

Impact of Individual Learning on Team Learning and Innovation in the Petroleum Industry of Malaysia

Zubair Hassan¹

PhD Scholar, Faculty of Management and Economics, International Islamic University, Malaysia

Abdul Basit

MBA Graduate, Lords Ashcroft International Business School, Anglia Ruskin University, UK

Abstract

The aim of this research is to investigate the impact of Individual learning on Team learning and Innovation in the Petroleum Industry of Malaysia. The study will carry this research through engaging 321 employees of one petroleum company (PETRONAS) in Malaysia using convenience sampling. The independent variables are Mental Models, Personal Mastery, Dialogue and Inquiry, Continuous Learning and Empowerment to gauge the impact on the dependent variable Team learning and Innovation. This study will employed Confirmatory Factor analysis and Structural Equation Modelling using AMOS20. The results of the study indicated that Empowerment is the only attribute of individual learning that is found to be significant with team learning and Innovation as well while Dialogue & Inquiry has a positive and significant impact on team learning but not innovation while other all factors are found to be insignificant with the dependent variables in the studied context. Moreover it is recommended to engage other relevant factors of individual learning to make the conceptual framework more addressing with a wider number of respondents to pasteurize a more generalize picture of the studied topic. Though this study will be considered a crucial piece in the discipline of organizational learning for the corporate world and as well as the research community through digging and exploiting different research dimensions about the topic. Thereby, for further research other developed economic corridors and developing economies that can further be exploited under the umbrella of organizational learning. Last of all, a

¹ Corresponding author's email: Zubai7@gmail.com

comparative study can also be conducted amongst two industries of different nature like Petroleum and Banking to understand the phenomena in a better manner and understandably.

Keywords: Individual learning, Team learning, Innovation, Petroleum Industry, Malaysia.

Cite this article: Hassan, Z., & Basit, A. (2018). Impact of Individual Learning on Team Learning and Innovation in the Petroleum Industry of Malaysia. *International Journal of Management, Accounting and Economics*, 5(6), 417-447.

Introduction

The purpose of the research is to carry out an investigation on the impact of Individual Learning on Team Learning and Innovation in Malaysian firm. The study has been carried out in Malaysia's well known company known as Petroliaam Nasional Berhad (PETRONAS). The company is a Malaysian owned Oil and Gas Company which is owned by the Government. It has consigned with the oil and gas resources of the country and has been successfully adding value to the resources (Alhassan, Ghazali, & Isha, 2014). PETRONAS by no doubt has been a major contributor to Malaysia's GDP and has achieved its rank among the world's largest corporations in the list of Fortune Global 500 (Malaysian Petrochemical Country Report, 2014). Thus PETRONAS has been a fine choice for conducting this research as Organizational Learning in a public sector organization, such as PETRONAS, can help their employees to develop an improvement in their existing skills and knowledge and hence plays and crucial role in the creation and facilitation of an innovative environment.

The term or concept of learning organization has gain much attention as result organization is striving to gain and sustain competitiveness in the markets they operate. Many organizations such as Dutch Shell, Ford Motor Company, Boeing, Toyota and Microsoft etc. have designed their infrastructure in building a learning organization. Most of these companies have paid much attention on development of individual workers by spending fortunes on education and training programs. It was assumed that there is '*no organizational learning without individual learning*' (Argyris & Schon, 1996, p. 20).

Previous researchers have undertaken their study in the field of Organizational Learning for understanding its dynamics towards firm's performance. Researches have implied several theories and models which has given them the ability to have a better understanding of their framework. Ellinger, Ellinger, Yang, and Howton (2002) have used Watkins and Marsick's (1993) Dimensions of the Learning Organization Questionnaire (DLOQ); Kocoglu, Imamoglu and Ince (2011) have employed Peter Senge's (1990) Five Disciplines and The Theory of Nonaka (1991); Mansoor and Ratna (2014) used Besant and Tidd's (2005) 4Ps Model of Innovation. Furthermore, Uğurlu and Kurt (2016) have employed Path Goal Theory (1974) in their study. While the mentioned scholars have carried out the researches all around the world. Similarly there were several researches undertaken in Malaysia, which are worthy of mentioning as well. For example Salim and Sulaiman (2011) have used Fiol and Lyles' (1985) Higher and Lower-Level Learning Theory and Argyris and Schon's (1978) Single and Double Loop Learning;

Hafit, Asmuni, Idris and Wahat (2015) have used Dynamic Capabilities Theory (1997); and Mansor, Malik and Mat (2010) have employed The Resource Based Theory (1996). However, the most common theories and models that have utilized are Watkin and Marsick's (1993) Dimensions of the Learning Organization Questionnaire (DLOQ), Peter Senge's (1990) Five Disciplines, The Theory of Nonaka (1991), Argyris and Schon's (1974) Single and Double Loop Learning, and Huber's Theory (1990).

As discussed earlier, the concept of organizational learning has grown its popularity and has been highly prioritized by organizations. Thereby, researchers have linked the concept to several aspects of an organization and carried out their studies throughout the past years. Afzali, Motahari and Hatami-Shirkouhi (2014) carried out their research in the banking sector of Iran; Kocoglu, Imamoglu and Ince (2011) researched in Turkey's telecommunications, computer and electronics, communication, software, manufacturing and machinery, chemical, service technologies, food and material industries; Dekouloua and Trivellasb (2014) researched in the Advertising sector of Greece; Spicer (2004) carried out his study on England's SMEs; Hernaus, Skerlavaj and Dimovski's (2005) research involved Croatian companies employing more than 50 people; Laeque and Babar (2015) studied on Pakistan's Hospitals; and Ouma and Kombo (2016) carried their research in the Food Manufacturing sector of Kenya. Moreover, majority of the researches were carried out in Turkey, Iran and Greece, with highest number of researches done in the Banking and Manufacturing sectors.

Malaysia, moreover, has paced up in this field and several researches were carried out with the reference of Malaysian companies. Salim and Sulaiman (2011) researched in Malaysia's ICT industry; Hussein, Mohamad, Noordin and Ishak (2013) and Hafit, Asmuni, Idris and Wahat (2015) both focused on Malaysian Public Institutions of Higher Education; Hussein, Aluwi, Noordin and Ishak (2016) carried out their research in the Government-Linked Companies (GLC); while Mansor, Malik and Mat (2010) studied on the Banking sector.

However, among the studies carried out in Malaysia along with other countries, the most common variables used to measure learning organizations are continuous learning, inquiry and dialogue, collaboration and team learning, share learning, collective vision and empowerment (Mansoor & Ratna, 2014; Ellinger, Ellinger, Yang & Howton, 2002; Dekouloua & Trivellasb, 2014). While on the other hand, variables such as Return on Assets (ROA), Return on Equity (ROE), innovativeness and job satisfaction were employed to assess the impact on firms' performance (Sung, Rhee & Yoon, 2016; Goh & Ryan, 2002). Moreover, majority of their methodology consistently entails the adoption of a survey research method.

In the past reserachers have constructed their study on the basis of their framework which not only reflected on the importance of being a learning organization but also explored the degree it impacted on different dynamics of the organization. According to Kim (1993) organizations ultimately learn through their individual members, and although individual learning grew its importance in the rapidly competitive era, there are very few research papers established in this field. However, as these past studies have focused solely on organizations adapting for being a learning organization, this research

would be signifying itself by rooting out on one of the most important factors of the organizational learning and thereby focusing on Individual Learning. Moreover, it will not only consider assessing the firm's performance through innovativeness, but also assesses the further impact of individual learning on team learning.

Research Rational

One of the important factors that make a Learning Organization successful is 'Individual Learning'. According to Crossan, Lane and White (1999), an organizational learning occurs in two ways; it starts from the individual to the organization (feed forward) or from the organization to the individual (feedback). Individual Learning, according to Castaneda and Perez (2005), is an integration of human capabilities and learning sub-processes which is beyond mere intuition which excludes other cognitive processes and forms of conscious learning. It is expected from the individuals to learn frequently and also share their learning in ways that enable the larger system to learn. Moreover, it is further expected from the individuals to critically reflect on them. This process itself demands people to work from a model of free and informed choice and that they are able to engage in dialogue with one another regardless of status or position in the hierarchy (Marsick, n.d.). However, individuals may not be able to think in way which will enabling them to raise these kind of questions. Even when they do, organizations are not typically safe places for public critique even when they have adopted a commitment to organizational learning (Kegan, 1994). As the work of Argyris and Schön (1996) over the years attests, some leaders have begun to create cultures that are more open to critical thinking, but organizational life, by its very nature, often pushes members toward conformity (Rhodes, 1998). Thus for organizations, it is crucial for them to build and support individual learning and strengthen its base in order to be a stronger learning organization themselves.

Moreover, for organization to maintain their position in the rapidly changing economic world and in an environment where there is always a tough competition, 'learning' is a chief requirement. Thereby it has become a necessity for companies to train and teach their employees and become a learning organization to adapt these changes and face the challenges (Gilaninia, Rankouh & Gildeh, 2013). These organizations are believed to be bold and powerful as their foundation is based on learning and thus it has a developed an increased importance in today's modern business era. Besides, according to Ichij and Nonaka (2007) the success of a company in the 21st Century will be determined by the level to which the organizational Leaders can employ their abilities in developing the knowledge within their subordinates. Further Learning Organization is considered as a mainstream privilege in this competitive world because learning is the key health pack for the sustainable survival in the confused and changing conditions (Tseng & McLean, 2008).

