

# **Chapter 1**

## **INTRODUCTION**

## **1.0. INTRODUCTION**

This chapter provides some background information about new technologies in organizations, together with a summary of factors influencing discussions about organizations' culture and perceived quality of working life. The main aims and themes of this paper are summarised along with the approach taken to collecting relevant material. The chapter concludes with a plan of the report together with an outline of the key research questions.

## **1.1. BACKGROUND**

Technology-driven companies are increasingly dependent on collaborative relationships, such as technology transfer, to face an ever-changing competitive landscape characterized by rapid technological diffusion, rising cost of development, and compression of product life cycles.

There are some models of technology transfer which are well-known in this area. The "Appropriability Model" emphasizes the importance of the quality of research and competitive market pressures in achieving technology transfer. This model assumes the myth that good technologies sell themselves, but seldom true in real world. The "Dissemination Model" concentrates on the diffusion of innovation (Rogers and Kincaid, 1982). In which case, the objective is to disseminate innovations to individual users. But one-way communication from expert to user does not characterize the process. Most current is the "Knowledge Utilization Model", which emphasizes the importance of (1) interpersonal communication between researchers and users, and (2) organizational barriers and facilitators of transfer. But this model tends to reduce a very complex process to chronologically ordered stages.

According to Tae Kyung Sung and Gibson (2005) the four levels of knowledge and technology transfer are suggested: Knowledge and Technology Creation (Level I), Sharing (Level II), Implementation (Level III), and Commercialization (Level IV).

### **1.1.1. TECHNOLOGY ACCEPTANCE MODEL(TAM)**

The most used theory by Information System academicians and practitioners is TAM (Technology Acceptance Model) designed by Davis (1989). The TAM takes its roots mainly from the Theory of Reasoned Action explaining behavior across behavioral intentions (Ajzen & Fishbein, 1980).

The Technology Acceptance Model (TAM) is an information systems (system consisting of the network of all communication channels used within an organization) theory that models how users come to accept and use a technology. The model suggests that when users are presented with a new software package, a number of factors influence their decision about how and when they will use it, notably:

Perceived usefulness (PU) - This was defined by Fred Davis (1989) as "the degree to which a person believes that using a particular system would enhance his or her job performance".

Perceived ease-of-use (PEOU) Davis (1989) defined this as "the degree to which a person believes that using a particular system would be free from effort"

The goal of TAM is "to provide an explanation of the determinants of computer acceptance that is general, capable of explaining user behavior across a broad range of

end-user computing technologies and user populations, while at the same time being both parsimonious and theoretically justified”.

According to the TAM, if a user perceives a specific technology as useful, she/he will believe in a positive use-performance relationship. Since effort is a finite resource, a user is likely to accept an application when she/he perceives it as easier to use than another. As a consequence, educational technology with a high level of PU and PEOU is more likely to induce positive perceptions. The relation between PU and PEOU is that PU mediates the effect of PEOU on attitude and intended use. In other words, while PU has direct impacts on attitude and use, PEOU influences attitude and use indirectly through PU.

User acceptance is defined as “the demonstrable willingness within a user group to employ information technology for the tasks it is designed to support” (Dillon & Morris). Although this definition focuses on planned and intended uses of technology, studies report that individual perceptions of information technologies are likely to be influenced by the objective characteristics of technology, as well as interaction with other users. For example, the extent to which one evaluates new technology as useful, she/he is likely to use it. At the same time, her/his perception of the system is influenced by the way people around her/him evaluate and use the system. Studies on information technology continuously report that user attitudes are important factors affecting the success of the system. For the past several decades, many definitions of attitude have been proposed. However, all theories consider attitude to be a relationship between a person and an object (Woelfel, 1995).

In the context of information technologies, is an approach to the study of attitude - the technology acceptance model (TAM). TAM suggests users formulate a positive attitude toward the technology when they perceive the technology to be useful and easy to use (Davis, 1989).

### **1.1.2. CULTURE:**

Culture has been defined according to several perspectives. Definitions go from the most complex and the most comprehensive (e.g. Kluckhohn, 1962) to the most simple (e.g. Triandis, 1972, Hofstede, 1997). According to Kluckhohn (1962), “Culture consists of patterns, explicit and implicit, of and for behavior acquired and transmitted by symbols, constituting the distinctive achievement of human groups, including their embodiments in artifacts” (p.73). Even though previously the objective reality view of culture predominated (Berry et al., 2002), recently the symbolic view of culture is predominant. In this view Hofstede (1997) defines culture as “the collective programming of the mind which distinguishes the members of one group or category of people from another” (p.5). Several sets of dimensions have been developed to characterize the concept of national culture.

Hofstede’s cultural dimensions constitute the most used and recognized dimensions as a whole or separately in studying cross-cultural issues in management and organizations. Provided its global coverage in terms of respondents, it seems that Hofstede’s study has been unrivalled (Smith and Bond, 1999). In fact, the identification of the cultural dimensions was based upon a field study covering a sample of forty countries in which more than 116000 questionnaires were collected. Hofstede’s work has also been

validated directly or indirectly by many other researches in different settings (Chinese culture connection, 1987, Shackleton, Ali, 1987, Hofstede, Bond, 1984).

