



# INFORMATION TECHNOLOGY CAPABILITY AS PREDICTOR OF ORGANIZATIONAL INTELLIGENCE IN LIBYAN OIL AND GAS COMPANIES

Haryani Haron and Hadya S. Hawedi

Faculty of Computer and Mathematical Sciences, Universiti Teknologi Mara, Selangor, Malaysia

E-Mail: [haryani@fskm.uitm.edu.my](mailto:haryani@fskm.uitm.edu.my)

## ABSTRACT

The Libyan oil and gas companies are in dispersed locations, which necessitate an efficient and effective management system to improve their competitiveness. They need to pool resources in the organization to create organizational intelligence as to be competitive. Organizational intelligence is organizational practices which are influenced IT capability. The objective of the study is to investigate how IT capability influences organizational intelligence in the Libyan oil and gas companies. A quantitative research method based on survey questionnaire was used to collect numerical data that were statistically analyzed using descriptive and inferential statistics based on Statistical Package of Social Science (SPSS) software and AMOS module. A total of 163 managers in the Libyan oil and gas companies were randomly selected as the respondents. The result of the analysis showed that IT capability and organizational intelligence has a significant correlation and a predictor of OI with the value of  $p=0.05$  and  $B=1.562$ . This study contributes towards new knowledge through the insights from the role of IT capability in influencing organizational intelligence in the context of Libyan oil and gas companies. The predictor's model of IT capability contributes towards better decision making where the oil and gas companies management can decide on their investment for their companies in the future in order to increase their organizational intelligence.

**Keywords:** IT infrastructure, IT human resource, knowledge management, IT-related intangible resources.

## INTRODUCTION

Organization operates in the current global economy are facing aggressive and intense competition thus, these organization need to facilitate their innovation management and knowledge within the organization to create competitive products and services. Knowledge is the cornerstone of the strategy and operations of most organizations in the oil and gas companies. Knowledge management has been implemented in the oil and gas companies for a long time, pioneering the successes in knowledge management. Literature has highlighted five issues in the oil and gas companies which are the importance of knowledge sharing at all levels, the need to create and sustain, the knowledge management culture, the needs for team works to promote performance and creativity and finally the right use of technology to support knowledge management [1].

The manifestation of knowledge management in an organization is organizational intelligence (OI). Organizational intelligence is defined as the capability of an organization to generate knowledge and to use it strategically to adapt to its environment. It is the mobilization of intelligence within an organization to adapt to its environment and create agility [2]. In other words, organizational intelligence provides an organization with the dynamism in the competitive environment.

Information technology (IT) capability entails the use of technology to facilitate organizational process. An organization's IT capability is crucial for its competitive advantage [3]. IT capability is related to OI as it provides the platform for organizational learning through

facilitating knowledge exchange, and the intensity of organizational learning in creating organizational intelligence is related to IT capability [4]. IT capability mobilizes knowledge and intelligence within an organization, and creates organizational agility [5]. The integration of IT facilitates the interaction and communication within the organization [6, 7] therefore an organization's IT capability is crucial for generating OI.

The role of IT in knowledge transfer is crucial [1], however in the context of Arab countries the usage of technology to transfer information and knowledge has not been a success [8]. The Libya oil and gas companies operations involve a large number of heterogeneous partners and complex processes of information exchange and value creation between partners. Currently, the Libyan oil and gas companies are not performing well and not able to compete competitively globally. Among the main reason is the inefficiency in managing their resources [9]. Geographically, the companies are in dispersed locations, and there is minimum IT infrastructure and the technology is not up-to-date [10].

The paper is organized into 5 main sections, starting with the introduction which describes the research background. Literature reviews is the second section where relevant literatures on OI and IT capability are reviewed and discussed, together with a description of the context of the research which is the Libya oil and Gas companies. Since methodology is important for the reliability of the results, a section on methodology is included followed by the results and analysis. The final section is the conclusion which highlights the findings and recommendation for future work.



