perception of help desk function.

Conventional media provide end users with the ability to increase reliability and empathy, because they allow end users to exchange a variety of verbal and non-verbal information (Chidambaram & Jones, 1993). In particular, face-to-face contact has the ability to allow a broad range of communication stimuli and responses so as to make end-users perceive a personal interest, politeness and attention, get first problem-solving cues, sincere interest and immediate answers without ambiguity. It also permits richer affection than



Note: Adapted from Kydd and Ferry (1991), who adapted their framework from Daft and Lengel (1986)

<Figure 1> Continuum of Communication Media in Help desk

<Table 1> Factors Influencing Perceptions of Service Quality : A Comparison of Conventional and Electronic Media

Factors	Communication Media				
	Conventional ←				→ Electronic
	Face to Face	Telephone	Fax	E-mail	Internet (e.g., FAQs)
Reliability	1	2	3	4	5
Empathy	1	2	3	4	5
Assurance	5	4	3	2	1
Tangibles	5	4	3	2	1
Responsiveness (Within bandwidth)	5	4	3	2	1
Responsiveness (Out of bandwidth)	1	2	3	4	5

Note) Adapted from Chidambaram and Jones(1993).

Key qualities of these five media presented in <Table 1>, the lower, the better.

does any form of electronic media. For example, conventional media are often considered as a more natural form of group interaction than comparable non-in person forums (Daft & Lengel, 1986). In other words, electronic media are regarded as less effective media for intense socio-emotional interaction involving heated debates, negotiation, and decision-making.

On the basis of the literature reviewed above, we hypothesize that conventional media is positively associated with the perception of reliability and empathy among service quality constructs (see <Figure 1>). Hence :

Ha : The use of conventional media is more strongly related to Reliability than the use of electronic media.

Hb : The use of conventional media is more strongly related to Empathy than the use of electronic media.

We also hypothesize that electronic media increase assurance and tangibles. For example, written documents such as e-mail and Internet (Frequently Asked Questions) help end users deal with the dual themes juxtaposed by Daft and Lengel (1986). Electronic media allow end-users to focus their idea or problem (Zigurs, et al., 1988) and leave evidence of communication. Thus, end-users can obtain confidence, safety, and transaction knowledge.

Hc : The use of electronic media is more strongly related to Assurance than the use of conventional media.

Hd : The use of electronic media is more strongly related to Tangibles than the use of conventional media.

As shown in <Table 1>, electronic media provide an ability to input comments anonymously and are easy for customers to access (Zigurs, et al., 1988). These characteristics encourage end-users to easily lodge complaints, so that they can receive prompt service. However, electronic media have a narrow bandwidth¹⁾. When electronic media deal with complex problems and out of contents, end users are faced with more of a time lag than when they use conventional media. Thus, we assume that hybrid media users (people who select mixed media determine this based on problems or their own experience) have a higher perception than conventional media users or electronic media users do.

He : The users of both conventional and electronic media will show a higher satisfaction on responsiveness toward help-desk services than conventional media users or electronic media users only.

4. RESEARCH METHOD AND ANALYSES

A survey was used in this study. Questionnaires were distributed to 1,000 MBA students in Korea. All of them were part-time students and most were fully employed at the time of the survey. We received 222 usable respondents, a return rate of 22.2 percent.

The initial data analysis showed that most participants were proficient in computer : power-

1) According to Chidambaram and Jones (1993), they referred Bandwidth as an ability of a medium to allow a broad range of communication stimuli and responses.

users (11.3%), above-average (20.7%), average (41.0%), below-average (18.5%) and novice (9.4%). In their career paths, the participants were from various fields : manufacturing (20.3%), financing/banking (1.4%), transportation (12.2%), information technology (1.8%), retailing (12.0%), communications (3.2%), education (35.6%), health care (5.1%), others (7.4%) and no response (2.7%). The survey utilized a seven-point Likert-type scale to measure respondent's overall perceptions about measurement items. Measurement items per each construct ask respondents to rate the extent to which they feel or agree with the feature described by the statement on a scale of 1 through 7 where 1 = subjects strongly disagree ; 7 = subjects strongly agree.

