THE FOCAL DETERMINANTS OF SERVICE FAIRNESS AND SERVICE RECOVERY SATISFACTION IN CLOUD COMPUTING

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Abstract: The purpose of this study is to analyze the implications of service fairness on satisfaction recovery in business relationships. Adopting a service fairness perspective on cloud computing business directs suppliers' focus in business relationships towards engaging with their customers' service recovery satisfaction. In the article it is demonstrated that a service fairness perspective is multi-dimensional (structural and social), enabling the creation of recovery satisfaction, which enhances continued usage of cloud computing system. This perspective enables marketers to better understand how to develop and extend structural and social service fairness through equally service delivery and fair treatment relevant to their businesses.

Keywords: service fairness, recovery satisfaction, IS continuance intention, cloud computing.

1. Introduction

Information technology (IT) service providers spend millions of dollars annually trying to retain current customers. In an effort to retain those customers, it appears that service organizations now recognize that long-term relationships do not just happen; they are grounded in the organizations delivery of excellent service, value in the first instance, and complemented by an effective service recovery system when things do go wrong.

Customer service recovery satisfaction in IT service support has a major impact on intentions to maintain contact with service providers who manage and provide a particular technology. There is a subtle distinction between continuing to use a service technology versus continuing to obtain the service from a particular service provider. And there is a similar distinction between being satisfied with a service technology versus being satisfied with the technology's service provider.

This study focuses on customer service recovery satisfaction with service providers in a context where the service is provided through a technology. While most prior information system (IS) research has attempted to explain user acceptance of new IT, recent research has focused on IS continuance or continued usage. The Technology Acceptance Model (TAM) and Expectation-Confirmation Theory (ECT) are the dominant theoretical frameworks explaining user acceptance and continuance of IT (Premkumar & Bhattacherjee, 2008). In addition, a Post-Acceptance Model (PAM) of IS continuance has been widely adopted in the continuance intention literature (Bhattacherjee, 2001).

This research seeks to examine the focal determinants of service fairness influencing recovery satisfaction which enhance continued usage of an IS. Satisfaction is contingent on customer perceptions of service fairness with a service provider organization that provides a technological product together with services. Service fairness, therefore, helps to shape perceptions of recovery satisfaction. In practice, IS service provider organizations in a competitive market seek to meet or exceed customer satisfaction levels, which encourages customers to use their systems. Customer retention is critical to long-term profitability in service businesses (Williams & Naumann, 2011). Customer recovery satisfaction is influenced by numerous variables. One of these is service fairness, which influences

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customer recovery satisfaction by exerting influence upon individual satisfaction.

The focal determinants of fairness which this study examines are based on Greenberg's (1993) taxonomy of organizational fairness which influences recovery satisfaction. The two distinct fairness dimensions are structural and social fairness. Enhancing recovery satisfaction through service fairness would then improve IT continuance intention. Figure 1 represents the conceptual model and hypothesized relationships developed in this study.

Figure 1 - Conceptual Model
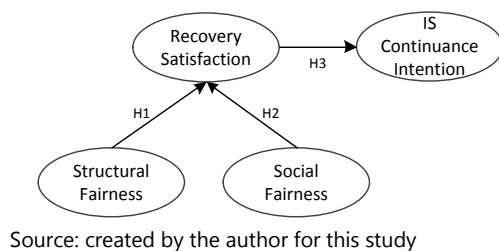
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2. Literature Review
- *Satisfaction and Service Fairness*

Spreng et al., (1996) defined satisfaction as "an affective state that is the emotional reaction to a product or a service experience." Customer service recovery satisfaction can therefore be defined as the end-user's perception when interacting with a specific application including perception toward service failures and their satisfaction or dissatisfaction with the organization's approach to service recovery (Kwok et al., 2009). While the various levels of customer satisfaction result from many factors, they are all grounded in the customer's experiences of the service and the interaction with the service provider.

