



## A Study on the Factors Affecting Total Quality Management in the Saudi Arabian Construction Industry

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### ABSTRACT

Quality in a construction company is the key focus for competitiveness. The research described in this paper assesses the effectiveness of total quality management in construction industries. Thus, this study is aimed to investigate the four dimensions of total quality management which are fundamental for construction process. These four dimensions are quality management, quality control, quality assurance, and quality inspection. The regression analysis has been done to identify the effectiveness of these variables towards the quality in the company. The empirical result shows that quality management and assurance have the most effects towards quality as they are positively and significantly related to the quality. However the effect of the control and inspection are found not to be significant.

**Keywords:** Quality assurance, quality control, quality inspection, quality management.

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### 1.0 INTRODUCTION

Total quality management has become an important strategic implementation in construction sector around the world. It has become an important tool for companies around the globe to improve their competitive abilities and provide strategic advantages (Hellard, 1993). Therefore, the effect of TQM in construction industries is to improve quality, which is considered as a global phenomenon for seeking high output within rapid changes of environmental variables. Construction industries of Saudi Arabia need to improve effective TQM in order to gain their competitiveness in this rapidly growing business as Saudi Arabia is ranked 13<sup>th</sup> in economically competitive countries in the world as mentioned by World Bank's annual report (issued for 2010). Moreover, implementing TQM in Saudi construction industries has become a great challenge to attract the customers for establishing long term relationship with their clients. According to David & Gunaydin (1997), the advantage of TQM in construction sector has increased competition, improved product quality and reduced the cost of building. Thus, one of the key challenges

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for Saudi construction sectors is how to improve material properties to meet Saudi Standards and Quality Organization (SASO) through adopting TQM as an effective strategy. The purpose of the research is to identify the main factors that affect the implementation of TQM approach in construction sector of Saudi Arabia. Moreover, this research also aims to investigate the fundamental element of TQM at the top management in Saudi construction sectors and as well as to achieve the best implementation and high quality outputs.

Nowadays, quality has become an increasingly predominant feature of business competition in the world market. According to Hoonakker et al, (2010), Rapid growth and competitiveness has made the industries and organizations throughout the world to adapt 'Quality' as a strategic weapon for market share and improved profitability of organization. Moreover, as stated by Crosby, (1989), quality mostly focuses on the satisfaction of customer needs as well as the quality as conformance to meet specific requirements referring to the perception of the degree that quality of product or service can meet the customer's expectations. Thus, quality able to be measured ISO 9000, (2000), (cited by Dale, et al, 2007) defined that the total features and characteristics of the product or service should have a degree to meet the expectations and satisfaction of customers in order to fulfill the requirements. These definitions are based on different perspectives and expectations where valid requirement is defined as conditions that meet the particular needs of customers. In construction industry, quality must be a set of characteristics comprising of marketing, engineering, manufacture and maintenance through the product or service so as to meet the demand of consumers. As well as, it can be seen from above definitions that quality of product provides better production and higher profit margins in order to have user based perspective and satisfaction of customer needs.

Based on the current TQM practice in Saudi construction sectors, this research aims to achieving these points of objective to determine the most significant factors that have an influence on construction process in Saudi business environment. More specifically, this paper is trying to determine the effect of quality management, inspection, control, and assurance towards the total quality management (profitability and service quality) in order to develop a long term strategy through the regression analysis.

## 2.0 LITERATURE REVIEW

### 2.01 QUALITY INSPECTION

According to Dale & Bunney, (1999), quality inspection is a set of activities which include measuring, examining, testing, gauging one or more characteristics of the products and services and comparing all the results with specified requirements in order to access each characteristic through determining conformity. On the other hand, 'Inspection' works as an effective and efficient way of discovering defects of the product and service at the required level. Hence, it is necessary to examine, test and measure within industries and organizations. Therefore, inspection is used to grade the final product in order to ensure desired quality.

As reported by Juran (2008), quality inspection contributes to quality improvement by experienced employees. Measurement, examination can be handled more efficiently due to experienced employee implemented. Skilled staffs help to organization towards managing quality improvement ideology in the process of production. Quality inspection equips work process with level of activities and techniques of quality improvement. As well as it is argued to be an effective activity of quality improvement in the achievement of its customer requirement. Through testing, quality inspections are able to identify opportunities as it is directed at providing high quality for products and services to be able to contribute to ongoing quality improvement process. Therefore, manufacturing work focuses on inspection whether inspection jobs were created by skilled workers. Inspection requires organization to keep product quality same time committing resource to measure how it has been successful in improving quality.