## LITERATURE REVIEW

### Organizational intelligence

The performance of an organization depended on how an organization uses its intelligence to adapt to the environment [6, 11]. OI as the capacity of an organization to mobilize its brain power in accomplishing its mission is related to knowledge transfer within the organization [2]. OI consists of the interactive capacity of firms and organizations to solve complex problems. OI also supports best management processes and practices and empowers managers to adopt the best management practice for daily transaction in the organization. OI functions as an integral part of a successful enterprise and aid in boosting the entire performance of managers [2]. The movement of intelligence and creativity leads to better decision making. OI leads to effective management practices and promotes outstanding performance and scalability that improves overall organizational outcome [12]. According to reference [2], OI is related to the concept of brain power and the concept of brain power confines to improve knowledge, experience, generates new ideas and information that relates to working practices [13]. The role of brain power is to create intellectual input and bring the brain to work every day in order to form values and quality in working tasks. Brain power influences the work satisfactorily and avoids intellectually dead organization [13].

There are 4 widely used OI models which are Albrecht OI model, Matsuda OI model, Falletta OI model, and Liebowitz OI model. However, Albrecht OI model is adopted in this study because it has been widely used in organization's performance studies [14, 15]. This model comprises of seven indicators which include strategic vision, shared fate, appetite for change, heart, alignment and congruence, performance pressure and knowledge deployment.

Strategic vision is concerned about the success concept of an organization goals and vision. The strategic vision dimension assumes that leaders can articulate and evolve a successful concept. In short, it is the capacity to create, evolve, and express the purpose of the organization. OI dimension of shared fate focuses on the sense of common purpose which leads the people in the organization to perform synergistically to achieve the organizational vision. This means that there is a shared meaning that each employee plays which is an equally important role in achieving an organization vision.

Appetite for change is concerned with the eagerness to learn new ways of success through challenges. Managers in the organization want and stimulate challenges because they view challenge as new ways of learning.

The heart is concerned with the commitment and loyalty towards the organization. OI dimension of heart involve the willingness of the managers to contribute something more than expected, because they identify their success with the success of the enterprise and they want it

to succeed. The performance of workers can be viewed from their commitments.

Alignment and congruence focus on the alignment of individual energies toward achieving a common purpose. All the members of the organization must be their ideas and their goals are in the one path to reach the desired goal.

OI dimension of knowledge deployment is concerned with the free movement of knowledge throughout organizational and at the same time, concerned about balancing the dissemination of sensitive information needed to facilitate management processes.

Performance pressure indicator focuses on self-imposed mutual trust imperative for a shared business success. All are accountable for their contributions to the organization's mission, which employee leads to a new performance culture where every new member will feel the sense of shared imperative. The model is shown in Figure-1.

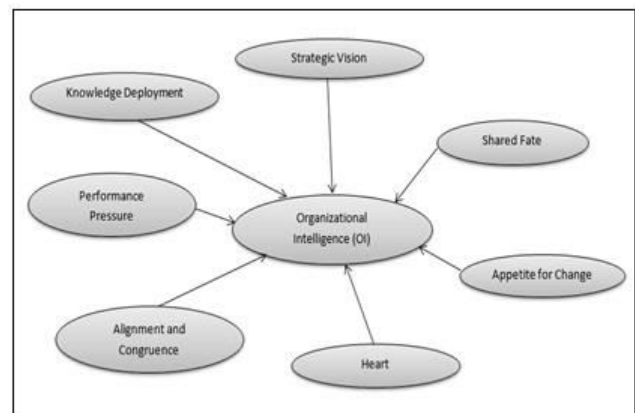


Figure-1. Organization intelligence model [2].

