

**KNOWLEDGE MANAGEMENT, ORGANIZATIONAL
CULTURE AND ORGANIZATIONAL LEARNING ON
INNOVATION IN AUTOMOTIVE INDUSTRY**

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KNOWLEDGE MANAGEMENT, ORGANIZATIONAL CULTURE AND
ORGANIZATIONAL LEARNING ON INNOVATION IN
AUTOMOTIVE INDUSTRY

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This work is dedicated to my parents who provided unconditional love and taught me how to soar on eagle's wings, who have always encouraged me and have taught me to think big, to never give up, and to believe in myself and dealt with all of my absence from my family occasions with a smile. My supportive and loving to my brothers for their love, support and encouragement.

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ABSTRACT

The ability to innovate is critical for all companies to gain and sustain competitive advantage. However, empirical studies looking at factors affecting innovation in Iranian automotive industry are still lacking. The main objective of this study was to examine the direct and indirect effect of organizational culture, knowledge management and organizational learning on innovation. This study combined knowledge-based view theory (KBV), competitive value framework and organization learning theories to develop a new theoretical framework to investigate factors affecting innovation. Data were gathered from a survey of 279 companies supplying automobile parts to Iran Khodro Company, an Iranian leading automobile manufacturer. Stratified random sampling technique was used to ensure that the population of companies supplying automobile parts to the company was adequately represented. Data were analyzed using Structural Equation Modeling (SEM). Results of the study revealed that organizational culture and knowledge management do influence organizational innovation. Besides that, organizational learning played a significant role as a mediator in the relationship between organizational culture, knowledge management and organizational innovation. However, knowledge management did not have a mediator role in the relationship between organizational culture and organizational innovation. In this study, the research has focused on innovation to link organizational culture, knowledge management and organizational learning. Besides that, theoretical contributions related to organizational culture, knowledge management and organizational learning to improve organizational innovation in the Iranian automotive industry are provided. As a practical contribution, the findings of the study serve as a guideline for policy makers and managers in the formulation of policies and strategies for sustainable innovation.

ABSTRAK

Keupayaan untuk berinovasi adalah sangat kritikal bagi semua syarikat untuk memperoleh dan mengekalkan kelebihan daya saing. Walau bagaimanapun, kajian empirikal yang melihat tentang faktor-faktor yang memberi kesan kepada inovasi dalam industri automotif di Iran masih kurang. Objektif utama kajian ini adalah untuk melihat kesan langsung dan tidak langsung budaya organisasi, pengurusan pengetahuan dan pembelajaran organisasi ke atas inovasi. Kajian ini menggabungkan teori pandangan berasaskan pengetahuan (KBV), kerangka persaingan nilai dan teori pembelajaran organisasi dalam membangunkan kerangka teori baharu untuk mengkaji faktor yang mempengaruhi inovasi. Data diperoleh melalui kaji selidik ke atas 279 syarikat pembekal bahagian automotif kepada Syarikat Iran Khodro, peneraju pembuat automotif di Iran. Kaedah persampelan rawak berstrata telah digunakan untuk memastikan populasi syarikat yang membekalkan bahagian automotif kepada syarikat diwakili secukupnya. Data dianalisis menggunakan Model Persamaan Berstruktur (SEM). Keputusan kajian menunjukkan bahawa budaya organisasi dan pengurusan pengetahuan mempengaruhi inovasi organisasi. Selain itu, pembelajaran organisasi memainkan peranan yang signifikan sebagai pengantara ke atas hubungan antara budaya organisasi, pengurusan pengetahuan dan inovasi organisasi. Walau bagaimanapun, pengurusan pengetahuan tidak memainkan peranan sebagai pengantara ke atas hubungan antara budaya organisasi dan inovasi organisasi. Dalam kajian ini, penyelidikan telah memberi fokus terhadap inovasi untuk menghubungkan budaya organisasi, pengurusan pengetahuan dan pembelajaran organisasi. Selain itu, sumbangan teoritikal berkaitan budaya organisasi, pengurusan pengetahuan dan pembelajaran organisasi untuk meningkatkan inovasi organisasi dalam industri automotif di Iran telah diberikan. Dari segi sumbangan praktikal, dapatan kajian ini menjadi panduan kepada pembuat polisi dan pengurus dalam penggubalan polisi dan strategi untuk inovasi yang mampan.

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LIST OF ABBREVIATIONS

AI	-	Administrative Innovation
AK	-	Application Knowledge
AMPM	-	After-Market Parts Manufacturers
AVE	-	Average Variance Extracted
BC	-	Bias-Corrected
CA	-	Capture Knowledge
CI	-	Confidence Interval
CK	-	Creation Knowledge
CMB	-	Common Method Bias
CMV	-	Common Method Variance
CR	-	Composite Reliability
CS	-	Criteria for Success
CTL	-	Commitment to Learning
CV Red	-	Cross-Validated Redundancy
CVF	-	Competing Values Framework
DC	-	Dominant Characteristics
DK	-	Dissemination Knowledge
EFA	-	Exploratory Factor Analyzes
EM	-	Expectation Maximization
ES	-	Effect Size
GDP	-	Gross Domestic Product
HOC	-	Higher Order Component
IBM	-	International Business Machines
IKCO	-	Iran Khodro Company
IPDI	-	Incremental Product Innovation
IPRC	-	Incremental Processes Innovation
KA	-	Knowledge Acquisition

