RELATIONSHIP BETWEEN MANAGERS’ ENTREPRENEURIAL ORIENTATIONS AND KNOWLEDGE MANAGEMENT IN SMES (CASE STUDY: TOOS INDUSTRIAL TOWN COMPANIES)

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ABSTRACT

Nowadays, knowledge is regarded as an essential, inimitable and unique source, and has a significant role in creating competitive advantages in the organizations; therefore, knowledge management is of considerable importance in various enterprises. Regarding the rich and comprehensive literature reviews in the field of the entrepreneurial inclinations and knowledge management, a scientific gap can be felt inside the country about the researches which should be accomplished to examine the possible relationship which exists between the entrepreneurial orientations and knowledge management. So, the present study intended to fill the gap and investigate the effects of the managers’ entrepreneurial inclinations (i.e. innovativeness, risk-taking and proactiveness) on knowledge management (i.e. to Knowledge acquisition, Knowledge creation, Knowledge storage and Knowledge application) in small and medium enterprises (SMEs). Structural equation and correlation (regression) methods were applied in the study. Target population of the research were consisting of all managers in industrial production units of Toos Industrial Town which were active in the fields of producing food, textile, chemic, cellulose, metallic and non-metallic mineral, electricity and electronics. 291 people of target population were considered as the statistical sample on the basis of Determining Sample Morgan Table. The instrument of collecting data was a standard questionnaire. AMOS and SPSS software were applied to assess the research hypotheses. The findings of Path Analysis indicate a Goodness-of-Fit Test in both AMOS and SPSS software. The achieved results also show that there is a significant relationship between the entrepreneurial orientations and knowledge management; the factors of innovation and acquainting, creating and applying knowledge; risk-taking and acquainting and creating knowledge;

KEYWORDS: Entrepreneurial orientations, knowledge management, knowledge management process, small and medium enterprises (SMEs), structural equation

INTRODUCTION

Knowledge is considered as the most principal and invaluable asset in new ultracompetitive environments in developed countries, since knowledge is the only factor which can evoke change and innovation in organizations. Today, applying knowledge is one of the fundamental challenges of developing countries.

A knowledge-oriented business, which is one of the essential goals of the fourth development plan of Iran, cannot be achieved without considering knowledge application in enhancing the capacity of different industries’ production. The most important proceeding in the fourth development plan is undeniably knowledge management. Achieving three criteria of
International Bank of Reconstruction and Development (IBRD), which are economic liberalization, government modernization and knowledge-oriented economics, is not possible without conducting lots of researches and projects. To obtain this goal, management researchers attempt to present applicable and efficacious resolutions to make the organizations capable of applying knowledge management.

Therefore, looking for an appropriate framework to develop knowledge management on the basis of theoretical literature can be considerably advantageous, since it can both shed light on the application of knowledge management and propose some principles to structuralize an effective system.

Different studies indicate that applying knowledge management can bring about some innovations in processes, activities, products and services. Entrepreneurial orientations act as a catalyst in making creativity and innovation in organizations (Gupta & Moesel, 2007). In other words, organizations require people with the ability of risk taking and creative thinking to make effectual knowledge management.

The present knowledge-oriented study has assessed people’s entrepreneurial orientations which improve knowledge management processes and competitive advantages such as capturing and creating knowledge; therefore, this study has investigated the existing relationship between people’s entrepreneurial orientations and knowledge management processes in small and medium enterprises.

Theoretical principles of the research, review of literature and research conceptual framework have been respectively discussed in the second, third and fourth part of the article. Then, in the fifth, sixth and seventh parts, research methodology, analysis, conclusion and suggestions have been brought up. Finally, research limitations and suggestions for future studies have been mentioned in the eighth and ninth sections.

LITERATURE REVIEW

1. Knowledge Management

Understanding the task of knowledge management is dependent upon defining it and its inseparable components.

Stonier states that data is a series of disconnected facts and observations. These facts may be converted to information by analyzing, cross-referring, selecting, sorting, summarizing or in some way organizing the data. Patterns of information, in turn, can be worked up into a coherent body of knowledge. Knowledge consists of an organized body of information, such information patterns forming the basis of the kinds of insights and judgments which we call wisdom (Zins, 2007).

