What drives the process of knowledge management in a cross-cultural setting

The impact of social capital

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Abstract

Purpose – This paper aims to consider the role and influence of social capital (SC) on knowledge management (KM) and sets out to develop an understanding of the importance of the impact of the cross-cultural environment on this relationship.

Design/methodology/approach – According to the notion, in this study, the relationship between two essential aspects in management and business, SC on KM practices, has been analyzed. By applying a descriptive and correlational method, the impact of various dimensions of SC on KM in a cross-cultural setting has been investigated, and required data has been obtained through questionnaires consist of 30 items, which is prepared for a sample of 232 people.

Findings – Although the findings are varied, the results indicated that there is an important relationship between SC dimensions and KM in the research environment, which is cross-cultural.

Research limitations/implications – First, as the data derived from different branches of a big company in Iran, its results cannot be easily extended to other contexts. Therefore, future streams of research can expand the scope of this paper into other contexts with different characteristics. Moreover, the sample of this paper is taken from different communities (branches) which increase the variety of personality features in distinct cultures. Thus, further research can stress a particular organization/ branch to avoid the problem of cultural variation and focus on a more homogenous sample. Finally, this study targeted a big organization in the IT sector. However, future studies can investigate another type of firm (e.g. small and medium firms) in different sectors (e.g. manufacturing, food sector, etc.).

Practical implications – In this research, using scientific and practical methods, the impacts have been examined carefully and deliberately to assist the managers of organizations in theoretically and managerially as these outcomes contribute to the development of a new concept called cross-cultural in knowledge management and social capital, and support organizations to cope with the implications of this concept.

Originality/value – There is not much empirical research on cross-cultural settings and its effects on management, finance and business, especially on correlations between KM and SC. This investigation tries to fill this gap and explain the ways, which companies can use SC for enhancing their effectiveness of KM by considering culture diversity impacts.

Keywords Knowledge management, Cross-cultural environment, Social capital dimension

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Introduction

Recent advances in information technology have significantly reduced the cost of data management (Karagouni, 2018). These signs of progress have introduced new concepts such as knowledge management (KM) in the organization literature, so that, over the years and many types of research that have been conducted in this field, the role of knowledge has become more outstanding and prominent. The root of the significance of knowledge resides in the incremental ability that enhances the value of assets in an organization.

Moreover, knowledge is represented as a key source for sustained competitive advantage (Reich, 1991; Quinn, 1992; Drucker, 2012) and organizations can employ it for the improvement of the effectiveness of intellectual capital (Sullivan, 1999) also, to innovate their processes, activities, products and services. Therefore, identifying the causes affecting organizational KM is one of the primary measures for the effective use of the intellectual capital of the organization. Notwithstanding special factors, social contexts have critical effects and play a noticeable role than economic and human capital. Social capital (SC) refers to the networks of relationships and connections among members of a community as a valuable source and, by creating common norms and mutual trust; it serves to realize the objectives of the members. SC and its brilliant impact in organization and business thoughts, has always been an interesting subject for researchers, so that, in a number of studies the importance of SC for KM has been discussed (Widén-Wulff and Ginman, 2004; Hoffman *et al.*, 2005; Smedlund, 2008; Manning, 2010).

Beyond these concepts, there is another factor, which has implicit and explicit effects on all issues related to human relationships and this subject is "culture." Culture affects human behaviour, feelings, reactions and interactions, both individually or collectively. Detailed and significant research has been done on the role of culture in organizations. One of the most important effects of culture is the impact of cultural differences. These differences peak in a cross-cultural environment. The study of relationships between managerial topics in the organization, such as KM and SC, in cross-cultural environments, is one of the new interests of management researchers. What is the role of a cross-cultural environment in the management of knowledge and SC? In this paper, we study the effects of SC on KM in an organization by considering the impact of the cross-cultural environment.

Literature review

Organizational knowledge is what everyone knows inside the organization, about processes, products, services, customers, the market and the competitors of the organization (Civi, 2000).

Davenport and Prusak (1998) defined knowledge as "a fluid mix of experiences, values, information and specific insight, which provides a coherent and integrated framework for evaluating and acquiring new experiences and knowledge." In Chinying Lang (2001) view, the human is the main element in the creation of knowledge. Knowledge is shaped through circulation and sharing (informally) among people who come together through common interests and remain in the organization (Liao *et al.*, 2004). In a general classification, knowledge includes individual information that is originated in the minds of individuals and organizational information, which is generated by interactions between technology, techniques and individuals in an organization and includes explicit and tacit knowledge (Smith, 2001). Explicit organizational knowledge is organized knowledge, and with fixed content that can be codified, compiled and published using information technology (Johannessen *et al.*, 2001). This knowledge as the upper part of the "iceberg" is a visible section of the organization's knowledge resources that can be found in databases and reference books in organizations. However, an "iceberg" has another invisible part, which is

known as the tacit knowledge lies (Haldin-Herrgard, 2000). This part of knowledge is personal, cognitive and affiliated with the text that lies in the mind, behaviour and perception of individuals. Values, beliefs, insights and intuition are examples of this type of knowledge in organizations. Such definitions of organizational knowledge explain the importance of the human element and the relationships among individuals in organizing the creation and sharing of organizational knowledge.

According to Teece (1998), knowledge is a basic component for sustained competitive advantage. Malhotra believes that KM involves the organizational process, which is seeking to find a synergistic combination of data and information processing capacity by information technology and the capacity for creativity and innovation by individuals. Also, KM is deemed as a process in which an organization generates value and wealth by its intellectual property and knowledge (Bukowitz and Williams, 2000). Chang Lee *et al.* (2005), in their experimental research, considered KM as the process of applying and providing the skills and expertise of individuals in the organization supported by information technology while Bhatt (2001) explain it as the process of creating, presenting, distributing and applying in the organization by individuals. However, KM is regarded as a process for the flow of knowledge among individuals as an instrument for innovation in processes, products and services, effective decision-making and adapting the organization to a dynamic and competitive marketplace (Stevenson *et al.*, 2018). Therefore, it can contribute to the refinement of business strategy that leads to exploiting opportunities in challenging new markets.

The concept of organizational KM provides a more comprehensive understanding of KM and its key foundations (Hislop *et al.*, 2018). In fact, it is a system that develops and facilitates the process of organizational learning by smoothing the exchange and dissemination of knowledge (both implicitly and explicitly) (Jafari Sadeghi *et al.*, 2014; Pucci *et al.*, 2018). In this regard, technology structures are the IT tools (including hardware and software) that provide electronic forms of organizational knowledge, which facilitates exchanging and sharing (Naqshbandi and Jasimuddin, 2018). Organizational structures are a definite framework, which organizational staff members interact with each other within groups and teams, and follow a series of instructions and purposes in association with the defined strategy for the organization (Zheng *et al.*, 2010). Moreover, organizational culture contains shared values and norms, ethics and behavioural forms inside the organization. Knowledge contains all kinds of organizational knowledge or even the minds of the employees (Vigolo *et al.*, 2016; Jafari Sadeghi *et al.*, 2019; Giacomarra *et al.*, 2019a; Giacomarra *et al.*, 2019b; Galati *et al.*, 2017; Bresciani *et al.*, 2016).