As previously mentioned, not many researches have been carried out focusing on "Individual Learning" and especially in Malaysia. Moreover, Malaysia's primary sector has been barely touched in this field. Thereby, this research will be shedding light on the dynamics of individual learning with the reference of Malaysia's leading organization, PETRONAS. This paper further contributes towards the corporate world and also

community in order to understand significance of the concept and help their organizations to enhance their base as a learning organization.

Research Objectives

- To examine the impact of individual learning on team learning
- To examine the impact of individual learning on Innovation
- To examine the impact of Team learning on Innovation.

Research Questions

- What is the impact of individual learning on team learning?
- What is the impact of individual learning on innovation?
- What is the impact of Team learning on innovation?

Literature Review

Learning organization concept becomes popularized with the work of Senge (1990). In his book he describes learning organization as the only business strategy in achieving competitive advantage in the long run. However a 'clear definitions of learning have proved to be elusive over the years' (Garvin, 1993. p.79). Different academicians defines learning organization in different ways. Garvin (1993) definitions are based on modifying behavior of individuals to acquire new skills and institutionalizing the new knowledge through the whole organization. Senge (1994, p.1) defines learning organization as continuously expanding capacity for their individuals to see the whole system and learns faster than competitors. Pedler (1995, p.21) define learning organization as total involvement of employees and bringing changes collectively.

Based on the evidence of the existing literature, there are three main pillars of learning organization. These are individual, team and organizational learning. Hong (1999) argued that individual learning system focus on top management or one top manager's knowledge and insight, while organizational learning system focus on the knowledge of all members in the organization. Individual level of learning normally occurs when the workers interact with other workers or when they are on duty. The knowledge and insight will be transferred or exchange with other individuals. This is described as reflection in action (Mulholland, Domingue, Zdrahal & Hatala, 2000). Cayla (2004) argued in the cognitive perspective, that when individual learns, the whole system learn so that is an evolution of the world. This author defines individual learning as changing and modifying the behavior of individuals Aksu & Ozdemir (2005) stated that individual learning take place through risk taking, changes of perception, new experiences, and modification of behavior.

Senge (1994) defined team learning as creating team capacity for team members to learn to achieve what they require. Senge (1994, p.236) outlined three dimensions of team

learning existed within the organizations. The first dimensions include allowing members to think insightfully about complex issues. Second dimension involves employee involvement, coordinated actions. As third dimensions, the role of team members on other team must be existed Hong (1995, p.117) stated that with knowledge and insight of each member in the group can make the whole team learn when each member exchange the information.

Hodgkinson (2000) defined organizational learning as process of combining individual learning thereby encouraging sharing the learning which will in the long-run benefits the organization Cayla (2004) argued that organizational learning occurs in two ways. Firstly, organization learns if the employees of the organization change their behavior, the way they think, or if new people come to the organization and if the people working in the organization adopt a new way or behavior. Secondly, Cayla argued that if the rules of the system are change to allow and encourage the people to think freely and give feedback, organization will learn.

Importance of individual learning

First, if learning organization is described as “*where people continually expand their capacity to create the results they truly desire*” (Senge, 1994, p.1) and “*enhanced capacity to learn, adapt, and change*” (Gephart, Marsick, Buren, & Spiro, 1996, p.36), it is individuals who contentiously monitor changes in the external and internal environment of organizations (Morgan, 1997). It is individuals in the organization, who act as agents in detecting and correcting errors without challenging the operating norms (Lim & Chan, 2004, p.101). These individuals not only predict the “rain” but also helps the organisation how to build “arks” as Noah did. However, as this involves, “correcting”, it implies more about controlling the behaviour of others, this might create dissatisfaction and defensiveness among the workforce (Argyris, 1976, p.368), which may destroy the learning culture. Argyris (1996) argued that when individuals focus on detecting and correcting errors, this prevents the organization as a whole to learn. He also argued that when professionals become defensive, and their single-loop learning strategies go wrong, they block the learning opportunity for the organization. Such defensive behaviour was addressed by the research conducted by Lukmann who argued that individuals normally agrees on something which they do not know but disagree most of the time, if they really are knowledge (Garavan 1997).

Second, according to Huber (1991) organizations can learn through the acquisition of new knowledge, information sharing, information interpretation, and organizational memory. Each of the aspects described by Huber is largely dependent on individual learning efforts. If the acquisition of knowledge is an aspect of learning organization, it is individuals in the organization who capture the new knowledge (Dodgson, 1993). Individuals develop new skills and ways of doing new things based on past experience (Mumford, 1994). This knowledge is transferred among the other members of the organization, when the whole organization may learn ways of doing things effectively. It is the role of leader as an individual to facilitate learning by accepting the new ways of doing things (Senge, 1994). In this way, individuals challenge the existing operating norms to improve the current system (Argyris, 1996). Recently researchers findings

indicated that individual learning must be “*channelled via team learning and ultimately with organizational learning*” (Teare and Dealtry, 1998, pp.50-51) to create a learning organization. Also it may not be possible for an organization to acquire new knowledge through its individuals without investing on development or education (Hodkinson, 2000). However, it is important to ask, do individual develop their own skills and acquire new knowledge? If individuals learn by doing the work for him/her, it may prevent learning due to inappropriate ideas (O’Keeffe, 2002). Stressing on this he argued that it would be a mistake to conclude that learning organization is created only through individual learning. It might be impossible for an individual to learn without others (Stacy, 2003). It is can be true in high-tech companies for new recruits when individuals are asked to learn on how complicated system works on their own leads “*inefficient non-standard ways of doing things that leads to inconsistent result*” (Hepczyk, 2004, p.11). To create learning organization requires producing a consistent result from the learning. Spending on individual training and education might be true but Teare and Dealtry (1998) suggested that individual learning is not enough in creating a learning organization.

Third, individuals shares their knowledge or information with other members of organisation to make the whole organization learn together. When organizations learn as a collective process, individuals in the organization transfers knowledge to the rest of the organisation (Dixon, 1998). However, Lehesvirta (2004,) believes the success of sharing information or individual knowledge is based on the degree of willingness to share the information. This depends on the type of individuals in the organization. It is difficult to conclude the types of individual which is most suitable to a learning organization as there was not enough organizational literature to support the argument (Garavan, 1997). But he promoted psychological maturity as a core attribute of individuals who are involved in creating learning organization, without any concrete research evidence. Another argument which promotes individual learning to create a leaning environment is forwarded by Hodkinson (2000) and Gorelick (2005) who suggested that encouraging individuals to engage in open dialogue in order to discuss mistakes committed while they are working. This may allow the exchange of information, as it is a vital aspect of learning organization. This may build trust among the members which may in turn encourage individuals to share ideas, information, knowledge and insight (Phillips, 2003). These authors’ arguments are mainly based on assumption and there is no empirical evidence to support the arguments. However, there was good research conducted by Morgan (1997) which argued that sharing information in a bureaucratic organization would be difficult. His finding also indicated that rewarding and punishing people might create defensive mechanisms, whereby it may create “*impression management*”. This means individuals may withhold vital information from the senior managers leading to the destruction to the whole organization. Then it is not possible for an organisation to become a learning organization only through individual learning.

Fourth, willingness of individuals to share the knowledge with others to learning collectively is in questions. It is important to learn collectively, but do people learn collectively? Morgan (1997) believes the quality circle is one of the worldwide concept that every organization needs to implement to enrich the decision making process. Wyrick (2003) highlighted that some problems arise in learning collectively as different members’ process information differently. According to (Kolb, 1981) individuals learn

through different style through observation, performing tasks, through intensive readings and findings or by applying what has been learnt in practice. People with different learning styles may not be able to learn together or collectively in creating a learning organization for many reasons. One academician believes that organizations are not designed to learn even if it is designed to learn through individual learning (Weick, 1991). He extended his personal views arguing that individual learning occurs only when different people gives different opinions on the same issues, while organizations learn only when all individuals provide the same opinion. Senge (1994) also questions the ability of individuals to create a learning organization by learning collectively as different people have different IQ, where some individuals have an IQ of 180 above, while the whole organization may have a collective IQ of 70. According to Argyris, organizations may not be able to capture what everyone knows (Pedler, 1995). Therefore individual development alone cannot create a learning organization (Pedler, 1995).

Fifth, to become a learning organization it requires new knowledge to change in the range of potential behavior of an organization through knowledge creations (Hubber, 1991). As organizations are consists with many individuals, without changing the individual behavior, organizational behavior cannot be changed. This means learning organization reflects new knowledge and insights by modifying the behavior of individuals (Gravin, 1993). This requires modifying the behavior of individuals in the organization by creating new knowledge or strategies or policies, procedures etc. Garvin (1993) illustrated an example of most popular, successful and profitable 360 computer series developed based on failed technology of stretched computer. Also Garvin (1993) illustrated an example of lesson learned after many series of failed projects. Boeing requested the most experienced engineers who involved in each project to write a report about how the project failed. Later these engineers involved in different projects were assigned to projects of 757 and 767, and “*guided experience, they produced the most successful, error free, launches in Boeing history*” (Garvin, 1993, p.85). This suggested that individuals modify their behavior through past experiences. Therefore the whole organization may learn as individuals learn, because when an individual learns, it modifies the behavior of the individual (Cayla, 2004). Nonaka (1994) argued that new knowledge always begin with individual learning. An individual learning is considered as prerequisite in improving organizational performance, which leads to behavioral changes (Giesecke & McNeil, 1999). Similarly, King (2001) suggested that enhanced individual learning improves organizational behavior performance. Therefore individual learning is a process that permanently modifies the individual behavior (Cyalor, 2004). This permits to conclude that if organization learns, it may permanently modify the behavior to reflect new knowledge and insight. However, if individual knowledge is not institutionalized among the teams, organizations may find it difficult to adapt the changing environment.