Tian & et al. (2009, cited in Tuomi, 1999) believe that data are raw facts, information is data endowed with relevance and purpose, and knowledge is valuable information. In other words, information is meaningless, but it becomes meaningful knowledge when it is interpreted and judged; therefore, it is assumed that we first need to have data before information is created, and only when we have information, knowledge can emerge.

Knowledge can be classified into two types of tacit and explicit knowledge. According to Nonaka and Konno, tacit knowledge is personal and in individual’s mind, so it is hard to
formalize and the result of this knowledge can appear in each person’s habits, views and actions. They believe that tacit knowledge can be converted to explicit knowledge and it is presented variously as two types of knowledge which one form the cognitive knowledge, views and mental models, and the other composes the skills and technical knowledge (Nonaka & Konno, 1998). But explicit knowledge can be easily transferred, processed and stored in databases and computers. Explicit knowledge can be demonstrated through vocabularies, numbers, data, formulas, specifications, instructions and so on. This kind of knowledge can be simply encoded and transferred systematically and formally between the individuals (Khodai Matin & Hasan Nezhard Kashani, 2012).

An important and difficult stage in the process of organizational knowledge is conversion of the explicit knowledge to the tacit one (Lindner and Wald, 2010). The knowledge management will be implemented in an organization providing that these two types of knowledge are capable of being transformed into each other and create competitive advantage for the organizations. This is the tacit knowledge which is the biggest challenge for knowledge management and its management can level the ground for individual and group learning, innovations and achievement to the competitive advantage in the organizations (Metaxiotis & et al., 2005). Alavi and leidner (2001) stated that different approaches toward knowledge lead to several inferences. If we consider knowledge as a goal, knowledge management will have to concentrate on knowledge framework and its storage and if we regard it as a process, it will have to emphasize on the knowledge trend and processes of creating, sharing and transferring knowledge. Also, if we consider knowledge as the superiority, knowledge management will focus on developing capabilities, understanding strategic advantages, and creating intellectual capital.

Knowledge management framework consists of activities such as recognizing, gaining, creating, storing, sharing, and applying knowledge by people and groups in an organization (Sun, 2010). In this respect, Wen (2009) defines knowledge management as sets of procedures for creating, gaining, sharing and applying knowledge to improve organizational performance.

It seems that all the researchers are agreed on the definition stated by Davenport and Prusak (2000): knowledge management means utilization and development of knowledge assets of an organization to achieve its goals. A managed knowledge involves two types of the objective, explicit, and the subjective, implicit knowledge (Theriou&Chatzoglou, 2007). The management of this knowledge consists of all processes related to identifying, sharing and producing the knowledge. This requires a system for production and maintenance of knowledge repositories and promotion and facilitation of knowledge sharing and organizational learning. Organizations which are successful in knowledge management consider knowledge as an organizational capital and develop the organizational values and rules to support knowledge production and sharing (Metaxiotiset al, 2005).

2. Knowledge Management Process

Knowledge management process is consisting of capturing, creating, transferring, storing and applying knowledge. These are the essential elements of knowledge management.

Gandhi (2004) states that knowledge management is not a linear and static process, but it is a dynamic, cyclical process which requires employees to continuously engage with information, acquire new knowledge, apply it to improve decisions, create new information and knowledge in the process and apply that new knowledge to new situations.
Actually there is no agreement on the definition of knowledge management. There are lots of researchers who have proposed different kinds of knowledge management processes which have many aspects in common such as Probst and et al. (2000), Heisig (2001), Gold and et al. (2001), Bhatt (2001), Alavi and Lindner (2001), Lee and Choi (2003), Lawson (2003) and Nielsen (2006. Considering different researches apropos of knowledge management and review of literature, four stages have been applied in this research which are as follows (Aujirapongpan et al, 2010):

1. Knowledge Acquisition

Knowledge acquisition refers to an organization’s capability to recognize, capture and collect internal and external knowledge to apply it in necessary actions (Gold et al., 2001; Zahra & George, 2002). Knowledge acquisition can include different aspects of knowledge creation, share and distribution. It can reflect one of the most interesting potentialities of a business firm which indicates the firm’s ability to take advantage of potential achieved knowledge, but it does not guarantee its application in the organization (Mills & Smith, 2010).

