

The Influences of Organizational Culture and Human Resource Development on R&D organizational Effectiveness – the Mediating Effect of Knowledge Management

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ABSTRACT

In this research we aimed to explore the mediating role of knowledge management in the relationship between organizational culture, human resource development (HRD), and organizational effectiveness using a hypotheses model. The hypotheses model contends that organizational culture, HRD are preconditions required for effective knowledge management which is mediated and aimed at further improvement of organizational effectiveness in R&D based organization. Here we surveyed a sample of 524 R&D professionals in Mongolia and results showed that knowledge management was partially mediating the relationships between organizational culture and organizational effectiveness and also between HRD and organizational effectiveness. Implication of research and practice of findings are discussed further.

Keywords: *Knowledge management; Organizational culture; Human resource development; Organizational effectiveness; Mediator.*

INTRODUCTION

In 1990, during the initial stages of transition to market, main concern was to sustain a macroeconomic stability, whereas today, the top priority is to develop a basis for long-term economic growth in Mongolia. In the age of Knowledge-based Economy, knowledge distribution power is the key to a nation's economic growth and international competitiveness. Economic theory emphasizes the accumulation of R&D (Research and Development) and human capital in explaining economic growth (Aghon & Howitt, 1992). From this point, Governments are responsible for developing the technological structure and the appropriate institutions and macro-economic policies to support R&D. For example, the presence of a well-developed technological infrastructure (encompassing the network of research organizations, the education system) as well as institutions to protect intellectual property rights provides the foundation for the development of innovation capabilities and the pursuit of scientific research. In today's rapidly developing world, processing information swiftly, identifying the critical mass, and investing in intellectual properties have become crucial factors of effective organizations and economic development in Mongolia (S&T plan of Mongolia, 2007). The research institutes of Mongolian Academy of Sciences (MAS) were asked to participate in this study. The MAS is an autonomous agency under the patronage of the government and has 50 members (academicians). Recently there are 21 research institutes of nature and as well as social sciences operated by MAS. Also MAS created two specialized Academies, the Mongolian Academy of Medical Sciences and the Mongolian Academy of Agricultural Sciences within its operational framework. About 25 percent of total 3562 researchers in Mongolia are working in MAS research institutes and 35.6% of total scientific expenditure is allocated to the MAS research institutes.

The multi-faceted output of R&D in a nation includes indicators such as patenting rates, number of research scientists and engineers, as well as scientific publications. Generally an organizational effectiveness is a powerful and problematic concept. It is powerful in the sense that it represents a useful tool for critically evaluating and enhancing the work of organizations; it is problematic in the sense that it can mean different things to different people (Forbes, 1998). Especially, improving or assessing the effectiveness of R&D and government organizations is not easy. Basically, an

R&D organization is any group or team of professionals that develops research and development activities autonomously or inside some company or institution and the key elements of processes apply and develop knowledge are speed and flexibility in a rapidly changing environment (Guillermo, 2003).

Knowledge management in an organization has become a critical factor in an organization's success and competitiveness. Knowledge for R&D projects changes rapidly as a result of technological, scientific development and changing economic relationships (Rob et al., 1997). The World Bank (2001) avers that knowledge management has become a fundamental source of wealth creation, supplementing industrial capital and land. In addition, Ron Sanchez, (2001) stated that we enter the first decade of the twenty-first century, contemporary management thinking is being profoundly reshaped by two new convictions: First, managing organizational knowledge effectively is essential to achieving competitive success; Second, managing knowledge is now a central concern – and must become a basic skill of the modern manager.