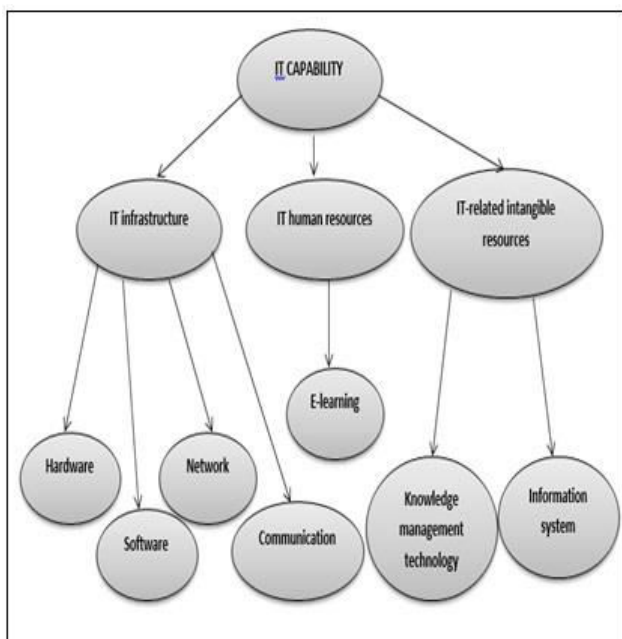
### Information technology capability

Advances in IT provide a pathway for organizations to achieve a competitive advantage which is of high priority in the Libya Oil and Gas companies. The adoption of IT infrastructure in organizations has become the backbone of globalization and provides industries and enterprises with the opportunity to compete on the global scale [16]. In order to obtain performance in an organization, knowledge exchange must be supported. IT is the platform and has been associated in creating competitive advantage through providing communication platform. IT capability includes IT infrastructure, IT human resources and IT-related intangible resources [17].

IT capability entails the use of technology to facilitate organizational process, using IT facilities such as computers, telecommunication equipment including hardware and software. Organizations invest heavily on IT to empower human resources development for greater productivity and effectiveness. Organizations that acquire valuable IT capability will be able to achieve competitive advantage leading to an enhanced long term performance [18]. IT capability influences employee engagement and effective use of IT infrastructure improve performance



output. IT capability supports organizational learning through facilitating the successful transfer of information and individual in an organization [8]. The intensity of organizational learning, which is an important element in creating organizational intelligence is related to IT capability [4]. Employee usage of IT applications significantly affects employee knowledge-sharing capabilities in the organizations [18]. According to [17], IT capability include three sub dimensions which are IT infrastructure (such as hardware, software, network and communication technology), IT human resources (e-learning) and IT related intangible resources (such as knowledge management technology and information system). Figure-2 illustrates in details the IT capability model by [17], including the dimensions, sub dimensions together with their components.



**Figure-2.** IT capability model [17].

One of the important reasons of adopting Tarafdar and Gordon's model in this study is that it has been widely used in studies which focus on creating value and organization's productivity and efficiency [19].

Advances in IT capability provide a pathway for organizations to achieve a competitive advantage which is of high priority in organizations. Nowadays, the backbone of globalization for any organization is the IT infrastructure adoption, which provides industries and enterprises with the opportunity to compete on the global scale [16]. The IT infrastructure includes hardware, software, networks and communication technology [20].

Another component in IT capability is IT human resource. Information technology utilization in human resourcing functions increases an organization's capability. Basically IT human resource focuses on the value creation of the human capital of an organization through the learning process in acquiring new knowledge

in technical and managerial skills. E-learning is the sub dimensions of IT human resource.

The e-learning system can easily be tailored to meet the needs of different institutions or structures for which personnel training is a main objective. This educational method can have remarkable results in human resources management. It can make the system more flexible and it can ease interaction between people who are at considerable distances from each other [21]. This contributes towards enhancing the organizational learning effectiveness. Organizational learning based on e-learning concept involves extensive use of computer technology as a key determinant of learning effectiveness or satisfaction. The third component in IT capability is the IT related intangible resources. IT related intangible resources are mainly information and knowledge which play increasingly prominent roles in the business world. Identifying and managing intangible resources becomes an issue that organizations must deal with regardless of size. In the study, IT related intangible resources comprise knowledge management technology and information systems are adopted.

Hence, among the biggest challenges of present day IT adoption in different organization is the lack of knowledge management system. Among the reason knowledge management systems are not available is because, to formalize certain knowledge processes, much restructuring of processes takes place in the organization concerned.

Knowledge in information systems can be leveraged to make organizations adaptable to their external environment [22]. The importance of information system extends to planning, processing, storage and dissemination of information and data needed to carry out the management functions. This form of IT-related intangible resources can be used in the oil and gas companies in Libya to plan and execute management activities because it supports IT capability. Complementarily, information system utilizes IT infrastructure to gather, sort, analyze, evaluate, and distribute data needed very fast and accurate among decision maker's business partners and managers [23].

### Scenario of Libya oil and gas companies

The petroleum companies in Libya are currently under the Libya umbrella of National Oil Company (NOC). Libyan petroleum companies of the NOC are divided into three types: companies fully owned by NOC, companies in joint ventures with a foreign partner, Explorations and Productions Sharing Agreements (EPSA). The importance of the oil and gas companies is reflected through the revenue generated. Oil currently generates around four-fifths of government revenue, one quarter of GDP and 95% of export earnings. Libyan economy is primarily dependent on revenues from the oil sector.

