

RUNNING HEADER: Organizational Commitment and
Perceived Usefulness

THE RELATIONSHIP BETWEEN COGNITIVE
PROCESSES AND PERCEIVED USEFULNESS: AN
EXTENSION OF TAM2

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Abstract

Venkatesh and Davis (2000) presented theoretical extensions to the technology Acceptance Model (TAM) (Davis, 1986, 1989). Their new model, TAM2, explains perceived usefulness in terms of cognitive and social influence processes. Venkatesh and Davis suggested job relevance, one of the cognitive processes that demonstrated a statistically significant relationship with perceptions of usefulness of technology and suggested this construct may be analogous to construct of person-job-fit (Meyer & Allen, 1997). This paper presents a review of literature of organizational commitment processes, including person-job fit, and presents three additional cognitive processes of attribution/obligation, rationalization, and investments, which may provide additional insight into the antecedents of perceptions of the usefulness of technology and the adoption of technology in organizations.

THE RELATIONSHIP BETWEEN COGNITIVE PROCESSES AND PERCEIVED USEFULNESS: AN EXTENSION OF THE TECHNOLOGY ACCEPTANCE MODEL2

Introduction

Recently, work (Venkatesh & Davis, 2000) on the Technology Acceptance Model (TAM) has focused on developing theoretical extensions that explain perceived usefulness, in particular, in terms of cognitive and social influence processes. In their seminal paper on the model, referred to as TAM2, Venkatesh and Davis proposed and empirically demonstrated that “job relevance” represented a viable explanation for cognitive processes that influence users’ intentions to use an information system. Venkatesh and Davis suggested job relevance was analogous to the profile-comparison construct of person-job-fit, a popular psychological process for explaining organizational commitment (Meyer & Allen, 1997). Venkatesh and Davis noted that:

Progress might also come from adopting profile-comparison processes from research on person-job-fit (Caldwell & O’Reilly, 1990) to the assessment of system-job fit. Understanding this matching process is a vital research direction since it explicitly links the functional design characteristics of a system to perceived usefulness and ultimately user acceptance. (p. 200).

The purpose of this paper is to present such a mapping by drawing from the literature that explains cognitive processes in organizational commitment.

Technology Acceptance Model

TAM

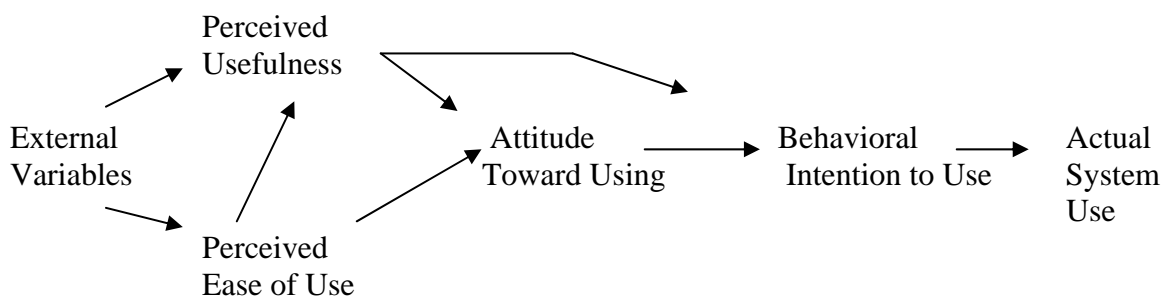
Davis (1986, 1989) conceptualized the Technology Acceptance Model (TAM) to explain user acceptance of technology (Adams, Nelson & Todd, 1992). The model can be used in a wide variety of ways. The model may be used by system designers to obtain user feedback of different system features or design approaches. According to Adams et al., TAM may also be used to diagnose problems with user acceptance after the implementation of technology.