2. Knowledge Creation

Knowledge creation is one of the significant issues of knowledge management. It is the main key to innovation in any organizations. According to Sandhawalia and Dalcher (2011), “knowledge creation is enabled by the processes and activities of interaction, feedback, innovation, brainstorming, and benchmarking.” King and et al. (2008) argues that “knowledge creation involves developing new knowledge or replacing existing knowledge with new content.”

3. Knowledge Storage

We have to store the acquired knowledge as a capital for the organization; therefore, making an active organizational memory is needed to transfer required information to the receiver at appropriate time. Organizational memory includes knowledge stored in the minds of organizational participants, that held in electronic repositories, which has been acquired and retained by groups or teams and is embedded in the business’s processes, products or services and its relationships with customers, partners and suppliers(Cross and Baird, 2000, cited in King, 2009)

4. Knowledge Application

Knowledge application is consisting of all activities which indicate that the organization is applying its knowledge (Bhatt, 2001). Mills and Smith (2011) believe that knowledge application means making knowledge more active and relevant for the firm in creating values. This applied knowledge can emerge as innovations, inventions and products of the organization.

3. Entrepreneurship and Entrepreneurial Orientations

From the beginning of 80’s decade, entrepreneurship in small and medium enterprises has been of great interest all over the world (Klofsten, 2000). So, today everybody is aware of its importance in the economic development of the society (Anderson, 2011). Entrepreneurs have always had a significant role in society’s improvement. They are at the top of different businesses and seek to find new opportunities. The most important tool which leads them to success is creativity. They show feedback to change and facing change is something natural for them. They seek and welcome change (Khodai Matin & et al., 2013). Entrepreneurship is related
to novel ideas of trading which can cause some changes in the market. It is the process of discovering, evaluating and exploiting of opportunities in the market. In entrepreneurial marketing, Miller (1983) suggested that taking risky ventures into account and being pioneering in discovering proactive innovations are important qualities.

Many studies have been conducted apropos of entrepreneurial orientations (Hitt & et al., 2001; Lumpkin & Dess, 1996; Barringer & Bluedorn, 1999; Miller, 1983; Covin & Slevin, 1991). Entrepreneurial orientations are of great importance in modern organizations and societies. As a matter of fact, through developing entrepreneurial orientations people can engage knowledge-based activities more than before (Hunt & Arnett, 2006). Gupta and Moesel (2007) defined entrepreneurial orientations as tendencies and behaviours which help organizations to distinguish new changes in their application of fresh resources and opportunities. Ying Li (2012, p. 372) states that entrepreneurial orientations are an indicative of a series of processes, approaches, styles, methods and decision makings which support entrepreneurial opportunities. Regarding the researches which have been done in relation to entrepreneurship and entrepreneurial orientations, the most essential variables which exist in making entrepreneurship are as follows: innovativeness, risk-taking and proactiveness (Barringer & Bluedorn, 1999; Gupta & Moesel, 2007; Li, 2012). Entrepreneurial orientations have the capability of being innovative, risk-taking, self-controlled in proportion to the actions and proactive in proportion to competitors to capture new opportunities of market (Hui Li & et al., 2008). Based on literature review of the research, three orientations of innovativeness, risk-taking and proactiveness have been noted in this article.

Innovativeness as one of the entrepreneurial orientations can demonstrate the organizations’ tendencies to support fresh ideas and encourage creative processes in the direction of products development and new services (Gupta & Moesel, 2007). The first people who paid much attention to the concept of innovation were Schumpeter (194) and Lumpkin and Dess (1996). According to Covin and Miles (1999), innovation is the only dimension which is used and should be noted in all organizations. Even if there is no other orientation in an entrepreneurial organization, the existence of innovation is undeniably necessary to prove it as an entrepreneurial organization (Gurbuz & Aykol, 2009).