## **1.2. FACTORS AFFECTING TECHNOLOGY TRANSFER IN ORGANIZATIONS**

While there are currently many gaps in our knowledge about human behavior and all aspects related to organizational behavior and organizational culture, there also are important gaps between the knowledge gained from research or community-based demonstrations and everyday practice in the field by individual practitioners, employees with different cultures working in different companies with different organizational cultures, and communities. Getting access to the right information at the right time for the right purpose is often difficult. This is sometimes due to limited dissemination of research findings or new practices and sometimes to too much information, with no way to efficiently sort out what is relevant to meeting a particular need in the field. Faced with either prospect, practitioners, service institutions, and communities often choose to continue current practice which make it one of the most important reason to resistance in front of any change or new technology.

But the difficulty does not end there. Even with relevant new knowledge, actually implementing a new program or practice is difficult and may take a long time. Managers and employees must overcome a host of financial, psychological, and organizational challenges to have new technologies implemented in their settings. (Thomas E. Backer et al)

Policy makers noticed that many technologies developed in publicly funded academic/ research institutes (like CSIR, IITs) remain unutilised by the industry for reasons such as technology obsolescence, up-scaling limitations, engineering drawbacks, absence of complimentary assets, easy leakages. Similar problems were noticed even in sectors like steel and defence where both the lab and production units were under the administrative control of same ministry. (A.S.Rao)

Traditionally, efforts to close the gap between knowledge and practice have focused on education, training, and dissemination of information through conferences, journal articles, and reports or brochures. These activities typically are directed at researchers and academics, the developers of such knowledge.

Over the last 70 years, a significant behavioral science knowledge base has developed about how to facilitate individual and organizational behavior change. This knowledge base has great relevance to technology transfer. But academic researchers in social and clinical psychology, and in related fields such as management sciences and communications, seldom have the chance to share this knowledge base with individuals and agencies developing technology transfer programs designed to reach individual practitioners, service organizations, and communities. (Thomas E. Backer et al.)

Tae Kyung Sung and Gibson (2005) found four key factors in knowledge and technology transfer: Communication, Distance, Equivocality, and Motivation. Communication refers to the degree to which a medium is able to efficiently and accurately convey task-relevant information and media while distance involves both physical and cultural proximity. Equivocality refers to the degree of concreteness of

knowledge and technology to be transferred while motivation involves incentives for and the recognition of the importance of knowledge and technology transfer activities.

Malhotra and Galletta (1999) found that social influences play an important role in determining the acceptance and usage behavior of new adopters of new information technologies.

The attitude towards adoption depicts the prospective adopter's positive or negative orientation/ behaviour about adopting a new technology. Attitudes are determined by relevant internal beliefs. Attitude towards adoption is influenced by factors such as: perceived ease of adoption; apprehensiveness, perceived utilities of technology (extrinsic motivation), enjoyment (intrinsic motivation).

In addition, individual characteristics like age, qualification, their prior experiences in adopting technology; technology suppliers' commitment; compatibility with existing technology and enhanced value are important factors.

Social pressure is another important factor. Social norms have significant effects on system usage. Norm is the most frequently occurring pattern of overt behaviour for the members of a particular social system. For certain innovations, the social prestige that the product conveys to its user may be the sole benefit that the adopter receives.  
(A.S.Rao)

According to Backer (2005), many of the challenges of innovation and change reflect complicated human dynamics. People need to feel rewarded for changing and to be involved in planning for changes that will affect them. They need to work through their fears, resistances, and anxieties about change. When ignored, this human dimension



often causes technology transfer efforts to fail or to have a reduced impact (Backer 1991), because successful technology transfer requires individuals and organizations to change. Culture of the organization which has effect on readiness to change is one of these challenges-one often neglected in planning and implementing technology transfer.

Since its development, TAM (Davis, 1989) has been replicated and extended by a quite large number of studies (e.g. Venkatesh and Morris and Davis et al, 2003; Venkatesh and Karahanna and Straub, 1999; Morris, 2000; Lucas and Spittler, 2000; Dishaw and Strong, 1999; Adams and Nelson and Ryan, 1992; Davis and Warshaw, 1989). Nevertheless, in their endeavour to better explain and predict IT use, few researchers (e.g. Straub et al., 1997; Rose and Straub, 1998; Srute, 2000) have explored and tested the impact of cultural factors on the behavior of use (for a review of IS cultural studies see Myers and Tan, 2002). Therefore, given this gap in the literature the present research aims at testing the influence of two cultures on the adoption and use of IT. By studying IT use cross-culturally, Iran and Malaysia; we intend to shed light on the effect of cultural context on usage behaviors thus, extending TAM to cross-cultural settings (Zakour, 2004).

