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The Mediating Roles of Trust and System Quality in Achieving System Success: A System Integrator Perspective*

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Abstract

A system Integrator (SI) makes a consortium with multiple providers of hardware and software solutions to sell an information system. The success of information systems (IS) mainly depends on establishing a trustful relationship between SI supplier and client, and delivering high-quality system. However, the determinants of trust and system quality have been investigated mostly from the perspective of system buyers rather than system sellers. This study examines the influence of key variables that SI can handle to improve trust and system quality which finally leads to user satisfaction toward SI. This study adopts resource complementarity, user participation and information sharing as the key variable then builds a research model to explain their relationships to user satisfaction. Respondents are recruited from 251 firms that have built any information system in recent two years in South Korea. Results of partial least square (PLS) modeling analysis show that both resource complementarity and information sharing have positive relationships with trust. Also the relationships between trust, system quality and user satisfaction toward S.I are supported. In addition, the mediating roles of trust and system quality are identified. We discussed some of the key managerial and theoretical implications of the paper and suggested further research directions.

Keywords: System Integrator, System Quality, Trust, Resource Complementarity, User Participation, Information Sharing.

JEL Classification Code: M10, M15, M30.

1. Introduction

A systems integrator (SI) is the prime contractor of many information systems (IS) development projects, especially when a variety of external suppliers are involved. SIs are responsible for the overall system design and the management of the entire development process by specifying and integrating components from multiple vendors with which they form a temporary consortium (Davies, Brady, & Hobday, 2007; Jung & Jun, 2014).

Traditionally, developing an IS has been regarded as an integrated organizational process. Therefore, most studies on system success or failure have investigated internal factors, including project's objectives, top management's support, and user training (Thong, Yap, & Raman, 1996; Guimaraes, Staple, & McKeen, 2003; Sabherwal, Jeyaraj, & Chow, 2006).

System success is also important to the SIs because they perform the key provider role in the IS development project, and they recognize the importance of corporate reputation in securing future customers. They should organize a partnership with a variety of S/W vendors and H/W suppliers, and sometimes with IT consulting firms to develop a system in order to increase the resource complementarity, which is necessary for a high-quality system. Besides the problem of partner selection, SIs should understand the needs of clients and meet their expectations. Because it takes long-term to develop most IS, user participation and proper interactions with clients in the process can be an effective way to satisfy the clients' needs.

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Although there have been many studies which address factors of success or failure of IS, few research approached the issue from the supplier's perspective. Especially, little empirical research has empirically examined trust in large-scale IS projects. This study aims to explore the mediating role of trust by examining other exogenous variables that may contribute to trust in IS projects and to provide empirical evidence for the influence of trust on the system quality and satisfaction toward the SI project. This research presents resource complementarity (RC), user participation (UP), and information sharing (IN) as key strategic variables which the SI should consider to increase the trust (TR) and system quality (SQ), a key indicator of system success.

In the next part, the theoretical background of the study is proposed and the research model is developed. The data analysis and empirical results and implications are reported before these results are discussed.

2. Theoretical Review

2.1. SI and System Success

There are multiple perspectives on quality in the literature. In a comprehensive review, Reeves and Bednar (1994) identify four category views of quality. The categories are quality as excellence, quality as conformance with specifications, quality as value, and quality as meeting expectations. Among the categories, quality as meeting user's expectation represents the most pervasive perspective on quality (Reeves & Bednar, 1994; Nelson, Todd, & Wixom, 2005). According to these previous studies, quality means the extent to which consumers are satisfied with their prior expectations, and the quality of systems is no exception. Thus, existing system quality studies have paid attention to the degree of satisfaction of users' expectation of system or information.

System quality is also important in achieving system success because it leads to user satisfaction and intention to use (Seddon, 1997; DeLone & McLean, 2003; Nelson, Todd, & Wixom, 2005; Wixom & Todd, 2005). The definitions of system quality have not been consistent. Some studies defined it as 'user friendliness' or 'ease of use' (Doll & Torkzadeh, 1988; Rai, Lang, & Welker, 2002), while most other studies focus on the performance aspects of the system such as reliability, flexibility, response time, and integration (DeLone & McLean, 1992; 2003; Nelson, Todd, & Wixom, 2005).