Sixth, individual learning has proved to be a crucial component of learning organisations. Although individual learning may not guarantee to create a learning organisation (Senge, 1994). The question is can an organization learn if an individual learns? Are there other elements other than individual learning? Based on the past research finding suggested that organization do learn. It creates an organizational memory, where it stores, retrieves and process information for purpose of organization

like a brain (Morgan, 1997). According to O’Keefe (2002) different individuals join and exits whenever they want and leadership may change over the time, but organization “preserve behavior, norms, values and “mental maps” over time”. Therefore learning organization is developed and “*built on collective organizational memory*” (O’keeffe, 2002, p.134). It is not possible for all individuals to learn collectively, but due to strong shared vision and system thinking, organizational culture never diminishes completely. A fine example can be illustrated from the plane crash incident of Norwegian shipping company, where a plane with 55 employees crashed in West Germany in 1989 (The New York Times, 1989). According to Morgan (1997, p.101), there were some senior managers among the victims. However, it was not long before the incident, the organization started to run as like before by using the organizational knowledge hub and combining the knowledge of the remaining members. This indicated that organizations do learn, but with the organizational memory which is mainly built by the pool of individual learning. In learning organization knowledge were obtained for the purpose of institutionalizing the knowledge and to adapt as an organization to the changing conditions of the environment (Castaneda & Rios, 2007). Weldy (2009) concluded that learning take place through explicit and tacit information which includes individual and organizational level of learning.

Conceptual Framework

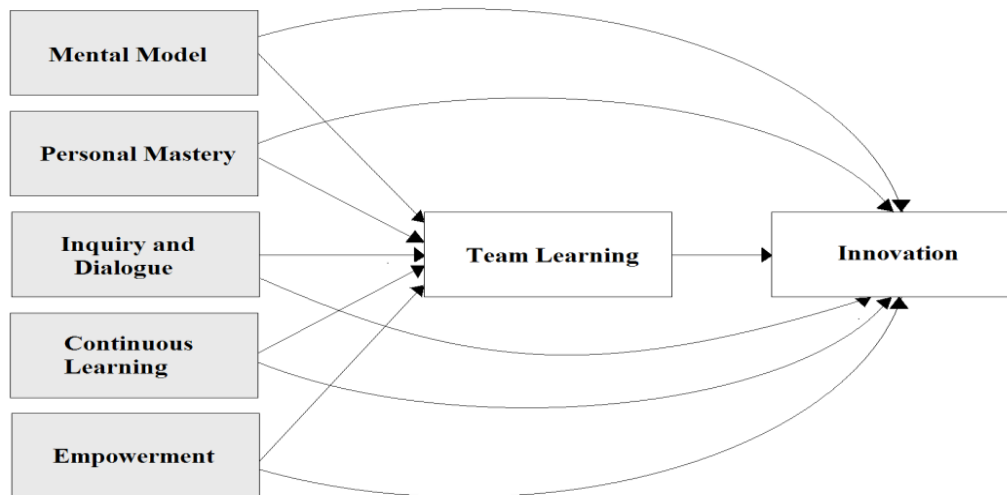


Figure1. Conceptual Framework- Individual learning, Team learning and Innovation

The term mental model has been used as an explanatory mechanism in a variety of disciplines over the years (Wilson & Rutherford, 1989). Essentially, mental models are organized knowledge structures that allow individuals to interact with their environment. Specifically, mental models allow people to predict and explain the behaviour of the world around them, to recognize and remember relationships among components of the environment, and to construct expectations for what is likely to occur next (Rouse and Morris, 1986). Furthermore, mental models allow people to draw inferences, make predictions, understand phenomena, decide which actions to take, and experience events vicariously (Johnson-Laird, 1983). Rouse and Morris (1986) defined the term as a

"mechanism whereby humans generate descriptions of system purpose and form, explanations of system functioning and observed system states, and predictions of future system states". Hence, mental models serve three crucial purposes: They help people to describe, explain, and predict events in their environment. This moreover, not only enhances the knowledge of an individual, but due to the growth in an individual's learning ability, it helps them enhance their team commitment as well. Thus is make them work as a team and develop their team learning ability even more.

H₁: Mental Model has positive significant impact on Team Learning

Zaltman et al. (1973, p.) stated that the distinguishing characteristic of an innovation is that instead of being an external object, it is the perception of a social unit that decides its newness. Innovation is increasingly discussed as one of the desired outputs of knowledge, whilst the need to manage workers in order to develop the learning needed to promote knowledge and innovation is also identified (Swan et al., 2002). According to Kaipa (2012) mental model in terms of innovation is the creation of a reality distortion field, namely the ability to reframe a problem in a way that convinces others to buy into your way of thinking and doing. Society may not be convinced of an individual's logic to describe a problem, but if they act on the problem with the new mental model and frame the problem differently, they might gain new insights and new approaches which could enable them to come up with a solution. The solution itself might not be innovative, but reframing the problem allows people to see old reality with new set of eyes and that is an important innovation (Davison & Blackman, 2005).

H₂: Mental Model has positive significant impact on Innovation

Team learning builds on the discipline of personal mastery. It is a process that encompasses aligning and developing the capacity of a team to achieve the goals that its members truly want. While individual learning at one level is important, it is irrelevant at another level; Individuals may learn but the organization as a whole does not. There is no organizational learning. Teams become, therefore, the essential ingredient for learning, a 'microcosm' for learning as Senge calls it. Team learning must therefore be seen as being a collective discipline (Taggart, 2010). To say that 'I' as an individual am mastering team learning is irrelevant. Team learning involves mastering the two primary ways that teams communicate: dialogue and discussion. By dialogue, Senge means 'deep listening' and the free exploration of ideas (Stephen, 2001). Discussion, on the other hand, refers to searching for the best view to support decisions once all views have all been presented. While on the other hand, to the extent that individuals can respond to what is offered, provides training it is vital to develop personal mastery. In this sense, it is important that the company has the clear conviction that only through quality training and be possible to reach the maximum number of people content, rational and emotional, necessary for it to occur creativity and innovation (Taggart, 2010).

H₃: Personal Mastery has positive significant impact on Team Learning

H₄: Personal Mastery has a positive significant impact on Innovation

Inquiry and Dialogue plays an important role on Team Learning. This is an important tool for promoting collective thinking and communication leading towards organizational performance. According to Jyothibabu, Farooq and Pradhan (2001) team learning or group level learning has a mediating effect on organizational performance and does not have direct influence on performance. Inquiry and Dialogue plays an important role in enhancing the communication and the establishment of processes for individuals to learn as a team. It further empowers employees to tackle issues at their level within organizational context. According to Senge (n.d.), as dialogue develops, team members will find this feeling of friendship developing even towards others with whom they do not have much in common. What necessary going is in is the willingness to consider each other as colleagues. In addition, there is a certain vulnerability to holding assumptions in suspension. Treating each other as colleagues acknowledges the mutual risk and establishes the sense of safety in facing the risk. Inquiry and Dialogue, furthermore, helps to enhance the organization's innovation (Senge, 1990).

H₅: *Inquiry and Dialogue has a positive significant impact on Team Learning*

H₆: *Inquiry and Dialogue has a positive significant impact on Innovation*

As per the previous studies, it has been found that continuous learning may influence individual's own perceptions of their development needs or capabilities to develop, which in turn determine the participation in developmental activities (Maurer et al., 2003). For instance, one of the characteristics of continuous learning is the cognitive ability. Individuals with high cognitive ability enhance their own learning as well as team learning (Ellis et al., 2003; LePine, 2003). Teams composed of individuals with high cognitive abilities and positive personality characteristics will more likely to learn and outperform groups made of individuals who are low on these traits (Tannenbaum, Beard, and Salas, 1992). Thus, organizations that want enhance team learning should give the opportunity for the employees to consciously learn, for example through training and other similar programs, and help them develop their own individual learning first.

Continuous learning is important for short and long term success of both individuals and organizations. Among various benefits of continuous learning for the individual is to learn better skill sets, enhance their ability to meet organizational goals, and to remain competitive in this job market and in the expanding global economy (Jain & Martindale, 2012). Since continuous knowledge acquisition can potentially lead to increased productivity, it benefits organizations to remain effective, innovative and competitive. As organizations struggle to survive and prosper in the increasingly competitive environment, continuous learning is becoming an important component within an organization. The ability to learn and develop one's skills is becoming a core career competency (Hall & Mirvis, 1995). Individuals are increasingly responsible for their own career path that often requires varied skill sets and knowledge bases. This shift has radically changed the process of learning and the ability to continuously gain new skills and to improve on existing ones has become an essential recipe for career success (Maurer & Weiss, 2010).

