

# Antecedents of Management Practice and Project Performance among Manufacturing Industries in Malaysia

S. M. Ferdous Azam<sup>1</sup>, Ali Khatibi<sup>2</sup>, Jacqueline Tham<sup>3</sup>

<sup>1,2,3</sup>Postgraduate Centre, Management and Science University, Seksyen 13, 40100, Shah Alam, Selangor, Malaysia.

## ABSTRACT

The purpose of this research is to evaluate the antecedents of management practice and project performance among manufacturing industries in Malaysia. To achieve the purpose of the study, the selected contractors are classified under the excellent and first classes. This target group was 21 contractors companies. The second target is the consulting engineering offices, which were registered by Ministry of Commerce and industry at the year 2017. The third target group was the owners or the leading operators. This study indicates that continuous improvement is also excellent when the companies want to increase the performance of the employees as with the continuous improvements, Manufacturing companies will be able to satisfy the employees most appropriately. Results from the measurement model revealed that there are positive and meaningful interrelationships among quality culture, resource management, management practice and overall performance for manufacturing industries in Malaysia. Besides, findings can be generalised to other developing countries and government of developing economies to grasp business opportunities in a significant manner. Furthermore, the study will be beneficial for companies in the context of understanding the benefits and challenges associated with the deployment of total quality management this sector in a proficient manner.

## Keywords

Quality culture, Resource management, Management practice, Overall performance, Manufacturing industries, Malaysia

Article Received: 10 August 2020, Revised: 25 October 2020, Accepted: 18 November 2020

## Introduction

Business organisations and companies are motivating to adopt different platforms to add value to existing business processes to survive and better perform in the modern business world (Tarofder *et al.*, 2017). However, it has been noticed that construction projects are growing and Manufacturing organisations working in the construction of facilities projects in Malaysia are also expanding in size and complexity (Ruqaishi and Bashir, 2013; Moha Asri and Azam, 2017). However, due to several causes such as project managers' concern, lawsuits between project parties, environment problems, loss of productivity and contract termination in some cases, construction projects which are running in the manufacturing sector have delayed. According to Kharusi (2012), the Manufacturing industry faces various challenges related to size, location or maturity of operation and maintaining costs. Besides that, quality, cost, flexibility and customer service are the other significant factors which are responsible for creating challenges for the manufacturing sector of the country (Kharusi, 2012).

Along with this, lack of transparency and management expertise raised in Malaysia can also create challenges in implementing Total quality management technique in a significant manner. Apart from these problems, lack of collaborations between different departments, regulatory limitations and poor technical and administration skills kinds of issues can also create hurdle in the success path of manufacturing organisations working in the construction of facilities projects in Malaysia (Parast and Adams, 2012).

The construction of facilities projects in the manufacturing industry is facing a variety of problems such as loosely structured system and poor integration between different departments of companies etc. To overcome such kinds of problems, it is necessary for management of enterprises to

adopt new method new to quality management. Furthermore, Alsaidi (2014) described that poor strategies adopted by oil service companies, failures of equipment performance and lack of skilled personnel and planning were the primary causes associated with manufacturing industry which are responsible for creating heavy monetary losses. Thus, the primary aim of the study was to evaluate the effect of total quality management implementation in manufacturing industries projects in Malaysia and to suggest a way forward.

## Literature Review

In the modern competitive business world, to meet the expectation of people, it is required for the organisations to maintain quality in their products. As per the Oxford dictionary, quality can be defined in the form of the degree of excellence against similar. However, the quality term is most associated with the product and service characteristics and satisfaction level of customers in a significant manner (England, 2013). The quality term can be described with the help of different approaches that can be understood as follow. Tayeb (2008) described that in the Transcendent quality approach quality could be defined as the goodness of a product which is derived from philosophy. As per this approach, quality can be considered as an absolute and universally recognisable term which is subjective. On the other side, in product based approach, quality is measured in term of performance at an acceptable price and best for certain customer conditions. In manufacturing-based approach, quality can be measured in the form of the outcome of engineering and manufacturing practices. In this approach, different parameters including rework or product failure, costs due to scrap and deviations from design specifications are included in the context of measuring (Tayeb, 2008).

