

Personality Types and Technical knowledge Management System

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Abstract – Technical knowledge management systems (TKMSs) are not achieving the usage (acceptance) and the benefits that have been forecasted and are therefore, not enhancing competitive advantage and profits in organizations (Comb, 2004, assessing customer relationship management strategies for creating competitive advantage in electronic business). Hardware and software must therefore identify ways of guaranteeing that all customers accept and use TKMSs. This research studied the relation of personality to technology acceptance of TKMS via the Five-Factor Personality Model (using the Technology Acceptance Model - TAM). This study tested the relationship between major types of personalities and their intention of accepting or refusing to accept TKMSs using an integrative model, which combines the TAM (Davis 1989) with the Five-Factor Model (FFM; personality). A survey was conducted to evaluate its personality, its sense and use for the TKMSs by IT, KM, Academia and Psychology LinkedIn Groups, the SIKM Leaders Groups and IEEE. Study results show that TKMS users with the personality characteristic of openness accept the TKMSs more (based on perceived ease of use and perceived usefulness). The results also showed that TKMS users showing the personality trait of extraversion accept the TKMSs better (based on perceived ease of use). It is therefore recommended that organizations and companies investigating and distributing TKMS take into consideration the personalities of users when investigating and designing TKMSs. The potential advantages in the field of information technology could support the competitive benefit and promote the study of relationships with personality aspects in fields of information technology.

Key Words – Personality Types, Technical Knowledge, Management System, Extraversion Personality, Information Technology

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INTRODUCTION

Today, companies aim to achieve and maintain a competitive advantage through the management of knowledge utilization. Knowledge management is defined as – a practice that finds valuable information that is important to decision-making and action and transforms it into necessary knowledge. Organizations have used technology to achieve their knowledge management objectives resulting in various forms of KMSs, including the technical knowledge management systems (TKMS). In addition, when customers and employees use KMSs effectively and continuously, a competitive advantage can be achieved. This thesis addresses the question of the relationships between personality types and acceptance of technical knowledge management systems. In this dissertation, the key factor in the acceptance of technical knowledge management systems by technology acceptance model are users' personalities (independent variables), as measured by the 5-founder model (FFM), and (TAM; dependent variable). The current collection includes information about the acceptability

and correlation of behavioral factors and acceptance of IS systems by knowledge management systems (type of information system). The current research group does not, however, detail the relation between knowledge management systems acceptance and user personality types. Alavi and Leidner (2001) indicated that they should continue to build on existing literature in similar areas in order for KMS research and development (R&D) to be reliable.

It was important to recognize, before carrying out the study, the assumptions and limitations that could affect the accuracy of the research findings. The voluntary nature of survey responses presents one limitation which subject the results of the study to self-selection errors. Self-selection distortions may occur since it is more likely for users interested in using, or using technical TKMSs. Additional prejudices may arise from self-reporting prejudices caused by participants who express their feelings, behaviour, and attitude. The sampling technique chosen (purposive sampling), due to the potential subjectivity of this

researcher may not be representative of the population, could also be another limitation. In addition, taking the survey in a field that experiences rapid change at some point limits the results of the survey. Furthermore, press reports and other similar reports could influence the perspectives on KMS, evaluated in this study. Limitations due to deliberate sampling may not reflect the population because of this researcher's possible subjectivity. A number of assumptions regarding this study have also been made. One assumption, for example, was that participants had access to technical knowledge bases and knew the terms of the survey. Another assumption was to provide a genuine and complete reply to the survey questions. It is also assumed that the investigator would receive sufficient survey returns to measure the desired results effectively.