In order to identify relevant success model of IS, this research incorporates a key research framework and major variables form IS success literature. Theory in the field of IS success has stemmed primarily from the famous research work of DeLone and McLean (1992), and system quality is a major component of the DeLone and McLean's IS Success Model. The model presents systems quality as a measure of technical success along with information quality as a measure of semantic success and use, user satisfaction, individual impacts as a measure of effective success (DeLone & McLean, 1992).

Since the research of them, many studies have sought to extend or validate the model. For example, Seddon (1997), Rai, Lang, and Welker (2002), and Iivari (2005) add system quality, information quality, user satisfaction in their models, and adds other variables to increase the explanatory power of the model. These added variables are individual impact, net benefit (Seddon, 1997), perceived usefulness (Rai, Lang, & Welker, 2002; Iivari, 2005). Despite these attempts, the dimensions of system quality, information quality, and user satisfaction have been included in all extended models, indicating that these variables are central to measuring IS success.

However, their user-oriented research efforts still have a common limitation in explaining system success. Without a doubt, a user-centric approach is very meaningful and an important endeavor that explains system success. However, considering the technology-driven characteristics of the SI project, it is also necessary to understand SI perspective.

Therefore, there is a need to identify the most important key factors that affect system success from the SI perspective. System quality as a measure of technical success should be more appropriate to represent the performance of an SI. Among the various dimensions of IS success, system quality is the ultimate output SI is responsible for, as well as being the ultimate goal. System quality is also important because it leads to user satisfaction and intention to use (Seddon, 1997; DeLone & McLean, 2003; Nelson, Todd, & Wixom, 2005; Wixom & Todd, 2005).

2.2. Drivers of System Quality

System quality itself has been used mainly as a key independent variable in existing studies (Seddon, 1997; Rai, Lang, & Welker, 2002; Iivari, 2005; Wixom & Todd, 2005; Irwin & Jayakody, 2008), and it is true that research on the antecedents or drivers of system quality is sparse. Thus, we need to understand the antecedents to understand the SI's efforts to improve system quality. As related studies, Nelson, Todd, and Wixom (2005) insists accessibility, reliability, response time, flexibility and integration as system quality drivers and divide these dimensions into the system-related category and task-related category. Vance, Elie-dit-cosaque, and Straub (2008) study mobile-commerce sites and propose previously unexamined system quality dimensions such as organizational culture, visual appeal, and navigational structure. Ravichandran and Rai (2000) identify top management leadership, a sophisticated infrastructure, process management efficiency, and stakeholder participation as important dimensions of a quality-oriented system for software development. These previous researches show that an understanding of the antecedent variables of the system quality is not agreed upon and depends on the research the subject or researcher's viewpoint. Jung and Jun (2014) insist that partnership between SI and customers is the key factor.

In order to explain the service quality factors from the service provider's point of view, additional variables (i.e., resource complementarity, user participation, and information sharing) need to be used in this study. This study attempts to take into account both the IS supplier's capability (i.e., resource complementarity), the user's importance (i.e., user participation), and the interactions among them (i.e., information sharing) through the input of multiple variables.

In this research, resource complementarity is defined as the degree to eliminate deficiencies in each other's portfolio of resources in an alliance (Lambe, Spekman, & Hunt, 2002). It brings synergy to the alliances because the marginal return of activity increases in the level of the other activity (Stieglitz & Heine, 2007). When the resources are complementary, the complexity of decisions making increases because of increased task interdependency, thus the coordination capability will be necessary to exploit the benefits. SIs select and coordinate a network of external component suppliers in order to build a well-functioning system by integrating the components. Therefore, excellence in integrating components from a variety of suppliers is recognized as the core competency for systems integration (Davies, Brady, & Hobday, 2007). For this reason, resource complementarity indicates how well system integrators manage their networks to ensure that the components satisfy a customer's requirements.

