Users' Intention To Explore: A Creativity-Based Perspective

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Abstract

An extensive body of literature explores the importance of individuals' acceptance of technology as it relates to the success of new systems' implementation. However, previous research does not take into account the active role of users in finding new applications for already developed systems. This paper, grounded in creativity theories, develops a multilevel theoretical framework which argues that users' intention to explore an already adopted technology is influenced by individual, social, and organizational factors. Empirically testable propositions are drawn and theoretical implications and possible future research are proposed.

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1 Introduction

"Everything that can be invented has been invented."
-Charles H. Duel, US Patent Office, 1899

Thankfully, Mr. Duel was errant in his assessment of innovation back in 1899. In contrast to his exclamation, an immense volume of research has explored the innovative nature of individuals and their inherent desire to explore. There are, however, gaps in this research and this manuscript identifies some of them. For example, an extensive body of literature indicates that resistance toward technology impedes potential performance improvements which can result from IT deployment (Davis, Bagozzi, & Warshaw, 1989; Venkatesh & Davis, 2000). In addition, it has been posited that end users decide if and how to use a technology, hindering or exploiting its potential (Orlikowski, 1992). In an attempt to investigate this phenomenon, scholars have developed many different models to explain the drivers which affect users' intentions and behaviors. So too, there is an extensive body of literature which explores the effects of individual and organizational factors on individuals' acceptance of technology (Venkatesh, Morris, Davis, & Davis, 2003 for a literature review). Some studies point out the important role of perceived usefulness and ease of use (Davis et al., 1989; Lewis, Agarwal, & Sambamurthy, 2003). Other research highlights the importance of social factors such as subjective norms (Taylor & Todd, 1995; Venkatesh & Davis, 2000) and management support (Leonard-Barton & Deschamps, 1988).
Notwithstanding the important contributions of the empirical findings related to user acceptance of technology, the implicit assumption of this stream of research is the passive role of users. In fact, Nambisan and colleagues put it quite succinctly when they state that, "users have only to decide whether to accept or not to accept an application that has already developed" (Nambisan, Agarwal, & Tanniru, 1999). According to Nambisan et al. (1999) many issues have to be addressed about user's active roles in the creation of new applications for already implemented technologies and the active role that users play in technology exploration. As noted by Agarwal (2000), "it is necessary to investigate and understand how to promote added value use of technology rather than how to influence individuals to use a technology." The need to study explorative behavior toward technology relies on the assumption that organizational long-term survival is tied to managers' ability to develop a creative environment to facilitate employees' ideas generation (Oldham & Cummings, 1996; Shalley & Gilson, 2004). Since IT is a crucial aspect of today's fast-paced environment, it is necessary to explore the creative role that users play in the deployment of existing technologies (Zawacki, 1993). Although the importance of this issue is recognized by managers and researchers (Ciborra, 1991; Zawacki, 1993), less work has specifically investigated the determinants of users' innovative behavior toward technology (Nambisan et al., 1999). As noted by Nambisan et al. (1999), one of the main aspects concerning users' innovative behavior revolves around the intention to explore a technology, which represents a user's willingness to find new applications for the system. While prior research does highlight the importance of individual, social, and organizational factors in influencing user intentions perceptions and behaviors (Lewis et al., 2003), it does not examine how these factors collectively influence the intention to explore a technology.
In order to address this issue, not exhaustively developed by previous studies, we will adopt a creativity approach because it offers a theoretical framework which allows the simultaneous consideration of individual, social, and organizational characteristics

affecting individuals' willingness to explore (Amabile, 1988; Woodman, Sawyer, & Griffin, 1993). Figure 1 depicts the general framework of the study.

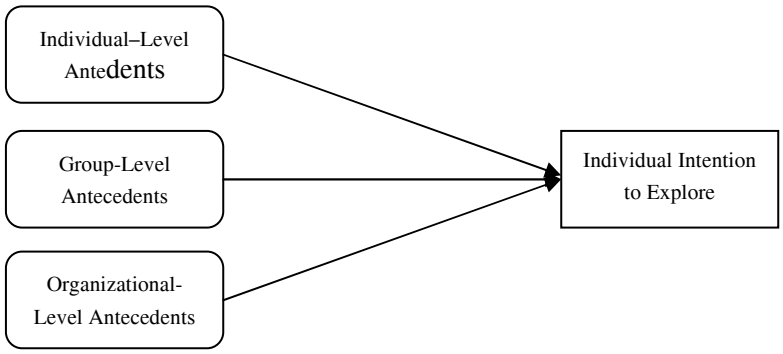

Figure 1 Research framework.

