IT Self-Service Engagement: A Theory of Trying Perspective

Completed Research Paper

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Abstract

IT self-service engagement, or an individual's attempt to voluntarily solve his or her IT problems without seeking the help of the IT department in an organizational setting, is an emerging phenomenon; it is gaining momentum among employees and organizations alike. By 2017, up to 54% of organizations are predicted to use IT self-service as an alternative to phone and email contact. In this study, we anchor IT self-service engagement within the conceptual framework of the theory of trying. We study what motivates individuals to engage in IT self-service as well as its effects on innovative work behaviors. Sampling more than 200 employees, we show that (a) IT self-service is a concept in its own right, (b) is driven by levels of IT empowerment and subjective norms, (c) manifests itself in heightened levels of innovative work behaviors, and (d) exists irrespective of good or bad service experiences provided by the IT department.

Keywords: IT self-service engagement, IT Empowerment, subjective norms, innovative work behaviors, theory of Trying

Introduction

The quality of IT service delivery has been extensively studied in the IS literature and been shown to be vital in contributing to the success of an information system (Zeithaml et al. 2002; Shankar et al. 2003; DeLone and McLean 2003). Being reliable, empathetic and responsive are just some of the characteristics that IT personnel, as well as IT services rendered via Web sites are expected to display in order to provide superior service to customers (DeLone and McLean 2003; Cenfetelli et al. 2008; Kettinger et al. 2009). However, the notion that customers themselves become actively involved in the process of IT service delivery has not yet entered the IS research stream—despite a call for it (Sun et al. 2012).

With the commoditization of IT taking place, and as individuals increasingly bring their own IT into the workplace (Niehaves et al. 2012; Harris et al. 2012), employees are becoming more and more IT savvy and less reliant on the services of an IT department. They experience higher levels of computer self-efficacy and competency, culminating in what the literature describes as self-sufficiency (Cousins and Robey 2015). Employees have grown comfortable not only with making their own IT decisions but also with taking care of their own IT problems—a phenomenon that is increasingly recognized by corporate IT.

Instead of assigning responsibility for solving an IT problem to the IT department, an employee may decide to tackle it on his own. At other times, he might consult a coworker who has encountered a similar problem or turn to FAQ pages offered by the organization or a vendor. The spectrum of IT problems an individual encounters can be broad. From software error messages, to failing login credentials, to

installing printers, the type and range of IT problems an individual is willing to solve varies significantly. In order to solve a problem, he may rely on resources other than the IT department; he may utilize resources within the organization, such as coworkers, manuals or FAQ platforms; or, he may turn instead to resources outside the organization, such as friends, social media networks, and the Internet in general.

Within organizations, the number of corporate IT portals is blossoming. By the end of this year, 20% of organizations will have IT self-service portals in place, up from 5% in 2010 (Greene 2014). These portals provide 24/7 online support and offer access to users anytime, anywhere, and from any device. In lieu of communicating with IT personnel via phone or email, employees are routed through these self-service portals first where they can find useful tips on how to address their IT problems. It has been suggested that as much as 40% of all service desk contact volume could be dissipated through IT self-service (Coyle and Greene 2010). But the benefits go well beyond service desk contact reduction. If properly implemented, IT self-service engagement can "improve customer satisfaction, provide incident trend analysis, identify training opportunities, and consolidate the knowledge that currently exists in silos across the support organization" (p. 6, Coyle and Greene 2010). By 2017, it has been predicted that 54% of organizations will use IT self-service as an alternative to phone and email contact (Gartner, 2015). For many organizations, this will translate into considerable savings and higher quality services while freeing up valuable IT resources. It also has the potential to increase organizational agility, innovation, and the level of empowerment among employees (Matchett 2014).

In this study, we define IT self-service engagement as an individual's attempt to solve his or her IT problems without seeking the help of a dedicated IT department. We deliberately limit our definition to an organizational setting where an IT department is present for the following reasons. First, we want to zoom in on the organizational factors that contribute or thwart IT self-service engagement; and second, we want to juxtapose the traditional way of solving an IT problem in an organization with an emerging approach and unearth reasons of why individuals exercise a voluntary behavior towards IT—even though the setting already provides for it.

We anchor IT self-service engagement within the conceptual framework of the theory of trying (Bagozzi and Warshaw 1990), a theory that focuses on an individual's act of trying a behavior, irrespective of its successful or unsuccessful outcome. We demonstrate that precursors of IT self-service engagement are rooted in the constructs of IT empowerment and subjective norms and show that IT self-service engagement has a significant effect on innovative work behaviors. The set of research questions motivating our study include: (1) How can we empirically conceptualize IT self-service engagement? (2) What motivates individuals to engage in IT self-service? And (3), to what extent, if at all, does IT self-service engagement impact innovative work behaviors?

We demonstrate that IT self-service engagement is a concept in its own right, one that is conceptually different from perceptions about service quality in general. We also demonstrate that IT self-service engagement, as a construct, has its own set of antecedents, manifests itself in heightened levels of innovative work behaviors and exists irrespective of good or bad service experiences provided by the IT department.

The paper is organized as follows. We first introduce the notion of IT self-service engagement and review the prior literature on the theory of trying that provides the foundation for our conceptual model. In this context, we also situate IT empowerment, subjective norms, and innovative work behaviors. We then describe the research method and present our data analysis and findings; we conclude by discussing the results in light of research and practice and provide suggestions for future studies.

Theoretical Background and Model Development

In this study, IT self-service engagement means that an individual becomes part of the IT service delivery process and switches his role from a mere consumer of IT services to an active participant in such services. We define IT self-service engagement as an individual's behavior to engage in the process of solving his own IT problem without calling upon the help of the IT department. It describes an individual's propensity to depend on his own expertise and resources when it comes to fixing his IT issues at work; it also captures that he feels able to solve his or her own IT problems and sometimes prefers—and perhaps even enjoys—doing so.

While IT self-service engagement might be a topic that applies to the broader public, we deliberately narrow our perspective to an organizational setting where a true alternative, namely that of a dedicated and paid-for IT department, exists. Electing to rely on themselves, and to a lesser extent on the services of an IT department, is a choice that employees are increasingly making. The emergence of IT self-service engagement—as a new phenomenon—is mostly driven by the commoditization of IT. The increasing ubiquity of IT devices penetrates work and personal lives (Harris et al. 2012). In form of laptops, iPads, or smartphones, loaded with applications, such as Skype, Twitter or Facebook, individuals are using these tools as part of their personal and work life (Harris et al. 2012).