Although the SI achieved a high level of resource complementarity in the early stages of the system development, it could be not enough to meet the customer's ongoing changing needs because the complexity of information system is very high and it takes a long period to finish the project. That's why many customer-facing units of SI firms work with the actual users and external suppliers throughout the project (Davies, Brady, & Hobday, 2007). User participation can be defined as the user's tasks and behaviors or psychological involvement in the IS development (Sabherwal, Jeyaraj, & Chow, 2006). User participation can take a variety of forms according to the direct/indirect, formal/informal or active/passive distinctions, making proper conceptualization of the construct difficult (Barki & Hartwick, 1994). It has been reported that user participation in the development of a specific IS has a positive influence on user attitude and perception on system quality in previous studies (Ives & Olson, 1984; Barki & Hartwick, 1994; Sabherwal, Jeyaraj, & Chow, 2006).

Information sharing is defined as how many members in a group have access to a piece of information (Mesmer-Magnus & DeChurch, 2009). The advantage of information sharing in IS has been intensively discussed. Information sharing improves coordination between supply chain processes, reduce operational cost (Cachon & Fisher, 2000; Yu, Yan, & Cheng, 2001) and leads to high level of system integration, resulting in fortifying competitive advantage of the company (Li & Lin, 2006). Information sharing is important to both SIs and users because it can eliminate the sources of uncertainty that affect an IS (Yu, Yan, & Cheng, 2001). The reason for most uncertainties that user experience is that perfect information about the system project cannot be secured. To reduce this uncertainty, the SI provides more information to its clients and potential users. As a result, the whole IS's quality will be improved because each partner can gain improvement from the shared information.

2.3. Importance of Trust

Trust has become recognized for its critical role in encouraging users to adopt new technology (Vance, Elie-dit-cosaque, & Straub, 2008). Oh and Kim (1999), Wu and Chen (2005), Vance, Elie-dit-cosaque, and Straub (2008) insisted that trust holds even when an IT artifact is the object of trust. In their studies, it is found that users form trusting beliefs toward IT systems, and these beliefs then firmly predict users' intention and behavior.

However, a gap in IS study is the effect of the trust on user attitude. Existing research frameworks to illustrate IS adoption or system success are not sufficient to account for the importance of trust. For example, the theory of reasoned action (TRA) insists that beliefs lead to attitudes, which in turn lead to behavioral intentions. The TRA model has been found to be amenable to the formation of trust, however, there is no direct mention of the importance of trust. In later studies to explain the acceptance of technologies such as the technology acceptance model (TAM) or UTAUT model, the importance of trust has not been noticed. TAM and TAM2 model incorporate both social influence processes (subjective norm, voluntariness, and image) and cognitive instrumental processes (output quality, job relevance, result demonstrability, and perceived ease of use, perceived usefulness) (Venkatesh & Davis, 2000). Venkatesh, Morris, Davis, and Davis (2003) compared and tested the variables in TRA, TAM and other IS models and proposed a unified theory of acceptance and use of technology (UTAUT) model, which consisted of four key variables (performance expectancy, effort expectancy, social influence, facilitating conditions), and four moderating variables (gender, age, experience, voluntariness of use). These existing studies do not fully take into account the relational factors in understanding technology, and they were less interested in the trust.

On the contrary, a small number of studies have captured the importance of trust in IS. However, these trust-related literatures in IS study has viewed trust as a key independent variable or a dependent variable. Pennington, Wilcox, and Grover (2003-4) insist that trust in system vendors plays an important role by directly affecting attitudes and intentions to purchase. Grimsley and Meehan (2007) develop an evaluative design framework for e-Government projects and focus upon clients' experiences of service provision and service outcomes as contributors to the formation of public trust. These previous research results on trust in IS are notable, however, more work ought to point to the mediating role that trust can connect between IS's characteristics and users' attitude and intention.

