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Rocco Agrifoglio

"Parthenope" University of Naples, agrifoglio@uniparthenope.it

Concetta Metallo

"Parthenope" University of Naples, metallo@uniparthenope.it

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THE ROLE OF AFFECTIVE COMMITMENT IN ERP ADOPTION: AN EMPIRICAL STUDY

Agrifoglio, Rocco, "Parthenope" University of Naples, Medina Street 40, Naples, IT,
agrifoglio@uniparthenope.it

Metallo, Concetta, "Parthenope" University of Naples, Medina Street 40, Naples, IT,
metallo@uniparthenope.it

Abstract

This study investigates the process of acceptance and use of Enterprise Resource Planning (ERP) systems by its users, in order to understand the reasons behind their behavior. The Technology Acceptance Model (TAM) is used as a starting point for this work. In accordance with the TAM, two user's beliefs, perceived usefulness and perceived ease of use, affect the behavioral intention to use a specific technology. Moreover, perceived ease of use also influences perceived usefulness. In literature, there are few prior research that focused on role of affective commitment in determining the process of acceptance and use of technology. These have shown that affective commitment positively affects the TAM constructs such as perceived usefulness and perceived ease of use. Unlike these prior research, we assume that affective commitment directly also affects both the behavioral intention to ERP system use and it moderates the relationships between perceived usefulness, perceived ease of use, and behavioral intention. A survey methodology was used to gather data from an Italian public transport firm. Findings show the importance of affective commitment in determining acceptance and use behavior by users. In particular, our results highlight that affective commitment does not moderate the relationships between perceived usefulness, perceived ease of use, and behavioral intention. Moreover, results shown that affective commitment affects behavioural intention to IT use trough user's beliefs and, above all, it directly and positively affects behavioural intention. We discuss the implications of these results for theory and practice.

Keywords: *ERP Adoption, Technology Acceptance Model, Affective Commitment*

1 INTRODUCTION

Enterprise Resource Planning (ERP) systems are comprehensive packaged software solutions that support all business processes and integrate the various functional areas (Davenport 1998; Gable et al. 1998). These systems reduce operating costs and improve business management by sharing information within and around the organization (Aldwani 2001). Its implementation is accompanied by redesigning the business processes and changes in the organizational structure. Business process reengineering (BPR) is required to adapt the organizational processes to the capabilities of the software (Amoako-Gyampah & Salam 2004). Despite the advantages associated with ERP systems, their adoption is often problematic (Markus et al. 2000).

Some firms consider the adoption of ERP systems to be an instrument for promoting and realizing organizational and managerial changes. Organizational change has been defined as an attempt, or series of attempts, to modify an organization's structure, goals and technology or work tasks (Carnall 1986). Some authors (Robey & Sahay 1996, Davenport & Stoddard 1994, Davenport 1998) have argued that technology has the potential to transform organizations. However, organizational transformation arises not only through the installation of new systems, but also depends upon a combination of technical and social influences which cannot always be controlled (Robey & Sahay 1996), such as users' willingness to accept and use available systems. In fact, users' resistance to newly introduced technology assumes a key role in determining implementation success or failure. Therefore, the process

of adopting and using technology may be conceptualized as a form of organizational change (Orlikowski 1993).

ERP implementation is often associated with mechanisms of rejection by potential users, such as a sense of confusion and inability to achieve their innovation potential. User acceptance was found to be one of the main factors contributing to ERP implementation success (Aladwani 2001, Amoako-Gyampah & Salam 2004, Wang et al. 2005). Also, it is very important consider user resistance because the adoption of a new technology may be achieved by making its users use the system (Calisir & Calisir 2004, Amoako-Gyampah & Salam 2004).

Therefore, understanding the conditions that lead users to adopt a new technology represents a high-priority research issue. In literature, the process of user technology use and the acceptance process has been investigated by many researchers (Davis 1986, 1989, Thompson et al. 1991, Compeau & Higgins 1995, Venkatesh et al. 2003). Davis's (1986) Technology Acceptance Model (TAM) is one of most widely used models to explain users' behavioral intention to use a technological innovation. The TAM is drawn from social psychology, and it is an adaptation of the Theory of Reasoned Action (TRA), developed by Ajzen and Fishbein (1975), which seeks to explain human behavior. According to TAM, users' behavioral intention to use new technology is influenced by two beliefs, namely perceived usefulness and perceived ease of use. Perceived ease of use also affects perceived usefulness. The TAM has served as a basis for numerous studies of technology acceptance and usage behavior, and it has been widely tested in different situations (see King and He 2006 for review).

In the last decade, some research have investigated the links between organizational behavior variables and technology acceptance by users. Some authors (Malhotra & Galletta 1999, 2005, Magni & Pennarola 2008, Kwahk & Lee 2008) have highlighted the key role of commitment in determining perceived usefulness, perceived ease of use, and, in turn, the behavioral intention to use an Information System (IS) in general. However, affective commitment has not been investigated in respect to ERP systems, a special category of IS, characterised by high complexity and very high failure rates. Therefore, the aim of this study is to analyze the role of affective commitment in determining user's ERP acceptance. In accordance with prior research, we assume that perceived ease of use and perceived usefulness positively affect behavioral intention and, furthermore, we also assume that perceived usefulness is also determined by perceived ease of use. Moreover, we assume that affective commitment positively affects the TAM constructs such as perceived usefulness and perceived ease of use. Unlike previous studies, we assume that affective commitment positively affects behavioral intention to ERP system use and it also moderates the relationships between perceived usefulness, perceived ease of use, and behavioral intention.