Organizational fairness is one of the important factors widely discussed in the field of organizational behavior (e.g. Colquitt et al., 2001; Beugre & Baron, 2001). Although, prior studies have used the term "justice" and "fairness" interchangeably, in this study, the term

"fairness" is used for the purpose of consistency. Organizational fairness has also received attention not only in the context of employee perceptions of fairness in the workplace with regard to job satisfaction, complaint handling, human resource management (Folger & Greenberg, 1985), but also in the context of customer satisfaction with services, service delivery, and service recovery (Clemmer, 1993; Groth & Gilliland, 2001; Maxham & Netemeyer, 2002; Kau & Lau, 2006; Chang et al., 2008; and Kim et al., 2009).

Additionally, several studies in management and marketing have investigated the relationship between organizational fairness and satisfaction. The literature suggests that fairness could play a significant role in service failure and recovery (Smith et al., 1999; Lewis & Spyrakopoulos, 2001; Huang & Lin, 2005; and Yang & Peng, 2009) and service management (Clemmer, 1993; and Seiders & Berry, 1998). In service management, perceptions of fairness are important antecedents of customer satisfaction (Holbrook & Kulick, 2001). Service fairness leads to satisfaction (Clemmer, 1993). A study of hospital patient satisfaction found that equity and expectation affected satisfaction and return intention (Swan et al., 1985).

Organizational fairness can be defined as the perception of fairness by an individual in the working environment (Greenberg, 1990; Byrne & Cropanzano, 2001). Greenberg (1993) proposed a rudimentary taxonomy that highlights the distinction between the structural and social determinants of fairness. The taxonomy is formed with two independent dimensions: category of fairness (procedural and distributive), and focal determinants (structural and social). The concept of focal determinants has been one of major research areas in organizational psychology (Cropanzano, 1993). Previous studies have discussed the focal determinants in the area of strategic

decision making in leadership and ethics (e.g. Tatum et al., 2003; Tatum & Eberlin, 2007) and human resource management in compensation and performance management (Kee et al., 2008).

The discussion will now turn to an examination of service fairness considered from the standpoint of organizational fairness and with respect to its influence on user recovery satisfaction. This approach originates in Greenberg's (1993) taxonomy of organizational fairness which positions the focal determinants of fairness as broader areas that are based on the immediate focus of a just action relative to existing categories of fairness. As mentioned earlier, the two specific determinants of service fairness to which it gives rise are structural and social. This research will examine the structural determinants first.

- Structural Determinants of Fairness

The structural determinants of fairness refer to the structural elements of the organization and focuses on the environmental context within which interaction occurs (Greenberg, 1993).

In service delivery, structural fairness refers to the structural elements of the service provider that allow for their customers to be involved as users in the decision-making and provide for a fair distribution of outcomes. When customers perceive high structural fairness, they will believe that an unfair outcome was merely an accident and will expect structural fairness to occur the next time. That is, they will be less likely to terminate their relationship with the service provider and will remain satisfied with the service. Additionally, customer recovery satisfaction will increase if the service provider provides advanced technological support to monitor and track their service, especially in the case of on-line customers.

Empirical research supports the concept of perceived structural fairness as having a direct impact on customer outcomes (Tatum et al., 2003; Tatum & Eberlin, 2007; and Kee et al., 2008).

When customers feel they have been treated equally (or not treated equally) with respect to the final service outcomes, they will deem it to come in part from the way the system is structured. Feelings of structural fairness can be important between customers and the service provider, as individual customers feel they should receive the same services from the service personnel as anyone else. Customers will have negative feelings if they find out they receive fewer resources than others. Customer feelings of having experienced a fair process can be used to increase customer outcomes (i.e. satisfaction). These consideration leads to the following hypothesis:

H₁: A Customer's perception of structural service fairness will be positively associated with service recovery satisfaction.

- Social Determinants of Fairness

The social determinants of fairness are recognized as ones of the most important sources of fairness perception (Greenberg, 1993). Social fairness focuses on the treatment of individuals and informational exchange by "showing concern for individuals regarding the distributive outcomes they receive" (Ibid), and "may be sought by providing knowledge about procedures that demonstrate a regard for people's concerns" (Ibid).

Regarding social fairness, several previous studies have shown a relationship between social fairness and both managerial performance (Tatum et al., 2002) and employee behaviors (Masterson et al., 2000). Social fairness is an important component of outcome fairness.

