Chapter 2

LITERATURE REVIEW

2.1. TECHNOLOGY AND TECHNOLOGY TRANSFER:

Technology is defined as firm-specific information concerning characteristics and performance properties of production processes and product designs (Rosenberg, Nathan and C. Frishtak, Eds, 1985). Technology includes the physical structure and logical layout of components, as well as the programs, covenants, rules of conduct and use, and the know-how to fulfill the requirements needed to achieve goals or pursue objectives.

Technology is defined not only as process and product, but also as information that is put to use; knowledge and science are not defined; and technology transfer is defined as the iterative movement of applied knowledge through channels of communication, in the manner of the process school of communication (Williams and Gibson, 1992).

Burgelman et al (1996, p. 2) define technology as “The theoretical and practical knowledge, skills and artifacts that can be used to develop products and services as well as their production and delivery systems”.

The transfer of technology includes the purpose, application, and justification of the technology. It is what to employ, how, when, and why (Rosenberg, et al, 1985). Comments on the survey questionnaires and from field research revealed that many practitioners do not share academia's definition of technology. They view technology transfer as involving only the "hard" (more tangible) forms of technology - not knowledge and other "soft" aspects of the process. Agreement among academicians and practitioners about the definition of technology would improve future research (LeMaster, Jane, 1995).

To focus more on this part of shortage in previous studies, Lin and Berg (2002) stress that knowledge is an important aspect of technology that is tacit in nature and difficult to transfer.

The literature of economics and strategic management contain a profusion of material about the barriers to technology transfer. Even though technology is becoming more pervasive, there are still more people in the world without access to technology than with. Many people that do have access to technology find the experiences of their interactions difficult, cumbersome and unhappy due to the complexity of such technology. Conversely, even though certain cultures may be somewhat resistant to change, technology can be an overwhelming force under certain sociological and economic conditions (Mejias, Shepherd, Vogel & Lazaneo, 1997).

The literature suggests that Small and Medium Enterprises are slow adopters of technology, often purchasing long after release and regularly dealing with handed down technology from other companies. These issues could have negative influence on technology adoption. (Beekhuyzen, Hellens, Siedle, 2004)

Technology adoption within firms is affected by several factors, often being influenced by at least one (and often many) of the factors presented by MacGregor et al (1998). Raymond and Magnenet (1982) long ago suggested that Small and Medium Enterprises characteristics, such as their limited resources and firm's dependency on a few key individuals often creates important challenges for development and implementation of information technology; in Beekhuyzen and Bernhardt's 2005 paper discussing the

importance of our human resources and the invisibility of other necessary resources in this context, this still rings true. In line with these studies, Thong and Yap (1995) identified characteristics of the firm as well as characteristics of new technologies adopted. In terms of a firm's CEO, they believe that firms which are likely to adopt new Information Technology will usually have a CEO with a positive attitude, and who is innovative and knowledgeable about IT (Thong and Yap, 1995). As emphasis on this issue, Collins-Dodd found that "Management skills and relevant experiences become vitally important to the decision-making process relating to the timely adoption of new technology" (Collins-Dodd, 1999). According to Yaptengco, the largest barrier to adopting new technology is the cost of investing in an IT system, "because IT is never cheap, most SMEs cannot afford to implement an integrated IT system" (Ramos 2003).

Andreas Riege (2007) offers a comprehensive list of actions that help managers to prevail over numerous internal knowledge transfer barriers in his article: "Actions to overcome knowledge transfer barriers in MNCs". Riege believes that for overcoming the barriers, organizations should create an environment supportive of knowledge flows first. Riege prepared a list of actions that were suggested to limit or remove technology and knowledge transfer barriers based on more than three-dozen knowledge transfer barriers– related to human, organisational, and technological issues.

Riege also mentioned: 'The transfer of knowledge is deep rooted in personal and organisational value systems, norms, and practices. Within corporations these must be embodied and personified by mainly senior and middle managers whom openly support and encourage knowledge transfer initiatives and lead by example on a daily basis.

Some barriers Riege listed in his article are:

- people barriers (perceive lack of time to share knowledge, apprehension or fear towards sharing their knowledge because it may reduce or jeopardise their job security, low awareness and realisation of the value and benefit of their possessed knowledge to others, perceive knowledge sharing as intrusive and extra work, perceive an already existing information overload, lack of natural sharing habit with time, dominance in sharing explicit over tacit knowledge, no or low mistake tolerance levels, resist to share knowledge because of differences in experience levels or different age levels or generations or different levels of education, have little time to establish contacts and foster relationships with internal and external knowledge sources, poor communication and interpersonal skills, have lacking social network, fear a loss of ownership over their intellectual property, low levels of trust in the accuracy and credibility of people and their transferred knowledge, communicate in a number of different languages, gender-related issues, lack of an understanding of differences in national cultures, people regard their manager(s) as power and status seeking authorities)
- Organizational barriers (overlook to align and integrate its knowledge management strategy and transfer initiatives with its goals and strategic approach, lacks of leadership and managerial direction in terms of clearly communicating the benefits and values of knowledge sharing practices that are required, strong hierarchy with managers thriving on position-based status and formal power, insufficient formal and informal spaces to collaborate, reflect and generate (new) knowledge, reward and recognition system does not work, organization needs a cultural change on one or more dimensions, low knowledge

retention rates of highly skilled and experienced staff, insufficient resources and infrastructure to successfully support transfer practices and opportunities, high level of external competitiveness within and across business units, high level of internal competitiveness in business units, communication flows restricted into certain directions, physical work environment and layout of work areas that restrict knowledge transfers, hierarchical structure that inhibits knowledge flows, business units are too large and unmanageable to enhance contact, better support relationship building, and facilitate ease of sharing)

- Technological barriers (integrated IT systems and tools fail to support people's work processes and actual communication flows, mismatch between people's need requirements and your integrated IT systems and processes, lack compatibility, reluctance to use integrated IT systems and tools, unrealistic expectations as to what technology can do or cannot do, lack of technical support (internal or external) and immediate maintenance of integrated technology).