Moreover, the cross-cultural TAM can be improved by taking into account a construct such as quality of work life. Quality of Work Life (QWL) is defined in “terms of employees’ perceptions of their physical and mental well-being at work” (Cascio, 2003, p. 28). Introducing QWL enables a better capturing of cultural influence on the acceptance of information technologies especially the impact of masculinity/femininity on intention to use IT (Zakour, 2004).

This study will be focused on the Behavioral Intention as dependent variable and Culture and Perceived Quality of Work Life as independent variables. Acceptance of the Technology Acceptance Model (TAM) is assumed.

### **1.3. PURPOSE AND SIGNIFICANCE OF THE STUDY:**

The purpose of this study is to do a comparison between two countries with different cultures, Iran and Malaysia, in terms of accepting new technologies and determine the role of the culture in intention to use new technologies in organizations.

The second purpose of the study is to find the effect of Percieved Quality of Work life on accepting new technologies which can help managers to plan carefully in human resource parts and find the rout of any challenges or conflicts may happen in organizations in facing new process or technologies or knowledge.

One of major challenges inside firms is how to effectively manage the cultural conflicts in the context of managing the acceptance of technological knowledge transferred across the firm's organizational boundaries. This thesis aims to explore how cultural barriers in organizations affect the technology transfer process.

On the other side, perceived quality of working life is another issue which has some effect on attitude of users in organizations. Quality of Work Life (QWL) is defined in "terms of employees' perceptions of their physical and mental well-being at work" (Cascio, 2003, p. 28). Introducing QWL enables a better capturing of cultural influence on the acceptance of information technologies especially the impact of masculinity/femininity on intention to use IT.

Taylor (1979) identified the essential components of Quality of working life as; basic extrinsic job factors of wages, hours and working conditions, and the intrinsic job notions of the nature of the work itself. He suggested that a number of other aspects could be added, including; individual power, employee participation in the

management, fairness and equity, social support, use of one's present skills, self development, a meaningful future at work, social relevance of the work or product, effect on extra work activities. Taylor suggested that relevant Quality of working life concepts may vary according to organisation and employee group. It has generally been agreed however that Quality of Working Life is conceptually similar to well-being of employees but differs from job satisfaction which solely represents the workplace domain (Lawler, 1982).

In this research, the researcher is interested to highlight the degree of importance of building a suitable organizational culture to make acceptance of new technologies easier. There are some researches in this area but in researcher's point of view the importance of culture and perceived quality of work life did not receive as much emphasis as other factors.

The researcher is expected to contribute to the body of knowledge in terms of providing an insight to adapting new technologies process in organizations in two countries, namely Iran and Malaysia. The framework developed will fill the gap in literature in studies concerning adapting with new technologies that is important in the implementation of new technologies, where from the literature, studies done on firms in the Iran and Malaysia are limited. The researcher also seeks to contribute in demonstrating the importance of perceived quality of work life in the implementation and adaption of new technologies in firms with different cultures in two countries.

The framework on cultural effect that developed in this study, will help businesses understand what it needs to achieve in order to be an effective organization in terms of implementing new technologies in company. Businesses can compare their

organizational culture and perceived quality of work life between their employees and the results of this study and make modification as they progress.

#### **1.4. ORGANIZATION OF THE STUDY**

As mentioned briefly in above parts, researcher used TAM (Technology Acceptance Model) designed by Davis (1989)- which takes its roots mainly from the Theory of Reasoned Action explaining behavior across behavioral intentions (Ajzen, Fishbein, 1980)- and Hofsted's culture theory for main conceptual framework. Researcher is not going to test TAM and Hofsted's theory but aims to compare the effect of different culture on willing to use new technologies.

In this thesis, we are going to review some related literatures and then come with the framework and hypothesis. Next chapters are about statistical findings and then we discuss about result and conclusion. It is structured into five chapters:

Chapter 1: Introduction, giving a short brief overall view about the work.

Chapter 2: Literature review, review and summaries more than one hundred articles and journals and using the related one as the references to support the work done.

Chapter 3: Research Methodology, using the proper academic way to test hypothesis, assumptions and theories used in research. Introduce the framework used (based on other studies) and choosing suitable instrument used to test all data.

Chapter 4: Research Results, testing hypothesis to show if the study supports the theories used as base studies.

Chapter 5: Conclusion and Recommendations, re-evaluate the study and suggest new ways or areas for further studies.

### **1.5. RESEARCH QUESTIONS AND OBJECTIVES OF THE STUDY**

- Do different culture affect the transfer of technology in organizations?
- How does perceived quality of working life affect the intention to use new technology in organizations?
- How different dimensions of the culture effect using new technologies in organizations?
- Is there any difference in willingness of using new technologies in different cultures?

The present study addresses these research questions by testing a cultural influence on Technology Transfer through combination of Hofstede questionair and TAM (Technology Acceptance Model) questionnaire while the perceived quality of working life also play important role on attitude toward using (A) in TAM model. Here cultural beliefs and values and PQOWL are major constructs while a dependent variable is technologically transfer performance or behavioral intention of new technology in both Iranian and Malaysian companies. In this thesis, Technology Acceptance Model (TAM) is assumed as accpeted theory and is not going to test again.