KBV	-	Knowledge- Based View
KIIs	-	Knowledge-Intensive Industries
KM	-	Knowledge Management
KMO	-	Kaiser-Meyer-Olkin
KMP	-	Knowledge Management Process
KMS	-	Knowledge Management System
LOCs	-	Lower Order Components
MCAR	-	Missing Completely at Random
ME	-	Management of Employees
OC	-	Organizational Culture
OCAI	-	Organizational Culture Assessment Instrument
OECD	-	Organization For Economic Cooperation And Development
OEM	-	Original Equipment Manufacturing
OG	-	Organization Glue
OI	-	Organizational Innovation
OK	-	Organization Knowledge
OL	-	Organizational Learning
OL	-	Organizational Leadership
OLS	-	Ordinary Least Squares
OM	-	Open Mindedness
PLS-SEM	-	Partial Least Squares Structural Equation Modelling
RBV	-	Research Based View
RPDI	-	Radical Product Innovation
RPRI	-	Radical Process Innovation
SCAs	-	Sustained Competitive Advantages
SE	-	Standard Error
SE	-	Strategic Emphases
SECI	-	Socialization Externalization Combination Internalization
SEM	-	Structural Equation Modelling
SK	-	Storage Knowledge
SPSS	-	Statistical Package for the Social Sciences
SV	-	Shared Vision

VIF	-	Variation Inflation Factor
WTO	-	World Trade Organization
IDRO	-	Industrial Development and Renovation Organization

LIST OF SYMBOLS

α	-	Alpha Value
β	-	Beta Coefficient
X	-	Independent Variable
M	-	Mediator Variable
Y	-	Dependent Variable
ϵ	-	Standard Error of Estimates
ΣX	-	Sum of the Score
N	-	The Number of Scores
N	-	Population Size
S	-	Sample Size
E	-	Estimate
Σ	-	Standard Deviation
χ^2	-	Chi-square Mean
P	-	Population proportion (assumed to be 0.50)
d	-	Degree of Accuracy Expressed as Proportion (0.05)
P	-	P-value
H_0	-	Normal Data
H_a	-	Non-normal Data
e^2	-	Level of Precision
$a*b^n$	-	Normal Distribution of the Indirect Path
D^2	-	Mahalanobis D2 Measure
Q^2	-	Predominant Measure of Predictive Relevance
d_{th}	-	Data Point
f^2	-	Effect Size
R_{in}^2	-	R Squares is Included in the Model
R_{ex}^2	-	R Squares is Excluded from the Model
c'	-	Direct Effect

- a₁b₁ - Indirect Effect of X on Y through M
- a₁ - Direct Effect of X → M
- b₁ - Direct Effect of M → Y
- a₁*b₁ - Indirect Effect of X on Y through M

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CHAPTER 1

INTRODUCTION

1.1 Research Overview

In this chapter, an introduction of the thesis is provided. It begins with the background of the study. The chapter also addresses the research problem, research questions and research objectives. It includes a discussion of the expected contribution, operational definition and scope of the study.

1.2 Background of the Study

Innovation is found as one of the concepts addressed by researchers and practitioners in the technological competitive environment (Eveleens, 2010). In a turbulent economic environment, innovation is considered as an strategic driver to gain competitive advantage (Smit and Trigeorgis, 2012). It will increase the sustainability, productivity and business competitiveness (Hurmelinna-Laukkanen et al., 2008). Innovation is central to economic growth and can be a source of sustained competitive advantage to the firms (McEvily and Chakravarthy, 2002).

Innovation is known as a major contributor to wealth creation and economic growth of nations. Drucker (2007) argued that the desired outcome of innovation has to do with a process that leads to new product development, technology or new industries. Innovation becomes an ongoing process of learning, searching and exploring that results in new products, new techniques, new forms of organizations and eventually new markets. Innovation reshapes the competitive landscape and

creates new market opportunities. Organizational innovation is fast becoming a crucial factor in company's survival and a result of the evolution of the competitive environment (Tohidi and Jabbari, 2012). By applying innovation, the strategic resources of the firms would be enriched and sustainable competitive advantage leads to the significant feature of the organizational performance (Samad, 2012).

As can be seen, the importance of innovation has been dramatically increasing. In fact, innovation is addressed as a key factor enabling the firms to face the technological challenges. However, the increasing dynamism and turbulence of the environment requires having a new look at innovation (Davila et al., 2012).

The increasing dynamism and turbulence of the environment has made sustaining of the innovation as a problematic issue. It is believed that there are rapid changes in product and process technologies, which make it challenging to gain sustainable innovation leading to sustainable competitive advantage (Smit and Trigeorgis, 2012).

To gain competitive advantage in such industries, firms must introduce new products and process technologies faster (Nadkarni and Narayanan, 2007). In order to achieve this purpose, organizations are facing tension. Organizations are found to exploit existing products to benefit from incremental innovation and to explore new opportunities to facilitate more radical innovation (Davila *et al.*, 2012). Following these two paths might lead firms to success or competency traps. Success traps are implied as the firms being caught in innovations that are obsolete, and competency traps are referred as the firms being involved in innovations that are not matching the needs of the market. Thus, it is necessary for firms to have capabilities enabling the innovation to be effective.

Knowledge management has emerged as one of the capabilities being related to innovation. Knowledge is no doubt the key resource in such a volatile environment. The key ingredient for organizational success in the post-industrial era has gradually shifted from physical asset management to intellectual capital and knowledge asset (Quinn *et al.*, 1998). Many researchers and practitioners have concluded that

knowledge management must facilitate creating new knowledge in order to make an organization more innovative and competitive (Burton-Jones, 2001; Joshi et al., 2010; Kearns and Sabherwal, 2007) therefore acquiring knowledge successfully in management processes affect organizational innovation (Garavelli et al., 2004; Hwang, 2003).