In other to improve KM practices, organizations need to prepare and expand a kind of culture and atmosphere that encourages and facilitates communications and interactions. Effective communication and interaction among the organization and creating a climate of mutual trust between them is associated with another concept in organization sciences, which is known as SC (Prieto-Pastor *et al.*, 2018; Holdt Christensen and Pedersen, 2018). Term of SC first arrived on the scene in the sociology literature. Coleman (1988); Portes (1998) and Adler and Kwon (2002) define SC as an accumulation of potential and actual resources that are linked with integrated networks of institutionalized relationships based on mutual understanding and understanding (Zhang and Fung, 2006). According to Nahapiet and Ghoshal (1998a), it is "all resources and value that exists and derives from a network of personal and organizational relationships." In other words, communication networks are considered as a value-creating resource (capital) for individuals or organizations. Van Engelen *et al.* (2006) argue that SC is a mixed concept of knowledge and

organizational resources, which improves the potential of individual and group activities in human social systems.

Social capital could be interpersonal or inter-organizational. Interpersonal social capital is created in communication networks between individuals, while inter-organizational is due to communication networks between organizations (Hoffman *et al.*, 2005; Ganguly *et al.* (2019). It is also a mechanism to enable transferring knowledge both within and between organizations is (i.e. via membership of specific social networks) (Rhodes *et al.*, 2008). Stone (2001) believes that interpersonal SC includes existing organizational resources within human networks supported by trust and collaboration. Moreover, individual SC explains the ability of mutual benefits, which is exchanged due to membership in a social network or other social structures (Coleman, 1998). However, in early literature, Fukuyama (1995) described SC as an ability that individuals achieve by cooperation in common objectives in groups and organizations.

Francis (2002) believes that SC can be derived from the phenomena of mutual trust; mutual social interaction, social groups, collective identity, the feeling of a shared vision of the future and teamwork in a social system. Hence, the "network of trust" and "radius of trust" are two fundamental concepts, in which the network of trust includes relationships based on mutual trust; individuals practice the same information, norms and values in their interchange (Hoffman *et al.*, 2005; Rossi *et al.*, 2019). Thus, mutual trust will play a crucial role in facilitating processes, increasing benefits and reducing the costs associated with such human exchanges while radius of trust means the extent of the circle of cooperation and the mutual trust of the members in a group (Nahapiet and Ghoshal, 1998a; Rossi *et al.*, 2019). Therefore, it is arguable that organizational knowledge is easier to manage through social capital as it influences the conditions crucial for combination or exchange to occur (Hoffman *et al.*, 2005). To be more precise, SC facilitates the combination, as well as the exchange of firms' resources, which enables organizations to create more value through the innovative practices (Tsai, 2018; Kanter, 1988; Kogut and Zander, 1993).

Hypotheses development

Social capital, knowledge management and culture

Individuals have a vital role in creating and sharing of information and knowledge at the micro and macro level (Levy *et al.*, 2003), as they can facilitate and accelerate these activities. Therefore, if an organization enhances effective interactions among its staff within the groups or organizational components, the reliability of the effectiveness of exchanged information will increase. Due to this assurance, organizations can take advantage of greater efficiency of organizational KM (Hardaker *et al.*, 2004; Donate and Sánchez de Pablo, 2015).

Adler and Kwon (2002) noted that the correlation between SC and knowledge sharing is important in the organization. Amara *et al.* (2002) have found some worthy evidence, which confirmed the existence of a noticeable link between SC and KM. However, they have considered the management of knowledge in its general concept, without distinction of its various dimensions. Tymon and Stumpf (2003) illustrated the association between SC and KM to achieve higher performance by the organization. Lioukas and Reuer (2015) have presented that SC in the organization affects the sharing of knowledge among members of the networks. However, there is a gap in the aforementioned studies to mention the role of cross-cultural environment. These studies mostly focussed on causes other than the factors of technology in the development of KM, and have a major emphasis on the human factor. Nonaka and Toyama (2015) considered the role of organizational leadership, cultural structures, the flexibility of organizational structure and the approach in which they coordinate in encouraging individuals to express ideas, and also to create and share

knowledge. Darroch (2005) investigated KM as a coordinating mechanism, revealing a significant positive relationship between KM capability and innovation. Zhang (2018) examined the role of organizational culture in KM and illustrated that flexible organizational structure, effective information systems, designing the appropriate reward system, and ultimately attracting people's trust, are the strategic factors in KM. These researches are some examples of efforts to create a link between SC and KM without considering the role of a cross-cultural setting.

Nahapiet and Ghasal (1998b) expanded the SC concept and specified three dimensions for SC structural, cognitive and relational. Structural dimension is tangible that includes the impersonal configuration of linkage between members of a group or social component and includes three dimensions, namely, network ties, network configuration and appropriable organization (Liao and Welsch (2005). The network ties involve certain methods that social unit members are interconnected. Network configuration describes the patterns of relationships between members of a social group. The cognitive dimension consists of shared language and codes, cultural and social beliefs, and concepts that are shared by common concepts, memories and narratives (Pearson *et al.*, 2008). The simplest interpretation for the relational dimension can be related to the degree of shared feeling of trust among members of a social unit. The relational dimension describes the kind of personal relationship in an organization, which influences an individual's behaviours such as respect and friendship.

Bhatt (2001) considered the KM process in five-step phases, namely, creation, validation, presentation, distribution (sharing) and application of knowledge. He explains that creation includes a set of activities that take place to develop fresh and useful ideas and solutions to gain novel knowledge. Knowledge validation refers to the extent to which a firm can reflect on knowledge and evaluate its effectiveness for the existing organizational environment. The way in which knowledge is displayed to the organizational members is deemed as a knowledge presentation. In the distribution step, knowledge shared throughout the organization. The interactions in all organization sections such as technologies and people are directly involved with knowledge distribution. The final destination of knowledge procedure is an application that argues organization knowledge needs to be used as production, processing and servicing.

Literature in the field of SC and KM in the organization has less investigated the cultural setting features as they are essential factors in an organization and its processes. Culture affects thinking, attitudes, interests and behaviours in an organization, both in the organizational dimension and in its personal dimension (Hofstede, 1998). According to Edgar Schein (2013), culture can be considered as a phenomenon that surrounds people. In Schein's view, when a person brings culture into an organization or into a group of organizations, he can obviously understand its impacts in creating, capturing and developing, and ultimately influencing, managing, and then changing. In general, the concept of culture is the quality of life of a group of human beings that passes from generation to generation (Schein, 2013).

Hofstede defines culture as:

> [. . .] the collective programming of the human mind that distinguishes the members of one human group from those of another. Culture, in this sense, is a system of collectively held values" (Karin Andreassi *et al.*, 2014).

After a long discussion about culture, he says:

> Although no-one has ever been able or cannot possibly establish a simple and one-to-one relationship between each aspect of culture in the organization with each of its functional aspects.