3. Hypothesis Development

In order to build a successful IS, a temporary consortium is formed among sellers and suppliers of H/W and S/W components. An SI assumes responsibility for combining the components into a system in typical system development. Unlike the system sellers who have their own designs of a system, system integrators often struggle in creating a high degree of complementarity among components because they have to integrate external components into a system for each customer (Page & Siemplenski, 1983; Davies, Brady, & Hobday, 2007). As a result, a belief in this integrated ability of SI can be the initial foundation of trust, because trust is viewed as a set of trusting beliefs about the system provider (Brown & Jayakody, 2008). Thus, we hypothesize:

H1: Resource complementarity (RC) will have a positive effect on trust (TR).

The positive relationship between user participation and system performance has been reported continuously (Barki & Hartwick, 1994; Sabherwal, Jeyaraj, & Chow, 2006). In addition, studies on the effect of user participation on trust are presented. For example, Mayer, Davis, and Schoorman (1995) insist that supervisors employing higher levels of salesperson participation are creating contexts marked by higher levels of interdependence. Also, Choi, Dixon, and Joung (2004) insist that higher levels of employee participation are related positively to trust in the supervisor among sales representatives. Consequently, a higher level of user participation in the SI project will be marked by higher levels of trust perception. Thus, we hypothesize:

H2: User participation (UP) will have a positive effect on trust (TR).

Communication for sharing information is a critical process to build an effective relationship. Especially when team members differ in their experience and expertise, which is very commo0n in IS projects, communication for information sharing could help members develop shared perceptions (Hollingshead & Brandon, 2003; Tang, 2014). Oh and Kim (1999) examined the role of trust in various IS and found evidence that predictability is positively correlated with trust. In general, providing the appropriate information can help improve predictability, so providing information can also provide a similar effect on trust. Thus, we hypothesize:

H3: Information sharing (IN) will have a positive effect on trust (TR).

A strong correlation between system quality and trust exist. System quality depends on accurate and trustful data and is related to the ability of IS to deliver relevant information to system users (Wilson & Lu, 2008). In general, the direction of causal relationships is from the trust to system quality in most cases. For example, Fang, Chiu, and Wang (2011) insisted that providing higher information quality results in a higher level of trust. Also, other researchers have shown that system quality gives the influence to trust (DeLon & McLean, 2003; Brown & Jayakody, 2008; Wang & Lin, 2017). However, some recent studies have shown that the direction of this causal relationship is likely to change. Thus, perceived trust can affect users' evaluation on the system quality. As relevant evidence, Wang and Lin (2017) insist that trust can affect quality factors and empirically identify that trust negatively affects the privacy risk associated with system quality. Madan (2010), Sadeh, Arumugam, and Malarvizhi (2013) also insist that achieving good results with respect to the client's needs or expectation can influence key performance results. Given the long-term nature of the system building process, trust is likely to be a prerequisite rather than a result of the quality system. Thus, we hypothesize:

H4: Trust (TR) will have a positive effect on system quality (SQ).

Trust is the belief that service providers such as SI perform a necessary action important to their clients (Fang, Chiu, & Wang, 2011). Thus, trust occurs when system users come to believe that service providers act for their benefits. Gefen, Karahanna, and Straub (2003) insist that trust in an e-commerce system has several benefits including a heightened perception of positive attitudes such as perceived usefulness, intention to use the website. This argument may be extended to encompass the impact of trust on user satisfaction. More directly, Molla and Licker (2001), Brown and Joyakody (2008) insist that trust has an appositive effect on user satisfaction with an IS. Thus, we hypothesize:

H5: Trust (TR) will have a positive effect on the satisfaction toward S.I (SS).

Despite the differences in views on system quality, the impact of high system quality on satisfaction has been steadily supported. A well-designed, developed and implemented system is a prerequisite to deriving the users' benefits (Gorla, Somers, & Wong, 2010). A system that is well designed and constructed will likely run into fewer system failures, which will be promoted to business operations and result in increased operational efficiency and business effectiveness over a longer period (Swanson, 1997). Thus, we hypothesize:

H6: Perceived system quality (SQ) will have a positive effect on the satisfaction toward S.I (SS).