In part of organizational barriers, Riege suggests some action if the culture of organization needs to change in one or more dimensions which includes some practical steps for organization:

What if your organisation . . . needs a cultural change on one or more dimensions?

1. Assess dimensions such as vision and mission, norms and customs, means to achieve goals, management processes, focus on external environment, image and reputation, etc, that impact on your corporate culture.

2. Integrate sharing activities into existing corporate values and style of the company rather than change your entire culture to suit sharing objectives (do one small step at a time as nobody likes change – do you?).
3. Make your sharing culture a part of organisational policy and people's individual KPIs.
4. Communicate knowledge policies clearly to all people, especially new ones, as part of the firm's training and development, and induction program.
5. Ensure individual and collective understanding of the purpose, value and benefits of knowledge sharing.
6. Implement any cultural changes to support sharing practices slowly and communicate them clearly.
7. People who resent necessary changes need to adapt or leave.

As new information technologies infiltrate everywhere, research on user acceptance of new technologies has started to receive more attention from professionals as well as academics. Software industries are beginning to realize that lack of user acceptance of technology can lead to loss of money and resources.

Researchers found that transferring technology to organizations faces some problems if the context and environment was not ready for it. Two parts of literature shows some studies in SMEs and Public sectors which transferring technology experience different barriers and needs to implement successfully.

Syed-Ikhsan and Rownald (2004) determine organization elements and their relationship with technology and knowledge transfer in public sector. In their framework they identified five main independent variables – organizational culture, organizational structure, technology, people/human resource and political directives – which tested against knowledge transfer performance.

In this article which choose Ministry of Entrepreneur Development (MED) of Malaysia for case study, Syed-Ikhsan and Rownald (2004) added political directive to other dimensions of organizational elements as they believe if the Government wants to implement knowledge management in public sector, it's very important to manage this dimension. As one of the independent variables, Syed-Ikhsan and Rownald (2004) mention about two aspects of organizational culture which are Sharing Culture and Individualism. According to Syed-Ikhsan and Rownald (2004) sharing culture is one of the most important elements that need to be understood before implementing any new strategies in public organizations. Culture is regarded as the key factor since it determines the effects of other variables such as technology and management techniques on the success of knowledge management. Stoddart (2001, p.19) argues that sharing culture can only work if the culture of organization promotes it. Any changes need to be developed in line with the existing organizational culture. Here, culture is defined as "the shared values, beliefs and practices of the people in the organization" (Mc Dermott and O'Dell, 2001, p.76).

In another research, Parker and Bradley (2000, p. 126), came with this idea that understanding the organizational culture of the organization will certainly "help explain

the outcomes of the reform process in terms of fit or absence of fit between public sector culture and the strategies and objectives of reform".

In individual part, Syed-Ikhsan and Rownald (2004) argue that attitudes/ behaviour are considered to be one of the important elements that could affect transfer of knowledge and technology in an organization. Two main potential problems pertaining to attitude/behaviour are how ready employees are to share their knowledge and how easily they can overcome the resistance to change. Although according to the findings, there is no significant relationship between individualism and transferring performance, management should always consider the tendency of individuals to use knowledge as their source of power.

Syed-Ikhsan and Rownald (2004) found that there is positive relationship between sharing culture and technology and knowledge transfer performance with high levels of sharing culture correlating with high levels of technology and knowledge transfer performance. This shows that sharing culture is fundamental for organizations that are implementing strategies to bring new technologies, innovation or new knowledge inside the organization.

In exploring the literature of user acceptance and use of technology, the TAM (Technology Acceptance Model) is one of the most cited models, received 424 journal citations in the Social Science Citation Index (SSCI) by the beginning of 2000 and 698 journal citations by 2003. (Venkatesh et al, 2000, Lee, 2003) (e.g.Venkatesh, Morris,

Davis,G.B., Davis,F.D., 2003,Venkatesh, Morris, 2000, Lucas, Spitler, 2000, Karahanna, Straub, 1999, Dishaw, Strong, 1999, Adams, Nelson, Ryan, 1992, Davis, Warshaw, 1989). This model developed by Davis (1989) to explain computer-usage behaviour. The theoretical basis of the model was Theory of Reasoned Actions developed by Fishbein and Ajzen (1975).

The theory of Reasoned Action (TRA) was developed by Martin Fishbein and Icek Ajzen (1975) as an improvement over Information Integration theory. In 1980 they did some amendments on the theory. They came with two changes in adding Behavioral Intention and Subjective norms into the first theory. The theory recognized that there are situations (or factors) that limit the influence of attitude on behavior.

The attitude construct continues to be a major focus of theory and research in the social and behavioural sciences, as evidenced by the proliferation of articles, chapters, and books on attitude-related topics published between 1996 and 2008.