H₇: Continuous Learning has a positive significant impact on Team Learning

H₈: Continuous Learning has a positive significant impact on Innovation

Because most teams are knowledge-based teams that solve customer problems or develop new products, one of the most important performance outcomes is process improvement. Process improvement is equivalent to team learning (Redding, 2000; Watkins & Marsick, 1993), which is defined as “activities carried out by team members through which a team obtains and processes data that allow it to adapt and improve” (Edmondson, 1999: 351). Team Learning behaviors include seeking feedback, discussing errors, and experimenting (Edmondson, Bohmer, & Pisano, 2001). The complex, knowledge-based tasks that teams perform require behaviours such as planning and executing, integrating with other teams inside and outside organizational boundaries, managing team performance, improving team processes, and influencing organization-level direction and resource allocations (Mohrman, Cohen, & Mohrman, 1995). Empowered teams have the authority to engage in these behaviours (Wellins et al., 1991). Hence it has been believed that the dimensions of empowerment contribute to the process of team learning.

Many authors have sought to identify management practices that build an organizational climate promoting innovation. Some of them argue that management styles incorporating empowerment allow employees to have more autonomy, authority and responsibility and promote innovation. Indeed, empowerment has a positive impact on employees and in particular on their ability to innovate. Çakar and Ertürk (2010), Ertürk (2012), Khodabakhshi et al. (2013), Knight-Turvey (2006) and Spreitzer (1995) provided evidence that employee empowerment is a significant predictor of innovation. Through empirical studies they conducted in the industrial sector, Ertürk (2012) and Spreitzer (1995) concluded that empowerment leads to innovative behaviours. This practice encourages the autonomy and initiative of employees and makes them more willing to provide more efforts. Due to the flexibility left to them, they are more motivated specially to explore new ways of doing things and to generate multiple ideas which can lead in particular to exploratory innovations. The same idea has been advocated by Wang (2012) who pointed out that empowerment increases employees’ creativity and initiative. Hasan and Thamizhmanii (2010) stated also that empowerment increases collaboration which boosts innovation.

H₉: Empowerment has a positive significant impact on Team Learning

H₁₀: Empowerment has a positive significant impact on Innovation

Organizational learning and education research studies express the role of teams in organizations and propose team-learning activities as facilitators for implementation of innovations (Timmermans, Linge, Petegem & Denekens, 2012). It has been considered that work teams have a potential organizational advantage when it comes to complex tasks, such as developing an innovation. Hence, it has been argued that Team Learning is necessary to enable effective teamwork and thus to activate the organizational advantage of teams. Several scholars emphasize that Team Learning are a key factor for fostering

processes of innovation development (Awang, Sapie, Hussain, Ishak, &Yusof, 2014; Crossan, Lane, & White, 1999; Van den Bossche, Gijssels, Segers, &Kirschner, 2006).

Team Learning is necessary to create a shared understanding of ideas, their relevance, different tasks and goals, and the distribution of responsibilities in the innovation process. Once a shared understanding of the innovation is established, team learning directly enhances different team behaviors related to accomplishing the requirements for innovation development by enabling an efficient distribution of responsibilities (Widmann, Messmann & Mulder, 2016). In addition, by having diverse knowledge bases and multiple perspectives readily available, attaining the requirements for innovation development, such as the generation of appropriate ideas or the identification of shortcomings of a prototype, becomes easier and more effective (Widmann, Messmann & Mulder, 2016).

H₁₁: Team Learning has a positive significant impact on Innovation

Research Design and Methodology

Subjects

As for this research, total of 400 questionnaires were distributed in the main headquarter of PETRONAS. However, when returned back, out of 400 only 371 questionnaires were filled out. When it was further filtrated, only 318 papers were usable. Thereby, this research's total population is 400 while its sample size is 318. However only 318 (Response rate 79.5%). This means the study only used 318 completed questionnaires, where 175 respondents were male (55%) and 153 respondents of the sample of 318 were female (45%). 66.1% of the respondents were in managerial level, 25% of the respondents were in executive level , 9% of respondents were from other levels such as specialists, consultants and others. These respondents were distributed to various age groups such as 41.3% of respondents are 25 to 35 years, 52.4% of respondents were from 36 to 45 years, 4.3% of the respondents were from 46 years and above, and 2% of the respondents were from age group of 18 to 24 years.

Procedures

The researchers independently contacted the employees from PETRONAS with the consent of PETRONAS using convenient sampling based on the approximate numbers of employees currently working in the PETRONAS –Head Office (approximately 400 employees were working currently). Additionally, permission from PETRONAS was obtained to meet the employees in their cabins and in the Head Office while they are working and during their break hours. A respondent consent was obtained before respondents were asked to participate in the survey. Those signed the consent form were given the survey form to complete. A time period of 7 hours were spent for 5 weeks on data collection process. The completed questionnaires were collected by the researchers and a follow up were made on the following week during the same hours before the classes were started and during the break-hours.

Measures

The questionnaire's content was administered through various sources which relates with the suitability of instruments (Senge, 1995; Watkins and Mersick, 1993). Further – more, these instruments have been extensively used in examining the relationship between learning organisation and its impact on organisational performance in terms of innovation and team learning, (Teng and Hassan, 2015, Kumar 2004).

The questionnaire developed for this research has been developed with the consideration of 5 measurements for each of the 7 variables of Mental Model, Personal Mastery, Inquiry and Dialogue, Continuous Learning, Empowerment, Team Learning and Innovation. The questionnaire has been divided into 2 parts. Part A requires the respondents' basic and work information, such as gender, age, marital status, education qualification, years of experience, job position, salary and promotion received. While some of the questions were given with the answers of different ranges and the respondent has to select one, other questions were left with blank space for the respondent to fill in the answer by themselves. Part B focuses more on the variables and implied the Likert scale method to answer the questions. The Likert scale method seems more applicable and convenient as respondents only have to answer the questions just by selecting the option, given and numbered by 1-Strongly Disagree, 2-Disagree, 3-Neither Agree or Disagree, 4-Agree or 5-Strongly Agree. All the questions are to the point and has not created any confusion among the respondent. Moreover, apart from English, no other languages have been used in the developing of the questionnaire (LeCompte and Goetz, 1982).

Research Instrument Development

The following table illustrates the questionnaire development, implying different variables or factors for each dimension of Mental Model, Personal Mastery, Inquiry and Dialogue, Continuous Learning, Empowerment, Team Learning and Innovation. However as for Team Learning, Question number 6 has a factor loading of 0.238 which, according to the rule of thumb, is lower than 0.5. Thus it had to be removed from the questionnaire.

Table 1 Research Instrument and Item Construct

	Variables	Sources
Mental Models (Independent)	1.Willingness to change the style	Senge (199)
	2.Actively exploring	
	3.Awareness of current believe	
	4.willingness to change after feedback	
	5.Reflection	
Personal Mastery (Independent)	1. Continuous effort to clarify the professional goal.	
	2.Engaging continuous learning and reflection activities to achieve personal growth	
	3.Career goals and current reality	

	4. Bridging the current reality and desired future.	
	5. Improve the level of skill and knowledge	
Continuous Learning (Independent)	1. openly discuss mistakes	Marsick and Watkins (1993)
	2. identify skills needed for future work	
	3. people help each other to learn	
	4. money and other resource to support learning	
	5. Time given to support learning	
	6. View problems as a learning opportunity.	
Inquiry and Dialogue (Independent)	1. open and honest feedback	
	2. listening to each other before speaking	
	3. encourage to ask why regardless of rank.	
	4. people treat each other with respect.	
	5. peoples spend time in building trust	
Empowerment (Independent)	1. Recognize people for taking initiatives.	
	2. people have choices in their work assignment	
	3. people are able to contribute to the vision	
	4. people are given power to control the resources.	
	5. support employees who take calculated risk.	
Team learning (dependent)	1. sharing information	Senge (1990)
	2. treat equally in team or group work	
	3. Respect ideas and opinions from colleagues	
	4. group or teamwork are used for professional development	
	5. revising thinking as a result of group discussion	
	6. teams are rewarded for their achievement	
	7. teams are confident management will act on their recommendation	
Innovations (dependent)	1. Number of suggestion implemented	Marsick and Watkins (1993)
	2. Number of new products and services.	
	3. Number of skilled workers.	
	4. total spending on IT and research.	
	5. individual learning new skills.	

Result and Analysis

Confirmatory Factor Analysis (CFA)