As a by-product of this IT consumerization trend, individuals are increasingly IT savvy, self-sufficient (Cousins and Robey 2015) and characterized by increased levels of engagement and collaboration within organizations (Tapscott 2008). Known as "digital natives", a phrase coined by Prensky (2001), this new generation of users has grown up in an environment where the use of information technology is pervasive and used in organizational as well as non-organizational contexts (Vodanovich et al. 2010). Digital natives are also characterized by a novel IT usage pattern (Prensky 2001). They are said to "prefer receiving information quickly, ... prefer multitasking and nonlinear access to information, have a low tolerance for lectures, [and] prefer active rather than passive learning" (p. 715, Vodanovich et al. 2010). As part of their increased level of engagement and their increased active and exploratory learning behavior, this new generation has an increased tendency to perform IT self-service as part of their everyday life.

Also, as a by-product of this IT consumerization trend, there is an increased availability of channels through which solutions to specific IT problems can be found (Nilsen and Sein 2004). These channels include online search engines, such as Google, as well as Q&A platforms, such as Stackoverflow.com. They also entail online social networks, such as Facebook or YouTube, where users can find visual step-by-step manuals or video tutorials that address specific IT problems and their solutions. At other times, users may rely on networks of friends and co-workers to learn first-hand how to fix an IT problem.

Another factor driving the IT self-service engagement phenomenon emerges from the organizations themselves; often, they have refused to invest in IT support services as they were unable to quantify how these services would overtly improve the technology usage experience of employees (Haggerty and Compeau 2001). For organizations, encouraging IT self-service not only streamlines the IT service delivery process and thus decreases the work volume, it also helps to re-allocate IT resources for value-adding services, including IT innovation. By 2014, 34% of organizations were promoting IT self-service as part of their service delivery model (Matchett 2015). While increasingly witnessed in the market, the IT self-service engagement concept has received little or no attention in IS scholarship. To the best of our knowledge, no study has measured IT self-service engagement or studied its impact in the workplace.

The Theory of Trying

The increased tendency of individuals to be IT self-sufficient, combined with the increased availability of sources that can aid in finding the right solution to the IT problem, increase the likelihood of individuals' trying. Introduced by Bagozzi and Warshaw (1990), the theory of trying emerged when studying goal-directed consumers' behaviors and signifies the extension of two existing theories, i.e., the theory of planned behavior (Ajzen 1985) and the theory of goal pursuit (Bagozzi and Edwards 1998). The theory of trying focuses on the act of trying and de-emphasizes an individual's intentions as the ultimate outcome variable that has dominated prior models. More specifically, a reasoned action or behavior is replaced by a trying behavior, an attitude towards the reasoned action is replaced by an attitude towards trying, and an intention is replaced by an intention to try (Bagozzi and Warshaw 1990; Carsrud et al. 2009).

The rationale behind the theory of trying is that in order to reach a goal, an individual has to behave in a manner to achieve it, but might, while doing so, face obstacles and barriers and thus might change his behavior along the way. Changing his behaviors in the process is a necessary condition (also referred to as pre-behaviors) to reach the ultimate goal (which is also considered a behavior). For example, in order to get a computer problem fixed and continue with his work, an employee might try different alternatives. He might call up the IT department, or if obstacles continue to thwart this behavior, he might seek other alternatives, such as consulting an online Q&A platform like superuser.com. Pre-behaviors, or the changes in behaviors to reach the ultimate goal (i.e., fixing a problem in order to continue work), are viewed as intermediate goals.

According to Ahuja and Thatcher (2005), trying is defined as "doing all the necessary pre-behaviors and otherwise satisfying all necessary conditions that are within volitional control for the performance of the subjective behavior" (p. 435). Trying therefore entails efforts and having multiple intermediate goals (and thus displaying pre-behaviors) that—eventually—lead to the attainment of an individual's ultimate goal, or ultimate behavior.

Trying is also a random process. An employee working on an Excel spreadsheet for an upcoming meeting, for example, might suddenly incur an error message, preventing him from accomplishing his ultimate goal of compiling all the information needed for the meeting. His behavior changes; he might switch from working on the spreadsheet to sending a ticket about his problem to the IT department; he may or may not wait for an answer; he might search for a possible solution online; he may or may not decide to follow the steps provided online on how to solve the problem (e.g., by restarting the application). While his ultimate goal is to getting his work done, his intermediate goals entails resolving the error message (either through the IT staff or through himself). Resolving the error message, in turn, entails exploring ways and generating possible solutions that allow him to continue his work.

In contrast, traditional theories, such as the theory of planned behavior, assume that a behavior is always preceded by a deliberative process, or intent, that culminates in a conscious decision to act; traditional theories also assume if an individual tries to act, no impediments are likely to stand in the way, such as ability limitations, lack of money, environmental contingencies, and unconscious habits (Fishbein and Ajzen 1975).

The theory of trying de-emphasizes an individual's intentions as the ultimate guarantee for the attainment of the outcome behavior. Intent, while required, is not a sufficient condition for the actual outcome to happen. Trying is about accomplishing intermediate goals, taking multiple consecutive steps toward the ultimate goal and making purposive efforts to fulfill them. In the process of doing so, the theory of trying acknowledges that failure is possible (Bagozzi and Warshaw 1990). After all, an individual might not be able to accomplish an intermediate goal and might spend considerable amounts of time checking out alternative behaviors. He will, however, keep trying, and his trying might depend on a series of factors, including, for example, his favorable or unfavorable attitude toward trying, manifested by his perceived level of empowerment to do so, his intentions to try, as well as the social norms that put the act of trying in a favorable or unfavorable light by virtue of others (Bagozzi and Warshaw 1990).

In this context, engaging in IT self-service can be viewed as an individual's pre-behavior to achieve an ultimate goal, such as continuing with his actual work and getting it done. The individual might feel empowered, for example by virtue of having the competence and self-determination to do so, and might therefore form a favorable attitude towards trying to solve his own IT problem; or he might observe that his coworkers are not calling upon the IT department to have their technical issues resolved, prompting him to try on his own. All of these contribute to the fact that an individual might be more inclined to fix an IT problem on his own in hopes of getting the job done.

