Major Criteria for Channel Selection in Banking Transaction

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Abstract

The purpose of this research, based on the Media Selection Theory, the Technology Acceptance Model, and the Social Influence Theory, is to investigate the influential factors that affect media selection in banking transactions. Analyses showed that for location sensitive bank windows and ATMs (automatic teller machines), defined as offline-based transaction channels, convenience was the variable affecting media selection. However, in the case of online media not related to location, (phone banking, internet banking, and mobile banking) reliability was the significant variable influencing use. The findings show that banking organizations may benefit from identifying traits of media affecting use, and should differentiate customer services for competitive advantage.

Keywords : Media selection, Banking transaction, TAM, Social influence model, ATM

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1. Introduction

On the basis of internet and digital tech-nologies, firms can supply customer-oriented services with lower transaction costs. Such technologies may also facilitate differentiation of customer services. The advent of information technologies, most notably internet technology, makes allows for a variety of bank transaction channels. Consequently, many banking channels frequently present market and differential serv-ice opportunities to bank organizations and pro-vide customers with options for media selection. Thus, if finance organizations successfully adopt electronic banking channels based on character-istics of the channels, they may greatly increase customer satisfactory strategies in many types of transactions. In the Korean finance industry, the ratio of use of internet banking increased to 41.5% at the end of 2006 compared with 36.7% at the end of 2005. Contrarily, use of banking windows decreased from 24.7% to 22.7%, and the use of ATMs, decreased from 27.0% to 24.6% at the same period [16].

According to the development and expansion of internet finance, mobile banking may be a new driver and crucial issue. Therefore, mobile banking can be considered as an expander of fi-nancial transaction channels. Many people who have been engaged in the finance industry pre-dict that mobile banking will grow faster than internet banking. Thus, the advent of new tech-nologies may play an important role, not in rep-licating or evicting existing technologies, but in expanding choices. Namely, internet and mobile technologies used in financial transactions can be new channels.

According to the Media Selection Theory that explains media choice behaviors of users, influ-ential factors may be social, official, individual, and technological. Because each channel has its own inherited characteristics, users usually ask themselves which media fits their specific purposes. Thus, based on the fitness of task, media is selected [2, 4].

Hence, the present research focused on influ-ential factors that affect the use of media in banking processes. In addition to traditional banking channels, this study also investigates influential factors on new internet and mobile banking selections.

2. Theoretical Background

In the Media Selection Theory, fitness of task can influence media selection. In general, a vari-ety of media can be classified by two intrinsic traits : one, to solve the uncertainty from the lack of information and the other is to settle the equivocality in communication [5].

Uncertainty comes from lack of information. Thus, the more information obtained, the less uncertain one is generally [18].

Equivocality implies lack of understanding and confusion. Consequently, uncertainty is as-sociated with the volume of information and equivocality with the quality of information. Moreover, media richness is one of various me-dia traits.

In the TAM, which depicts the acceptance process of information technology (IT), user's intention, associated with the acceptance of IT,

may be affected by perceived usability and per-ceived convenience [31]. The easy-to-use factor is especially influential factor in technology ac-ceptance [32]. According to literatures, com-pared with complex systems, simple information systems can get high rates of selection [8, 33]. Rogers [1962] asserted that the faster that users are accustomed to using a system, the more rapidly new technologies are diffused into the market [27].

Cummings and Bromiley [1996] depicted that trust will be established in social circumstances with following three elements. The first one is implicit or explicit endeavors to sincerely under-stand the cultures of an organization. The sec-ond one is a user's trust in the negotiation process. The last is a trust that an organization will not inordinately take advantage of another person in any circumstance. Namely, there must be a common faith in the group or its members [5].

In offline transactive situations, immersion and reliability may be the crucial factors in rela-tionships [21], and confidence among organ-izations or persons may affect purchasing be-haviors or interactivity [12]. However, trust in online transactions is dependent upon a guaran-tee of security, brand perception, easy locating, system performance, and technologies [2].

In the Social Influence Model, media choice and perceptions by individuals will be socially constructed. These theories propose that per-sonal media selection may be dependent upon behaviors, attitudes, and modes of co-workers or organizational traits [10, 14]. Social influence can be considered one of the crucial environ-mental or surrounding factors that affect people.