KNOWLEDGE MANAGEMENT SYSTEMS

Knowledge management systems (KMSs) are used as a part of the knowledge management initiative to share data and information. Many companies have developed and implemented KMSs to share information effectively with domestic and foreign clients. Knowledge Management Systems share many similarities with IS and many knowledge management tools and techniques are related to IS. KMSs also help to facilitate organizational learning, like information systems (ISS), through significant knowledge gathering and making it available as required to employees. KMSs are also seen as supporting the creation, sharing and use of knowledge among organizations. Technically speaking, KMSs are no different from conventional ISs but they can be extended past traditional ISs by providing context for information in an information system. Knowledge and knowledge workers are also the key elements of KMSs. The essential component for KMSs to succeed is that organizations need to promote a culture to promote the exchange of knowledge between their employees. As a result, measurement of KMS success must include not only features of IT-enabled IS, but also social aspects of individuals and culture in organizations. As the basis for developing a successful KMS model, the successful DeLone and McLean (2003) information system (IS) model used to measure information system achievement. Many organizations have been driven to develop Knowledge Management (KM) initiatives to remain competitive. First of all, it is important to define what KM is important for understanding organizational initiatives. Different types of global organizations and companies examine and implement KM initiatives in their business strategies. These KM initiatives include successful deployment of social software and repositories based on knowledge. In fact, several researchers in various journals have explained the advantages of these successful KM implementations. The focus of earlier KM deployments was on information communication technology. Today, however, researchers and professionals recognize

the importance of flexibility in KM initiatives. While many studies highlight the importance of use of IT as a facilitator for KM practices, socio-technical issues are associated with KM success in implementation.

Although many current implementations of KM initiatives rely on advanced information technology, Neto and Loureiro (2009) stated that challenges are still faced with in order to make these KM initiatives effective and efficient (p. 212). These challenges can lead to implementation failures of KM. Failure to implement KM was due to organizational culture and other psychosocial factors, although the success of KM was a significant factor for organizational culture and other psychological factors. In addition, various researchers have documented studies and surveys that discuss such failures in KM implementation.

CURRENT TRENDS IN KNOWLEDGE MANAGEMENT

Current trends in KM are linked to the acceptability for competitive advantage of KM. For most organizations, knowledge is the key to success and competitive advantage. KM ensures the effective management of the knowledge distribution and application process. — The competitive benefit is achieved by developing and implementing both creative and timely business solutions that reuse the knowledge used and use newly-created knowledge, commonly referred to as innovation. Organizations must improve their knowledge process efficiency in the cycle of knowledge management and recognize that their personnel are the main source of knowledge in order to compete effectively in the current and future economy.

Shows the activities involved in the knowledge management lifecycle:

Identifying -> creating -> transferring - > storing -> re-using -> unlearning knowledge.

The organization should first identify important and essential knowledge. Second, new knowledge must be created and transferred to other employees in the organization successfully. Third, this information must be stored for all of the organization in a knowledge repository. Fourth, transferring knowledge to the company is essential for the organisation's reuse. Fifth, outdated knowledge must not be learned, so that new knowledge can be achieved. In order to offer them a competitive advantage in spite of their market segment, organizations must understand and optimize their KM procedures. An institution can achieve the knowledge production and integration process by promoting the sharing of knowledge between all individuals and incorporating knowledge into a knowledge database for everyone to access. This will enable management to supply the people who need it with knowledge. This

knowledge enables people to solve problems effectively, take decisions, respond to customer requests and develop new products and services tailored to the needs of customers.

IMPLICATIONS OF KNOWLEDGE MANAGEMENT

Implementing knowledge management (KM) gives a large number of companies a competitive edge over their competitors. Many KM projects and initiatives have failed however, leading to considerable losses for many organizations. Many organizations have often included KM as a business strategy to increase competitiveness and improve business processes. Chua and Lam (2005a) reported that successful KM implementation reports resulted in financial savings, higher revenue and greater user acceptance. For instance, the 1996 implementation of the Eureka database saved Xerox and estimates for \$100 million. In 2000, Hill's pet diet reduced waste for pet food and another KM implementation enabled Hewlett-Packard to successfully set up consistent price schemes and sales processes and to standardise them.

Although 84% of KM programs have no significant impact on adopting organisations, Lucier and Torsiliera (1997) have claimed that the reporting of KM projects fails. The media seldom mention the names of the KM project failure organisations, while the names of organizations with the success stories in KM project projects are widespread. While organizational learning and active experimentation as corporate values are highlighted in the modern economy, failures are not mentioned. As stated by Norton (2003), a failed IT project can be defined by more than 30 percent as a project that misses the deadline and whose final information system doesn't fulfill the requirements of the user.