In the IS field, the theory of trying has been applied scarcely. For example, Bagozzi et al. (1992) used it as an alternative to the Technology Acceptance Model and the Theory of Reasoned Action by showcasing its validity in the context of technological learning and usage. In addition, Ahuja and Thatcher (2005) adopted the theory of trying for conceptualizing the construct "trying to innovate with IT" as a post-adoptive measure and superior in ability to "intentions to use IT", a prevailing measure of pre-adoption behaviors.

IT Empowerment and IT Self-Service Engagement

The level of empowerment an individual perceives, particularly with regards to technology, is vital for forming a positive attitude towards his trying behavior. Only when empowered will individuals perceive they have the appropriate level of prowess to keep on trying.

Conceptually, the notion of empowerment is rooted in participative management (Wagner 1994; Conger and Kanungo 1988; Wilkinson et al. 1997), employee involvement (Lawler and Mohrman, 1989), and job enrichment theories (Hackman and Oldham, 1980). It evolved over time from being a set of management practices (Blau and Alba 1982; Mainiero 1986), to a power sharing strategy between employers and employees (Conger and Kanungo 1988; Wagner 1994; Wilkinson et al. 1997), to a psychological state in the workplace (Conger and Kanungo 1988; Thomas and Velthouse 1990).

Psychological empowerment in the workplace, for example, describes a state in which an individual feels empowered because of four facets: his belief in his capability to perform the required activities with skill (competence), because of his self-determination to initiate and regulate behaviors (self-determination), because of the value he places on his work (meaning), and because of the difference he can make at work—operative strategic, administrative, or otherwise (impact) (Spreitzer 1995; 1996).

Psychological empowerment has explained organizational performance and job satisfaction (e.g., Liden and Arad 1996; Glick et al. 1986; Seibert et al. 2004; Zhang and Bartol 2010), job effectiveness (Spreitzer et al., 1997), employee turnover (Liu et al. 2011), and organizational commitment (Borghei et al. 2010). Further, it has been shown to influence an individual's creativity (Sun et al. 2012), his work place learning (Zahrani 2012) his innovative behaviors (Spreitzer 1995), as well as his exploration of collaboration technologies (Maruping and Magni 2015). In the IS field, the notion of IT empowerment has emerged (Junglas et al. 2014), placing the IT artifact at the center of psychological empowerment. More specifically, IT empowerment is described as the belief an employee holds towards a technology for getting his job done (Junglas et al. 2014).

We contend that the level of IT empowerment an individual experiences is vital for forming an attitude about him trying to solve his own IT problem. More specifically, it is achieved through four components: IT competency, IT self-determination, IT meaning and IT impact.

Through a heightened sense of IT competency, an individual believes he has the necessary skillset to evaluate and utilize technology for work. It leads him to develop an attitude of trying where his expectations of success outweigh his expectations of failure and prompt him to try to solve his own IT problem. Feeling capable and comfortable of the idea of solving his own IT problem is necessary for being able to achieve his higher-level goal: namely getting his work done (Bagozzi and Warshaw 1990). An individual's IT competency is not only reflective of his IT proficiency but also of his self-efficacy. In fact, self-efficacy, or an individual's belief in his own ability to succeed in specific situations or accomplish a task (Bandura 1977), is an important aspect of IT competence (Spreitzer 1995, 1996). Employees who expose high levels of IT competency are likely to have high confidence in their ability to use IT to do their job; they also display high levels of self-assurance about their capabilities to perform work activities with the use of IT, and the skills necessary to use IT for their job. Overall, this heightened sense of IT competency allows them to form a positive attitude toward the process of trying IT self-service. Prior research has indicated that competency motivates individuals to take initiative and to experiment in the hopes of enhancing their performance (Dabholkar and Bagozzi 2002; Kirkman and Rosen 1999; Spreitzer 1995). For example, an employee with high levels of IT competence facing an IT problem is likely to acknowledge that he has the required skillset to succeed in finding a solution.

Through a heightened sense of IT self-determination, in contrast, an individual feels in control and able to initiate and regulate actions when it comes to technology. He sees and perceives himself as the originator of actions, a free agent, that is able to decide how to solve an IT problem as well as which channels/alternatives to seek out to do so. This heightened sense of IT self-determination allows him to form a positive attitude toward the process of trying IT self-service. Prior research has shown that an individual's sense of autonomy increases his likelihood of being innovative with technology (Ahuja and Thatcher 2005). Applying the previous example, he feels that he has the option to seek other channels for getting this IT problem solved; he feels that he is not obliged to wait his turn for an IT staff member to fix his problem. Instead, he can choose to solve it himself, for example, by searching for it online or seeking out his social network for help.

Through a heightened sense of IT meaning, an individual deems IT to be instrumental in accomplishing his work goals. He feels that IT is essential for getting his work done and he is, thus, likely to seek out ways to alleviate any impediments that might deter from achieving this goal. This might include foregoing the IT department and seeking help elsewhere (e.g., by turning to online FAQ platforms or colleagues). Prior research has shown that with a heightened sense of meaning, an individual is more likely to try out new ways to augment his ability to get his job done (Mathieu et al. 2006).

Finally, through a heightened sense of IT impact, an individual believes that his use of IT can make a difference in the workplace. In contrast to bureaucratic approaches (Thomas and Velthouse 1990) where employees are prescribed strict rules, an individual with a heightened sense of IT impact feels the ability to exercise influence and control over technology used for work; he feels that his way of using technology

can have an impact above and beyond his immediate work task for the organization as a whole. Continuing with the previous example, an employee succeeding to solve an IT problem might show impact if his behavior promotes followers; a coworker, for example, seeking help on the same IT issue might expand his skill set, thus promoting this behavior among others. Overall, with a heightened sense of IT impact, an individual is more inclined to form a positive attitude toward the process of trying out IT self-service.

We contend that the combination of IT competence, or an individual's belief that he has the appropriate IT capabilities and skills to perform his work, IT self-determination, or an individual's belief that he has a say in which technology to use to get his work done, IT meaning, or the values an individual attaches to the IT at hand based on his standards and ideals, and IT impact, or the impact an individual believes to have with regards to technology provided at and for work, determine the extent of which individuals are willing to engage in solving their own IT problem. Accordingly, we state:

H1: IT empowerment has a positive influence on an individual's engagement in IT self-service.