The purpose of this research is to provide a contribution to the literature focused on the multi-level relationship between users and technology, offering a theoretical investigation of the factors affecting users' intention to explore a technology. In particular, the outcome of this paper is the development of theoretical propositions which could be empirically tested in future research which takes into account the multi-level nature of the phenomenon.
The remainder of this paper is structured as follows. The next section describes the concept of intention to explore. We follow this by a review of the literature in order to support the connection between creativity theories and intention to explore. Building on creativity and information systems literature, we next develop a theoretical framework and propositions that describe how the individual, social, and organizational dimensions affect users' intention to explore. Finally, we offer recommendations for future research and potential practical implications.

2 Intention to Explore

Intention to explore in the information systems (IS) domain can be defined as "the willingness and purpose to explore a new technology and find potential uses," (Nambisan et al.,1999). This definition draws from the Theory of Reasoned Action (TRA), which posits that individuals' intention to perform a certain behavior is positively related to the execution of that behavior (Fishbein & Ajzen, 1975). The role of intention as a predictor of individuals' behaviour is well established in the IS literature. In the technology acceptance domain, scholars have found that intention to use a technology is influenced by perceived usefulness and ease of use (Davis et al., 1989), outcome

expectations (Compeau, Higgins, & Huff, 1999), subjective norms (Davis et al., 1989; Mathieson, 1991) social factors (Thompson, Higgins, & Howell, 1991), and perceived behavioral control (Taylor & Todd, 1995; seeVenkatesh et al., 2003 for an extensive literature review). While there is considerable agreement about the drivers which lead to the intention to use a new technology, more work is needed to understand the factors which affect individuals' intention to explore an already implemented technology (Agarwal, 2000). Some prior research has traced factors that drive intention to explore, focusing upon a specific and limited set of antecedents. For example, Nambisan et al. (1999) pointed out that intention to explore is influenced by those managerial practices that provide more contextual knowledge (i.e., IT task group). These findings are consistent with King and Teo's (1994) results, which posit that users' intention to explore can be enhanced through clear directions about technology deployment.
However, the existence of a broader set of factors which affect individuals' perceptions and behaviors (Lewis et al., 2003) justifies the need to investigate simultaneously the differential effects of individual, social, and organizational aspects on users' intention to explore.

3 Users' Intention to Explore and Creativity

Previous research approached creativity in different domains (i.e., artistic, verbal, scientific) and from different perspectives such as the ability to correlate a problem with a solution (Wertheimer, 1945); the unconventionality process in problem solving (Newell, Shaw, & Simon, 1962); or the investigation of certain characteristics in people (Guilford, 1950).
Recent theories define creativity as the production of novel and useful ideas in any domain (Amabile, 1988; Amabile, Conti, Coon, Lazenby, & Herron, 1996).
Amabile's (1988) compositional theory posits that in addition to individual characteristics, context plays a critical role in enhancing creativity. The contextual factors can be traced back to the organization features such as its resources, propensity to innovate, and managerial practices (Amabile, 1988). The model proposed by Amabile has been extended by the interaction theory proposed by Woodman, et al. (1993), which builds upon the assumption that contextual factors affect individual creativity. More importantly, Woodman's et al. (1993) theory highlights the multilevel nature of creativity by suggesting that individual creative behaviors are influenced by individual traits and cognitive aspects, by group influences, and by organizational-level characteristics.
According to the theories presented above, personal characteristics and contextual facilitating conditions affect individual creativity, ultimately influencing a person's willingness to explore and experiment with new ideas and approaches toward a certain stimuli (Amabile, 1988; Woodman et al., 1993). The ability to explore new cognitive pathways grants individuals the freedom to investigate alternative solutions enhancing the probability of generating creative ideas. However, the level of individual engagement toward exploration can vary in relation to personal characteristics and contextual situations (Shalley & Gilson, 2004). Focusing on the information systems' domain, the user's intention to explore represents the individual's willingness to find new ideas related to the system deployment in her day-to-day activities.
Building on the works of Amabile (1988, 1997) and Woodman et al. (1993), we argue that individual, social, and organizational dimensions affect an individual's intention to explore a technology (Figure 2). At the individual level, a user's relationship