This study focused on dealing with traits influ-encing personal media cognition in society and surroundings. The theoretical bases of this theory were the Cognitive Dissonance Theory [13], the Social Learning Theory [1], and the Social Information Processing Theory [28].

Recently, in accordance with the rapid devel-opment of IT, the financial industry has been confronted with necessities of change, that is, a variety of customer's needs, M&A, subsidiary businesses, and informatization of financial organizations. Moreover, many firms not related with finance, such as telecommunication or man-ufacturing companies, have aggressively entered the financial business area. In finance industry, the demand for changes originated with elec-tronic finance. Electronic finance in Korea was first adopted by the stock exchange market, which requires effectiveness and rapidity in trans-action processes. Banking firms followed in transactions dealing with remittance money and gradually also in insurance tasks. Thus, new fi-nancial transaction channels have evolved and these have given firms a number of oppor-tunities in order to hold competitive advantages and differentiate financial services.

3. Research Model and Hypotheses

3.1 Research Model

3.2 Hypotheses and Measures

Daft and Lengel [1986] suggested four criteria as measures of media richness, namely, immedi-ate feedback, multiple cues for information
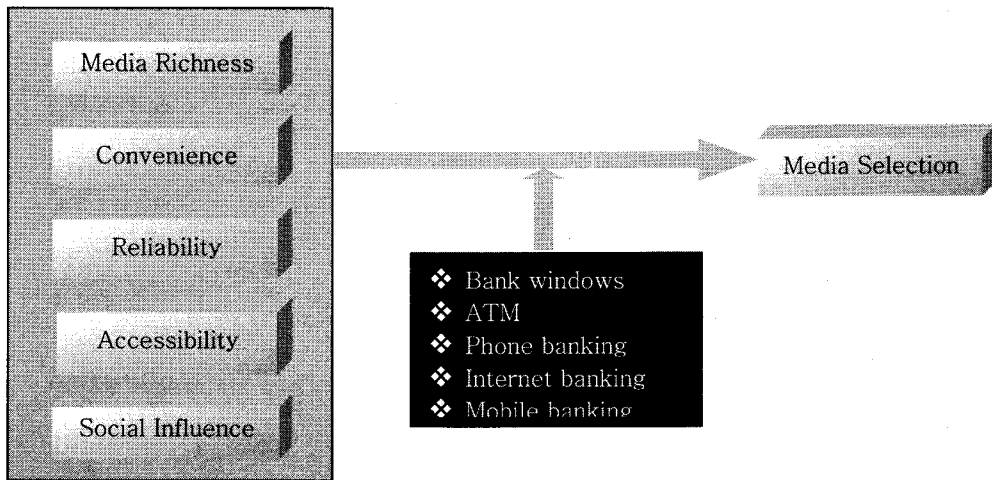
〈Figure 1〉 Research Model

transfer, personal focus, and language variety [7]. In this research, it is assumed that we assume that the media richness may affect which channels are preferred by users for banking transactions. Therefore Hypothesis 1 is established as below.

- Hypothesis 1 : The media richness of channels influences media selection positively.

Regarding the convenience factor, Davis [1989] classified the variables to measure the convenience as easy-to-use, controllability, clarity or understandability, flexibility, and easy-to-learn. Additionally, Nielsen [1993] suggested that the vital factors in software interface for implementing convenience in use consist of easy-to-learn, efficiency in use, easy-to-memorize, minimal errors in operation, and satisfaction of products. He also emphasized that increasing the usability of systems should be essential point to efficiently use the information

systems [22].

- Hypothesis 2 : The convenience of channels influences to the media selection positively.

In financial transactions, services provided by financial firms can be assessed by reliability, safety, and security levels. Particularly, customers who use internet banking are usually sensitive to security and safety levels for personal information. In this research, it is assumed that in accordance with safety and reliability, users may choose banking channels. Measures for reliability consist of stability of access, security level, and reliability of financial service.

- Hypothesis 3 : Reliability influences the media selection positively.

