



Examining an extended duality perspective regarding success conditions of IT service



Bongsik Shin^{a,*}, Sanghoon Lee^b, Ho Geun Lee^c

^a Management Information Systems, San Diego State University, United States

^b Korea Institute of Procurement, 40-604 Hangangro 3-ga, Yongsan-gu, Seoul 140-880, Republic of Korea

^c School of Business, Yonsei University, Republic of Korea

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ABSTRACT

IS research predominantly presumes that the success factors of IT service have one-dimensional influences: the higher (or lower), the better. Sporadic arguments, however, have been made that, depending on the antecedent, such a monolithic premise may not be sustainable. Despite the rich evidence of the dichotomous role of success factors on measured consequences in non-IS fields, especially in the marketing discipline, theoretical and empirical efforts to examine this duality have received limited attention in IS research. Especially, no previous IS study took the extended duality position in which the role of success conditions can be any of *pure enabler*, *pure inhibitor*, *asymmetric bi-directional influencer* or *symmetric bi-directional influencer*. The extended duality becomes the theoretical thesis of this research, setting it apart from the scant IS research that viewed duality through the rather simplified lens of statistical significance in each direction. To test the validity of the extended duality theory in the IT service context, cross-sectional survey data were gathered on post-adoption usage of mobile data services (or MDS), the most prevalent form of IT service. Frequently used success conditions of IT service – system quality, information quality, economic value and self-efficacy – are chosen as the explanatory variables. The analysis suggests that success conditions of IT service can have a highly divergent and diversified form of duality effects on measured outcomes. The findings have important practical and theoretical implications to practitioners and researchers.

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1. Introduction

Most IS studies take the position that success conditions of an IT service have unidimensional influences on measured outcome(s): the higher or lower the influences the better. The success conditions represent antecedents or explanatory variables that significantly affect the success (e.g., satisfaction, usage) of IT service. Most theories and research models adopted by IS researchers are grounded on this implicitly presumed or explicitly expressed premise. A few IS studies, however, argued that such a monolithic relationship may not hold up (Ahuja and Thatcher, 2005; Cenfetelli, 2004; Lee, Shin, & Lee, 2009; Mittal, Ross Jr., & Baldasare, 1998). These studies generally take the dichotomy position in which an explanatory variable can have a directional influence on encouraging and/or discouraging measured performance of an IT service. For instance, a variable may significantly improve user satisfaction if fulfilled,

but its absence may not necessarily result in growth of user dissatisfaction. Likewise, the weak level of a variable may swell user dissatisfaction with IT service, but its alleviation may not necessarily enhance satisfaction proportionately. Despite the potential of the dichotomous view in better explicating relationships between studied variables in IS research, we observe that its theoretical discourse and empirical validations are highly limited. This is a stark contrast to other disciplines, especially marketing, where research from such a theoretical angle has been active.

This work is to empirically examine the viability of the extended duality perspective in explicating the relationship between the explanatory and consequence variables of IT service success. With the extended dichotomy, success conditions of IT service (as explanatory variables) are expected to significantly affect measured outcomes (e.g., satisfaction, usage) in four different mechanics: pure enabler, pure inhibitor, asymmetric bi-directional influencer (i.e., a significant enabler and inhibitor with asymmetric directional influences) or symmetric bi-directional influencer (i.e., one with symmetric, non-directional influences). Here, the terms *enabler* and *inhibitor* are used to indicate a variable that either

* Corresponding author.

E-mail addresses: shlee@kip.re.kr (S. Lee), h.lee@yonsei.ac.kr (H.G. Lee).

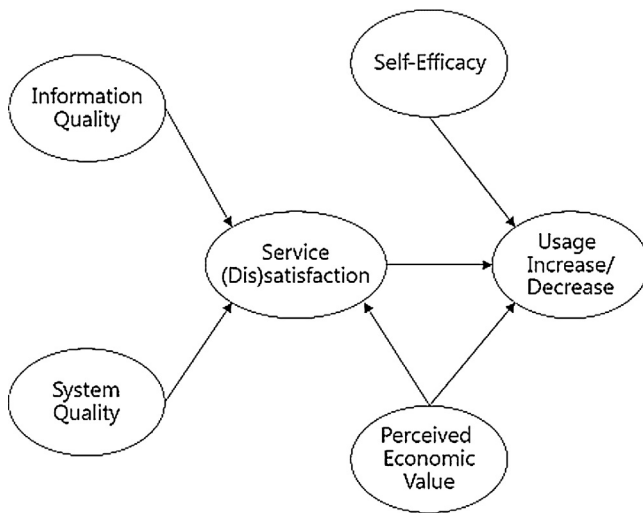


Fig. 1. Research model.

grows or impedes measured performance of IT service. As previous studies also used such terms as *satisfier/dissatisfier* and *motivator/demotivator* in place of *enabler/inhibitor*, we will be using them interchangeably as needed. The theoretical positioning of extended dichotomy sets this study apart from the short list of previous IS studies that mainly viewed duality through the limited perspective of directional significance (e.g., statistically significant in one direction, but insignificant in the other direction) (e.g., Lee et al., 2009).

