# Measuring Consumer Shopping Oriented Web Site Success: A Motivation-Based Model

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## INTRODUCTION

The Technology Acceptance Model (TAM) has been widely used since the late 1980s to explain users' acceptance and use of information technology (Keil et al., 1995). In particular, perceived usefulness and perceived ease of use have been demonstrated to be valid predictors of individual's acceptance of organizational information systems or information technologies (Adams et al., 1992, Davis, 1989, Doll et al., 1998).

Recently TAM has been applied to understanding web information systems usage (Venkatesh, 2000, Moon and Kim, 2000, Koufaris, 2002, Hackbarth et al., 2003). However, applying the TAM to web information systems requires a number of adaptations since web users may have numerous goals. For example, web users utilize the web for a range of activities including general browsing (82.6%), entertainment (56.6%), work (50.9%) and shopping (10.5%) ( c.f., http://www.cc.gatech.edu/gvu/user_surveys/papers/survey_3_paper.pdf ). Thus, unlike traditional organizational information systems, web systems are used for a variety of activities including both work and pleasure. Because of this, the use of perceived usefulness and perceived ease of use are not likely the only motivating factors behind web information system use (Moon and Kim, 2001).

Recent research has extended the TAM model by including intrinsic motivating factors to take into account a wider and more realistic assessment of users' goals (Venkatesh, 2000, Moon and Kim, 2000, Koufaris, 2002, Hackbarth et al., 2003). We propose a new updated model that takes into account intrinsic and extrinsic motivating factors and also provides additional dimensions of web site success that shed light on the perceived usefulness of these systems. Thus, the purpose of this research is to develop and test a consumer shopping based web information system success model that can be used to assess web site success or web site adoption intent.

## LITERATURE REVIEW

### Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) (Davis 1989, Davis et al., 1989) is the most widely used model of user acceptance and usage of information technology. TAM is based on the Theory of Reasoned Action (TRA) (Ajzen and Fishbein 1980, Fishbein and Ajzen, 1975). TAM posits that two beliefs, Perceived Usefulness and Perceived Ease of Use determine one's intention to use the technology.

Attitude toward using the technology has been omitted from TAM in Davis's final model (Davis et al., 1989) because of partial mediation of the impact of beliefs on intention by attitude and a strong link between perceived usefulness and attitude (Venkatesh, 2000). In addition, many researchers omit actual use since actual use is often difficult to measure and because intention and actual behavior has been found to be highly correlated (Ajzen and Fishbein 1980).

IS researchers have validated the TAM model in various corporate environments and have found perceived usefulness and perceived ease of use to be reliable predictors of technology use (Adams et al, 1992, Chin and Todd, 1995). Recently, a number of IS researchers have also applied TAM to the study of web based systems. Due to the nature of the web and web based systems, most IS researchers have found it necessary to extend the TAM model to take into account the differing motivations of web users.

Although TAM has been regarded highly because of its predictive power and because it is a parsimonious model, the parsimony of TAM is also one of the model's main limitations (Venkatesh, 2000). In addition to parsimony, a key characteristic of research models is their ability to provide practitioners with prescriptive guidelines and be generally useful. However, the TAM model does not provide system designers with specific insights necessary to create user acceptance of new systems (Mathieson, 1991, Venkatesh and Davis, 1996, Venkatesh, 2000). TAM has also been criticized for a number of other shortcomings, including: (1) the model does not explain a large amount of variance in system use (Legris et al., 2003), (2) TAM has a lack of a task focus, even though perceived usefulness implies useful for some purpose, a more explicit account of usefulness may provide a better model of IT utilization (Dishaw and Strong, 1999), and (3) TAM treats IS use to be an independent issue in organizational dynamics. Thus, it may be difficult to increase the predictive power of TAM if it is not integrated into a broader model that includes organizational and social factors (Legris et al., 2003).

In this paper, we propose an extension to the TAM model utilizing additional explanatory variables derived from the Garrity and Sanders model of IS success – called the Satisfaction-based Information system Success Model (SISM) (Garrity et al., 2003). The additional variables provide a more complete and useful picture of IS success which should allow designers additional information for systems development. The SISM model also addresses some of the other weaknesses in TAM, including: (1) the inclusion of the decision support satisfaction dimension that elaborates on the usefulness dimension of TAM, and may be especially useful in discerning usefulness in consumer oriented web-based systems, (2) the SISM model has been found to explain close to 70% of the variance in organizational impacts (Garrity et al., 2003), and (3) the

SISM model incorporates the quality of worklife satisfaction dimension that specifically models organizational and social factors. Quality of worklife satisfaction may be viewed as an intrinsic motivating factor dependent upon the context of IS use. However, in order to apply the integrated model to the web environment, we also modify the SISM model to include additional motivation-based variables from Flow theory (Csikszentimihalyi, 1975). The next sections discuss the Garrity and Sanders success model, SISM, and Flow theory to understand web users' motivation.