Fishbein's and Ajzen's (1976) theory of reasoned action provides the theoretical basis for TAM. Fishbein and Ajzen hypothesized that an individual's behavior depends on his or her intention to perform a function, the individual's evaluation with respect to the act, and the person's subjective norm or perception of the normative pressures regarding the behavior. Davis (1986, 1989) adopted the belief, attitude-intention-behavior sequence to explain user acceptance of information technology. According to Davis et al. (1989), TAM was intended to "provide an explanation of the determinants of computer acceptance that is general, capable of explaining user behavior across a broad range of end-user computing technologies and user populations, while at the same time being both parsimonious and theoretically justified."(p. 985)

Davis (1986) proposed that perceived usefulness and perceived ease of use predict usage of information technology. Perceived usefulness was defined as the "the degree to which a person believes that using a particular system would enhance his or her job performance. Perceived ease of use was defined as "the degree to which a person believes that using a particular system would be free of effort." (Davis, 1989, p. 14) With

theoretical support from various theories and models including expectancy theory, self-efficacy theory, cost-benefit research, innovation research, and the channel disposition model, TAM postulates that computer usage is a function of the end-user's behavioral intention to use the system. Behavioral intention was jointly determined by a person's attitude toward using the system as well as the end-user's perception of the usefulness of the system. TAM also postulates that perceived usefulness is influenced by perceived ease of use and external variables. External variables that influence perceived usefulness include features of the system, training, documentation, demographic characteristics of end-users, and end-user support. A diagram of TAM is included here as Figure 1.

Figure 1-TAM



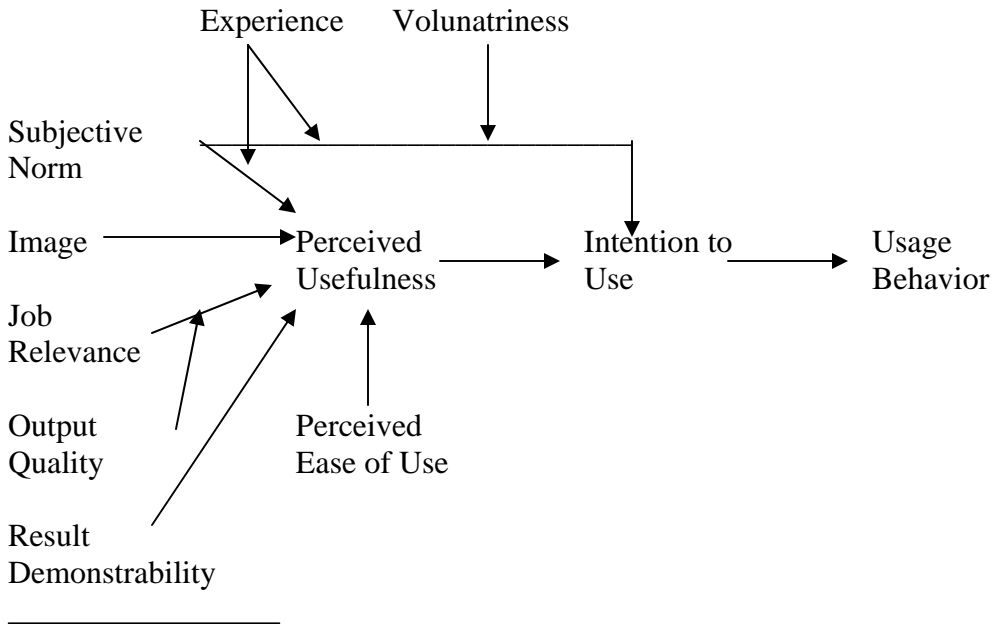
Adopted from Davis (1989)

TAM2

Venkatesh and Davis (2000) focused on extending the TAM model. They developed and tested theoretical extensions that explained perceived usefulness in terms of “cognitive instrumental processes,” including job relevance, output quality, result demonstrability, and perceived ease of use, and “social influence processes,” including subjective norm, voluntariness, and image. They call this new model TAM2. Venkatesh’s

and Davis' studies, conducted across four organizations and at three points in time supported their new model. A diagram of TAM2 is presented in Figure 2.

Figure 2-TAM2



Adopted from Venkatesh and Davis (2000)

In their discussion of their research findings, the authors suggested that “adapting profile-comparison processes on person-job fit to the assessment of system-job fit” would provide “vital research direction since it explicitly links the functional design characteristics of a system to perceived usefulness and ultimately user acceptance.” (Venkatesh & Davis, 2000, p. 200) The remainder of this paper presents such a mapping by drawing from the literature that explains cognitive processes in organizational commitment.