### 2.02 QUALITY CONTROL

According to Lawrence (1998), quality control is concerned with operation techniques and activities that are used for checking and reviewing work in order to manage quality. Quality control involves product design, operation process and outputs to ensure all activities are mainly done according to the required standard. Moreover, quality control is a regulatory process required in an organization to achieve the quality requirements so as to meet the quality standards (Mitra, 2008). Quality control focuses more on operational processes to measure actual quality performance and check whether products can meet the desired requirements. It is related to the inspection process which aims as a basic requirement in order to get through a customer. However, as quality control focuses on lowering defect incidence and stabilizing the process control, it does not set the bench mark to create standards. The process of quality control is to maintain the standard of the product or service through a mode of selection, measurement and prevention of defects so as to ensure high quality output associated with the product and service.

According to Juran & Joseph (1998), there are three quality management processes to improve quality such as quality planning, quality improvement and quality control. In this process, quality should have two aspects; products and services without or with fewer defects which required different processes of quality planning, control and improvement. Moreover, as reported by Dale (2009), quality is the integration of marketing, engineering, production and service that allow to fulfill customer satisfaction as well as it's systematic approach that requires the involvement of all functions such as quality control, quality maintenance and quality improvement. According to Jerry (1989), quality control is business method rather than technical activity it's because technical activities that involve material, machines and process and operating. He further emphasis that human relation is a basic element in quality control activity to generate gradual commitment to TQM such as top management, employee involvement, supply management, open communication and measuring quality cost. Effectiveness of quality control has become the most important guide to organizational growth and success due to quality control moved from technical method to a business method. Thus, quality control defined as an effective method for integrating the quality development, quality maintenance and quality improvement. Quality control involves manufacturing, processes, outputs and services leading to customer satisfaction.

### 2.03 QUALITY ASSURANCE

Quality assurance is the planned and systematic preventive activities which increases productivity by placing the emphasis on product and service (Oakland, 1995). As noted by Dale et al, (1994) quality assurance emphasizes on defect prevention and focuses on the prevention of the production of non-conforming products in order to provide the confidence of organizational outputs and ensures meeting customer satisfaction. Moreover, it is aimed to control quality at all stages of production that are designed to ensure that the final product and service meets customer expectations. Quality assurance proved that quality is created in the design stage, but not in control stage because all the activities are done before manufacturing or planning process of a product or service respectively. Thus, it involves the development of new operating approaches that avoid or reduce the chances of defects in a product or service.

According to Frank & Ronald (2013), quality assurance requires systematic preventive activities to ensure final products or services due to designing of the business process of production meet customer expectation. Thus, quality assurance is done by set of activities before the manufacturing process of product and service in order to control quality at the all stage of production. It is necessary to provide confidence of organization outputs to maintain close link with customers. Therefore, customer needs and expectations determine by better design and development of new products. Quality assurance for product and service associated the planning process to avoid and reduce the cause of defects in the first place. Moreover, it can be made by all actions and programs with deep involvement of product development to assure quality improvement. As reported by Joachim (1993) quality assurance is concerned with continues improvement in all the process of production from level of planning and preventive activities to the execution of work. Focus on quality assurance will lead fulfill customer expectation and satisfaction that is determined by design, distribution and development within detailed

process. The principle behind the idea of quality assurance is basically the idea that defects can be prevented. Thus, it refers to the improvement of organizational output to increase customer value. Product operating in dynamic environment is able to carry up set of activities in quality assurance due to result of changes in customer needs.

## 2.04 QUALITY MANAGEMENT

Quality management involves the proper conditions for construction work process concerned with the formulation of strategies by creating the attitude and environment that makes prevention possible (Crosby, 1989). According to Dale & Lascelles, (1997), quality management deals with the operation process, organization planning and formulation of strategies. Moreover, quality management handles the process of planning, organizing and controlling the factors so as provide high quality of work with low cost ensuring customer satisfaction and enhancing the reputation of the organization. In terms of practicing quality management for a certain process by an organization, formulation of strategy mostly focuses on customer satisfaction in order to meet their demands and expectations while improving the overall business efficiency.

