

**INDIVIDUAL VALUES: A CONCEPTUAL MODEL FOR  
UNDERSTANDING THE REDEFINITION OF THE USE OF  
INFORMATION TECHNOLOGY IN ORGANIZATIONS**

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Data de submissão: 25/04/2008

Data de aprovação: 27/11/2008

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## **INDIVIDUAL VALUES: A CONCEPTUAL MODEL FOR UNDERSTANDING THE REDEFINITION OF THE USE OF INFORMATION TECHNOLOGY IN ORGANIZATIONS**

### **ABSTRACT**

The objective of this article is to explain how individuals define Information Technology (IT) in organizations, based on their values. Individual values influence the actions, with repercussions on the redefinitions of the use of technology. The social construction of reality and the vision of the IT user as an agent in the use of the technology are premises of this essay. The discussion presented is based on the idea that the structure of technology is built through practice, and that individual values, beliefs and expectations will influence the use of IT. A conceptual model is proposed, to be empirically tested, which presents different types of IT use and their effects on the technology. The justifications and motivations for these uses are associated with the individual values.

Key words: Information Technology; Individual Values; Social Construction of IT.

## **VALORES INDIVIDUALES: UN MODELO CONCEPTUAL PARA LA COMPRENSIÓN DE LA REDEFINICIÓN DEL USO DE TECNOLOGÍA DE LA INFORMACIÓN EN LAS ORGANIZACIONES**

### **RESUMEN**

El objetivo de este artículo es explicar cómo los individuos redefinen la Tecnología de la Información (TI) en las organizaciones, con base en sus valores. Los valores individuales influyen las acciones, con reflejos en las redefiniciones del uso de la tecnología. La construcción social de la realidad y la visión del usuario de TI como agente en el uso de la tecnología son las premisas de este ensayo. La discusión presentada se basa en la idea de que la estructura de la tecnología se construye en la práctica y que los valores individuales, creencias y expectativas influenciarán el uso de la TI. Se propone un modelo conceptual, a ser testeado empíricamente, que presenta diferentes tipos de usos de TI y sus efectos sobre la tecnología. Las justificativas y motivaciones de estos usos están asociadas a los valores individuales.

Palabras clave: Tecnología de la Información; Valores Individuales, Construcción Social de la TI.

## **VALORES INDIVIDUAIS: UM MODELO CONCEITUAL PARA COMPREENDER A REDEFINIÇÃO DO USO DA TECNOLOGIA DA INFORMAÇÃO NAS ORGANIZAÇÕES**

### **RESUMO**

O objetivo deste artigo é explicar como os indivíduos redefinem a Tecnologia da Informação (TI) nas organizações, com base em seus valores. Valores individuais influenciam as ações, com reflexos nas redefinições de uso da tecnologia. A construção social da realidade e a

visão do usuário de TI como agente no uso da tecnologia são premissas deste ensaio. A discussão apresentada baseia-se na idéia de que a estrutura da tecnologia é construída na prática e que os valores individuais, crenças e expectativas influenciarão o uso da TI. É proposto um modelo conceitual, a ser testado empiricamente, que apresenta diferentes tipos de uso de TI e seus efeitos sobre a tecnologia. As justificativas e motivações destes usos são associadas aos valores individuais.

Palavras-chave: Tecnologia da Informação; Valores Individuais, Construção Social da TI.

## 1 INTRODUCTION

There has been extensive use of information systems in organizations in recent decades, motivated by various perceived benefits, usually associated with productivity, competence and gains in organizational performance.

This extensive use of information technology (IT) has transformed the way work is performed, organized and perceived. Influenced by various factors, the implementation of IT resources requires a set of new abilities that enable its special characteristics to be dealt with (THIRY-CHERQUES & TAVARES, 2007).

Technology has often been treated as a deterministic force with predictable impacts (LIKER *et al.*, 1999). Technological determinism describes technologies as settled and static artifacts, which are made available to users. This idea of the stability of technology stability is opposed by empirical research, which has shown that people redefine and change the meaning of technology, its properties and applications even after it has been developed (WOLGAR, 1991). Today, it is known that the impact of IT on work will depend on the interaction between individuals and technology. Several studies have been conducted with the aim of understanding this interaction, such as the Technology Acceptance Model (DAVIS, 1989; DAVIS *ET AL.*, 1989), the Model of Goodman, Griffith and Fenner (1990) and the Theory of Planned Behavior (AJZEN, 1991).

It is important to recognize that the role of IT users is not restricted to that of passive consumers of technological artifacts. On the contrary, they are agents in the adoption, use and adjustment of the available resources, i.e., they work on the technology and redefine it, whenever there is interaction. The idea supported here is that although technology may have material properties and bear symbols, its structure is formed through practice. The application structure of technology is recursively built as a result of regular human interaction with some properties of the technology, and it establishes the set of rules and resources that mold this interaction. This notion of recursiveness is discussed in Giddens's Structuration Theory (1984), which stresses that action is subject to existing cultural structures, and that these structures are created and recreated by the action process.