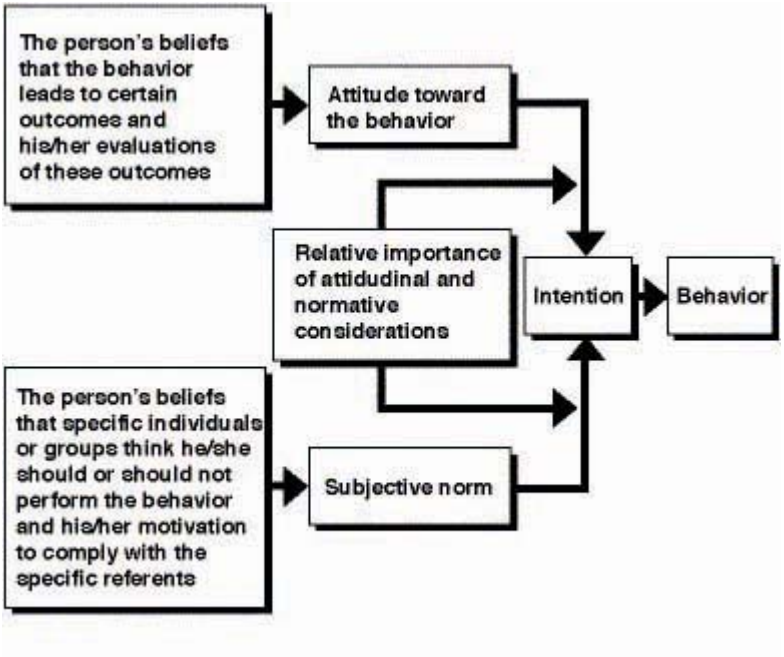


Fig2.1: Theory of Reasoned Action by Fishbein and Ajzen (1975)

Therefore, Reasoned Action predicts behavioral intention, a compromise between stopping at attitude predictions and actually predicting behavior. Because it separates behavioral intention from behavior, Reasoned Action also discusses the factors that limit the influence of attitudes (or behavioral intention) on behavior.

The Technology Acceptance Model (TAM) is an information systems theory that models the process of accepting and using new technologies by users. The model shows number of factors influence users decision about how and when they use new software packages.

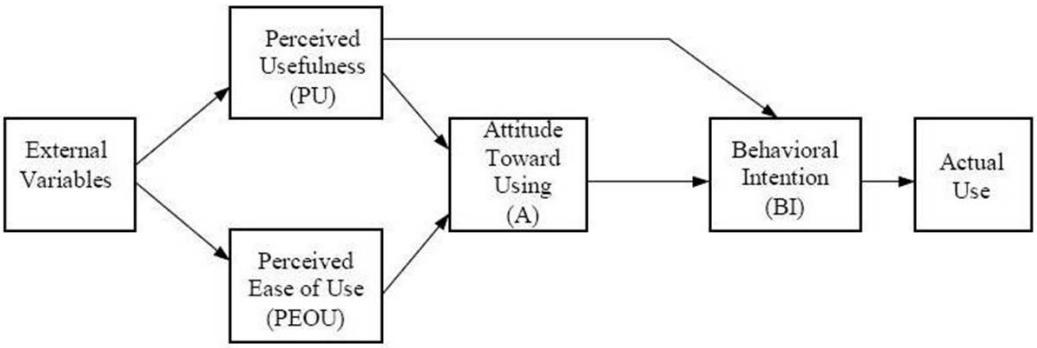
The goal of TAM is "to provide an explanation of the determinants of computer acceptance that is general, capable of explaining user behavior across a broad range of

end-user computing technologies and user populations, while at the same time being both parsimonious and theoretically justified". (Fishbein and Ajzen, 1975)

TAM has 5 variables namely, Perceived usefulness (PU), Perceived ease of use (PEOU), Attitude toward using (A), Behavioural Intention (BI) and Actual Use (Act). The theory, assumes that an individual's information systems acceptance is determined by two major variables: Perceived usefulness (PU) and Perceived ease-of-use (PEOU).

Perceived usefulness (PU) defined as "the degree to which a person believes that using a particular system would enhance his or her job performance" (Davis, 1989). Perceived ease-of-use (PEOU) defined by Davis as "the degree to which a person believes that using a particular system would be free from effort" (Davis, 1989). A and PU influence the individual's BI to use the system. Actual use of the system is predicted by BI. Please see Figure 2 (a) and Figure 2 (b) for the two models.

Figure 2.2 Technology Acceptance Model (TAM)
(Based on Davis et al. 1989)



The model passed some periods from the first time introduced in academic society till now. Lee et al (2003) named these period as: Model introduction, Model Validation, Model Extension and Model Elaboration. The process of TAM research showed in Fig 3 briefly.

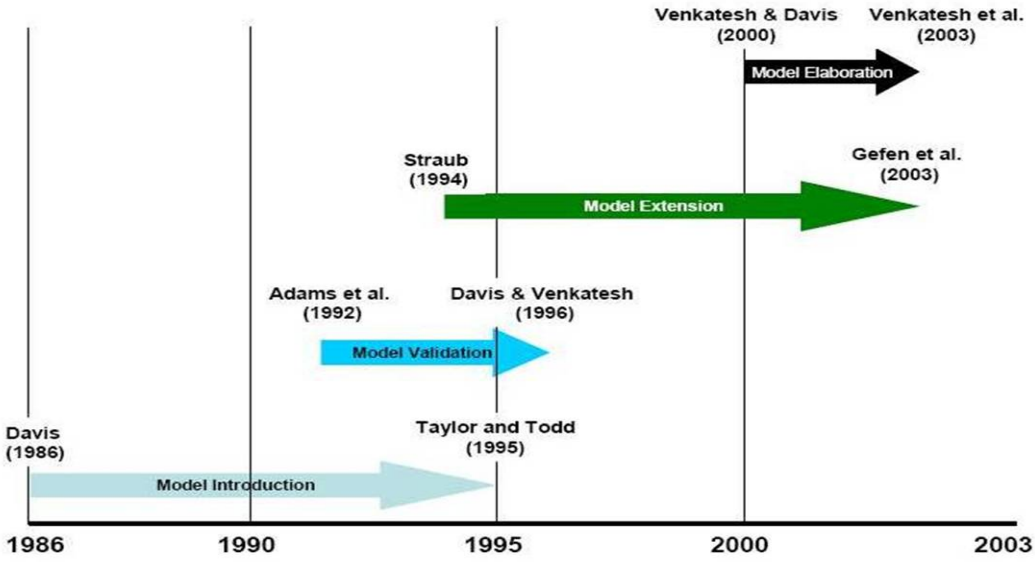


Figure 2.3 Chronological Progress of TAM Research

The major limitations which reported by studied worked on TAM are self-reported usage, the tendency to examine only one information system with a homogeneous group of subjects on a single task at a single point of time, thus raising the generalization problem of any single study and dominance of cross-sectional study. (Lee, 2003).