Subjective Norms and IT Self-Service Engagement

Subjective norms capture the degree to which an individual is compelled to perform a certain behavior because he believes that important others or referents think he should (Fishbein and Ajzen 1975). In other words, subjective norms comprise "the perceived social pressure to perform or not to perform the behavior" (p. 188, Ajzen 1991). As part of the theory of trying (Bagozzi and Warshaw 1990), an individual's expectation of succeeding or failing in their effort of trying is highly dependent on what others do. Their intention to try is heightened if others, who value IT self-service engagement, exhibit the same behaviors. In other words, and applied to the context of IT self-service engagement, if coworkers, who have influence over an individual's behavior, solve their own IT problems, the very same individual will be more inclined to do the same. Accordingly, we hypothesize the following:

H2: Subjective norms has a positive influence on an individual's engagement in IT self-service.

IT Self-Service Engagement and Innovative Work Behaviors

Given the fast-evolving technological advancements and the turbulent environment that contributes to a tightening of market competitions, organizations have increasingly realized that avenues are needed to encourage their employees to engage in creative behaviors (Shalley and Gilson 2004). Employee-driven change has been found to be an important determinant of an organization's ability to continuously innovate (e.g., Janssen 2000; Scott and Bruce 1994; Sharma and Chrisman 1999; De Jong and Den Hartog 2007; Kanter 1983; West and Farr 1990).

Innovative work behavior, defined as an individual's behavior with a specific goal of launching and introducing new and useful ideas, procedures, processes, or products, within a work role (Farr and Ford 1990), has been shown to include not only the generation and introduction of new ideas, but also the realization and implementation of these ideas (e.g., Farr and Ford 1990; Scott and Bruce 1994; Janssen 2000; Krause 2004; Dorenbosch et al. 2005; Reuvers et al. 2008; Yuan and Woodman 2010). More specifically, four interrelated dimensions have been proposed, that constitute innovative work behaviors (De Jong and Den Hartog 2010): idea exploration, idea generation, idea championing, and idea implementation. Idea exploration captures the idea of investigating opportunities (Krueger 2000), often an indication that a change in existing work practices needs to take place (Farr and Ford 1990; Kanter 1988). Idea generation is about furnishing an opportunity with ideas that are based upon combined and reorganized information on how to solve a detected problem (De Jong et al. 2010). Idea championing entails the ability of an individual to persuade others, typically coworkers, to work in accordance with the idea, and idea implementation comprises putting the idea into action.

Innovative work behaviors have been studied extensively in the organizational behavior literature. Factors that influence the extent to which employees exhibit innovative behaviors at work include, for example, their relationship with supervisors (e.g., Janssen and Van Yperen 2004), job characteristics (e.g., Oldham and Cummings 1996), their respective group or the social context in which work is performed (e.g., Munton and West 1995), individual differences (e.g., Bunce and West 1995), as well as their perceived level of empowerment (e.g., Spreitzer 1995; Zhang and Bartol 2010).

According to the theory of trying (Bagozzi and Warshaw 1990), IT self-service engagement can be viewed as a pre-behavior (or intermediate goal) when trying to accomplish the ultimate goal, namely getting a job done. For example, an individual working on finishing a task and encountering an IT problem, such as a Windows error, is likely to change his course of action in order to explore what options he has to be able to resume and accomplish his initial task—assuming he does not want the help of the IT department. This act of "idea exploration," according to the theory of trying, is an intermediate goal and a pre-behavior that will lead to accomplishing his ultimate or end goal (i.e., resolving the IT problem so that he can resume his work). He might choose to google the error message or to ask someone in his social network. Either way he chooses, he will need to structure and gather information on how to solve the error message, which is considered "idea generation," yet another intermediate goal leading to attain the ultimate goal. The process of actually getting the IT problem resolved would be considered "idea implementation," and if the individual chooses to promote his approach to others, he actively engages in "idea championing." Interestingly, in this context the level of innovative work behavior that an employee exhibits is almost a by-product of his IT self-service engagement. An individual engaging in IT self-service, by default, does not follow the norm and bypasses the IT department as the most obvious choice. Instead, he seeks out alternatives, often more than one, to solve his IT problem in a way not prescribed.

As individuals can be the source of innovation (e.g., Nambisan et al. 1999; Ahuja and Thatcher 2005; Wang et al. 2008; Maruping and Magni 2015), engaging in IT self-service can be viewed as a formative factor or precursor to this behavior. Prior studies have shown that an individual's tendency to innovate with IT is predicated, among other things, on his ability and intention to explore a technology (Nambisan et al. 1999). The ability to explore signifies an individual's competence in identifying relevant information and resources that are needed in solving an IT problem, and his intention to explore represents his motivation in exerting novel behaviors, which, in our context, is embodied as an actual behavior, i.e., the engagement in IT self-service. As an individual performing IT self-service engagement is characterized by his technological ability, gained through experience, as well as his propensity to solve an IT issue at work, we hypothesize:

H3: IT self-service engagement has a positive influence on an individual's innovative work behaviors.

Figure 1 summarizes our research model.