Many studies raise the issue of organizational culture's influence on knowledge management success. Organizational culture is a source of sustained competitive advantage (Berney, 1991) and empirical research shows that it is a key factor to organizational effectiveness (Denison, 1990; Denison & Mishra, 1995; Fey & Denison, 2003; Denison, et al., 2004, Brain et al., 2009; and Zheng, 2009). Cold and his colleagues' (2001) review of the cultural environment conducive to knowledge management, suggested that shaping culture is central in an organization's ability to manage its knowledge more effectively. To achieve a competitive advantage, organizations need to generate specific knowledge because specific resources are unique and difficult to imitate. One way to generate organization-specific resources is human resource development (Lepak & Snell, 1999). Human resource development and utilization refers to the practices used for enhancing employee skills through training and other forms of knowledge and skill enhancement (Lepak & Snell, 1999). Moreover, when the human resource development is effective it brings human capital of employees in higher level so we can say that human resource is most important factor in growth of the organization. The main purpose of this paper is to examine the relationship between knowledge management, organization culture, HRD and organizational effectiveness and to investigate whether the organizational culture and HRD affect organizational effectiveness through knowledge management in R&D organizations. There are some researches on organizational effectiveness in knowledge management, organizational culture, and HRD but only few studies focused on R&D organizations and in Mongolia there is almost any study on R&D organizational effectiveness. In order to achieve sustainable economic growth, there is an urgent need for the R&D profession establishing an effective R&D management system. Therefore, the study attempts to formulate a hypotheses model to assess the impacts of R&D organizational effectiveness on the Mongolian research institutes.

LITERATURE REVIEW

Knowledge Management

In the field of Knowledge Management (KM), multiple different attempts to categorize, classify, and define knowledge and related terms have been undertaken in the past and these are still questionable. When the literature focused on knowledge management, the discussions often concern the characteristics of knowledge, the difference between information of knowledge and categorization of knowledge. However, the literature comprises many different research traditions and points of view. Some authors see knowledge has been defined as "justified true belief" (Irma & Rajiv, 2001) and a common expression for knowledge is "information in action" (Kucza, 2001), like information applied for a purpose. Nonaka (1994) and Huber (1991) defined knowledge is a justified personal belief that increases an individual's capacity to take effective action and it may be more appropriate definition, and can be used in any area. Following the implications of the process-oriented perspective, knowledge is seen as a dynamic factor by social interaction between individuals and organizations. Knowledge is active because it is action oriented and subjective because knowledge is information in a certain context.

Irma and Rajiv, (2001) defined the effective knowledge management as key to the success of contemporary organizations. Importantly, organizations may not be equally predisposed for successful launch and maintenance of knowledge management initiatives. Therefore, a key to understanding the success and failure of knowledge

management within organization is the identification and assessment of preconditions that are necessary for the effort to flourish. These preconditions are described broadly as capabilities or resources within the organizational behavior literature (Nonaka 1991; Gold et al., 2001). The above mentioned attempts and other attempts determining knowledge management have been undertaken, but they have always dealt with high-level processes only and they were too specialized on specific aspects, or dealt with knowledge management too broadly which is difficult to determine due to its nature and complexity. While knowledge itself is something intangible, knowledge management has to cover various aspects such as sociology, physiology and information technology so on (Kucza, 2001).

Accordingly, there are many possible approaches to research of KM. The approach selected for this research was to look at the processes taking place within KM with the goal of developing a representation that is simultaneously both simple and comprehensively enough. Carrillo et al., (2004) emphasized that knowledge management is the continues process of managing all knowledge in order to anticipate current and future needs, to identify and exploit existing and acquired knowledge as well as developing new opportunities. Gold et al. (2001) suggested that acquisition, conversion, application and protection are the main condition of knowledge process capabilities. Alavi and Leidner (2001), to develop organizational knowledge management process based on framework of the view of organizations as social collectives and "knowledge systems". Based on this framework, Alavi and Leidner (2001) suggested that organizations as knowledge systems consist of four sets of socially enacted "knowledge processes": (1) creation (also referred to as construction), (2) storage/retrieval, (3) transfer, and (4) application. According to those different characteristics of KM, the appropriate definition might be that knowledge management is the overall task of managing the process of knowledge creation (acquisition), conversion, utilization, and protection, as well as the related activities.