"Low explanations of variance were referred to as a major problem of TAM studies. In general, 30-40% of the variance of the causal relationship was explained, but in some

cases, only 25% was explained by the independent variables [e.g., Chin and Gopal, 1995; Gefen and Straub, 2000]. The majority of the studies with lower variance explanations did not consider external variables other than original TAM variables. Other suggested limitations of TAM studies included single measurement scales, relatively short exposure to the technology before testing, and self-selection biases of the subjects." (Lee, 2003). Importance of TAM discussed in many articles published during years.

Table 2.1: Summary of some prior studies on Internet technology usage; Subjects and hypotheses.

Authors	Research subjects	PEU →PU	PEU → INT	PU → INT	PEU →ATT	PU→ ATT	ATT→INT
Saadé & Bahli (2005)	102 undergraduates	0.28	0.16	0.43			
Lee et al. (2005)	544 students	0.51		0.19	n.s	0.39	0.35
Hsu & Lu (2004)	233 on-line game users	0.23		n.s	0.57	0.14	0.99
Heijden (2003)	828 website brows-ers	0.49		0.18	0.23	0.17	0.5
Yi & Hwang (2003)	109 students	0.02	0.22	0.46			
Moon & Kim (2001)	152 students	0.31		0.269	0.23	0.33	0.29
Agarwal & Kara-hanna (2000)	288 college students (Test 1)	0.20	0.307	0.475			
	(Test 2)	0.20	0.21	0.37			
Teo, Lim, & Laia (1999)	1370 Internet users (Frequency)	0.35	0.19	0.19			
	(Daily of usage)		0.03	0.16			
	(Diversity of usage)		0.11	0.21			

All researchers agreed that TAM had important impact in Information System field as Lee (2003) mentioned: "TAM provided a parsimonious model to examine factors

leading to IS acceptance. It includes a systematic grounding for research and focuses previously scattered work. This standardization allows an examination of findings to bring greater meaning to mixed or inconclusive results, thus leading to further work. Building on prior IS research, TAM conceptualized usefulness and ease of use as important perceptions leading to intentions to adopt new systems." This theory provided a stream of research papers to aid and grow the knowledge about Information System acceptance.

Eventhough, like any other theory, TAM has its own shortcomings. One of the arguments around this theory is about differences between individual acceptance of technology and organizational or societal acceptance which each one need its own conditions. According to Kozar (2003) "Social influence plays a crucial role in human behavior and decision making [Azjen, 1991; Barki and Hartwick, 1994; Taylor and Todd, 1995b]. While TAM studies attempted to investigate the effect of social influence on the technology acceptance decision, results were mixed. Davis [1989], Barki and Hartwick [1994], and Mathieson [1991] found weak associations between subjective norm and other variables. Lucas et al. [1999], Moore and Benbasat [1993], Taylor and Todd [1995], and Thompson et al. [1991] found a significant relationship. These questions still remain for future study."

One of the major problems of TAM studies found by Kozar (2003) is that in following researches TAM was applied to tasks that were too broad. Previous studies were mainly performed by assigning a single task to a single IS. However, many studies of task-technology fit [Goodhue, 1995], revealed that perception of the technology varies

according to task type. Karahanna and Straub [1999] recognized that the research findings cannot be generalized under task-dependent situations. Heeding the warning by Goodhue and Thompson [1995] that the lack of task focus in evaluating IS caused the mixed results in IS acceptance**,** future TAM studies need to specify tasks more granularly.

In present research, Technology Acceptance Model assumed as accepted theory with all limitations mentioned above. As studies shows there are plenty of researches in Information System areas which worked on factors influence the process of accepting and adopting new technologies. One of the strongest factors recognized by researchers is Culture and Organizational Culture. The major focus of the study is on investigating the role of different cultures on intention to use new technologies in organizations and predicting the related factors affect on the process of acceptance. In following literature researcher comes with exploring the most important researches in cultures and technologies area.

2.2. CULTURE AND ORGANIZATIONAL CULTURE

There are many approaches to culture and even more definitions. Kroeber & Kluckhohn in their classic review of culture (1952) report 156 different definitions, which they arrange under six different generic headings. In the years since they wrote many other definitions have been attempted and still there is no consensus (Seel, 2000).

Culture is the result of all the daily conversations and negotiations between the members of an organization. They are continually agreeing (sometimes explicitly,

usually tacitly) about the 'proper' way to do things and how to make meanings about the events of the world around them. If you want to change a culture you have to change all these conversations—or at least the majority of them (Seel, 2000).

Cultural dimensions are often identified as a crucial influence on the success or failure of transferring new technology inside firms. Worldwide studies in recent and previous years show the importance of study of how culture affects the adoption of new technologies in organizations (Norhayati et al, 2003). As different articles are published about culture and cultural influence in organizations, different definitions are also appeared in different aspects and ideas.

Culture, a system of shared values and assumptions, is critical to any organizational activity. It dominates how organizations function, how employees interact, and how decisions are made. Culture represents a core set of values governing the attitudes employees adopt toward change and their approaches to the introduction of something new (Lucas and ogilvie, 2006).

Numerous frameworks to assess the consequences of culture exist. Schein (1985) presents a framework which emphasizes understanding the compatibility of different cultures as important to inter-organizational cooperation (Lucas, 2006).