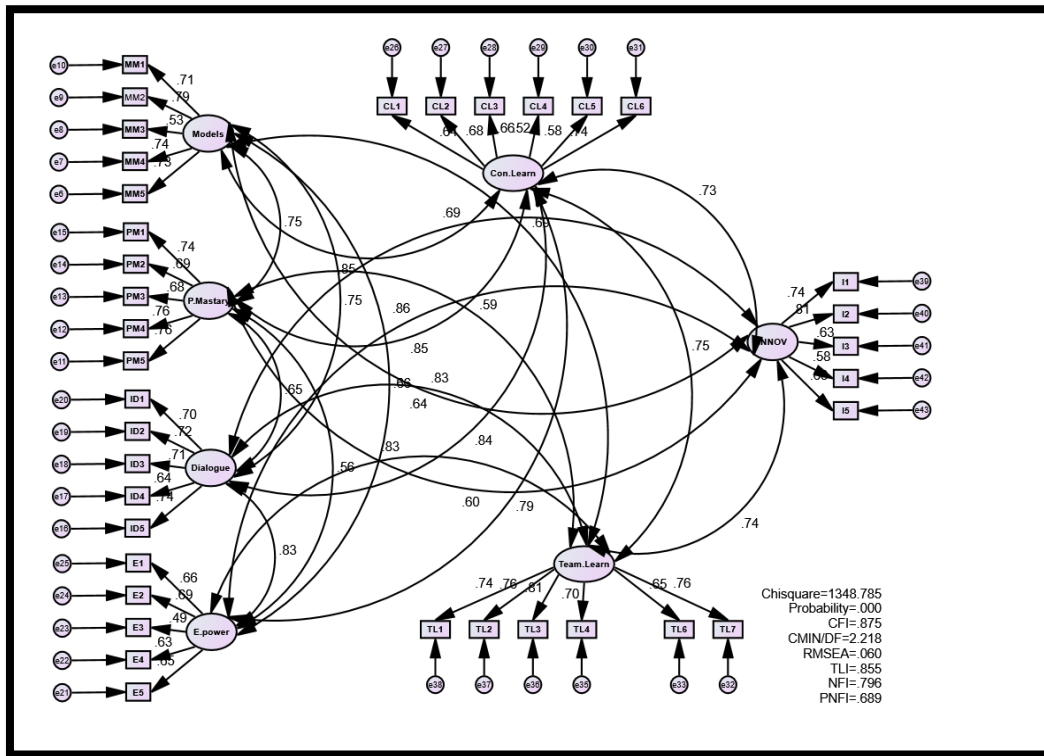


Figure 3: CFA Modeling
Source: AMOS generated output

According to Hair et al. (2010) and Holmes- Smith (2006), model fitness measurement indicates that the exact revision of this study confirmatory factor analysis is appreciable. Further in accordance with Byrne (1994) the comparative fit index (CFI), normal fit index, and incremental fit index (IFI) should be exceeding 0.90 to achieve good model fitness. Hence this study results presents that $CFI = 0.875 > 0.90$; $TLI = 0.855 > 0.90$ and $NFI = 0.796 < 0.90$. Thereby, the results of the mentioned analysis indicates the constructed model for this study is not a good fit since the values of CFI, TLI and NFI is found to be lesser that the defined parameter gauge.

Moreover, the Root Mean Square Error (RMSEA) is deployed to avoid the issue that lies with the sample size as to look for a good model with smaller sample size through conducting the analysis to uncover the discrepancy amongst the hypothesized model along with the best possible chosen scale estimates and the population covariance matrix. The scale for RMSEA is ranging from 0 to 1 in which a smaller figure indicates a comparatively good fit. Moreover, seeing to the defined scale by Browne and Cudeck (2007) that the figure should be less than 0.8 for been considered as a good and acceptable model fitness. The outcome for this study found to be 0.06 in context of RMSEA which indicates a good fit model for the research. While moving to the next test, Shadfar and Malekmohammadi (2013) PNFI figure needs to be exceeding 0.60 to declared model for been a greatly fit.

As per this research, the $PNFI=0.689>0.60$, which is acceptable according to the rule of thumb. According to Schumacker and Lomax (2004) the range that is accepted should be $CMIN/DF$ to be less than 5 because of the Index sensitivity. Hence, based on the proposed scale of Schumacker and Lomax (2004) the relative chi-square index ($CMIN/DF$) of this study should be considered to be fit as the value of 2.218 is less than 5 which indicates a model to be a good fit. Furthermore, the P-value which should be exceeding the scale of 0.05, non than the less this study p-value has been affected by the concise sample size which has a P-value of 0.0000 which is less than 0.05.

Table 2 Summary of the Model fitness (CFA)

Name of Category	Name of Index	Measurement Level	Comments
Absolute Fit Indices	Chi-Square (CMIN)	p-value = $0.000<0.05$	Achieved
	RMSEA	RMSEA = $0.060<0.08$	Achieved
Incremental Fit Indices	NFI	NFI = $0.796<0.90$	Not achieved
	CFI	CFI = $0.875<0.90$	Not achieved
	TLI	TLI = $0.855<0.90$	Not achieved
Parsimonious Fit Indices	Normed Chi-Square/DF(CMIN/DF)	$CMIN/DF=2.218<5$	Achieved
	PNFI	$PNFI=0.689>0.60$	Achieved

Reliability and Convergent validity of Measurement

For this study (Table 3), reliability of the scale is measured using Cronbach's alpha with a score of 0.826 for Mental Models, 0.848 for Personal Mastery, 0.829 for Dialogue, 0.760 for Empowerment, 0.800 for Continuous Learning, 0.875 for Team Learning and 0.815 for Innovation. Since all the items included in this construct are above 0.7, suggested that all items have strong internal consistency among the items, thus all the items are retained (Hair et al, 2010)

As per seeing to the general rule of factor loading stated by Hair et al. (2010) addresses that those items that are reported to load more than 0.7 but pools the values that are loaded near to 0.5 and excludes those values which have poor factor loadings. Seeing to this study, all the computed value in the table has portrayed to be more than 0.5. Though, a repeated run of confirmatory factor analysis (CFA) has to be done because of removing the loading of TL5 since the value for TL5 was less 0.238

Table 3: Reliability of Scale and Convergent Validity

	M.Model	P. Mastery	Dialogue	E. Power	Con. Learn	Team. Learn	Innov
MM1	.708						
MM2	.787						
MM3	.528						
MM4	.744						
MM5	.731						
PM1		.738					
PM2		.685					
PM3		.682					
PM4		.761					
PM5		.759					
ID1			.698				
ID2			.722				
ID3			.713				
ID4			.636				
ID5			.744				
E1				.662			
E2				.689			
E3				.494			
E4				.627			
E5				.654			
CL1					.635		
CL2					.683		
CL3					.658		
CL4					.523		
CL5					.580		
CL6					.738		
TL1						.740	
TL2						.756	
TL3						.814	
TL4						.696	
TL6						.651	
TL7						.759	
I1							.736
I2							.806
I3							.630
I4							.580
I5							.676
Reliability	0.826	0.848	0.829	0.760	0.800	0.875	0.815

Discriminant Validity

Table 4: Discriminant Validity

	Innov	Team Learn.	M.Model	P. Mastery	Dialogue	E. Power	Con. Learn
Innovation	1	0.741	0.638	0.597	0.693	0.864	0.730
Team. Learn		1	0.688	0.587	0.830	0.831	0.750
Mental Model			1	0.754	0.748	0.655	0.848
P. Mastery				1	0.653	0.556	0.849
Dialogue					1	0.828	0.843
E. Power						1	0.787
Con. Learn							1

Discriminant validity can be termed as the degree to which a construct can be realistically distinct from other constructs, though high discriminant validity provides a proof that the construct is new and holds few phenomenon that are avoided by other gauges (MacQueen, 1967). Moreover, Confirmatory Factor Analysis (CFA) accommodates two similar ways of gauging discriminant validity first correlation amongst any two construct and second through the comparison of AVE. Hence, the most renounce amongst the test is the correlation amongst the two construct that's why this research will be making use of it.

In case, of fit of the two construct model is significantly dissimilar from that only construct model, so than the discriminant validity will be supported even if there is a higher correlation as high of 0.9. Therefore, the data satisfy the discriminant validity samples because of the only a couple of variables are passing the scale of 0.85. While, the other rest factors indicates a good correlation. In brief, from the construct validity, to divergent validity and discriminant validity is been significantly backed with concrete literature that highlights the model to be a good fit for undertaking the SEM (path analysis).

Structural Equation Modeling

There are numerous ways of examining Structural model in numerous ways which can confirmed that whether the model is valid or not. The most renounce amongst the cluster of methods is to find the index as chi-square, normed chi-square, CFI, RMSEA can assure the model fitness in accordance with the theory (Jackson and Gillaspy, 2009). Moreover, seeing to the recommended entrance loadings and the founded loadings of the structural model indicates the model fitness in accordance with the recommendations. Measurement model signifies a crucial role in the system of confirming the model of structural analysis. The loadings of the following measurement model and the structural model indicates that the Chi- Square is found to be significant with the loading value of $p=0.000$. Following to it, Chi- Square visions are loading of 1348.785 since the DF value is 2.218. Normed

Chi-Square is recorded to be 1.926 which has found to be less than the thumbs scale of 3.0 shows the model to be fit (Hair et al., 2010).