**Garrity and Sanders Model of IS Success and The SISM model**

Garrity and Sanders (1998) adapted the DeLone & McLean model and proposed an alternative model in the context of organizational systems and socio-technical systems. They developed a user satisfaction inventory comprised of the questions from the following six well developed instruments: Franz and Robey (1986), Doll and Torkzadeh (1988), Baroudi and Orlikowski (1988), Sanders (1984), Davis (1989), and Goodhue (1990). Garrity and Sanders (1998) expand on the DeLone and McLean model by identifying four major factors they assert are the basic underlying constructs that make up existing success measures in the IS field (Figure 1). They validate these constructs using a modified Delphi technique whereby IS research experts mapped existing measurement items into one of four factors. Their study provides support for the four factors, and also identifies items from existing instruments that seem to be "out of place" with respect to IS success[1].

The four factors they identify are *Task Support Satisfaction, Decision Support Satisfaction, Interface Satisfaction,* and *Quality of Work Life Satisfaction*. The factors were derived from an extensive review of IS success research and from a process of reasoning from basic principles of systems and general systems theory. These four factors also correspond with Bowditch and Buono's (1982) view of organizational systems, which consists of (1) a set of tasks to be performed with a related technology or set of tools to accomplish the tasks, (2) an informational or decision making subsystem, (3) a human or social component that emerges from organizational activities, and finally (4) an administrative or structural configuration.

Garrity and Sanders' Model of IS Success re-specifies user satisfaction and introduces important and specific aspects or factors in an effort to resolve the quest for clear presentation of the relationship between user satisfaction and IS effectiveness or organizational impact. Since the dimensions of IS success specifically measure the support provided by the IT application or tool toward the goal of helping workers in their organizational task and decision making environment, one can establish the connection from dependent variable measurement to individual goal attainment and then ultimately to organizational goal attainment since organizations are designed as subsystems within systems.

The Garrity and Sanders model provides a high level view of IS success similar to the DeLone and McLean model. However, in order to better understand the underlying dimensions, Garrity et al. (2003) developed and tested a revised model, based on the Garrity and Sanders model, which arranges the IS success dimensions into a nomological net in order to further understand IS success and to test the construct validity of their dimensions. The revised or detailed model, called Satisfaction-based IS Success Model (SISM) is presented in Figure 2.

Although the origins of the SISM model are derived from general systems theory and TAM is derived from the Theory of Reasoned Action, the SISM model is related to TAM. Essentially, interface satisfaction is equivalent to ease of use and task support satisfaction is roughly equivalent to perceived usefulness. In essence usefulness is expanded in the SISM model into two components: usefulness toward task accomplishment or overall job support (Task Support Satisfaction) and usefulness toward decision making (Decision Support Satisfaction). Since most jobs are composed of both decision making and clerical or processing tasks, the SISM model provides additional explanatory power above and beyond TAM. In addition, the SISM model expands on TAM by providing a more realistic view of workers in organizations through the quality of worklife satisfaction dimension.
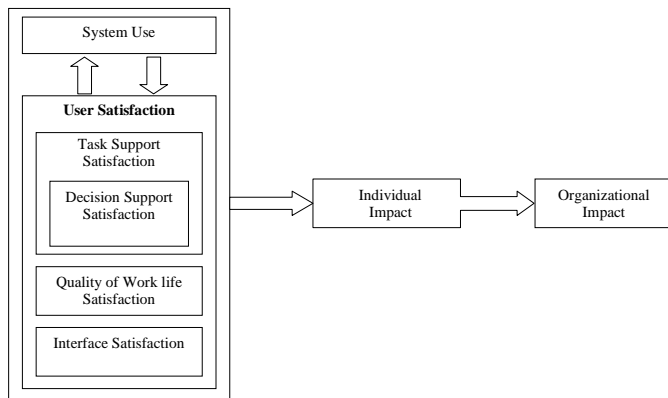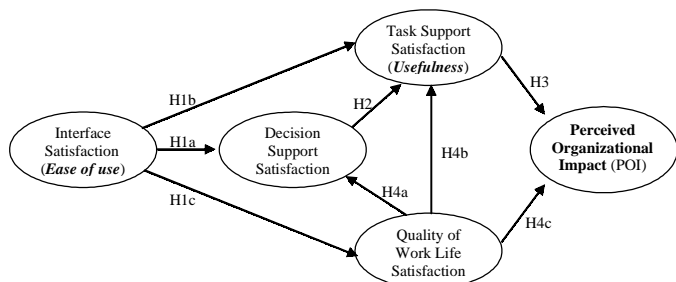
**Extrinsic and Intrinsic Motivation: Flow Theory and Playfulness**

One may view quality of worklife satisfaction as primarily an *intrinsic* motivation dimension. *Intrinsic* motivation is related to perceptions of pleasure and satisfaction from performing the behavior itself while *extrinsic* motivation is related to the desire to undertake a behavior to achieve specific goals or rewards (Venkatesh, 2000). In other words, workers can derive satisfaction from obtaining their job and task related goals from their use of the information system (task support satisfaction), an *extrinsic* motivation. On the other hand, workers who work with an information system may also derive pleasure or satisfaction from direct interaction with the technology itself. An information system can negatively or positively impact a user's (or worker's) quality of worklife. Thus, well-designed systems do not overburden users or inflict physical or psychological harm. Rather, they help to support users and empower them, since the human element of systems must be taken into account in order to produce truly effective organizations. Quality of worklife satisfaction is the dimension that captures the impact of the IS on user's personal goals and job satisfaction. Users that derive satisfaction directly from system use are intrinsically motivated to use the technology.