Based on Giddens's ideas, Orlikowski (2000) sustains the idea that there will always be two aspects of technology: technology as an *artifact* and *technology-in-practice*. On the one hand, technology is a phenomenon which is physically organized in time and space. It has cultural and material properties that transcend individual experiences. In this aspect, technology can be called a technological artifact. On the other hand, the use of technology involves a personal order and an edited version of the technological artifact, which is experienced in different ways by different individuals, depending on their circumstances. This aspect the author calls technology-in-practice. In this perspective, the focus of attention is transferred to technological structures arising from the interaction between the user (agent) and the artifact (structure).

This proposal brings new challenges concerning the understanding of IT, since technology is assimilated by individuals whose values, beliefs and expectations may influence its use.

The present study is based on the assumption that technology is socially constructed, and that IT users are agents in the adoption, use and adjustment of the available resources. This essay presents a theoretical reflection on individual values as a relevant concept for understanding the interaction between individuals and information technology in organizations. If values set conditions for actions within the organizations, then they must also influence the way in which individuals redefine the use of information technology.

The main motivation for this reflection is the fact that research in IT tends to disregard individual values as highly influential factors in the assimilation and use of technology in organizations. Mainstream approaches focus on the characteristics of IT and contingency-related factors, ignoring the complexity of changes driven by the implementation of IT. This narrow view leads to a limited understanding of the interactions that occur between individuals and IT.

This article proposes a preliminary conceptual model of the different types of IT reconstruction and the effects arising from it, linking the justifications and motivations of this reconstruction to individual values. It seeks to contribute to the understanding of the role of individuals as agents in the construction and reconstruction of IT, during recursive practices. More specifically, its main contribution is the proposal of a model for furthering understanding of how individual values influence the redefinitions of IT artifacts.

This theoretical reflection is systematized as follows: first, IT is presented as socially constructed – a view that is a basic assumption of this article; section 3 discusses the idea of the individual as an agent in the use of IT and also suggests Structuration Theory as a theoretical alternative for the type of research proposed; section 4 presents the characterizations of IT uses, the resulting effects on the technology, and their justifications and motivations; section 5 discusses the concept of values and describes the motivational types proposed by Schwartz (1992, 1994, 1999, 2005), since they perfectly fit in the work context. Finally, in the last section, the conclusions of this theoretical reflection are presented.

## **2 THE SOCIAL CONSTRUCTION OF TECHNOLOGY**

Historically, technology has been seen as a deterministic force, with predictable impacts. Technology, according to this perspective, is self-regulating, and humans should interfere with it as little as possible. The underlying idea is that workers add vulnerability to production, therefore, production processes should be based exclusively on technology (LIKER *et al.*, 1999).

Recently, the complexity of the relationship between technology and work is recognized. The social reality of technological implementation is highly complex. Very distinct technologies are used in different social settings, for a variety of reasons, and these may lead to a wide range of effects which are not always predictable (LIKER *et al.*, 1999).

The function of technologies is to improve living or working conditions, through the use of instruments, mechanisms or procedures that facilitate human action. However, with some new technologies, there may be several psychological, social or moral barriers to their acceptance (ALMEIDA, 2002). The implementations of technology can result in serious problems such as: (i) degradation of quality of life at work, by creating a lack of confidence in retaining a job, increasing stress and generating uncertainties related to career interests; (ii)

impacts on informal communication, which is responsible for friendship, trust, self-respect and feelings of belonging to the group; (iii) undesired redistribution of power; and (iv) loss of job or of meaning of life at work (RAMOS & BERRY, 2005).

Social construction scholars propose that the interaction among agents controls technologies and their effects, and that attitudes related to technology converge into a social system. Social constructivists analyze how interpretations, social interests and conflicts mold the production of technology, by molding its cultural meaning and the social interaction among relevant groups (FULK, 1993; ORLIKOWSKI, 2000).

Weick (1990) based his work on the ideas about social constructivism, by discussing technology as arising from the relations among a heterogeneous set of elements. The author proposes the metaphor of an equivoque to elucidate the concept of technology, since there are various interpretations of technologies, some of which are conflicting. Weick showed that technologies cause unpredictable problems because their processes are frequently poorly understood, and because they are being constantly redesigned and reinterpreted in the process of implementation and adjustment to specific social and organizational contexts.

That means recognizing that people play an active role in the creation of new technologies and their results. Technology does not operate in a compulsory way: individuals redefine and change, during practice, the meanings of technologies, their properties and applications, this process being consequently characterized as social construction. Therefore, the implementation of a technology is only one of the stages for assimilating a resource into the work process. This assimilation does not only occur due to the characteristics of technology, but also because of the organizational context and users' characteristics – values, personality traits, career expectations, skills, and other factor.