2 THEORETICAL BACKGROUND

This study investigates the process of acceptance and use of technology by users, in order to understand the reasons behind such behavior. The technology investigated consists of ERP systems. We analyze the factors that influence ERP adoption in public transport firm. Moreover, we highlight the role of affective commitment as the key variable in determining users' behavioral intention. Therefore, we reviewed and separated the literature into two areas: a) models of acceptance and use of technology and b) affective commitment and IT adoption.

2.1 Models of acceptance and use of technology

The process of acceptance and use of technology by users has been investigated by several researchers (Davis 1986, 1989, Thompson et al. 1991, Compeau & Higgins 1995, Venkatesh et al. 2003). Previous studies concerning technology acceptance, and in particular ERP adoption, are based on the TAM by Davis (1986), which is an adaptation of TRA by Fishbein and Azjen (1975).

TRA is a theory derived from social psychology and used to predict the determinants and performance of a specific behavior (Venkatesh 2000). According to Fishbein and Azjen (1975), an individual's behavior is determined by the behavioral intention (BI) to perform a behavior. BI is a "measure of the strength of one's intention to perform a specified behavior" (Fishbein & Azjen 1975, p. 288). BI is in turn determined by two constructs: attitude towards a behavior (A), "an individual's positive or negative feelings about performing the target behavior" (Fishbein & Ajzen 1975, p. 216), and subjective norm (SN), "the person's perception that most people who are important to him think he should or should not perform the behavior in question" (Fishbein & Ajzen 1975, p. 302).

The TAM is one of the broadest theoretical bases to explain an individual's acceptance of information systems (Lee et al. 2003, King & He 2006). According to Davis (1986, 1989), the intention to use an information system is determined by two dimensions: perceived usefulness (PU) and perceived ease of use (PEOU). PU is defined as "the degree to which a person believes that using a particular system would enhance his or her job performance" (Davis 1989, p. 320). PEOU refers to "the degree to which a person believes that using a particular system would be free of effort" (Davis 1989, p. 320). Davis (1986) stated that PU and PEOU predict the individual's attitude towards using (ATU), which in turn influences his or her behavioral intention (BI) and, subsequently, actual use of the system (AU). Moreover, PEOU is also related to PU.

Particularly, according to the TAM the BI is determined by ATU and PU. Therefore, unlike the TRA, Subjective Norm (SN) does not determine BI.

Many extensions to the original TAM have been proposed, especially regarding external variables (e.g., system characteristics, the development process, and training), which affect both PU and PEOU (Davis 1999). Later studies have focused on antecedents of PU and PEOU (Venkatesh & Davis 1996, 2000, Venkatesh 2000). Particularly, the most commonly discussed external variables in literature are gender and ICT experience (Venkatesh & Morris 2000, Taylor & Todd 1995a, 1995b), training (Igbaria et al. 1997, Davis 1999), educational level (Agarwal & Prasad 1999), and involvement (Jackson et al. 1997).

From this point of view, Venkatesh and Davis (2000) extend the TAM, explaining perceived usefulness and usage intentions in terms of social influence and cognitive instrumental processes. Particularly, TAM2 identifies cognitive instrumental (job relevance, output quality, result demonstrability, and perceived ease of use) and social influence (subjective norm, voluntariness, and image) as determinants of perceived usefulness and behavioral intention.

Other researchers have applied motivation-oriented perspectives to understand technology adoption and use. In particular, Davis and his colleagues (1992) examined the importance of the role of extrinsic and intrinsic motivation on behavioral intention to use technology. Extrinsic motivation was considered as a determinant of perceived usefulness (Davis et al. 1989, 1992, Venkatesh & Davis 2000), while intrinsic motivation was considered as a determinant of perceived ease of use (Venkatesh 2000).

Venkatesh and his colleagues (2003) proposed the Unified Theory of Acceptance and Use of Technology (UTAUT), a unified model integrating elements across several models. In their model, constructs which play a significant role as direct determinants of intention to use are: performance expectancy, effort expectancy, social influence, and facilitating conditions. Moreover, the UTAUT identifies four variables that moderate these relationships: gender, age, voluntariness, and ICT experience.

2.2 Affective commitment and IT adoption

In the last decades, researchers (Malhotra & Galletta 1999, 2005, Magni & Pennarola 2008, Kwahk & Lee 2008) have been investigating the role of commitment on individuals' acceptance and use behavior to new technology.

Organizational commitment is "the relative strength of an individual's identification with, and involvement in, a particular organization" (Mowday et al. 1979, p. 226). Organizational commitment explains the nature of the relationship between the individual and the organization that urges him/her

to take a positive and proactive attitude in the organization (Ashforth & Mael 1989). Allen and Mayer (1990:2-3) indentified three dimensions of organizational commitment: 1) affective, or “an affective or emotional attachment to the organization such that the strongly committed individual identifies with, is involved in, and enjoys membership in, the organization”, 2) normative, or “a belief about one's responsibility to the organization”, 3) continuance commitment, or “a tendency to engage in consistent lines of activity based on the individual's recognition of the costs (or lost side-bets) associated with discontinuing the activity”.

Many scholars (Reichers 1985, Mathieu & Zajac 1990, Meyer & Allen 1991, Morrow 1993) have highlighted the construct of organizational commitment affecting work attitudes and individuals' behavior. Information systems studies on individuals' acceptance and use behavior regarding new technology have mostly focused on the affective dimension of commitment. Affective commitment is the most consistent predictor of the psychological link between the individual and the organization, which may influence workplace behavior, such as attendance, retention, citizenship behavior and job performance (Mathieu & Zajac 1990, Shore & Wayne 1993). Consequently, in this work, the continuance and normative components of the commitment were excluded from the investigation.