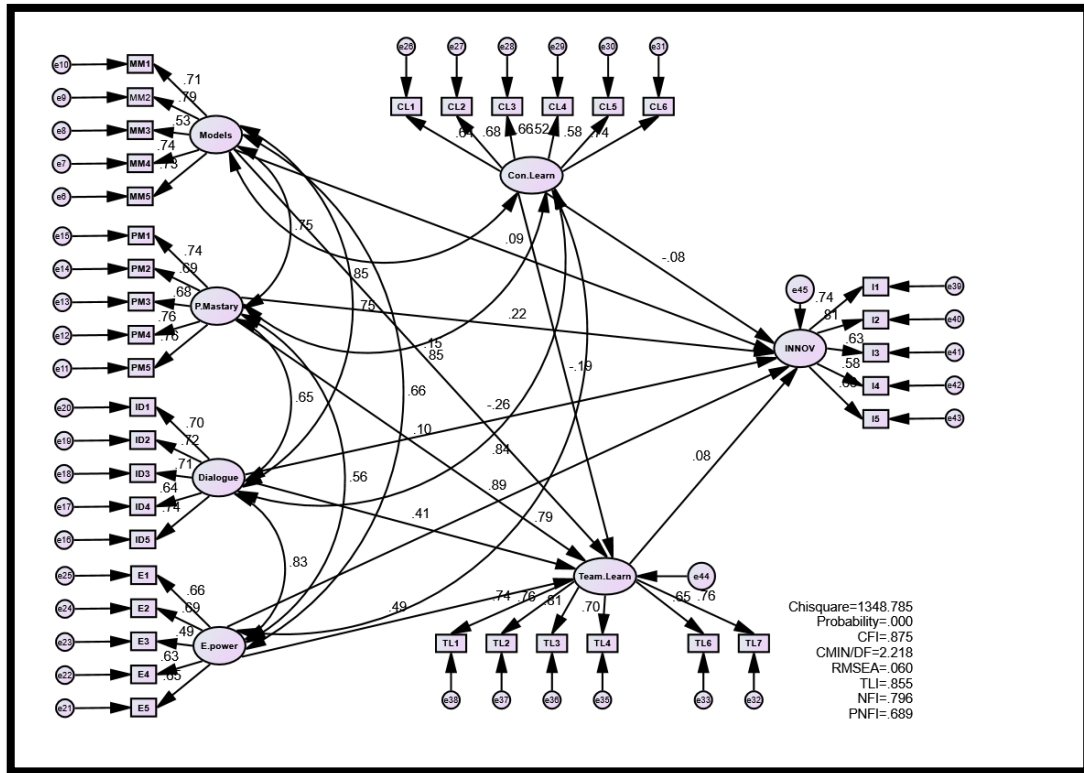


Figure 3: Structural Equation Modeling
Source: AMOS generated output

Moreover, RMSEA has been recorded to be 0.060 which is less than 0.80 signifies that the values are required to be entranced. Lastly, CFI has been noted on to be 0.875 which should be exceeding 0.90 but has found to be near to the defined scale (Kline, 2011; Hair, et al., 2010). This has been accepted and acknowledged in numerous literatures that highlight the purpose of it to have a satisfying setup of loadings to generate the originality in the defined covariance as 0.80 of the value may proof the adequacy through displaying the representativeness of a reliable model (Bentler & Bonett, 1980). Statistical capacity doesn't prove a poor model to be a good fit while the loading is nearer to 0.90 so it can overlook over factoring. Further, according to Cohen (1992), CFI value should be exceeding the scale of 0.80 though the value which is below 0.90 is accepted. Though, because of the above discussed reason and the explanation discussed, the structured model is considered acceptable.

Model fitness comparison of CFA and SEM

Table 5: Model fitness comparison of CFA and SEM

	Chi-square	CFI	CMIN/DF	TLI	NFI	PNFI	RMSEA	P- value
CFA Model	1348.78	0.875	2.218	0.855	0.796	0.689	0.060	0.000
SEM model	1348.78	0.875	2.218	0.855	0.796	0.689	0.060	0.000

The other renounce way of assuring the fitness of model is through conducting a relevant comparison on the settled gauges, loadings and the structural models loadings (Hair et al., 2010). According to the thumb of rule, the gauge speculates show indicate a very likely figures in the both models (Hair et al., 2010). Table above, both of the model shows similar statistics which doesn't indicate any significant differences as both models have similar gauges with Chi-Square is 1348.785, DF of 2.218, CFI of 0.875 (Have been considered as the loading is nearer to 0.90), RMSEA is 0.060 and the Probability value of 0.000. Both of the discussed models indicate that is sufficiently good fit for carrying out this research to study the conceptive phenomena

Comparison of Factor Loading

Moving to another way of confirming the validity of the structural model is to compare the measurement models factors loadings with the measurement models factor loadings to assess the nearly relationships through similarity of the factor loadings of the both models (Hair et al., 2010). The table above, the factor loadings of the measurement model and the structural model are above 0.50 and indicate the resemblance of almost 100% amongst the both measurement and structural model. Hence, this proves the model to be a good fit.

Table 6: Comparison of CFA and SEM for SEM validity

	Construct	CFA Model	SEM Model
MM1	M.Model	.708	.708
MM2	M.Model	.787	.787
MM3	M.Model	.528	.528
MM4	M.Model	.744	.744
MM5	M.Model	.731	.731
PM1	P. Mastery	.738	.738
PM2	P. Mastery	.685	.685
PM3	P. Mastery	.682	.682
PM4	P. Mastery	.761	.761
PM5	P. Mastery	.759	.759
ID1	Dialogue	.698	.698
ID2	Dialogue	.722	.722
ID3	Dialogue	.713	.713

	Construct	CFA Model	SEM Model
ID4	Dialogue	.636	.636
ID5	Dialogue	.744	.744
E1	E. power	.662	.662
E2	E. power	.689	.689
E3	E. power	.494	.494
E4	E. power	.627	.627
E5	E. power	.654	.654
CL1	Con. Learn	.635	.635
CL2	Con. Learn	.683	.683
CL3	Con. Learn	.658	.658
CL4	Con. Learn	.523	.523
CL5	Con. Learn	.580	.580
CL6	Con. Learn	.738	.738
TL1	Team. Learn	.740	.740
TL2	Team. Learn	.756	.756
TL3	Team. Learn	.814	.814
TL4	Team. Learn	.696	.696
TL6	Team. Learn	.651	.651
TL7	Team. Learn	.759	.759
I1	Innov.	.736	.736
I2	Innov.	.806	.806
I3	Innov.	.630	.630
I4	Innov.	.580	.580
I5	Innov.	.676	.676

Path Analysis Comparison

The models of structural equation validity dimensions stated in the Table 7 below, indicates that the anticipation of individual learning has positive links with team learning and innovation. This indicates that the model engaged in this study to accommodate to gauge the impact of individual learning on team learning and innovation in Malaysian Petroleum Company (PETRANOS) and can also be engaged by other researchers in future to exploit other industries and countries in terms of gauging the impact of individual learning on team learning and innovation.

Table 7: Comparison of Path Analysis

Measurement Model		Structural Model	
Relationship	Estimates	Relationship	Estimates
MM correlates with TL	0.688	H1: MM----> TL	0.147
PM correlates with TL	0.587	H2: PM ----> TL	0.095
ID correlates with TL	0.830	H3: ID ----> TL	0.408
E Correlates with TL	0.831	H4: E ----> TL	0.490
CL Correlates with TL	0.750	H5: CL ----> TL	-0.186
MM correlates with I	0.638	H6: MM----> I	0.094
PM correlates with I	0.597	H7: PM----> I	0.221
ID correlates with I	0.693	H8: ID ----> I	-0.256
E Correlates with I	0.864	H9: E ----> I	0.887
CL Correlates with I	0.730	H10: CL ----> I	-0.082
TL correlates with I	0.741	H11: TL ----> I	0.083

The perspectives of Individual learning from the above discussed model clearly indicate direct and indirect effect to team learning and innovation. The management of the petroleum companies in Malaysia highly regarded continuous learning and enquiry & dialogue as crucial elements in individual learning which eventually drives organization to team learning and innovation. This model will help the corporations to develop an effective learning model which will help the organizations to make them fall on the path of continuous learning and betterment and will result into the learning clusters from individuals and will make organization fall for innovation. The figures and significant values for the defined parameters that have been standardized in the table above shows that the team learning (TL) and Innovation (I) are significant with the following parameter estimates 0.436, 0.571 and 0.943 that builds the relation amongst the constructs and the manifest variables.

The Dialogue and E. Power are found to be the only variables to be significant when aligned with Team learning while all the other components of individual learning (Model, P. Mastery and Con. Learning) defined in the conceptual framework were found to be insignificant with the significance value that are exceeding the defined gauge of 0.05 which means that the assumed Hypothesis 1, 2 and 5 is rejected. While seeing to the other dependent variable, E.Power is the only variable that is found to be significant when been linked with Innovation when all the other components (Model, P. Mastery, Con. Learning, Dialogue, Con Learning and Team Learning) found to be insignificant because of exceeding the defined scale of 0.05 which results in rejection of the following hypothesis 6,7,8,10,11 because of exceeding the scale.

Table 8: Hypothesis Decisions

Hypothesis				Estimate	S.E.	C.R.	P	Accepted /Rejected
H1	Team. Learn	←	Model	.143	.106	1.343	.179	Rejected
H2	Team. Learn	←	P. Mastery	.104	.149	.699	.485	Rejected
H3	Team. Learn	←	Dialogue	.436	.147	2.957	.003	Accepted
H4	Team. Learn	←	E. Power	.571	.160	3.569	.000	Accepted
H5	Team. Learn	←	Con. Learn	-.187	.264	-.709	.478	Rejected
H6	Innov	←	M.Model	.083	.117	.710	.478	Rejected
H7	Innov	←	P. Mastery	.220	.164	1.343	.179	Rejected
H8	Innov	←	Dialogue	-.249	.170	-1.465	.143	Rejected
H9	Innov	←	E. Power	.943	.226	4.180	.000	Accepted
H10	Innov	←	Con. Learn	-.075	.286	-.263	.793	Rejected
H11	Innov	←	Team. Learn	.076	.128	.594	.552	Rejected

Discussion

The result of the survey from the developed instrument which was formed through creating generalized statements for each of the constructed questions along with numerous factors that backed the specified reasoning on the collected data that was pooled and run, constructing 11 hypothesis amongst which 3 were accepted and 8 were rejected. Dialogue and E.Power were the variables which were found to be significantly aligned with Team learning which indicates that having a culture of dialogue and inquiry in the organization plays a crucial part in developing good communication and result in the establishment of procedures and mechanism for individuals to learn in a team (Jyothibabu, Farooq & Pradhan, 2001).