> However, there is no doubt that culture can influence the performance of the organization and in a long time, can have a decisive impact on the survival of the organization. Culture is a blend of values, principals, and beliefs that individuals have achieved from the childhood environment (idem).

This combination can be different from person to person in a community, and these differences can create a variety of decisions at the same time and place in different people. Sociologists call these cultural differences in society a "cultural diversity", which is a contextual and comprehensive word in organization literature (Eriksson and Hägg, 2016). It is also a vital topic of concern for managers which considering its effects on organization performance has increasingly grown. Cultural diversity simply defined, as important differences distinguishing one individual from another (Ogbu, 1992). This definition, which is presented by many contemporary researchers, is a description that covers a wide range of obvious qualities and hidden capabilities (Slavova, 2013). In a diverse cultural environment, personal differences in thinking, attitude, action and the reaction can be effective in the role of individuals in a larger society, such as an organization. The cross-cultural setting is a simple instance, which cultural diversity can be defined and observed (Jelavic and Ogilvie, 2010). In business studies, we define cross-culture as efforts, which a corporation invokes to surge the ability of its staff to cooperate effectively with professional associates and colleagues from different backgrounds and nationalities. Nowadays, examining the role of cross-cultural behaviours and organizational issues is one of the most significant concerns for researchers in organization management (Hejase *et al.*, 2013). Moreover, achievement for an organization is a direct consequence of successes of the optimal combination of the efficiency of the financial and non-financial capital, and as human resources are one of the main pillars of non-financial capital of organizations, cultural differences can be effective on the ultimate success of organizations (Rossi *et al.*, 2017; Jafari Sadeghi and Biancone, 2017b). Therefore, considering the cross-cultural effects for the survival of an organization is essential.

In this research, while investigating the role of SC as an effective overall factor, we examine the impact of its dimensions. Among the various dimensions, five important factors were identified and selected. These SC dimensions include trust, shared language and codes, network ties, identity and obligations and expectations that were addressed by several scholars in the study of SC issues. Therefore, for the main hypothesis, we assert:

H0. Social capital positively affects knowledge management practices in a cross-cultural environment.

Trust

Trust is a set of beliefs that a person has toward others and it makes he/she feels positive to the second person's behaviours and reaction (Dierks, 2005). Trust is the source of communication and discourse and can have different forms; trust as a belief, trust as a decision and trust as an action (act) (Dietz and Den Hartog, 2006). In Fukuyama's definition, trust has been known as a presumption within a regular and honest society, along with cooperative behaviours based on common norms (Fukuyama, 1995). The concept of trust may be expressed to predict the behaviours of a partner with respect to the commitments and the possibility of predicting his behaviours in negotiations with the possibility of being opportunistic in it. In addition, he argued that trust could facilitate the creation of intellectual capital (Caputo *et al.*, 2016; Ferraris *et al.*, 2016). It is an effective factor in SC that promotes the relationships between individuals in each social unit (Li *et al.*, 2019). There is a mutual

relationship between trust and cooperation in the organization (Jones and George, 1998), confirming that, in a community when in relationships among individuals increase, cooperation will be developed. Moreover, the ultimate result of close cooperation is enhancing the trust domain.

In many studies, the effect of trust on KM activities has been discussed, and most of them conclude that by increasing trust in an organization (as a social unit), individuals (employees) tend to be more willing to create and share knowledge (Blaas-Franken *et al.*, 2016; Ho *et al.*, 2018; Le and Lei, 2018). Another effect of trust is to increase interactions between people. If people trust each other, they will dare to talk and hear more, which will propagate novel thoughts and new ideas and ultimately create and share knowledge. Zhu *et al.* (2004), in an empirical study, examined the relationship between SC and knowledge sharing in various companies. The results of the research show that social trust does not have a direct impact on the sharing of organizational KM. Paliszkiewicz *et al.* (2014) examined the effect of trust as a basis for knowledge sharing and its impact on organizational performance on a total of 469 managers in 278 top companies selected by the Forbes and found that trust is the preconditions for knowledge sharing among employees. Hajidimitriou *et al.* (2012) in a research that was conducted among top managers of four dynamic and active companies in Greece showed that trust is a prerequisite for the transfer of both tacit and explicit knowledge. On the other hand, as this hypothesis will examine in a cross-cultural environment, and there is no specific study on the features of the cross-cultural setting. Thus, one cannot comment on the extent of this relationship. Therefore, it is expected that there is a positive relationship between trust, as a feature of SC, and KM. Hence, we propose:

H1. Trust has a positive influence on knowledge management practices in a cross-cultural setting.

Shared language and codes

The cognitive dimension provides a shared vision of goals and values for network members and introduces their optimal activity in the social system (Chiu *et al.*, 2006). This dimension involves the extent to which staff members share a social network in a shared vision or shared understanding, and as such, communicates to the nature of communications among individuals within an organization, including common language and codes, and common narratives (Claridge, 2018). At the organizational level and especially in large organizations, creating a shared vision among the members and bringing their thoughts and views closer to each other are ways to develop the cognitive dimension (Pee and Kankanhalli, 2016).

For various ranges of reasons, shared language and codes affect the creation and sharing of knowledge (Chua, 2002). First, language has a direct and important role in social relationships because as an instrument, people communicate with each other, express and exchange their views (Halliday, 1994). With the common language, they can capture and analyse the information of others, and use it to present new information or new knowledge (Reiche *et al.*, 2017). Moreover, language affects human perceptions. The greater the linguistic distribution of people, the more their understanding of each other. The result of this increase in mutual understanding is to create a good environment for creating and sharing knowledge (Büchel and Raub, 2002). On the other hand, shared codes also have the same effect. Common codes are a specific framework and reference for analysing and interpreting information (Carroll and Swatman, 2000). By creating the same thinking style, these frameworks will put ideas in the form of information and knowledge, and ultimately facilitate the sharing of knowledge (Akhavan and Mahdi Hosseini, 2016). Commons

language and code facilitate the path of converting new ideas into knowledge (idem). An important matter in this research is the environment in which these paths exist. It can be said that in a cross-cultural environment, given the diversity and differences in culture, shared codes and languages can have a special effect on management knowledge. It is clear that in an organization, more verbal communication leads to more knowledge (Ritala *et al.*, 2015). Therefore, the second hypothesis considers:

H2. Shared language and codes have a positive impact on knowledge management practices in a cross-cultural setting.

Network ties

Network ties are one of the most important parts of the structural dimension of SC that can facilitate access to resources (such as knowledge) (Aldrich and Meyer, 2014). This structural sub-dimension of SC shapes the overall configuration of a social structure, such as an organization, and can affect the development of intellectual capital and KM and their performance (Nahapiet and Ghoshal, 1998b; Claridge, 2018). In an organization, individuals (as the simplest physical means of sharing and creating knowledge) will be able to access resources (such as knowledge) with a coherent network of relationships (Miller and Read, 2013). Network ties also reduce the time to access information by creating information channels and finally, the cost of creating and sharing knowledge (Hoffman *et al.*, 2005). In addition, these simple interconnections, by creating structured networks, can increase the way for the exchange of ideas and the emergence of ideas, and ultimately, their transformation into knowledge in parallel with the cognitive and social dimensions of SC (Horvat *et al.*, 2003).