Risk-taking is also one of the worthy factors of entrepreneurial orientations. Various studies indicate that entrepreneurs have more risk-taking in proportion to other people in the society. In fact, risk means the probability of happening something at a definite time (lumpkin & Erdogan, 1999). Kropp and et al. have defined risk-taking as being intended to do ambiguous activities such as investing in unknown and new markets, the conflict between transactions and their uncertain results, and getting heavy loans (Kropp & et al., 2008).

Proactiveness was not noted as much as other dimensions of entrepreneurial orientations (Gurbuz & Aykol, 2009). It refers to a predictive overview which tends to take big steps on the path of exceeding other competitors and gaining new opportunities and also attending in new-emerged markets. From one perspective, proactiveness can cause and distribute new opportunities in market (such as introducing new products before other competitors in a part of the market) and from other perspective, it can execute and exploit those opportunities to enhance the level of information and meeting customers’ needs (Khodai Matin & et al., 2013).

4. Past Researches
Although there is a rich literature in the field of knowledge management, few researches have been conducted in which the relationship between entrepreneurial orientations and knowledge management has been investigated, especially inside the country. The current study has been done to remove this scientific gap by reviewing and assessing the recent studies in relation to this issue.

Gupta and Moesel have conducted a study under the title of “The impact of entrepreneurial orientation on knowledge management in strategic alliances: Evidence from high technology SMEs”. They have investigated the impact of entrepreneurial orientations on a firm’s knowledge management activities in its supply chain alliances. They have collected needed data from top executives of small- and medium- sized high technology firms based in the US. Their findings results have indicated that entrepreneurial orientations (risk-taking, innovativeness and proactiveness) are positively related to knowledge creation and acquisition in key customer alliances.

Hui Li et al. (2008) have examined the relationship among entrepreneurial orientation, knowledge creation process, and firm performance. According to their hypotheses they have concluded that 1. there is a significant relationship between entrepreneurial orientation and firm performance, 2. there is a significant relationship between entrepreneurial orientation and knowledge creation process and 3. there is a significant relationship between knowledge creation process and firm performance.

Yuan Li et al. (2009) have conducted a research under the title of “Entrepreneurial orientation and firm performance: The role of knowledge creation process” in China. They have concluded that there is significant relationship between knowledge share inside a firm and innovativeness as a result of knowledge application. Their findings have also provided support for the significant impact of knowledge share inside a firm on knowledge application. In addition, there is a significant relationship between knowledge share and entrepreneurial innovation variable.

Lee and Sukoco (2007) have done a study entitled “The effects of entrepreneurial orientation and knowledge management capability on organizational effectiveness in Taiwan: the moderating role of social capital”. They have found in their study that entrepreneurial orientation has a positive influence on the capability of organization to manage their knowledge, on new product or process innovation, on the upgrading of their competence as well as on organizational effectiveness. Furthermore, knowledge management capabilities have a significant impact on innovation and organizational effectiveness. They have concluded that social capital moderates the effect on entrepreneurial orientation and knowledge management capabilities on the dependent variables.

Pérez-Luño and et al. (2011) have analyzed two modes of innovation that differ in their scope of newness – innovation generation and adoption. They have investigated the effect of entrepreneurial orientation on innovation and adoption and found that proactivity and risk-taking influence the number of innovations generated and knowledge created.

HYPOTHESES

Each researcher needs a conceptual framework for his/her study to be able to investigate the research’s hypotheses, probable relationship between variables, and operational and conceptual definitions. In this study, the most important factors of entrepreneurial orientation
(innovativeness, risk-taking and proactiveness) and knowledge management processes (Knowledge acquisition, Knowledge creation, Knowledge storage and Knowledge Application) have been evaluated; therefore, on the basis of reviewed literature, the following hypotheses have been proposed:

The major hypothesis: there is a significant relationship between entrepreneurial orientations and knowledge management principles.