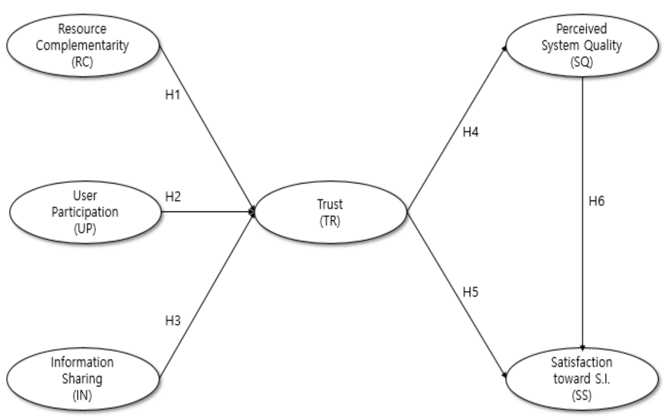

Figure 1: Research Model

4. Method

4.1. Sample

Data for the survey were collected using either mail, e-mail or a combination. The mailing lists were collected from The Korean Business Directory and the participants' lists of IT-related conferences held in Korea. A questionnaire was mailed or e-mailed to more than 5,000 targets on the lists. Respondents were confined to those who involved in the IS development in their organizations. We first asked if they have been involved in any IS development or enhancement project of existing systems in the past 3 years before proceeding to other questions. As a second question, we asked their position in the company and asked to participate in the survey only if he/she was above the manager level. A total of 251 answers with distinct IS development or enhancement projects were returned. There was no response bias between early and late responses. The sample comprised of 92.0% of male and 8.0% of female and their average age and average work experience was 42.27 years and 12.26 years subsequently.

4.2. Measurement

All measurement items except system size and the type of sector used a seven-point scales (1=very strongly disagree, 7=very strongly agree). Resource complementarity is a reflective measure composed of a six-item scale expanding Lambe, Spekman, and Hunt (2002)'s three-item scale. Customer participation in marketing literature was measured with one or a few items (Cermak, File, & Prince, 1997; Fang, 2008). As a similar concept, user participation, mostly appeared in the IS literature, was measured with different numbers of item scales (Barki & Hartwick, 1994; Spears & Barki, 2010). In this study, four items were used to measure user participation adapted from Fang (2008). Measurement items for information sharing were composed of six items which were adapted from Mohr and Spekman (1994) and Mohr and Sohi (1995). Items in this scale included "We voluntarily shared all the information that is helpful to the transaction process" and "We voluntarily shared information about changes or events that could affect the transaction process".

Trust was measured with five items adapted from Mohr and Spekman (1994) and Morgan and Hunt (1994). Items in this scale included "It is absolutely reliable that this partner has promised once in the past" and "This partner has always maintained fairness in the transaction process". Perceived system quality was measured with eight items that asked about flexibility, reliability, efficiency, response speed, compatibility, ease of use, value for money, and overall quality adapted from Nelson, Todd, and Wixom (2005). Measurement items for satisfaction toward SI were composed of six items which were adapted from Delone and Mclean (1992, 2003). Items in this scale included "This information system meets the expectations of the contract" and "We are satisfied with the performance and quality of this information system".

5. Results

5.1. Reliability and Validity

Since the variables used multiple-question items, it is essential to test the reliability and validity of the variables to complete the PLS equation. The internal consistency could be identified by calculating Cronbach's alpha score and other coefficients. The alpha score, composite reliability should be above 0.7 while average variance extracted (AVE) should be above 0.5 (Bagozzi & Yi, 1988, 2012). In this study, both the alpha scores and other coefficients are all above the minimum required.

Table 1: Reliability of Variables

	Cronbach's Alpha	Composite Reliability	AVE
IN	0.925	0.941	0.728
RC	0.899	0.923	0.667
SQ	0.937	0.948	0.696
SS	0.928	0.949	0.823
TR	0.876	0.911	0.676
UP	0.872	0.910	0.717

As a next step, exploratory factor analysis (EFA) is performed to examine the validity of the measures. This analysis uses a principal component analysis method with a VARIMAX rotation option. In the test, six factors explaining 72.8% of total variance are extracted as expected.