The oil and gas companies are in dispersed locations. The distance between the main offices with its branches can be up to 1000 kilometers. The common



communication is through satellite telephones. The overall technology include IT infrastructure is very minimum [10]. Although Libya is one of the global key oil producers, the Libya oil and gas companies are not performing well and not able to compete globally. The main reason is the inefficiency in managing their resources [9].

## METHODOLOGY

This study employed a positivist paradigm which seeks to investigate the relationships between IT capability and OI. The research approach used is the quantitative research approach which is in line with the objective of the research. Quantitative method holds the strength in empirical hypothesis testing through rigorous and reliable data collection [24]. The strategy of inquiry used in this research is a case study, where the respondents are the managers of the upstream oil companies (those operating in exploration, drilling and production activities) in Libya (The National Oil Corporation (NOC)). These upstream oil companies are chosen because their operations are distributed all over the region and they have at least 2 branches. Data are collected through surveys, and questionnaires are the main instrument used in the data collection process. Random sampling was applied on the target population managers in the oil and gas companies in Libya.

The survey was conducted by the researcher with the approval of the top management of the upstream oil companies involved. The language used in the questionnaire is Arabic language. Data collection process lasted for the duration of eight months.

Although IT Capability model by reference [17] is adopted, the statements to measure the dimension of IT infrastructure, IT human resources and IT related intangible dimensions are adapted from literatures [25, 23]. These studies on the knowledge management competence become the basis for measuring IT related intangible resources dimension. For the OI construct, the standardized questionnaire from Albrecht's OI model was used.

A pilot study was conducted on 40 respondents, whom are the lower level management in the Libya oil and gas companies. The purpose of the pilot study is to test on the clarity of the questions asked besides measuring the internal consistency of the constructs. Among the feedbacks gathered from the respondents is the need to include a brief description of the dimensions of OI in the questionnaire. Feedbacks from the respondents are taken into consideration in devising the questionnaire for main data collection. The internal consistency measures using Cronbach's Alpha were obtained for 13 dimensions as shown in Table-1. Basically, it can be observed that three-quarters of the dimensions are beyond the benchmark value of 0.70. Overall, these values indicated that the items asked were able to measure the construct involved.

**Table-1.** Reliability analysis of IT capability and OI constructs and their dimensions.

Construct	Dimensions	Cronbach alpha
<b>IT Capability</b>	IT Infrastructure & Communication Technology (7 Statements)	0.866
	IT Human Resource (5 statements)	0.860
	IT Intangible Resources (22 statements)	0.873
<b>Organizational Intelligence</b>	Strategic Vision (5 statements)	0.644
	Shared Fate (6 statements)	0.774
	Appetite for Change (6 statements)	0.743
	Heart (5 statements)	0.609
	Alignment & Congruence (5 statements)	0.574
	Knowledge Deployment (5 statements)	0.713
	Performance Pressure (5 statements)	0.786

The relationship between OI and IT capability constructs are further investigated through correlation and regression analysis. The results are discussed in the following section.

## RESULTS AND DISCUSSION

A total of 163 respondents answered the questionnaire, exceeding the sample size of 150. Demographically, 30.1% of the respondents have been working for more than 10 years in the organization and 20.2% have been between 6 and 10 years of employment. In terms of their tenure in their current position as managers, 47.9% has been in the current position between 2 to 5 years, followed by 12.9% who have been in the current position between 6 to 10 years, and 11.7% are in the current position for more than 10 years.

Two types of analysis are performed which are the descriptive and inferential analysis. Descriptive analysis gives an overview on the level of OI and IT capability in the Libya Oil and Gas Companies, whereas the inferential analysis focuses on investigating the role of IT capability in contributing towards OI. In categorizing the level of IT capability and OI in Libyan Oil and Gas industry, the mean values obtained were tabulated using the classification as in Table-2.



**Table-2.** The rating score.

Rating score	Mean Score
Very Low	$1.0 \leq \text{Mean score} \leq 1.5$
Low	$1.5 \leq \text{Mean score} \leq 2.5$
Moderate	$2.5 \leq \text{Mean score} \leq 3.5$
High	$3.5 \leq \text{Mean Score} \leq 4.0$
Very high	$4.0 \leq \text{Mean Score} \leq 4.5$
Excellent	$4.5 \leq \text{Mean Score} \leq 5.0$

### Descriptive analysis of OI

The results show that the overall organizational intelligence mean value is 3.38, which is a moderate score. This reflected the moderate capability of Libyan oil and gas companies in generating knowledge and to use it strategically to adapt to its environment. Table 3 shows the descriptive statistics of OI in Libya Oil and Gas Companies.

