

## RELATIONSHIP BETWEEN KNOWLEDGE INERTIA AND ORGANIZATIONAL LEARNING

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Nowadays Knowledge is not a fad. In terms of strategy, it is important for both individuals and enterprises. Hence the necessity of knowledge management is blatantly obvious. Knowledge is "not replicated", therefore, it can bring about competitive advantage. However, while encountering problems, there is a tendency to rely on prior knowledge and experience. Such routine problem solving strategy is called "Knowledge inertia". This paper aims to utilize this literature and examine the relationship between knowledge inertia and organizational learning in Iran for the first time. Structural equation modeling is employed to discuss mutual impacts on each other and coming up with some ideas to boost organizational learning. A questionnaire survey was conducted to collect data from government organizations as well as private enterprises. A total of 165 valid responses were collected. Our results reveal that first there is a higher tendency for learning through exploitation rather than exploration. Second, experience inertia has a positive impact on organizational learning, whereas the effect of learning inertia on learning is negative. Research has shown that when a member of an organization has more experience inertia or less learning inertia, the performance of the organizational learning will be better.

Keywords: Knowledge Inertia, Organizational Learning, Correlation, Structural Equation Modeling, Kerman

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### 1. INTRODUCTION

It has been wildly acknowledged that the competitive advantage of firms in today's economy stems not from market position, but from "difficult to replicate" knowledge assets and the manner in which they are deployed. Therefore, knowledge is increasingly regarded as a survival tool in a dynamic and competitive environment (Laudon and Laudon 2000). The third industrial revolution is based on knowledge which changes the way one individual, an enterprise or even a nation can create wealth and prosperity (Liao et al, 2008).

Knowledge management (km) and organizational learning (OL) certainly can not be considered as new topics, with the original concepts close to two decades old and OL practices dating back well beyond that (Senge, 1990; Wiig, 1994). The practices of KM and OL have been shown to improve organization performance (Caveleri et al., 2005; Davenport and Prusak, 1998) and thus it is justifiable to conduct research to refine our understanding of how these management and practice concepts improve organizational outcomes.

Nevertheless, hurdles to efficient and effective knowledge management and organizational learning are many. Using the principles of inertia in physics to knowledge management, Liao (2002) expresses that knowledge inertia may inhibit an organization's capabilities

to learn and solve problems. Often routine problem-solving procedures are adopted to save time and effort as well as avoid risks (Liao et al., 2008). Stagnant knowledge sources and obsolete prior experience result in the some solution and approaches being employed to deal with problems. Such predictability in management behavior may make an enterprise more risk in a highly vulnerable competitive environment. Inertia not only has negative impact on knowledge utilization, but may also disclose an enterprise's commercial secrets and strategies (Liao, 2008).

The theory of knowledge inertia proposed by Liao (2002) and organizational learning from two dichotomies of exploration and exploitation has not been tested empirically in Iran. Therefore this research attempts to delve into the constructs of knowledge inertia using principle analysis and explore the relationships between knowledge inertia and organizational learning. The sample of organizations studied includes government organizations as well as private enterprises which are categorized into manufacturing and services industry.

### 2. THEORETICAL FRAMEWORK

#### 2.1. Knowledge Inertia

In physics, the principle of inertia states that objects continue in a state of rest or uniform motion unless acted upon by forces. Facing no obstacles, an object's motion is subject to physical constraints and objects will move in the predicted trajectory (Liao, 2008). Humans can track and reach moving

objects by predicting where objects are going. This truth suggests that human cognition also has inertia (Hofsten, Vishton, Spelke, Fent & Rosarder, 1998; Kavcic, Krar & Doty, 1999).

The whole procedure explains several things. Firstly prediction is based on that there is a trajectory if objects more then we can track and reach them according to their inertia. Secondly, changes in moving trajectory only happen if objects are interrupted by outside forces. It means that any change of inertia is caused by outside forces. Thirdly, change does not happen spontaneous, but must be implemented (Liao, 2008).

In human cognition, there is an explanation process, which derives something from a view of understanding that the other thing has been done (Schank, 1986). For instance, while reading a text or listening to a discussion, we use our knowledge about what is being written or talked about to help us tie together the pieces of what we hear. Then our post knowledge helps us predict what we will hear afterwards, complex words, resolve pronouns, and make connections between the completely distinct subjects being discussed. The conceived implication is that our past knowledge of what happened in something allows us to infer a similar thing and to explain it (Kolonder, 1994).

## 2.2. Organizational Learning

All humans are born with the ability to learn and it is thought learning that they adapt to the changing and evolving environment. Learning leads to new insights and concepts. It often occurs when we take effective actions and we detect and correct our own mistakes (Argyris and Schon, 1978).