To test the theoretical validity of the extended dynamism between explanatory variables and measured consequences of IT service, a research model was proposed in the context of mobile data services (shortly MDS), the most prevalent form of IT service, and the proposed relationships between included variables are empirically examined. Hong and Tam (2006) defined MDS as “an assortment of digital data services that can be accessed using a mobile device over a wide geographic area.” With the launch of high-speed mobile networks, there has been a surge of digital data consumption for social networking, video conferencing, streaming of movies and user-created contents, and online gaming among others.

Explanatory variables included in the research model are among the most frequently cited success conditions of IT service: system quality, information quality, economic value, and self-efficacy (DeLone & McLean, 1992, 2003; Hong & Tam, 2006; Lee et al., 2009; Venkatesh & Brown, 2001). The first three are important IT service dimensions, while self-efficacy is a personal attribute that should be significant in shaping an individual’s IT usage behaviors (Agarwal & Prasad, 1998; Lewis, Agarwal, & Sambamurthy, 2003; Venkatesh & Brown, 2001). Their influences on outcome variables of “(dis) satisfaction with MDS” and “change in MDS usage” are empirically examined. For this study, cross-sectional survey data were gathered and analyzed using structural equation modeling.

2. Literature and theories

As discussed, most IS research has been conducted on the premise of linear (or symmetric, non-directional) relationships between the levels of explanatory and consequence variables. This literature review section, therefore, focuses on studies that are grounded on perspectives different from the dominant ‘linearity’ viewpoint, and, thus, accept the divergent role of antecedent variables on the measured consequence(s). Given the scarcity of IS

studies conducted on this premise, the literature review is performed separately for IS and non-IS studies.

In the management discipline, the theorization of duality began as early as Herzberg, Mausner, and Snyderman (1959), who separated personal and organizational factors influencing employee job satisfaction into two categories: motivators and de-motivators (also called as hygiene factors). 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 mitigation may not result in higher job satisfaction. They tend to be extrinsic, environmental, and controlled by someone other than the employee herself.

The duality view has been frequently adopted in the marketing domain as well to understand both product/service quality management and ensuing customer satisfaction (or dissatisfaction). 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. Meanwhile, dissatisfaction with the product increases when its instrumental values fall below certain psychological anticipation. Johnston (1995) suggested that, while intangible interpersonal service aspects may be more significant in enhancing customer satisfaction, operational service aspects may play a bigger role in growing customer dissatisfaction. Mittal and Lassar (1998) divided service quality into technical quality and functional quality, and demonstrated their opposite influences on clients’ service satisfaction. Duality is also discussed in terms of *vantage* and *qualifying* factors (Chowdhary and Prakash, 2005). While the former differentiates a service and, thus, is sought after by consumers as ‘order-winning’ attributes, the latter are conditions that clients take for granted in subscribing to the service and, thus, their presence is considered essential to prevent growth of consumer dissatisfaction.

Several studies of marketing, especially in service quality management, extended the dichotomous view into the three-factor theoretical lens in which an explanatory factor (e.g., service quality) can be one of: a satisfier (or enabler) with a larger role in improving satisfaction; a dissatisfier (or inhibitor) that is more influential in growing dissatisfaction; and a bi-directional factor with equal effects on growing both satisfaction and dissatisfaction. Johnston and Silvestro (1990) categorized the explanatory variables into hygiene, enhancing, and dual factors in which the dual factor leads to both satisfaction and dissatisfaction rather than having a larger influence on one direction. Brandt (1987, 1988) and Brandt and Reffet (1989) utilize: penalty factors with minimum requirements (i.e., dissatisfiers); reward factors as value enhancing factors (i.e., satisfiers); and hybrid factors with both satisfying and dissatisfying forces. Matzler and Sauerwein (2002) labeled them in terms of basic factors with minimum requirements; excitement factors; and performance factors with hybrid (or dual) effects. They suggested that, while basic factors are generally low implicit and high explicit service attributes, excitement factors have high implicit and low explicit importance to customers. Research grounded on the premise of influential diversity of service quality factors has continued until recently with strong empirical supports (e.g., Bianchi and Drennan, 2012; Huang and Finch, 2010). Huang and Finch (2010) summarized that the influence of explanatory factors on a measured outcome (or performance) can be manifested

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