In the case of transformational leaders, social fairness will have more impact than structural fairness since the leaders care about the needs and well-being of the followers and want to be open and responsive (Iles, 2001; and Eberlin & Tatum, 2005).

In IT service delivery, social service fairness refers to the customers' perceptions that the service provider cares

about their wellbeing and keeps customers informed before and during changes to the service process (Tatum et al., 2003). Additionally, social fairness can take the form of any information provided by service providers. Customers are given information about services they have received or with which they have been involved. When customers feel they have been treated fairly, respectfully, sincerely, and politely by the service provider throughout the service delivery process, the level of customer recovery satisfaction will invariably increase. High levels of informational fairness may be achieved by being truthful in all communications and tailoring service providers' explanations to customer needs.

When customers or users perceive a fair interaction and information exchange before, during and after the service delivery process from a social fairness perspective this will most likely lead to positive or increased customer outcomes. Based on the above, the following hypothesis was developed:

H_2: *A Customer's perceptions of social service fairness will be positively associated with service recovery satisfaction.*

These two service fairness dimensions should have an impact on customer service recovery satisfaction. $H_1 - H_2$ address the question of whether an individual's perception of the focal determinants of fairness (structural and social) is strong enough to influence customer service recovery satisfaction, thus, indirectly contributing to the IS continuance or continued usage. This study applies a conceptual model in which the perception of the focal determinants of service fairness influence service recovery satisfaction and enhance IS continuance intention.

- *Service Recovery Satisfaction and IS Continuance Intention*

User satisfaction is a significant factor in the IS context (Bhattacherjee, 2001; Susarla et al., 2003; and Bhattacherjee &

Premkumar, 2004). In an online context, e-satisfaction is a key determinant of technology acceptance and continued usage (Devaraj et al., 2002; and Cenfetelli et al., 2008). PAM views relationship satisfaction as a basis for the continued intention to use IS; user's satisfaction with prior use has a strong positive impact on user's intention to continue using the system. The more an individual user is satisfied with prior usage experience, the higher the chance that user will continue to use the system (Bhattacherjee, 2001). Other IS researchers have also found that user's satisfaction is a strong predictor of system usage (e.g. Baroudi et al., 1986). Satisfaction is a key factor influencing continuance intention. The relationship between service recovery satisfaction and IS continuance intention can therefore be hypothesized as:

H_3: *Service recovery satisfaction with initial IS usage is positively associated with IS continuance intention.*

3. Methodology

The context in this study is Software-as-a-Service (SaaS) with the cloud computing environment as the IS application and SaaS users as the IS sample. Cloud computing is an emerging technology enhancing subscribers' perceptions of SaaS as a long term solution requiring long-term partners and is widely adopted among both businesses and non-profit organizations. It is a good example of the wider SaaS market, which is rapidly growing as developers and service providers continue to make investments in developing the technologies.

This study uses several previously developed measures with some modifications and supplementations that reflect the specific IS context and targeted users. The focal determinants of service fairness items were adapted from a number of works, but generally follow (Leventhal, 1980; Bies & Moag, 1986; Shapiro et al., 1994; and Maxham & Netemeyer, 2003). Other items were adopted from Maxham

& Netemeyer (2002) for service recovery satisfaction and Bhattacherjee (2001b) for IS continuance intention.

All the items were reworded to relate specifically to customer relationship management (CRM). It should note that SaaS is called 'the software' throughout the survey questionnaire. All the responses to the survey items are based on a 7-point Likert scale ranging from 1 "strongly disagree" to 7 "strongly agree".

The initial questionnaire was reviewed by an expert panel from both IS academia and IS industrial experts, followed by a pilot survey (n=60). The pilot test showed good results on the service fairness concepts, recovery satisfaction and IS continuance intention. The main survey was then carried out.

4. Sample and Data Collection

The samples in pilot testing and the main study included individuals in small and medium sized enterprises who use business-to-business (B2B) CRM-SaaS in a cloud computing platform. Thus, for both the pilot and the main study, the respondents were CRM-SaaS users.