To test the hypotheses, we first performed a cluster analysis. Cluster analysis is an exploratory data analysis tool for developing meaningful subgroups of individuals or objects. Its object is to sort cases (people, things, events, etc) into groups, or clusters, so that the degree of association is strong between members of the same cluster and weak between members of different clusters (Hair et al, 1998). We grouped based on face-to-face, telephone, fax, e-mail, and

Internet. <Table 2> shows the results of this cluster. We identified three groups of end-users : one group utilizing all of the media, another group using most of the electronic media such as e-mail and Internet, and the other group using mostly telephone and face to face. We named the first group the hybrid group (HG), second group the electronic group (EG), and third group the conventional group (CG). The numbers of end-users were 55, 95, and 54, respectively.

Secondly, we performed factor analysis using measures related to the service perception constructs to assess the reliability of the multi-item scales. <Table 3> shows the factor analysis results. These five factors account for more than 78.36% of the observed variance. The loading of each of the 15 measures on its respective factor is well over 0.40, and the Eigenvalue of each construct is above 1. The results of the factor analysis, therefore, showed convergent and discriminant validity for the measures we used. (Cronbach, 1971 ; Campbell and Fiske, 1959). Also the reliabilities for the measures were calculated based on Cronbach's alpha, and all of five constructs showed strong reliability as all were over 0.75.

<Table 2> Cluster Analysis of End-users, Media Choice Pattern

media \ mean	Hybrid	Electronic	Conventional
Face to face	4.58	1.63	1.89
Telephone	4.93	4.79	5.22
Fax	4.24	1.69	1.57
Email	4.55	5.38	2.44
Internet	5.11	5.93	1.85
Total number	(55)	(95)	(54)

Note) Mean : the extent to which respondents frequently use the media

<Table 3> Factors Analysis of Independent Variables

	<i>Tang.</i>	<i>Resp.</i>	<i>Assu.</i>	<i>Reli.</i>	<i>Empa.</i>
The medium you use the most will increase visual attention using materials such as pamphlets or public relations.	.854				
The medium you use the most makes you feel customer service is visually appealing.	.838				
The medium you use the most makes you feel customer service has modern-looking equipment.	.780				
The medium you use the most makes you feel customer service is never too busy to respond to your requests.		.906			
The medium you use the most makes you feel customer service is always ready to respond your request.		.813			
The medium you use the most makes you feel customer service provides a prompt service.		.774			
The medium you use the most makes you feel customer service make you feel safe with your transactions.			.839		
The medium you use the most makes you feel customer service gives you a confidence about the transaction.			.784		
The medium you use the most makes you feel customer service has knowledge about your transactions.			.598	.420	
The medium you use the most makes you feel that customer service provides the service promptly.				.834	
The medium you use the most makes you feel that customer service will solve the problem right the first time.				.774	
The medium you use the most makes you feel that customer service shows sincere interest in the customer.			.447	.594	
The medium you use the most makes you feel that customer service is polite.			.454		.420
The medium you use the most makes you feel that customer service shows a personal interest.					.847
The medium you use the most makes you feel customer service tries to pay personal attention.					.771
Eigenvalue	2.506	2.476	2.462	2.404	1.906
Percentage of Variance Explained	16.708	16.504	16.416	16.028	12.705

Finally, we conducted a one-way ANOVA to detect differences in end-user perceptions among the three groups. In general, our results demonstrate that conventional media users possess a positive perception toward help desks and reliability. However, empathy is not different among the three media-using groups. Electronic media

users have significantly more positive perception in terms of tangibles even though assurance is not statistically significant. The hybrid media user group has more positive perception toward reliability and responsibility than other two groups (conventional and electronic groups) have (see <Table 4>).