Knowledge management is implied as policies leading to embedding the knowledge in an organization (Lloria, 2008). Knowledge management is referred as an important factor enabling the firms to develop new market and new products (Andreeva, 2009). In fact, organizations are required to renew their knowledge base in order to maintain their innovative capability of new product or new market development. The objectives of business today have focused on seeking various sources to obtain new knowledge to maintain sustained competitive advantages (SCAs). Therefore, knowledge management is found as an important factor contributing to gaining sustained innovation leading to sustainable competitive advantage (Shenbagavalli, 2013).

Organizational learning has emerged as one of the other capabilities capable of facing the changes coming from turbulent and dynamic environment. In fact it has been considered as one of the capabilities giving the chance to firms to benefit from exploration learning and exploitation learning. It is believed that both incremental innovation and radical innovation requires the firm to have special capability for learning from both the external and internal sources.

Organizational learning is currently the focus of considerable attention, and it is addressed by a broad range of literatures (Vieira, 2013). Scholars who supported the innovation studies have aimed at the question of how organization innovate through learning (Tabatabaei and Ghorbi, 2014). Organizational learning has been considered as one of the strategic drivers of gaining organizational innovation (Rouzbahani et al., 2013). Organizational learning is also believed to enhance an organization's abilities in order to propagate and apply knowledge to be adapted with changes of external environment. More so, the organization will advance towards organizational innovation (Slater and Narver, 1995).

Necessity of considering culture is also highlighted in studies related to innovation. It is believed that gaining a sustained innovation should be assumed as a shared responsibility of all the people in different organizational levels (Davila et al., 2012). However, it is less known about how cultural barriers influence innovation (Liao and Wu, 2010). The necessity of addressing culture in this study can also be due to its contribution to OL and KM. Organizational culture (OC) is referred as the factor playing an important role to knowledge management (KM) and organizational learning (OL). This is due to the point that culture establishes work systems that provoke both learning and knowledge sharing (Gold et al., 2001).

Organization culture contributes to organizational capabilities that can lead the firms to innovation (Lynn, 1999). Apart from knowledge management, organizations can proactively manage changes by considering a continuous development as their culture to become a learning organization (Karkoulia et al., 2013). Innovation entails an organizational culture which creates creativity in the employees (Jamrog et al., 2006; Jaskyte, 2004; Lau and Ngo, 2004). All firms in the industry need to establish and understand their own organizational culture which will enable them to adjust their ways and customs when conducting business with other firms and give them a competitive advantage (Karkoulia et al., 2013).

The necessity of addressing the concept of innovation in this research is highlighted by referring to the condition of Iran Khodro firms in Iran. The current situation of the Iran Khodro firms (e.g. uncertainty, lack of innovation, high risk and volatility) shows that firms need to innovate in order to maintain or increase their competitiveness. The Iranian government decided to employ modern technology and enhanced innovation for a better performance (Tohidi and Jabbari, 2012) In fact, the innovation is a serious concern in automotive sector vehicle manufacturers, and government is interested in the innovation and quality of vehicles (Jones et al., 2011). In addition to the lack of innovation, the learning mechanism seems to be absent in Iran Khodro. It has also been observed that lack of quality assurance and organizational learning at company level on one hand, and paucity of innovation and knowledge management practices on the other hand, have been noticed as problems in recent years in Iran Khodro Company (Tohidi and Jabbari, 2012).

A possible contributing issue regarding the failure of Iranian automobile parts industry in the area of innovation is the absence of integration in worldwide markets. The USA started to apply economic sanctions against Iran in the 1980s that were further enhanced in the mid-1990s. During the recent years, USA has imposed greater economic sanctions regarding the nuclear issues. Sanctions had the highest influence in 2012, once they were imposed on the automobile industry stock network portions (e.g., Peugeot, Kia). These sanctions were one-sided from most European countries (Mehri, 2015). Further, the USA did not let Iran to join global organizations like the World Trade Organization (WTO). Though this did not destructively affect improvement of the local industry (it permitted Iran to be engaged in opposite engineering without relying on WTO), it banned Iran from integrating its automotive parts industry into the global automobile supply chain (Mehri, 2015).

During recent years, Iranian automobile firms have made marvelous developments, but still they have significant distance to catch up with the Japanese, American, and European car producers. The Industrial Development and Renovation Organization (IDRO) makes quality investigations and rates cars as A (maximum quality), B (medium quality), or C (lowermost quality). Iranian-made vehicles constantly receive B and C grades (e.g., Samand (B), Peugeot 405 (B), and Kia Pride (C)). Quality rankings are published on IDRO's website. Consequently innovation is one of the main important systems in Iran Khodro. It is crystal clear that, the automobile market of Iran were affected significantly by the sanctions that were imposed on the country in recent years as the car companies did not have access to the recent technologies and vehicle parts. In this situation, Iranian car manufacturers had to rely on themselves and consequently they could not produce high quality cars, and their cars received B and C grades. In the figure 1.1, the researcher compared the annual production growth of automotive industry in Iran and world, it is shows that the annual growth of Iranian car manufacturers has decreased to the year 2012, so the car manufacturers of Iran have to improve the innovation to increase the quality.