According to OReilly, Chatman, and Caldwell (1991) central aspects of culture include:

- Evaluative element involving social expectations and standards; the values and

beliefs that people hold central and that bind organizational groups.

- Set of more material elements or artefacts. These are the signs and symbols that the organization is recognized by but they are also the events, behaviors and people that embody culture.
- Social interaction, the web of communications that constitute a community, which is a medium of culture. Here a shared language is particularly important in expressing and signifying a distinctive organizational culture.

Deal and Kennedy (1982) argued that culture is the single most important factor accounting for success or failure in organizations. They identified four key dimensions of culture:

1. Values -the beliefs that lie at the heart of the corporate culture.

2. Heroes -the people who embody values.

3. Rites and rituals -routines of interaction that have strong symbolic qualities.

4. The culture network -the informal communication system or hidden hierarchy of power in the organization.

Peters and Waterman (1982) suggest a psychological theory of the link between organizational culture and business performance. Culture can be looked upon as a reward of work; we sacrifice much to the organization and culture is a form of return on effort.

One of the best known models in organizational culture was developed by Roger Harrison (Harrison & Stokes 1992) who writes of cultures as being characterized by ‘Power’, ‘Role’, ‘Achievement’ or ‘Support’. Charles Handy developed this idea in a slightly different way in his Gods of Management (1995) with ‘Club’ (Zeus), ‘Role’ (Apollo), ‘Task’ (Athena) or ‘Existential’ (Dionysus).

Cultural values held in common by individuals within societies reflect a complex of preferred patterns for social interaction, communication, and exchange (Adler, 2001; Schneider and Barsoux, 1997). Much research has shown that cultural values influence the typical ways in which communication artifacts and other technologies are used within a society (Adler, 2001; Cole and O’Keefe, 2000; Fischer, 1992; Gao, 2001; Honold, 1999a; 1999b; Marcus, 2001; Sifianou, 1989).

Kanter (1989) refers to the paradox implicit in linking culture with change. On the surface culture has essentially traditional and stable quality, so how can you have a "Culture of change?" Yet this is exactly what the innovative organization needs. O'Reilly, C., Chatman, J. and Caldwell, D. (1991) in their article “People and organizational culture” describe some Dimensions of Organizational Culture as follows: Innovation and risk taking, willing to experiment, take risks, encourage innovation, paying attention to being precise versus saying its good enough for chopped salad, Outcome orientation, oriented to results versus oriented to process, People orientation degree of value and respect for people, Individual versus Team orientation, Aggressiveness, taking action, dealing with conflict, Stability, openness to change.

The most widely cited theory in culture and organizational culture comes from Geert Hofstede's work (Bond 2002, Hofstede 1997). In his official website, in the section named "A summary of my ideas about national culture differences" Hofstede describes all steps and works were done by him and his group or others to extend the thory later:

"These ideas were first based on a large research project into national culture differences across subsidiaries of a multinational corporation (IBM) in 64 countries. Subsequent studies by others covered students in 23 countries, elites in 19 countries, commercial airline pilots in 23 countries, up-market consumers in 15 countries, and civil service managers in 14 countries. These studies together identified and validated five independent dimensions of national culture differences:

1. Power distance, that is the extent to which the less powerful members of organizations and institutions (like the family) accept and expect that power is distributed unequally. This represents inequality (more versus less), but defined from below, not from above. It suggests that a society's level of inequality is endorsed by the followers as much as by the leaders. Power and inequality, of course, are extremely fundamental facts of any society and anybody with some international experience will be aware that 'all societies are unequal, but some are more unequal than others'.
2. Individualism on the one side versus its opposite, collectivism, that is the degree to which individuals are inte-grated into groups. On the individualist side we find societies in which the ties between individuals are loose: everyone is expected to look after him/herself and his/her immediate family. On the collectivist side, we find societies in which people from birth onwards are integrated into strong, cohesive in-groups,

often extended families (with uncles, aunts and grandparents) which continue protecting them in exchange for unquestioning loyalty. The word 'collectivism' in this sense has no political meaning: it refers to the group, not to the state. Again, the issue addressed by this dimension is an extremely fundamental one, regarding all societies in the world.

3. Masculinity versus its opposite, femininity refers to the distribution of roles between the genders which is another fundamental issue for any society to which a range of solutions are found. The IBM studies revealed that (a) women's values differ less among societies than men's values; (b) men's values from one country to another contain a dimension from very assertive and competitive and maximally different from women's values on the one side, to modest and caring and similar to women's values on the other. The assertive pole has been called 'masculine' and the modest, caring pole 'feminine'. The women in feminine countries have the same modest, caring values as the men; in the masculine countries they are somewhat assertive and competitive, but not as much as the men, so that these countries show a gap between men's values and women's values.
4. Uncertainty avoidance deals with a society's tolerance for uncertainty and ambiguity; it ultimately refers to man's search for Truth. It indicates to what extent a culture programs its members to feel either uncomfortable or comfortable in unstructured situations. Unstructured situations are novel, unknown, surprising, different from usual. Uncertainty avoiding cultures try to minimize the possibility of such situations by strict laws and rules, safety and security measures, and on the philosophical and religious level by a belief in absolute Truth; 'there

can only be one Truth and we have it'. People in uncertainty avoiding countries are also more emotional, and motivated by inner nervous energy. The opposite type, uncertainty accepting cultures, are more tolerant of opinions different from what they are used to; they try to have as few rules as possible, and on the philosophical and religious level they are relativist and allow many currents to flow side by side. People within these cultures are more phlegmatic and contemplative, and not expected by their environment to express emotions.