On the other hand, Rapaport (2014) described that to be competitive in the manufacturing sector in Malaysia, it is essential for companies to focus on things like production and manufacturing, environmental stewardship and complying with the regulations framed related to health and safety of an individual at the workplace. In this sector, supply and price play an essential role. Also, different types of costs involved with manufacturing development activities which include the processing and storage of crude Manufacturing, delivery of Manufacturing to the consumer within stipulated time and logistics and process control (Rapaport, 2014). According to Tayeb (2008), different types of costs are associated with the quality such as prevention cost, appraisal cost, internal failure cost and external failure cost etc. Quality planning, supplier quality evaluation cost, process control, training cost and quality audit cost come under the category of prevention cost and expended to prevent errors in all functions within the enterprises in different industries like oil & gas and construction. While conducting inspections and determine whether products and services are met as per requirement, appraisal cost is expended by companies. On the other side, failure analysis cost, downgrading cost, rework cost and scrap cost are the significant cost associated with the internal failure of activities within companies.

To better compete with their core competitors and survive in the business environment, it is essential for companies to change in their business strategy, values and cultural change to lead employees and retain them with the company for the extended period. In a successful implementation of TQM programme, Quality culture work as the main ingredient, and it can improve project delivery and mitigate any negative orientations of employees towards their work and organisational goals (Duh, Hsu and Huang, 2012). However, in the success path of creating a quality culture in Malaysian Manufacturing companies, various issues such that harsh working conditions, low esteem and secure employment prospects etc. can create a problem. Besides, several other factors which include leadership style, low performance and organisational commitment strongly affected the way of doing business and culture of any company.

According to Subramaniam (2014) without understanding the relationship between leaders and their outcomes, performance and commitment, management of Malaysian companies would be unable in managing multi-cultural workforces as well as improving the quality, performance and profitability of firms in the global world. In the context of creating a framework for organisational change and better response to their changing environment, TQM can be helpful for enterprises. Besides that, companies can be used quality management technique in getting the best out of employees at all levels and getting the best out of employees at all levels so that poor working conditions, delays and rework problems can be reduced which can create a delay in creating quality culture (Subramaniam, 2014). For example, PDO has signed a contract with the United Nations Global Compact (UNGC) to build the quality culture and support various principles which include a commitment to ethical business, human rights, anti-corruption labour and environment at the workplace (PDO report, 2015).

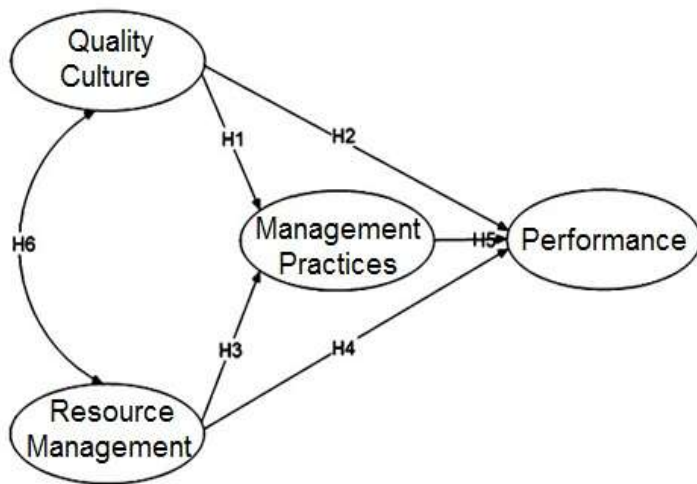
Furthermore, Yazdani et al. (2017) explored that for managing human resource various HRM practices including

employee career planning, training and development and quality performance and meeting expectations of employees by regular communicating with them can be beneficial for the management of Manufacturing companies in Malaysia (Yazdani et al., 2017). Intrinsic motivation, delegation or job enrichment, increases worker pride and involvement in decision-making processes can be helpful for management of companies to effective utilisation of their human resources as well as improve their skills and performance. In this regard, management has to involve in strategic planning and other resource management techniques in the construction industry in the UK and Jordan to create a healthy culture toward quality improvement. For example, for managing risks and controls its business and support operational effectiveness, management of Malaysian Oil Company has developed an internal control framework to ensure the reliability and to enhance the system of internal controls (De and Petrillo, 2008). However, managing conflicts of interest, the efficiency of operations and support operational effectiveness can affect resource management policies framed by companies in Malaysia. Nevertheless, along with human resource management, technical resource management is also required for companies to improve productivity.

Despite that, various issues including technical challenges, ill-equipped to handle the maintenance problem and fail to meet advancement demand technologically can create a problem in successful execution of manufacturing industries project sector in Malaysia within the stipulated time (Babatunde and Low, 2007). On the other hand, regulatory limitations, lack of collaborations between different departments can and administration skills kinds of issues can also create hurdle in the construction of facilities projects in Malaysia (Elfaituri, 2012).