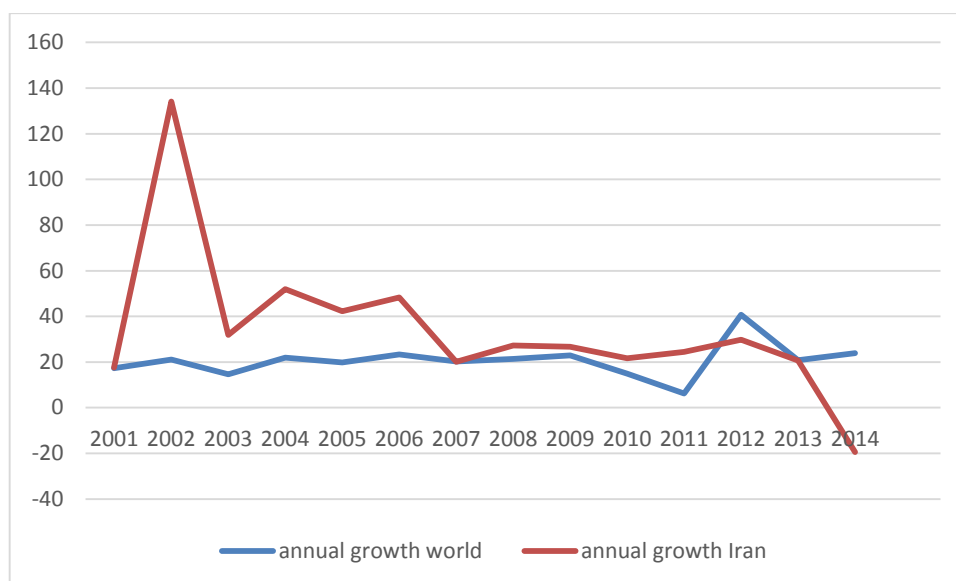


Figure 1.1 Annual production growth of automotive industry: The World vs. Iran
Source: (IKCO, 2012)

As can be seen, Figure 1.1 depicts the difficulties the Iranian automotive industry faced from the turn of the 21st century to the present, when the inherent absence of innovative culture shunted the industry's growth. However, by 2002, a dramatic 675% increase in production was recorded following the involvement of British auto manufacturers in the Iranian market, bringing with them new technologies and innovative ways of car manufacturing. This is a decisive indicator of the importance of innovation and effective knowledge management practices in the growth (or otherwise) of organizations. Thus, as soon as the UN sanctions on Iran were imposed, production levels in the entire industry dropped to about 18% of the pre-sanction year. However, by 2014, the Iranian automotive industry was in total crises with plant shutdowns and negative growth as the sanctions become even worse. In view of this situation, it has become imperative for the Iran Khodro to find ways of reviving its cooperation with the western car manufacturers in order to tap into the global stock of innovations and recent technologies.

1.3 Industrial Innovation Automotive Sector in Iran

The value of innovation, in general, can be explained by the increasing amount of expenditure for research and development in Iran. The main reason for the firms

was to obtain an innovation to be able to improve process efficiency and product quality to develop their domestic and global markets. At first, the program was begun by some training program and workshops on innovation and quality assurance in the governmental institution (IKCO, 2012). In addition, economical relationships with some western European countries such as Germany, France, were the main reasons directing firms for the establishing and implementing of innovation in Iran. Therefore, it is two reason: Strategic partnership with the Peugeot Citroen Automotive Group was the one of the early activities. One of biggest Iranian automaker companies, namely Iran Khodro signed a contract with the mentioned companies to produce Peugeot in Iran. KIA Motors Company from South Korea also developed a production line in Iran (Damanpour et al., 2009).

The second movement toward an innovation in the automotive industry in 1993 is related to assembling some type of the European automobile, especially Germany, England, and Italy. Although, the automotive industry in Iran was launched around 1960, its technological capability was limited to assembling. However, the policy makers have always been eager to develop this industry. To develop Iranian automotive industries, the government was determined to incorporate modern technology and benefit from innovation to gain higher performance (Tohidi and Jabbari, 2012).

Today, the automobile has become one of the fundamental needs of human life and its use is widespread throughout the world. The product is based on quality, safety and reliability. Therefore, to assure continuous improvement of automobile products as well as market acceptance, industry participants must cultivate organizational innovation (Senoz et al., 2011).

Iran Khodro Company (IKCO) is the largest car maker in Iran and the Middle East that founded in 1962. IKCO produces vehicles under 11 brand names such as Peugeot, Mercedes-Benz, Hyundai, Nissan, L90 and others. Domestically, the biggest share of domestic vehicle production belongs to Iran Khodro with 47 percent of share of vehicle production. Its manufactured cars are exported to countries such as Belarus, Russia, Syria, Tajikistan, Turkey, and Venezuela. However, over the last few years,

market demand has been declining. This firm is also considered as the main manufacturer of commercial vehicles with 71 percent of share of bus and 77 percent of share of minibus production.

Iran has the Middle East's largest auto maker industry. Regarding units produced, Iran's automobile industry, is positioned as one of the top five in the developing countries. Many leading carmakers are active in Iran such as Peugeot, Kia, Volvo, Benz, Scania, Nissan and Mazda. This has been the fastest growing industry in Iran in the two past decades. The sector is characterized by 25 automakers (both in public and private sectors); around 1.3 million units' annual automobile production (in 2008), over 850 auto-part manufacturers; and 650000 direct and indirect employment (IKCO, 2012). Iran khodro has also integrated vertically in to the higher part of car manufacturing industry value chain. It has established the component manufacturing capability.