Many organizations implement KM initiatives based on other KM success stories in order to increase the use of their knowledge assets and better management by having success factors and their best efforts (Chua & Lam, 2005b). Dixon (2000) states that the success factors of KM projects are linked both to the knowledge and objectives of an organization and to their attention to employees requiring certain knowledge. In addition, Trussler (1998) stated that the success factors of KM projects relate to the extensive Communication of companies and organizations in and the commitment of KM. Furthermore, Davenport and Prusak (2000) list nine factors that contribute to KM project success:

- [a] knowledge-oriented culture,
- [b] Organizational and technical infrastructure,
- [c] Senior management support,

- [d] Link to industry or economics value,
- [e] Modicum of process orientation,
- [f] Clarity of vision and language,
- [g] Nontrivial motivational aids,
- [h] Some level of knowledge structure, and
- [i] Multiple channels for knowledge transfer.

KNOWLEDGE MANAGEMENT IN BUSINESS STRATEGY

Corporate knowledge management has become an increasing focus in theory of business and economy and has the potential to affect the whole business, and in particular its processes and information systems. Nonaka and Takeuchi (1995) have declared that many organizations have KM as their main strategic concern, which has become the latest strategy to increase the competitiveness of their organisations. Organizations must therefore integrate process, strategy, technology and structure knowledge areas in order for a company to successfully implement KM. Companies and organizations which do not understand the strategic significance of KM cannot survive. KM involves acquiring knowledge and using that KM in order to help them carry out organizational missions from internal and external organization sources. In particular, KM is an organizational package designed to accommodate specific tasks. Different case studies in KM were carried out and found that some companies were using KM to achieve the success of KM by combining KM with their corporate goals and training. Michael H. Zack, another research scientist, found that a company is using various administrative methods on the basis of its strategic mission to help implement KM. In organizations, strategy and knowledge are dynamic and could include the current or future strategic plan of the company. How knowledge is created and managed effectively can create an organization's strategic and competitive advantage. In general, a knowledge-management organization can create significant value only if they are connected to its overall strategy and strategic decision-making.

EVOLUTION AND ROLE OF INFORMATION TECHNOLOGY IN KNOWLEDGE MANAGEMENT

Technology supportive of KM projects in the 1990s was distinct and carried out only a single function of a KM initiative. Thus, to carry out various tasks, users would have to log in to many systems. In essence, the integration of the systems was little to no. In the early 2000s

technologies in support of KM initiatives began to develop so as to be less platform-dependent and to have capacity for information exchange. This was a direct consequence of progress in open technology standards. These technologies therefore constitute different components and can be integrated easily into other business applications. Furthermore, commercial KM Technology vendors are now combined with other technology solutions that permit users to work and collaborate on a range of business functions in a single KM system. These changes were caused by the market consolidation of vendors and an understanding that critical success factors in KM initiatives rely on knowledge processes integration. Many recent KM projects have managed to take advantage of its KMSs. A fair number of KM projects failed, however. Moreover, Tsui (2005) argues that many previous KM projects have been driven by technologies such as e-collaboration tools, content management, search engines and tools for recruitment and classification. These failures show that organizations must integrate the use of technology, people, processes and content in order to achieve a successful KM project implementation. These failures also reveal that successful KM projects are not purely technologically driven. In future, KM technologies will continue to improve alignment with organizational project management tools to support business process management initiatives in companies. To support the capture and sharing of personal knowledge, organisations, such as Social Networks, and personal applications, must coordinate various organizational resources. In addition, KM technologies are predicted to become more on-demand technologies to support inter-organizational collaborations and develop rapid applications tools.

TECHNICAL KNOWLEDGE MANAGEMENT SYSTEMS

A technical knowledge management system (TKMS) can be defined as a knowledge management system created by hardware and software vendors containing technical knowledge on how to perform certain technical operations and resolve technical software or hardware problems. The research on measurement of TKMSs is important in the understanding of the benefits of using and accepting these systems. The research on acceptance is vital to understanding the elements to accepting technology, like TKMSs.

Various researchers have approached the issue of linking business performance with KM and IT. The approach has included classifying the issue into five categories: —

- (a) Quantitative measures studies;
- (b) Accounts and/or audit types of studies;

- (c) Studies of the causal relations between KM and business performance with or without the involvement of IT;
- (d) Studies based on the balanced scorecard; and
- (e) Studies that evaluate and measure the impact.