Figure 1. Research Model
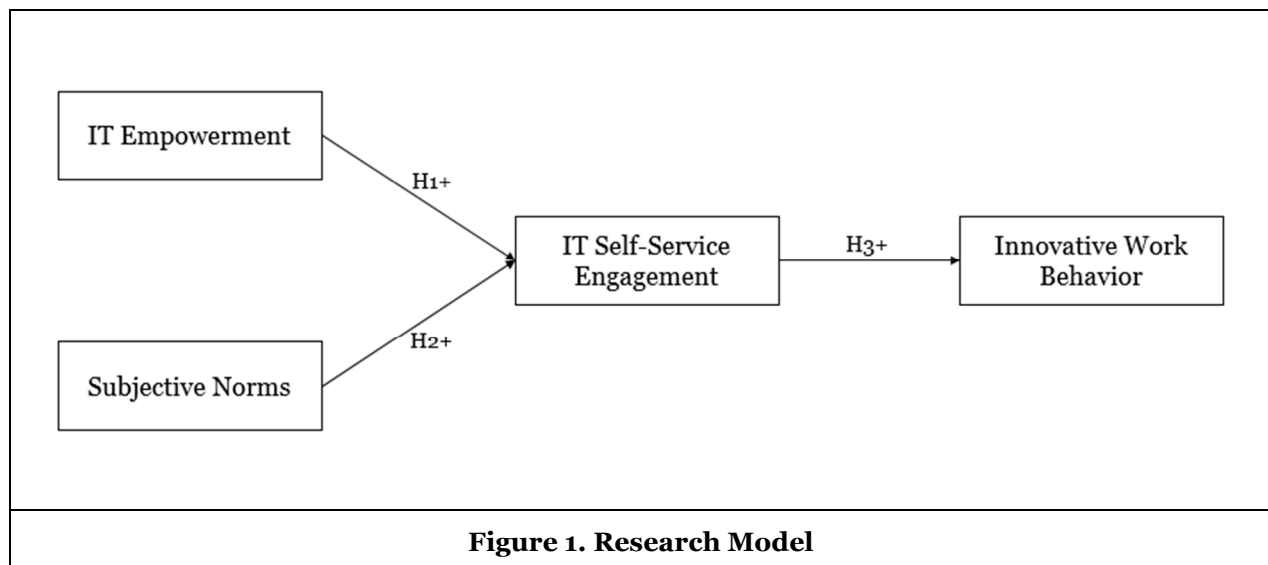
Research Method

For this study, we used a cross-sectional online questionnaire among employees to gather our data. The measurement items were adopted from established scales and adapted to fit our context—with the exception of the IT self-service engagement scale. Since IT self-service engagement is a new construct,

we followed the steps for item development as suggested by Moore and Benbasat (1991). More specifically, we conducted an exploratory study with IT professionals, along with a pre-pilot and two pilot studies in order to evaluate the suitability and validity of the questionnaire.

Exploratory Study

In order to gain a better understanding of the IT self-service engagement phenomenon, we conducted semi-structured interviews with three IT service professionals and one IT director who had been with the organization for more than 5 years at the onset of our study. Our purpose of conducting interviews was to understand (a) the perspective of IT professionals on the concept of IT self-service, (b) the factors that influence individuals' seeking behaviors to fix their IT problems in light of their experience and expert knowledge, and (c) the expected outcomes of engaging in such a behavior. We adopted a semi-structured interview format to allow us to have follow-up questions when needed. Our interviews were on a one-to-one face-to- face basis and were approximately 45 minutes long. Interviews were transcribed, and the data were coded using a labeling technique (Corbin and Strauss 2008).

The interview started with a "grand tour" question (Spradley 1979, p. 86). We asked the participants to share their experiences with regards to their respective IT service culture and changes over time. Next, we asked a series of questions about their clients' help seeking behavior, what triggered and motivated clients to try solving an IT problem on their own and what kept them from engaging in such a behavior. The role of IT empowerment, subjective norms and perceived service quality as provided by the IT department was further discussed to explore its influence on individuals' trying to fix their IT issues. Then, we asked them about the potential outcomes of engaging in IT self-service.

The interviews asserted that IT self-service engagement is an emerging phenomenon among employees, something that has been noted by IT departments, and something that should be considered as a distinct conceptual construct in the broader realm of IT service delivery; the interviews also provided us with a conceptual foundation for developing IT self-service engagement items.

Pre-Pilot Study and Pilot Studies

In order to test for clarity, face and content validity, our initial set of questionnaire items was reviewed by four IT professionals, four IT users, and two academic researchers. Based on their recommendations, some modifications, such as re-wording items, particularly for IT self-service engagement, and eliminating or adding items, were made.

After the pre-pilot, we conducted two pilot surveys that were deployed consecutively. They were posted online on Amazon's Mechanical Turk in order to further test the validity of questionnaire items, particularly those developed for IT self-service. For each pilot survey, we solicited 40 responses. In the first pilot, we had to eliminate four responses due to subjects failing a quality marker; in the second pilot, we had to discard three responses for the same reason.

After each pilot survey, we subjected the set of IT self-service engagement items to a series of exploratory factor analyses, testing for convergent and discriminant validity. We deleted items that loaded weakly on their respective factor (lower than .5) and dropped items that showed a low reliability (below .70). We did so iteratively, resulting in a measure for IT self-service engagement that is stable, reliable and valid.

Measurements

The results of the pre-pilot and pilot study led to the generation of four IT self-service engagement items, including: (1) I like to depend on myself when it comes to fixing my computer issues, (2) I prefer to fix my own IT problem rather than calling upon the IT department, (3) I know what I am doing when it comes to solving my own IT problems, and (4) I enjoy solving my own IT problems. All items were measured using a 5-point Likert scale, ranging from strongly disagree to strongly agree.

For established constructs, including IT empowerment, subjective norms, and innovative work behaviors, we decided to retain all items. Innovative work behavior was measured on a 10-item scale, adapted from De Jong and Den Hartog (2010), using a 5-point Likert scale ranging from strongly disagree to strongly agree; subjective norms were measured on a 5-item scale, adapted from Venkatesh and Morris (2000), using a 5-point Likert scale ranging from strongly disagree to strongly agree; and IT empowerment was measured on an 12-item scale, adapted from Spreitzer (1995) and Junglas et al. (2014), using a 5-point

Likert scale ranging from strongly disagree to strongly agree. Based on prior literature, both innovative work behavior and IT empowerment were modeled as second order constructs.

Numerous control variables were considered as part of the model. Apart from age, gender, and tenure with the company, we controlled for an employee's perceived service quality (as provided by the IT department), the typical type of IT problem he faces as part of his work (ranging from mostly major, to a balanced mix of major and minor, to mostly minor, including also "I don't know") and his frequency of calling upon the help of the IT department in general (using a 5-point Likert scale, ranging from never to always). Additional control variables collected included the size of the organization and the type of industry respondents worked for.

Age, gender, and tenure was used to control for both IT self-service engagement and innovative work behaviors. Type of the IT problem and frequency of calling upon the IT department were deemed relevant to single out the variance from the IT environment and to ensure the validity of the analysis model. Perceived service quality, as provided by the IT department, was measured as a second order construct, including five dimensions and 21-items, adapted from Sun et al. (2012), using a 5-point Likert scale ranging from strongly disagree to strongly agree.