Weber and Weber (2007), in their research, indicated that networks and employee interactions in the organization provide opportunities for creating and sharing knowledge. In this regard, Merlo *et al.* (2006) also point out that the flow of information in the organization stems from the network of relationships between individuals. Karkoulian *et al.* (2010), while pointing out the effect of relationships between individuals, refers to the transfer of knowledge from person to person among employees of an organization, the most effective way for transmitting and disseminating information and knowledge. On the other hand, the quality and quantity of relationships among individuals in the organization are also important aspects of SC that affect the sharing of knowledge Omar Sharifuddin Syed-Ikhsan and Rowland (2004). It is clear that a proper network of communications and effective cooperation will increase the exchange of knowledge (Nguyen *et al.*, 2016). Mu *et al.* (2008) found that expanding internal and external relationships and creating a proper condition for communication between individuals would strengthen the capacity of knowledge-creating in the organization and smooth the company path to success.

The relationships between people in a community are significantly related to the cultural characteristics of the community (Hejase *et al.*, 2013). The simple consequence of the diminution of differences in society is the closer relationships of members and the strength of social links. In this regard, the study of the context and the impact of the characteristics of a cross-cultural environment on the impact of network ties on KM is very important (Hejase *et al.*, 2013). Consequently, it seems the role of network ties as a capital social dimension in creating and sharing knowledge is a cross-cultural environment is significant. Therefore, the third hypothesis would be:

H3. The network ties have a positive influence on knowledge management practices in a cross-cultural setting.

Identity

Identity is the process in which an individual feels; he/she belongs to a group with a person or a group of people (Hopkins, 2011). Identity changes one's concerns from "personal concerns to group concerns" (Boutilier, 2017). In other words, a person in a "group identity" assigns himself/herself responsible for the results and function of his group, and as a result, will share information and knowledge to facilitate group success. Hoffman *et al.* (2005) illustrated that increasing the identity in the group; increases the opportunity for information exchanging and teamwork, in contrast, where there is no such common feeling in the organization, there are major barriers to the creating and sharing of information and knowledge. According to Mu *et al.* (2008), identity in the organization makes individuals aware of themselves as one group and works more for organizational gain. As a result, relationships among members become stronger, and because of these connections, knowledge creation and sharing will increase. Therefore, identity as "collectivism" creates the insight that organizational success is one's own success, and gives incentive for more collaboration to get the best results for an organization increases (Triandis, 2018).

On the other hand, identity is one of the main concepts in culture and is the most important distinguishing features between cultures (Schutte and Barkhuizen, 2015). The specific identity of a group or community means that they have a degree of dependence and convergence on a particular culture, which does not for another culture (Dittmer and Bos, 2019). In a cross-cultural environment, the concept of identity plays a vital role (Rutherford, 1990; Dittmer and Bos, 2019). It can be argued that different identities in the simplest sense mean that there are different ideas and if appropriate convergence is created between different identities, these diverse ideas will create the future knowledge required by the organization, and this knowledge will be shared among the members. Therefore, in the fourth hypothesis, we propose:

H4. The identity has a positive effect on knowledge management practices in a cross-cultural setting.

Obligations and expectations

According to Coleman (1988), the most important feature of SC is the system of obligations and expectations. The simplest example for defining obligations and expectations is that if person A does something for B, then taking into account the confidence to be compensated by B in the future, the expectation for A and an obligation for B are created. This commitment creates a capital called reputation for A and, as long as A has more credibility; it has an assured capital that it can use if necessary. Therefore, the obligations and expectations represent a commitment or duty of a person or a group to carry on an activity in the future (Coleman, 1988; Nahapiet and Ghoshal, 1998b).

In a community where expectations and obligations are deep-rooted and members obligate strongly to each other's expectations, the trust will increase (Hoffman *et al.*, 2005). As a result, in a potent form, a network of collective trust is created, reliability increases and collaboration will be enhanced to solve problems and achieve goals. Of course, the relationship between collective trust and exceptions and obligations is reciprocal. With increasing collective trust, collaborations among members become closer and expectations and commitments increase (Hoffman *et al.*, 2005). Coleman (1988) distinguishes the obligations from the social norms and consider them as expectations formed within particular personal relationships. Nahapiet and Ghoshal (1998b) considered the effects of expectations and obligations on the perseverance and motivation of individuals and groups to exchange and create knowledge. "A bunch of positive interactions" is Lesser (2000)

definition for this dimension of SC. Weick and Putnam (2006) viewed these interactions as positive factors because they create trust in social groups.

As it was discussed before, the close relationship between employees and the trust will facilitate the activities of KM in the organization. Consequently, in the field of KM, the importance of this dimension of SC is evident in the creation of a collective trust network (Costa *et al.*, 2018). In an organization, which the expectations and obligations are strong, by increasing collective trust, individuals will discover their potential ideas more easily, and they will share knowledge through close cooperation (Forsyth *et al.*, 2011; Hernaus and Mikulić, 2014). On the other hand, the features of a cross-cultural environment affect the level of expectations and commitment in individuals (idem), increasing cultural differences among people leads to lower collective trust, lower level of expectations, and finally lower level of commitment of individuals. Therefore, examining the effects of the cross-cultural environment is essential in this research. Consequently, in the fifth hypothesis, we propose:

H5. The obligations and exceptions positively impact on knowledge management practices in a cross-cultural setting.

Methodology

The primary research methods for this study is literature and conceptual modelling. All necessary information is extracted from books, scientific journals, and previous research about SC, KM and culture. The data required for the main and sub-hypotheses are obtained using a questionnaire. In this study, we examine the role of cultural differences in a cross-cultural environment on the effects of SC on KM. According to Hofstede's definition of culture, which recognizes it as an inherited bunch of values, beliefs and assumptions, we identify cultural differences. Our distinguishing criteria were divided into three categories of race and ethnicity, religious beliefs, and mother tongue-based on the values, beliefs and assumptions in Iran. In each of these groups, according to the criterion of differentiation, suitable subgroups were formed due to the cultural differences existing in Iran. Therefore, in these three main branches, 17 criteria for cultural differentiation were identified. For the final sample, a set of information that has two distinct styles, at least, than others in their community has been selected as a cross-cultural setting. Therefore, in the first step of sample selection, among 53 branch offices of SGs Company, an IT-related company, with more than 1300 employees, 37 branches (consist of 911 employees) were selected that had the minimum specified feature in terms of cross-cultural criteria. In the second step, the degree of development of the organization has been considered for the use of KM infrastructures and 27 branches with 698 people were eligible. The appropriate sample for research was calculated based on the sampling formula of the finite population at the error level of 0.05. As a result, a sample of 232 people was determined. The anonymous 385 questionnaires were administered and distributed, and more than 60 per cent of them were accumulated. The questionnaire consists of two separate sections and its most items are set up in accordance with Likert Scales (Harpe, 2015). In the first part, by 20 items, SC is measured. In the evaluation of KM, 10 items have been designed. The most significant issue for hypotheses measures the reliability of the questionnaire and the Cronbach's alpha coefficient can perform it. Therefore, a preliminary sample of 55 questionnaires was pre-tested. The Cronbach's alpha for SC and KM issues was 81 and 95 per cent, respectively. These findings indicate that the method employed has an acceptable level of confidence. In the final analysis, we have used SPSS and LISREL software (Molenaar, 2019).