Organizational Culture

At previous scholars' study, multiple conceptualizations of organizational culture can be found in the literature. However, it is difficult to find the most appropriate perspective to assess culture where the interest is on relating culture to organizational effectiveness and knowledge management within study area. Typically, researchers have agreed that culture can be thought of as a set of cognitions shared by members of a social unit (Hause, 2000). It is concept, and there is no concrete way to "prove" what a concept for what is organizational culture. There is no method for conclusively ending debates about "single true definition or concept of organizational culture (Ott, 1989). However, the multitude of definitions have been proposed by many authors (Keesing, 1974; Schein, 1981; Ott, 1989, Denison, 1990) by creating a typology of organizational culture, but some of them were collapsed during past research period.

Schein (1988; 1990) points out that multiple cultures are possible in an organization and he defined culture as a pattern of basic assumptions; invented, discovered, or developed by a given group; as it learns to cope with its problems of external adaptation and internal integration; that has worked well enough to be considered valid and, therefore, is to be taught to new members as the correct way to perceive, think, and feel in relation to those problems. However, Reichers and Schneider (1990) clarified the Schein's definition as learned responses to the group's problems of survival and internal integration. The responses are subconscious, taken for granted, and shared by the members of the group. Ott, (1989) stated that organizational culture can be defined functionally or pragmatically as a social force that controls patterns of organizational behavior by shaping members' cognitions and perceptions of meaning and realities, providing affective energy for mobilization, and identifying who belongs and who does not. The functional definition of organizational culture is quite straightforward. A functional definition provides important understandings about the functions organizational culture performs and why organizational cultures continue to exist. Nevertheless, it is far from adequate by itself for those who would work with and in organizational cultures (Ott, 1989). This paper applies the culture framework developed by Denison and his colleagues (Denison, 1990; Denison & Mishra, 1995; Fey and Denison, 2003; Denison, et al., 2004) which is very essential to the relationship between organizational culture and effectiveness. Denison and his colleagues (Denison, 1990; Denison & Mishra, 1995; Denison et al., 2004) identified and validated four traits of organizational cultures; involvement, consistency, adaptability, and mission. The Involvement refers a function of the level of involvement or participation of the members of the organization in decision making related to organizational goals. Consistency refers highly consistent, well coordinated, and well integrated for a shared system of beliefs, values, and symbols that is understood by the members of the organization. Adaptability refers to the

degree to which an organization has the ability to alter behavior, structures, and systems in order to survive in the wake of environmental changes (Zheng W, 2009). The mission refers to the existence of a shared definition of the function and purpose of the organization and members. Mission has two major influences on organizational functioning: first, it provides purpose and meaning, and secondly it provides direction and goals.

Human Resource Development

Human resources management involves practices that ensure organizations' human capital (i.e., employees' knowledge, skills, and abilities) to be contributing to business outcomes (Huselid et.al, 1997). The theoretical literature suggests that human resource management increases productivity by increasing employees' skills and motivation (Huselid, 1995). Many organizations are highly dependent on their human capital to competitive advantage. Their market value increasingly depends on their intangible assets, such as their knowledge, core competencies, and organizational capabilities (Lawler, 2005). The resource-based view suggests that human resource systems can contribute to sustained competitive advantage through facilitating the development of competencies that are firm specific, produce complex social relationships, are embedded in a firm's history and culture, and generate tacit organizational knowledge (Lado and Wilson, 1994). Human resource development refers to the practices used for enhancing employee skills through training and other forms of knowledge and skill enhancement (Lepak & Snell, 1999). Therefore, Human resource development improves the human capital that people bring with them to the organization.

Rauch and his colleagues (2005) defined four dimensions to Human resource development and utilization: training and development of employees, decision-making involvement, support for personal initiative, and goal communication. Training and development of employees is important because the firm is not likely to find specific and unique skills in the labor market (Lepak & Snell, 1999). Therefore, these skills need to be developed internally. Additionally, employee development helps to shape employees' behavior and attitudes in such a way to make them consistent with organizational goals. Decision making involvement helps to create ongoing commitment from employees, which in turn affects performance (Arthur, 1994, Huselid et al., 1997; Lepak & Snell, 1999). Support for personal initiative can be seen as an attempt of empowering employees because personal initiative describes extra role behaviors such as having more responsibility, working independently, and controlling one's own work independently. Empowering employees is related to business outcomes (Arthur, 1994; Huselid et al., 1997). The goal of communication is to provide information to a person or group in a fashion which enables the person or group to integrate to the new information with their own knowledge and use it in making decisions. Finally, the high investment in training and development programs, promotions planning, job enrichment and work design, and other HRD activities have to have proven effective outcomes related to an organization's core competencies and human capital (Blackman & Lee-Kelley, 2006). Overall, this study used the dimensions of training and development of employees, decision making involvement, personal initiative and goal of communication for measure to assessing HRD due to significant of the study.

