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Business Architecture: A New Approach to Improving a Corporation's Adaptability to Strategic Change

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Addressing the Justification of Enterprise Systems Benefits: a Desires and Expectancy Disconfirmation Model

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ABSTRACT

This research-in-progress study proposes a research model to analyze the benefits of Enterprise Systems (ES), by using disconfirmation theory as a theoretical basis. We review and extend previous models by including the needs/desires of users as a disconfirmation construct and by separating needs/desires and expectations of the ES from the information provided by the ES. We suggest that both elements have an impact on the overall perceived net benefits of the ES used within an organization. Furthermore, dimensions of equity and attribution theories are explored as a process mediating the effects of these variables on satisfaction with the employee and the organization.

Keywords (Required)

Enterprise Systems, ES usage, disconfirmation theory, equity theory, attribution theory, benefits realization

INTRODUCTION

While many companies have strategically made considerable investments in IT in the last decade in response to the changing business environment, the returned benefits from these IT investments have been proved to be elusive and, at the least, difficult to quantify (Gunasekaran et al. 2001). Enterprise Systems (ES) are precisely one of these examples. It has been argued that an ES, when properly implemented, can achieve unprecedented benefits for business computing. Shang and Seddon (2003) have proposed a comprehensive framework of business benefits that organizations might be able to achieve from their use of ES. They present twenty five ES benefits consolidated across five benefit dimensions. They focus on the benefits of an ES in use and comment that there are few details of ES-specific benefits in academic literature, the main sources of data being 'trade-press articles' and 'vendor-published success stories' with low scientific validity as a whole. Further studies have suggested the different segments of business organizations have different level of IT usage. Shang and Seddon (2003) analyzed both the organizational and the functional level. Analysis at both these levels is necessary because some benefits, such as strategic benefits, may be best assessed at the organizational level, and others, such as operational benefits, are best assessed in functional areas. Following Anthony (1965) management model, Shang and Seddon (2003) argue that ES benefits should be judged from a business manager perspective because the views of strategic managers are too broad to identify causal links between ES investment and benefit realization, and those of operational managers are too narrow to consider all relevant organizational goals. Our research proposes an ES benefits model based on both desires disconfirmation and expectancy disconfirmation to provide a better conception of the formation of ES benefits. Thus, the theoretical framework for this study is grounded in a review of disconfirmation theory followed by an examination of equity and attribution theories. The paper proceeds as follows. First, we review the different theories related with satisfaction. Then, based on the previous literature review, we propose a research model. Finally, we present some considerations.

USER EXPECTATIONS AND SATISFACTION

User expectations are potentially an important factor affecting the perceived benefits arising from the use of new information systems. Staples et al. (2002) conducted a study to examine the effect on users of implementing a new system. They specifically studied the relationship between pre-implementation expectations and their perceived benefits based on post-implementation experience. Disconfirmation theory was used as the theoretical basis. The results indicate that creating and maintaining realistic expectations of future system benefits really does matter. Within the marketing domain, customer satisfaction has been conceptualized across a number of different levels of analysis (Oliver 1997). There have been many approaches in defining the user/consumer satisfaction/ dissatisfaction construct and how the various customer factors such as cost or product performance impact on satisfaction. Next, we briefly review these theories.

Expectancy Disconfirmation Theory

The expectancy disconfirmation theory, originally developed in the Marketing field, has been applied in the past few years by a number of studies in Information Systems (IS) in order to explain user satisfaction (e.g. Battacherjee 2001). Disconfirmation refers to a situation in which a product performs differently than expected prior to purchase. Positive disconfirmation occurs when the product performs better than expected; while negative disconfirmation occurs when the product performs worse than expected. Confirmation occurs if a characteristic performs as expected. Satisfaction is typically modelled as a function of prior expectations and/or desires (or some other standard), perceived performance and disconfirmation of the standard. Expectations must be measured before consumption, as those measured after consumption are influenced by the performance that is received. These expectations can be formed through past experiences, word of mouth, and/or market-supplied information, such as advertising or statements from salespeople.

Needs/Desires Disconfirmation

Although the dominant model continues to be one based on the aforementioned “disconfirmation of expectations”, other disconfirmation standards different from performance expectations have been investigated and proposed too. One of these standards is the analysis of “disconfirmation of needs/desires”. Spreng et al. (1996) defined desires as “the level of attributes and benefits that a consumer believes will lead to or are associated with high-level values”, meaning what the customer expects to see in future usage. Spreng et al. (1996) found that disconfirmation of consumer desires explained consumer satisfaction better than disconfirmation of consumer expectations. A number of previous studies have included the concept of “meeting users’ needs” as part of the measure of an overall user satisfaction construct (e.g. Shi et al. 2004). The desires of IS users refer to what users want or wish to receive from the IS, while the term “expectations”, as a disconfirmation standard, refers to what the users believe they will receive from the IS. The formation of desires is not based on realistic prediction of actual performance, but rather on inner emotional needs or wishes that are not necessarily constrained by any rational cognitive understanding of the situation (such as practical feasibility). An individual may desire/want a certain service to be good but nevertheless expect it to be poor from his/her past experience and understanding of the actual environment. Under the desires disconfirmation theory, low performance, although meeting individual expectations, can fall below the desired performance (negative disconfirmation) and is hence more likely to lead to dissatisfaction.