To examine the obtained data, exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) was used to identify the latent and observable variables, finally, structural

equation model (SEM) for testing the research hypotheses. SEM examines the degree of adaptation of the research data and the conceptual model of the research, whether it is a goodness of fit (Jafari Sadeghi *et al.*, 2019). Some of the goodness of fit indexes are the Chi-square test (χ^2/df), goodness of fit index (GFI), adjusted goodness of fit index (AGFI) and root mean square error of approximation (RMSEA).

Factor analysis

Factor analysis is one of the advanced statistical methods. In this method, variables are categorized into two or more factors. Therefore, each factor can be considered as a hypothetical variable, which is made up of a combination of several variables that are similar in appearance to each other. The initial data for factor analysis is the correlation matrix between variables and does not have predetermined dependent variables (Bandalos and Finney, 2018). The factor analysis method is used for the following three purposes: first, data reduction – it helps researchers to reduce the large volume of variables to a limited number of factors. The second is the Structure Detection. The structure of a set of variables is identified in a specific conceptual domain. In other words, the research variables are restricted by two or more categories based on their common characteristics, and these categories are called factors. After that the relationships between the factors are obtained, in each factor, the relations between its variables are calculated, and ultimately the main objective of the research, which is the relationship between the variables of the research, is calculated. The third is to measure the validity and reliability of the questionnaire. It means whether the items are placed inside the factors (Bandalos and Finney, 2018). Therefore, the primary collected responded data should be analysed to verify the dimensions of SC and KM to identify more reliable and manageable items.

Factor analysis of social capital items

To verify the number of different observable variables in the SC questionnaire, EFA was performed. Seven factors in the first-order factor analysis of SC issues have been identified. Then, five items and two factors were omitted from the analysis because of inadequate structure and community. Other items regarding the factor loading and according to the logic of preparing and setting the questionnaire and previous theoretical concepts, were categorized into five groups as factors; trust, shared languages and codes, network ties, identity and obligations and expectations (Appendix 1). In addition, to confirm the significance of these relationships and the independent variable measurement model, CFA was executed (Figure 1).

Table I shows the goodness of fit model for the first stage.

After the first-order factor analysis, the identified factors, in the second-order analysis. This second-order analysis was conducted to differentiate and characterize the dimensions of SC. Figure 2 shows the results of this analysis. As can be seen, all recognized factors in the first analysis are suitable for only one factor. It is reasonable to call this factor "SC".

In the following, CFA was performed to confirm the significance of these relationships and the independent variable measurement model. Regarding the output of the LISREL, the value of χ^2 is 5.68, which is appropriate and illustrates that there is not a major difference between the conceptual model of the research and the observed data. In addition, the output shows the appropriate RMSEA = 0.026 for the model, which proves the goodness of fit for this model (Table II).

The significance of the obtained coefficients of the SC measurement model illustrates that all the coefficients are significant. In other words, it shows that each of the items in the five factors, extracted in the EFA, is meaningful; therefore, the model is confirmed.

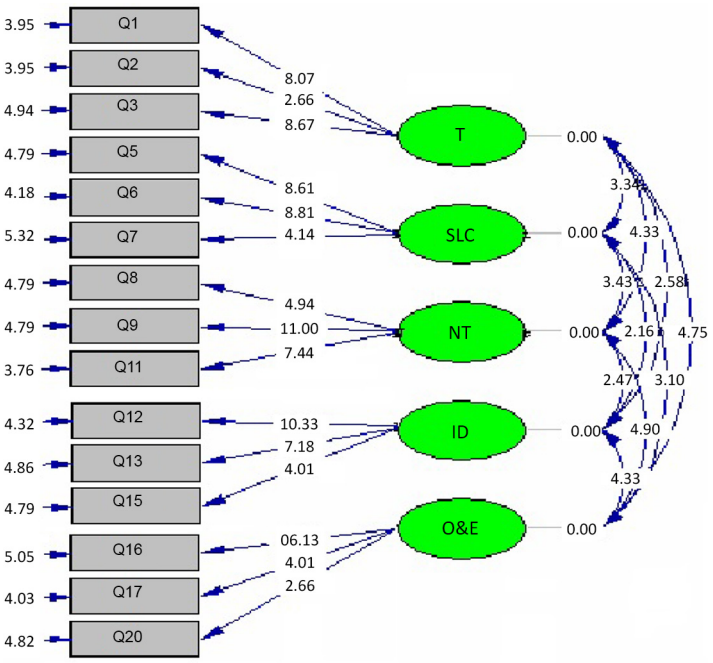

Figure 1.
First-order factor analysis – SC

Fit indices	Reference value	Model value
χ^2/df	χ^2/df < 3	1.154
p-value	*p*-value < 0.05	0.04725
RMSEA	RMSEA < 0.05	0.028
GFI	More than 0.9	0.92
AGFI	More than 0.9	0.91

Table I.
Fitness indices – first-order factor analysis – SC

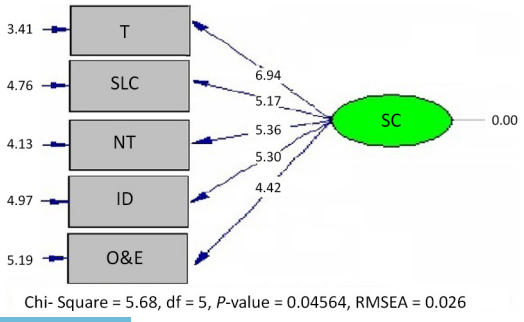

Figure 2.
Second-order factor analysis – SC

Factor analysis of knowledge management items

We screened 10 KM items for the suitability of the structure. As a result, in the factor analysis; two items were deleted from the analysis. Subsequently, an agent was identified and, as can be seen, all recognized factors in the first analysis are suitable for only one factor, which we identified as "knowledge management" (Appendix 2). Then, using SEM, CFA was performed to determine the significance of these relationships and the independent variable measurement model. The output of the LISREL illustrates that there is a slight difference between the conceptual model of the research and data; therefore, it indicates the goodness of fit for this model (Table III).

All coefficients of the KM model are significant, and this matter illustrates their importance and confirms EFA. In other words, it shows that each of the items, extracted in the EFA, is meaningful; therefore, the model is confirmed (Figure 3).

Analysing the main hypothesis by the structural equation model

Figure 4 shows the path diagram of our model. We examined the main hypothesis of the research by applying the SEM to verify the existence of a causal relationship among the research variables, also for analysing the appropriateness of observed data with the conceptual models. In executing SEM to test the main hypothesis, the output indicates that the structural model is appropriate. In other words, the observational data are largely consistent with the conceptual model of research (Table IV).