While, as far as empowerment is concern Mohrman, Cohen, and Mohrman (1995) favours the dimensions of empowerment for contributing significantly into the process of team learning to effectively addressing the dimensions like feedback, discussing errors, and experimenting (Edmondson, Bohmer, & Pisano, 2001). While seeing to the other dependent variable (Innovation), only E.Power founds to be aligned with the innovation which clearly indicates that as per to numerous authors and scholars who argues that management styles that are incorporated with empowerment characteristics encourages employees with more autonomy, authority and responsibility which eventually drives organizations to the path of innovation (Çakar & Ertürk, 2010; Ertürk, 2012; Khodabakhshi et al., 2013; Knight-Turvey, 2006; Spreitzer, 1995).

Looking into the findings of this study, the research is entitled to one petroleum company (PETRANOS) in Malaysia; this research will not be a representing one for the

entire petroleum industry or the companies that are operating the developed economies like Europe, America etc. Thereby, this research will assist the readers with some good insights that might be useful for petroleum companies in other markets or companies of similar nature like mining. The learning process in this era of modernization has become essential to meet up the competition in the time of highly competitive business environment where individual learning is essential to meet up with innovation. As per Kaipa (2012) individual learning regarding advancement is the production of a reality mutilation field, to be specific the capacity to reframe an issue in a way that persuades others to get tied up with your state of mind and doing while as indicated by Jyothibabu, Farooq and Pradhan (2001) group learning or gathering level learning has an interceding impact on authoritative execution and does not have coordinate impact on execution. Hence, this last argument becomes the reason for the rejection of the other Eight (8) proposed hypotheses. Since, there are few researches done to determine the impact of individual learning on team learning and innovation in the Malaysian market in comparison with the developed economic arenas as the petroleum industry in Malaysia is not ranked to be much developed when you compare it with the petroleum industry of developed compounds like USA or the naturally rich regions like the Arab world.

Conclusion and Recommendation

This study will be classified as a crucial piece of study to address the impact of Individual learning on team learning and information in the petroleum company (PETRONAS) of Malaysia. Mental model, Personal mastery, Inquiry & dialogue, Continuous learning and Empowerment are the defined parameters of gauging Individual learning to see their impact on Team learning and Innovation. 321 Likert-scale questionnaires were distributed to the employees of the company to pool the data for this study. The findings of this study indicates that Dialogue and Empowerment to be founded significant with Team learning while only empowerment to be significant with innovation.

The statistical results for the conducted loadings of Mental Model with Team learning and innovation indicates a insignificant causal relationship. Therefore, it is constructed that mental models are not a significant player for Team learning and as well as driving organization to the path of Innovation when it comes to the Petroleum Companies of Malaysia. The figures generated from the statistical test done of Personal Mastery aligning with Team learning and Innovation signifies an insignificant impact of Personal Mastery on Team Learning and Innovation. Hence, the fact is built that Personal Mastery cannot be classified as a fundamental factor for Team learning and innovation in the Petroleum Industry of Malaysia. The result indicates that Dialogue & Inquiry linking with Team learning and Innovation creates a significant impact of Inquiry and Dialogue on Team learning suggesting that dialogue and queries within the organizations help in building teams and make them learnt jointly to achieve the organizational goals in a better matter. While the relationship of Dialogue and Inquiry with Innovation founds to be insignificant. Hence this creates that when it comes to driving organization on the road of Innovation, Dialogue and Inquiry doesn't found to be that efficient and significant in the Malaysian Petroleum companies. The statistical result generated for this loading of variables signifies that continuous learning alignment with Team learning and innovation

is insignificant. Hence, the point is constructed that being on the mode of continuous learning couldn't lead to team learning neither they would be successfully able to put the company on the on the path of innovation when it comes to the petroleum companies of Malaysia. The result for this research is found to be similar to the empirical researches on the topic, the generated statistics for this variable shows that empowerment is significant factor which leads to Team learning and innovation. This is built that empowerment is a crucial determinant that drives the individual learning towards team learning and eventually innovation since corporations where employees are empowered to contribute in the central grid of the company are eventually better as "Two head are better than one. The result indicates that team learning has no significant impact on Innovation. Therefore, it is shown that Team learning is not an effective tool for driving an organization to the road innovation when it comes to the petroleum companies of Malaysia

Recommendation and Future research directions

Future researchers who intend to exploit this area are recommended to add other factors of individual learning which are not considered in this study to exploit the topic in a wider perspective for example Watkins dimension can be empirically tested. Moreover, a wider range could be engaged while conducting this which should not just restrict to 321, so a better picture of the phenomena can be portrayed. Lastly, more industries which are dissimilar to petroleum industry can be investigated like insurance or banking which are purely service providing industry and owns crucial significance of team learning in their structure.

Limitations

The research besides being comprehensive and addressing is entitled to certain limitations and weaknesses; essentially the data collected for this study only represents a particular industry (petroleum) which is not applicable to be utilizing for other industries of different nature like banking and insurance. Moreover, Pilot testing was supersede before analyzing the company data set which has restricted the user to identify the weakness of the defined and make it more better to attain more convincing results. Adding to it, the data set just comprise of 318 respondents which could be more to make the findings of the research more generalize. Lastly, the adapted sampling technique (Convenience sampling) could be replaced with stratified sampling technique to assure the representation from each strata and class of the company but it couldn't be adapted due to the limited time span for doing this study

References

- Afzali, A., Motahari, A. and Hatami-Shirkouhi, L.(2014). Investigating The Influence Of Perceived Organizational Support, Psychological Empowerment And Organizational Learning On Job Performance: An Empirical Investigation. [online] 21(3). Available at: <<https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0ahUKEwjMranB5Y3SAhXKHpQKHZHfDTEQFggcMAA&url=http%3A%2F%2Fhrcak.srce.hr%2Ffile%2F182187&usg=>

AFQjCNGyIkLDNAU6mK-a6eP-2EjCKcw7qA&bvm=bv.146786187,d.dGo>
[Accessed 13 Jan. 2017].

- Aksu, A. A., & zdemir, B. O. (2005). Individual learning and organization culture in learning organizations: Five star hotels in Antalya region of Turkey. *Managerial Auditing Journal*, 20(4), 422-441.
- Alhassan, M. A., Zulkipli, G., & Isha, A. S. N. (2014). Role of Organizational Culture, Organizational Communication and Temperament in the Choice of Conflict Management Styles among Plant Turnaround Maintenance Employees in PETRONAS Petro-Chemical Companies in Malaysia: A Conceptual Framework. *Global Business and Management Research*, 6(4), 262 Available at: <<https://www.gbmr.ioksp.com/pdf/vol.%206%20no.%204/v6n4-1.pdf>> [Accessed 3 Feb. 2017].
- Argyris, C. (1976). Single Loop and Double Loop models in research on decision making. *Administrative Science Quarterly*, September (2), 363-375.
- Argyris, C. (1996). Unlocking defensive reasoning. *Across the Board*, 33(3), 18-19.
- Argyris, C., & Schon, D.A. (1978). *Organizational learning: A theory of action perspective*. Reading, MA: Addison-Wesley.
- Awang, A. H., Sapie, N. M., Hussain, M. Y., Ishak, S., & Yusof, R. M. (2014). Organizational learning and work environment: A formation of innovative work behaviour at small medium enterprises (SMEs). In J. Rooney & V. Murthy (Eds.), *The 11th International Conference of Intellectual Capital, Knowledge Management and Organizational Learning*, 30-38. New York, NY: Curran Associates
- Bentler, P. M. & Bonett, D. G., 1980. Significance tests and goodness of fit in the analysis of covariance structures.. *Psychological Bulletin*, 88(3), 588-606.
- Çakar, N. D., & Ertürk, A. (2010). Comparing innovation capability of small and medium-sized enterprises, examining the effects of organizational and empowerment. *Journal of Small Business Management*, 48(3), 325-559. <http://dx.doi.org/10.1111/j.1540-627X.2010.00297.x>
- Castaneda, D. I., & Rios, M. F. (2007). From Individual Learning to Organizational Learning [Electronic Version]. *The Electronic Journal of Knowledge Management*, 5 (4), 363-372. Retrieved March 22, 2009, from <http://www.ejkm.com/volume-5/v5-i4/Castaneda.pdf>
- Cayla, D. (2004). A Cognitive approach of organisational learning [Electronic Version], Working paper, 1st Draft, 1-13. Retrieved March, 12, 2008, from <http://esnie.u-paris10.fr/en/archives/2004.php>

- Crossan, M. M., Lane, H. W., & White, R. E. (1999). An organizational learning framework: From intuition to institution. *Academy of management review*, 24(3), 522-537. DOI:10.5465/ AMR.1999.2202135
- Dixon, N. M. (1998). Responsibilities of a member in an organisation that is learning. *The learning organisation*, 5(4), 161-167
- Edmondson, A. (1999). Psychological safety and learning behavior in work teams. *Administrative science quarterly*, 44(2), 350-383.
- Edmondson, A. C., Bohmer, R. M., & Pisano, G. P. (2001). Disrupted routines: Team learning and new technology implementation in hospitals. *Administrative Science Quarterly*, 46(4), 685-716..
- Ellinger, A. D., Ellinger, A. E., Yang, B., & Howton, S. W. (2002). The relationship between the learning organization concept and firms' financial performance: An empirical assessment. *Human resource development quarterly*, 13(1), 5-22., [online] 13(1). Available at: <<http://www.richardswanson.com/textbookresources/wp-content/uploads/2013/08/TBAD-r9a-Ellinger-DLOQ-Financial-Performance.pdf>>[Accessed 18 Dec. 2016].
- Garavant, T. (1997). The Learning Organisation: a review and evaluation. *The learning organisation*, 4(1), 18-29.
- Garratt, B. (1987). *The Learning Organization*, Harper Collins Publishers, London
- Garvin, David A. (1993). *Building a Learning Organization*. *Harvard Business Review*, [online] 71(4), pp.78–91.
- Gephart, M. A., Marsick, V. J., Van Buren, M. E., & Spiro, M. S. (1996). Learning organizations come alive. *Training & Development*, 50 (12), 35–45
- Gilaninia, S., Rankouh, M. A. A., & Gildeh, M. A. P. (2013). Overview on the Importance of Organizational Learning and Learning Organization. *Journal of Research and Development*, 187(941), 1-6. [online] 1(2). Available at: <http://www.arabianjbmr.com/pdfs/RD_VOL_1_2/4.pdf> [Accessed 15 Dec. 2016].
- Hair, J. F., Black, W. C., Babin, B. J., and Anderson, R. E., (2010). *Multivariate Data Analysis*. Seventh Edition. Prentice Hall, Upper Saddle River, New Jersey.
- Hall, D. T., & Mirvis, P. H. (1995). The new career contract: Developing the whole person at midlife and beyond. *Journal of vocational behavior*, 47(3), 269-289.
- Hodkinson, M. (2000). Managerial perception of barriers to becoming a “learning organisation”. *The learning organisation*, 7(3), 156-166.
- Hong, J. (1999). Structuring for organisational learning. *The learning organisation: an international Journal*, 6(4), 173-185.