Malhotra and Galletta (1999) argued that psychological attachment to the use of an information system has a positive effect on behavioral intention as well as attitude. In their study, psychological attachment to use of an information system represents the perceived fit of the system use to the users' value system; particularly, psychological attachment is drawn from O'Reilly and Chatman (1986)'s affective commitment, based on internalization and identification constructs. Subsequently, Malhotra and Galletta (2005) developed the new construct of user commitment: users' psychological attachment to system use. Particularly, they assumed that user commitment affects the volitional acceptance and usage of the system and, therefore, the following aspects of the TAM: PU, PEOU, A, and BI.

Some authors (Kwahk 2006, Kwahk & Lee 2008), on the other hand, have investigated the links between Allen and Meyer's (1990) organizational commitment (affective, continuance, and normative) and organizational change. On this, Orlikowski (1993) argued that IT adoption and use should be conceptualized as a form of organizational change. Kwahk and Lee (2008) showed that the individuals with favourable attitudes toward change believe that using the system could improve their performance. Therefore, they assumed that organizational commitment affects users' attitudes toward change that, in turn, affect the TAM's constructs (PEOU, PU, and BI).

Other authors (Thatcher et al. 2002, Magni & Pennarola 2008), instead, have argued that affective commitment may be positively related to user beliefs. People with a high level of affective commitment are more likely to understand the perceived ease of use and perceived usefulness of newly implemented IT. Results of Magni and Pennarola's (2008) study showed that affective commitment is positively related to perceived usefulness, but its is not positively related to perceived ease of use. Instead, results of Thatcher and his colleagues' (2002) study showed that affective commitment positively affects perceived usefulness and perceives ease of use. Therefore, these studies have shown that affective commitment affects behavioural intention to IT use through the user beliefs.

Li and his collogues (2006) argued that an individual's decision to continue to use a Web site may be influenced by organizational commitment (affective and calculative commitment). They defined affective commitment as “a situation in which an end user demonstrates an affective and emotional attachment to the relationship with an e-vendor” and calculative commitment as a “as a situation in which an end user recognizes the rewards and benefits associated with continuing to use a Web site and maintaining a relationship with an e-vendor” (Li et al. 2006, p. 430-431). Results highlighted that affective and calculative commitment are positively related to a person's intention to continue to use a Web site.

Overall, in literature there are few studied that focused on the role of Affective Commitment (AC) in determining the process of acceptance and use of technology by users. Of these studies, none shows a

direct relationship between affective commitment, as emotional attachment to the organization, and user's behavioral intention to use a new technology and, particularly, an ERP system.

2.3 Research model and hypotheses

According to the TAM, the behavioral intention to use a technology is determined by two constructs (Davis 1986): perceived usefulness and perceived ease of use; moreover, perceived ease of use also affects perceived usefulness.

The original TAM also included AT as does TRA. However, most studies include only BI and ignored AT, measuring only the direct effect of PU and PEOU on use (see Legris et al. 2003 for a review). Actually, Venkatesh and Davis (2000) also excluded AT in an extension to the original TAM.

In agreement with previous research, we assume that the behavioral intention to use derives from the ease of use and usefulness that users perceive around the new system: the more users consider it easy and useful the more they will be willing to use it. Moreover, if the system is easy to use, users perceive greater usefulness. Thus, we assume that both perceived ease of use and perceived usefulness positively affect behavioral intention. Moreover, we assume that perceived usefulness is also determined by perceived ease of use. Consequently, our hypotheses are:

H1: Perceived usefulness is positively associated with behavioral intention.

H2: Perceived ease of use is positively associated with behavioral intention.

H3: Perceived ease of use is positively associated with perceived usefulness.

Moreover, we believe that affective commitment plays a key role in determining user technology acceptance and use. Some previous research have highlighted the role of affective commitment on IT adoption. Particularly, these studies have shown that affective commitment affects the behavioural intention to use the IS mainly through the two basic TAM constructs: PU and PEOU. Affectively committed users believe that the implementation of new technology could represent an important change within the organization, improving individual and organizational performance, and, therefore, they are more likely to understand the perceived usefulness and perceived ease of use. Moreover, users that express positive beliefs about new technology may demonstrate their identification with, and involvement to organizational goals and values. Consequently, our hypotheses are:

H4: Affective commitment is positively associated with perceived usefulness.

H5: Affective commitment is positively associated with perceived ease of use.

However, affective commitment should also directly affects behavioural intention to IT use. Prior research have highlighted that commitment may affects work attitudes and individuals' behavior. Users believe that the implementation of a new system promotes individual and organizational performance, perceiving the necessity for and importance of the system. Moreover, affective committed users may use the new system with affection, happiness, and pleasure because they know that the IT use encouraging the implementation success and ability to achieve innovation potential. Therefore, we assume that high degrees of user's affective commitment to the goals and values of the organization increases their behavioral intention to use IT. Consequently, our hypothesis is:

H6: Affective commitment is positively associated with behavioral intention.

Finally, affective commitment should also moderates the relationships between perceived usefulness, perceived ease of use, and behavioural intention to use. Users who perceive the new system's usefulness and easy, and with a high level of affective commitment, will be characterized by a higher level of behavioral intention to use a new information system. In fact, beyond the user's perceived usefulness and perceived ease of use, a high degrees of affective commitment to the goals and values of the organization increases their behavioral intention to use IT and intensify the positive effect of

perceived usefulness and perceived ease of use on behavioral intention. Consequently, our hypotheses are:

H7: Affective commitment moderates the relationship between perceived usefulness and behavioral intention, such that the positive effects of perceived usefulness become stronger as the affective commitment increases.

H8: Affective commitment moderates the relationship between perceived ease of use and behavioral intention, such that the positive effects of perceived ease of use become stronger as the affective commitment increases.