As reported by Besterfield (2008), employee training plays an important role for organizations so as to improve employee skills and their work flow, as well as accelerating organizational performance that provide quality and customer satisfaction. Thus, quality management at all levels should require adequate education and training that is able to contribute to ongoing quality improvement process and development of products.

As noted by Ramezani & Gharleghi (2013), employees and management have to work as a team with all departments, integrated together to achieve required outcome of the quality management in order to provide value for organization and high quality outputs. Integration process within all departments can reduce defects, thereby reducing the overall operational costs to the organization. Thus, all department integration requires highly committed management to come up with quality function development in order to provide high quality output within low costs.

## 2.05 TOTAL QUALITY MANAGEMENT

The rapid growth of the industry along with the 21<sup>st</sup> century technological advancements have combined par excellence to create quality awareness which has gained significant acceptance in construction process. Quality management within construction sector has led to improvements in quality, productivity and competitiveness through efficient management of process for value creation in the highly dynamic market (Matthews, et al., 1991). Thus, TQM has contributed to sustainable growth of construction industries with strategic advantages in order to improve competitive abilities of the firms through a strong and positive impact on industrial performance (David & Gunaydin, 1997, Anderson et al., 1994). Therefore, TQM as a management approach focus on value creation that has become a source of sustainable competitiveness. Also, construction sectors still face major challenges in implementing such good quality for customer needs which has become the primary focus in modern business success. As reported by Peter et al., (2010), there is a strong relationship between TQM and market orientation in the perspective of customer satisfaction as market orientation is concerned with consumer satisfaction by implementing the best of quality. Moreover, According to Narver & Slater (1990), market orientation aimed to create the set of activities and superior value for customers. Meanwhile, TQM has improved product quality for value creation seeking customer satisfaction. Due to the appearance of the global market, customer demands have increased for high quality product which can be assumed as sustainable value in the competitive market (Anderson et al., 1995). Furthermore, the firms have adopted TQM keeping in mind the current or future challenges in order to bring positive impact on industrial performance. As an example, Saudi construction sectors have adopted TQM to achieve long term profitability, sustainability and competitiveness (Albert, 2012). Thus, TQM in construction sectors brings whole lot of benefits to improve business quality, increase customer satisfaction and reduce construction



cost. Therefore Saudi construction industries have adopted different platforms for value creation such as value in mass production, six sigma and standard ISO 9000 (Mohamed et al, 2014).

## 2.06 TOTAL QUALITY MANAGEMENT IN SAUDI ARABIAN CONSTRUCTION INDUSTRY

In the construction sector, TQM concern projects which have been developed to improve quality and to maintain the quality over a longer period of time. According to David & Gunaydin (1997), Quality can be defined as cultural and behavioral features that meet the legal and functional requirements. Construction industries in Saudi are facing serious challenges through adopting TQM because of construction industries extremely growing competitiveness. According to Mohamed et al (2014), Saudi construction sectors have developed in different areas starting by adopting formal quality approaches by implementing business processes, employee training, observation and performance measurement, and as well as by improving their operation system by providing high standard. The adoption of the TQM approach in the Saudi construction industries is aimed to increase productivity, profitability and company reputation in order to meet the quality demands and requirements set by Saudi Arabian Standard Organization (SASO). During implementation of TQM in a proper way, Saudi industries faced many obstacles due to lack of experience, observation and evaluation (Salman, 1999). In order to implement effective TQM, industries have responded quickly to fulfill these needs with high consideration to project quality, affecting the reputation of company. Based on the result of inspection of construction quality, it can be concluded that Saudi construction standard as a whole is to require implemented TQM tools and techniques. Saudi Arabia, being one of the largest developing countries in the Middle East has adopted TQM from the level of domestic to international market competition. Moreover, the quality tools implementation in Saudi construction sectors need to cope with current challenges in their limited potential and in adopting new material methods as due to construction processes have changed as competitive bid process on quick work and short time horizons. Thus, market of economic liberalization lead to shorter product life cycles with more innovation. As the result tend to have short product life cycle; better employee, customer satisfaction and quality cost are carried out correctly right from start. As stated by Mohamed et al (2014), in order to improve their operation systems by providing a high standard of products and services, Saudi construction sectors have been associated with environmental and safety management systems, which can meet quality requirements in order to provide their employees with the proper tools and techniques. Saudi construction industries have improved their quality system and increase their market share in terms of productivity, business results and customer satisfaction. This improvement can be achieved by having a clear understanding of the TQM such as Six Sigma, ISO 9001 and employee training or applying the associated tools and techniques. Due to identify the main factors that affect the successful implementation of TQM approach in the Saudi construction industry, this research will focus on understanding implementation and examination of TQM and different quality perceptions in order to provide recommendation to the Saudi construction companies.