The most widely used method of measuring organizations is likely to be the use of quantitative measures to determine the return on investment of the TKMS (ROI). The main objective of TKMS distribution organizations is ROI. The model calculates the annualized costs of knowledge management, and the financial gains produced in five areas with the use of proven measurement methodology: personal productivity; other productivity; problem-solving speed; cost savings; and quality. Anderson provided recommendations on the basis of the resulting ROI (50 percent) to increase the company profits of KM. ROI is one way to measure the advantages of KMSs and one way to measure the advantages of TKMSs.

In particular, TKMSs, the DeLone and McLean (2003) models were used in many studies to measure KMS success and served as a framework for IS success design and functionality. The DeLone and McLean — IS model of success, quality systems measures technical success; information quality measures semantically successful; and usability, user satisfaction, individual impacts and corporate impacts measure success efficiency (p. 10). Wu and Wang conducted a study in 2006 that re-established the DeLone and McLean models in order to measure KMS success in empirical KMS surveys. Wu and Wang carried out a quantitative study using a questionnaire survey conducted with KMSs by fifty top Taiwanese firms. In each company a contact person was identified and the self-administered questionnaires were distributed to KMS users. For reliability and validity measurement, the data were analyzed using composite values. Wu and Wang's study indicated that KMS benefits perceived by users played an important role in KMS success, but that the relationship between KMS perceptions by users needs to be understood to make our conclusions more general. Wu and Wang are being expanded in this research study to study how user perceptions relate to TKMSs. The result of this study was a validated KMS success model that introduced new KMS measures: the quality of knowledge as a success measure of KMS and its use as a KMS success measure. Although numerous studies have taken place to measure success of ROI and KMS, literature for measuring TKMSs is still lacking.

PERSONALITY TYPES

Allport (1961) indicated that distinctive thinking and behavioral patterns of an individual could be determined by the individual's personality. However, individual personality traits emerge when an individual is studied from different aspects. In fact, many psychologists agree that individual behavior is related to personality traits and the context of these traits. Eysenc's (1991) study suggested five principles related to personality traits: efforts expectancy, explicability, external correlates, and comprehensiveness. These principles were later identified as the Big Five Factors, or the five-factor model.

Generational differences. Much research was conducted on observing differences in work values from generation to generation. However, this research is limited in that there is little evidence of generational differences in the motivating drivers of personality and workplaces. In spite of past research studies which examined the motivational drivers for generational personality differences, these studies focused further on broader generational differences and not on the workplace in particular. The work research on generational differences focused on the values of work. Brown (1976), George and Jones (1999) said, for example, that work values refer to the attitudes of the employee about the right and attitudes of the person to the right at work. While there may be relationships with motivational drivers that are influenced by the values of an individual, it is important to understand the difference between these concepts. To ensure that all generations of users can make effective use of systems and see the systems as useful, software vendors must develop TKMSs. Prensky (2001) described digital natives and digital immigrants as different generations of digital technology users. Digital indigenous people have developed through digital technology in every aspect of their lives, while digital immigrants are people who have not come into the digital world, but have fascinated many or most aspects of digital technology later in their lives.

PERSONALITY TYPE MODELS

Myers-Briggs. The theory of psychologic types (extroversion, introversion, sensing and intuition) in Carl Jung states that random behavior is actually quite ordinary in people. This behavior is due to differences in how people get information and decide. This idea, however, caused a great deal of debate among psychologists. The theorist Jung described the guidelines for the extroversion and introversion of a personality kind as follows: 'Some people are guided by rapidly implementing a broad approach to knowledge; others are geared towards a degree of knowledge reflecting ideas and concepts. In addition, Jung described styles and perceptions of information collection as sensing and insight (SN) as

follows: —With sensation and intuition, some people are tuned to practical, practical, shared views of events and intuition—and others have a better focus on complex interactions, theoretical implications or new event opportunities. Jung also discussed two different styles of decision-making, thinking and feeling (TF). In Capretz (2003), some people tend to draw conclusions or make judgments objectively, reluctantly, and analytically by thinking and feeling; others weigh human factors or the importance of society and make judgments based on personal conviction about their value. Finally Jung described the judgement and perception of two other personality styles.