5. Long-term versus short-term orientation: this fifth dimension was found in a study among students in 23 countries around the world, using a questionnaire designed by Chinese scholars It can be said to deal with Virtue regardless of Truth. Values associated with Long Term Orientation are thrift and perseverance; values associated with Short Term Orientation are respect for tradition, fulfilling social obligations, and protecting one's 'face'. Both the positively and the negatively rated values of this dimension are found in the teachings of Confucius, the most influential Chinese philosopher who lived around 500 B.C.; however, the dimension also applies to countries without a Confucian heritage.

Scores on the first four dimensions were obtained for 50 countries and 3 regions on the basis of the IBM study, and on the fifth dimension for 23 countries on the basis of student data collected by Bond. Power distance scores are high for Latin, Asian and African countries and smaller for Germanic countries. Individualism prevails in developed and Western countries, while collectivism prevails in less developed and

Eastern countries; Japan takes a middle position on this dimension. Masculinity is high in Japan, in some European countries like Germany, Austria and Switzerland, and moderately high in Anglo countries; it is low in Nordic countries and in the Netherlands and moderately low in some Latin and Asian countries like France, Spain and Thailand. Uncertainty avoidance scores are higher in Latin countries, in Japan, and in German speaking countries, lower in Anglo, Nordic, and Chinese culture countries. A Long Term Orientation is mostly found in East Asian countries, in particular in China, Hong Kong, Taiwan, Japan, and South Korea.

The grouping of country scores points to some of the roots of cultural differences. These should be sought in the common history of similarly scoring countries. All Latin countries, for example, score relatively high on both power distance and uncertainty avoidance. Latin countries (those today speaking a Romance language i.e. Spanish, Portuguese, French or Italian) have inherited at least part of their civilization from the Roman Empire. The Roman empire in its days was characterized by the existence of a central authority in Rome, and a system of law applicable to citizens anywhere. This established in its citizens' minds the value complex which we still recognize today: centralization fostered large power distance and a stress on laws fostered strong uncertainty avoidance. The Chinese empire also knew centralization, but it lacked a fixed system of laws: it was governed by men rather than by laws. In the present-day countries once under Chinese rule, the mindset fostered by the empire is reflected in large power distance but medium to weak uncertainty avoidance. The Germanic part of Europe, including Great Britain, never succeeded in establishing an enduring common central authority and countries which inherited its civilizations show smaller power distance. Assumptions about historical roots of cultural differences always remain

speculative but in the given examples they are quite plausible. In other cases they remain hidden in the course of history.

The country scores on the five dimensions are statistically correlated with a multitude of other data about the countries. For example, power distance is correlated with the use of violence in domestic politics and with income inequality in a country. Individualism is correlated with national wealth (Per Capita Gross National Product) and with mobility between social classes from one generation to the next. Masculinity is correlated negatively with the share of their Gross National Product that governments of the wealthy countries spend on development assistance to the Third World. Uncertainty avoidance is associated with Roman Catholicism and with the legal obligation in developed countries for citizens to carry identity cards. Long Term Orientation is correlated with national economic growth during the past 25 years, showing that what led to the economic success of the East Asian economies in this period is their populations' cultural stress on the future-oriented values of thrift and perseverance." (Hofstede, 2009)

On the other part named "A summary of my ideas about organizational cultures" in his official website is written: "Organization cultures should be distinguished from national cultures. National cultures distinguish similar people, institutions and organizations in different countries. Organizational cultures, the way I use the term, distinguish different organizations within the same country or countries. Cultures manifest themselves, from superficial to deep, in symbols, heroes, rituals and values. My research has shown that organizational cultures differ mainly at the levels of symbols, heroes and rituals,

together labeled 'practices'; national cultures differ mostly at the deeper level, the level of values. As a consequence, the five dimensions of national cultures identified in my cross-national research, which are based on values, are not suitable for comparing organizations within the same country. National cultures belong to anthropology; organizational cultures to sociology.

A separate research project into organizational culture differences, conducted by IRIC across 20 organizational units in Denmark and the Netherlands in the 1980s, identified six independent dimensions of practices: process-oriented versus results-oriented, job-oriented versus employee-oriented, professional versus parochial, open systems versus closed systems, tightly versus loosely controlled, and pragmatic versus normative. The position of an organization on these dimensions is partly determined by the business or industry the organization is in. Scores on the dimensions are also related to a number of other 'hard' characteristics of the organizations. These lead to conclusions about how organization cultures can be and cannot be managed.

Managing international business means handling both national and organization culture differences at the same time. Organization cultures are somewhat manageable while national cultures are given facts for management; common organization cultures across borders are what holds multinationals together." (Hofstede, 2009)

Based on what Hofstede mentioned about differences between national and organizational culture, this research did a cultural comparison between two countries,

Iran and Malaysia, which have some similarities in terms of religion and vision plan (Nejati, 2009) and differences in national culture to identify how culture of the organization affects the process of new technology's acceptance in organizations.