**Table-3.** Descriptive statistics of OI.

Dimension	Mean	Level
Organizational Intelligence	3.38	Moderate
Strategic vision	3.53	High
Shared fate	3.39	Moderate
Appetite for change	3.23	Moderate
Heart	3.28	Moderate
Alignment & Congruence	3.36	Moderate
Knowledge deployment	3.37	Moderate
Performance pressure	3.52	High

Strategic vision is the highest mean with the value of 3.53. Strategic vision is concerned about the success concept of an organization goals and vision. This reflected a high level of comprehension to increase the competitiveness of the organization among the managers in the Libyan oil and gas companies. Shared fate sub dimension, scored a moderate 3.39 reflected the moderate sense of common purpose among the managers to perform synergistically to achieve their vision.

The sub dimension of the appetite for change has a moderate score of 3.23, reflected a moderate eagerness of the managers to learn new ways of success through challenges. In other hand, Heart sub dimension scored a little bit higher than appetite for change to record a 3.28. This reflected the moderate commitment and loyalty of managers towards the organization. Alignment and

congruence sub dimension scored a moderate 3.36 reflected moderate positioning of individual employee capability toward the organizations goal.

Knowledge deployment sub dimension scores a 3.37 which reflected a moderate level of free movement of knowledge throughout organizational culture as well as in balancing between conservation of sensitive information and the availability of information needed for management processes. Finally, the performance pressure sub dimension. This sub dimension falls under the category of high with a score of 3.52. This indicates that there is a high level of self-imposed mutual trust in the oil and gas industries in Libya.

### Descriptive analysis of IT capability

In analyzing IT capability, descriptive statistics on the IT infrastructure components of hardware and software are shown in Table-4 and 5. Intel processor is the most available and used processors followed by Pentium, Celeron and AMD respectively. According to the general technology rank, the top is AMD followed by Pentium, Intel and the lowest is Celeron. In terms of computers, personal computer was the most available in their organization, followed by workstation, minicomputer, supercomputer and the least available was the mainframe. Based on the general technology, Supercomputer is ranked as first, workstation the second, personal computer the third and minicomputer and mainframe as the fourth and fifth. The most used printers in the organizations were laser-printer. Ink-jet was the second highest, followed by dot matrix and thermal wax. However, based on the general technology, laser-printer is ranked first, followed by thermal wax, ink-jet and dot matrix printer.

**Table-4.** Hardware usage.

Hardware	Types	Percentage
CPU	Advanced Micro Devices (AMD)	1.8 %
	Pentium	43.6 %
	Intel	66.3 %
	Celeron	20.2 %
Computers	Supercomputer	11.7 %
	Workstation	47.9 %
	Personal Computer	60.7 %
	Minicomputer	24.5 %
	Mainframe	6.1 %
Printers	Laser-printer	65 %
	Thermal wax	18.4 %
	Ink-jet	46.6 %
	Dot matrix	19 %

The software used in the companies was mainly for database administration purposes, website services and network management as depicted below Table-5.

**Table-5.** Software usage.

Software usage	Percentage
Database administration	64.4 %
Network management	33.1 %
Application development	25.2 %
Application maintenance	23.9%

In terms of the usage of network types in organizations, 64.4 % of the companies use local area network (LAN), followed by 39.3 % storage area network (SAN), 18.4 % wireless local area network (WLAN) and 4.9 % metropolitan area network (MAN). Telephone and social network was the most used communication types in the organization (77.9%), followed by intranet (45.4%) and other communication types such as electronic posters and radio. Email, bulletin-board and television are the least communication used in the organization. For the communication technology, Optical fiber is the most used (67.5%) followed by cloud computing (27.6%), fix phone lines (25.6%) and wireless (19%). In general, ranking technology, optical fiber is the first. Cloud computing is the second, followed by wireless and fix phone lines. The overall IT capability mean value is 3.45 which reflected a moderate ability of an organization to repeatedly perform a productive task to enhance organizational performance towards achieving desired results using IT.