Table 2: EFA Analysis

	SQ	IN	RC	TR	SS	UP
sq7	**0.809**	0.105	0.195	0.155	0.192	0.095
sq6	**0.797**	0.161	0.189	0.129	0.228	0.010
sq4	**0.779**	0.099	0.252	0.193	0.209	0.107
sq2	**0.778**	0.096	0.209	0.096	0.132	0.190
sq1	**0.776**	0.122	0.209	0.154	0.162	0.181
sq3	**0.756**	0.103	0.182	0.107	0.136	0.215
sq8	**0.734**	0.141	0.123	0.226	0.129	0.253
sq5	**0.539**	0.170	0.072	0.258	0.308	0.124
in4	0.136	**0.831**	0.177	0.092	0.170	0.196
in3	0.072	**0.828**	0.064	0.230	0.120	0.137
in2	0.081	**0.799**	0.040	0.271	0.056	0.119
in6	0.125	**0.792**	0.154	0.111	0.125	0.170
in5	0.243	**0.778**	0.140	0.109	0.115	0.149
in1	0.121	**0.704**	0.221	0.226	0.187	0.119
rc3	0.262	0.038	**0.831**	0.172	0.137	0.130
rc4	0.282	0.099	**0.787**	0.179	0.131	0.068
rc5	0.282	0.129	**0.780**	0.017	0.150	0.217
rc1	0.104	0.197	**0.723**	0.173	0.173	0.093
rc2	0.183	0.214	**0.710**	0.016	-0.115	0.132
rc6	0.111	0.109	**0.610**	0.114	0.290	0.315
tr2	0.147	0.260	0.155	**0.755**	0.244	0.066
tr3	0.198	0.340	0.136	**0.750**	0.234	0.117
tr4	0.204	0.123	0.032	**0.688**	-0.069	-0.044
tr5	0.234	0.230	0.216	**0.675**	0.422	0.088
tr1	0.328	0.247	0.262	**0.608**	0.172	0.119
ss1	0.359	0.251	0.210	0.184	**0.742**	0.125
ss4	0.337	0.258	0.202	0.181	**0.731**	0.110
ss3	0.356	0.219	0.089	0.271	**0.711**	0.153
ss2	0.492	0.132	0.197	0.101	**0.705**	0.098
up1	0.159	0.119	0.224	0.000	0.012	**0.821**
up2	0.206	0.222	0.148	0.091	-0.002	**0.809**
up3	0.206	0.232	0.130	0.038	0.199	**0.729**
up4	0.240	0.257	0.230	0.092	0.228	**0.693**
Eigen Value	5.952	4.688	4.159	3.154	3.108	2.988
Variance %	18.036%	14.207%	12.602%	9.558%	9.417%	9.053%
Total %	72.873%					

In addition, Fornell-Larcker test is performed to check additional discriminant validity. Fornell and Larcker (1981) suggest that the square root of AVE could be used to test discriminant validity when the calculated value is larger than other correlation values among the latent variables. To test additional validity, the below table is created in which the square root of AVE is written in bold. The correlations between variables are placed in the lower left triangle of the table. For example, the square root of SQ is 0.834, and this number is larger than the correlations in the column of SQ (0.689, 0.573, 0.502), and also larger than those in the row of SQ (0.415, 0.547). Similar results are also made for other variables. The Fornell-Larcker test result indicates that discriminant validity is well established.

Table 3: Fornell-Larcker Test

	IN	RC	SQ	SS	TR	UP
IN	0.853					
RC	0.411	0.817				
SQ	0.415	0.547	0.834			
SS	0.497	0.503	0.689	0.907		
TR	0.577	0.484	0.573	0.621	0.822	
UP	0.496	0.495	0.502	0.459	0.621	0.847

5.2. Test Results

A path analysis to test the hypotheses is performed by using partial least squares (PLS) method. PLS is an emerging multi-variate analysis method that can test the additive causal model and PLS can be a good alternative to regression analysis and other methods (Wong, 2013; Woo, Park, & Jung, 2014; Lee, Hong, & Min, 2018). PLS is used efficiently when the conditions are satisfied (i.e., new research topic, small sample size, and little previous research). Considering the scarcity of studies on S.I suppliers and the difficulty of collecting abundant samples, PLS was considered a suitable method.

