The Relationships between Knowledge Quality and Innovation Performance
PINAR ÇÖMEZ¹ and HAKAN KITAPÇI²

Abstract

This study aimed to explore the relationships between the knowledge quality and innovation performance in organizations. It has been proposed an empirical research model and used survey method for collecting the data. The questionnaires were sent to 300 SME’s in Istanbul and 128 responses were received. The survey participants were mid-and top level managers. For data analysis, descriptive statistic, correlation and regression analysis have been done using SPSS 22.0. The findings show positive relationships between knowledge quality and firm innovation performance.

Key words: innovation, knowledge quality, performance

INTRODUCTION

In the new economic era, companies use the power of knowledge to succeed against their competitors (Leonidou et.al, 1998). According to Cabello-Medina and her friends (2011) the human capital plays an important role by increasing the firm innovative capacity and Hitt et al. (2006) indicate on the positive relationships between innovativeness and creativeness in the organizations which have the ability to use and improve the knowledge of their human resources. In this manner, knowledge is seen as a strong power to push the organizations to innovate. Processing the data coming from different functions of the organization and sharing it effectively increases the quality of knowledge which is essential to accelerate the companies developing their service and products, reducing their costs and increasing sales rates (Yoo; 2010). In this study it is aimed to understand how the knowledge quality affects innovation performance in organizations. The data was collected via surveys from 300 SME’s operating in Gebze and Istanbul.

BACKGROUND

Every day, companies are under bombing of the new knowledge coming from their suppliers, competitors, customers... The huge amount of this environmental new knowledge brings uncertainty to the organization. To get rid of this problem, companies seek to use the knowledge effectively. Openness and communication between the work units within an organization increase the problem solving capacity and brings resistance and quick respond to environmental changes (Hoegl et al., 2003). According to Grant’s resource-based theory (1991), the productivity is related with the effective usage of the resources and knowledge is a competitive advantage which introduces to cooperation and coordination of organizational resources. Song and Dyer (2000) named 3 concepts which influences the effectiveness of the knowledge: 1) Involvement, 2) Quality and 3) Harmony. In this study, it has been investigated the influence of the knowledge quality which on innovation performance to fill the literature gaps in this field.

Knowledge Quality

The knowledge quality has become an important issue on creating excellence in competitive and rapidly changing business environments (Lee et al., 2002). As knowledge begun to be seen valuable and led to superior performance (Davenport and Prusak, 1998), to define and assess the quality of it gained more interest among researchers. There are different aspects of defining and measuring the knowledge quality. According to Nonaka (1994), the knowledge is a multidimensional concept and its quality cannot be measured by a single dimension. Soo et al. (2004) tried to measure the knowledge quality as the dimensions frequency, purpose, and innovation. Rao and

¹ Asst. professor, faculty of business, Adana science & technology university Adana
² Associate professor, faculty of business, Gebze technical university, Gebze

©Society for Business and Management Dynamics
Osei-Bryson (2007) conceptually developed the dimensions as *accuracy, consistency, currency, data interpretability, level, context, level of detail, level of interest, sharing, purpose, and volatility*. Majchrzak et al. (2004) also states that there are three criteria to use knowledge for innovation: *credibility, relevance and adaptation*.

According to the results of the study of Yoo (2010), the knowledge quality is a sum of the qualities of *intrinsic knowledge, knowledge context and the followed knowledge*. In this definition the intrinsic knowledge indicates the knowledge of the human resources in their own and it’s quality is related to accuracy, reliability and timing of the knowledge. This is the basis for the knowledge quality and based on the observations of the members of the organization (Erden et al., 2008).

The quality of the intrinsic knowledge is necessary, but that doesn't reflect the quality of the knowledge and don’t differ in meanings. According to Becerra-Fernandez & Sabherwal (2001) and Nonaka & Takeuchi (1995) knowledge is context-specific (time, space, culture, purpose, role, or paradigm) and the quality of it should be assessed in different ways. This dimension deals with the relevance, of correspondence, and the value of understanding the environment in which the task operates.

The quality of the knowledge context deals with the value of understanding the environment in which the task operates. Understanding the context allows organizations to access precious knowledge and compete for new skills (Yoo, 2010). Thus, an organization can improve the quality of its knowledge with the integration of the new data at the right time.

The quality of the followed knowledge refers to the extent of knowledge expanded, adapted, or easy to be applied to the duties. Knowledge must be transformed into actions to create profitability (Droge et al., 2003). This dimension depends on the reliability and truth, so that it allows to be flexible, adaptable and easy to applied.