This distinctive capability has enabled Iran khodro to achieve competitive advantage against the other emerging regional car manufacturers. Currently around 1.3 million cars are being produced. This is insufficient to meet local demand. The rising demand can be clear by referring to the waiting lists for the products of Iran's domestic manufacturers (IKCO, 2012).

In Iranian automotive industry, innovation and creativity are considered as an effective factors of production. Creativity and necessity of innovation are one of the major issue for improving the quality and performance in Iranian automotive production. Iran Khodro Company requires taking into consideration its expertise and providing them with mechanisms leading to improvement of their knowledge and skill (IKCO, 2012). In order to fulfil this need, innovative ideas should be supported by top managers. Besides, innovative oriented employees are needed. This requires the firms to provide their workforce with sufficient skill and knowledge. Learning is found to be a key capability required for sustained innovation in Iran Khodro company (Farsani et al., 2012). Furthermore, it has also been observed that the lack of quality and learning group level on one side, and lack of innovation and knowledge management

on the other side have been noticed as a problem during these past years in Iran Khodro Company (Tohidi and Jabbari, 2012).

1.4 Problem Statement

Organizational innovation has emerged as an important factor making a significant contribution to companies' survival, which is due to increase in the intensity of competitive environment. It is believed that innovative capabilities can be applied to turn the threats into opportunities (Tohidi and Jabbari, 2012). Laying emphasis on innovation can be related to several reasons. The necessity of innovation can be due to the fact that products are required to have quality and reliability. In order to come up with a high quality product, it is necessary to make sure that product realization process is fulfilled, which is dependent on innovation (Senoz *et al.*, 2011). The necessity of innovation is also related to the fact that the capacity to innovate is among the most important factors that contribute to the business performance. This is due to the fact that innovativeness provides firms with flexibility or variety of options, through which customers' requirements will be fulfilled leading to a sustainable competitive advantage (Škerlavaj *et al.*, 2010).

In spite of the importance of concept of innovation, it is considered as a challenging issue (Davila *et al.*, 2012), because there are several factors contributing to gaining innovation. Based on our review, the literature on the factors affecting innovation can be described as fragmented and inconclusive. In fact, it is believed that innovation is a multifaceted concept (Hurmelinna-Laukkanen *et al.*, 2008). Thus, there should be studies considering the simultaneous effect of all factors that are related to gaining innovation (Damanpour *et al.*, 2009). One of the stated factors in literature contributing to gaining innovation is knowledge management. Innovation requires that individuals acquire existing knowledge and that they share this knowledge within the organization. In fact, it is believed that the relationship between knowledge management and organizational innovation is significant (López-Nicolás and Meroño-Cerdán, 2011). For instance, Sanz-Valle *et al.* (2011) find a positive relationship between knowledge acquisition and product innovation.

There are three main issues identified from our review of literature and preliminary interviews with managers conducted in October-December 2013. The first issue in this study appears referring to theory as it is believed that study on relation between knowledge management and innovation must be studied along with other contributing factors to innovation (Andreeva, 2009). However, the mechanism used by past studies still remains unclear (Liao and Wu, 2010). Therefore these study focuses on the new mechanism of testing the relationship between KM, OL, OI and how this relationship can produce better understanding about enterprise innovation process (Goh, 2005). According to Darroch & MaNaughton (2002), world of research lacks empirical quantitative studies regarding such simultaneous relation of contributing factors to innovation. As can be seen, there is need for empirical studies investigating the simultaneous contribution of different factors in gaining innovation (Liao and Wu, 2010).

One of the other factors found in literature contribution to innovation is organization learning. It is argued that learning enhances the innovation and tackles the organizational problems. In fact, learning has always been regarded as one of the necessary factors for the organizations (Tabatabaei and Ghorbi, 2014).

Organizations benefit from organizational learning as a strategy to improve organizational performance and maintaining a competitive advantage. One of the contributions of learning to success of companies can be explained by fact that it facilitates the development of new products and processes. In fact, it is referred as antecedents of innovation (Murat and Birdogan, 2011). It is believed that learning is implied as combination of exploration learning (integrating new knowledge) and exploitation learning (mixing the existing knowledge in new ways). In fact, learning is regarded as a factor resulting in innovation. According to Therin (2003) a learning organization is considered as an innovative organization.

Although the effect of organization learning on innovation has been highlighted in literature, there is a need for comprehensive consideration of organization learning on different dimensions of innovation including (technological and administrative innovation, incremental and radical innovation, and product

innovation and process innovation). There are studies showing that the OL enhances product innovation (Forrester, 2000) and process innovation (Jang *et al.*, 2002; Scarbrough, 2003). Some quantitative studies have also provided evidence that OL process as a whole is related to the product innovation (Darroch, 2005), or to the organizational learning capability of the firm (Alegre and Chiva, 2008).

Regarding process innovation, Murat and Birdogan (2011) found that organizational learning capability has a significant and positive impact on process innovation. There are some other studies focusing on one phase of the organizational learning process and its effects on product or process innovation (Sanz-Valle *et al.*, 2011). As can be seen, the aforementioned studies addressed one specific dimension of OL or OI, thus there is need to do more research on examining the effect of all dimensions of OL on newly introduced dimensions of OI to reach to a better understanding about how OL can lead to higher OI.