IT infrastructure and communication usage mean was calculated based on the ranking of the technology used in the organizations. There was a high level of infrastructure and communication technology usage with the mean value of 3.77. The communication channel also scored a high mean (4.26) and communication technology (mean score=4.33), depicting that the usage of the most up to date technology is high. Meanwhile, the infrastructure technology usage for hardware was moderate level (mean score=2.72), the computer was at a moderate level (mean score=3.17), the printer was at high level (mean score=4.35), the software was at high level (mean score=4.36) and network at a moderate level (mean score=3.23).

For IT human resources, the mean value equals to 3.58 and at high level. The result also revealed that information system used as in IT-related intangible resources indicates the organization is better in managing compared to knowledge management technology based on the highest mean value of 3.42. The overall IT-related intangible resources mean is 3.39 is considered moderate level. The knowledge management technology scored 3.35 in which it falls under the category of moderate, while information system records 3.42 to describe as moderate as well.

In investigating the role of IT capability in influencing OI, further analyses were performed. Three level of IT infrastructure are determined through the ranking of the technology used. ANOVA test is performed and the result is shown in Table-6.

**Table-6.** IT infrastructure level and OI.

IT Infrastructure Level	Mean
Low	4.13
Moderate	4.90
High	4.91
F-statistics =3.653, p-value=0.028<0.05	

A further test is performed to investigate the influence of level of usage of IT infrastructure & communication technology on OI. There is a significant influence of the level usage of infrastructure & communication technologies on organizational intelligence. It is proved by F-statistics equal to 3,653 and p-value significant at 0.05. A closer investigation was further performed with examining the mean differences test. The result showed that companies with high level of IT infrastructure tend to have a higher OI score.

#### The relationship between IT capability and OI

To investigate on the role of IT capability as a predictor to OI, a structural equation modeling is performed. Normality test are conducted on both constructs of IT capability's dimensions and OI's dimension. The hypothesis proposed was there is a significant relationship between IT Capability and Organizational Intelligence. The path coefficients from IT capability to OI were examined. A summary of the path coefficients (unstandardized estimates), standard errors, critical ratio values and probability values is provided in Table-7.

**Table-7.** Path analysis for the structural model.

Path	Parameter estimate	E	R*	p-value
IT Capability → OI	1.562	.871	.982	0.015*

\* Significant at  $p < 0.05$

Modeling results demonstrated that IT capability has a significant ( $p < .05$ ) relationship with OI where a strong positive effect ( $\beta = 1.562$ ) was revealed for the path from IT capability to organizational intelligence. For estimation, when increase by 1 percent in IT Capability among Libya Oil and Gas Companies, OI will increase by 56.2%. Generally, IT capability was significantly positively affecting organizational intelligence. By this it can be said that higher IT capability tends to contribute towards higher organizational intelligence.

#### CONCLUSIONS

This research contributes towards new insights on the OI level of the oil and gas companies in Libya. The current scenario highlighted that Libyan oil and gas companies are not able to compete globally, and literatures



in knowledge management have been highlighting the importance of OI and IT capability in relation to an organization's performance. The findings show a moderate level of OI, with basically the dimensions for change, appetite to change and individual capability are moderate. The IT capability also is in moderate level. Further investigation into the role of IT capability in influencing OI in Libya oil and gas companies prove that IT capability is a predictor of OI in the context of Libyan oil and gas companies. In terms of quantitative estimation, an increase of 1% of IT capability will contribute towards a 56.2% increment in OI within the context of the research.

For future study, it is recommended to include a wider population of oil and gas companies in Libya. The constructs of organization culture and ethnicity are also recommended to be included in the future study.

### ACKNOWLEDGEMENTS

This work is supported by the Malaysian Ministry of Education and Research Management Institute (RMI) UiTM.