toward technology is not invariant across users. Individual traits and cognitive processes shape user's perceptions, and behaviors toward technology (Lewis et al., 2003), ultimately influencing her willingness to explore the system. Moreover, users who belong to a group will exchange gossip, stories, rumors, and develop new interpretive frameworks (Gioia, Thomas, Clark, & Chittipeddi, 1994) related to the system. The quality of this exchange process may act as a stimulus to find new applications for the system. Finally, an organizational environment which is oriented toward innovation will provide the necessary resources and recognition for employee results to facilitate a nurturing environment for exploration of new technology deployments. According to Triandis (1971) a behavior cannot occur if environmental conditions constrain it and Lado and Wilson (1994) posit that harnessing innovation and entrepreneurship amongst employees will lead to an organizational environment that support a 'transformational' competencies.

Although the creative process can be affected by social and contextual factors, Unsworth (2001) underscores the importance of considering the kind of driver which initiates the individual willingness to generate novel ideas. According to Deci and Ryan (1987) an individual's behavior can be initiated either through self-determined choice (i.e. individual desire to achieve a goal) or because of external demands (i.e., R&D project needs). Most of the empirical studies concerning creativity focus on externally driven generation of new ideas, exploring individual responses to given problems. Many researchers have investigated the role of creativity in certain professional figures such as engineers, architects, and R&D scientists (Amabile et al., 1996; Unsworth, 2001). In the information systems field, the importance of creativity has been recognized in the development of a new information system to enable organizational change (Cooper, 2000). In this work, Cooper states that a lack of creative thinking, from the definition of the system requirements to the program design, facilitates the creation of a new information system which reinforces the organizational status quo rather than enhancing the process of change (Cooper, 2000). Few studies, with notable exceptions (Eisenberger, Fasolo, & Davis-Lamastro, 1990; Oldham & Cummings, 1996), have analyzed self-determined creative thinking, which is related to a proactive behavior toward a certain situation or problem- such as the individual attempt to discover problems to solve (Unsworth, 2001). People spontaneously try to look at an object or a situation through a different point of view not because it is required by their formal task, but because it is a self-determined attempt to generate new ideas. These insights may also occur in the IS domain when users try to discover new applications for a system, even if their formal task does not include the discovery and development of new technology functionalities. The present paper focuses on the self-determined individual's intention to explore a technology, rather than on external demand.