According to the path diagram (Figure 4), for the main hypothesis, the standard coefficient is 0.69, that can be interpreted as up to 0.69 of variation of KM is explained by SC in a cross-cultural setting and rest coefficients are involved by 0.31, which are not studied in our research.

Based on *t*-value model (Appendix 3), which determines whether the coefficient of the hypothesis is significant, for the main hypothesis is proved that the effect of SC on KM in a cross-cultural environment is significant and direct and the main hypothesis was confirmed. (*T*-value of this model is more than ± 1.96).

Fit indices	Reference value	Model value
χ^2/df	χ^2/df < 3	1.136
p-value	*p*-value < 0.05	0.04562
RMSEA	RMSEA < 0.05	0.026
GFI	More than 0.9	0.92
AGFI	More than 0.9	0.91

Table II. Fitness indices – second-order factor analysis – SC

Fit indices	Reference value	Model value
χ^2 /df	χ^2/df < 3	1.246
P-value	*P*-value <0.05	0.03478
RMSEA	RMSEA < 0.05	0.036
GFI	More than 0.9	0.94
AGFI	More than 0.9	0.92

Table III. Fitness indices – KM

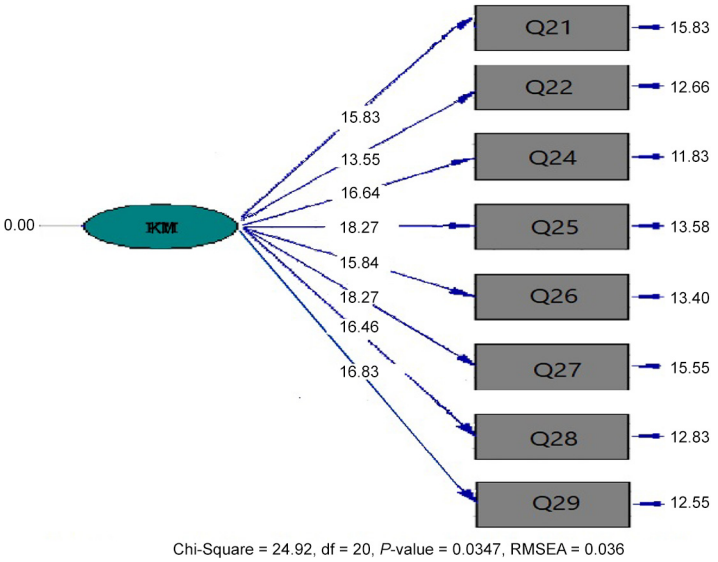

Figure 3.
First-order factor analysis – KM

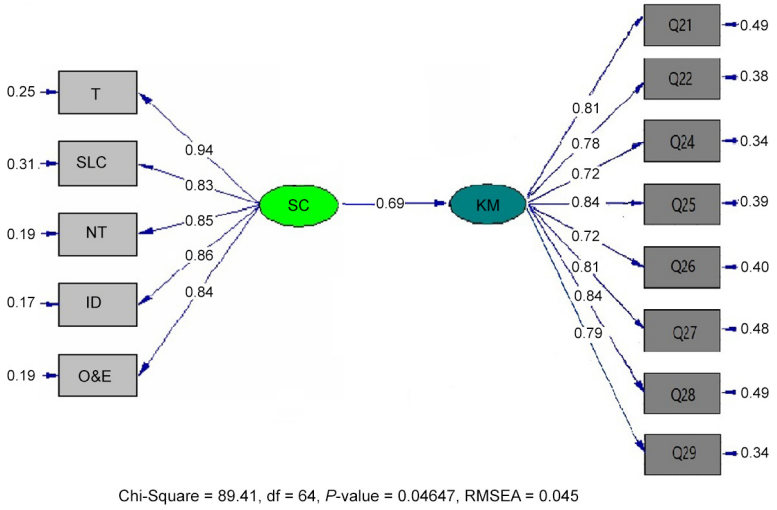

Figure 4.
Path diagram main hypothesis

Table IV.
Fitness indices – main hypothesis

Fit indices	Reference value	Model value	Does global model fit?
χ^2/df	χ^2/df < 3	1.397	Yes (Acceptable)
p-value	p-value < 0.05	0.04647	Yes
RMSEA	RMSEA < 0.05	0.045	Yes
GFI	More than 0.9	0.93	Yes
AGFI	More than 0.9	0.91	Yes

Analysing sub-hypothesis by the structural equation model

SEM is also applying to find out the relationship between dimensions of SC and KM activities in a cross-cultural setting and testing the sub-hypotheses. According to the path diagram, six latent variables are recognized. The standard model illustrates the appropriateness of observed data with the conceptual models (Table V).

The model shows the impact of exogenous latent factors, which are dimensions of SC on KM practices. Based on the path diagram, these five dimensions, namely, trust, shared languages and codes, networks ties, identity and obligations and expectations explain 0.39, 0.34, 0.28, 0.17 and 0.23 of KM, respectively (Figure 5). In other words, the results confirm all the sub-hypotheses of this research.

Regarding the T-value model for the sub-hypotheses (Appendix 4), which its results are shown in Table VI, it can be said the effects of SC dimensions on KM practices are significant.

Fit indices	Reference value	Model value	Does global model fit?
χ^2/df	χ^2/df < 3	1.298	Yes (Acceptable)
p-value	*p*-value < 0.05	0.03941	Yes
RMSEA	RMSEA < 0.05	0.039	Yes
GFI	More than 0.9	0.92	Yes
AGFI	More than 0.9	0.91	Yes

Table V.
Fitness indices – sub-hypotheses

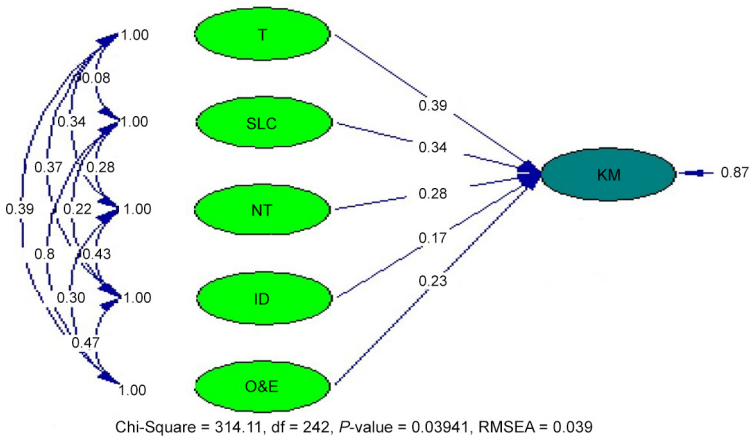

Figure 5.
Path diagram sub-hypotheses

hypothesis	Social dimension	T-value	Reference value	result
H1	Trust	3.82	±1.96	accepted
H2	Shared languages and codes	3.47	±1.96	accepted
H3	Networks ties	2.38	±1.96	accepted
H4	Identity	3.39	±1.96	accepted
H5	Obligations and expectations	5.33	±1.96	accepted

Table VI.
T-value results – sub-hypotheses

Discussion

Our findings prove this noticeable notion that there is a noteworthy association between SC and KM in a cross-cultural environment, both from a theoretical and an empirical point of view. There is a bunch of research, which examines the relationship between KM and SC theoretically, but it can be said that less investigation has been carried out empirically. Moreover, in this few empirical kinds of research, the effects of the cross-cultural environment are considered. For instance, in the theoretical outcomes of Manning's research (2010), Baron and Markman (2003) and Lazarova and Taylor (2009), the relationship between SC and KM is assumed, but no empirical evidence has been provided.

