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Editorial Comment: The Dichotomy of Critical Success Factors for IT Services

Ho Geun Lee*

Most IS studies take the position that the effect of critical success factors (CSFs) of IT services on user satisfaction/usage is one-dimensional or linear: the higher the influence of a CSF, the higher the level of measured performance (e.g., service satisfaction, adoption, and/or usage). Most theories and research models adopted by IS researchers, such as the theory of reasoned action and the technology acceptance model, are grounded on this paradigm in which unidimensionality is presumed implicitly or explicitly. However, sporadic arguments have been made that adequate prediction of user perceptions and behaviors is difficult when research is grounded on such a one-dimensional premise (Ahuja and Thatcher, 2005; Cenfetelli, 2004; Mittal et al., 1998). The motivators and de-motivators to use a service/product could represent two divergent concepts rather than flip sides of a coin. For instance, motivators to use a service improve user satisfaction if they are fulfilled, but their absence may not necessarily result in a proportional degree of user dissatisfaction. Likewise, de-motivators to use a service may increase user dissatisfaction, but their alleviation may not necessarily enhance satisfaction with the service proportionally.

However, empirical studies that examine the dichotomy or directional discrepancy of influencing forces on the success of an IT service are scarce, making it difficult to judge the theoretical integrity of what may be called the 'dichotomy' view. In this article, I would like to introduce a recent research result, co-produced with Bongsik Shin from San Diego State University, to test the dual nature of CSFs. In adopting the duality perspective, we have taken the position that the influence of a CSF as an antecedent variable on the consequence variable(s) of an IT service can be asymmetric (i.e., non-linear). From the symmetric viewpoint, the association between a given CSF and outcomes remains proportionately uniform: a higher-level CSF results in a higher level of performance, and vice versa. However, if the influence of a CSF is asymmetric, its effect on the consequence variable(s) must be stronger in one direction than in the other direction.

To test the validity of our theoretical position, data were gathered on post-adoption usage of digital

* Editorial Board Member, School of Business, Yonsei University, h.lee@yonsei.ac.kr

data services offered by carriers of mobile devices (mobile data service or MDS), currently the most prevalent form of IT-enabled service. The inundation of web-based advanced data services for smart phones (e.g., iPhone), tablets (e.g., iPad), laptops, and other personal digital devices is well known. With the launch of high-speed mobile networks running 4G technologies, there has been a surge of various mobile data services such as social networking, video conferencing, streaming of movies and user-created content, and online gaming. This explosive growth trend should continue with the meteoric rise of smart phones. Two sets of empirical data (a purely self-report-based, cross-sectional dataset and an actual usage-based, longitudinal dataset) were gathered to verify the duality of the CSFs. The different types of datasets complemented each other's weaknesses, allowing for a more generalized view of the empirical findings.

Ⅰ. Duality Theories

The theorization of dichotomy began as early as Herzberg *et al*. (1959), who separated personal and organizational elements influencing employee job satisfaction into two categories: motivators and de-motivators. Motivators boost job satisfaction and employee performance, but their absence or insufficiency does not necessarily increase job dissatisfaction. According to the two-factor theory, motivators are internally-generated drivers rather than externally-stimulated incentives (Bassett-Jones and Lloyd, 2005). They are mainly task-related, intrinsic to job content, employee-administered, and closely related to a person's sense of internal growth. By contrast, de-motivators result in employee dissatisfaction if not alleviated; however, their alleviation may not result in higher job satisfaction. They tend to be extrinsic, environmental, and controlled by someone other than the employee herself. For instance, the motivational effect of financial rewards may decrease past a certain threshold level; however, their paucity can steadily de-motivate employees.

The two-factor theory has been applied to the domain of product/service satisfaction. For example, Mittal and Lassar (1998) divided service quality into technical quality and function quality, and demonstrated their opposite influences on clients' service satisfaction. Chowdhary and Prakash (2005) discussed motivators and de-motivators in terms of *vantage* factors that differentiate a service and *qualifying* factors that clients take for granted in subscribing to the service. Swan and Combs (1976) derived the concept of *instrumental* variables that represent product performance and *expressive* variables that embody the psychological performance of the product. According to them, customer satisfaction tends to improve when a product's expressive values are higher, but low expressive values do not necessarily translate into higher dissatisfaction with the product. However, dissatisfaction with the product increases when instrumental values fall below a certain psychological anticipation level.