Organizational Commitment

Organizational commitment focuses on a bond linking individuals to the organization (Mathieu & Zajac, 1990; Meyer & Allen, 1991, 1997). Employees in

organizations demonstrate different forms of commitment (Meyer & Allen, 1997; O'Reilly & Chatman, 1986).

Some employees exhibit a strong belief in and acceptance of the new organization's goals and values. This group of employees also exerts considerable effort for the new organization, and exhibit a strong desire to maintain membership. Meyer and Allen (1997) call this form of commitment to the organization affective commitment. A second group of employees displays behavior that is characteristic of normative commitment (Wiener, 1982). According to Wiener, this group of employees does not develop as strong an emotional attachment to the organization. However, employees who possess high levels of this form of commitment continue to work productively as a result of cultural, familial, and organizational ethics that direct their behavior. Finally, a third group of employees exists. The third group of employees remains with the new organization not out of loyalty or innate beliefs. This group of employees remains because they have no job alternatives or have too much invested in the organization to leave. According to Meyer and Allen, the investments include tenure, retirement, status, and certain benefits. The third form of organizational commitment, presented originally by Becker (1960), is referred to as continuance commitment. The next sections of the paper present literature related to processes that result in the three different forms of organizational commitment.

Commitment Processes

In addition to person-job fit, Meyer's and Allen's (1997) organizational commitment model indicates several intervening, complimentary processes that may be relevant to the development of organizational commitment and, perhaps, according to

Vanketesh's and Davis' reasoning, user acceptance of information systems. The organizational commitment processes that researchers have identified include attribution (Koys, 1988, 1991; Morrison & Robinson, 1997), retrospective rationalization (Kline & Peters, 1991; Meyer, Bobocel, & Allen, 1991; O'Reilly & Caldwell, 1981; Salancik, 1979), met expectations (Wanous, 1992; Wanous, Poland, Premack & Davis, 1992), person-job fit (Meyer & Allen, 1997), needs satisfaction (Gleitman, 1981), job alternatives (Meyer & Allen, 1990; Whitener & Walz, 1993), investments (Becker, 1960; Meyer & Allen, 1997; Whitener & Walz), obligations (Meyer & Allen, 1997; Morrison & Robinson, 1997; Robinson, Krantz, & Rousseau, 1994), and expectations (Dunham, Grube, & Castaneda, 1994; Meyer & Allen, 1987; Wiener, 1982). This paper is organized so that first a brief overview of organizational commitment forms is discussed, followed by a review of relevant literature and research concerning the processes that influence commitment and, then, possible links with user's technology adoption is presented.

Affective Commitment Processes

Introduction

Despite Venkatesh's and Davis' suggestion that person-job fit may further explain perceptions of usefulness of technology, the few studies that exist on person-job fit as an organizational commitment process have proven difficult to interpret (Meyer & Allen, 1997). Also, Meyer and Allen noted research indicates that needs satisfaction (Gleitman, 1981) and met expectations (Wanous, 1992; Wanous et al., 1992) provide little support to in explaining the process of commitment formation. Thus, the literature regarding those three constructs is not presented here. Rather, studies regarding attribution (Koys, 1988, 1991; Morrison & Robinson, 1997), rationalization (Salancik, 1979) provide more

plausible explanations about the process of organizational commitment literature and, thus, perhaps, the development of perception of the usefulness of technology.

Attribution

Attribution addresses the perceived causes of others' behavior (Kelley & Michela, 1980). In their review of attribution theory, Kelley and Michela indicated a number of theories of perceived causation exist. The common idea, however, is that "people interpret behavior in terms of its causes and that those interpretations play an important role in determining reactions to the behavior" (p. 458). Attribution theory has been used to investigate the influence of the perception of organizational activities and employee's commitment (Koys, 1988, 1991; Morrison & Robinson, 1997).