- Hussein, N., Mohamad, A., Noordin, F. and Ishak, N. (2014). Learning Organization and its Effect On Organizational Performance and Organizational Innovativeness: A Proposed Framework for Malaysian Public Institutions of Higher Education. *Procedia - Social and Behavioral Sciences*, [online] 130, pp.299-304. Available at: <<http://www.sciencedirect.com/science/article/pii/S1877042814029450>> [Accessed 13 Jan. 2017].
- Ichij , K., & Nonaka, I. (2007). *Knowledge creation and management: new challenges for managers*: Oxford University Press, USA.
- Jain, S. and Martindale, E.,(2012). Facilitating Continuous Learning: A Review of Research and Practice on Individual Learning Capabilities and Organizational Learning Environments. [online] Available at: <http://www.aect.org/pdf/proceedings12/2012i/12_09.pdf> [Accessed 7 Feb. 2017].
- Johnson, C., Spicer, D. and Wallace, J.(n.d). An Empirical Model Of The Learning Organisation. [online] Available at: <http://www2.warwick.ac.uk/fac/soc/wbs/conf/olkc/archive/olkc6/papers/id_251.pdf> [Accessed 25 Jan. 2017].
- Johnson-Laird, P. (1983). *Mental models*. Cambridge, MA: Harvard University Press.
- Jyothibabu, C., Farooq, A., & Bhusan Pradhan, B. (2010). An integrated scale for measuring an organizational learning system. *The Learning Organization*, 17(4), 303-327.
- Kaipa, P.(2012). Steve Jobs and the Art of Mental Model Innovation. [online] Available at: <<http://iveybusinessjournal.com/publication/steve-jobs-and-the-art-of-mental-model-innovation/>> [Accessed 7 Feb. 2017].
- Khodabakhshi, F., Sajad, N. K., & Shiargar, M. (2013). The Impact of Knowledge management on Innovation with the mediating role of empowerment. *Life Science Journal*, 10(2), 1385-1390.
- Kocoglu, I., Imamoglu, S. And Ince, H.(2011). The Relationship Between Organizational Learning And Firm Performance: The Mediating Roles of Innovation and Tqm. *Journal of Global Strategic Management*, [online] 1(5), pp.72-72. Available at: <<http://www.isma.info/uploads/files/072-the-relationship-between-organizational-learning-and-firm-performance-the-mediating-roles-of-innovation-and-tqm.pdf>> [Accessed 5 Jan. 2017].
- Laeque, S. and Babar, S. (2015). Learning Organization as a Strategy to Improve Performance of Pakistani Hospitals. *Journal of Managerial Sciences*, [online] 9(2). Available at:<http://www.qurtuba.edu.pk/jms/default_files/JMS/9_2/JMS_July_December2015256-266.pdf> [Accessed 13 Jan. 2017].
- Lim, L. L. K., & Chan, C. C. A. (2004). Development and application of organisational learning matrix. *International Journal of Management*, 21(1), 100-107.

- Malaysia Petrochemical Country Report (2014, 2015). Malaysia Petrochemical Country Report 2014 Presented to APIC – The Asia Petrochemical Industry Conference Korea. [online] Available at: <<http://cpmaindia.com/pdf/apic-country-2015/Malaysia-Petrochemical-Industry-2015.pdf>> [Accessed 3 Nov. 2016].
- Mansoor, S. and Ratna, R. (2014). Impact of Organizational Learning on Organizational Innovation. [online] (2). Available at: <<http://www.inflibnet.ac.in/ojs/index.php/MI/article/view/2553/2062>> [Accessed 7 Dec. 2016].
- Mansor, N., Malik, N. and Mat, A. (2010). Enculturation of Organizational Learning for Developing Competency: a Case of Malaysian Islamic Banking Institution. *e-Journal of Organizational Learning and Leadership*, [online] 8(1). Available at: <<http://www.leadingtoday.org/weleadinlearning/Spring2010/Article%20%20-%20Mansor.pdf>> [Accessed 15 Jan. 2017].
- Morgan, G. (1997). *Images of organisation*. USA: Sage Publication.
- Mulholland, P., Domingue, J. D., Zdrahal, Z., & Hatala, M. (2000). Supporting organisational learning. *Information services and use*, 20, 9-23.
- Pedler, M., Burgoyne, J. and Boydell, T. (1996). *The Learning Company. A strategy for sustainable development*, London: McGraw-Hill.
- Pedler, M., Burgoyne, J. and Boydell, T. (1991). *The Learning Company. A strategy for sustainable development*, London: McGraw-Hill.
- Phillips, B. T. (2003). A four-level learning organisation benchmark implementation model. *The learning organisation*, 10(2), 98-105.
- Redding, J. C (2000). *The radical team handbook: Harnessing the power of team learning for breakthrough results*. San Francisco: Jossey-Bass.
- Rose, R., Kumar, N. and Pak, O. (2011). The Effect of Organizational Learning on Organizational Commitment, Job Satisfaction And Work Performance. *Journal of Applied Business Research (JABR)*, [online] 25(6). Available at: <<https://www.cluteinstitute.com/ojs/index.php/JABR/article/view/995>> [Accessed 4 Feb. 2017].
- Rouse, W. B., & Morris, N. M. (1986). On looking into the black box: Prospects and limits in the search for mental models. *Psychological Bulletin*, 100, 359–363.
- Salim, I. and Sulaiman, M. (2011). Organizational Learning, Innovation and Performance: A Study of Malaysian Small and Medium Sized Enterprises. *International Journal of Business and Management*, [online] 6(12). Available at: <<http://www.ccsenet.org/journal/index.php/ijbm/article/view/11368/9368>> [Accessed 5 Jan. 2017].
- Schumacker, R.E. and Lomax, R.G. (2004). *A Beginner's Guide to Structural Equation Modelling*. Mahwah, Lawrence Erlbaum Associates, Publishers. New Jersey

- Senge, P. M. (1994). *The fifth discipline: the art and practice of the learning organization*. New York: Doubleday/Currency.
- Tannenbaum, S. I., Beard, R. L., & Salas, E. (1992). Team building and its influence on team effectiveness: An examination of conceptual and empirical developments. In K. Kelley (Eds.) *Issues, theory, and research in industrial/organizational psychology*, 82, 117-153. New York: Elsevier Science.
- Teare, R., & Dealtry, R. (1998). Building and sustaining a learning organization. *The Learning Organization*, 5(1), 47-60.
- Tseng, C. and McLean, G (2008). Strategic HRD practices as key factors in organizational learning. *Journal of European Industrial Training*, [online] 32(6), 418-432. Available at: <http://www.emeraldinsight.com/doi/pdfplus/10.1108/03090590810886544> [Accessed 13 Jan. 2017].
- Watkins, K. and Marsick, V. (1992). Building the learning organization: a new role for human resource developers. *Studies in Continuing Education*, 14(2): 115-29.
- Watkins, Karen E. & Marsick, Victoria J (1993). *Sculpting the Learning Organization*. San Francisco: Jossey-Bass.
- Weick, K. E. (1991). The Non-traditional Quality of Organisational Learning. *Organisation Science*, 2(1), 116.
- Weldy, T. G. (2009). Learning organization and transfer: strategies for improving performance. *The learning roganisation*, 16(1), 58-68.
- Wellins, R. S., Byham, W. C., & Wilson, J. M. (1991). *Empowered teams: Creating self-directed work groups that improve quality, productivity, and participation*. San Francisco: Jossey-Bass.
- Widmann, A., Messmann, G. & Mulder, R. (2016). The Impact of Team Learning Behaviors on Team Innovative Work Behavior: A Systematic Review. *Human Resource Development Review*, [online] 15(4), 429-458. Available at: <http://journals.sagepub.com/doi/pdf/10.1177/1534484316673713> [Accessed 8 Feb. 2017].
- Wyrick, D. A. (2003). Understanding Learning Style to be more effective team leader and engineering manager. *Engineering management Journal*, 15(1), 27-33.
- Zaltman, G., Duncan, R. & Holbek, J. (1973). *Innovations and Organizations*, John Wiley & Sons, London.