An examination of the R^2 value shows that the model shows a substantial amount of the variance. In the model, the R^2 values of TR, SQ, and SS are 0.407, 0.328 and 0.550 subsequently. According to the analysis result, every hypothesis is supported except H2 at the significance level of 0.05. According to the empirical results, RC and IN has significant positive effects on TR, and the relations between TR, SQ and SS are also supported. However, the direct relationship between UP and TR is not supported.

Table 4: Causal Relation Effect

Hypothesis	Path	S.E	T-value	P(<0.05*)
H1. RC → TR	0.294	0.057	5.127	0.000*
H2. UP → TR	0.008	0.060	0.135	0.893
H3. IN → TR	0.452	0.082	5.542	0.000*
H4. TR → SQ	0.573	0.048	11.850	0.000*
H5. TR → SS	0.337	0.067	5.025	0.000*
H6. SQ → SS	0.496	0.064	7.768	0.000*

Apart from the main effects, the multiple mediating effects of TR and SQ are examined. In particular, we examine the mediating effects of TR and SQ on the relations between significant exogenous variables (RC and IN) and SS. The first step of the analysis to test the mediating effect is to exclude the mediating variables (TR, SQ) and analyzed the direct relationships between exogenous variables and SS. As a result, RC and IN shows a significant relationship. Second, indirect relationships are added and the mediating effects are analyzed again. As a result, TR and SQ are found to mediate the relationships between exogenous variables and SS, resulting in partial mediating effects.

Table 5: Mediating Effect

Direct & Indirect Effect		Path	S.E	T-value	P(<0.05*)
Direct Effects	IN → SS	0.298	0.083	3.598	0.000*
	RC → SS	0.303	0.066	4.595	0.000*
Indirect Effects	IN → TR → SQ	0.260	0.053	4.915	0.000*
	IN → TR → SS	0.114	0.037	3.077	0.002*
	IN → TR → SQ → SS	0.111	0.030	3.698	0.000*
	RC → TR → SQ	0.168	0.039	4.307	0.000*
	RC → TR → SS	0.074	0.027	2.768	0.006*
	RC → TR → SQ → SS	0.072	0.021	3.380	0.001*