**Innovation Performance**

Cabello-Medina (2011) indicates that intellectual capital is the most relevant antecedent of innovation. According to her, conceptualizing the knowledge and the ability & capability of data processing is the most precious competitive advantage of an organization. Intellectual capital is the asset related to innovation ability intimately. The importance of intellectual capital for innovation has attracted researchers. They are more interested in determining and processing the elements that enhance the innovative performance.

Human capital, the part of intellectual capital, regard that people can be exploited by others to create new knowledge new (Reed et al., 2006). Given that innovation is an essential exercise in collaboration, social capital plays the key role to directly increase and emphasize their impact on innovation. Therefore, increasing the knowledge of individuals and creating conditions to share are the important efforts that deserve an attention.

Considering the tight relationship between knowledge and new products and services, it is clear that the ability of the company to generate new product and innovation is closely related with the human resources (Lopez-Cabrales et.al, 2006). The potential to increase the efficiency and the compound, to exploit opportunities in the market and/or neutralize a potential threat points on the value of the knowledge. This strategically valuable asset helps to generate high returns in the market that increases the benefit ratio. The employees with the valuable knowledge and skills are positively related to innovation performance, because they contribute to identify the opportunities in new markets, and they are willing to experimenting and applying the new procedures (Label, 2002). Subramaniam and Youndt, (2005) showed the relationship between human resources and innovation the performance. Besides, the knowledge contributed to the development of ideas and new product (James, 2002). Knowledge is a unique source of the innovative activities. Therefore, its quality helps a company to compete.

The concept of knowledge management is important in order to build the organization better (Amrous et al., 2014). In the literature, knowledge management is defined as the integration and coordination of individuals to manage and create new organizational knowledge. Therefore, different contexts of knowledge may be required for knowledge management and the consequences will increase the innovation performance. The management of knowledge means managing the flow of information and
gets information right to people who need it in a hurry. Then knowledge is the source of the most important of its competitive edge. The quality of the follow-through of knowledge is action and should be used for a purpose (Nonaka and Takeuchi, 1995). These conditions introduces to increasing innovative performance.

![Figure1. Research Model](image)

**METHODOLOGY OF RESEARCH**

**Data Collection and Analysis**

For data collecting, survey method has been chosen as a widely used technique in social sciences. While Zikmund (1997) indicates the general format of the questionnaire plays a big role on the respond rates suggestions from literature have been taken into consideration by preparing the form. The questions and phrases consist of the scales with approved validity and reliability from the literature. All items (except demographics) were measured on a five-point Likert-type scale, indicating the relative strength of their agreement or disagreement with responses ranging from 1 to 5. The surveys were sent to the small and medium sized industrial firms operating in Istanbul/ Turkey, from a range of the different sectors. Of the 300 surveys, 128 have been received with a response rate of % 42.67. The sample was comprised middle- and top managers and owners through SPSS 22.0.

**Variables**

*Innovation management* is the dependent variable adapted from the study from Zerenler et.al. (2008). Reliability is good, at more than .70 (Nunnaly, 1978). *Knowledge quality* is the independent variable adapted from the study Yoo (2010). Knowledge quality is measured with 3 factors: All items load on three factors: *quality of intrinsic knowledge, quality of knowledge context and quality of followed-up knowledge*. Strong evidence for the reliability of the scale has been reported.

**Analyses and Results**

We performed varimax rotation and exploratory factor analysis using SPSS 22.0 to evaluate the factor structure of the variables. Each scale had satisfactory reliability, with a Cronbach’s alpha coefficient of more than .70 (Nunnaly, 1978) and all the values of the announced total variance are greater than 0.50 (Yeniçeri and Erten, 2008; Grewal et al., 1998). The means, standard deviations, and correlations for the study variables are shown in Table 2. The analyze results encompasses the demographic statistics, factor analyses, correlation matrix and regression analyses. The demographical statistics of the survey respondents are given in the table 1 below.
Table 1. Demographical Statistics of the Survey Respondents

<table>
<thead>
<tr>
<th>Positions</th>
<th>Frequency</th>
<th>%</th>
<th>Education Level</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Owner</td>
<td>4</td>
<td>3.1</td>
<td>Masters and PhD</td>
<td>18</td>
<td>14.06</td>
</tr>
<tr>
<td>Top manager</td>
<td>32</td>
<td>25</td>
<td>Bachelor and College</td>
<td>103</td>
<td>85.94</td>
</tr>
<tr>
<td>Senior manager</td>
<td>80</td>
<td>62.5</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Age</th>
<th>Frequency</th>
<th>%</th>
<th>Sex</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; 50</td>
<td>15</td>
<td>11.72</td>
<td>Female</td>
<td>45</td>
<td>35.16</td>
</tr>
<tr>
<td>40-50</td>
<td>42</td>
<td>32.81</td>
<td>Male</td>
<td>83</td>
<td>64.84</td>
</tr>
<tr>
<td>30-40</td>
<td>53</td>
<td>41.41</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 30</td>
<td>18</td>
<td>14.06</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2. Correlation matrix