This major hypothesis is consisting of 12 minor hypotheses which are as follows:

1. There is a relationship between risk-taking and knowledge acquisition.
2. There is a relationship between risk-taking and knowledge creation.
3. There is a relationship between risk-taking and knowledge storage.
4. There is a relationship between risk-taking and knowledge application.
5. There is a relationship between innovativeness and knowledge acquisition.
6. There is a relationship between innovativeness and knowledge creation.
7. There is a relationship between innovativeness and knowledge storage.
8. There is a relationship between innovativeness and knowledge application.
9. There is a relationship between proactiveness and knowledge acquisition.
10. There is a relationship between proactiveness and knowledge creation.
11. There is a relationship between proactiveness and knowledge storage.
12. There is a relationship between proactiveness and knowledge application.

Figure 1 Research conceptual framework

RESEARCH METHODOLOGY
Owing to the fact that this research intends to assess the relationship between entrepreneurial orientations and knowledge management, it is an applied-descriptive survey which has used descriptive method, correlational and structural equations to assemble data. Correlational surveys aim to realize the complex behavioural patterns on the basis of investigating the existing correlation between these patterns and variables. Correlational surveys, based on their purposes, are divided into three groups of two-variables, regression and matrix correlation or covariance analysis. Factor analysis and structural equation are models in which covariance and matrix correlation are calculated.

Target Population, Sampling Method and Size
Regarding this fact that always managers are more aware of their organization’s condition than employees and considering all researches which have been mentioned in review of literature, target population of this research include all managers of small and medium enterprises in Toos Industrial Town Companies. It should be noted that this town is consisting of 765 industrial production units which are active in the fields of producing food, textile, chemic, cellulose, metallic and non-metallic mineral, electricity and electronics. Random stratified sampling method was applied in order to sample, and 291 samples were considered as the statistical sample on the basis of Determining Sample Morgan Table. The instrument of collecting data was a standard questionnaire which was distributed between seven fields of different activities in the town. 215 questionnaires were returned among which 206 ones were statistically investigated.

Data Collecting Methods
The research tool of assembling data has been two 5-point Likert questionnaires apropos of entrepreneurial orientations consisting of 9 questions. These questionnaires have been patterned after different questionnaires by various researchers like Ma’atoofi and Tajeddini (2010), Gurbuz and Aykol (2009), Casillas and Moreno (2010), Li and et al. (2008), Naldi and et al. (2007). Second tool of measurement was a knowledge management questionnaire consisting of 16 questions. This one was also a 5-point likert questionnaire. Its questions were based on researchers’ questionnaires such as Gold and et al. (2001), Lee and Choi (2003), and Lawson (2003).

Evaluating and exploring the questionnaire’s validity and reliability
Cronbach’s alpha coefficient has been calculated to prove the reliability of the research. This method is mostly used to evaluate internal consistency and can be useful to assess different features. To evaluate the validity and variables’ structures, some methods have been used like factor analysis, exploratory investigation, principal components analysis and varimax rotation. Factor loads which are more than 0.5 can be accepted as high factor loads (algebraic sign is not important). Table 1 shows the results of investigating validity and reliability of the questionnaire. According to the table’s data, the amount of Crobnach’s alpha of all variables are more than 0.7; therefore, the questionnaire’s reliability has been confirmed.

Appraising the knowledge management questionnaire has proved the independence of four variables for knowledge management, and assessing the entrepreneurial orientation questionnaire has shown the independence of three variables for entrepreneurial orientation. SPSS 16 has been applied for calculations. The aforementioned explanations are an indicative of the indexes’ validity and reliability.
Table 1 Summary of reliability test and exploratory factor analysis