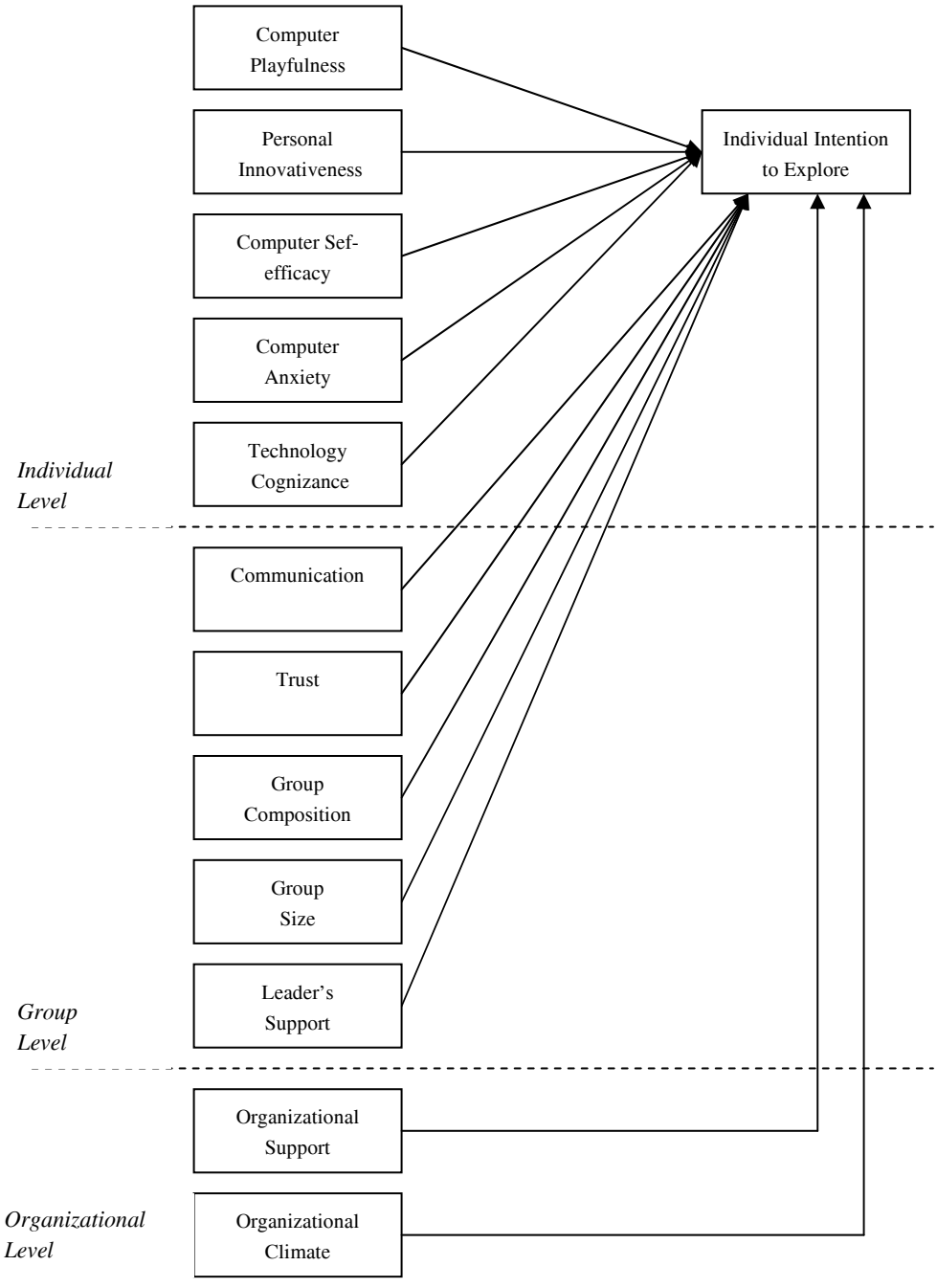

Figure 2 Antecedents of Intention to Explore

4 Individual Factors and Intention to Explore

Early researchers of creativity argued that similar biographical characteristics occurred among creative individuals (Goertzel, Goertzel, & Goertzel, 1978). Subsequent studies suggested that there are specific individual traits and cognitive factors which are related to individual creativity (Woodman et al., 1993). Amabile (1996) identified that individual creativity could be traced back to individual factors belonging to knowledge and intrinsic motivation and that an individual's domain-knowledge represented the raw material for creative productivity. She further suggested that individual creativity is related to the intrinsic motivation of the subject. Others have shown that motivated individuals are more likely to show a deeper level of involvement by focusing on solving problems, minimizing distractions, and being absorbed in their work (Ruscio, Whitney, & Amabile, 1998). According to Thatcher and Perrewe (2002), previous research on technology acceptance underscores that individual traits and cognitive factors toward technology can be stable over time, such as that which occur in personal innovativeness (Agarwal & Prasad, 1998) and computer playfulness (Webster & Martocchio, 1992); or dynamic, such as computer self-efficacy (Compeau & Higgins, 1995), computer anxiety (Harrison & Rainer, 1992) and technology cognizance (Nambisan et al., 1999).
These individual aspects refer to the degree to which an individual is comfortable in her interaction with a technology, ultimately influencing her intentions and behaviors toward the system (Venkatesh & Davis, 2000).

Personal innovativeness. Personal innovativeness refers to the propensity of individuals to innovate and their willingness to change (Thatcher & Perrewe, 2002). According to Goldsmith (1991) and Leonard-Barton (1988), personal innovativeness has to be contextualized in a specific domain. In information systems research, personal innovativeness is related to the degree to which an individual is willing to try out new technologies (Agarwal & Prasad, 1998). This definition of personal innovativeness is consistent with the creativity theories which refer to the ability of a person for taking new perspectives on problems and to applying new techniques for the exploration of cognitive pathways (Amabile, 1997). Therefore, we argue that individuals who present a high degree of propensity to innovate in the IT domain are more likely to search for new applications for the adopted technology. Thus,

PROPOSITION 1: Personal innovativeness is positively related to an individual's intention to explore a technology.