In a web-based information system context, users utilize the web for a number of tasks, including work and entertainment. Thus, a strict application of the TAM model is most likely inappropriate since TAM is limited to modeling only extrinsic motivation. An intrinsic motivating variable or construct that has recently received a great deal of attention in web-based technology utilization studies is "Playfulness." Although playfulness has been operationalized in a number of ways by researchers, we take the approach used by Moon and Kim (2001) who base their operationalization on the pioneering work on Flow theory by Csikszentimihalyi (1975). Moon and Kim (2001) view playfulness as a situational characteristic of the interaction between an individual and the situation. Csikszentimihalyi's work on flow theory emphasizes the role of a specific context rather than individual differences in explaining

*Figure 1: Garrity and Sanders (1998) Model of IS Success*



*Figure 2: SISSM: Satisfaction-based IS Success Model*

human motivated behaviors. Csikszentimihalyi defines the "flow" as "the holistic sensation that people feel when they act with total involvement." Based on Csikszentimihalyi's work, Moon and Kim (2001, p. 219) define three dimensions of perceived playfulness; the extent to which the individual: (1) perceives that his or her *attention* is focused on the interaction with the web-based system; (b) is *curious* during the interaction; and (3) finds the interaction intrinsically *enjoyable* or interesting.
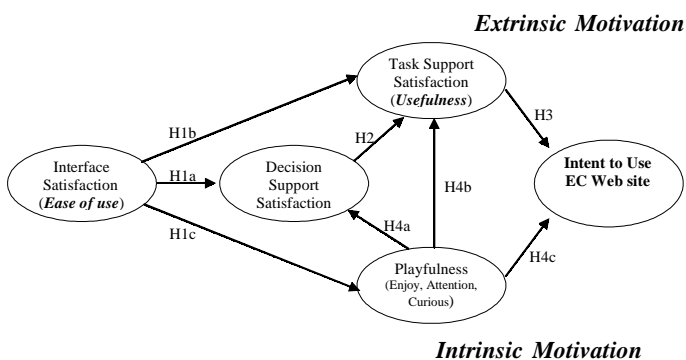
## RESEARCH MODEL AND HYPOTHESES

In TAM, extrinsic motivation and the associated instrumentality are captured by the perceived usefulness construct. TAM does not explicitly include intrinsic motivation (Venkatesh, 2000). In order to extend TAM and to provide a more realistic assessment of IS success for web-based systems, intrinsic motivation must be included and modeled. We argue that the modified SISM model provides an integrated assessment of IS success for web-based systems. The new model, Integrated Model of Web Information System Success (IWISM), captures both the user's intrinsic and extrinsic motivation for using a web-based system (Figure 3). Essentially the IWISM model replaces quality of worklife satisfaction, which is an intrinsic motivator variable within an organizational context, with Playfulness, the intrinsic motivator within the web-based context.

In addition, one can expect certain individual characteristics to be related to computer playfulness. Webster and Martocchio (1992) and Hackbarth et al. (2003) found strong associations between computer experience and playfulness. Koufaris (2002) found strong correlations between a consumer/computer user's product involvement and both shopping enjoyment and attention, both important aspects of playfulness. Since a user of a web-based consumer purchasing website is both a consumer and a computer user, one's experience level (or self-efficacy) and one's degree of product involvement should influence one's degree of playfulness in a particular web information system context. In other words, users who are more skilled computer users should find interaction easier, more enjoyable, and thus may experience a greater "flow experience." Also, consumers who have higher product involvement should be more attentive, curious, and generally enjoy the web system experience.

## SUMMARY

The IWISM model is an extension of the organizationally-based SISM model. Although the SISM model is derived from general systems theory, taking into account both extrinsic and intrinsic motivations of users, the model closely aligns with the TAM model and can be viewed as a superset of it. The IWISM model incorporates the decision support dimension of SISM providing an expanded view of usefulness which should be of particular importance in a web-based consumer-oriented environment. IWISM replaces quality of work life satisfaction, the organizationally-based intrinsic motivator, with playfulness, the web-based intrinsic motivator.

*Figure 3: An Integrated Model of Web Information System Success*



The IWISM model is also a nomological network that can be used to test the construct validity of the variables. Future research can apply an empirical test of the model for the further enhancement and understanding of information systems success measurement and prediction.

## ENDNOTE

[1] Some items from frequently used instruments were classified by the expert panel as "out of place," and were later identified as independent variables.

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