<table>
<thead>
<tr>
<th>Statistic variable</th>
<th>( \alpha ) (cronbach’s alpha)</th>
<th>KMO(^2 )</th>
<th>Exploited factors based on principal components analysis in an exploratory factor analysis</th>
<th>Specific amount of the factor</th>
<th>The calculated variance by the factor (( R^2 % ))</th>
<th>Total number of the obtained variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge management</td>
<td>0.91</td>
<td>0.904</td>
<td>Factor 1 (knowledge acquisition)</td>
<td>9.7</td>
<td>39.13</td>
<td>0.61</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Factor 2 (knowledge creation)</td>
<td>5.4</td>
<td>9.21</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Factor 3 (knowledge application)</td>
<td>1.87</td>
<td>7.23</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Factor 4 (knowledge storage)</td>
<td>1.5</td>
<td>5.75</td>
<td></td>
</tr>
<tr>
<td>Entrepreneurial orientations</td>
<td>0.93</td>
<td>0.895</td>
<td>Factor 1 (innovativeness)</td>
<td>4.7</td>
<td>44.5</td>
<td>0.73</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Factor 2 (risk-taking)</td>
<td>1.32</td>
<td>15.58</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Factor 3 (proactiveness)</td>
<td>1.1</td>
<td>13.73</td>
<td></td>
</tr>
</tbody>
</table>

**RESEARCH FINDINGS**

1. Descriptive Statistics

Tables 2 and 3 indicate the achieved descriptive findings and correlation matrix between entrepreneurial orientations and knowledge management. They are the result of 206 questionnaires which were statistically investigated. Then, goodness of fit will be estimated by confirmatory factor analysis, and research hypotheses will be discussed.

Table 2 Separation of data in statistical sample based on demographic features

<table>
<thead>
<tr>
<th>Gender</th>
<th>92% male</th>
<th>8% female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>20-30 (18%)</td>
<td>31-40 (29%)</td>
</tr>
<tr>
<td>Academic degree</td>
<td>B.A. (76%)</td>
<td>M.A. (20%)</td>
</tr>
<tr>
<td>Work experience</td>
<td>1-5 years (29%)</td>
<td>6-10 years (34%)</td>
</tr>
</tbody>
</table>
Table 3 correlation matrix between entrepreneurial orientation and knowledge management processes

<table>
<thead>
<tr>
<th>variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Innovativeness</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Risk-taking</td>
<td>0.19**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>proactiveness</td>
<td>0.31**</td>
<td>0.25**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Knowledge</td>
<td>0.27**</td>
<td>0.19*</td>
<td>0.32**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>acquisition</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Knowledge</td>
<td>0.17**</td>
<td>0.24**</td>
<td>0.20**</td>
<td>0.37**</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>creation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Knowledge</td>
<td>0.21**</td>
<td>0.10</td>
<td>0.23**</td>
<td>0.22**</td>
<td>0.35**</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>application</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Knowledge</td>
<td>0.11</td>
<td>0.13</td>
<td>0.22**</td>
<td>0.34**</td>
<td>0.39**</td>
<td>0.41**</td>
<td>1</td>
</tr>
<tr>
<td>storage</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

2. Model Assessment

According to the application of structural equations, this study, first, assesses the existing relationship between hidden variables and gamma and beta coefficients. Through this assessment, whole multiple-regression coefficients are actually investigated. Then, the significance of beta coefficient and structural equations between variables are calculated by T-test. Before the final analysis and modeling for structural equations, goodness of fit is counted by AMOS software.

Model’s goodness of fit can be computed by the comparison of target population’s covariance matrix (based on the model) and sample’s covariance matrix (based on observed data). The most considerable indexes in goodness of fit are as follows: structural linear relations which determines variance, Goodness of Fit Index (GFI), Adjusted Goodness of Fit Index (AGFI) which is adjusted according to freedom degree, and RMSEA.
Goodness of Fit Index varies from zero to one. The more it nears one, it shows that the model’s goodness of fit is better than data’s. Less amount of RMSEA indicates better model’s goodness of fit in the way that if it is less than 0.05 (between 0.05 and 0.1), it is better.

Table 4 shows the goodness of fit result of measurement model of knowledge management and entrepreneurial orientations which have been conducted in explanatory factor analysis.