Organization learning is a necessary resource and capability for firms seeking to sustain a competitive advantage in today's market place (Barney, 1991). According to resource based theory, resources include all the "assets, capabilities, organizational processes, firm attributes, information, knowledge and etc., controlled by a firm that enable the firm to conceive of and implement strategies that are efficient and effective" (Barney, 1991, P. 101). In this light, organizational learning, defined as the capability for organizations to create, disseminate, and act upon generated knowledge, can be regarded as a source (Auh and Mengue, 2005). In retrospect, different approaches toward learning have emerged: double loop vs. Single loop learning (Argyris and Schon, 1978); generative vs. adaptive learning (Senge, 1990); product innovation vs. production-oriented learning (Mckee, 1992).

Organizational learning occurs through a process of acquiring, sharing and integrating new knowledge from outside the firm as well as inside the firm (Crossan et al., 1999). Exploration results from a relatively broad and generalized search to expand the knowledge domains of

firms into unfamiliar or novel areas and/ or to establish new combinatory mechanisms. Exploitation, on the other hand, relies on more narrow, localized and in-depth search and/or repetitive combinative mechanisms in order to obtain well-defined solutions pertinent to a firm's existence knowledge domains (Galunic and Rodan, 1998; Katila and Ahuja, 2002; McGrath, 2001).

Researchers from a variety of disciplines have noted the close tie between a firm's orientation towards organizational learning and its knowledge stocks (Cohen and Levinthal, 1990; Helfat, 1997). To really understand the "trade off" between exploration and exploitation, therefore, we need to look more directly at the knowledge stocks of the firm (Kang and Snell, 2009).

In brief, a learning organization has the ability to continuously adjust to new situations and to renew itself according to the demands of the environment (Jaw and Liu, 2003). In order to enhance it's capability to learn, an organization should establish a system where individual learning can be shared among members (Tsang, 1997). Learning by an individual forms the basis of organizational learning; it is through individual learning that an organization will also learn as a whole (Grant, 1996).

However, Adams et al. (1998) identified inertia as a stumbling block that hinders an organization's capabilities for learning about markets for new product development. Moreover, knowledge inertia may inhibit the learning ability of an individual (Liao, 2002). This may in turn impact organizational learning. According to mentioned notes, we pose our hypothesis as follows.

H1. Knowledge inertia is negatively related to organizational learning.

Image1 display's the theoretical frame work for this research which depicts our hypothesis and different constructs of KI and OL.

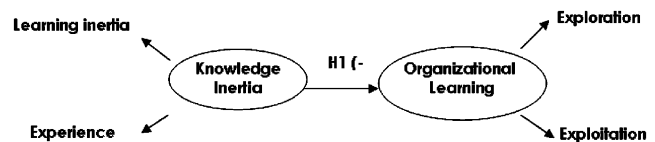


Image1: theoretical frame

## 2.3. Research Methodology

Sample: After pre-test and modifications related to cultural context, questionnaires were sent out to selected respondents. According to the maximum likelihood estimation (MLE), in order for the sample to be effective, the number of respondents should be between 100 and 150 (Ding et al., 1995). The sample comprises four types, namely government-service organizations, government-manufacturing, private-service and private-manufacturing

enterprises. A total of 400 questionnaires were sent out, 100 to each organization type. To ensure the sample is representative, equal numbers of government organizations and private sector organizations and enterprises were included. These governmental organizations and private sector enterprises were randomly chosen from 100 and 200 of these enterprises, respectively, listed under the manufacturing and servicing sectors of Kerman in the south of Iran. A total of 400 questionnaires were distributed, there were a total of 165 valid responses, for an effective response rate of 41.25%.

2.4. Operational Definition and Measures of Research Variables

Table1 listed the operational definitions of the three variables, namely, knowledge inertia and organizational learning.

2.5. Questionnaire development

Reliability Analysis: Reliability of a construct refers to the consistency and stability of the questions. Table 2 lists the Cronbach's á of the constructs. As can be seen all constructs have Cronbach's á above 0.7, which indicates high reliability (Nunnally, 1978).

Validity Analysis: In the phase of pre- test, the questionnaire was given to 25 experts at the faculty of management in Kerman and Tehran and the validity of the questionnaire was verified.

Structural Equation Model: A model of structural equation (Lisrel 8.5) was estimated in the theoretical development of the hypothesis formulated. This analysis enables us to assess the causal relationships between knowledge inertia and organizational learning. The Path diagram of the model and the relationships as well as it's indicators of goodness of fit are shown in Image2.

Organizational learning	Exploration: learning mechanism which has the goal of experimentation with new alternatives.	3	March (1991)
	Exploitation: efficient employment of current assets and capabilities, which is needed to survive in the short term	4	

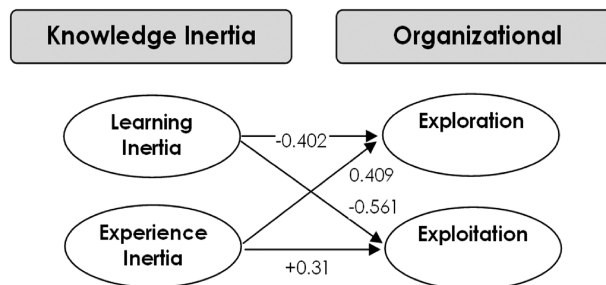
Table 2  
No. of Questions for each Construct and its Cronbach's α