Regardless of the research environment and its effects, there is a similarity in our results with findings of Ostrom (2009) and Rumizen (2001), which confirmed the existence of a strong relationship between SC and KM, although as it is already mentioned, these studies have not been conducted in a cross-cultural environment. Additionally, we investigated the impact of SC in different dimensions on KM in a cross-cultural environment. Based on the results, trust has the highest correlation with knowledge-creating and sharing (hypothesis *H1*). In environments where there is a high level of trust, individuals tend to have a greater social exchange, greater communication and cooperative interaction, which, in turn, facilitates the flow of information in the organization and the sharing and creating of knowledge. It seems that in the cross-cultural environment examined in this research and among the five SC indicators, trust is at a more acceptable level, so that, this level has increased the relationship between SC and KM. This finding is definitely parallel with prior outcomes and illustrates that the role of trust in social relationships is fundamental (Politis, 2003; Mooradian *et al.*, 2006; Renzl, 2008; Blaas-Franken *et al.*, 2016).

Identity is a process in which people consider themselves as a member of an integrated group with a person or a group (Serenko, 2013). This feeling, by creating a sense of responsibility for collective results and team performance, makes collaboration, the exchange of knowledge and information and collaboration will increase (Maier and Hadrich, 2011). In this research, the result of the fourth hypothesis is the relationship between identity and KM. Based on the findings, and among these five dimensions of SC, identity has the least correlation. The interpretation may be that in a cross-cultural environment, individuals, while having a proper level of collective trust, do not feel themselves as belonging to a particular group, and regard their religious, ethnic and linguistic distinctions as priorities. However, according to the fifth hypothesis, the relationship between shared language and codes as an SC factor with KM is ranked second in the correlation results, which indicates that the common codes are expanded to the appropriate extent in the research sample and environment. This specifies that there are common codes among people in this cross-cultural environment, which are separate from the three main distinguishing factors (ethnicity and race, language and religion). As Hatch and Schultz (2004), identity is something that employees accept about the company, receive, feel and think and are accepted as a common understanding of the firm's values and attributes. Therefore, these codes can be formed as a result of management and organizational systems and are shared as a social factor among members.

In the analysis of the results, perhaps the most important reason for the correlation between SC and KM stands in the human-social essence of knowledge processes, so that, the nature, type and degree of communication between individuals have a great effect on their ability and tendency for creating and sharing of knowledge (Hsu and Chen, 2018). Based on the definitions of the activities of KM, in the creation and sharing of knowledge, human factor and interaction of individuals, more than any other factor are necessary and effective. According to Ramadan *et al.* (2017), Leana and Van Buren (1999), knowledge creation is the

ability of organizations to generate new and beneficial ideas and initiatives. Robertson and O'Malley Hammersley(2000) define knowledge as a commodity that can be transmitted through the interaction of individuals and their communications. In other words, the sharing of knowledge can also be understood as a centralized directional process for the dissemination of knowledge among a specific group of employees. Also, it can be the sharing of knowledge among individuals within the working groups (Thrassou *et al.*, 2011). Researchers have emphasized some factors such as interactions, connections, motivations and subjective ideas of individuals in explaining the main elements of people's processes and knowledge sharing (Donate and Sánchez de Pablo, 2015; Jafari Sadeghi and Biancone, 2017a). Zhu *et al.* (2004), categorized intellectual capital in the organization into two dimensions, namely, human and structural, which, the human dimension is the implicit knowledge learned and saved in the minds of the staff. Therefore, it seems logical which the development of KM in an organization is required to improve communication and interactions among the members. In other words, strengthening the dimensions of SC in the organization will act as a motivating factor for expanding the activities of KM (Thrassou *et al.*, 2011). On the other hand, if exchanging ideas and interactions, which are the source of knowledge creation, remain in this phase and do not share among employees due to lack of proper structure and communications, the knowledge circle would not be effective for the organization (Earl, 2001). In other words, organizations cannot meet the ultimate target of this process, which is the applying of novel knowledge for the development and improvement of processes and products. Improving social indicators in a cross-cultural environment requires a sense of shared purpose among individuals (Santoro *et al.*, 2018). However, it should also be noted that different cultural groups have different views on some organization issues such as how to choose leaders, and how to manage conflicts and differences, how to carry out a structured program, for instance, KM, etc. In others to achieve this purpose, the organization requires a rigorous plan, patience and a strong will to establish cooperation among people who are not usually together. The effectiveness of collaboration in the cross-cultural environment requires individuals to overcome conflicts and increase solidarity(Shams, 2012; Belyaeva *et al.*, 2019). Perhaps differences in the level of skills and knowledge, the motivation of individuals and their attitudes towards different cultures may show the outcomes would be unsuccessful, at the beginning of the program. However, organizations can achieve such cooperation by relying on common goals, coordinated decision-making, regulations and tasks and timelines (North and Kumta, 2018).

According to the results of this study, it seems that SGs Company has been able to increase social and cultural indicators such as trust, shared languages and codes, identity, common obligations and expectations, continuity by implementing a precise and accountable program, and as a result, by improving these indicators, will contribute to the greater impact of SC on KM.

Conclusions

KM is a multi-factorial process, which covers a wide range of management processes, principles and variables. In an organization, appropriate and effective implementation of KM requires a comprehensive approach that includes structural, technological and social and human-based studies factors. Scholars, in many studies, with the growing growth of technology, examined the effects of technological and structural dimensions on KM. Most of them in management science has also focused on these two hard dimensions. Consequently, the effects of some factors such as behavioural sciences and in particular SC have been less developed. On the other hand, the cultural impacts of the environment, as an inclusive element, affects all research that manages human behaviours In any research that addresses

the behaviours, interests, tendencies and reactions of humans, culture is decisive. As a result, to fill the gap in the relevant research, this study examined the relationship between KM and CS in a cross-cultural environment.

The results show that SC has a positive relationship with KM. Given that we have defined SC in five dimensions and KM in two steps, research findings show that trust has the greatest impact on KM in the cross-cultural environment. Based on the research findings, the effectiveness of human-social factors of KM and those activities, which are directly related to the nature of connection and relationship, individually or in-group form, is vital for KM activities. Therefore, the dimensions of SC can be recognized as an important and effective means that continuously and increasingly improves the KM activities in an organization.

In today's business scene, international enterprises are the main cast that has crossed the boundaries and become "global". On the other hand, the quicker and more interconnected communication has changed the range of labour force usage, from just indigenous labour to international labour. Therefore, by the growth of the internationalization of business increasingly, managers are faced with a challenge that did not fall on their predecessors: how to communicate effectively across cultures. The best way to manage this challenge is to analyze the results and effects on the performance of organizations. In this research, using scientific and practical methods, the impacts have been examined carefully and deliberately to assist the managers of organizations in theoretically and managerially as these outcomes contribute to the development of a new concept called cross-cultural in knowledge management and social capital, and support organizations to cope with the implications of this concept.