Organizational Effectiveness

Cameron (1980) stated that evaluating the effectiveness of organizations requires selecting the appropriate criteria. Many approaches are available, but to find the most useful approach, the evaluator should first answer. Basically, the evaluators have used four major approaches namely goal, system resource, internal process & operation, and strategic constituencies (multiple constituency) to define and assess organizational effectiveness (Cameron, 1980; Cameron & David, 1983). Scholars emphasized that the most widely used approach defines effectiveness in terms of how well an organization accomplished its goals (Cameron, 1980; Lusthaus, 2002). Goals are the central component of this approach. Thus, operative goals are clearly identifiable, consensual, assessable and time-bounded are the most important features to focus on when evaluating organizational effectiveness (Price, 1972). According to that we define effectiveness as the extent to which an organization is meeting its functional goals. The first order of business in assessing organizational effectiveness is to identify the goals. As stated by Lusthaus (2002), at one level the organizational goals are self-evident, for example: Mongolian academy of Sciences develops the sciences and advanced technology in the country. Although, describing and measuring effectiveness presents problems, first, it is unclear whether you can decide on a single set goal

or, for that matter, come to consensus about multiple set goals for an organization (Brown, 1994). Second, it is unclear where to go, and to whom to go to, to identify goals or seek consensus. Despite these difficulties, organizations do engage in a variety of processes to identify goals, objectives and systems to communicate their effectiveness – that is the extent to which they attain their goals – to their constituents (Lusthaus et al, 2002).

There are very few findings among R&D organizations on what the term “effectiveness” really means to them, how to be effective, and how it should be measured in R&D organization. The productivity of an industrial operation usually includes the quantity and quality output. However, in an R&D organization, many units of output are intangible and subjective in nature. Productivity also needs to be related to the objective and goals of the organization. Organization effectiveness has a one to one correspondence to the general concept of productivity, but it also includes items which are not always included in productivity – for instance, quality and utility. Organization should not be productive only, and it needs to be viable over a considerable period of time. This in turn requires that members be satisfied with organization (Jian & Triandis, 1997). A good case can be made for each organization developing its own criteria of effectiveness through participation of organization members in a debate that considers (1) different criteria, (2) how they should be measured, and (3) how they should be weighted. R&D organization output measures can be subjective or objective, discrete or scalar, and quantitative or non-quantitative, and there can also be qualitative aspects associated with them. The relationship of output measures to organizational goals must also be included (Jian & Triandis, 1997).

Gold et al. (2001) utilized both practitioners’ statements and the general literature in an attempt to operationalize this nebulous concept for organizational effectiveness. They noted that organizational effectiveness include activities such as improved ability to innovate, improved coordination of efforts, and rapid commercialization of new product; and that external factors (e.g. overall economic growth, industry growth and profitability, level and intensity of competition, consumer preferences) as well as factors internal to the firm (e.g. cost structure, revenue, firm size, efficiency) can contribute to overall effectiveness. Gold et al. (2001) concluded that three important processes of organizational effectiveness are efficiency, adaptability and innovativeness. Economists define efficiency as the absence of waste and explain that an efficient economy or firm is one which utilizes all its available resources and produces the maximum amount of output that its technology permits (Baumol & Blinder, 1994). Adaptability is the “change in a significant organizational attribute, such as basic business strategy or organizational structure in response to environmental change” and innovations is a measure of knowledge management effectiveness; reflects a degree of uniqueness; and generally give rise to a new or modified device, system, program, process, etc for adaptation to the organization. Finally, the purpose of this review is not to provide a new conceptualization of effectiveness or argue for superior methods of measurement. Instead, it aims to argue for appropriate conceptualization and measurement for a particular context of organizational effectiveness in the selected objective area. Thus, this study utilized the dimensions of efficiency, adaptability and innovations which are very suitable for the R&D organizational effectiveness.