3 RESEARCH METHODOLOGY

3.1 Sample and procedure

A survey methodology was used to gather data. The survey data was collected within a public transport firm that was implementing a SAP R/3. The firm is located in the Campania Region of Italy and manages several transport services (bus, underground train, tram, and train) with about 2500 employees and 250 ERP users. The firm was using several modules of the SAP software, i.e., FI, CO, MM, PM, and PS. The Go-Live phase started on 01/01/2008.

We administrated a questionnaire to 250 ERP users belonging to different departments, namely administration, security, legal and insurance, information systems, human resources, marketing, network infrastructure, operational planning and engineering and investment. Of the 250 users surveyed, 172 returned questionnaires (response rate 68.8%).

86.8% of the respondents are men and the average age is about 50 years while the level of education was classified into the following levels: 68.5% of the respondents have a high school diploma, 14.8% have a bachelor's degree and 3.7% have a master's degree. As for their ICT experience, it varies from a minimum of 4 months, to a maximum of 31 years, with an average of approximately 12 years.

3.2 Measurements

Behavioral intention was measured using Venkatesh and Davis's (2000) two-item scale, adapted from Davis (1989) and Davis and colleagues (1989). An example of an item used is: "Assuming I have access to the system, I intend to use it".

Perceived usefulness was measured using Venkatesh and Davis's (2000) four-item scale, adapted from Davis (1989) and Davis and colleagues (1989). An example of an item used is: "Using the system improved my job performance".

Perceived ease of use was measured using Venkatesh and Davis's (2000) four-item scale, adapted from Davis (1989) and Davis and colleagues (1989). An example of an item used is: "I found the system easy to use".

Affective commitment was measured using Allen and Meyer's (1990) eight-item scale. An example of an item used is: "I really feel as if this organization's problems are my own".

Finally, we identified the following control variables: age, gender, educational level, and ICT experience. Particularly, educational level and ICT experience are two continuous variables that, respectively, represent the years of study and use ICT.

3.3 Results

The structural equation modelling technique of Partial Least Squares (PLS) has been used to analyze the data. PLS is a structural equation modeling technique particularly useful to predict a set of dependent variables from a large set of independent variables (Abdi 2003). This technique has been must used in IS

research and, particularly, IT acceptance (e.g., Venkatesh 2000, Venkatesh et al. 2003, Magni & Pennarola 2008).

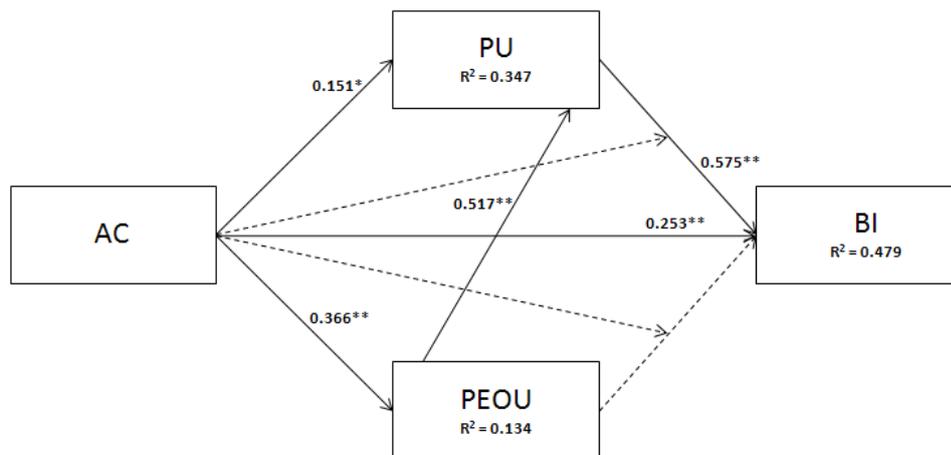
The process of data analysis consists of two phases. In the first phase we established the psychometric validity of the scales used. The correlations among the variables are represented in Table 1.

	Mean	SD	Reliability	AVE	1	2	3	4	5	6	7	8
1. Age	50.30	7.75	-	-	-							
2. Gender	0.13	0.34	-	-	-0.35	-						
3. Educational level	13.31	2.87	-	-	-0.33	0.22	-					
4. ICT experience	12.21	8.30	-	-	0.13	-0.02	0.35	-				
5. AC	3.82	1.48	0.76	0.76	0.16	-0.27	-0.08	-0.12	-			
6. PEOU	4.01	1.59	0.91	0.77	-0.16	0.05	0.13	-0.06	0.38	-		
7. PU	4.50	1.04	0.94	0.84	0.03	-0.04	-0.13	-0.16	0.38	0.61	-	
8. BI	5.37	1.32	0.79	0.83	-0.19	0.11	0.09	-0.14	0.36	0.45	0.60	-

Table 1. Mean, standard deviation, composite reliability, AVE, and correlations

Table 1 also shows the mean, the standard deviation, the Cronbach's α coefficients for the variables (composite reliability), and the Average Variance Extracted (AVE) as well as the correlations between constructs. The Cronbach Alphas (0.91 PEOU, 0.94 PU, 0.76 AC, 0.79 BI) for the items within each construct are sufficiently high. Moreover, the results do not show high levels of correlation between the independent variables. These results show a high degree of internal coherence with the scales used and, therefore, the measures testing the model shown a good psychometric properties.

In the second phase we tested our hypotheses. The results of Partial Least Squares are show in Figure 2.



** $p \leq 0.001$; * $p \leq 0.05$;

— The relationship is significant; -- The relationship is not significant.