Computer playfulness. In the information systems field, individual playfulness has been defined as the degree of cognitive spontaneity, inventiveness, and imaginativeness with a technology (Webster & Martocchio, 1992). Previous studies demonstrated that playful individuals are more likely to show internal motivation, tendencies toward not conforming to externally-imposed rules, and the desire to be lead by active involvement (Webster & Martocchio, 1992). Playfulness allows individuals to go beyond the familiar uses of objects (Claxton, 2002), and some researchers have pointed out that individuals with high levels of playfulness are more likely to show high curiosity (Webster & Martocchio, 1992). Thus, we argue that users who present a high level of playfulness are more likely to search for new applications for the adopted technology.

PROPOSITION 2: Computer playfulness is positively related to an individual's intention to explore a technology.

Computer self-efficacy. Computer self-efficacy can be traced back to the general concept of self-efficacy developed in Social Learning Theory (Bandura, 1977; Bandura, 1986). Agarwal and colleagues (2000) state that, "self-efficacy, rather than referring to the individual skills for goal achievement, refers to judgments of what one can do with whatever skills one possesses." Focusing on the information systems domain, computer self-efficacy refers to an individual's beliefs that she can use computers in different situations (Compeau & Higgins, 1995). Extant literature shows that individuals who possess high computer self-efficacy are more likely to form positive perceptions of IT (Venkatesh & Davis, 1996) and use computers more frequently (Compeau et al., 1999). Marakas et al. (1998) argue that, since computer self-efficacy refers to users' confidence in their ability to use a computer, individuals with low computer self-efficacy will follow instructions and directions more carefully. Therefore, we argue that users with a high degree of confidence with a computer will be less likely to follow standard procedures and will experiment with new ways to use the system. In addition, computer-savvy individuals will have the skills and capabilities necessary to fully explore the features, functions, and previously untapped abilities of the technology.

PROPOSITION 3: Computer self-efficacy is positively related to an individual's intention to explore a technology.

Computer anxiety. Computer anxiety is a negative affective reaction toward computers and can be conceptualized as an individual's apprehension toward using the computer (Thatcher & Perrewe, 2002). Previous research pointed out that computer anxiety affects the interaction between users and technology. In particular, computer anxiety is related to beliefs (Venkatesh & Davis, 2000), behaviors (Compeau & Higgins, 1995), and learning (Martocchio, 1994).
Individuals who have a high level of computer anxiety are concerned about the implications and possible negative consequences resulting from mistakes they make (e.g. loss of important data) while using the technology (Thatcher & Perrewe, 2002). Because the exploration process implicitly assumes the occurrence of mistakes and errors, individuals with high levels of computer anxiety will avoid these situations. Therefore, we argue that a high level of computer anxiety inhibits users' intention to explore. Thus,

PROPOSITION 4: Computer anxiety is negatively related to an individual's intention to explore a technology.

Technology cognizance. "Technology cognizance refers to a user's knowledge about the technology capabilities, its features, its potential use, costs and benefits" (Nambisan et al., 1999) and it represents a necessary condition for IT innovation (Nambisan et al., 1999). This aspect is consistent with creativity theories which posit that individuals' expertises are the foundation for all creative work (Amabile, 1988; Woodman et al., 1993). In fact, "users may not develop a creative process unless they understand the task involved and the environment in which the system operates" (Nambisan et al., 1999). If users have a good understanding of technology characteristics, they should be able to forecast the effects of their action toward technology.

Users who present high technology cognizance will be more aware of the effect of their actions toward technology and they will be more confident in their attempt to find new solutions and applications for a certain technology.

PROPOSITION 5: Technology cognizance is positively related to an individual's intention to explore a technology.