Table 4 Summary of confirmatory factor analysis and goodness of fit indexes

<table>
<thead>
<tr>
<th>Variable</th>
<th>X²</th>
<th>Freedom degree</th>
<th>X²/df</th>
<th>RMSEA</th>
<th>GFI</th>
<th>AGFI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge management</td>
<td>43.7</td>
<td>24</td>
<td>1.8</td>
<td>0.047</td>
<td>0.93</td>
<td>0.88</td>
</tr>
<tr>
<td>Entrepreneurial</td>
<td>534.18</td>
<td>278</td>
<td>1.92</td>
<td>0.043</td>
<td>0.90</td>
<td>0.83</td>
</tr>
<tr>
<td>orientations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The aforementioned results are indicative of appropriate goodness of fit for the model. Next stage, measurement model has been calculated through path analysis, structural equation analysis, gamma and beta coefficients and T-test to recognize the relationships between knowledge management and entrepreneurial orientations. Figure 1 and tables 5 and 6 demonstrate the findings of path analysis in structural model in relation to research hypotheses.

Figure 2 Findings of standard coefficients for general form of research model
Table 5 Goodness of fit indexes for general structural pattern

<table>
<thead>
<tr>
<th>$X^2$</th>
<th>Df</th>
<th>$X^2/df$</th>
<th>RMSEA</th>
<th>GFI</th>
<th>AGFI</th>
<th>NFI</th>
<th>CFI</th>
<th>NNFI</th>
</tr>
</thead>
<tbody>
<tr>
<td>88.93</td>
<td>73</td>
<td>1.21</td>
<td>0.069</td>
<td>0.91</td>
<td>0.86</td>
<td>0.83</td>
<td>0.91</td>
<td>0.92</td>
</tr>
</tbody>
</table>

According to table 5, general indexes of testing the structural equation model of the research show the appropriateness of the model’s goodness of fit. This goodness can be resulted from the fact that $X^2/df$ is less than 3, RSMEA is less than 0.1 and nearer to zero, and also because the indexes of GFI, AGFI, NFI, CFI and NNFI are nearer to 1; therefore, the proposed model has been confirmed and table 5 possesses all standards.

Another finding is related to the coefficients and parameters which are related to the general form of research measurement model. It shows that all coefficients are significant, since their significance level have been calculated between -1.96 and +1.96. The significance of these numbers is an indicative of the significance of the model and different factors.

Table 6 The result of hypotheses testing by structural equations method and AMOS software

<table>
<thead>
<tr>
<th>Hypotheses (paths)</th>
<th>Hypothesis’s coefficient</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Innovativeness → knowledge creation</td>
<td>0.29</td>
<td>confirmed</td>
</tr>
<tr>
<td>Innovativeness → knowledge acquisition</td>
<td>0.10</td>
<td>confirmed</td>
</tr>
<tr>
<td>Innovativeness → knowledge application</td>
<td>0.15</td>
<td>confirmed</td>
</tr>
<tr>
<td>Risk-taking → knowledge creation</td>
<td>0.13</td>
<td>confirmed</td>
</tr>
<tr>
<td>Risk-taking → knowledge acquisition</td>
<td>0.15</td>
<td>confirmed</td>
</tr>
<tr>
<td>Proactiveness → knowledge creation</td>
<td>0.19</td>
<td>confirmed</td>
</tr>
<tr>
<td>Proactiveness → knowledge acquisition</td>
<td>0.12</td>
<td>confirmed</td>
</tr>
<tr>
<td>Proactiveness → knowledge application</td>
<td>0.18</td>
<td>confirmed</td>
</tr>
<tr>
<td>Proactiveness → knowledge storage</td>
<td>0.12</td>
<td>confirmed</td>
</tr>
<tr>
<td>Entrepreneurial orientations → knowledge management</td>
<td>0.31</td>
<td>confirmed</td>
</tr>
</tbody>
</table>

Based on the conceptual model, the current research has had one major hypothesis and 12 minor hypotheses. After investigating the model’s goodness of fit for 12 minor hypotheses, it has been concluded that the main hypothesis and 9 minor hypotheses have been confirmed (table 6), and there is no significant relationship between entrepreneurial orientations and knowledge storage,
and also risk-taking and knowledge storage and application, since level of significance is not 0.05. The suggested model has been accepted on the basis of table 6.