Table 2.2: Similarities between Iran & Malaysia vision plan

Iran	Malaysia	Similar pillar(s)
To become a developed country reliant on ethical principles and Islamic value, with an emphasis on religious democracy, social justice, legitimate freedom, respecting people's rights, and with social and legal security	- Aim for a Malaysia that is a fully developed country by the year 2020 along all the dimensions: economically, politically, socially, spiritually, psychologically and culturally - Fully developed in terms of national unity and social cohesion, in terms of our economy, in terms of social justice, political stability, system of government, quality of life, social and spiritual values, national pride and confidence. - Fostering and developing a mature democratic society - Ensuring an economically just society	Economic Incentive and Institutional Regime
Equipped with professional knowledge, capable in science and technology, reliant on the human and social capital for national production	- Establishment of a competitive economy that is increasingly technology intensive and innovative	Education; Innovation
Secure, independent, and dominant to defend country	A secure Malaysian society	other
- With health, welfare, food security, social security, equal opportunities, proper distribution of income, strong family structure, and a good environment; and without poverty, corruption, discrimination	- Eradication of absolute poverty and moving all people above the line of absolute poverty - Provision of enough food to avoid under-nourishment, essential shelter, access to health facilities, and all the basic essentials	other
- With active, responsible, religious, satisfied and dedicated people with a working conscience, discipline, cooperation and social consistency, committed to Islamic Government and the success of Iran, and proud to be an Iranian	- A society proud of its achievements - Establishing a fully moral and ethical society with strong religious and spiritual values and highest of ethical standards	other
The first economical, scientific, and technological position in the Southwest Asia with an emphasis on software movement and knowledge creation, accelerated and continuous growth of economy, relative improvement in the income per capita, and achieving complete employment	- Establishment of a competitive economy that is increasingly technology intensive and innovative - Doubling real gross domestic product every ten years between 1990 and 2020	Economic Incentive and Institutional Regime; Innovation, ICTs
Inspirational, active and effective in the Islam world, strengthening the religious democrat pattern, efficient development, and ethical society, innovative and socially/intellectually dynamic	- Establishing a scientific and progressive society, a society that is innovative and forward-looking and a contributor to the scientific and technological civilization of the future	Education

Hofstede (2001, p.377) classified organizations in different four category by link different culture to correlations between the power distance and uncertainty avoidance dimensions, based on Mintsberg's (1963) classification of organizational structure. Hofstede identifies four main types of organisation:

(1) Full bureaucracy (high power distance, strong need to avoid uncertainty, "pyramid" model).

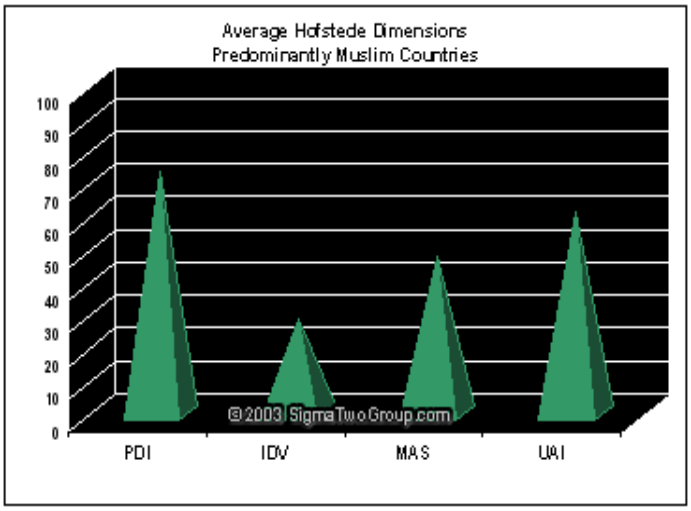
(2) Implicitly structured (low power distance, low need to avoid uncertainty, "market" model).

(3) Workflow bureaucracy (low power distance, strong need to avoid uncertainty, "well-oiled machine" model).

(4) Personnel bureaucracy (wide power difference/low need to avoid uncertainty, "family" model).

As he found there is a high correlation between the Muslim religion and the Hofstede Dimensions of Power Distance (PDI) and Uncertainty Avoidance (UAI) scores.

Fig2.4: Average Hofstede Dimensions, predominantly Muslim Countries



As can be seen in his website in Malaysia's page the combination of two high scores (UAI) and (PDI) create societies that are highly rule-oriented with laws, rules, regulations, and controls in order to reduce the amount of uncertainty, while inequalities of power and wealth have been allowed to grow within the society. These cultures are more likely to follow a caste system that does not allow significant upward mobility of its citizens.

When these two Dimensions are combined, it creates a situation where leaders have virtually ultimate power and authority, and the rules, laws and regulations developed by those in power, reinforce their own leadership and control. It is not unusual for new leadership to arise from armed insurrection – the ultimate power, rather than from diplomatic or democratic change.

2.2.1. IDENTIFIED CULTURAL DIFFERENCES IN TECHNOLOGY TRANSFERRING AND ADOPTION

"Several researchers have provided empirical and anecdotal evidence that culture affects knowledge and technology transfer. Chase (1998), in a study of 500 companies, found that existing organizational culture hindered the successful execution of technology transfer strategies because it reinforced the notion that knowledge of new technology belonged to specific employees and should not be seen as an organizational asset. Similarly, Skyrme and Amidon (1997), in a study of 430 companies, found that internal cultures were a major barrier to knowledge and technology transfer and those changes in culture were essential to the successful execution of any technology and knowledge transfer strategy.

Lucas and Ogilvie (2006) come with a hypothesis in their article "A culture of sharing and participation will have a significant positive impact on the transfer of knowledge between employees". They found that "Findings reinforce the idea that knowledge and technology transfer is not a socially neutral process. Knowledge transfer is a social activity occurring within a social context (Bailey, 2004), the success of which is largely influenced by questions of who employees see as "their partners" in this process, how well do they know one another, and whether or not they view knowledge as something to be shared with their colleagues (Lucas and Ogilvie, 2006).