For monetary transactions in general, an important factor to be considered may be the effort needed by users. In compensation for these ef-

forts, users may select based on the accessibility and the economic value of banking channels. Accessibility of channels refers to whether or not users can easily access bank windows or ATMs. In case of internet banking users, access is generally always available. Media selection behavior may also depend upon customers' perceived economic benefits, as in saving transaction fees or additional costs for financial processes.

- Hypothesis 4 : Accessibility and economical benefits influence media selection positively.

By use of the Social Influential Model in media selection, the assessment can be explained by the function of variables like objective characteristics, experience and know-how, social influences, and previous behaviors of media use. Thomson, et al. [1991] performed empirical research about relativity between social influence and use of PC, and showed that, in their own organization, media use can be affected by the user's ratio of PC, positive attitudes and supporting circumstances of managers, and organizational sponsorship for PC adoption.

- Hypothesis 5 : Social influence influences media selection positively.
- Hypothesis 6 : There may be significant difference in distance among channels that bank users perceive.

⟨Table 1⟩ Operational Definition of Variables

Variables		Definition	Item No.	Literature
Predictors	Media Richness	∘ Feedback speed for customer's questions	1	Galbraith [1973], Daft and Lengel [1986], Goodhue and Thompson [1995]
		∘ Variety of information corresponding channels	2	
		∘ Variety of information providing types	3	
	Convenience	∘ Convenience of information locating	4	Davis [1989], Nielson [1993], Patricia [1998]
		∘ Ease of media use	5	
		∘ Complexity of transaction process	6	
		∘ Rapidity of transaction processing	7	
	Reliability	∘ Reliability of technology	8	Achrol [1991], Bhimani [1996] Jarvenpaa and Todd [1997], Polatoglu and Ekin [2001], Cao [2002], Yeo and Kim [2003]
		∘ Safety of use	9	
		∘ Security of task processing	10	
	Accessibility	∘ Accessibility for use	11	Based on team discussion
		∘ Satisfaction level for transaction fee	12	
		∘ Satisfactory level for costs (ex. data using fee)	13	
	Social Influence	∘ Recommendation level for media use	14	Thomson, et al. [1991], Fulk [1993]
		∘ Use level of group	15	
Dependent Variable	Media Use	∘ Use level of media	16	Based on team discussion

3.3 Operational Definition of Variables

To verify the hypotheses, we defined the measures by referring to previous literatures and research team discussion as shown in below the table below. On the basis of literatures, five factors (media richness, convenience, reliability, accessibility and economic benefit) and social influence had been chosen as predictors. The response of each questionnaire was plotted on the Likert five-point scale from strongly disagree (= 1) to strongly agree (= 5).

4. Research Results

4.1 Data Collection

To test our hypotheses, we conducted questionnaire survey and selected the public who had experience in banking transaction. Data was collected by face-to-face interview, e-mail, and online chat software, i.e. microsoft messenger. The 343 responded questionnaires were collected, from a total of 600 questionnaires reflecting a 57.2% response rate. Participants in our study ranged in age (60.6% were 21~30yr.; 26.5% were 31~40 yr.). Most respondents had experience or knowledge in internet banking, ATMs, or mobile banking. The internet use capability of participants shown to be above moderate were more than 90%. Thirty-seven percent of participants had used mobile devices from 5~7 years, 3~5 years was 31%. In general, more than 70.9% used mobile devices for SMS or voice services. Thus, many participants were accustomed to mobile service.

4.2 Analysis

As a result of factor analysis by Varimax methodology reducing the number of variables, the table below shows that the 15 items affecting bank window use were regrouped into four factors. The first fact group consists of items (BW 7, 8, 10) related to reliability in security or safety. The second group of items (BW 1, 2, 3, 4) measured the media richness.

The third factor group (BW 5, 6, 9) regards convenience, including transaction process, speed, cost, and time to process excluding BW 11, 12 under factor loadings 0.500. Lastly, the fourth fact group, social influence, was grouped by BW 13, 14, and 15.