**CONCLUSION**

The current study aims to investigate the impact of entrepreneurial orientations on knowledge management processes in small and medium enterprises. This article has developed theoretical literature existing in this field, since it is the first research which has examined the effect of employee’s entrepreneurial orientations on knowledge management in small and medium enterprises and has attempted to remove the scientific gap in this field. Second, owing to the fact that there is no single and unit definition for the concepts of entrepreneurial orientation and knowledge management, the present study has tried to propose and design a new model through studying literature review and consulting experts and specialists in this area. Third, this research has proved that there is a significant relationship between entrepreneurial orientations and knowledge management; therefore, managers can improve their employee’s knowledge-based activities through engaging with entrepreneurial orientations (Hunt & Arnett, 2006).

In hypotheses 1, 2, 3 and 4, the effect of risk-taking on knowledge acquisition, knowledge creation, knowledge storage and knowledge application has been assessed. The obtained results show that there is a significant and positive relationship between risk-taking and knowledge creation, and risk-taking and knowledge storage. The managers’ and entrepreneurs’ capability to take risks in creating and storing knowledge in small and medium enterprises is one of the causes of the existing relationship between risk-taking and knowledge creation and storage. Gupta and Moesel (2007) have proved in their research that entrepreneurial orientations are positively effective in knowledge management processes (knowledge creation and acquisition) in small and medium enterprises in the US. Hui Li et al. (2008) have also concluded that there is a positive relationship between entrepreneurial orientations and knowledge management processes among entrepreneurs in Taiwan.

In hypotheses 5, 6, 7 and 8, the relationship between innovativeness and knowledge acquisition, knowledge creation, knowledge storage, and knowledge application have been assessed. Results have demonstrated that there is a significant and positive relationship between innovativeness and knowledge acquisition, creation and application. Findings of the research which has been by Gupta and Moesel (2007) have indicated that there is significant and positive relationship between innovativeness and knowledge creation. Findings of Li and et al. (2009) have shown that there is a significant relationship between innovativeness and knowledge transfer in China. Hui li and et al. (2008) have concluded that knowledge creation plays the role of a mediator between entrepreneurial orientations (such as innovativeness), and also there is a positive relationship between innovativeness and knowledge creation.

In hypotheses 9, 10, 11 and 12, the relationship between proactiveness and knowledge acquisition, knowledge creation, knowledge storage and knowledge application have been appraised. According to the findings of the research, all four hypotheses have been confirmed. Possessing the feature of proactiveness (such as surpassing other competitors, capturing new opportunities and taking part in new-made markets) can be logical and reasonable for all managers and entrepreneurs of an organization to handle knowledge management processes (knowledge acquisition, knowledge creation, knowledge storage and knowledge application) in small and medium enterprises. The obtained findings of the research which have been conducted
by Li and et al. (2009) show that there is a positive relationship between proactiveness and sharing internal knowledge (knowledge transfer) in the passing economic situation of China. The results of the study done by Gupta and Moesel (2007) indicate that proactiveness is positively effective in knowledge creation.

The major hypothesis of the research has investigated the existing relationship between entrepreneurial orientations and knowledge management in small and medium enterprises in Toos Industrial Town Companies in Mashhad. Therefore, the main hypothesis was also confirmed. Findings of this hypothesis were in the direction of what Gupta and Moesel (2007), Hui Li and et al. (2008) and Li and et al. (2009) had achieved.

Considering findings of this research and other literature reviews, the following suggestions have been given:

- Giving freedom to the employees to be able to make some decisions in relation to their job when it is quickly needed
- Welcoming changes in the organizations and paying more attention to the innovative and risky decisions and giving them priority over the old, conservative approaches
- paying more attention to innovativeness in specifying an organization’s purposes and rewarding those who are contributing in this process and give fresh and innovative ideas
- supporting innovative employees and applying a system of teamwork decision making, not a centered and individual one
- structuring innovative proceedings and actions before other competitors and proving their position in the market
- applying information technology instruments to introduce new products and uninterrupted education of employees and marketers to meet customers’ satisfaction

REFERENCES