After considering the research gap left by different scholars in their past studies, the researcher has conducted the present study and prepared generic model by considering them. Besides that, the scholar has focused on designing assessment instrument by various factors for manufacturing organisations working in the construction of facilities projects in Malaysia. Along with this, to attain aim and objectives of the present study, the researcher has taken cases of different Manufacturing companies which successfully implemented TQM in their business practices.

Hence, it can be said that proper understanding and evaluation of total quality management practices in facilities projects in Manufacturing sector using assessment instruments are required to overcome the hurdle and gain advantages in a significant manner. Along with this, the current study also provides information about current trends of Malaysian Manufacturing industry, detail description of the Manufacturing industries project, TQM concepts and related cases to better understand the deployment of quality management practices the construction of facilities projects in manufacturing efficiency. Thus, after the theoretical and empirical reviews, the following figure (Figure 1) illustrates the conceptual framework of the study around the variables and describes the hypotheses that will be validated in the study:



**Figure 1:** Conceptual Framework

### Hypotheses Development

Based on the conceptual framework and the above variables, it can be seen that seven hypotheses are formulated to test whether there are significant relationships between quality culture, resource management, and management practice and overall performance.

The hypotheses that will be tested in this study are as follows:

H<sub>1</sub>: There is a positive relationship between quality culture and management practice

H<sub>2</sub>: There is a positive relationship between quality culture and overall performance.

H<sub>3</sub>: There is a positive relationship between resource management and management practice

H<sub>4</sub>: There is a positive relationship between resource management and overall performance

H<sub>5</sub>: There is a positive relationship between management practice and overall performance

H<sub>6</sub>: There is a reciprocal relationship between management practice and overall performance

### Research Methodology

The first target populations include the contractors who have a valid registration. The selected contractors are classified under the excellent and first classes. This target group was 21 contractors companies. Contractors that are registered under the second, third and fourth classes were neglected due to the limited practical and administrative experience of their companies in the critical success factors of TQM implementation. The second target is the consulting engineering offices, which were registered by Ministry of Commerce and industry at the year 2017. All the consulting engineering used in this study seven consulting offices, which have a valid registration in the manufacturing industry. The third target group was the owners (clients) or the leading operators. This target group was five owners.

To identify the factors that forced companies in the construction of facilities projects in Manufacturing in Malaysia to implement TQM, this approach will be useful for the researcher. Random sampling technique can be considered to draw sample form population size. 300 sample

sizes can be taken to evaluate the perceptions of respondents about the critical success factors and impact of total quality management implementation in the construction of facilities projects in Manufacturing in Malaysia. This study indicates that continuous improvement is also excellent when the companies want to increase the performance of the employees as with the continuous improvements, Manufacturing companies will be able to satisfy the employees most appropriately. There is a significant impact on the total quality management practices in facilities projects in Manufacturing in Malaysia.

### Research Findings

To conduct the research, the distribution of respondents according to gender was 228 male and 72 female. By percentage, it can be said that 76% were male and 24.1 % were female respondents who fill the questionnaire and share their perceptions regarding quality management importance in Manufacturing sector Malaysia.

Education of respondents and their knowledge about technology could play an essential role in the implementation of TQM in a successful manner. From the output, it is clear that differently educated and experience respondents have different aspects and they have different thinking and perception towards TQM implementation concern.

It is identified that 64.3% of the respondents have done bachelor degree while 14% of respondent have completed their post graduate and above degree, 15.7% of respondent are perusing diploma and 6% of respondent are professional courses pass out. Out of 300 respondents, the bachelor degree holder respondents are more as compared to a postgraduate degree and others. Also, the professional degree holder is least with the lowest frequency. Also, the table shows the degree of level of education criteria of the respondents. By information gathered from respondents of different Manufacturing enterprises in Malaysia, it is found that resource and process management can play an essential role in this. From their past working experience, participates shared their views about the critical success factors required for TQM in the construction of facilities projects in Manufacturing in Malaysia. In the context of the better understanding of this topic, the researcher was collected data from different profile people who directly or indirectly associated with industry and know TQM. In respondents portfolio, Manager/ Project manager, Technical Engineer, Site Engineer and Project support team-members were included.