A web-based survey is an appropriate choice for this study because of the characteristics of the research subject (i.e., CRM-SaaS subscribers access the software via internet on a daily basis) (Armbrust et al., 2009). Because the individuals sampled have frequent and easy access to the internet and are comfortable using it, they are more likely to answer on the internet. Therefore, web-based surveys do not have restricted geographical location, are likely to gain higher members of responses, and may extract longer and more substantive quality answers than a mail survey (Bhattacherjee, 2001; Porter & Whitcomb, 2007).

Recruitment e-mails were sent to 31,015 prospective panel members across the USA identified by companies' databases as full-time employees working in organizations. The first response rate was 11.58% (3,591).

Four stringent screening questions reduced this figure to 490 questionnaires, at a response rate of 1.58%. The screening questions ensured that: (1) The respondents used CRM software over the internet in their workplace. A list of specific common CRM-SaaS was used to make sure the applications were comparable; (2) The respondents' organization had used the software for more than 2 years, so their answers were about continuance, rather than adoption and the trial use period; (3) Respondents used the software at least once a week for their work, which is considered as using the software as part of the normal routine activities; and (4) the respondents had contacted the software service provider for support. In the event they had not had any interaction with the software service provider and/or the software service provider personnel, they did not qualify to take part in the survey.

Since the usable response rate was relatively low, tests for non-response bias were conducted by comparing answers on the last quartile of the responses retuned with those of the first quartile (Lambert & Herrington, 1990). There were no difference in the mean of all the items in the model constructs, and only two differences in the variances. This indicates that non-response bias was not a significant problem and the survey was able to collect adequate data.

The demographic characteristics of the 490 respondents are as follows: males constitute 61.22% of the respondents. The majority of them (64.70%) is in the age range from 30 years to 50 years old, and nearly ninety percent (88.98%) had over 5 years of working experience. The most common positions were operating staffs (16.73%), supervisors (15.51%) and sales representatives (13.06%). Half of the respondents (50%) were from organizations employing between 51

In summary, the sample constituted an experienced working-age group, with responsibilities at their present companies

requiring frequent use of CRM software and much interaction with the software service provider.

5. Results

Statistical analyses were conducted using PASW Statistics version 18 and SPSS Analysis of Moment Structures (AMOS) version 18 statistical software packages. Statistical analyses such as descriptive statistics, means, standard deviations, and R^2 were also conducted. The results of the descriptive statistics used for the composite variables, include means, standard deviations and reliability analyses (Cronbach's alpha) for each construct measure shown in Table 1.

As indicated in Table 1 below, the internal reliability of the measures is .956 for structural fairness and .960 for social fairness. The other two measures are .924 for satisfaction and .893 for continuance intention. All the measures included in the questionnaire show adequate levels of initial internal consistency reliability (> .70) (Nunnally & Bernstein, 1994; and Hair et al., 2006). A correlation matrix of variables (not presented) shows that in general, the correlations were consistent with theoretical expectation.

A correlational study analyzed the relationship between independent and dependent variables, employing the Structural Equation Modeling (SEM) technique which is particularly useful when one dependent variable becomes an independent variable in subsequent dependence relationships.

Table 1 - Descriptive Statistics and Reliability Analysis Result

Variable(number of items)	Mean	S.D.	Cronbach's Alpha
Structural fairness (12)	5.510	0.957	.956
Social fairness (10)	5.597	0.990	.960
Recovery satisfaction (4)	5.629	1.011	.924
Continuance intention (3)	5.582	1.041	.893

Standardized estimates and standardized regression weights are shown in Figure 2 and Table 2 below. All three hypotheses tested were supported. The structural model was accepted and the chi-square was significant (chi-square = 967.920; df = 205, p = .000, relative chi-square = 4.722) (see Figure 2).

The path coefficients for the structural model are presented in Table 2 below. The relative effect (standardized regression weights) between independent and dependent variables shows a statistical significance for all hypothesized relationships.

The analysis of the path coefficients indicates that all hypotheses are supported. The influences of structural fairness (coefficient = .533, p = .000) and social fairness (coefficient = .419, p = .000) on recovery satisfaction were significant. Similarly, the influence of recovery satisfaction on IS continuance intention was significant (coefficient = .820, p = .000) (see Table 2).