### **3. THE INDIVIDUAL AS AN AGENT IN THE USE OF IT**

As information technologies were disseminated within organizations, a growing number of researchers looked for alternative ways of studying the interactions between users and IT resources. Among these new research approaches in the area are the arrangements based on the premises of Giddens' Structuration Theory.

Giddens' core research issue focuses on the relationship between structure and agency. He analyzes this duality considering the concept of structure as a given or external form. The structure is what shapes social life, but it is not the shape in itself. The structure only exists through the agency of human beings. The agency does not refer to individuals' intention to do something, but to people's standard action flow. Giddens sustains that in the issue of structure and agency, the action is subject to existing cultural structures, and these structures are created and recreated by the action process (GIDDENS, 1989).

Structuration Theory did not benefit the study of technologies. However, due to their role in the day-to-day activities of organizations, particularly the role of computer technologies in the construction of reality in modern organizations, some attempts have been made to extend Giddens' ideas to research in the field (BARRET & WALSHAM, 1999; NICHOLSON & SAHAY, 2001; WALSHAM & SAHAY, 1999; NGWENYAMA, 1998; OLESEN & MYERS, 1999; ORLIKOWSKI, 2000; MAZNEVSKI & CHUDOBA, 2000; WALSHAM, 2002). That body of research shows that Structuration Theory provides researchers with a theoretical framework which furthers understanding of how the interaction between users and IT occurs, what the implications of this interaction are, and how its intentional and unintentional consequences can be dealt with (POZZENBON & PINSONNEAULT, 2005).

Two elements discussed in Structuration Theory are appropriate to the idea supported in this research, of the IT user as a social agent – someone who plays the role of agent in the adoption, use and adjustment of IT resources: the agent's learning capacity, and the notion of duality between structure and agency.

In relation to the structure-agency duality, Structuration Theory treats the structure as incorporated into practice, or into a series of practices, in a recursive way. Emphasis is placed on the construction and reconstruction of social practice. In this line of thought, the real nature of technology and its consequences arises from human action (GIDDENS & PIERSON, 1998). IT is designed to provide meaning, offer the exercise of power, and to give legitimacy to actions. Consequently, it is deeply involved with the structural duality (WALSHAM, 2002). Recursiveness in the interaction between users and technology consists, in the recurrent practice, of the user molding the technology structure, which in turn molds its use (ORLIKOWSKI, 2000). Therefore, the structure of technology is not external to or independent of human agency, but exists as a set of behavioral rules, and as the ability to exploit resources, which arise in the course of interactions between people and technology (WALSHAM, 2002).

The second element of Structuration Theory which is of interest in this discussion is the fact that this theory considers the social agent as someone capable of learning and reflecting. Social agents learn patterns of action and interaction that become standardized, or may even become institutionalized over time, forming the organization's structural properties as a result. These structural properties allow, and at the same time restrict human action, as they are reproduced by agents (POZZENBON & PINSONNEAULT, 2005). Standards of action and interaction, as well as the resulting structural properties, are clearly related to how individuals use IT resources.

The structure concept must be understood as a set of rules and resources, represented in the recurring social practice (GIDDENS, 1979, 1984). Technology elements are not synonymous with structure, since they are external to human action. Only when such elements are routinely used can we say that they structure human action, therefore, they involve rules and resources that comprise the recurrent social practice (ORLIKOWSKI, 2000).

Thus, although technology may have material properties and bear symbols, it does not have a structure, since the structure is only formed in practice. As individuals regularly interact with technologies, they become involved with their material and symbolic properties. Through repeated interaction, some properties of technology enter the structuration process. The resulting recurrent social practice produces and reproduces a particular structure of technology use. This structure is recursively constructed, by means of regular human interaction with some properties of the technology, and as such, it establishes the set of rules and resources that mold such interaction (ORLIKOWSKI, 2000).

This *practice lens* is more appropriate for understanding the use of technology, since it is not based on suppositions about stability, predictability and the relative completeness of the technology. Emphasis is placed on the structures that emerge, as people repeatedly interact with any property of technology that they have at hand, whether to construct, improve, change or reinvent the technology (ORLIKOWSKI, 2000).

Technology structuration models study how people make use of technology, considering this use as "appropriation" of the structure present in technologies. This appropriation occurs when people actively choose how the technology structures will be used. DeSanctis and Poole (1994, p.130) identified different types of appropriation, such as preservation, replacement, combination, enrichment, contrast, imposition, acceptance, and denial of structures resulting from technology.