Similarly, items affecting ATM use were classified into four factors. The first factor

⟨Table 2⟩ Factor Analysis for Use of Bank Windows

Item	Fact 1	Fact 2	Fact 3	Fact 4
BW8	.840			
BW7	.726			
BW10	.717			
BW3		.780		
BW4		.661		
BW1		.660		
BW2		.564		
BW5			.795	
BW9			.610	
BW6			.538	
BW12			.379	
BW11			.322	
BW14				.820
BW15				.727
BW13				.532
Eigen value	3.315	1.691	1.560	1.147
Explanation Ratio(%)	22.097	11.274	10.403	7.649
Cumm. Ratio(%)	22.097	33.371	43.773	51.422

group (AT 7, 8, 10) related to reliability in transaction. The second factor group (AT 1, 2, 3, 4) was convenience was covered by AT 5, 6, 9, 11, 12. Items (AT 1, 2, 3, 4) to measure the media richness were grouped put into the third factor group. The fourth factor group (AT 14, 15; excluding AT 13–an inconsistent item) was social influence. Also in the case of phone banking, items were classified into four factors. The first factor group Items (PB 1, 2, 3, 4) was to measure media richness; The second factor group (PB 7, 8, 10) related to reliability in transactions; the third factor group (PB 14, 15) measured social influence; the fourth factor group (PB 5, 6, 9, 11, 12) measured convenience. Concerning the internet banking service, the first factor group (IB 7, 8, 10) related to reli-

ability in transactions; the second factor group (IB14, 15) related to social influence; the third factor group (Items (IB 1, 2, 3, 4) related to media richness; the fourth factor group (IB 5, 6, 9, 11, 12) related to convenience.

Items (MB 7, 8, 9, 10) measuring influential factors regarding mobile banking use were grouped together in the first factor for reliability. Items (MB 1, 2, 3, 4) to measure media richness were grouped into second factor. The third fact of the social influence was grouped by IB 14, 15. The fourth factor of the convenience was covered by IB 5, 6, 11, 12. As predictors, the traits of media such as media richness, convenience, reliability, and social influence showed the internal consistency with Cronbach alpha, an index of internal reliability, of more than 0.6. In
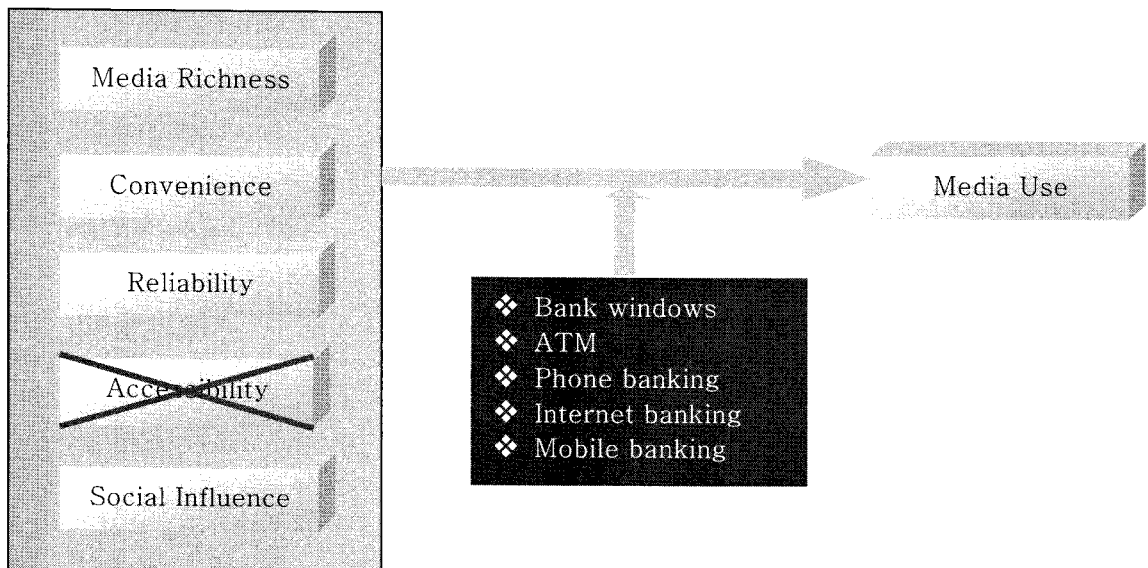
<Figure 2> Modified Research Model

- Hypothesis 1 : Media richness influences media selection positively.
- Hypothesis 2 : Convenience influences media selection positively.
- Hypothesis 3 : Reliability influences media selection positively.
- Hypothesis 4 : Social influence influences media selection positively.
- Hypothesis 5 : There may be significant difference in distance among channels that bank users perceive.

the case of convenience of mobile banking, however, the Cronbach alpha's value had .5845. This implies that some participants in the survey could not recognize and did not have exact understanding of mobile banking.