Equity Theory

Popular in social psychology, sociology and organizational behavior, equity theory has so far received very little attention in the IS literature. According to the equity theory developed by Adams (1965), equity is the result of an individual’s evaluation of the inputs and rewards relationships, by making comparisons internally and/or externally to other reference groups. In the context of IS, Woodroff and Kasper (1998) suggest that equity could well be focused on the fairness of the “process.” A user’s perception of the inputs (costs) required and the outcomes (benefits) obtained from using a particular system is compared with the inputs required and the rewards obtained from using other means (e.g. manual or other systems). The benefits derived from a new IS may not guarantee user satisfaction if the inputs required to acquire benefits are comparatively high (Au et al. 2002).

Oliver and Swan (1989) found that both equity and disconfirmation have a significant impact on satisfaction. They argued that disconfirmation and equity are conceptually distinct and can be considered as complementary drivers of satisfaction. According to the authors, the two concepts differ fundamentally on several issues: the standard of comparison, the nature of this standard, the attributes and dimensions used in the comparison, whether inputs are used, the stages in the comparison process, and the emotional reaction to the various states of the two concepts. In the IS field, Au et al. (2002) propose an end-user IS satisfaction model based on both theories. As the authors point out (Au et al. 2002, p. 457), “the significance of adding equity construct to end-user information systems satisfaction is that it takes into consideration not only which benefits an IS delivers, but also what ‘inputs’ or ‘costs’ are required from an end-user in order to achieve such benefits/outcomes”.

Attribution Theory

Although early studies by Heider (1958) were the first ones to propose a psychological theory of attribution, Weiner and colleagues developed a full theoretical framework that has become a major research paradigm in social psychology. Attribution theory is related to how individuals interpret events and how this interpretation relates to their thinking and behaviour. In this theory the outcome of a purchase is thought of in terms of either success or failure. The cause of the satisfaction is either attributed to internal factors, such as the buyers’ perceived buying abilities, or external factors such as the difficulty inherent to the buying task, other people efforts or just luck (Brooks 1995). Weiner (1986) argues that individuals categorize attributions along three general dimensions – locus, controllability, and stability. The three dimensions

of attributions have been extensively tested, and found to be relatively reliable. Locus is defined as the extent to which a cause is considered internal or external to the individual (Weiner 1986). Controllability is defined as the degree to which the cause of a failure is perceived to be under the volition of an individual (Weiner 1986). Stability is the extent to which causes of failures are viewed as temporary (expected to vary over time) or permanent (expected to persist over time).

The Dependent Variable – Perceived Net Benefits

User satisfaction is widely used of in IS research as an indicator user perception of the effectiveness of an IS. Several studies have shown perceived performance to have a direct impact on user satisfaction – as well as an indirect one via disconfirmation, especially in the case of products and services that require high involvement. These studies have argued that involvement decreases consumers' sensitivity to pre-usage phenomena (e.g. expectations) but increases sensitivity to the outcome. Thus, several studies have used perceived performance as a predictor of satisfaction. However, Seddon (1997) suggests that Perceived Net Benefit (PNB) is more appropriate because it is more inclusive and comprehensive than user satisfaction. Seddon (1997, p. 246) defines PNB as an "idealized comprehensive measure of the sum of all past and expected future benefits, minus all past and expected future costs, attributed to the use of a given IT application. Any use of resources (including time) in building, learning to use, and/or using the system is considered a cost. To measure net benefits, one has to adopt a specific stakeholder's viewpoint on what's valuable and what's not". PNB is a perceptual measure of net benefit (Staples et al. 2002). The advantage of PNB compared with user satisfaction is that, while being very similar to user satisfaction, it also captures other dimensions, such as IS effectiveness. Therefore, following Staples et al. (2002), we have opted for PNB as the dependent variable in our study.

Information Product versus Information System/Service

Pitt et al. (1995) distinguished between the information and service aspects of IS functions, arguing against the common focus based on a product rather than a service view of IS. In this light, system success evaluations need to incorporate the "service" aspect of information. Shi et al. (2004) have adopted this perspective to analyze library users' satisfaction. They propose that satisfaction for library users is a function of multiple sources – the customer's satisfaction with the information product(s) received as well satisfaction with the IS and library services utilized to obtain the information product. Their research suggests that satisfaction with the information product may be a better predictor of overall library user satisfaction than satisfaction with the IS/services accessed. Consequently, for the present study, we propose to divide the perceived benefits of an ES into these two aspects: information product and information system/service. In the first aspect, the service component of the IS function, we include the more engineering-oriented, technical aspects of the ES – accessibility, reliability, response time, usefulness, flexibility, modules. In the second aspect, the informational product itself, we include variables such as completeness, accuracy, currency, relevance, usefulness, etc.