〈Table 4〉 Results of a One-way ANOVA by Different Media Choice Group with LSD

			<i>Mean Difference (I-J)</i>	<i>Std. Error</i>	<i>Sig.</i>
<i>Dependent Variable</i>	(I) Cluster Number of Case	(J) Cluster Number of Case	Mean Difference	Std. Error	Sig.
<i>Reliability</i>	HG	EG	2.310	.585	.001***
	HG	CG	1.499	.660	.011**
	EG	CG	-0.811	.588	.089*
<i>Empathy</i>	HG	EG	0.778	.621	.211
	HG	CG	0.810	.702	.250
	EG	CG	0.032	.624	.959
<i>Assurance</i>	HG	EG	0.567	.539	.294
	HG	CG	1.077	.616	.082*
	EG	CG	0.510	.542	.348
<i>Tangibles</i>	HG	EG	0.351	.613	.568
	HG	CG	1.873	.701	.008**
	EG	CG	1.522	.617	.015**
<i>Responsiveness</i>	HG	EG	1.467	.651	.025**
	HG	CG	1.908	.740	.011**
	EG	CG	0.441	.655	.502

Note) *** $p < .001$

** $p < .05$

* $p < .10$

5. FINDINGS

Results of the ANOVA partially support the idea that conventional media have more ability as a medium to allow a broad range of communication stimuli and responses. The results were not consistent with Daft and Lengel's (1986) theory that conventional media are perceived by end-users as the "warmest" media permitting the exchange of a wide range of socio-emotional communication. However, if we carefully look at the measurements in reliability and empathy, more open-ended communication makes end-users feel personal interest, politeness and attention, and get an immediate problem solving response with an expression of sincerity rather than impersonal ambiguity (Chapanis, et al., 1972, and 1976), even though empathy is not statistically

significant.

As shown in <Table 5>, electronic media partially provides end users with the ability to increase assurance and tangibles. In hypothesis Hc and Hd, we proposed that electronic media have higher assurance and tangibles than conventional media. The results of the ANOVA and Rank proved that e-mail and Internet' FAQ rate higher in tangibles (with statistical significance) even though assurance is not significant. These results indicate that electronic media make end-users focus their idea or problem so that end-users can obtain transaction safety, confidence of problem solving and knowledgeable information with evidence of communication. In the case of tangibles, the Internet and e-mail can provide end-users with strong visual performance using figures, tables and prototyping products. Finally,

<Table 5> Results of Hypotheses

Hypotheses	Condition (mean / Ranks)	Hypotheses Supported or not?	Statistically Supported or not?
Hypo. a (Reliability) Rank	HG (13.25) EG (10.94) CG (11.76) 1 3 2	Yes	Yes
Hypo. b (Empathy) Rank	HG (11.27) EG (10.49) CG (10.46) 1 2 3	No	No
Hypo. c (Assurance) Rank	HG (11.14) EG (11.57) CG (11.06) 1 2 3	Yes	No
Hypo. d (Tangibles) Rank	HG (11.37) EG (11.02) CG (9.50) 1 2 3	Yes	Yes
Hypo. e (Responsive) Rank	HG (12.59) EG (11.12) CG (10.68) 1 2 3	Yes	Yes

the results indicate that the hybrid group receives prompt service with statistical significance.

In sum, we found an interesting aspect in reliability and responsiveness that the hybrid group, who use various types of communication media, has the highest level of satisfaction. The results of this study imply that organizations should be encouraged to design their help desk with more care and attention.

6. CONCLUSION

As we expected, customers have different perceptions of various media : higher reliability from conventional media (face-to-face and telephone), and higher tangibles and assurance for electronic media (e-mail and Internet) Specifically, the hybrid group indicates higher levels of reliability and responsiveness. These perceptions may lead organizations to prepare different medium for different tasks or use mixed purpose.

The results of this study have some important theoretical implications. First, we applied the concept of media choice to the domain of the help desk service. Second, our research incorporated

SERVQUAL theory into media selection mechanism.

The practical implication of our study is that by understanding the types of perceptions customers have for each medium and their behavioral patterns, organizations may be able to provide better help desk service, which is critical in the competitive business world.

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