Some IS studies have embraced a similar line of reasoning. Most notably, Cenfetelli (2004) theorized an influential duality (i.e., *enablers* and *inhibitors*) of explanatory IT features on a measured outcome (e.g., adoption). In his duality theory, the inhibiting and enabling perceptions are mutually independent. For instance, an enabler exerts a positive force on the decision to adopt a system, but its absence

may not contribute to system rejection. An inhibitor may be a positive predictor of system rejection, but its absence may not enhance system adoption. The dual theoretical argument can be extended into a nomological network in which inhibitors are triggered by a set of causal factors different from those of enablers. Inhibitors also differ from enablers in their effect on consequence variables. In determining the psychological significance of IS attributes (e.g., inhibitors vs. enablers), norms and expectations play a key role. For instance, if an attribute is normative, users take it for granted and notice its effect only when it is missing (or weak), thus triggering their negative reactions. The argument goes that instead of focusing on the enabling or facilitating aspects of system issues, IT may be designed to curtail inhibiting forces in order to prevent system rejection by IS users.

Other IS studies have embraced reasoning similar to that of Cenfetelli (2004). Speier *et al.*'s (2003) study indicated that inhibitors have asymmetric effects on IT usage. For example, the reduction of such system interruptions as web browser pop-ups did not necessarily increase system usage. In addition, studies of IT innovation adoption (e.g., Parthasarathy and Bhattacherjee, 1998; Venkatesh and Brown, 2001) implied that factors promoting adoption differ from inhibiting forces. Despite the potential lack of symmetry of an attribute's impact on measured consequences, empirical efforts to examine this phenomenon have not gained much traction in the IS field.

Ⅱ. Motivators and De-motivators of IT Services

In our study, we have employed two important CSFs for the MDS success: "information quality" as motivators and "system quality" as de-motivators. In MDS, content may be available in text, sound, image, or other multimedia format; richness of content depends largely on the presentation method. The quality of information is *intrinsic* in the sense that its consumption is the primary reason for subscribing to MDS. From the duality perspective, information quality is a motivator that drives satisfaction with MDS, influences usage, is closely tied to user experience, and engages individuals in a personal way. Information is the reason most people use a mobile device. Information quality is therefore considered a *vantage* factor that differentiates IT services rather than a *qualifying* factor that any IT service provider should offer or any user takes for granted. When high-quality information is offered that strikes a balance between passive and active absorption and passive and active immersion, MDS users are expected to be more engaged in the service and more satisfied with their experience. By enriching user tasks and therefore user experience, high-quality information is expected to result in greater satisfaction with the MDS.

By contrast, when information quality does not meet the standards that the user implicitly or explicitly expects, dissatisfaction may result. As finding and using information is fundamental to MDS use, it can be discouraging when information is irrelevant, inadequate in scope and range, not timely or improperly updated, and unreliable. Nonetheless, from the duality theory perspective, because information quality is a *differentiator* rather than a *qualifier* of a service, perceived weakness in this area may not necessarily lead to service rejection. From a slightly different perspective, a certain quality

of information is required when a user adopts MDS in order to meet his/her hedonic or utilitarian needs. Psychological compromise on the part of the user may be necessary, but its discouraging effects may not be as strong as its encouraging effects.

System quality has been considered a crucial indicator of the success of an IT service. The components of MDS systems include bandwidth and accessibility, operational support systems, terminals such as cellular phones, user applications, and interface design. User perceptions of system quality are formed by the integrity of system elements as a whole in effectively fulfilling user expectations and providing positive experiences. System quality reflects a general impression of the MDS platform on which information content is offered, the *extrinsic* or *supportive* conditions under which a user uses the service. The platform is in this sense *contextual* or *instrumental,* and is a qualifying condition for MDS subscribers.