Variable	Construct	No. of Questions	Cronbach's α
Knowledge inertia	Learning inertia	7	0.782
	Experience inertia	7	0.817
Organizational Learning	Exploration	3	0.881
	Exploitation	4	0.868

As it can be seen, the analysis of the model indicates a good level of fit. All the indicators of goodness of fit greatly exceed the recommended value for each of them. On the other hand, according to table 3, T-values of the hypothetical relationships between experience inertia and the two constructs of organizational learning is positive and significant, indicating positive impact of learning inertia on organizational learning. In other words, organization members with great experience inertia will enhance the performance of the organization through exploitative and explorative learning. On the contrary, learning inertia has a negative effect on organizational learning; hence H1 is partially supported.

Table 1  
Operational Definitions of Variables

Variable	Operational definition of construct	No. of questions	Source
Knowledge inertia	Learning inertia: Members of organization are influenced by inertia in knowledge learning.	7	Liao et al. (2008)
	Experience inertia: Members of organization are influenced by inertia in solving problems with past knowledge and experience.	7	



S-Bx	RMSR	GFI	NFI	NNFI	AGFI	CFI	IFI
172.5653	0.051	0.875	0.875	0.921	0.859	0.912	0.918

(p=0.000)

Image2 Path Diagram of relationships between knowledge inertia and organizational learning with indicators of goodness of fit.

Table 3  
MLEs of the Path Parameters

Paths/hypothesis	Parameter estimate	T-value	Hypothetical relationship	Results
Learning inertia →	-0.402	-9.421	Negative	Supported
Exploration	+0.312	2.325	Negative	Not
Experience inertia→	-0.561	-7.154	Negative	Supported
Exploitation	0.409	4.683	Negative	Supported
Learning inertia →				Not
Exploitation				Supported
Experience inertia→				
Exploration				

Note 2: T-value > 1.96

## 2.6. Correlation Analysis

Table 4 presents descriptive statistics and correlations for the study variables. Consistent with the notion that organizations tend to prefer exploitation over exploration (e.g. March, 1991; Nemanich & Vera, 2008). Apart from descriptive statistics, we can reckon that the more learning inertia exists in the atmosphere of workplace, the less learning occurs. This relationship is in line with the former research studies (e.g. Liao et al, 2008). The drawn implication might be the stark fact that dependence on prior knowledge in the era of violent and pervasive change can lead to lagging behind the rivals. Although both exploitation and learning inertia convey the idea of positive relationship between them, surprisingly, the correlation coefficient is negative, albeit not very noticeable. Moreover, the table shows that fact that exploration and exploitation were not correlated in our data supported the implication which lies in this specific context that these two constructs were orthogonal and a touchable correlation is not elicited.

Table4  
Descriptive Statistics and Correlation Matrix of Constructs

Variable	Mean	SD	1	2	3	4
(1)Learning inertia	3.54	0.96	(0.78)			
(2)Experience inertia	2.87	0.84	-0.461**	(0.82)		
(3)Exploration	3.18	1.32	-0.674**	0.335**	(0.88)	
(4)Exploitation	4.53	0.78	-0.231**	0.453**	0.054	(0.87)

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

## 3. RESULTS AND DISCUSSION

Our research findings show that experience inertia is positively related to organizational learning, meaning that members with more experience inertia show higher

capability in enhancing organizational learning. In terms of cognition, Huff and Huff (2000) argue that resistance to initiate change at the level of individual cognitive processes is the most important source of inertia in organizations.

In addition, the means related to the constructs can show that in the studied organizations in Kerman there is a stronger tendency to capitalize on obsolete knowledge; therefore, in long-term it can jeopardize good companies to get doomed. Thus taking heed of innovation as a creator of long-lasting advantages (Deboni, 2008), can elevate the possibility of their survival. Innovation matters, as innovative organizations have the following in common. First and foremost, they are competitive innovators in that they contribute to break through to the next level because they are constantly defining it. Second, they understand that it is not the organization that is innovative; rather it is the sum of the people who, through the way they think and act, allow the organization to be innovative (Deboni, 2008).

## 4. CONCLUSION

In this paper we wanted to address the question of how two different modes of learning, namely, exploration and exploitation can be hindered or expedited by the knowledge inertia. Moreover, we got some peripheral results which are worth paying attention to. We can sum up that relying on prior knowledge can be detrimental for the future of organization learning. In return, it has been proved that organizational learning has positive effect on both innovation and competitiveness and economic/financial results (Lopez et al., 2005). On the other hand, using former experience can help an enterprise to boost learning. This statement is in line with the quote that says "experience is the best science".

But setting a balance between exploration and exploitation is another story. It is shown that exploration is more positively related to firm performance than was exploitation while the opposite was true for defenders of their current situation. We should bear in mind that regardless of whether the firm is a prospector or defender, futuristic or conservative, exploration is more positively associated with effective firm performance than is exploitation.

The contributions of this study lies in offering some directions of exploration and widening the scope of knowledge management and organization studies.

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