Koys (1988) looked at the influence of selected human resource management practices on employee's commitment to the organization. His subjects were 88 full-time employees from different organizations who were enrolled in a part-time MBA program. After controlling for job satisfaction, Koys' correlation analysis found that his subjects positively related organizational commitment to their perceptions of their human resource department's motivation for implementing the different practices. Koys reported that perceptions that management's desire to show respect for the individual's and management's need to attract and retain quality employees increased subject's affective commitment. On the other hand, Koys concluded no significant relationship with affective commitment existed when subject's perceived that the human resource department's activities were motivated out of compliance with the law or to improve performance.

In 1991, Koys studied the relationship between employee's perception that fairness was the underlying motivation for personnel and human resource actions and affective commitment. His subjects were managers at a chain of midwestern department stores. The results of Koys' hierarchical regression analysis again supported his hypothesis of a significant relationship between perceived fairness and organizational commitment.

Retrospective Rationalization

Salancik (1979) was among the earliest to identify the determinants of the affective commitment development process that is now called retrospective rationalization. Salancik identified four determinants that measure the degree of human acts. Those four determinants include explicitness, or the deniability of the act, revocability of the act, volition, or the motivation behind the act, and publicity, or the linkage of the act in a social context. Empirical research (Kline & Peters, 1991; Meyer et al., 1991; O'Reilly & Caldwell, 1981) has assisted in developing Salancik's concepts. These researchers independently investigated employees' decisions to join the organization and their resultant commitment.

Integrating Salancik's model to organizational commitment, O'Reilly and Caldwell (1981) sought to evaluate the relationship between commitment and internal and external motives for selecting jobs. Internal motives included intrinsic interest in the job, own feelings about the job, responsibility the job provides, and the opportunity for advancement. Extrinsic motives included family concerns, salary, advice of others, and geographical location. O'Reilly and Caldwell (1981) surveyed MBA graduates immediately after they accepted job offers. These researchers

repeated the surveys six months later. The results of their canonical correlation analysis indicated both the internal and external factors were significantly related to subsequent commitment. Correlation scores for specific factors which were significantly correlated with affective commitment following six months of employment included in each root of the canonical correlation were as follow: intrinsic interest in the job, own feelings about the job, job responsibility, opportunity for advancement, family pressure, job location, and salary.

Meyer et al. (1991) also investigated employee's decisions to join an organization and their resultant commitment. They reported mixed results. To test the hypothesis regarding the influence of retrospective and prospective rationality in the development of commitment, Meyer et al. measured the affective and continuance commitment of approximately 500 recent college graduates following one, six and eleven months during the subjects' first year of employment. Meyer et al. reported correlation results consistent with prospective rather than retrospective rationalization. They reported the best predictors of affective commitment were the perceived job quality and the perceptions of the quality of their decision (volition) to join the organization they selected. Meyer et al. (1991) also reported their findings regarding job quality and the perceived volition in joining the organization may be related. After controlling for job quality, their multiple regression analyses concluded volition was an insignificant variable in explaining affective commitment.

Kline and Peters (1991) also evaluated the impact of perceptions of volition, revocability, and publicness, and their impact on commitment, with a sample of 315 newly hired clerical employees. Their correlation analysis indicated a significant, positive

relationship between commitment and perceived volition and a significant, negative relationship with revocability.

Relevant literature about normative commitment processes, which exist, suggests normative commitment processes may provide additional perspectives about the development of organizational commitment. The relevant literature about normative commitment processes is presented in the next section.

Normative Commitment Processes

Meyer and Allen (1997) proposed that because of a complex process of modeling others' behavior and conditioning, the normative commitment process occurs when individuals learn the expectations of their families, their society, and their organizations. According to these researchers, the outcome of the normative commitment process is that employees' internalize a belief that being committed to their organization is appropriate.

Expectations (Dunham et al., 1984; Meyer & Allen, 1987; Weiner, 1982) and obligation-related explanations (Meyer & Allen, 1997; Morrison & Robinson, 1997; Robinson et al., 1994) of the normative commitment development process exist. First, is a review of the literature regarding the normative expectations processes.

Expectations.