5 Social Factors and Intention to Explore

Creativity usually occurs through social interaction between coworkers and group members (Mumford & Gustafson, 1988). This aspect can be traced back to the broad literature concerning the influence of group and leader on individuals' outcomes and behaviors. An extensive amount of literature showed that high quality interactions among group members affects individual satisfaction, learning and personal success (Campion, Papper, & Medsker, 1996; Hoegl & Gemuenden, 2001; Pinto, Pinto, & Prescott, 1993). In the creativity literature domain, Amabile (1997) argues that work group support and supervisor encouragement represent a stimulus for individual creativity. Previous research showed that creativity may be enhanced by diversity in group composition, communication, and trust among members (Shalley & Gilson, 2004). Group members are the primary source of influence for individuals, affecting their process of new idea development (Woodman et al., 1993). Moreover, the stream of research on leadership pointed out the critical role of supervisors in shaping subordinates' behavior (Yukl, 2002). Extant theoretical and empirical studies found that supportive supervisors foster subordinates' creative thinking (Woodman et al., 1993). Considering the supervisor's behavior as a group-level construct relies on the concept that members belonging to the same group are likely to be exposed to the influences of the same supervisor, involving a relatively homogeneous experience that is distinct from those of other groups (Liao & Chuang, 2004).
Thus, in the post-adoption domain of a technology, group and supervisor characteristics may facilitate the process of idea generation. Hereafter, adopting the above mentioned group-level constructs, we will analyze how the social aspects may affect users' intention to explore.

Communication. Communication provides a means for the exchange of information among members and it represents a critical aspect for group coordination (Ancona & Caldwell, 1992; Pinto et al., 1993). According to Hoegl and Gemuenden (2001), the quality of communication among group members is a multifaceted construct. High quality communication is based on the degree of formalization, which indicates the degree of spontaneity through which individuals communicate. Low formalization allows a quick and efficient exchange of ideas (Katz, 1982; Pinto et al., 1993). Another critical aspect of communication quality pointed out by Hoegl and Gemuenden (2001) is related to the openness of the communication process, which refers to the degree to which individuals share important information with other group members.
Theoretical and empirical studies on creativity show that high communication quality leads to an exchange of information and new idea development (Gilson, 2001; Monge, Cozzens, & Contractor, 1992; Woodman et al., 1993). Since individuals exchange information concerning the adopted technology within their reference group, they can generate a new idea about technology use as a result of the information and stimuli received from other members. We argue that high quality communication

among group members enhances an individual's intention to explore, leading to our next proposition.

PROPOSITION 6: Group communication quality is positively related to an individual's intention to explore a technology.

Trust. Trust can be defined as a willingness to be vulnerable to another party (Mayer & Davis, 1995; Rousseau, Sitkin, Burt, & Camerer, 1998) and it is based on competence, reliability, and openness of the partner, which derive from several prior interactions (Whitener, Brodt, Korsgaard, & Werner, 1998). It is well documented that trust in group members affects satisfaction and performance (McEvily, Perrone, & Zaheer, 2003). Many researchers have demonstrated that where the relationships are characterized by high trust, people are more willing to engage in social exchange (Gambetta, 1988). Moreover, trust affects the social exchange both on the sender and on the receiver side (Szulanski, 1996). In particular, in the presence of trust, the sender will be more inclined to share sensitive information and details. For
this reason, if individuals trust their group members, they will also be more likely to share beliefs and opinions concerning the system and they will be exposed to sensitive and important information about technology characteristics, enhancing their chance to generate novel ideas. Indeed, according to Shalley and Gilson (2004), information sharing among members enhances the cross-fertilization of perspectives, increasing the chance of creativity and innovation occurrence. Therefore,

PROPOSITION 7: Trust among group members is positively related to an individual's intention to explore a technology.

Group composition. Even though the empirical evidence of group composition influence on members' outcomes is not entirely conclusive, a number of recent studies find a positive relationship between group diversity and creative behaviors (Ancona & Caldwell, 1992). Group composition is a multifaceted construct referring to the degree to which individuals within a group represent different characteristics related to background, age, gender, and so on. Some researchers suggested that group diversity might increase creativity (Amabile et al., 1996), based upon the assumption that individuals who belong to non-homogeneous groups are likely to be influenced by the different perspectives of the other members (Ancona & Caldwell, 1992; Pelled, 1996). For example, Gilson (2001) pointed out that individuals belonging to groups without any predominant gender reported a higher level of creativity in comparison with homogeneous groups. In the IS domain it has been found that individual differences lead to dissimilar opinions about the system (Karahanna, Evaristo, & Srite, 2005). Therefore, users can be stimulated to find new applications because of their exposure to different perspectives of other members.