This study has several limitations. First, as the data derived from different branches of a big company in Iran, its results cannot be easily extended to other contexts. Therefore, Future streams of research can expand the scope of this paper into other contexts with different characteristics. Moreover, the sample of this paper is taken from different communities (branches), which increase the variety of personality features in distinct cultures. Thus, further research can stress a particular organization/branch to avoid the problem of cultural variation and focus on a more homogenous sample. Finally, this study targeted a big organization in the IT sector. However, future studies can investigate another type of firm (e.g. small and medium firms) in different sectors (e.g. manufacturing, food sector, etc.).

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Appendix 1

Table AI. First-order factor analysis – SC

Items	Components						
	T	SLC	NT	IE	O&E	6	7
Q1	**0.813**	0.062	−0.321	−0.121	0.078	*0.042*	*0.055*
Q2	**0.863**	0.076	0.124	−0.078	0.402	*0.031*	*0.074*
Q3	**0.720**	0.014	0.094	−0.261	0.052	*0.012*	*−0.024*
Q4	*0.323*	*0.076*	*0.061*	*0.050*	*0.038*	*0.217*	*−0.041*
Q5	0.358	**0.888**	−0.002	0.220	0.040	*0.299*	*0.094*
Q6	−0.003	**0.838**	0.154	−0.041	0.057	*0.019*	*0.087*
Q7	0.079	**0.762**	0.047	−0.041	−0.139	*−0.084*	*0.047*
Q8	0.087	0.054	−0.475	**0.783**	0.029	*−0.094*	*0.15*
Q9	0.014	−0.124	−0.328	**0.749**	0.412	*0.095*	*0.19*
Q10	*−0.173*	*−0.109*	0.031	*−0.326*	*0.133*	*0.071*	*−0.087*
Q11	−0.025	−0.247	−0.087	**0.790**	0.070	*−0.054*	*−0.87*
Q12	−0.092	0.220	**0.655**	0.031	−0.023	*−0.54*	*−0.021*
Q13	0.254	0.077	**0.822**	−0.034	0.163	*0.065*	*0.045*
Q14	*0.395*	*0.165*	*−0.034*	*0.260*	*0.104*	*0.25*	*0.032*
Q15	−0.327	0.200	**0.904**	0.502	−0.002	*0.24*	*0.051*
Q16	−0.010	−0.173	−0.031	−0.286	**0.838**	*−0.71*	*0.041*
Q17	0.087	0.152	0.038	0.294	**0.833**	*0.089*	*−0.078*
Q18	*−0.066*	*−0.232*	*0.192*	*−0.414*	*−0.200*	*0.01*	*0.049*
Q19	*0.158*	*0.184*	*0.302*	*−0.032*	*−0.180*	*0.32*	*−0.92*
Q20	0.163	0.395	0.163	0.034	**0.917**	*0.25*	*−0.39*

Appendix 2

Table AII. First-order factor analysis – SC

Items	KM
Q21	**0.814**
Q22	**0.715**
Q23	*0.090*
Q24	**0.752**
Q25	**0.781**
Q26	**0.795**
Q27	**0.740**
Q28	**0.822**
Q29	**0.788**
Q30	*0.028*

Appendix 3

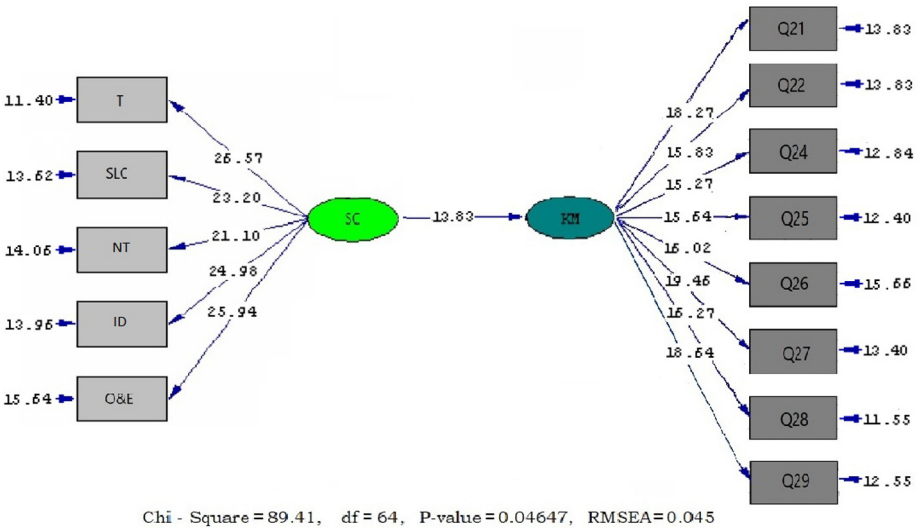

Figure A1.
T-value model – main hypothesis

Appendix 4

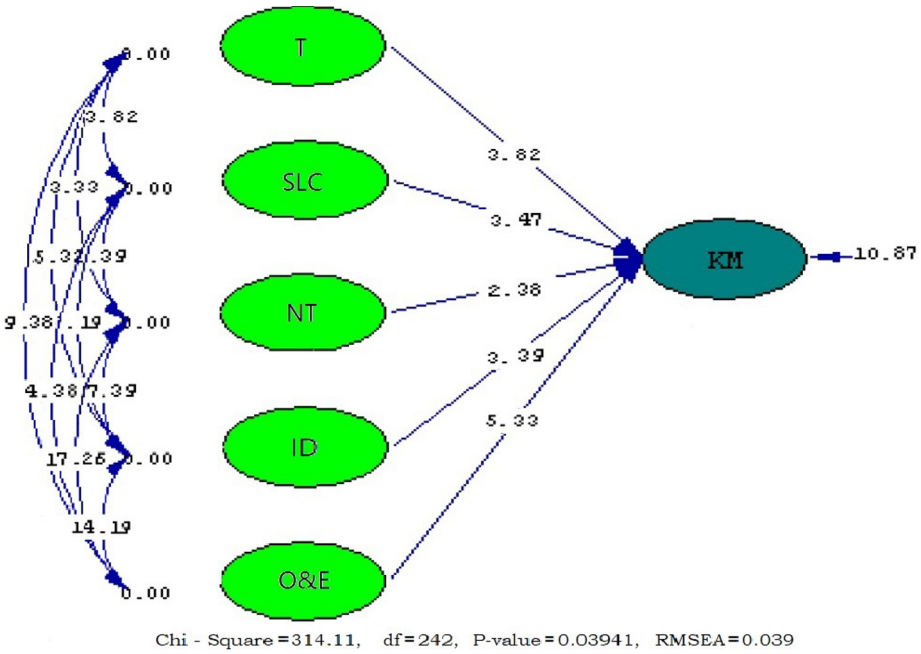

Figure A2.
T-value model – sub-hypotheses