Weiner (1982) argued that normative commitment is the result of a combination of internalized experiences resulting from cultural and early organizational socialization experiences. Weiner's words help further clarify his perception of the normative commitment process: "The core of the relationships can be summarized as follows: beliefs and instrumental beliefs concerning organization-related behaviors lead to organizational commitment and instrumental motivation, respectively. Instrumental

motivation and commitment, in turn, simultaneously determine organizational-related intentions and behaviors”. (p. 420)

Weiner’s (1982) definition of “instrumental motivation” was derived from Fishbein’s and Ajzen’s (1975) reasoned-action-based model of behavior. Fishbein and Ajzen hypothesized that an individual’s behavior depends on his or her intention to perform a function, the individual’s evaluation with respect to the act, and the person’s “subjective norm” or perception of all the normative pressures regarding the behavior. Meyer and Allen (1997) applied this concept to organizational commitment.

Of the little empirical evidence that exists, Dunham et al.’s (1994) study supports the role expectations may play in the development of normative commitment. These researchers argued that coworkers often send signals about what they expect. They found, in two separate samples, significant correlations between groups of employees’ and their coworker’s normative commitment.

Obligations.

Research (Morrison & Robinson, 1997) considering obligation-related antecedents and processes of normative commitment has recently been linked to the psychological contract (Rousseau, 1990). Rousseau stated that the psychological contract is an implicit rather than explicit agreement between the organization and its employees. Robinson et al. (1994) suggested that affective and continuance commitment does not directly encounter the roles of obligation, reciprocity, and fulfillment implicit in the psychological contract. Normative commitment, though, with its direct emphasis on obligation, may be the key element in understanding the relationship between the psychological contract and organizational commitment.

The continuance commitment antecedent themes of investments employees have in the organization and lack of employment alternatives have also generated discussion and research about continuance commitment processes. Next is a discussion of those processes.

Continuance Commitment Processes

Introduction

Job alternative and employee investment-related explanations of the development process of continuance commitment exist (Meyer & Allen, 1990; Meyer et al., 1991). The two-factor representation has resulted in research that provides evidence that the continuance commitment processes are independent (Allen & Meyer, 1990; McGee & Ford, 1987; Somers, 1993). Below is a synopsis of the literature of the processes related to the job alternative and investment hypotheses.

Job Alternatives.

Empirical evidence exists of a relationship between continuance commitment and employee's perceptions of work alternatives (Allen & Meyer, 1990; Whitener & Walz, 1993). These studies concluded that employee's perceptions of employment opportunities and the viability of those options are correlated with continuance commitment. That is, employees with many job alternatives exhibit lower continuance commitment than those employees with few alternatives. Additionally, Whitener and Walz concluded continuance commitment is negatively correlated with the perceived attractiveness of the alternatives. Although they provided no empirical evidence, Meyer and Allen (1997) discussed Whitener's and Walz's findings. Meyer and Allen hypothesized that the process involved with linking antecedents of continuance

commitment and alternatives involves recognition by employees. That is, in the development of continuance commitment, job alternatives will not have an impact on employee's continuance commitment until they recognize and evaluate the alternatives. Investments that employees make in the organization (Becker, 1960) that represent costs of leaving or sunk costs for employees have also been identified as a source of continuance commitment.

Investments.

Becker's (1960) work about continuance commitment resulting from investments linked an employee to a course of action because something would be lost if the employee were to leave the organization. Becker provided the following description of the process resulting in continuance commitment:

Thus, whenever we propose commitment as an explanation of consistency in behavior, we must have independent observations of the major components in such a proposition: (1) prior actions of the person staking some originally extraneous interest on his (or her) following a consistent line of activity; (2) a recognition by him (or her) of the involvement of the originally extraneous interest in his present activity; (3) the resulting consistent line of activity. (p. 36)

Whitener and Walz (1993) accumulated a list of side bets or investments employees' risk losing by leaving the organization including retirement money, job security, and status. The cost of relocating (Meyer & Allen, 1997) is another example of an investment that binds employees to an organization through a continuance commitment process.

Table 1 provides a summary of the sources of literature and the results of investigations regarding organizational commitment processes. Next is a discussion of distinct organizational commitment processes and possible implications for perceptions of technology adoption.