If we focus on emerging structures, an alternative view of the use of technology emerges – a view that enables us to frame what users do with technology, not as appropriation, but as enactment – in the sense of transforming into action. Thus, in an investigative process, rather than initially observing the technology and describing how individuals appropriate the incorporated structures, this view focuses on human action. It analyses how emerging structures are represented through interaction with technology. Focusing our attention on how structures are constructed and reconstructed in the recurring social practice shows that although individuals may use technology for the purpose for it was originally designed, they may also use it in different ways, ignoring some properties of the technology by trying to bypass them, or creating new forms that may even be contradictory with the use planned by the developer of the technology (ORLIKOWSKI, 2000).

From a user's point of view, technology shows up as a set of properties prepared by its designer. However, how these properties will actually be used is not inherent to the technology, or even a pre-determined fact; it will depend on what people really do with it in specific circumstances. Some studies have shown that people may, whether deliberately or inadvertently, use technology in unexpected ways (ORLIKOWSKI, 2000). Whether by error (reduced perception, failure to understand, distraction) or by intention (sabotage, inertia, innovation), users ignore, change or deviate from the designed properties of the technology. They may adjust or remake the artifact to meet personal needs and interests.

Of course, when people use technology, they consider the properties of the artifact. However, they also use capacities, powers, knowledge, premises and expectations about the technology and its use, typically influenced by training, communication and previous experience. Also, users consider the institutional context in which they live and work, and the associated cultural and social conventions. Thus, the use of technology is structured by these experiences, knowledge, meanings, habits, power relations, norms and technological artifacts. This generates a series of rules and resources that will structure the use of technology in the future. Consequently, over time, people construct and reconstruct the use of technology, generating new technologies-in-practice.

In recurring actions, users reconstruct structures as follows: (i) by means of reinforcement, where the agent generates essentially the same structure without any substantial changes; and (ii) by means of transformation, where the agent generates changed structures, with minor or substantial changes.

#### **4 STRUCTURE OF IT USE**

Seeking to understand the role of the individual values in the redefinition of the use of information technology in organizations, it is necessary to understand which types of reconstruction of technological structures are possible.

Therefore, it is possible to present the preliminary idea of a logical model of reconstructions of IT. This logical structure, which must be validated in the future or reviewed in empirical research, consists of three parts: characterization of use; justifications/motivations for the type of use applied; and the effects on the information system. The model is shown in figure 1, followed by a detailed explanation.

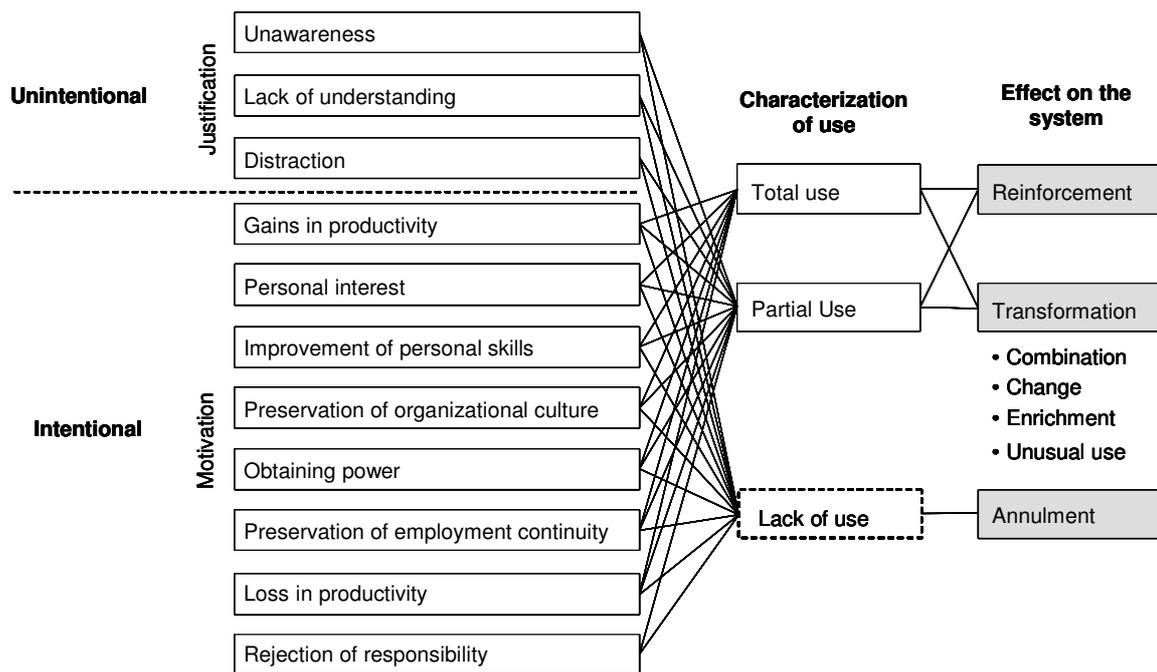


Figure 1: Preliminary Structure for IT Use

The *characterization of use* consists of uses that reinforce the technological artifact, uses that transform it, or uses that annul it.