Figure 2. Results of Partial Least Squares

Figure 2 shows PLS results on dependent variable BI. The control variables used are age, gender, educational level, and ICT experience. Results show that the control variables are not related with BI. Therefore, in the final model the control variables are not displayed.

Figure 2 highlight that PU is positively related to BI ($\beta=0.575$; $p \leq 0.001$), thus supporting H1. Moreover, PLS results show that PEOU is positively related to PU ($\beta=0.517$; $p \leq 0.001$), thus supporting H3, while it has not a significant influences on BI ($\beta=-0.035$; $p \geq 0.05$), thus H2 is not supported.

Providing support for hypotheses 4 and 5, AC is positively associated with PU ($\beta=0.151$; $p \leq 0.05$) and PEOU ($\beta=0.366$; $p \leq 0.001$). Moreover, results show that AC is positively associated with BI ($\beta=0.253$; $p \leq 0.001$), thus supporting H6.

Finally, we tested the moderator hypotheses H7 and H8. Results show that AC does not moderate the relationship between PU and BI ($\beta=-0.029$; $p \geq 0.05$) and between PEOU and BI ($\beta=0.098$; $p \geq 0.05$). Thus, H7 and H8 are not supported.

PLS results show a good explanation of users' behavioral intention to use variance (BI $R^2=0.479$). Moreover, the contribution of independent variables on BI has been tested through Path analysis. Path coefficient technique "involves a method of partitioning correlation coefficients into direct effects (unidirectional pathways) and indirect effects through alternate pathways (correlation coefficient*pathway)" (Bhatt 1973, p. 340). Path analysis results are show in Table 2.

	PU	PEOU	AC
Correlation coefficient	0.612	0.435	0.349
Pathway	0.575	-0.035	0.253
Correlation coefficient *Pathway	0.352	-0.015	0.088

Table 2. Path analysis

Table 2 highlights the explanatory role of PU (0.575), PEOU (-0.035), and AC (0.253) on BI. Particularly, path analysis results show that AC is more explanatory than PEOU. In fact, in our study PLS results shown that PEOU has not a directly influences on BI, but it indirectly works through PU. On the contrary, AC directly and indirectly, through PU and PEOU, affects on BI.

4 DISCUSSION

The aim of this study was to analyze the process of acceptance and use of technology by users. Using the TAM, we analyzed the relationships between perceived ease of use, perceived usefulness, and behavioral intention. Unlike previous studies, we highlight the role of affective commitment as a key variable in determining the process of acceptance and use of new technology such as ERP system. In particular, we assumed that affective commitment both positively affects perceived usefulness, perceived ease of use, and behavioral intention to use IT and moderates the relationship between perceived usefulness, perceived ease of use and behavioral intention. Therefore, high levels of users' affective commitment increase their beliefs and behavioral intention to use IT and intensify the positive effect of perceived usefulness and perceived ease of use on behavioral intention.

Our results show that perceived ease of use positively affects perceived usefulness, and that perceived usefulness, in turn, positively affects behavioral intention. In particular, perceived usefulness represents a mediator variable between perceived ease of use and behavioral intention. These results are consistent with a lot of research investigating technology adoption based on Davis's TAM (Legris et al. 2003). In fact, many researchers had shown that perceived usefulness affects IT adoption, but others had mostly failed to do so regarding perceived ease of use (Gefen & Straub 2000). Users believe that IT use will increase their job performance and, therefore, they will be more willing to use it (Davis 1989, Davis et al. 1989). Davis (1989) already failed to find a direct linkage between PEOU and users' behavioral intention, and he argued that "ease of use operates through usefulness" (Davis 1989, p. 332). For this reason, some authors (Keil et al. 1995, Gefen & Straub 2000) have investigated the importance of PEOU in IT adoption. Particularly, Ma and Liu (2004) conducted a meta-analysis based on 26 selected empirical studies on the TAM's constructs (PEOU, PU, and BI). Results have suggested a strong relationship between perceived usefulness and acceptance, and between perceived ease of use and perceived usefulness. The authors have concluded "that the relationship between ease of use and acceptance is weak, and its significance does not pass the fail-safe test" (Ma & Liu 2004, p. 59).

Moreover, our results show that affective commitment positively affects user's beliefs such as perceived usefulness and perceived ease of use. Previous studies had shown that affective commitment is directly and indirectly related to beliefs on technology acceptance (PE and PEOU). Particularly, Kwahk and Lee (2008) demonstrated that affective commitment indirectly affects perceived usefulness and

perceived ease of use; it operates through attitude to organizational change. Moreover, other authors (Thatcher et al. 2002, Magni & Pennarola 2008) assumed that affective commitment is directly related to perceived usefulness and perceived ease of use. However, results of Magni and Pennarola's (2008) study had shown that affective commitment is positively related with perceived usefulness, but the relationship between ease of use and affective commitment is not significant. In agreement with previous study, we argue that affectively committed users perceive the ERP system as a tool to improve the individual and organizational performance, developing their awareness about the processes of organizational change and supporting organizational goals and values. In this way, users with high level of affective commitment may be more willing to expend time and effort learning to use new systems and, consequently, they perceive ease of use and usefulness more (Thatcher et al. 2002).

Compared with these studies, our results highlight the role of affective commitment in determining the behavioral intention to use ERP system. Particularly, affective commitment is directly and positively associated with user's behavioral intention. However, results show that the effect of perceived usefulness and perceived ease of use on behavioral intention is not moderated by affective commitment. Employees may perceive the implementation of a new information system as either a threat or an opportunity. IT implementation is often associated with mechanisms of rejection by potential users, and a sense of confusion and inability to achieve their innovation potential. On the other hand, workers may perceive the adoption of new IT, and in particular an ERP system, as an instrument to promote and realize organizational and managerial changes. In this case, highly affective committed employees have a greater emotional attachment to, identification with, and involvement in the organization than non-committed colleagues, perceiving the implementation of a new information system as beneficial for individual and organizational performance. Affective committed users believe that implementing an ERP system could represent the best way for the organization to achieve success and, for this reason, they put up less resistance to change and facilitate the implementation processes. Therefore, users with goals and values congruent to organization feel and believe that the use of a new information system is the "right thing" to do (Kwahk & Lee 2008), increasing their intention to adopt and use it.