Discussion

The review of the literature regarding organization commitment processes appear to merge around several common themes, including the psychological contract, rationalization, and investments. Discussion of those themes and their potential relationship with technology adoption are presented below.

The Psychological Contract

Attribution theory and the normative commitment process referred to as “obligations” have been presented to explain employee’s reactions to perceived psychological contract violations (Morrison & Robinson, 1997).

A psychological contract is “expectations about the reciprocal obligations that compose an employee-organization exchange relationship” (Morrison & Robinson, 1997, p. 228).

More specifically, Robinson and Morrison stated that “a psychological contract is a set of beliefs about what each party is entitled to receive and obligated to give, in exchange for another party’s contribution” (p. 228).

Morrison and Robinson (1997) hypothesized that attribution, in the case of psychological contract violations, occurs as follows. When faced with situations where they have little control and encounter unexpected or unfavorable outcomes, employees seek to assign responsibility. The process resulting in the assignment of responsibility has a direct affect on the intensity of employee’s emotions, including anger, and perhaps, in the case of the

Table 1-Commitment Processes and Their Significance In Influencing Commitment

Commitment Process	Significance In Influencing Commitment	Sources
<p>Affective Commitment</p> <ul style="list-style-type: none"> • Attribution • Rationalization 	<p>+ve, **</p> <p>+ve, **</p>	<p>Koys, 1988, 1991; Morrison & Robinson, 1997</p> <p>Salancik, 1979; Kline and Peters, 1991; Meyers et al., 1991; O'Reilly & Caldwell, 1981; Meyer et al., 1991</p>
<p>Continuance Commitment</p> <ul style="list-style-type: none"> • Alternatives • Investments 	<p>-ve, **</p> <p>+ve, *</p>	<p>Allen & Meyer, 1990; Whitener & Walz, 1993</p> <p>Meyer & Allen, 1997; Backer, 1960</p>
<p>Normative Commitment</p> <ul style="list-style-type: none"> • Expectations • Obligations 	<p>+ve, *, NC</p> <p>+ve, *, NC</p>	<p>Weiner, 1982; Ajzen, 1975; Meyer & Allen, 1997; Dunham et, al., 1994</p> <p>Morrison & Robinson, 1997; Robinson et al. (1994)</p>

Note:

+ve: Positive correlation between process and commitment

-ve: Negative Correlation between process and commitment

* *: Correlation between process and commitment strong and supported with empirical evidence

*: Correlation between process exist but weak

NC: Research results not conclusive

adoption of new technology, perceptions regarding the usefulness of the technology. According to Morrison and Robinson (1997), other variables that moderate employee's emotions in these situations include the perception of the causality and intentionality of the actions. Actions that are perceived as purposeful renegeing of a psychological contract, such as changing technology in an organization, have a direct affect on the intensity of the anger and contempt experienced by employees.

Rationalization

The results of studies (Kline & Peters, 1991; Meyer et al., 1991; O'Reilly & Caldwell, 1981) that investigated retrospective rationality as a moderating process in organizational commitment development have presented conflicting results. Meyer and Allen (1997) attempted to sort out the confusing research results. They suggested that "employees are more likely to remain with an organization if, among other things, they joined the organization on their own volition, they made their choice public, and the decision could not be reversed" (p. 49). Taking actions under these conditions may bond employees to organizations by retrospectively developing emotional attachment. Similarly, tying the characteristics of this construct to technology adoption and perceptions of the usefulness of technology, user may perceive technology to be useful if they adopted the technology under their own volition, made their choice of the technology public, and could not reverse their decision. Venkatesh and Davis (2000) lend support to the first axis of rationalization, volition. They adopted a similar construct, which they referred to as voluntariness, as a component of the subjective norm antecedent of their TAM2 model. Their studies found that "subjective norm had a direct effect on intention for mandatory, but not voluntary, usage contexts." (p. 198)

Investments

Investments employees make in an organization is a prevalent theme in the formation of both normative and continuance commitment. Extending Whitener's and Walz's (1993) list of side bets or applying Weiner's (1982) perception that normative commitment is the result of a combination of internalized experiences, employees may adopt new technology because they risk losing economic and/or social investments they have made in an organization for they adopt new technology as a result of cultural and social experiences.