### REFERENCES

- [1] J.S. Edwards. 2008. Knowledge management in the energy sector: review and future directions. *International Journal of Energy Sector Management*, Vol. 2, No. 2, pp. 197-217.
- [2] K. Albrecht. 2003. The power of minds at work: Organizational intelligence in action: AMACOM Div American Mgmt Assn.
- [3] B.W. Lin. 2007. Information technology capability and value creation: Evidence from the US banking industry. *Technology in Society*, Vol. 29, No. 1, pp. 93-106.
- [4] G. Bhatt and V. Grover. 2005. Types of information technology capabilities and their role in competitive advantage: an empirical study. *Journal of Management Information Systems*, Vol. 22, No. 2, pp. 253-277.
- [5] L. Ying and K. Ramamurthy. 2011. Understanding the Link between Information Technology Capability and Organizational Agility: An Empirical Investigation. *MIS Quarterly*, Vol. 35, No. 4, pp. 931-954.
- [6] W. E. Halal. 1998. Organizational intelligence. *Knowledge Management Review*, Vol. 1, No. 2, pp. 45-53.
- [7] J. Liebowitz. 1999. Building organizational intelligence: A knowledge management primer, Vol. 1 CRC Press.
- [8] K. Al-Mabrouk and J. Soar. 2009. An analysis of the major issues for successful information technology transfer in Arab countries. *Journal of Enterprise Information Management*, Vol. 22, No. 5, pp. 504-522.
- [9] N. M. Victor. 2007. On measuring the performance of national oil companies (NOCs). Working Paper 64. Stanford, Cal.: Program on Energy and Sustainable Development, pp. 1-41
- [10] J. M. Twati and J. G. Gammack. 2006. The Impact of Organizational Culture Innovation on the Adoption of IT/IS: the case of Libya. *Journal of Enterprise Information Management*, Vol. 19, No. 2, pp. 175-191.
- [11] V. D. Kalkan. 2005. Organizational intelligence: Antecedents and consequences. *Journal of Business & Economics Research (JBER)*, Vol. 3, No. 10, pp. 43 – 54.
- [12] S. Nasiri, M. Javidnia, and Z. Anvar. 2103. Evaluating impacts of organizational intelligence in creating competitive strategy in companies producing powder coating. *Management Science Letters*, Vol. 3, No. 3, pp. 953-960.
- [13] Y. Xu. 2011. Entrepreneurial social capital and cognitive model of innovation. *Management Research Review*, Vol. 34, No. 8, pp. 910-926.
- [14] W. O'Donohue and M. Wickham. 2010. The role of ethical intelligence and organizational infrastructure in organizational decision-making. *Proceedings of Academy of Management Conference*, University of Tasmania, Hobart, Australia.
- [15] F. Azma, M. A. Mostafapour and H. Rezaei. 2012. The application of information technology and its relationship with organizational intelligence. *Procedia Technology*, Vol. 1, pp. 94-97.
- [16] H. Agourram. 2009. Defining information system success in Germany. *International Journal of Information Management*, Vol. 29, No. 2, pp. 129-137.
- [17] M. Tarafdar and S. R. Gordon. 2005. How information technology capabilities influence organizational innovation: exploratory findings from two case studies. *ECIS 2005 Proceedings Paper 17*
- [18] M. Wade and J. Hulland. 2004. Review: The Resource-based view and information systems research: review, extension, and suggestions for future research. *MIS Quarterly* Vol 28, No. 1, pp. 107-142.
- [19] H. E. Williams and B. K. Shah. 2013. Administering Information Technology Capabilities in Competitive Global Business by Preventing Replication of



Technology Portfolio. International Journal of Innovation, Management and Technology, Vol. 4, No. 6, pp. 619-624.

- [20] A. Bharadwaj. 2000. A resource-based perspective on information technology capability and firm performance: an empirical investigation. MIS quarterly, Vol. 24, No. 1, pp. 169-196.
- [21] D. Seserman. 2013. E-Learning In The Human Resources Management. Conference proceedings of eLearning and Software for Education (eLSE), issue 01/2013, pp. 264-267.
- [22] J. M. Arias and J.M. Solana. 2013. Information systems supported organizational learning as a competitive advantage. Journal of Industrial Engineering and Management, Vol. 6, No. 3, pp. 702-708.
- [23] D. Sedera and G. G. Gable. 2010. Knowledge management competence for enterprise system success. The Journal of Strategic Information Systems, Vol. 19, No. 4, pp. 296-306.
- [24] W. J. Orlikowski and J. J. Baroudi. (1991). Studying information technology in organizations: Research approaches and assumptions. Information systems research, Vol. 2, No. 1, pp. 1-28.
- [25] R. Weijermars. 2012. Building Corporate IQ–Moving the Energy Business from Smart to Genius, pp. 21-37: Springer-Verlag.