Oliver (2008) in three different case studies which did in Australia, Germany and Hong Kong, found that Recognition and acceptance of societal requirements for managing information, Recognition and acceptance of organisational requirements for managing information, Attitudes to sharing information, Utilisation of information technology, Trust in written documentation, Preference for low or high context communication characterised and make differentiation in organizational culture. Oliver believed these main factors were related to the overarching societal information management framework and attitudes and values accorded to information." (Taylor, 2005)

The results from an extensive study of firms carried out by Grover, et al (1994) have identified the following cultural differences in technology adoption:

Table 2.3: Cultural differences in technology adoption by Grover, Segars and Durand (1994)

Technology Spending	As a percentage of sales, technology spending is not found to be a largely differing factor across cultures. However, with regard to spending associated with systems success, very different results among countries started to emerge. The U.S. for example, had a clear association with budget and market success, whereas French and Korean respondents showed no such relationship, thus emphasising the competitive nature of the U.S. and their need to justify investment in tangible terms.
Centralised versus Decentralised Environments	A significant difference was observed within the number of centralised environments between the various countries. Korea for example, had a larger percentage of centralised environments compared to the U.S. and France, who reported a higher percentage of distributed environments.
Hardware & Telecommunications	Overall, U.S. and French firms mirrored each other in regard to deployment of hardware and telecommunication activities. It is believed that despite the vast differences in architecture and telecommunications activities of Korean respondents, higher levels of success of their Western counterparts may be incentive for Korean companies to change their ways and follow in the footsteps of U.S. and French firms.
Innovation/Risk taking	Innovation and risk taking is encouraged in 37 percent of U.S. firms, 38 percent in French firms and only 14 percent in Korean firms. However, all countries noted significant overall firm and performance impacts associated with risk taking. "In particular, system usage was particularly higher in all countries that encourage risk taking.
IS and Strategic Planning Integration	Formal integration of IS and strategic planning was reported by only 44 percent of Korean respondents as apposed to much higher 74 percent and 78 percent respectively for U.S. and French firms. It is believed that these findings are the result of Korean firms adopting a more formalised structure, which are slower to change. (As apposed to the participative structure found in U.S. and France, which is believed to allow an easier transition in terms of integrating plans of top-level management and functional-level management).
Information Sharing	Information sharing between departments was found to be significantly higher in France (59 percent), as apposed to the U.S. (35 percent) and Korea (28 percent).

2.3. PERCEIVED QUALITY OF WORK LIFE

Quality of working life has been differentiated from the broader concept of Quality of Life. To some degree, this may be overly simplistic, as Elizur and Shye (1990) concluded that quality of work performance is affected by Quality of Life as well as Quality of working life.

Although, Quality of Life has been studied widely, Quality of working life remains relatively unexplored and unexplained. A review of the literature reveals relatively little on quality of working life. Where quality of working life has been explored, writers differ in their views on its' core constituents (e.g. Sirgy, Efraty, Siegel & Lee, (2001) and Warr et al, 1979). It is argued that the whole is greater than the sum of the parts as regards Quality of Working Life, and, therefore, the failure to attend to the bigger picture may lead to the failure of interventions which tackle only one aspect. A clearer understanding of the inter-relationship of the various facets of quality of working life offers the opportunity for improved analysis of cause and effect in the workplace.

This consideration of Quality of working Life as the greater context for various factors in the workplace, such as job satisfaction and stress, may offer opportunity for more cost-effective interventions in the workplace.

According to Akselsen et al, important factors influencing QOL are Stress, Workload, Control, Flexibility and Concentration. Linda Sturman suggests other dimentions which are Job satisfaction, challenge, use of skills and autonomy, Communication, decision making and job security, Support from

manager/supervisor, Freedom from work-related stress, Salary and additional benefits, Relationships with work colleagues, Involvement and responsibility at work which all also mentioned by (NFER-Nelson, 2001).

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).

Any new technology comes to workplace, has different impact on the process of work and the all environment including people. A major way that new technologies impact people in the workplace is by changing the mix of skills required to do work. Specifically, technologies may have the effect of skill substitution, complementarity, and debilitation, and may affect skill demand. Many technologies substitute for worker skill. Scholars and other commentators remain divided on whether the changes created by new technologies are ultimately good for workers (Head, 2003; Levy & Murnane, 2004; Kraut, Dumais, & Koch, 1989).

Technologies may affect QWL by actually creating or reducing jobs and by the kinds of jobs eliminated or created. The literature reviewed suggests that new technologies may diminish QWL by increasing surveillance of workers, devaluing and making less use of workers' skills, intensifying work pressures, and reducing workers' power. Technologies also may improve QWL when they create more interesting, high skill, complex jobs (which ultimately pay better) and when they are used to create high involvement work practices that increase meaningful participation and power. On the other side, new technologies may increase the

demand for some skills, such as computer programming as well as the need for expert thinking and complex communication (Levy & Murnane, 2004). However, those whose workplaces had experienced significant new technology adoption reported being more satisfied with their role, their pay and their job security.

According to Zorn and Hector (2008) technologies have been claimed to decrease workers' power. First, because of skill substitution and debilitation, some workers have less bargaining power. Also, new technologies are used to closely monitor and micro-manage workers, reducing their power (Guy & Skottz, 2005; Head, 2003). Furthermore, decrease in power and skill substitution has contributed to income inequality (Guy & Skottz, 2005). That is, workers find their jobs are insecure, their skills are less valued, and thus are not in a strong bargaining position. Researchers also have identified "technostress" as a consequence of ICT implementation (Tarafdar et al., 2007; Weil & Rosen, 1997). As Tarafdar and colleagues argue, "Technostress results in a variety of outcomes such as dissatisfaction, fatigue, anxiety, and overwork, leading to a negative effect on individual productivity" (p. 304). They found that those who reported that their employers had adopted significant ICT perceived that work had become more pressured and more closely supervised.

However, there is a gap in the literature focusing on the effects of new technology adoption and implementation on QWL. "We maintain that the perceived effects are important because they reflect and affect social attitudes towards Information Technology, thus creating the discursive context for the introduction of Information Technology into organizations. If the prevailing discourse asserts that new

technologies adoption is ultimately harmful for workers, we can expect greater resistance to new technologies adoption and implementation." (Zorn, 2008)

In this research, researcher compared two different cultures from two countries and investigated the relationship between culture and all aspects of work life with intention to use new technologies in organizations to identify the most important factors can facilitate knowledge and technology transfers in organizations and help to identify critical points to manage all conflicts and resistance may happen in facing new technologies.