In summary, our findings show the key role of affective commitment in determining the process of acceptance and use of ERP system. Compared with previous research, our results highlight that affective commitment affects behavioural intention to IT use through user's beliefs such as perceived usefulness and perceived ease of use, but, above all, it affects behavioural intention directly and positively.

5 CONCLUSIONS

Understanding the determinants and the psychosocial dynamics of the process of acceptance and use of technology by users is a necessary condition to achieve management and organizational change induced by new technology.

Our results indicate that affective commitment contributes to explaining ERP adoption by users. PU and PEOU most explain the behavioral intention of users, but including affective commitment in the research model represents an incremental contribution compared with previous research. Particularly, our results highlight that affective commitment is directly related to a behavioral intention to use new technology.

Employees with values and goals matching those of the organization will be more willing to accept the choice to change, such as implementing an ERP system. Mayer and Herscovitch (2001, p. 322) argue that "commitment to general targets (e.g., organizations) with broadly defined focal behaviors (e.g., working toward organizational success) is likely to be associated with a general tendency on the part of members to achieve organizational objectives". Affective commitment could help both the individuals to improve their job performance and the organization to achieve performance outcomes. We believe

that affective committed users might be more inclined to adopt new technologies to achieve such important organizational objectives.

The importance of affective commitment emerges from our results. Therefore, organizations may adopt policies favouring affective user commitment in order to improve their behavioral intention to adopt the ERP system.

One way of doing so could be by paying attention to human resource management practices associated with high commitment (Arthur 1994, Delery & Doty 1996, Wood & Menezes 1998). For example, these politics may include participative decision making, perceived pay equity and information sharing (Mowday et al. 1982, Lawler 1986). Managers should consider adopting policies to foster affective commitment or emotional attachment to the organization, including placing a greater emphasis on the organization's identity.

To this end, it is important to communicate organizational successes, strategies and goals, emphasizing core values, beliefs and behaviors that represent the organizational culture and reflect the organization's identity (Cole & Bruch 2006). Other important practices include intensive socialization experiences, shared corporate events and conventions, cultural messages signalling teamwork and inclusion of individuals in the firm, social support and other inducements, including those under the influence of charismatic leaders (Rousseau 1998). Particularly, the quality of exchange relationships between leader and employee (Leader-Member Exchange, LMX) has been positively associated with affective commitment (Uhl-Bien & Maslyn 2003, Greguras & Ford 2006).

Organizations can cultivate commitment by enabling employees to receive support. In fact, perceived organizational support (POS) has been found to be positively related to commitment and the desire to remain with an organization (Rhoades & Eisenberger 2002). For example, managers can adopt fair procedures and practices (Masterson et al. 2000) and offer more development opportunities to employees (Wayne et al. 1997) in an effort to increase employees' POS and, subsequently, their commitment. Moreover, development appraisals and equitable rewards affect the relationship between perceived organizational support and organizational commitment (Whitener 2001). Researchers have found that procedural justice and distributive justice are both positively related to POS (Cropanzano et al. 1997, Masterson et al. 2000, Wayne et al. 2002). Fair treatment by the organization represents a signal to employees of their value for the organization to which they belong. A wide range of organizational politics and procedures are shown to affect employees' perceptions of fairness on the part of the organization. For example, organizations should encourage employees to participate in setting performance goals. Providing employees with feedback about job performance, rewarding good performance, or helping employees to correct poor performance (thought training) are likely to make those employees feel more valued as members of the organization (Hutchinson & Garstka 1996).

This study has several limitations. The first limitation comes from having tested our hypothesis within a single firm that was implementing a SAP R/3; moreover, we have not conducted a longitudinal study, thus, we cannot compare results over time. TAM's constructs are dynamic and not static from initial adoption to extended use. Concerning the TAM and TAM2, the field studies were longitudinal observational designs. Despite these limitations, we believe that this study contributes further to explain user behavior regarding new technology acceptance. Future research can extend our study to other firms and sectors using longitudinal data collected in order to compare results. In this way, future empirical research can be carried out to validate the role of affective commitment in determining new technology acceptance by users. Particularly, additional research could also make a comparative analysis between voluntary and mandatory use of technology verifying the role of affective commitment in these different contexts. On the other hand, longitudinal study could explain how affective commitment influences the process of adoption and use of new technology over time.