Regarding the first issue, which is evaluating the simultaneous effect of contributing factors to innovation, Culture is also another factor which is expected to be effective in gaining a sustained innovation. Organizational culture is likely to lead to organizational innovation because organization culture shapes values, beliefs, and work systems that could boost or impede both learning and knowledge sharing resulting in emergence of innovation (Hislop, 2013; Rai, 2011). Despite the importance given to culture as a driver for innovation, empirical research remains somewhat limited. Only a few studies have focused on the effect of culture on innovation and most of them have focused on some cultural characteristics not on archetypes of culture values (Naranjo-Valencia *et al.*, 2011).

The second issue in this study is related to effectiveness of implementing the Knowledge Management Systems (KMS). Although implementation and utilization of KMSs as a competitive capability leading to innovation is increasing (Nazaridoust *et al.*, 2013), the dynamic environment has created challenges making it difficult to implement the knowledge management systems effectively (Lawson, 2003). Dynamic business environment requires that knowledge management is considered as a continuous process directing the flow of information and knowledge to companies

over time. In fact, because of the dynamic and turbulent business environment, firms should be capable of adapting and updating their knowledge (Allameh *et al.*, 2012) It is believed that companies should possess capabilities enabling them to strengthen the research and development of knowledge, and to manage it efficiently and effectively (Liao and Wu, 2010).

The necessity of a supportive capability for implementing knowledge management systems is due to rapid changes making the knowledge become outdated. In this context, firms need to have capability enabling them to continuously renew their knowledge. It can be assumed that companies which are capable of renewing their knowledge, can come up with innovative ideas to prepare themselves for the changes in environment (Sanz-Valle *et al.*, 2011). Therefore, it is necessary to seek for certain mechanisms with which the knowledge resources can be managed more effectively (Frappaolo, 2008).

Organization learning can be considered as one of the mechanism and capabilities which can facilitate the execution of knowledge management to achieve organizational innovation (Liao and Wu, 2010). Al-Hakim and Hassan (2013) argued that knowledge management should be accompanied with learning in the organization to gain superior performance. It is generally accepted that in case organizational learning is implemented in knowledge-intensive industries, the effect of innovation will be enhanced (Liao and Wu, 2010). In spite of considering a facilitating role for organization learning on the relation between KM and OI, it is found that research on organization learning is mixed with KM (Garcia-Morales *et al.*, 2006), and the relationship between knowledge management and organizational learning is not clearly discussed (Liao and Wu, 2010). Thus, there is need to do research on examining the effect of OL on the relation between KM and OI.

The third issue in this study addresses the necessity of considering an indirect relation between culture and innovation. The gap regarding the relation between OC and OI becomes highlighted by referring the relation between OC and OL on one side, and OL and OI on the other side. There are a few studies focusing on the relation between organizational culture and learning (Azadi *et al.*, 2013; Czerniewicz and

Brown, 2009; Lopez *et al.*, 2004). On the other hand, there is some evidence that organizational learning is associated to innovation (Darroch and McNaughton, 2002; Forrester, 2000; Jang *et al.*, 2002; Scarbrough, 2003). Thus a mediating factor can be considered to facilitate the relation between of OC on innovation. However, Sanz-Valle *et al.*, (2011), disclosed that culture, learning, and innovation have scarcely been examined together in the literature. The mediating relation can be justified by the fact that organizational culture affects organizational learning and organization's capabilities and can provide suitable environment for innovation (Cameron and Quinn, 2011; Škerlavaj *et al.*, 2010). Besides, necessity of doing research on investigating the relation between culture, learning and innovation can be related to the fact that learning and organizational culture are mutually dependent on social and cultural context. Thus, studying the linkages between those variables in Iran Khodro in Iran context would be the contribution to the literature.

In fact the relation between OC, KM and OI is also taken in to account in this study. Researchers believed that organizational culture is an essential factor in leading knowledge management to innovation in organizations (Taleghani and Talebian, 2013). Although within the extant literature, there has been clear support for a direct relationship between organizational culture and knowledge management initiatives. The research lacks empirical study on the indirect relation between OC and OI by considering the mediating role of KM. According to Cameron and Quinn, (2011), there are limited studies that have comprehensively and simultaneously examined different processes of knowledge management on relationship between organizational culture and organizational innovation. Besides , it is not clear what aspects of organizational culture facilitates or inhibits the knowledge management initiatives or have the greatest impact on organizational success or failure. While many researchers recognized the crucial nature of organizational culture as an important factor in effective knowledge management. There should be consensus on creating an effective culture for knowledge management (Nonaka *et al.*, 2006). Table 1.1 depicts that authors that has used all four variables.

It is very difficult to get related statistical data due to the Iran close-door policy. However, our preliminary interviews with managers have identified the above-

mentioned issues related to innovation in Iranian automotive sector. A number of Iranian researchers have reported problems with Iran Khodro Company (Tohidi and Jabbari, 2012). Most of the problems reported undercut the company's innovative capabilities. They include: institutional inertia, human resources dislocations, unsupportive organizational culture, and hierarchal flow of information. Similarly, Kamalian et al. (2011) noted that the company faces enormous challenges rising from both micro- and macro-economic constraints, including: absence of learning mechanism, organizational rigidities, lack of skilled personnel, high economic risk and volatility, high cost of innovation, poor knowledge management practices (micro factors); and lack of financing, deficiency in information technology, difficulty in accessing information on markets, want of customers' responsiveness, and inclement government regulations (macro-factors) (Kamalian et al., 2011).