<table>
<thead>
<tr>
<th>Intrinsic knowledge quality</th>
<th>Alpha</th>
<th>Mean</th>
<th>S.D.</th>
<th>MO</th>
<th>LO</th>
<th>QO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge context quality</td>
<td>0.84</td>
<td>3.3637</td>
<td>.9745</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Followed-up knowledge quality</td>
<td>0.98</td>
<td>3.1978</td>
<td>.6189</td>
<td>.566*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Innovation Performance (IP)</td>
<td>0.92</td>
<td>3.2822</td>
<td>1.0223</td>
<td>.489*</td>
<td>.512*</td>
<td></td>
</tr>
</tbody>
</table>

* P<0.01

Table 3. Regression analysis Results

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Dependent variable</th>
<th>B</th>
<th>T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intrinsic knowledge quality</td>
<td>Innovation Performance.</td>
<td>.145</td>
<td>1,834*</td>
</tr>
<tr>
<td>Knowledge context quality</td>
<td></td>
<td>.221</td>
<td>2,795*</td>
</tr>
<tr>
<td>Followed-up knowledge quality</td>
<td></td>
<td>.256</td>
<td>3,006*</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>R²</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>.049</td>
<td>2,768</td>
<td>.029</td>
</tr>
</tbody>
</table>

* P<0.05

CONCLUSION AND DISCUSSIONS

Quality of Intrinsic Knowledge and Innovation Performance
First of the 3 hypothesis of this study pointed on the positive influence of the quality of the intrinsic knowledge on innovative firm performance. Innovation performance variable is consisted of the factors: introduction of new technology products, frequency of replacement of a significant product change, the proportion of new technology products and novelty management. The quality of intrinsic knowledge variable is built by the indicators: accurateness, objectiveness, dynamicity and reliability, by the way.
According to correlation matrices there are positive relationships between intrinsic knowledge quality and innovation performance, and the regression analysis show positive relationships at 0.05 significance level. Thus, the hypothesis is supported. Intellectual capital is one of the most relevant antecedents of innovation. It determines the ability of the organization to gain unique knowledge, which has been the basis to achieve organizations competitive advantage and being innovative. Therefore, as an intangible resource the quality of knowledge plays an important role triggering the innovative performance of the company.

Quality of Knowledge Context and the Innovation Performance
The second hypothesis proposed that the quality of knowledge context influences the innovation performance positively. The knowledge context quality variable is consisted of: adding value to decision, adding value to operations team, providing competitive advantage and relevant to the tasks performed. According to correlation matrices there are positive relationships between knowledge context, and the regression analysis show positive relationship at 0.05 significance level. Thus, the hypothesis is supported.0.05 significance level and regression analysis indicate positive relationships too. The hypothesis is supported. These results indicate that to improve the innovation performance, organizations should improve the quality of knowledge context.

Quality of Impact Follow-Up Knowledge and Innovative Performance
The last hypothesis of this study proposed that there are positive relationships between the quality of the knowledge followed and innovation performance. The follow-up knowledge quality variable is consisted of the factors: adapt, apply to increase duty and provide the capacity to react to circumstances. According to correlation matrices there are positive relationships between follow-up knowledge quality and innovation performance, and the regression analysis show positive relationship at 0.05 significance level. Thus, the hypothesis is supported. Human capital, social capital and intellectual capital, and the potential interactions between them can improve innovative performance. The quality of the followed-up knowledge contributes for development of ideas and new products. A unique knowledge resource activates innovativeness.

THEORETICAL AND MANAGERIAL IMPLICATIONS
The research findings support that innovation performance is influenced by the quality of knowledge. As a part of intellectual capital, human capital can used to create new knowledge by exchanging and sharing individual insights. Based on the findings, the quality of the knowledge-based organizational functions can be developed by cooperation and networking.

LIMITATIONS
This study has some limitations. The research has been done based on the survey with 128 respondents with the respond rate of 42.67% collected from an isolated organizational industrial region. Results of a survey conducted with a larger sample may give a better insight on the research topic.
FUTURE RESEARCH

Organizational culture is a pattern of human behavior and seen related with adjustment problems or integration of internal and external conditions, as well. Therefore organizational culture has a role in the development of knowledge quality to improve innovative performance. Further research may consider to put organizational culture to have a deepen insight on innovation performance.

REFERENCES