The *total use* refers to a situation in which users apply all system functionalities. It is a type of use that is mostly found in very simple systems. It is hardly found in practice, in systems that are a little more complex, since such systems, when conceived, consider the division of tasks that the organization has or wishes to structure. Thus, people are expected to use the system parts that refer to the work they perform. In this case, people will make *partial use* of the system.

Both total and the partial use may be jointly conducted with combinations of the system with other systems, software or hardware to which users have access. The types of use generate effects on the technology, which may or may not have been originally planned by the organization (reinforcement and transformation, respectively). An example of the reinforcement effect is when the system exports data to Excel and users make use of this functionality. Transformation occurs when the user exports data to Excel without this operation being planned by the organization, or when, for instance, the users runs a search on data sources not included in the organization's planning. In this case, the uses that previously reinforced the organizational planning now transform the original intention.

In addition to combinations, there may exist other effects that result from the contradiction with what the organization originally intended: the change effect, enrichment and unusual use.

The change effect occurs when users transform the properties of the technology. As a result of their technical knowledge, the users may make changes in the system. In enrichment, the users add new properties to the technological artifact, such as when they create macros to be jointly used. Unusual use, in turn, consists of a use made of the technology for purposes other than those for which it was originally designed.

## Individual Values: A Conceptual Model For Understanding The Redefinition Of The Use Of Information Technology In Organizations

There is also a last type of unplanned use, which does not cause the transformation effect, but an annulment effect – lack of use of the system.

Regardless of how the use of the IT is characterized, each form of use has its own justification or motivation, whether intentional or unintentional, by the users.

Unintentional uses involve justifications, i.e. *why* users practice a given form of use. They may be doing this due to unawareness, a lack of understanding or a lack of attention. In the case of unawareness, users may ignore the existence of the technology or some of its properties. In lack of understanding, users do not understand the properties of the technology, whether partially or completely; they do not know what they are for or how to use them. Lack of attention is the last unintentional justification for non-standard use. These three justifications result in lack of use or partial use of the system. Unintentional use is more associated with personality traits, or with difficulties over lack of opportunities for the development of cognitive abilities – which may eventually be solved through the training and development of the individual.

Intentional use is linked to motivations, to *what* technology is actually used *for*. Users' actions may be motivated by several factors, such as productivity gains, whether qualitative or quantitative; personal interest, personal goals (e.g. career) or individual preferences; improvement of personal skills, including the enhancement of knowledge and ability to perform an activity; preservation of the organization's culture, where one tries to preserve habits and ways of doing things; gaining power; and trying to keep a job, i.e. the search for stability within the organization.

Some motivations may also be rarely admitted, as in the cases of loss in productivity or rejection of responsibility. Qualitative or quantitative loss in productivity involves the individual's intention to sabotage the organization. The rejection of responsibility occurs due to fear or the user's lack of intention to assume duties.

The motivations are related to all types of use (total, partial or lack of use), except for the rejection of responsibility, which is related to only the partial use and lack of use.

That means recognizing that the structure of technology is recursively constructed through regular human interaction with the technology. Technology-in-practice may be changed as the agent's experience changes in terms of his or her goals, values, knowledge, power, motivation, time and circumstances. Therefore, technologies are never stable or complete. Technology continues to evolve, to be changed, improved, damaged, rebuilt, etc. Typically, these changes are not pre-determined or predictable. They are implemented by people and suffer the influence of competitive, technological, political, cultural and environmental factors (ORLIKOWSKI, 2000).

When technology does not help individuals to achieve their goals, or contradicts with their beliefs and values, they may ignore the technology or attempt to change it. In short, individuals may, according to their values, select which resources they will use from among those available, and how they will use them. An example of the use of IT resources conditioned to values is a system in which the purpose is collaboration among teams. An individual with altruistic values will probably use this system differently from someone who has more individualistic values.

Before associating individuals' values with how those individuals use IT, it is necessary to clarify what we mean by values, and how they may be defined.

## 5 CONCEPTUAL PROPOSAL FOR UNDERSTANDING THE INTERACTION BETWEEN INDIVIDUALS AND INFORMATION TECHNOLOGY

Values may be defined as criteria or goals that transcend specific situations, which are ordered according to their importance and serve as guiding principles in individuals' lives (SCHWARTZ, 1999). Values are cognitive representations of needs and reasons, and what “differentiates one value from another is the type of motivation that it expresses” (TAMAYO, 2007a, p.18). Every value has some underlying motivation.