Organizational Culture, Knowledge Management, and Organizational Effectiveness

Typically, Denison et al.’s (Denison, 1990; Denison et al., 2004) two of the dimensions, namely involvement and adaptability, are indicators of flexibility, openness, and responsiveness, and were strong predictors of growth. The other two dimensions, consistency and mission, are indicators of integration, direction, and vision, and were better predictors of profitability. Each of the four dimensions was also significant predictors of other effectiveness criteria such as quality, employee satisfaction, and over-all performance (Denison & Mishra, 1995). Many studies raise the issue of organizational culture’s influence on knowledge management success. Although, a few investigate the way in which this influence manifests itself which means the relationship between organizational culture and knowledge management. Cold’s (2001) research review of the cultural environment conducive to knowledge management, suggested that shaping culture is central in a firm’s ability to manage its knowledge more effectively. At any organization the interaction between individuals is essential in the innovation process. For example: dialogues between individuals or groups are often the basis for the creation of new ideas therefore it can be viewed as potential for creating knowledge. Turban and Arison (2001) to emphasize that “the ability of an organization to learn, develop memory, and share knowledge is dependent on its culture”.

Human Resource Development, Knowledge Management, and Organizational Effectiveness

The theory of human capital supports the use of closely monitored training as the best way to assimilate knowledge transfer. Many organizations are highly dependent on their human capital competitive advantage and their market value increasingly depends on their intangible assets, such as their knowledge, core competencies, and organizational capabilities (Lawler, 2005). Moreover, several researchers argued that the organizational performance and growth are dependent on successful Human resource development management in terms of enhancing motivation, performance, involvement loyalty and commitment (Sharabi & Harpaz, 2010).

RESEARCH METHODOLOGY

Sample and Data Collection

The research institutes of Mongolian Academy of Sciences (MAS) were asked to participate in the study. The MAS is an autonomous agency under the patronage of the government and have 50 members (academicians). At present there are 21 research institutes of nature and social sciences operated by MAS. All of MAS research institutes were selected for the survey and questionnaires were directly sent to them and collected questionnaires back. The survey took one month due to different location of research institutes. Before sending the questionnaires it was translated English to Mongolian by Mongolian professional translators. From the frame of approximately 750 people who are working in MAS, a sample of 524 respondents (response rate of 69%) was selected for the study.

Research Framework

According to research purposes and literature reviews, the study proposes the research frame as shown in Figure-1. Organizational culture and human resource development are the independent variables, organizational effectiveness is dependent variable and knowledge management is the mediating variable.

Figure 1: Research Framework

Research Hypotheses

- H1: Organizational culture is positively related to its knowledge management.
- H2: Organizational culture is positively related to its organizational effectiveness.
- H3: Knowledge management is positively related its organizational effectiveness
- H4: Knowledge management is a mediator between organizational culture and organizational effectiveness.
- H5: Human Resource Development is positively related its knowledge management.
- H6: Human Resource Development is positively related its organizational effectiveness.
- H7: Knowledge management is a mediator between human resource development and organizational effectiveness

Research Design and Instrument

A self administrated survey was used to collect data for variables of organizational effectiveness, organizational culture, HRD and knowledge management. Survey items were adapted from existing instruments used in past research. The multi-item scales comprised questions, and forty-three questions in five parts including above variables and

individual information to collect data. Measures assessing organizational effectiveness were adopted from Gold et al. (2001) which capture organizational members' perception of degree of overall efficiency, adaptability and innovativeness. Moreover, some items which based on special of number of patent obtained and publication which are arguable characteristics of effectiveness in an R&D organization. Organizational culture were referred from the study of Denison and his colleagues (Denison, 1990; Denison & Mishra, 1995; Fey & Denison, 2003; Denison, et.al., 2004) that encompassed four functional dimensions: involvement, consistency, adaptability, and mission. Knowledge management is the overall task of managing the process of knowledge creation (acquisition), conversion, utilization, and protection, as well as the related activities. In this study, items measures knowledge management were adopted from Gold and his colleagues' (2001). Human Resource Development refers to the practices used for enhancing employee skills through training and other forms of knowledge and skill enhancement (Lepak & Snell, 1999). Items measure assessing of HRD adopted from the study of Lepak and Snell (1999). The all questionnaires using a 7-point Likert scale.