## 3.0 RESEARCH METHODOLOGY

### 3.01 RESEARCH HYPOTHESIS

The hypotheses will be tested according to research objective which will determine the effect of independent and dependent variables as well as it will help to test research findings in the chapter five.

There are four hypotheses as below and written in null form:

- 1- Ho: Quality management in Saudi construction industry cannot bring a higher degree of quality.
- 2- Ho: Saudi construction industry adopting quality control perceptions will not have positive influence on quality
- 3- Ho: Construction industry adopting quality assurance will not have positive influence on quality.
- 4- Ho: Quality inspection in Saudi construction cannot be an important influencing factor to improve quality.

### 3.02 DATA COLLECTION METHODS

In this research, primary data are characterized through collecting questionnaire. Based on the research objectives, questionnaires will be administered to Saudi construction industry in order to ensure effectiveness of TQM. As stated by Greasley (2008), in terms of statistical analysis within SPSS software, data originated by the researcher specifically is used for in-depth data access, preparation, analytical reporting and graphics. The questionnaire has been designed in Google Drive and distributed to the front line staff of construction industries; respondents will be willing to fulfill questionnaire in an easy way through ticking certain answers that make it simple to compile data. Thus, these questionnaires which consist of close-ended, therefore, the answers can have less misleading results due to the answering process that will be checked by the researcher.

### 3.03 RESEARCH SAMPLE

In this case of survey, the data collection is through self-completion schema by respondents who can be from different departments. The result of survey will be more comprehensive due to the respondents for this research consists of large and medium sized construction companies. Probability sampling method is used and hence it utilizes some form of random selection. In terms of defining targeted respondents, the researcher made a list of all construction industries from Riyadh and chose more representative industries according to the country's classification of the top construction companies. As the targeted companies have been operating regionally and internationally, it would be more accurate to gather data from different departments. The questionnaire will be distributed to more than 150 operations and project managers along with engineers who have been working with their companies for certain time to ensure their credibility in answering the research questions. The purpose of this survey is not only to show the effect of TQM in construction industries, but also to determine the most influential factors that affect profitability in industries. A total of 147 usable questionnaires are used for analyzing.

### 3.04 DATA ANALYSIS

Data analysis is a useful stage to transfer the questionnaire into reliable information and determine collected data that can achieve research objective. Data analysis focuses on transferring the questionnaires and filling the gaps between all variables. After collecting the data, SPSS statistical tool will be used to analyze the primary data. The researcher has interpreted the data in terms of testing these data and answering research questions. Within data analysis stage, collected data will show achievement of research objective. The data analysis will use a parametric test within descriptive statistics, correlation test, and regression analysis. The finding will clearly show the effectiveness of TQM in construction industry and find out the most significant factor that will improve the quality.

## 4.0 EMPIRICAL FINDINGS

A representation of gender in population of the 147 respondents shows 96.6% were male in construction sectors while 3.4% were female in table 1. Gender frequency defined as the most of front line staffs are male in this sector. This might be related to the local culture that is totally against female employment in management level and are still growing to reach the phase of self-employed individual.

Table 1: Distribution of respondents by gender

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid male	142	96.6	96.6	96.6
Valid female	5	3.4	3.4	100.0
Total	147	100.0	100.0	

The frequency table for work experience (table 2) shows promoted period of participants from CEO to Quality Control manager. The range of work experience has been arranged in four categories that are less than 1 year, 1- 5 years, 5- 10 years and more than 10 years. The below table 5 shows different ranges

of work experience from different departments where 9.5% have worked for their company less than one year, 1-5 years takes 19.7% of all participants, 46.3% have worked for 5 to 10 years and 24.5% of them have worked for a long period of time. The result can be classified as working experiences in construction sector in order to see whether it will help to the effectiveness of TQM.

Table 2: Years of work experience

	Frequency	Percent	Valid Percent	Cumulative Percent
less than 1 year	14	9.5	9.5	9.5
1- 5 years	29	19.7	19.7	29.3
Valid 5- 10 years	68	46.3	46.3	75.5
more than 10 years	36	24.5	24.5	100.0
Total	147	100.0	100.0	

Table 3 below shows the descriptive statistics for the variables which contains minimum, maximum, mean, and standard deviation.