As highlighted by Tamayo and Paschoal (2003), in the motivational process, values provide the cognitive representation responsible for assigning cultural and cognitive meaning to needs, transforming them into intentions and goals.

The structure of personal or basic values may be divided into two categories: the first comprises the values related to all aspects of life – a general structure of values; the second consists of values associated with specific life contexts, such as work, family and religion. The structure of general values is wider and more abstract. The specific structures relate to the general structure and represent the expression of the values in everyday situations.

Thus, the values related to work are the expression of the general values in the work environment. They may be therefore defined as

hierarchically organized principles or beliefs related to desirable goals or rewards people seek by means of the work and which guide their assessments of work results and context, as well as their behavior at work and the choice of work alternatives (PORTO & TAMAYO, 2003, p.146).

Schwartz is considered the first author to propose a structure of values based on the motivations inherent in them. He empirically verified, in more than sixty countries, (SCHWARTZ, 1992; 2005), a structure consisting of ten motivational types that can be grouped into two bipolar dimensions: self-transcendence x self-enhancement and openness to change x conservation. A motivational type is comprised of several values that show similarity from the motivational content standpoint (TAMAYO, 2007b).

Dimension	Motivational Types of Values	Emphasis
Self-transcendence	Universalism Benevolence	Equality, concern for the welfare of others.
Self-enhancement	Power Achievement Hedonism	Pursuit of success and power over others.
Openness to change	Self-direction Hedonism Stimulation	Pursuit of independence of thought and action; favors change.
Conservation	Tradition Conformity Security	Stability; favors maintenance of the <i>status quo</i> .

*Table 1: Dimensions and Schwartz's Motivational Types of Values*  
Source: Adapted from Porto and Tamayo (2003).

The structure proposed by Schwartz is presented in the figure below:

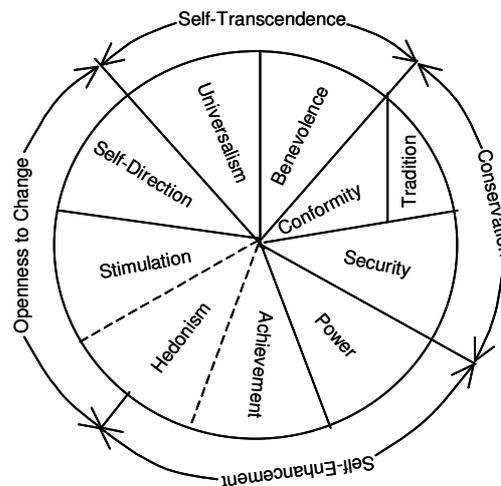


Figure 2: Theoretical model of relations among types of values  
Source: Schwartz, 1992, 1994.

The dimensions of openness to change vs conservation arranges values based on people's motivation to follow their own intellectual and affective interests, as opposed to the tendency to preserve the *status quo* and the security they generate in their relationship with other people and institutions. The second dimension, self-transcendence vs self-enhancement, arranges values based on people's motivation to promote their own interests, even at the expense of others, in contrast to the pursuit of transcending their own selfish concerns and promoting the welfare of others and of nature. One important aspect is the fact that "hedonism" is a factor in both openness to change and self-enhancement (TAMAYO *et al.*, 2001).

In Schwartz's model, there is conflict and compatibility dynamics between the several motivational types. There is compatibility between adjacent types (stimulation and hedonism, tradition and conformity, for instance) and conflict between values belonging to opposed dimensions (stimulation and conformity, hedonism and tradition, for instance). The simultaneous pursuit of values belonging to adjacent areas is compatible, since these values serve the same purpose. Thus, the actions performed in the pursuit of certain values have psychological, practical and social consequences that may be either conflicting or compatible with the pursuit of other types of value (TAMAYO, 2007b).

In the work context, motivational types correspond to specific motivational goals, as presented in the following table. As advocated by Tamayo and Porto (2003), the goals of the first five motivational types are connected with the individuals themselves. The goals of motivational types of tradition, conformity and benevolence are linked to interests more strongly related to family, organization and society. On the other hand, the goals of universalism and security are related to both self-interests and the welfare of others.