Including perceptions of service quality was not only important for controlling purposes, but also contributed to better understanding the nature of IT self-service engagement. After all, choosing to solicit the services provided by an IT department and engaging in IT self-service are somewhat complementary behaviors. If, for instance, an employee who usually seeks the help of the IT department perceives that engaging in this behavior does not lead to the expected goal, let's say, for example, by experiencing unreliable or unresponsive service, he might consider abandoning this relationship with the IT department and resorting to alternatives. Alternatives may include asking a coworker, looking for FAQ and Q&A platforms, seeking help from their respective online social communities, or calling up a friend. The Appendix provides a list of the items used for this study.

Survey Participants

Data were collected online via the crowdsourcing platform Amazon's Mechanical Turk. Despite criticisms of self-bias (Chandler et al. 2013), MTurk has been deemed a suitable alternative for convenient data collection (Buhrmester et al. 2011).

Only full-time employees whose organizations had a dedicated IT department were included. We restricted our range of respondents to those working full-time in organizations with a dedicated IT department because we were primarily interested in studying individuals who voluntarily engaged in IT self-service behavior. More specifically, we were primarily concerned with understanding the driving factors behind IT self-service engagement even though, or despite, the existence of a traditional alternative (i.e., an IT department). We were not interested in understanding the difference between those that engaged and those that did not as we assumed that those who have never attempted to solve their own IT problem were in no place to experience what it means to engage in IT self-service.

We offered USD 1 for each successful completion of the survey. In total, we obtained 325 responses, out of which 122 were screened out because either (a) a subject had never attempted to solve an IT problem on his own, (b) the organization prohibited such conduct altogether, (c) the organization employing the subject did not have a dedicated IT department, or (d) the subject failed the survey's quality check marker.

A set of 203 usable responses remained. Demographic variables were collected, including education, age, gender, industry type, and firm size. Table 1 depicts the demographics of survey participants, indicating a healthy dispersion across education, age and gender, as well as an array of different industries.

Table 1: Demographics of Survey Participants		
		Percent
Education	Senior High school	14.3%
	College (Associate Degree)	23.2%
	Bachelor	44.8%
	Graduate	11.3%
	Post Graduate	6.4%
Age	29 and less	36.0%
	30-39	34.9%
	40-49	18.8%
	50 and above	10.3%
Gender	Male	56.2%
	Female	43.8%
Industry	Financials	9.8%
	Distribution	4.9%
	Government	18.6%
	Healthcare	7.7%
	IT	14.2%
	Marketing and Communication	7.10%
	Retail	7.7%
	Services	18.6%
	Other	11.4%
Firm size	Less than 100	24%
	100-499	33%
	500-999	13%
	1,000-4,999	13%
	5,000-9,999	5%
	10,000-49,999	5%
	More than 50,000	5%
	Not known	2%

Data Analysis

To test our model, we used partial least square (PLS-SEM) since our data failed the normality assumption (e.g., a Komogorov-Smirnov test for innovative work behaviors yielded 0.104, df=203, p<.001 and a Shapiro-Wilk test 0.973, df=203, p<0.001) (Fornell and Bookstein 1982). We used SmartPLS Version 3.2.3 (Ringle et al. 2014), following the guidelines outlined by Chin (1998). Bootstrapping with 1,000 re-samples was used.

Measurement Model

As a first step, we performed a confirmatory factor analysis and deleted items that loaded below 0.50 and exhibited high cross-loadings (Cheon and Stylianou 2001). We then assessed each construct's uni-dimensionality by testing the significance of its item loading (Anderson and Gerbing 1988). All loadings were significant at p<0.05 (see Table 3 and 4 in the Appendix).

The average variance extracted (AVE) for each construct exceeded 0.50. Regarding discriminant validity, we followed the suggestion of Fornell and Larcker (1981) by comparing the square root of the AVE with the correlation between any pair of constructs. As shown in Table 2, the diagonal (representing the square root of the AVE) is larger than any correlation. Composite reliabilities of our constructs ranged from 0.89 to 0.97 and Cronbach's alphas from 0.86 to 0.93, exceeding the 0.70 threshold, as proposed by Fornell and Larcker (1981).

As part of our discriminant validity analysis, we also combined the items of IT self-service engagement and IT service quality. The results showed that each item loaded on its corresponding construct, supporting the distinctiveness of IT self-service engagement as a theoretical concept.

Table 2: Reliability and Discriminant Validity						
	Composite Reliability	Cronbach's Alpha	IT Empowerment	Subjective Norms	IT Self- Service Engagement	Innovative Work Behavior
IT Empowerment	0.89	0.86	**0.63**			
Subjective Norms	0.97	0.93	0.08	**0.96**		
IT Self-Service Engagement	0.89	0.84	0.42	0.24	**0.61**	
Innovative Work Behavior	0.93	0.91	0.59	0.08	0.47	**0.59**

Structural Model

Figure 2 shows the results of the structural model. IT empowerment and subjective norms were found to have a positive effect on IT self-service engagement (β=0.37, p<0.001 and β=0.21, p<0.01, respectively). IT self-service engagement, in turn, was found to have a positive impact on innovative work behaviors (β=0.46, p<0.001).

Among our control variables, perceived service quality had no significant effect on IT self-service engagement (β=0.05, p>0.05), indicating that the level of positive (or negative) service received by the IT department is uncorrelated with the extent to which individuals engage in IT self-service. Age and organizational tenure were also non-significant on IT self-service engagement (β=-0.10, p>0.05 and β=0.10, p>0.05, respectively) and innovative work behavior, respectively (β=-0.07, p>0.05 and β=0.07, p>0.05). Gender, in contrast, had an influence on innovative work behaviors but not on IT self-service engagement (β=0.12, p<0.05 and β=-0.08, p>0.05, respectively).

Overall, the model explained 24.2% of the variance in individual's innovative work behavior while IT empowerment and subjective norms explained 35.0% of the variance in IT self-service engagement.