The impact of the endogenous variables is high, as indicated by the R^2 values. The highest R^2 appeared in recovery satisfaction (88.1%) and the next R^2 was shown in continuance intention (67.3%) (see Table 2). The results of the research model ($H_1 − H_3$) show that all three hypotheses are supported, so the model does work well in this context.

6. Conclusion and Recommendations

The objective of this study is to propose a theoretical model that can explain and predict service recovery satisfaction in relation to the focal determinants of service fairness perceptions. It explores the relationship between service fairness and customer recovery satisfaction, and investigates whether recovery satisfaction have a direct impact on continuance usage of the cloud computing system. The findings show a positive and significant path from structural and social service fairness to

recovery satisfaction. That is, recovery satisfaction with the service delivery process is affected by the processes and value outcome.

Figure 2 - Result of Structural Equation Modelling (SEM)
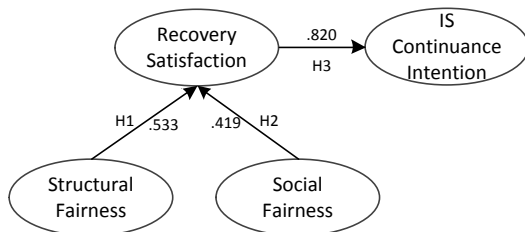
Source: created by the author for this study

Table 2 - Results of Standardized Coefficients

Dependent (R^2)	Determinant (hypothesis)	Coefficients (*P*-value)
Recovery Satisfaction (R^2 = .881)	Structural fairness (H_1)	.533 (.000)
	Social fairness (H_2)	.419 (.000)
Continuance Intention (R^2 = .673)	Recovery Satisfaction (H_3)	.820 (.000)

This research is an important contribution as it integrates the focal determinants of service fairness with the IS continuance intention domain. The focal determinants of service fairness do have a significant impact on recovery satisfaction, and thus, indirectly influences IS continuance. This suggests the areas which managers of IS support services need to consider and also points out areas of research on IS management that must be accounted for. The focal determinants of service fairness are clearly an important issue for IS users.

The implication of these research findings could be translated into practical skills that would result in a more satisfying recovery service encounter such as, for example, structural fairness related to customer's involvement in decision-making and fair distribution outcomes. Organizations could include service failure recovery procedures in their Service Level Agreement (SLA) to ensure that customers receive a specified level of performance and availability if service failure occurs.

In addition, organizations could implement the social fairness approach in service recovery practices that are related to the quality of communication and apologies, the time it took to respond and solve the problem, as well as the employee's ability to (a) solve the problem, (b) be respectful and empathetic and (c) be knowledgeable, honest and reliable. Practitioners in the service industry could find additional use for these research findings to improve the level of customer service recovery satisfaction.

The basic concept that the focal determinants of service fairness have an impact on recovery satisfaction was also confirmed.

This study does, of course, have several limitations. First, the scope is limited to the context of SaaS enterprises in a cloud computing environment. While this is an important and increasingly widespread context, it would be beneficial to replicate the study and broaden the context. Related sorts of environments could be, for example, public SaaS, Infrastructure-as-a-Service (IaaS) or Platform-as-a-Service (PaaS) applications. Second, this study employed a one-sided survey response from external customers using SaaS in a cloud computing environment. Further study using a dyadic approach could develop in-depth understanding on the responses from both customers and service providers; notably, by examining the record of the service interaction to examine how specific details of the service interaction correlate with the fairness issues. Finally, this research was cross-sectional surveyed at one period in time. The findings can only reflect that specific time, but customer satisfaction is also a product of cumulative experience, and may change over time**.**

While addressing these limitations help to articulate potential directions for future research, a few other useful areas

for future work should also be pointed out. First, IS in large organizational contexts, where they have their own systems and IS service for internal customers are potential environments to be investigated. Internal organizational employees account for a large percentage of IS users. Studies of these extrinsically motivated users may contribute many theoretical insights to the IS post-acceptance model. Second, testing the research model with different types of IS context would improve the generalizability of the empirical results of this study.

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