PROPOSITION 8: Group diversity is positively related to an individual's intention to explore a technology.

Group size. Group size has been considered by researchers as a critical issue related to group activities and outcome (Campion et al., 1996). Many studies pointed out that larger group size leads to a greater psychological distance among members and individuals are less likely to cooperate and participate in group activities (Pearce & Herbik, 2004). We argue that group size represents the number of potential sources of information and stimuli within the group, leading to a positive effect on user intention

to explore a technology. In addition, we draw a correlation between group size and diversity and therefore suggest the following: Thus,

PROPOSITION 9: Group size is positively related to an individual's intention to explore a technology.

Leader's support. A supportive leadership refers to supervisor behaviors which are oriented to the needs of subordinates, displaying concern for their welfare, and creating a friendly climate in the work unit (Yukl, 2002). Previous research pointed out that a supportive behavior toward subordinates reduces their amount of stress, intention to quit, and enhances satisfaction and innovative behaviors (Ganster, Fusilier, & Mayes, 1986; Kessler, Price, & Wortman, 1985; Scott & Bruce, 1994). Moreover, Amabile et al. (2004) found that supportive leader behavior affects subordinates' creativity. In particular, results show that supportive behavior influences individuals' perceptions and feelings, enhancing their creative thinking.
These findings are consistent with previous research results which indicate that criticism behavior may interrupt the creative process with a consequent idea withdrawal (Galluchi, Middleton, & Kline, 2000). If leaders wish to support the rise of new ideas, they must recognize and reward creative thinking (Mumford, Scott, Gaddis, & Strange, 2002). Therefore,

PROPOSITION 10: Leader's support is positively related to an individual's intention to explore a technology.

6 Organizational Factors and Intention to Explore

The impact of organizational factors on individuals' behavior is widely acknowledged in the organizational literature (Kozlowski & Klein, 2000). Coase (1937) states that firms will create unique resources simply by organizing and separating operating and strategic functions.
Williamson (1975) expands on this theme when he suggests that M-Form (multidivisional) firms are more effective in using corporate incentives to promote specific behaviors than U-Form (unitary-form) firms are. In the creativity literature, Amabile (1988) posits that organizational characteristics foster individual creativity. Organizations can facilitate creative behaviours developing an environment which encourages new idea development and provides resources and support for creative thinking. Individuals who belong to an organization which stimulates, supports, and rewards innovation are more likely to generate creative ideas (Amabile et al., 1996; Oldham & Cummings, 1996; Woodman et al., 1993). The critical role of organizational aspects is confirmed by many studies in the information systems domain. An extensive body of literature examines how organizational support (Leonard-Barton & Deschamps, 1988), top management commitment (Lewis et al., 2003), and organizational climate (Kraemer, King, Dunkle, & Lane, 1989) affect users' beliefs and behaviors toward technology. Although prior research has unequivocally established the importance of organizational factors for users' acceptance of technology, less work has specifically linked these aspects to individual willingness to explore a technology (Nambisan et al., 1999). Consistent with the definition of organizational encouragement provided by Amabile et al. (1996), we argue that individuals who belong to an organization which encourages proactive behaviors, are more likely to try new ways to use the sys-

tem. In accordance with Shalley and Gilson (2004), we will consider the effect of organizational support and organizational climate on individuals' intention to explore.

Organizational support. The concept of organizational support can be traced back to the "employees' perception about the extent to which the organization cares about their well being" (Eisenberger et al., 1990). In the IS domain, organizational support can be considered a multifaceted concept which refers to two main categories: end-user support and top management support (Igbaria, Guimaraes, & Davis, 1995). End-user support refers to the availability of assistance and guidance in using the system, while top management support is related to the allocation of sufficient resources and to the encouragement of an effective technology deployment (Igbaria et al., 1995). Employees who perceive a high level of organizational support exhibit behaviors that are consistent with the organizational goals, generating a virtuous exchange process between organization and employee (Eisenberger et al., 1990). Other studies (George & Brief, 1992) suggest that organizational support is positively related to employees' effort and outcome. In particular, employees who perceive that the organization recognizes and rewards their effort to carry out their job effectively are more likely to perform behaviors which go beyond their formal duties. Therefore, the presence of proactive behaviors may also result in users attempting to develop new ways for system deployment.