Because system quality is a *qualifying* condition, service users consciously or unconsciously develop certain performance expectations toward the service platform. If the expectations are met, that is, if the platform does not hamper users' information needs, they may not care much about its performance any more. For instance, if a webpage downloads slightly faster than normal, it may not make much difference to or have a lasting psychological impact on the user. Thus, the effect of system quality as a motivator in facilitating user satisfaction and subsequent usage increase may be limited. However, when the quality of an IT platform system is perceived to be below a certain acceptable level or weaker than what is implicitly or explicitly taken for granted, the user may become more conscious of the fact that the system is not supporting his/her needs effectively. Due to the fast pace of daily life, users become irritated when system performance does not meet their expectations in terms of responsiveness, ease of use, and interactivity. Poor system quality may therefore become a major inhibitor of sustained MDS usage, resulting in more negative user reactions. Thus, system quality may be a necessary condition to, but not a sufficient condition of, MDS success.

The empirical test revealed that information quality and system quality had clearly divergent strengths in influencing levels of user satisfaction and dissatisfaction. Information quality played a relatively larger role in shaping user satisfaction than dissatisfaction, but system quality had a greater influence on increasing user dissatisfaction than satisfaction. This is in line with the theoretical position of enablers (as satisfiers) and inhibitors (as dissatisfiers) in the adoption of MDS, as argued in previous studies. The information quality (as a motivator) was positively associated with significant increases in satisfaction of mobile data services, but system quality (as a de-motivator) was not. System quality was also negatively associated with dissatisfaction, but information quality was not.

Ⅲ. Implications

The dual perspective of CSFs in IT services has several theoretical and practical implications. It was grounded on the presumption that both asymmetric bi-directionality and symmetric unidimensionality can explain how antecedent variables shape user attitudes and behaviors. As confirmed by the effects of information quality and system quality on the performance variables, the influence of CSFs

on an IT service at the personal level must be approached from both dichotomous and non-dichotomous angles. Thus, researchers must begin with an open mind, realizing that satisfaction and dissatisfaction do not necessarily represent opposite concepts of a single dimension, and that each could be more or less responsive to a particular group of variables.

Related to the first point, researchers may take the theoretical position that an explanatory factor should be understood in terms of its *relative* influence on satisfaction versus dissatisfaction and on performance growth versus performance degradation. This position of *relativism* differs from that of previous duality studies in which the effect of a study variable is presumed to be statistically significant in one direction, but not in another (e.g., Lee *et al*., 2009). For example, our study reveals that while the inhibitor (i.e., system quality) furthered dissatisfaction and had a limited effect on satisfaction, the two variables (i.e., information quality and perceived monetary value) were statistically significant in both directions, but had a stronger influence as satisfiers.

The duality theory underlying this empirical work is a type of EP (explanation–prediction) theory that can contribute to the development and validation of IS research (Gregor, 2006). Among the conditions of a good EP theory are internal and external validities. The internal and external validity of duality theories has been demonstrated in marketing studies (e.g., Swan and Combs, 1976; Mittal and Lassar, 1998; Mittal *et al*., 1998) as well as in certain limited studies of IS (e.g., Lee *et al*., 2009; Speier *et al*., 2003). Thus, we suggest that the duality approach may be extended to the study of other variables. For example, recent studies (Benbasat *et al*., 2008; Charki and Josserand, 2008) emphasized the role of *distrust* as an independent conceptual dimension, rather than considering it as the opposite of trust. From the dichotomy perspective, low trust is not considered equivalent to high distrust, and vice versa. Future IS research may distinguish the effects of such negatively labeled variables (e.g., dissatisfaction, distrust) in understanding the dynamics of IT service usage.

This empirical finding has practical implications as well. Above all, the findings offer insights to IT service providers about how to develop effective marketing and promotional strategies for motivating service usage among satisfied customers, while at the same time preventing dissatisfied customers from defecting. For instance, given limited resources, if a firm's strategic mix desires to minimize attrition of current subscribers rather than growing its customer base due to a saturated market situation, then it may pay more attention to sustaining the system quality its customers have come to expect. However, if the firm's strategic goal is to grow its customer base or market share, then it may want to differentiate its service quality from that of the competition by enhancing customers' perceptions of information quality or financial value. Our findings also suggest that practitioners should treat customer satisfaction and dissatisfaction as two divergent dimensions of business strategy in order to comprehend market dynamics better and improve the chance of business success. Executing a service strategy designed to increase user satisfaction may not have an equivalent effect on curtailing dissatisfaction.

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