4.3 Modified Research Model

Analysis shows the accessibility and economical benefit variable merged with the convenience variable. Thus, the original model was modified as shown below into the four variables of media richness, convenience, reliability, and social influence excluding accessibility.

4.4 Analysis and Findings

In order to verify our research model, multiple regression analysis was conducted by using full set data. With full set data of all channels, analysis was done on how four predictors affect media use and selection. The full data was then divided into five groups for each media and then multiple regression analysis was performed to verify variables affecting use and selection.

- Bank Windows : As reported in <Table 3>, the explanatory power of this model

was 32% ($R^2 = .320$). Also, F-statistics, which verify the statistical significance, showed at 39.693 and significant at $p = .000$. TOL (tolerance) coefficients ranged from .766 to .958. above .10. VIF (variance inflation factor) coefficients ranged from 1.044 to 1.306 under 10. Thus, the regression equation, $Y = -.053 \times Media\ Richness + .100 \times Convenience - .009 \times Reliability + .554 \times Social\ Influence$, didn't not show multiple co-linearity. Under the significant level of $a = 0.05$, both Convenience and Social Influence were positive and significant at $p = .037$ and $p = .000$ in bank windows, respectively.

This reveals that two influential variables, convenience and social influence, positively affect use of bank windows, providing support for both hypothesis 2 and 4. Media richness and reliability, however, did not support hypotheses 1 and 3.

- ATM : For the ATM channel, multiple regression showed the explanatory power of regression model as 30% ($R^2 = .302$). Also,

<Table 3> Significance of Predictors(Bank windows)

Bank windows	Unstandardized Coefficients		Standardized coefficients	t	Sig.	95% C.I. of B		Coll. Stats	
	B	Std. Error	Beta			Low	High	TOL	VIF
(Constant)	.584	.337		1.733	.084	-.079	1.248		
Media richness	-8.628E-02	.081	-.053	-1.070	.286	-.245	.072	.823	1.215
Convenience	.186	.089	.100	2.098	.037**	.012	.360	.886	1.128
Reliability	-1.306E-02	.078	-.009	-.168	.867	-.166	.140	.766	1.306
Social influence	.648	.054	.554	12.084	.000***	.543	.754	.958	1.044

Note) * p < 0.1, ** p < 0.05, *** p < 0.01.

⟨Table 4⟩ Significance of Predictors (ATM)

ATM	Unstandardized coefficients		Standardized coefficients	t	Sig.	95% C.I. of B		Coll. Stats	
	B	Std. Error	Beta			Low	High	TOL	VIF
(Constant)	.681	.327		2.082	.038	.037	1.324		
Media richness	-6.069E-03	.067	-.004	-.091	.928	-.138	.126	.959	1.043
Convenience	.283	.084	.178	3.355	.001***	.117	.449	.736	1.358
Reliability	5.632E-02	.072	.039	.781	.436	-.086	.198	.820	1.220
Social Influence	.590	.065	.444	9.006	.000***	.461	.719	.851	1.175

Note) * p < 0.1, ** p < 0.05, *** p < 0.01.