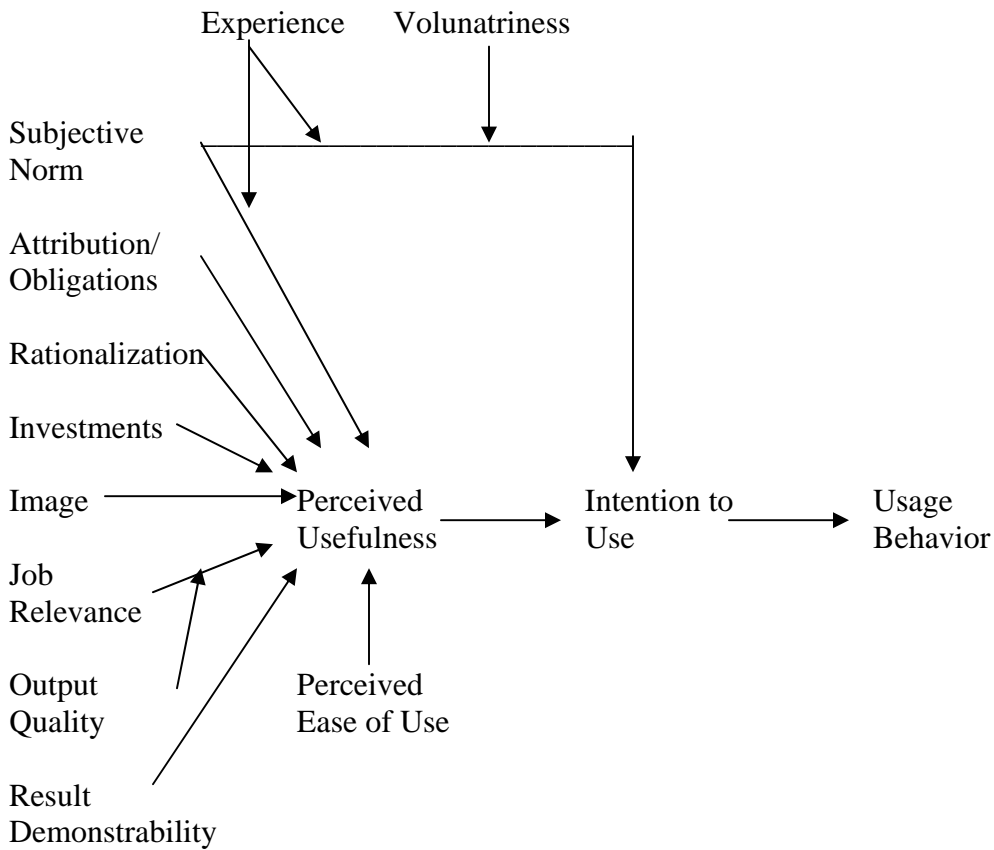
Ozag (2003) proposed that the list response may be characteristics of an "accommodate" response to new technology. He said:

If the majority of organization members perceive technology as useful and easy to use way, individual organization member's own construct may be similarly influenced. Individual organization members may be socialized to react to a certain information system in a particular manner. This user may not change their beliefs about the information system, but may accept the information system as a necessary evil. (p. 9)

Implications

Venkatesh and Davis (200) stated that "future research should seek to further extend models of technology acceptance to encompass other theoretical constructs." (p. 200) To respond to this call, we have presented a review of literature regarding widely accepted organizational commitment processes (Mathieu, & Zajac, 1990; Meyer & Allen, 1997) and provided possible links between these processes and technology adoption.

Figure 3-TAM2 Revised



Future research should seek to examine the relationship between the cognitive processes we identified, attribution/obligations/psychological contract, rationalization, and investments, which might significantly influence perceptions of technology adoption, and, thus, intentions to use, and usage behavior. Research should also seek to expand our understanding of the relationship between these processes and the other social influence and cognitive instrumental processes that have been incorporated into the TAM2 model. In summary, contingent upon the results of future studies, the TAM 2 model might be expanded to include the antecedents we presented, which are presented in Figure 3.

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