In summary, there is still no consensus in the literature on the factors affecting firms' innovation, and how they relate with each other. The study on antecedents of innovation remains to be fragmented and inconclusive. The subsequent section will elaborate the research questions.

Table 1.1: The summary of previous study

Author	KM	OC	OL	OI	Country & scope
Naranjo-Valencia (2011)		✓		✓	471 Spanish companies
Shu-Hsien Liao and Chi-chuan Wu (2009)	✓		✓		Taiwan firms manufacturing, and financial
Michael Brandt Jones (2009)	✓	✓			Manufacturing firms in USA
Bolívar-Ramos et al (2012)			✓	✓	201 Spanish technological firms
(López-Nicolás and Meroño-Cerdán, 2011)	✓			✓	310 Spanish organizations
(Liao and Wu, 2010)			✓	✓	485 Taiwan's industries
(Darroch, 2005)	✓			✓	443 New Zealand firms
Shu-Hsien Liao, Wen-Jung Chang (2012)		✓	✓		Taiwan's banking and insurance industries
(Moradi et al., 2012)	✓	✓			322 employees in MMU in Malaysia
(Aragon-Correa et al., 2007)			✓	✓	408 large firms in Spanish
(Liao and Wu, 2010)	✓		✓	✓	1000 manufacturers in Taiwan's
Current study	✓	✓	✓	✓	279 in Iran Khodro

1.5 Research Questions

The present study attempts to investigate these research questions as follows:

1. Does knowledge management relate to organizational innovation?
2. Does the organizations culture affect organizations innovation?

3. Can the organization culture influence knowledge management?
4. Is there any association between organization culture and organizational learning?
5. Does knowledge management affect organizational learning?
6. Does organizational learning have any connection with organizational innovation?
7. Does organizational learning mediate a relationship between organizational culture and organizational innovation?
8. Does knowledge management mediate a relationship between organizational culture and organizational innovation?
9. Does organizational learning mediate a relationship between knowledge management and organizational innovation?

1.6 Objective of the Research

Based on the problem statement, the main objective of this study is to examine the direct and indirect effect of organizational culture, knowledge management and organizational learning on product, process and administrative innovation in Iranian automotive industry. Specifically, this study aims:

1. To examine the effect of knowledge management on organization innovation.
2. To determine the relationship of organizations culture with organization innovation.
3. To investigate the relationship between organization culture and knowledge management.
4. To examine the relationship between organization culture and organizational learning.

5. To determine the relationship between knowledge management and organizational learning.
6. To determine the relationship between organizational learning and organization innovation.
7. To examine the mediating role of organizational learning between the relationship of organizational culture and organizational innovation.
8. To examine the mediating role of knowledge management between the relationship of organizational culture and organizational innovation.
9. To examine the mediating role of organizational learning between the relationship of knowledge management and organizational innovation.

1.7 Contribution of the Research

The literature suggests that the process of innovation and consequently competitiveness is at risk, unless the required knowledge to be easily accessible in the right format at the right time (Andreeva and Kianto, 2011). In addition, to achieve innovation in the organizational level, participation of all individuals is necessary. Moreover, to maintain a competitive advantage, companies must establish and implement knowledge management (Nonaka, 1995). Reviewing the literature, it is found that a few studies have taken into account the relationship between knowledge management (KM) and organizational innovation (OI) by considering different dimensions of organizational learning such as commitment to learning, shared vision and open mindedness. The results from this study can give more insight in the area of learning and its effects on the organizational innovation.

Scholars have underlined the importance of organizational learning to organizational innovativeness (Basadur and Gelade, 2006; Clark and Tracey, 2004). In addition, the literature illustrated the significance of organizational culture on

organizational innovation (Škerlavaj *et al.*, 2010). As organizational culture and organizational learning are the main elements for promoting an innovative work environment and organization. (Azadi *et al.*, 2013; Czerniewicz and Brown, 2009). Yet there are very few studies that concurrently examine the effect of different type of organizational culture (OC) i.e. clan adhocracy, hierocracy and market culture on organizational innovation (OI) through the effect of organizational learning (OL). Therefore, to provide a better understanding the relationship between organizational culture and attitudes toward organizational innovation, this study need to examine the influence of different type of organizational culture on organizational learning. In addition, the results of this study help us to have a realistic insight to the organizational culture and role of knowledge on the organizational learning and innovation.

Although research has been carried out to find out the relation between knowledge management, organizational learning, and organization innovation, the variables have not been studied simultaneously (Liao and Wu, 2010; Moustaghfir and Schiuma, 2013). It is argued that regarding the issue of innovation, there should be studies investigating issues on KM, OL and OI along with each other. (Liao and Wu, 2010). Few comprehensive studies concurrently examine the effect of organizational culture (OC) on organizational innovation (OI) directly and through knowledge management (KM). Therefore, the result of the study in line with KBV theory by integrating of the variables in the domain of knowledge management, and organizational innovation provides a new light to the current body of knowledge about the role of effective utilization of knowledge management on organizational innovation.

This study attempts to examine how to change the effect of the innovation in different sectors of the same industry. Based on the knowledge-based view (KBV), providing the needed resources and effective utilization of them may enhance the firm's sustainable competitive advantage. But, due to some limitations, it may not be possible for some companies to employ required resources, therefore the present study with a demographic and intra-industry approach want to give some new clarification which is not known in the body of existing knowledge about the reasons of the success and the failure of the innovation in some sectors of manufacturing industries (Wiklund

and Shepherd, 2003). Therefore, study opened new perspectives into KBV theory as well as internal resource and indicated how the innovative utilization of firm's internal resource in terms of organizational strategy leads to resource management in both the internal and external environments of organizations (Zack, 2002). It is to this end that the results of this comprehensive study can be valuable to the organizations, and may help them in the future decision-making where resources are used as a basis for achieving competitive advantage.