References

- Abdi, H. (2003). Partial Least Squares (PLS) Regression. In Lewis-Beck M., Bryman A., Futing T. (Eds.), *Encyclopedia of Social Sciences Research Methods*, Sage, Thousand Oaks (CA).
- Agarwal, R. and Prasad, J. (1999). Are individual differences germane to the acceptance of new information technologies?. *Decision sciences*, 30(2), 361-391.
- Ajzen, I. and Fishbein, M. (1975). *Belief, attitude, intention, and behavior: an introduction to theory and research*. Addison-Wesley Pub. Co., Reading.
- Ajzen, I. and Fishbein, M. (1980). *Understanding attitudes and predicting social behaviour*. Prentice-Hall Englewood Cliffs.
- Allen, N.J. and Meyer, J.P. (1990). The measurement and antecedents of affective, continuance and normative commitment to the organization. *Journal of Occupational Psychology*, 63(1).
- Aladwani, A.M. (2001). Change management strategies for successful ERP implementation. *Business Process Management Journal*, 7(3).
- Amoako-Gyampah, K. and Salam, A.F. (2004). An extension of the technology acceptance model in an ERP implementation environment. *Information & Management*, 41(6).
- Arthur, J. (1994). Effects of Human Resource Systems on Manufacturing Performance and Turnover. *Academy of Management Journal*, 37(4), 670-687.
- Bhatt, G.M. (1973). Significance of path coefficient analysis in determining the nature of character association. *Euphytica*, 22(2), 338-343.
- Calisir F., Calisir F. (2004), "The relation of interface usability characteristics, perceived usefulness, and perceived ease of use to end-user satisfaction with enterprise resource planning (ERP) systems", *Computers in Human Behavior*, 20(4).
- Carnall, C.A. (1986). Toward a Theory for the Evaluation of Organizational Change. *Human Relations*, 39(8), 745-766.
- Cole, M.S. and Bruch, H. (2006). Organizational identity strength, identification, and commitment and their relationships to turnover intention: Does organizational hierarchy matter?. *Journal of Organizational Behavior*, 27, 585-605.
- Compeau, D.R. and Higgins, C.A. (1995). Computer Self-Efficacy: Development of a Measure and Initial Test. *MIS Quarterly*, 19(2).
- Cropanzano, R., Howes, J.C., Grandey, A.A. and Toth, P. (1997). The relationship of organizational politics and support to work behaviors, attitudes, and stress. *Journal of Organizational Behavior*, 22, 159-180.
- Davenport, T.H. (1998). Putting the enterprise into the enterprise system. *Harvard Business Review*, 76(4).
- Davenport, T.H. and Stoddard, D.B. (1994). Reengineering: Business Change of Mythic Proportions?. *MIS Quarterly*, 18(2), 121-127.
- Davis, F.D. (1986). *Technology Acceptance Model for Empirically Testing New End-User Information Systems: Theory and Results*, doctoral dissertation, MIT.
- Davis, F.D. (1989). Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. *MIS Quarterly*, 13(3).
- Davis, F.D., Bagozzi, R.P. and Warshaw, P.R. (1989). User Acceptance of Computer Technology: a Comparison of two Theoretical Models. *Management Sciences*, 35(8).
- Davis, F.D., Bagozzi, R.P. and Warshaw, P.R. (1992). Extrinsic and Intrinsic Motivation to Use Computers in the Workplace. *Journal of Applied Social Psychology*, 22(14).
- Delery, J.E. and Doty, H.D. (1996). Modes of theorizing in strategic human resources management: Tests of universalistic, contingency, and configurational performance predictions. *Academy of Management Journal*, 39, 802-835.
- Gable, G.G., Scott, J.E. and Davenport, T.D. (1998). Cooperative ERP Life-cycle Knowledge Management. *Proceedings 9th Australasian Conference on Information Systems*.
- Gefen, D. and Straub, T. (2000). The relative importance of perceived ease-of-use in IS adoption: A study of e-commerce adoption. *Journal of the Association for Information Systems*, 1(8), 1-30.

- Greguras, G.J. and Ford, J.M. (2006). An examination of the multidimensionality of supervisor and subordinate perceptions of leader-member exchange. *Journal of Occupational and Organizational Psychology*, 79, 433-465.
- Hutchison, S. and Garstka, M.L. (1996). Sources of perceived organizational support: Goal setting and feedback. *Journal of Applied Social Psychology*, 26, 1351-1366.
- Igbaria, M., Zinatelli, N., Cragg, P. and Cavaye, A.L.M. (1997). Personal Computing Acceptance Factors in Small Firms: A Structural Equation Model. *MIS Quarterly*, 21(3), 279-305.
- Jackson, C.M., Chow, S. and Leitch, R.A. (1997). Toward an understanding of the behavioral intention to use an information system. *Decision Sciences*, 28(2), 357-389.
- Keil, M., Beranek, P.M. and Konsynski, B.R. (1995). Usefulness and Ease of Use: Field Study Evidence Regarding Task Considerations. *Decision Support Systems*, 13, 75-91.
- King, W.R. and He, J. (2006). A meta-analysis of the technology acceptance model. *Information & Management*, 43(6), 740-755.
- Kwahk, K.Y. (2006). ERP Acceptance: Organizational Change Perspective. *Proceedings of the Hawaii International Conference on System Sciences*.
- Kwahk, K.Y. and Lee, J.N. (2008). The role of readiness for change in ERP implementation: Theoretical bases and empirical validation. *Information & Management*, 45(7), 474-481.
- Lawler, E.E. (1986). *High-involvement management*. Jossey-Bass Press.
- Lee, Y., Kozar, K.A. and Larsen, K.R.T. (2003). The technology acceptance model: Past, present, and future. *Communications of AIS*, 12(50), 752-780.
- Legris, P., Ingham, J. and Colletette, P. (2003). Why do people use information technology? A critical review of the technology acceptance model. *Information and Management*, 40(2), 191-204.
- Li, D., Browne, G.J. and Chau, P.Y.K. (2006). An Empirical Investigation of Web Site Use Using a Commitment-Based Model. *Decision Sciences*, 37(3), 427-444.
- Ma, Q. and Liu, L. (2004). The technology acceptance model: A meta-analysis of empirical findings. *Journal of Organizational and End User Computing*, 16(1), 59-72.
- Malhotra, Y. and Galletta, D.F. (1999). Extending the Technology Acceptance Model to Account for Social Influence: Theoretical Bases and Empirical Validation. *Proceedings of the Hawaii International Conference on System Sciences*.
- Malhotra, Y. and Galletta, D.F. (2005). A Multidimensional Commitment Model of Volitional Systems Adoption and Usage Behavior. *Journal of Management Information Systems*, 22(1), 117-151.
- Magni, M. and Pennarola, F. (2008). Intra-organizational relationships and technology acceptance. *International Journal of Information Management*, 28(6), 517-523.
- Markus, M.L., Axline, S., Petrie, D. and Tanis, S.C. (2000). Learning from adopters' experiences with ERP: problems encountered and success achieved. *Journal of Information Technology*, 15(4).
- Masterson, S.S., Lewis, K., Goldman, B.M. and Taylor, M.S. (2000). Integrating justice and social exchange: The differing effects of fair procedures and treatment on work relationships. *Academy of Management Journal*, 43, 738-748.
- Mathieu, J.E. and Zajac, D.M. (1990). A review and meta-analysis of the antecedents, correlates and outcomes of organizational commitment. *Psychological Bulletin*, 108(2), 171-194.
- Meyer, J.P. and Allen, N.J. (1991). A three-component conceptualization of organizational commitment. *Human Resource Management Review*, 1, 61-89.
- Meyer, J.P. and Herscovitch, L. (2001). Commitment in the workplace: Toward a general model. *Human Resource Management Review*, 11, 299-326.
- Morrow, P.C. (1993). *The theory and measurement of work commitment*. Greenwich: JAI Press.
- Mowday, R., Steers, R. and Porter, L. (1979). The measurement of organizational commitment. *Journal of Vocational Behavior*, 14, 224-247.
- Mowday, R.T., Porter, L.M. and Steers, R.M. (1982). *Employee-organization linkages: The psychology of commitment, absenteeism, and turnover*. Academic Press, New York.