THE PROPOSED RESEARCH MODEL

Our research model for studying and justifying ES usage benefits is based on a review of disconfirmation, equity and attribution theories to provide a better understanding of the formation of ES benefits. The model encompasses two ES components: ES information product and ES service (see figure 1). Thus, we hypothesize that ES information product and ES-service PNB have a direct effect on overall PNB:

- H 1 PNB with ES information products affects positively overall PNB. The higher the PNB with ES information products at usage phase, the more positive is the overall ES PNB.
- H 2 PNB with ES service affects positively overall PNB. The higher the PNB with ES service at usage phase, the more positive is the overall ES PNB.

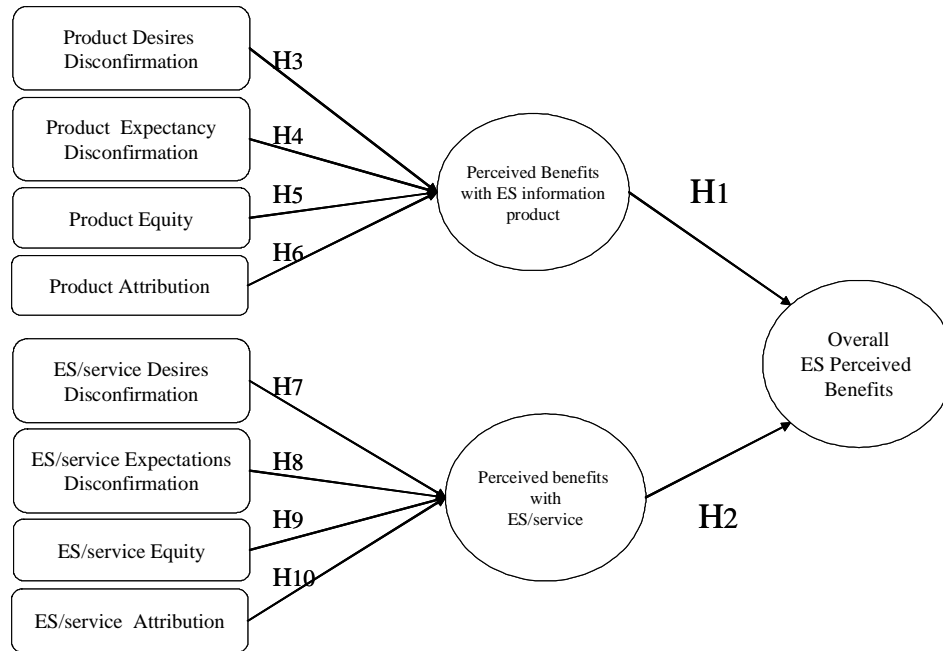


Figure 1. The proposed research model.

With regard to ES information product, we hypothesize that:

- H 3 The more the ES information product is perceived to fulfil users needs/desires, the greater the PNB associated with the ES information product.
- H 4 The more the ES information product is perceived to fulfil users' expectations, the greater the PNB associated with the ES information product.
- H 5 The lack of a perceived equitable relationship between an individual and ES information product will positively affect individual's evaluation of ES information product PNB.
- H 6 The more attribution of success on ES information product PNB to internal causes and their lack of success to external causes, greater the PNB associated with the ES information product.

Similarly, with regard to ES service, we hypothesize that:

- H 7 The more the ES service is perceived to fulfil users needs/desires, the greater the PNB associated with the ES product.
- H 8 The more the ES service is perceived to fulfil users' expectations, the greater the PNB associated with the ES product.
- H 9 The lack of a perceived equitable relationship between an individual and ES service will positively affect individual's evaluation of ES service PNB.
- H 10 The more attribution of success on ES service PNB to internal causes and their lack of success to external causes, greater the PNB associated with the ES service.

Considerations and Further Work

Currently, we are developing an instrument to measure the constructs discussed above. These constructs are measured with items taken from past literature and adapted to ES context. The above social sciences theories have been developed to analyze human behavior not in one point in time but as an evolution process. Seddon et al. (1999) argue that it is not meaningful to talk about benefits of IS without identifying the stakeholder group in whose interest those benefits are judged, and explain that 'very different measures of value are needed for different stakeholders'. In this study we attempt to test our model with different stakeholders such as end users, key users, IS personnel, and top management. The main objective for using different social theories is to remove the typical biases due to only measuring people of benefits just after ES implementations. Research has shown that a person's expectations about product or service performance may change after

product use, which could cause performance and expectations to be highly correlated when both are measured after the experience. The notion that the degree of disconfirmation felt by a consumer should diminish over time recognizes that consumers will learn as they gain experience with a product, and should modify expectations accordingly. Contrary to social expectations, usually product expectations are changed more quickly. To avoid this problem, we will compare the results in the pre-implementation phase with the results of the usage phase..

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