F-statistics showed at 36.577 and significant at $p = .000$ under significant level .05. TOL (tolerance) coefficients ranged from .736 to .959. Moreover, VIF (variance inflation factor) coefficients ranged from 1.043 to 1.358 under 10. Thus, the regression equation, $Y = -.004 \times Media\ Richness + .178 \times Convenience + .039 \times Reliability + .444 \times Social\ Influence$, didn't not have multiple co-linearity. Under the significant level of $a = 0.001$, both Convenience and Social Influence were positive and significant at $p = .037$ and $p = .000$ in ATM, respectively. This reveals that two influential variables, Convenience and Social influence, positively affect use of ATMs,
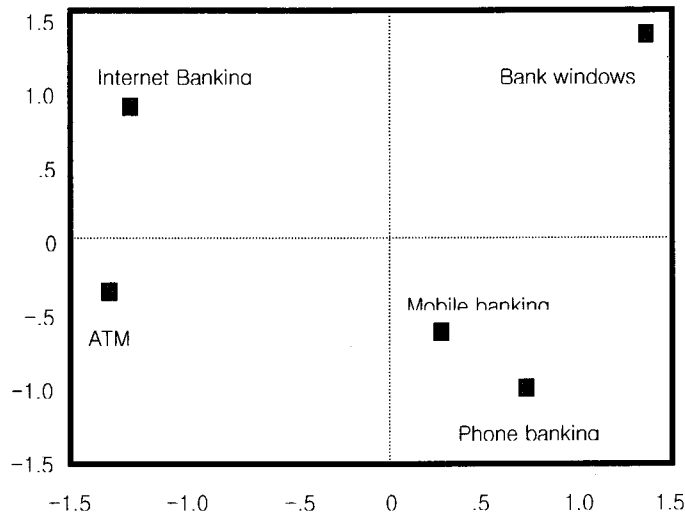
providing support for both hypotheses 2 and 4. Media richness and reliability, however, did not support hypotheses 1 and 3.

- Phone Banking : In the case of phone banking channel, the explanatory power of regression model was 35% ($R^2 = .352$). Also, F-statistics showed at 40.267 with significance at $p = .000$. TOL (tolerance) coefficients ranged from .721 to .853. Moreover, VIF (variance inflation factor) coefficients ranged from 1.173 to 1.388 under 10. Thus, the regression equation, $Y = -.016 * Media\ Richness - .101 \times Convenience + .189 \times Reliability + .548 \times Social\ Influence$, didn't have multiple co-linearity. Under the significant level of $a = 0.001$, both

⟨Table 5⟩ Significance of Predictors (Phone banking)

Phone banking	Unstandardized coefficients		Standardized Coefficients	t	Sig.	95% C.I. of B		Coll. Stats	
	B	Std. Error	Beta			Low	High	TOL	VIF
(Constant)	.157	.338		.464	.643	-.509	.823		
Media richness	-2.673E-02	.083	-.016	-.324	.746	-.189	.136	.853	1.173
Convenience	-.189	.102	-.101	-1.856	.064	-.388	.011	.732	1.366
Reliability	.303	.088	.189	3.430	.001***	.129	.477	.721	1.388
Social influence	.670	.065	.548	10.256	.000***	.542	.799	.767	1.305

Note) * p < 0.1, ** p < 0.05, *** p < 0.01.

⟨Figure 3⟩ Positioning map by MDS

Reliability and Social Influence were positive and significant at p = .001 and p = .000 in phone banking, respectively. This reveals that two influential variables, Reliability and Social Influence, positively affect use of phone banking, providing support for both hypotheses 3 and 4. Media richness and convenience, however, did not support hypotheses 1 and 2.

• Internet banking : Associated with internet banking, explanatory power of regression model was 43% (R^2 = .434). Also,

F-statistics showed at 62.206 and were significant at p = .000 under the significant level of 0.001. TOL (tolerance) coefficients ranged from .746 to .883. Moreover, VIF (variance inflation factor) coefficients ranged from 1.132 to 1.340 under 10. Thus, the regression equation, Y = -.063 × Media Richness + .046 × Convenience + .297 × Reliability + .487 × Social Influence, does not have multiple col-linearity. Under the significant level of a = .001, both Reliability and Social Influence were positive and significant at

⟨Table 6⟩ Significance of Predictors (Internet Banking)