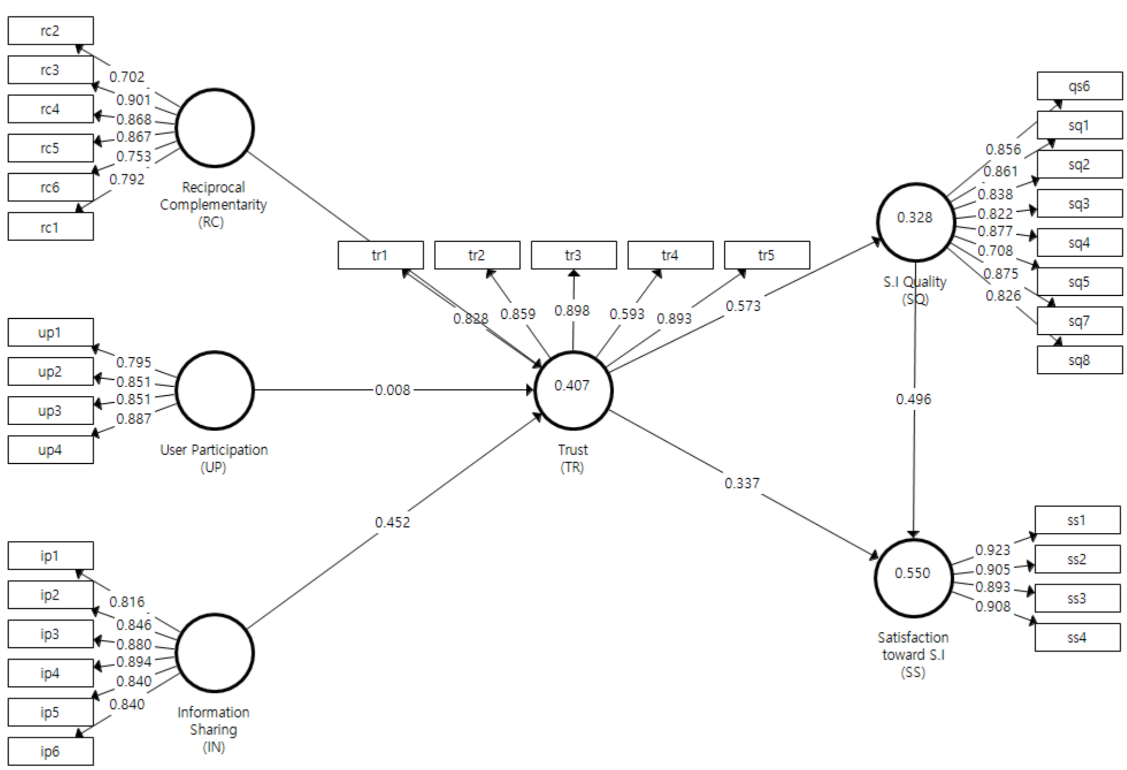

Figure 2: PLS Output

6. Conclusions

6.1. Implications

This study presents antecedents of trust and system quality in IS development projects from the perspective of system integrators. The model argues that trust is SI's key managerial variable to achieve high system quality.

First, according to the results of the study, resource complementarity is a powerful predecessor of trust, and success of S.I business relies on its capability to acquire and connect the necessary resources. In other words, the source of competitiveness of SI companies lies not inside the company but outside the company, and the key factor is the networking ability.

Second, this study emphasizes the importance of user participation again. However, the relationship between user participation and trust is not supported. There are several potential explanations for not supporting this hypothesis. Excessive user participation and unclaimed requirements can lead to conflicts and potentially undermine the relationship with the SI. In addition, the request of asking for a large number of users to participate may be seen as a lack of SI's expertise. SI should be aware of the appropriate level of user participation required for the project in order to establish a respectable relationship.

Third, this research confirms that information sharing can promote trust. The SI must strive to obtain the client's trust and at the same time to obtain the necessary cooperation for the fulfillment of the project by providing the right information that the customer needs. One way to do this is to operate a knowledge portal or knowledge management system (KMS) that allows SI and users to participate together.

Fourth, quality is a leading factor in customer satisfaction, and it has been confirmed that the SI is no exception. Due to the characteristics of the SI business, more revenue is generated from customer support such as system maintenance and user education than simple system development task can generate. However, without the provision of superior system quality, this subsequent additional revenue will not be realized.

Fifth, it is important to note the positive mediating effects of trust and system quality are identified. The results reaffirm the importance of relationship satisfaction and high quality on the success of an IS project. In particular, given the nature of the relationship-oriented business of system development project, SI should make various efforts to increase trust with the client. Confidence in the quality of the system and trustful relationship promoted during the long-term project period is confirmed to be able to guarantee a sustainable business relationship.

6.2. Limitations

Despite several notable contributions, there are a few limitations to this study, which may be overcome by future research. First, most measurements were retrospective, depending on the respondents' memory of past behavior or events, limiting the validity of the results. In addition, key variables such as resource complementarity and user participation were measured as perception but their impacts may be different if they were measures of behavior.

Second, the possibility of the respondent error exists. In particular, it is not realistic for a large-scale project to require a single respondent to understand the overall project and answer the questions. In order to overcome the potential problem, it may be necessary to consider the role and responsibility of the respondents in the client company or their prior project experience.

Third, the hypothesis on user participation is rejected, raising the possibility that an appropriate level of participation may exist rather than fundamentally denying the necessity of user participation. In future research, it will be necessary to show the proper level of user participation more precisely and to confirm the level. In addition, it may be necessary to expand the range of survey respondents participating in this study. If the actual system users as well as the development participants were included in the survey, then this hypothesis could be supported. Future research is needed to explore the impacts of SI's role on those variables.

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