PROPOSITION 11: Perceived organizational support is positively related to an individual's intention to explore a technology.

Organizational climate. Organizational climate is a multi-dimensional concept which relies on three dimensions: fairness, affiliation, and innovativeness (Gee-Woo, Zmud, Young- Gul, & Jae-Nam, 2005). In particular, it is posited that the dimensions of innovativeness are consistent with the definition of organizational encouragement discussed by Amabile (1996). In this sense, innovativeness refers to "the perception that change and creativity are actively encouraged and rewarded emphasizes learning, open information flows, and reasoned risktaking" (Gee-Woo et al., 2005). Consequently, those individuals who perceive an organizational climate to be based upon innovation are more likely to share new and creative ideas with each other (Lee, Kim, & Lee, 1995). Moreover, individuals who perceive that an organization tolerates a reasonable level of risk and its associated consequences will be less concerned about potential negative consequences derived from an error due to exploration, leading to our final proposition.

PROPOSITION 12: Organizational climate is positively related to an individual's intention to explore a technology.

7 Conclusion

While many studies concerning the relationship between users and technology focus on the individual acceptance of a new system, this paper attempts to analyze the antecedents of an individual's intention to explore. In the post-adoption phase, intention to explore represents one of the most critical aspects of individual innovative behavior toward technology (Nambisan et al., 1999). In order to shed some light on the intention to explore predictors, we adopted a creativity-based approach because it allows one to consider individual, social, and organizational factors collectively. Ac-

cording to Hofmann (1997), there is the need to consider the hierarchical nature of organizations. Therefore, this paper represents an attempt to provide the theoretical basis for investigating a user's intention to explore through a multi-level lens.

Furthermore, if the propositions offered here are supported empirically, some important practical implications will emerge for firms. In fact, the strategic value of technology is not only related to technical issues, but also to social aspects that involve users. First of all, management has to support an effective individual training process in order to minimize the occurrence of negative feelings toward technology; however, the development of a positive attitude toward technology is not enough. Managers must develop an organizational environment which allows users to go beyond the simple acceptance and use of a technology. They should encourage creative thinking and consider exploratory behaviors to be an investment for gaining competitive advantage due to a more effective deployment of the technology.

The model points out, in a parsimonious fashion, the constructs affecting intention to explore a technology. However, the theories developed by Amabile (1988) and Woodman (1993) provide a more general framework of the factors affecting individual creative thinking.

Therefore, there is the possibility to extend the model through the introduction of other predictors. For example, Shalley and Gilson (2004) identify the role played by job characteristics. A challenging job, which is complex and not routinized is likely to enhance individual motivation to explore new creative pathways to accomplish this task. However, in the present study we have not considered different job types, because the aim of this paper is to study the effects of different predictors on users who deploy the same technology and who are assigned to the same task (i.e. front line call center operators nested in different group and different organizations, and adopting the same system to manage the relationship with customers). However, future empirical research may study the effect of intention to explore predictors across different tasks or different professional settings (i.e what is the effect of job type on the intention to explore a certain technology?). Moreover, we did not consider other constructs proposed by previous researchers because they refer to an external trigger for the initiation of the creativity process (Unsworth, 2001) rather than focusing on self-determined creative thinking. For example, the importance of coordination among group members is likely to affect creative thinking when there is an external demand for idea and group is expected to find a solution to a certain problem (i.e. a group of analysts and software developers who are required to design a new data warehouse). However, it would be interesting for future research to depict and investigate the effects of externally stimulated exploration toward technology. For example, the study of users' exploration in an information system development domain may offer some interesting insights for project managers who are responsible for leading the project group.

Future research should focus on the empirical validation of the derived propositions and should discriminate among different types of technology and organizational settings. It would be interesting to test the validity of this model in a context characterized by virtual groups and multi-national organizations investigating the effect of different cultural settings.

Finally, the empirical test of this model should also consider the interaction of constructs across different level of analysis in order to provide a more complete understanding of the phenomenon.

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