The second one is contributing to owners, employees and the board. Specifically, the owners of the company are direct beneficiaries of the added value innovation brings to the company in terms of increasing the value of owners' net-worth. Similarly, employees as repositories of the company's embedded knowledge benefit from the abundance of opportunities for self-development and other monetary and non-monetary rewards that innovativeness in an organizations generates. Finally, the management board will have the advantage of having a learning and innovative organization in which to implement their competitive.

The last one is contribution to government. Nowadays, many of the governments, especially in the developing countries have decided to pay some financial aid to companies to develop the culture of innovation for improving performance of companies. Knowing the effectiveness of these systems can help to the government to make decisions about the continuation of this policy.

1.8 Scope of Study

Based on the problem statement, the main objective of this study is to examine the direct and indirect effect of organizational culture, knowledge management and organizational learning on product, process and administrative innovation in Iranian automotive industry. An empirical study that is quantitative in nature conducted in three different groups of Iranian Supplying Automotive Parts. As a result, the sampling frame for the current study includes variety of auto parts manufacturer. Therefore, this study considered the managers as respondents, because they have a significant impact

on the process of knowledge management, organizational culture as well as organizational innovation. Furthermore, the managers are the best sources for obtaining direct measures of consequences of organizational culture, knowledge management and organizational learning on organizational innovation.

This selection was based on two reasons. Firstly Iran Khodro Company (IKCO) is the largest car maker in Iran and the Middle East. Secondly, according to Trade and Development Bank reports, Iran's auto industries is among the top five manufacturers in the developing nations with regard to the units produced. Besides, many international automakers are active in Iran such as Peugeot, Kia, Volvo, Benz, Scania, Nissan and Mazda. Iran Khodro Company is positioned as the biggest vehicle manufacturer in the Middle East, Central Asia and North Africa (IKCO, 2012). The company won the annual national prize for export activities in 2006 and 2007 with Russia, Syria, Turkey, Iraq, Azerbaijan, Ukraine, Egypt, Algeria and Bulgaria among their key consumer. The company employs over 26,000, which approximately who are working in different sectors. The data for the study is obtained from auto parts manufacturers the three branches of namely, metallic, electric and polymeric over Iran. The segmentation is done based on criteria of two leading car manufacturers in Iran.

1.9 Conceptual Definitions

There are a number of terms used frequently in this study. In this section, a brief definition of these terms is given. While, the complete explanation of these terms have been described in the next chapter also.

1.9.1 Organization Culture

Organizational culture is a pattern of norms, values, beliefs, symbols, language, assumptions, beliefs, habits and attitudes that influence behavior within an organization. Culture emerging as behavioral patterns is shared at organizational

levels. It influences on the orientation of organization members in their interaction with other members, clients and stakeholders (Loy and Mujtaba, 2007b).

1.9.2 Organizational Learning

Organizational learning is defined as the development of new knowledge or awareness that has potential to affect firm behavior. Organizational learning leads to enhanced productivity and is a powerful tool to improve the performance of an organization and achieve long-term organizational success. Organizational learning enhances an organization's abilities in order to propagate and apply knowledge to be adapted with changes of external environment (Imran *et al.*, 2011).

1.9.3 Organizational Innovation

Organizational innovation is considered as the process used to develop and enhance the products, processes and markets. Innovation is also referred as the execution of creative and noble ideas in a firm (Marins, 2008). In this study, innovation is implied as introduction of a new idea in product, machinery, equipment, processes, task specifications and workflow mechanisms (Damanpour et al., 2009).

1.9.4 Knowledge Management

Knowledge management includes the systems capable of creating and embedding knowledge within a firm. Knowledge management must facilitate creating new knowledge in order to make an organization more innovative and competitive. knowledge management focused on the capacity to identify, acquire, store, distribute, and use explicitly documented knowledge (Lloria, 2008).

1.10 Outline of the Thesis

This thesis consists of five chapters. Chapter one introduces the background of the study. The chapter also addresses the research problem, research questions and establishes of the research objectives. It includes a discussion of the contribution, operational definition and scope of the study.

Chapter two begin with explanation about the concepts; latent and measured variables that are applied in this study and include a description about innovations, knowledge management, organizational learning and organizational culture. This chapter continues with descriptions of the underlying theory of study and development of the research model. The last section of the chapter is about reviewing of literature about the relationship between variables, measurement, and hypothesis development.

Chapter three presents the methodology of the research. The topics included are population of the study, sampling frame, sampling technique, unit of analysis, data collection method, questionnaire design, , pilot study, reliability and validity tests as well as explanations of statistical tools for analysis of main data and hypotheses testing a detailed discussion of the theoretical framework, underlying theory and hypotheses development.

Chapter four will present data analysis results that contain the description or results, discussions of research findings, testing the research questions and hypothesis. The analysis of quantitative data has been done by structural equation modelling (SEM) technique. Furthermore, the Smart PLS has been will to analyze the measurement model and scrutinizes the relationship between latent variables that have been discussed in the chapter four.

Chapter five answered the research question and objectives, also it presented the prospective contribution, limitations, recommendations and conclusion of the chapter.

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