RESEARCH ANALYSIS AND RESULT

Reliability and Regression Analysis

The study adopts Cronbach's α to measure the internal consistence reliability of the questionnaire. The results show that Cronbach's α of knowledge management, organizational culture, HRD and organizational effectiveness are 0.899, 0.941, 0.930, and 0.897 respectively. It indicates that the design of the questionnaire has a high internal consistence. The results of regression analysis shown that organizational culture ($\beta=0.746$, $p<0.001$), human resource development ($\beta=0.646$, $p<0.001$), and knowledge management ($\beta=0.737$, $p<0.001$) are positively and significantly related to organizational effectiveness. Moreover, organizational culture ($\beta=0.808$, $p<0.001$), and HRD ($\beta=0.728$, $p<0.001$) have significantly influence on knowledge management respectively (See Table 1). Therefore, H1, H2, H3, H5 and H6 hypotheses are supported.

Table1: Regression Analysis

Variables	β	R ²	t	F	Sig.
Organizational culture to knowledge management	0.808***	0.654	11.702	984.698	0.000
Organizational culture to organizational effectiveness	0.746***	0.557	12.922	656.670	0.000
Knowledge management to organizational effectiveness	0.737***	0.544	8.910	622.105	0.000
Human resource development to knowledge management	0.728***	0.531	18.205	588.701	0.000
Human resource development to organizational effectiveness	0.646***	0.417	19.186	373.114	0.000

* $p<0.05$, ** $p<0.01$, *** $p<0.001$

Mediation Test

The study follows Baron & Kenny (1986, p.1177) suggestions to examine the mediating effects in three steps: (1) the independent variable must be shown to affect the dependent variable in the first equation, (2) second, the independent variable must affect the mediator in the second equation; and (3) the mediator must affect the dependent variable in the third equation. If these conditions all hold in the predicted direction, then the effect of the independent variable on the dependent variable must be less in third equation than in the second. Perfect mediation holds if the independent variable has no effect when the mediator is controlled.

As shown in Table 2, the study follows Baron and Kenny's (1986) suggestions to enact the mediation test. To test hypotheses four (H4), a regression analysis needs to examine whether knowledge management has mediation effect between organizational culture and organizational effectiveness.

First, the study let organizational culture as independent variable and knowledge management as dependent variable. The results show that organizational culture is significantly and positively affected to knowledge management

($\beta = 0.808$, $p < 0.001$). Second, organizational culture and knowledge management are the independent variable, and organizational effectiveness is the dependent variable. The results indicate that organizational culture is significantly and positively affected to organizational effectiveness ($\beta = 0.746$, $p < 0.001$). Moreover, knowledge management is significantly and positively accounted for organizational effectiveness ($\beta = 0.737$, $p < 0.001$). Third, organizational culture added to knowledge management and regressed with organizational effectiveness. The result indicated that β value of organizational culture is reduced from 0.746 to 0.434, and both organizational culture and knowledge management are significantly related to organizational effectiveness. Therefore, Hypotheses four (H4) is supported. Knowledge management provides a partial mediation effect between organizational culture and organizational effectiveness (See Table 2).

Table2: Mediation Test

Variables	Model 1		Model 2				Model 3	
	KM	KM	OE	OE	OE	OE	OE	OE
OC	0.808*** (.000)		0.746*** (.000)				0.434*** (.000)	
HRD		0.728*** (.000)			0.646*** (.000)			0.232*** (.000)
KM				0.737*** (.000)			0.387*** (.000)	
KM						0.737 0.000		0.569*** (.000)
R ²	0.654	0.531	0.557	0.544	0.417	0.544	0.609	0.569
Adj R ²	0.653	0.53	0.556	0.543	0.416	0.543	0.607	0.568
F.change	984.698	588.701	656.67	622.105	373.114	622.105	405.637	343.609

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Note: KM-Knowledge management, OC-Organizational Culture, HRD-Human Resource Development, OE-Organizational effectiveness.