From a respondent portfolio, it can be said that percentage responded position in an organisation where the highest percentage of the position in an organisation is a project manager with a percentage share of 41 percent and the frequency of 123 in the organisation. Then the second highest percentage is shared by site engineer by 22.7 percent followed by technical engineer and project support by 22.3 and 14.7 percent respectively. Different role within organisation and project have different opinions. The other significant finding of the present research is level of experience of people. Among the respondents 46.0 percent people have an experience of 1-5 years, 48.7 percent have 5-10 years' experience, and 5.3 % have more than ten years of

experience. The respondent parties are involved in project valuation whose segregation are given in above table the invested cost is less than 5 million USD in 17.5 % of the project. 40.9 % are invested with an amount of 5-10 million USD and form the significant category of respondents. From the secondary research, it is cleared that, a proper understanding of behaviours and attitudes of employees involved in TQM process is required to enhance participation of all staff members towards achieving common goals and appropriate management of funds in a systematic manner (Adefolalu, 2013). TQM will also help companies to reduce their cost and meeting expectation of their customers within stipulated time in a significant manner (Bassey, Usang and Edom, 2007). As per the researcher point of view, it can be said that there is a significant difference in perception of male and female participants. Research has discovered that education, total industry experience and organisations in which they are working can affect Malaysian companies regarding implementing TQM in industry.

### Exploratory Factor Analysis (EFA)

Factor analysis is a data reduction technique that is widely used to identify the underlying dimensions in multivariate data analysis. The purpose of factor analysis is to remove all redundant or highly correlated variables from the data file, replacing the remaining ones with a smaller number of variables, often called factors.

Kaiser- Meyer- Olkin (KMO) measures the proportion of variance in the variables that might be caused by an underlying factor. Statistically, it tests whether the partial correlations among variable are small. Moreover, the KMO of this study is 0.815, that is to say, it is more than 0.8 which is considered excellent. Similarly, Bartlett's test is 0.000 which is less than 0.005. This indicates that there is no high correlation or coefficient among the items and also suggests conducting an EFA.

Besides, if the variances are independent of each other, then the total variance will be equal to the number of variables in the analysis. The eigenvalue is commonly used in deciding on the number of factors. The first factor extracted explains more variance in the observed variances compared to the following factors. In this research, the factors explained the 61.990 percent of total variance. The rotation has the effect of optimising the factor structure, and one consequence for these data is that the relative importance of the six factors is equalised.

This study used Varimax because it is an orthogonal rotation method that minimises the number of variables that have high loading on each factor. This method simplifies the interpretation of the factors.

The next step is to look at the content of questions that load onto the same factor to try to identify common themes. Table 3 below exhibits the rotated component matrix output.

**Table 3: Rotated Component Matrix**

Item Code	Item/Statement	Factor			
		Quality Culture	Resource Management	Management Practice	Overall Performance
Q12	Quality forms part of organisational culture.	.809			
Q13	Top management able to identify the responsibilities for quality performance. To support total quality culture.	.792			
Q14	Involvement in total quality objective task definition, budgeting, and measurement.	.443			
Q27	The recruitment/selection procedures in the organisation are valid. The employees are qualified to hold the assigned responsibilities.		.574		
Q28	Career development, welfare and training programs emphasise quality management in the organisation.		.705		
Q29	Suggestions and complaints system in place, with target timescale for management to respond.		.409		
Q20	Senior Executives are directly involved in establishing, evaluating and communicating the organisation's vision, and mission plans policies and values of the quality program.			.862	
Q21	Senior Executives stress on accuracy and reliability of all information and communication within the organisation.			.705	
Q22	Involvement in total quality objective task definition, budgeting, and measurement			.409	
Q23	Top management allocated resources to maintain/improve the			.405	



	quality.				
Q2	Cost of quality process performance is based on defined standards.				.676
Q3	The team members share responsibilities to the project objectives.				.596
Q4	Team meetings and conducted efficiently.				.549
Q5	The project delivered is expected the level of quality.				.525
Q6	Performance and commitment, management of Malaysian companies can be beneficial in managing multi-cultural workforces as well as improving the quality, performance and profitability of firms				.488
Extraction Method: Principal Axis Factoring. Rotation Method: Varimax with Kaiser Normalization.					
a. Rotation converged in 6 iterations.					