- O'Reilly, C. and Chatman, J. (1986). Organizational commitment and psychological attachment: The effects of compliance, identification and internalisation on prosocial behaviour. *Journal of Applied Psychology*, 71(3).
- Orlikowski, W.J. (1993). CASE tools as organizational change: investigating incremental and radical changes in systems. *MIS quarterly*, 17(3), 309-340.
- Reichers, A.E. (1985). A review and reconceptualization of organizational commitment. *Academy of management review*, 10(3), 465-476.
- Rhoades, L. and Eisenberger, R. (2002). Perceived organizational support: A review of the literature. *Journal of Applied Psychology*, 87, 698-714.
- Robey, D. and Sahay, S. (1996). Transforming Work through Information Technology: a Comparative Case Study of Geographic Information Systems in County Government. *Information Systems Research*, 7(1), 93-110.
- Rousseau, D.M. (1998). The "problem" of the psychological contract considered. *Journal of Organizational Behavior*, 19, 665-671.
- Shore, L.M. and Wayne, S.J. (1993). Commitment and employee behavior: Comparison of affective and continuance commitment with perceived organizational support. *Journal of Applied Psychology*, 78, 774-780.
- Taylor, S. and Todd, P. (1995a). Assessing IT Usage: The Role of Prior Experience. *MIS Quarterly*, 19(4), 561-570.
- Taylor, S. and Todd, P. (1995b). Understanding Information Technology Usage: A Test of Competing Models. *Information Systems Research*, 6(2), 144-176.
- Thatcher, J.B., McKnight, D.H. and Ahuja, M.K. (2002). The work environment and technology acceptance: The influence of affective commitment, autonomy and trust. *Information Systems Technical Reports and Working Papers*.
- Thompson, R.L., Higgins, C.A. and Howell, J.M. (1991). Personal Computing: Toward a Conceptual Model of Utilization. *MIS Quarterly*, 15(1).
- Uhl-Bien, M. and Maslyn, J.M. (2003). Reciprocity in manager-subordinate relationships: Components, configurations, and outcomes. *Journal of Management*, 29(4), 511-532.
- Venkatesh V. (2000), "Determinants of Perceived Ease of Use: Integrating Control, Intrinsic Motivation, and Emotion into the Technology Acceptance Model", *Information Systems Research*, 11(4).
- Venkatesh, V. and Davis, F.D. (1996). A Model of the Antecedents of Perceived Ease of Use: Development and Test. *Decision Sciences*, 27(3).
- Venkatesh, V. and Davis, F.D. (2000). A Theoretical Extension of the Technology Acceptance Model: Four Longitudinal Field Studies. *Management Science*, 46(2).
- Venkatesh, V. and Morris, M.G (2000). Why Don't Men Ever Stop to Ask for Directions? Gender, Social Influence, and Their Role in Technology Acceptance and Usage Behavior. *MIS Quarterly*, 24(1), 115-139.
- Venkatesh, V., Morris, M.G., Davis, G.B. and Davis, F.D. (2003). User Acceptance of Information Technology: Toward a Unified View. *MIS Quarterly*, 27(3).
- von Eye, A. and Schuster, C. (1998). *Regression Analysis for Social Sciences*. Academic Press, New York.
- Wang, C., Xu, L., Liu, X. and Qin, X. (2005). ERP research, development and implementation in China: an overview. *International Journal of Production Research*, 43(18).
- Wayne, S.J., Shore, L.M. and Liden, R.C. (1997). Perceived organizational support and leader-member exchange: A social exchange perspective. *Academy of Management Journal*, 40, 82-111.
- Whitener, E.M. (2001). Do "high commitment" human resource practices affect employee commitment?. *Journal of Management*, 27(5), 515-535.
- Wood, S. and De Menezes, L. (1998). High Commitment Management in the U.K.: Evidence from the Workplace Industrial Relations Survey, and Employers' Manpower and Skills Practices Survey. *Human Relations*, 51(4), 485-515.