Internet banking	Unstandardized coefficients		Standardized coefficients	t	Sig.	95% C.I. of B		Coll. Stats	
	B	Std. Error	Beta			Low	High	TOL	VIF
(Constant)	-.461	.350		-1.318	.188	-1.149	.227		
Media richness	-.125	.089	-.063	-1.412	.159	-.300	.049	.883	1.132
Convenience	7.487E-02	.079	.046	.945	.345	-.081	.231	.746	1.340
Reliability	.503	.079	.297	6.402	.000***	.349	.658	.809	1.237
Social influence	.654	.064	.487	10.293	.000***	.529	.779	.781	1.280

Note) * p < 0.1, ** p < 0.05, *** p < 0.01.

p = .000 in internet banking. This reveals that two of influential variables, Reliability and Social Influence, positively affect use of internet banking, providing support for both hypotheses 3 and 4. Media richness and Convenience, however, did not support hypotheses 1 and 2.

- Mobile banking : Associated with mobile banking channel, the explanatory power of the regression model was 49% (R = .489). Also, F-statistics showed at 80.750 and were significant at p = .000 under the significant level .001. TOL (tolerance) coefficients ranged from .706 to .868. Moreover, VIF (variance inflation factor) coefficients ranged from 1.044 to 1.306. Thus, this implies that the regression equation, Y = .054 × *Media Richness* + .027× *Convenience* + .117 × *Reliability* + .615 × *Social Influence*, does not have multiple co-linearity. Under the significant level a = 0.05, both Reliability and Social Influence were positive and significant at p = .012 and p = .000 in mobile banking, respectively. This reveals that two of influential variables, Reliability and Social Influence, positively affect use of mobile banking, providing support for both hypotheses 3 and 4.

Media richness and Convenience, however, did not support hypotheses 1 and 2.

- Perceived distance among channels by MDS (Multidimensional Scaling) : By using the average score of four influential variables, researchers visually ascertained how far each channel was positioned on two-dimensional space as shown in <Figure 4>. The MDS analysis presents the distances among n-objects on 2-dimensional space based on p-variables (p-dimension). Also fitness levels of positioning results will rely on stress values. To visualize n-objects on p-dimension as 2-dimension, repeating the process is essential. In this study, the number of repeats was three times and the stress value in the last repeat was .00007 under .001. Generally, if the stress value, criteria for fitness level of positioning, is 0, the fitness level is perfect. If under .05, that is excellent. If between .05 and 1.0, it will be satisfactory. If between .10 and .15, it is acceptable. Lastly, if the stress value is more than .15, the fitness will be poor. Thus, in this study, stress values approximately approached zero. This implies that the fitness level of positioning can be measured as perfect.

Finally, it was assessed that users perceived mobile and phone banking channel as being similar to each other. Namely, it is determined that users recognize mobile banking, not as new technology, but as an advanced service of phone banking.

5. Implications and Conclusions

Through this research, it was found that, according to media traits affecting the level of use in banking, users differently recognize the advantages of each media under any specific

circumstance. In brief summary, results show that in bank windows and ATMs (classified as offline channels, and which are sensitive to locations), convenience was the most influential factor in media selection. However, for online channels, such as banking channels in phone, internet, and mobile banking, the transaction reliability technologically guaranteed was the most important factor in selections. These data show us that users differently recognize traits of banking channels. Also, according to the correlation among variables, the use level of phone banking and mobile banking was highly correlated. These may be interpreted as showing that users generally recognize mobile banking not as the next step of internet banking, but as the advanced stage of phone banking. Moreover, as a result of distances by the MDS analysis among channels perceived by users, phone and mobile banking were positioned at the same dimension. This result shows that most users may perceive that these two channels are on the basis of similar technologies.

This research has the following limitations. First, in order to identify an user's channel selection behavior, respondents were required to complete a questionnaire based on given scenarios. Thus, this research may not come to a conclusion that respondents clearly choose the exact channels on the questionnaire. Second, as there were not enough questions suggested for variables, it was difficult to persuasively measure the predictors. Third, as in the early stage of mobile banking, there were some difficulties in getting respondents who had banking experience in a mobile environment. Therefore, as to answers related to mobile banking, simulated scenarios of banking could not be depended on.

In spite of the limitations in clarity, it is believed that these research results can provide important implications to banks who want to differentiate channels and develop new business models for various banking infrastructures.

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