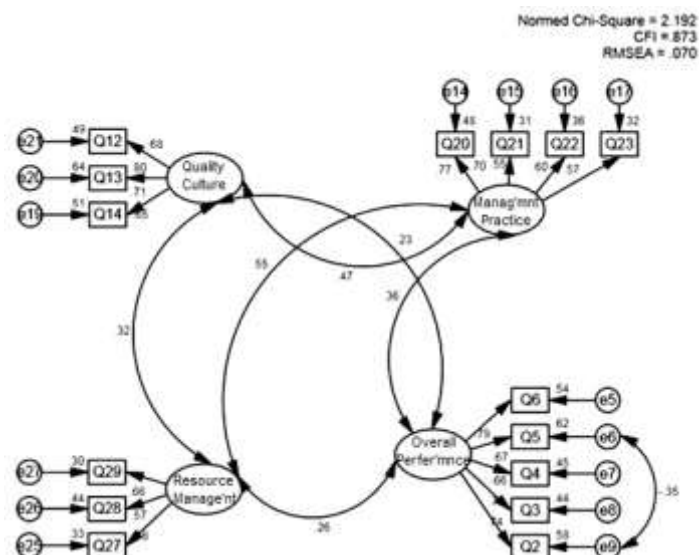
Source: Author's Illustration

### Measurement Model

The measurement model for the framework was developed by combining 15 items based on each final individual measurement model. According to the results, all the factor loading values are higher than the required cut-off point of 0.5. By looking at the model fit indices, it can be seen that the model fits the data well, as indicated by observing the absolute fit indices and incremental fit indices, the RMSEA values; however, GFI, CFI, NFI, IFI & TLI values closer the standard cut-off values.

**Table 4:** Model Fit Indices for the Measurement Model of the Framework

$\chi^2$	d f	$\chi^2 / df$	GFI	RMS EA	NFI	CFI	IFI	TLI
58.9	2	2.1	0.9	0.070	0.7	0.8	0.8	0.9
63	7	92	35		77	73	39	10



**Figure 2:** Measurement Model for the Framework

Table 4 demonstrates that AVE values for the entire constructs are higher than 0.5. Further to this, the CR values are higher than the AVE values which indicates the convergent validity.

**Table 4:** AVE and CR Values for the Structural Model

Variables	AVE	CR
Quality Culture	0.63	0.85
Resource Management	0.59	0.82
Management Practice	0.67	0.89
Overall Performance	0.53	0.87

### Hypothesis Testing

Hypothesis is a statement that the researcher sets out as to whether to accept or reject based on the data collected. The six hypotheses are summarized as following:

**Table 5:** Summary of Hypothesis

Hypothesis	Remark	Reference
H1: There is a positive relationship between Quality culture and Management practice	Accepted	Figure 2, path coefficient
H2: There is a positive relationship between Quality culture and Overall performance	Accepted	Figure 2, path coefficient
H3: There is a positive relationship between Resource management and Management practice	Accepted	Figure 2, path coefficient
H4: There is a positive relationship between Resource management and Overall performance	Accepted	Figure 2, path coefficient
H5: There is a positive relationship between Management practice and Overall performance	Accepted	Figure 2, path coefficient
H6: There is a reciprocal relationship between Quality culture and Resource management	Accepted	Figure 2, path coefficient

## Conclusion And Recommendation

The research explored that it is essential for companies to concentrate on different technologies to grasp various advantages such as customer focus, quality, cost and delivery of products within the stipulated time to gain competitive advantages. All these factors and gaining advantages from the implementation of TQM in different sectors like Libyan and Saudi Arabia industrial sector are motivating firms to adopt different platforms and techniques to add value to existing business processes and better perform in the modern business (Alsaid, 2014). Furthermore, it has been said that the role of total quality management in Malaysian construction industry. In consequence, this section will discuss and summarise the findings of the entire research using the analysis presented in the earlier sections to provide a meaningful interpretation of the analysis. The findings are based on the objectives of the research as outlined in section one and discuss the suggestions in an attempt to improve overall performance.

As per the research of Al-Hatmi and Tan (2013), lack of consistency and coordination in policy, deployment of renewable energy has grown up with meagre pace, lack of clarity in strategic plan for renewable energy, absence of financing system for renewable energy projects and inappropriate allocation of funds in development for renewable energy and rapid development are the significant challenges facing by Malaysian government and different oil sector companies such as BP, LNG and OGC etc. within the country. From the economic perspective, it can be said that different policies such as interest-free or subsidised loans, tax exemptions, loans with longer terms for repayment, visas and permits for foreign workers etc. are favourable for domestic and international firms to invest money in the manufacturing sector. Thus, this present research provides new insight into the overall performance space that may benefit the industry and have some implications for policymakers and government. The government of country prepared vision 2020 plan to reduce dependence on oil and focus on the diversification, modernisation and promote competition at all levels. Lack of skilled labours, insufficient primary education, underutilised labours and lack of integration of Malaysian with the world economy are the significant weaknesses that are creating challenges for the manufacturing industry. The economy of the country relies on Manufacturing, and most of the revenue comes from this sector, it creates a challenge for the government on a long-term basis (Al Hatmi, and Tan, 2013).