Figure 2. Structural Model Results
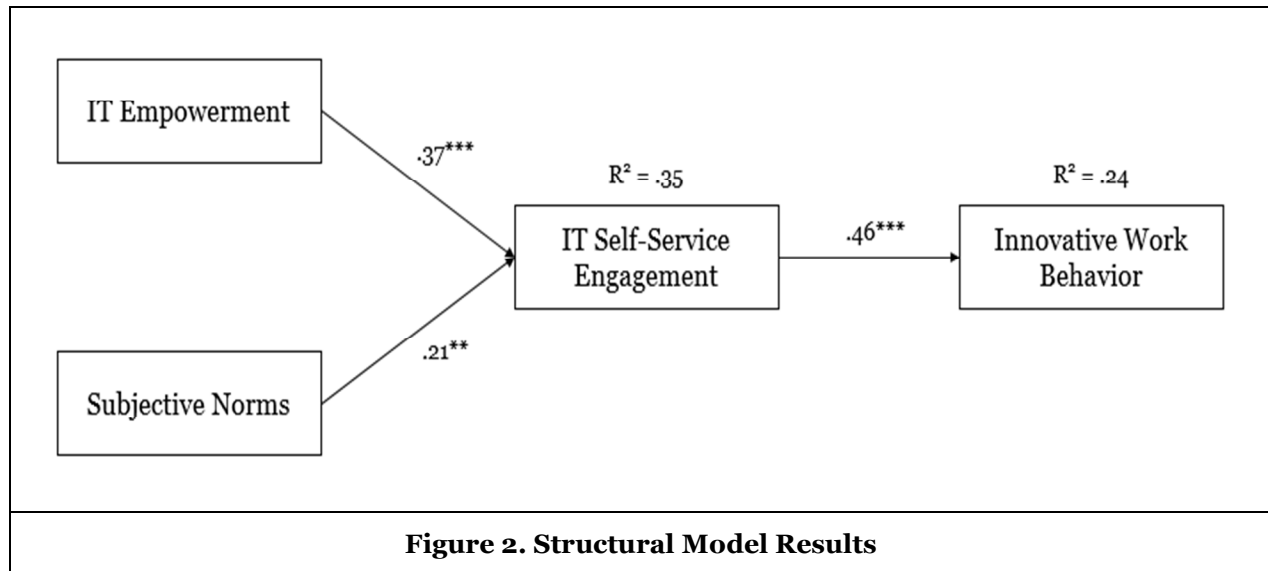
** p < .01; *** p < .001;

Discussion

There are numerous findings that can be inferred from the study. First, we were able to define IT self-service engagement as a new construct, develop its measurement and establish its psychometric validity within a nomological network of antecedents and outcomes. IT self-service engagement, so we were able to demonstrate in this study, is a construct in its own right and should be incorporated into future IS studies that examine the IT service delivery model in more detail. Noteworthy is also the insignificant link between perceived IT service quality and IT self-service engagement. It emphasizes that an employee's decision to solve an IT problem on his own and the existence of an IT department are independent concepts; an employee engages in IT self-service, irrespective of how good (or bad) an IT department is perceived to be in its ability to deliver a service.

Second, we learned that IT self-service engagement has a significant impact on an employee's innovative work behavior. More specifically, our study shows that an employee who engages in solving his own IT problems is equally likely to show innovative tendencies in executing his job. After all, solving one's own technical problems entails initiating a process of searching for solutions and implementing them, which has been identified as significant markers of innovation (De Jong et al., 2010). This is important for organizations to understand. It shows that employees who put in the effort and time to solve an IT problem on their own are, on average, also more likely to be innovative with regards to their job. If an organization's focus is on innovation, encouraging IT self-service engagement among employees might be a good driver in facilitating innovative behaviors at the employee level.

Third, we learned that IT empowerment is a strong predictor of IT self-service engagement. Its four dimensions, IT competency, IT self-determination, IT meaning and IT impact (Junglas et al., 2014), contribute to an individual's tendency to try out alternative ways of solving IT problems. Only those employees who feel confident and autonomous, who feel that technology carries meaning and can make a

difference at work, are likely to engage in IT self-service. While psychological empowerment has been extensively studied in the organizational behavior literature, it has only recently gained attention in the IS field (e.g., Maruping and Magni 2012-2015; Junglas et al. 2014). Future research may want to explore the role of IT empowerment beyond the context of IT self-service engagement as individuals gain more and more access to a broader set of consumer technologies (Junglas et al. 2014).

Fourth, we found that the peer pressure employees perceive exerts a significant effect to engage in IT self-service. In other words, employees feel more compelled to solve their own IT problems, if they observe their coworkers, who have an influence over their behaviors, are doing it. One could argue that coworkers exhibit a contagious effect on an individual; they might even serve as the first point of reference. Particularly, if co-workers have solved similar IT problems in the past, an employee might not only feel pressured to tackle an IT problem on his own, but also learn from their colleagues on how to approach it in the appropriate way. For organizations, this is important to understand as colleagues, aside from perceived levels of IT empowerment, are a driving force for trying to solve one's own IT problems. For organizations that want to promote IT self-service engagement, it seems paramount to ensure that a significant number of IT self-service users exist so as to pressure others into behaving the same way. Alternatively, the organization can elect an employee champion that is perceived to have an influence on his co-workers. Having a champion, employees, according to our model, will tend to follow his lead when solving their own IT problems.

With regards to theoretical contributions, we identified the theory of trying—a theory that has only achieved scarce attention in the IS field thus far—to be a vital for understanding exploratory behaviors of technologically savvy employees. The theory of trying recognizes that despite best efforts, sometimes a goal cannot be accomplished. Sometimes employees try to fix an IT issue, e.g., by using Google or a specialized crowdsourced IT service platform (e.g., Superuser.com), but they might not always find a solution to their problem; they might post a question, but not receive an acceptable answer. Yet, every time they face a problem, they keep trying to find a solution—even though there is no guarantee that an applicable solution can be found at all. The theory of trying not only made it possible to identify and measure IT self-service engagement, but also to position it within a conceptual frame. With employees increasingly choosing their own IT for getting work done (Harris et al. 2012), we expect that the theory of trying will gain an increasing importance in the field of IS.