In addition, test hypothesis seven (H7) analyzes whether knowledge management has mediation effect between HRD and organizational effectiveness and firstly the study let HRD to be the independent variable and knowledge management be the dependent variable. The results show that HRD is positively affected to knowledge management ($\beta = 0.728$, $p < 0.001$). Second, the study tests whether HRD affects on organizational effectiveness and knowledge management affects on organizational effectiveness. The results signify that HRD is positively affected to organizational effectiveness ($\beta = 0.646$, $p < 0.001$). Moreover, knowledge management is significantly and positively accounted for organizational effectiveness ($\beta = 0.737$, $p < 0.001$). Third, HRD added to knowledge management and regressed with organizational effectiveness. The results demonstrate that HRD and knowledge management are positively affected to organizational effectiveness, and β value of the regression decreases from 0.646 to 0.232. Thus, H7 is supported and we could say that knowledge management is a partial mediate the relationship between HRD and organizational effectiveness (See Table 2).

CONCLUSION AND SUGGESTION

The goal of this study was to examine the relationship between organizational culture, HRD and organizational effectiveness by focusing on knowledge management in an R&D organization. The results of study shown that organizational culture is significantly related to knowledge management; organizational culture is significantly related to organizational effectiveness; knowledge management is significantly related to organizational effectiveness; knowledge managements is a partial mediator between organizational culture and organizational effectiveness; HRD is significantly related to knowledge management; HRD is significantly related to organizational effectiveness, knowledge management is partial mediator between HRD and organizational effectiveness. Therefore all hypotheses of this study are supported. Based on the results of this study, several main conclusions can be drawn. The first conclusion is that both organizational culture and HRD has positive effect on the organizational effectiveness. While, many existing studies have focused on the relationship between organizational culture and organizational effectiveness but very few

study explored the relationship with R&D organizations. The study reached same conclusion as previous study, that organizational culture is a source of sustained competitive advantage and key factor to organizational effectiveness. In addition, the study proposes the more investment in trainings and development programs, promotion planning and other HRD activities to prove effective outcomes related to an organization's core competencies and human capital. Hence, maintaining high human resource development activities should have positive consequences on organizational performance and effectiveness. Second, this study explored the relationship between organizational culture and organizational effectiveness by mediated knowledge management. The findings supported that knowledge management is a partial mediator between above two variables. It means knowledge management is not only indirect predict organizational effectiveness, it is also a central mechanism that leverages organizational culture influence on organizational effectiveness. This finding suggests that how knowledge is managed well is greatly associated with how well cultural values are translated into value to the organization, this may be due to the culture determines the basic beliefs, values, and norms regarding knowledge creation, conversion, utilization and protection among organization. Third, the study shows that knowledge management is a partial mediator between HRD and organizational effectiveness. The theoretical literature suggested that human resource management increases productivity by increasing employees' skill and motivation. In addition, to achieve competitive advantage, organizations need to generate specific knowledge because specific resources are unique and difficult to imitate. One way to generate firm-specific resource (knowledge) is human resource development. It is clear that HRD skills and knowledge are critical to the success of knowledge management processes, whatever perspective on knowledge is used. Thus, the study suggests that R&D managers should give more attention on how to improve their employees' skill through HRD and it might generates more firm-specific resources for organization's success in future. Finally, the study findings indicate that knowledge management influences organizational effectiveness when it is clearly related with organizational culture and HRD. Therefore, knowledge management in an R&D organization has a critical factor in an organization's success and competitiveness. However, an R&D organization needs more complex research to emphasize the importance of knowledge management with different factors such as organizational strategy, and organizational technology it might be improving organizational effectiveness using different way. Therefore, further research and literature review are required.

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