From the external an internal analysis of the country, it is identified that manufacturing industry of Malaysia is one of the significant contributors to economic development. Along with this, it also integrates with various other industries and influences other activities which include employment and boosting industrial development. To recap, there are significant relationships between quality culture, resource management, management practice and overall performance.

## References

- [1] Al Hatmi, Y. and Tan, C.S., 2013. Issues and Challenges with Renewable Energy in Malaysia. [Pdf]. Available through: <http://esatjournals.net/ijret/2013v02/i07/IJRET20130207029.pdf>. [Accessed on: 25 February 2016].
- [2] Alsaidi, A., 2014. Applying TQM Approach in Equipment Maintenance of Manufacturing Industry. [Pdf]. Available through: [http://www.ijerst.com/ijerstadmin/upload/IJEETC\\_53e4738a8b73b.pdf](http://www.ijerst.com/ijerstadmin/upload/IJEETC_53e4738a8b73b.pdf). [Accessed on 1st February 2016].
- [3] Babatunde, Y. and Low, S.P., 2007. Cross-Cultural Management and Quality Performance.
- [4] De Felice, F. and Petrillo, A., 2008. TQM model for the competitive advantages of an electromechanical company.
- [5] Duh, R.R., Hsu, A.W.H. and Huang, P.W., 2012. Antecedents and performance effect of TQM practices: An integrated model approach. *Total Quality Management & Business Excellence*. 23(5-6). Pp.689-701.
- [6] Elfaituri, A.A., 2012. An assessment of TQM implementation, and the influence of organisational culture on TQM implementation in Libyan banks (Doctoral dissertation, University of Gloucestershire).
- [7] England, I.N., 2013. Gas-Fired Power Generation in Eastern New York and its Impact on New England's Gas Supplies.
- [8] Kharusi, A.B., 2012. Challenges Facing the Oil Industry- Perspective from PDO North Assets. [Pdf]. Available through: <http://connect.spe.org/Malaysia/events/eventdescription?CalendarEventKey=ce3dc160-f1a9-47c4-9a76-a317ae9655af>. [Accessed on: 31st January 2016].
- [9] Moha Asri A. and Azam, S. M. F., (2015). "Mediating Relationship of Financial Practice between Financial Knowledge and Business Success: An Empirical Study on Malaysian Small Business", Australian

Academy of Business and Economics Review, 1(1): 1-23

of Quality & Reliability Management 33 (5).

- [10] Parast, M.M. and Adams, S.G., 2012. Corporate social responsibility, benchmarking, and organisational performance in the petroleum industry: a quality management perspective. *International Journal of Production Economics*.139 (2). Pp.447-458.
- [11] PDO report, 2015. AL-Fhal The monthly newsletter for Petroleum Development Malaysia staff and its Contractors The monthly newsletter for Petroleum Development Malaysia staff and its Contractors.
- [12] Rapaport, M., 2014. Enterprise Quality Management Challenges for Manufacturing. [Online]. Available through: <http://www.iqs.com/iqs-blog/enterprise-quality-management-challenges-oil-gas/>. [Accessed on 3rd March 2016].
- [13] Ruqaishi, M. and Bashir, H.A., 2013. Causes of delay in construction projects in the Manufacturing industry in the Gulf cooperation council countries: a case study. *Journal of Management in Engineering*. 31(3). pp.05014017.
- [14] Subramaniam, A.2014. A Study on Challenges in Implementing Total Quality Management in construction Firms at Coimbatore. *Global Journal of Engineering Science and Researches*.
- [15] Tarofder, A. K. and Azam, S. M. F. and Jalal, A. N. (2017), "Operational or Strategic Benefits: Empirical Investigation of Internet Adoption in Supply Chain Management", *Management Research Review*, 40 (1): 28-52
- [16] Tayeb, A., 2008. Critical Success Factors of TQM Implementation on Construction Projects in Gaza Strip. The Islamic University – Gaza.
- [17] Yazdani, B., Attafar, A., Shahin, A. and Kheradmandnia, M., 2017. The impact of TQM practices on organisational learning case study: automobile part manufacturing and suppliers of Iran. *International Journal*