With regards to practical contributions, our study contributes to a better understanding of the IT service experience. A plethora of studies exist that have studied how to best provide an effective support for IT users, including information centers (Brown and Bostrom 1994) and centralized help desks (Plotnick 1999). Our study has shown that employees can no longer be categorized as sole consumers of IT services; it has shown that two components are at play that affect employees' engagement in IT self-service. Both components, to a greater or lesser degree, can be influenced by the organization.

Also, by encouraging employees to engage in IT self-service, organizations not only shift the service obligation towards them, but are also able to extract several other benefits—among them innovation. While it seems somewhat paradoxical to introduce IT self-service engagement as part of the IT culture in an organization, our study has shown that it benefits employees' innovativeness at work. IT self-service engagement has the ability to not only to re-write how IT service is rendered, but also how the roles of both, employee and IT department, are defined. IT departments will have to change from solving IT problems to learning how to empower employees to solve their IT problems. Future research should therefore explore the arrangement and structure of IT departments. Likewise, the role of employees will likely expand in its range of responsibilities. We expect that even those employees that do not engage in IT self-service right now might be expected to do so eventually, constituting an expansion in job scope for which they may, or may not, be compensated.

Limitations

Like most empirical research, this study has certain limitations (McGrath 1982). First, our results are based on a cross-sectional design. Since we are measuring a work behavior and the potential causes that could trigger it, conducting a longitudinal study to collect data about participants' behaviors over time would be advisable. Further, we did not control for the size of the firm, even though we collected it, but rather stipulated that an IT department exists at the respondent's workplace. Firm size might have an effect on employees' behaviors as small firms may either promote IT self-service engagement in more

overt ways than bigger ones, or may not have the resources to provide an IT department that can be accessed 24/7.

Conclusion

IT self-service engagement, as an emerging phenomenon, is gaining momentum among employees and organizations alike. It has not, until now, received a lot of research attention even though market researchers have pointed out that by the end of next year, 54% of IT problems are expected to be solved by employees themselves (Matchett 2015). Our study has shown that the empowerment an individual feels towards IT in general, as well as the norms colleagues and co-workers exhibit, have a significant impact on his tendency to engage in IT self-service. This is good news for organizations. Individuals engaging in IT self-service are also likely to be more innovative at work, according to our study. As employees evolve from being mere consumers, to co-producers, to producers of IT services, the configuration of the IT delivery process within organizations will most likely change. Our study provided a glimpse into the motivating factors that contribute to IT self-service engagement as well as the consequences that organizations should expect from it.

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Appendix

Sample of other survey items used in this study:

Table 3: Questionnaire Items and Their Loadings			
Construct (Source)	**Dimension**	**Item**	**Loadings**
IT Empowerment (Spreitzer 1995; 1996; Junglas et al. 2014)	IT Competence	I am confident about my ability to use IT to do my job	0.88
		I am self-assured about my capabilities to perform my work activities with the help of IT	0.83
		I have mastered the skills necessary to use IT for my job	0.82
	IT Self-Determination	I have significant autonomy in determining what IT to use for my job	0.90
		I can decide on my own which IT to use to go about doing my work	0.95
		I have considerable opportunity for independence and freedom in choosing which IT to use for my job	0.95
	IT Meaning	The type of IT I use to get my work done is very important to me	0.85
		The fact that I use IT for my job activities is personally meaningful to me	0.93
		The fact that I can use IT to get my work done is meaningful to me	0.90
	IT Impact	My impact of deciding what IT tool to use for getting work done in my department is large*	0.87
		I have a great deal of control deciding what IT should be used in my department	0.93
		I have significant influence over IT decisions that take place in my department	0.90
Subjective Norms (Venkatesh and Morris 2000)		My co-workers who are important to me think that I should engage in IT self-service	0.96
		My co-workers who influence my behavior think that I should engage in IT self-service	0.98
IT Self-Service Engagement (Authors)		I am willing to invest some effort into IT self-service	0.70
		I like to depend on myself when it comes to fixing my computer issues	0.82

		I feel satisfied when I solve my own IT problem	0.73
		I know what I am doing when it comes to solving my own IT problems	0.80
		I enjoy solving my own IT problems	0.84
Innovative Work Behavior (De Jong and Den Hartog 2010)	Idea Exploration	I pay attention to issues that are part of my daily work	0.69
		I wonder how things can be improved	0.93
	Idea Generation	I search out new working methods, techniques or instruments	0.86
		I generate original solutions for problems	0.86
		I find new approaches to execute tasks	0.86
	Idea Championing	I make important organizational members enthusiastic about innovative ideas	0.92
		I attempt to convince people to support an innovative idea	0.92
	Idea implementation	I systematically introduce innovative ideas to work practices	0.91
		I contribute to the implementation of new ideas	0.84
		I put effort into the development of new things	0.90
Service Quality (Sun et al. 2012)	Reliability	When IT employees promise to do something for me by a certain time, they do so	0.90
		When I have a tech problem, IT employees show a sincere interest in solving it	0.87
		IT employees provide their services to me at the times they promise to do so	0.92
		IT employees insist on error-free records	0.74
		At my work, IT employees are dependable	0.92
	Responsiveness	IT employees tell me exactly when services will be performed	0.84
		IT employees give me prompt service	0.90
		IT employees are always willing to help me	0.84
		IT employees are never too busy to respond to my requests	0.75
	Assurance	The behavior of IT employees instills confidence in me	0.87
		IT employees are consistently courteous with me	0.88
		IT employees have the knowledge to do their job well	0.85
	Empathy	IT employees give me individual attention	0.81
		IT department has operating hours that are convenient for me	0.78
		IT department has employees who give me personal attention	0.90

		IT employees have my best interests at heart	0.89
		IT employees understand my specific needs	0.87
	Tangibility	My IS department has up-to-date hardware and software available to me	0.73
		My IS department physical facilities are visually appealing to me	0.84
		To me, IS employees are well dressed and neat in appearance	0.76
		To me, the appearance of the physical facilities of the IS units is in keeping with the kind of services provided	0.74

Table 4: Second Order Construct Loadings	
Construct	**Loading**
IT Competence	0.37
IT Self-Determination	0.84
IT Meaning	0.70
IT Impact	0.70
Idea Exploration	0.70
Idea Generation	0.89
Idea Championing	0.84
Idea implementation	0.91
Reliability	0.94
Responsiveness	0.92
Assurance	0.92
Empathy	0.93
Tangibility	0.70