Five-Factor. The personality traits of the five-factor model (FFM) are sorted into extraversion (E), conscientiousness (C), agreeableness (A), neuroticism (N), and openness (O). Wang and Yang (2005) explained that —high extraversion persons are mostly positive, optimistic, are willing to take risks, like to be around crowds, have more social activities, and tend to look for amazement. In contrast, Wang and Yang described conscientious persons as being more commanding, thorough, reliable, and resilient. Furthermore, Wang and Yang mentioned that people who are more agreeable are enthusiastic, empathetic, and cordial, and are likely to help others. —High nervousness persons are relatively unstable, easily to be frightened, rash, depressive, and angry. Additionally, social pressure theoretically causes a person with the neuroticism type to exhibit a certain behavior. Equally important, persons exhibiting the personality trait of openness are imaginative, express their curiosity, and tend readily accept various arrays of experiences and culture.

Use of FFM in technology acceptance. Based on their effective use of each of the respective products and the associated TKMSs, many software and hardware users make buying decisions. New technology acceptance level determines if users are prepared to adopt TKMSs. Thompson et al. (1991), for example, have observed user behavior while using PCs by adding two additional TAM2 variables that include the long-term effects and facilitating conditions of the latest technology. This research has helped enterprises to understand the potential reactions of employees and consumers to the introduction of new technologies. But the most recent research focuses on certain dimensions or constructions that prevent companies from fully understanding why new technology was refused to be accepted by customers or employees. Venkatesh et al. (2003) therefore developed an integrated model based on a total of eight major models.

The integrated model, UTAUT, addresses behavior intention and consists of four structures: social influence, conditions of support, expectancy

of performance and effort expectancy. This model is based on the theory of accepting and using technologies. In addition, the relationship between each of the four constructs and personality traits was investigated in previous research. For example, Wang and Yang (2005), based on online stock investment use, have conducted a study to examine the relationship between personality traits and UTAUT model. The researchers used the quantitative method of research by distributing questionnaires to a contact person in eight major taiwanese security companies who distributed them to their customers. While the questionnaires were intended for clients with some experience in investment, no specific filters were applied when distribution took place. Similar to the study of this researcher, Venksh et al (2003) measuring tool for the UTAUT, Costa and McCrae (1992), NEO-PI (form S), internet survey measuring internet experience were included in the questionnaires source (Wang & Yang, 2005). One study result suggested that the personality characteristic of extraversion affected investors' intention to use online investment systems. The other characteristics had different results on the intention to use. Data analyzes indicate that personality characteristics are more important than external variables as moderators.

RESEARCH OF PERSONALITY TYPE AND TAM

Barrick and Mount (1991) asserted that researchers found that context matters in IS research as the interests on moderated relationship increases. In fact, past research shows that the hidden relationship between personality traits and new technology acceptance was explicitly excluded from the TAM model. Essentially, conclusions about the effect of personality traits on intention to accept a new technology are ongoing. This research focuses mainly on the usage of TKMSs, exploring the role that personality traits play on the unified theory of acceptance and Use of Technology (UTAUT) model as it relates to technology acceptance, either indirect or intervening.

CONCLUSION

Many studies on various topics including organizational management of knowledge, knowledge management systems, the reusability of knowledge, user satisfaction with IT systems and user satisfaction measurement are completed. Although there are many theories of management of knowledge and even more studies of personality variables, there have been few empirical studies that examine the link between these two fields. This leaves the KMS literature with a large gap. The five-factor personality model has in the past been widely used and applied to studies in management and psychology, but was rarely discussed in the field of IS. Indeed, in [management information systems]

literature in the past two decades, the personality has been largely ignored. But personality psychology has since advanced substantially, and in other disciplines the FFM has inspired a new theory and empirical research. This investigation integrates the FFM in the TKMS technology acceptance, examining how personality building influence the perceived utility and ease of use and the potential acceptance of TKMSs. This research shows that the different personal characteristics of TKMS users can play an important role in accepting a TKMS in the university arena. In order to design and implement new CTS, practitioners can use the results of the study to focus on the personality characteristics of potential users, increasing the opportunities to accept technology. In another way, practitioners can plan education and award-winning programmes, which can focus on personality types that are resistant to new technology.

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