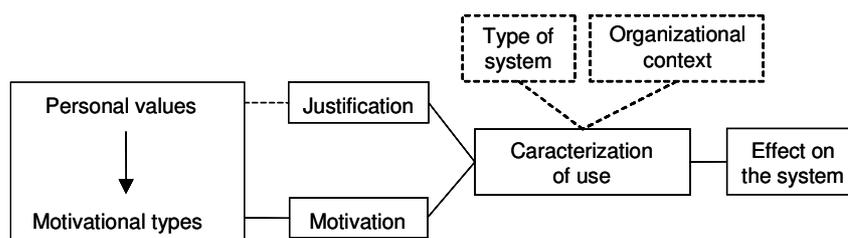
Motivation	Motivational Goals
Self-direction	To have autonomy, make one's own decisions and/or take part in decisions, control the organization and performance of one's own duties.
Stimulation	To have challenges in life and at work, explore, innovate, have strong emotions in life and at work, acquire new knowledge.
Hedonism	To pursue pleasure and avoid pain and suffering, feel satisfied and promote welfare at work.
Achievement	To achieve personal success, show one's skills, be influential, feel personally and professionally fulfilled.
Power	To be prestigious, pursuit social <i>status</i> , have control and power over people and information.
Safety	To promote the integrity work safety, harmony and stability of oneself and others, and of the society and organization one works in.
Conformity	To control impulses, tendencies and behaviors that harmful to others and that violate the standards and expectations of society and of the organization
Tradition	To respect and accept the traditional ideas and manners of society and of the company.
Benevolence	To pursue the welfare of the family and people within the framework of reference.
Universalism	Sympathy, tolerance, pursuit of welfare of society in general and the organization in which one works; to protect nature.

Table 2: Employees' Motivations and Motivational Goals  
Source: Tamayo and Paschoal (2003).

Thus, individual values in the work context, as an expression of needs and reasons, will be manifested in individuals' motivational nature and in the interests that guide their organizational action.

In the specific case of the use of information technology, values will be manifested primarily in *what* the technologies are used *for*, in uses associated with individuals' decisions, which influence on the characterizations of IT use.

Figure 3 summarizes a relationship between values, motivational types and structure of information technology use. As explained above, values are directly linked to the motivational types. Hence, personal values are related to the intentional use of the systems (motivations). Unintentional use (justifications) may be occasionally linked to individual values, but, as mentioned above, it appears to be more closely related to the personality traits and cognitive characteristics of an individual. Intentional and unintentional uses influence the types of use, which generate reinforcement, transformation or cancellation effects on the system.

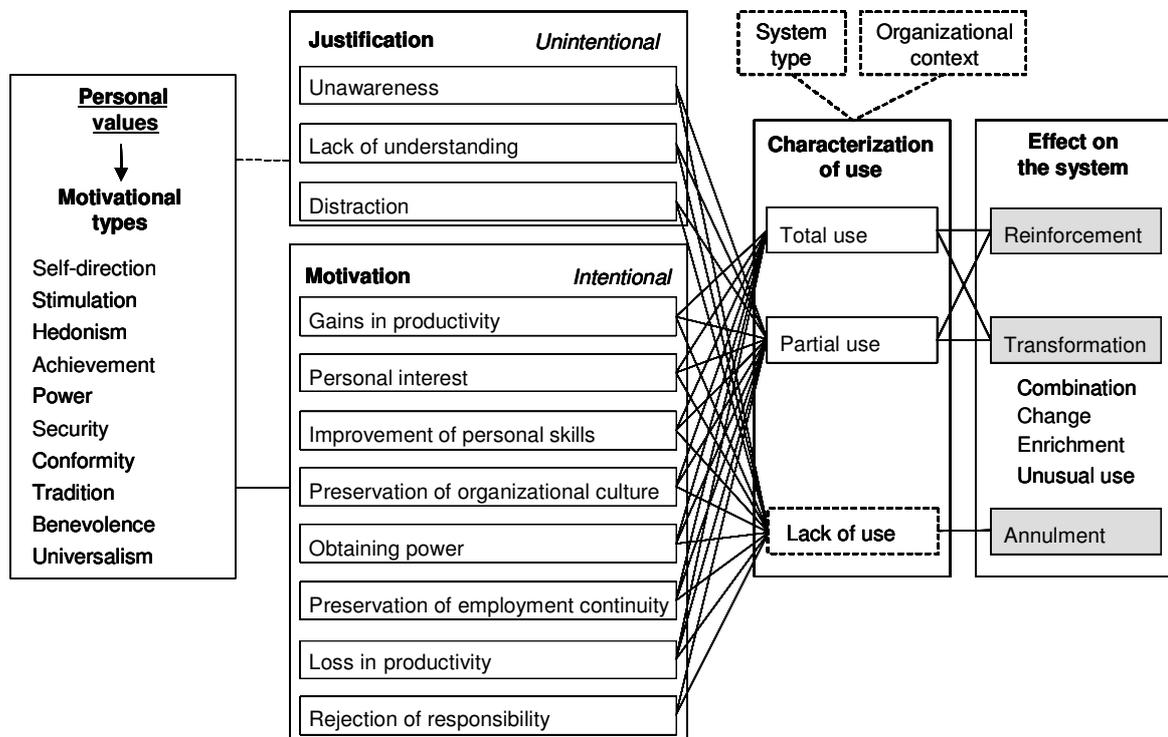


## Individual Values: A Conceptual Model For Understanding The Redefinition Of The Use Of Information Technology In Organizations

*Figure 3: Values, Motivational Types and Structure of Use of Information Technology.*

Naturally, the characterization of use will also depend on the technological artifact, that is, the characteristics inherent to the system used. Also, it will depend on the organizational context in which the system is inserted. In other words, it will change according to the organization's culture, the implementation of the system, the organizational structure, the sector in which the organization operates, the competitive environment etc. These variables are represented in Figure 3 by boxes with dotted lines, as they do not form part of the scope of this study, and comprise scientific knowledge already systematized in area of study of IT.

A proposal of individual values as a conceptual standpoint for understanding the interaction between individuals and information technology in organizations is shown in Figure 4.



*Figure 4: Conceptual model of interaction between individuals and SI*

In addition to motivations, individuals' values express their ideas about what is good for themselves, for society and for the organization in which they work (TAMAYO *et al.*, 2001). Hence, the use that individuals make of IT changes according to the interests invested in the organizational life.

If we consider information systems as tools for work performance, the way individuals use these tools will vary according to their personal aspirations, interests and goals.

The understanding of information systems as tools makes the neutrality of such systems impossible in relation to work. therefore, systems will promote either good or bad performance. They will generate recognition and prestige, or else assign knowledge, activities and people to obsolescence.

As an outcome, the characterization of the use of information systems and the effects arising from it will vary according to the various different motivations of individuals. These motivations reflect different personal values.

For instance, the motivations of productivity loss and rejection of responsibility may be associated with values related to collective welfare of the group within the organization. This may occur in situations where individuals would consider a change caused by IT implementation detrimental to the group, and therefore decide not to take responsibility for these changes or cause a loss in productivity for the organization through the use of the IT.

Likewise, achievement, as the pursuit of individual success, may be associated with productivity, which would be used to achieve success. This pursuit of productivity may involve an individual's conformity in relation to the organization, since institutions invest in IT to obtain better organizational performance.

The key issue is the fact that the interaction between individuals and information systems will produce effects on these systems. These effects may be: (i) reinforcement effects, when individuals act in accordance with what the organization had conceived as system; (ii) transformation effects, when individuals modify what was made available as a tool by the organization; or (iii) annulment effects, when individuals take the system for granted and work alternatively its rules.

Therefore, understanding the interaction between individuals and information technology in organizations by means of individual values arises as an area with plenty of investigative possibilities, which may contribute to IT investments to be made following a confluence of individual and organizational objectives, and with enhanced performance.

The proposed relations that take place between the motivational types and the different ways of using IT consist initially of the possible complexity of information technology, and then, how it can be seen in light of the analysis of the user's role as an agent in the process of social construction of IT. The ideas displayed do not seek to exhaust or even define the types of possible relations between IT values and uses, but the direct associations between motivational types and the different motivations for using the technology require empirical investigation.

## **6. CONCLUSIONS**

This article proposes a conceptual model for classifying individual values, in order to shed light on how individuals redefine the use of information technology in organizations.

It defends the idea that the use of technology is based on the technological artifact, but it is influenced by values, beliefs and expectations of individuals and their institutional context.

The notion that the technology structure is only established through practice, despite the fact that technology has material and symbolic properties, is based on the notion of the social construction of reality. This notion is also one of the basic premises of the type of research proposed. This study proposal is also grounded in Structuration Theory, which emphasizes the fact that structures are constructed and reconstructed by means of the action process.

We present a preliminary model with different characterizations of use of information systems, and their possible effects. The characterizations of use are related to justifications and motivations, the latter being based on Schwartz's Typology of Motivational Types.

## Individual Values: A Conceptual Model For Understanding The Redefinition Of The Use Of Information Technology In Organizations

The proposed discussion highlights the complex interactions between users and information systems, which may involve a series of positive and negative effects over technology investments. The positive effects, such as productivity gains, flexibility and innovation can come from the confluence of individual and organizational objectives. If these objectives diverge, then negative effects, such as waste of resources, low performance of the production processes and several types of conflicts, may take place.

In short, this study presents an alternative form of research, to complement existing ones, in order to further understanding on the adoption, use and adaptation of IT resources in organizations. We advocate that the assimilation of these resources in organizations be related to individual values. Therefore, individual values are elements that can be better explored through research on the interactions between individuals and information technology in organizations.

Although working with values is a somewhat complex issue, bearing in mind the multiple perspectives that exist, advancing in this field of study as a conceptual standpoint for the understanding of the IT use can shed new light role of the individual, as an agent in the adoption, use and adaptation of IT resources. This, in turn, can contribute to acknowledging the individual's role, not merely as a passive user, but as an agent in the construction of technology.

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Individual Values: A Conceptual Model For Understanding The Redefinition Of The Use Of  
Information Technology In Organizations

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