Table 3: Descriptive statistics

	N	Minimum	Maximum	Mean	Std. Deviation
quality	147	2.00	4.99	4.0093	.61564
Q. Management	147	1.60	4.80	4.1156	.66453
Control	147	1.20	5.00	4.1619	.54714
Assurance	147	1.40	4.80	4.1034	.60380
Inspection	147	1.60	5.00	4.0925	.69687

#### 4.01 RELIABILITY ANALYSIS

According to Field (2007), Cronbach's Alpha is an estimate of internal consistency associated with scores, that can be divided from a scale or composite score. In the research, Cronbach's Alpha can be used to test data in order to measure reliability and internal consistency in the information system domain. Cronbach's Alpha usually shows a value of range from 0 to 1. The following table will show Cronbach's Alpha with internal consistency.

Table 4: Performance of Cronbach's alpha

Cronbach's alpha	Internal consistency
$\alpha \geq 0.8$	Excellent
$0.7 \leq \alpha < 0.8$	Good
$0.6 \leq \alpha < 0.7$	Acceptable
$0.5 \leq \alpha < 0.6$	Questionable
$\alpha < 0.5$	Unacceptable

Table 5 shows the result of Cronbach's Alpha by using SPSS reliability analysis. Therefore, it is clear to show that scale of measures will be good with Alpha between 0.8 and 0.9. The result of Cronbach's Alpha on 25 items is 0.881 which can be proved that questionnaire is confidential as well as 147 questionnaires are 100% which means valid data can be used confidentially.

Table 5: Reliability statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.894	.881	25

#### 4.02 CORRELATION RESULTS

Table 6 Pearson correlation results

quality		Q. Management	Control	Assurance	Inspection
	Pearson Correlation	.705**	.555**	.651**	.600**
	Sig. (2-tailed)	.000	.000	.000	.000
	N	147	147	147	147

Based on the result from table 6, the correlation between quality (dependent variable) and quality management (independent variable) is positive and the figure 0.705 shows a strong relationship. The correlation between control and quality is positive and it is considered as moderate relationship. The correlation between assurance and quality is positive and it is considered as moderate relationship. The correlation between inspection and quality is positive and it is considered as moderate relationship. These findings are based on the critical values obtained from below table.

Table 7: Pearson correlation critical values

Value of the correlation coefficient	1	0.7-0.9	0.4-0.6	0.1-0.3	0
Strength of correlation	Perfect	Strong	Moderate	Weak	zero

### 4.03 REGRESSION RESULTS

In this section, linear regression is used statistical techniques for investigating the relationship between independent variables and dependent variables when all variables are taken together. The advantage of linear regression is to test hypothesis whether it's reject or accept as per result regression. The significant level of alpha in linear regression testing is 0.05 within 95% of confidence level. If the p-value is lower than alpha, the result of null hypothesis will be reject and if level of p-value is greater than alpha, null hypothesis will be accepted.

Table 8: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.743 <sup>a</sup>	.552	.540	.41777

Predictors: (Constant), Insp, cntrl, QMan, Assu

Table 9: ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	30.552	4	7.638	43.763	.000 <sup>b</sup>
Residual	24.784	142	.175		
Total	55.335	146			

Dependent Variable: quality

Predictors: (Constant), Insp, cntrl, QMan, Assu

Table 10: Regression Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients		Sig.
	Beta	Std. Error	Beta	t-stat	
(Constant)	.682	.280		2.437	.016
QMan	.434	.077	.468	5.629	.000
cntrl	.116	.092	.103	2.392	.020
Assu	.262	.108	.257	2.417	.017
Insp	-.004	.092	-.005	-.043	.965

Dependent Variable: quality

### 4.04 QUALITY MANAGEMENT



Ho: Quality management in Saudi construction industry will bring no higher degree of quality

The level of significant value for linear regression test is 0.05. From table 10, it is clear to see the significant value is 0.000 (p-value= 0.000). As a result, p-value is less than alpha 0.05 ( $\alpha=0.000<0.05$ ). The statistic is considered as a most significant which means researcher can be 95% of confidential level for quality management has higher degree on quality. Therefore, a result shows Ho is rejected. Therefore it can be concluded quality management has a greater impact on quality.

Quality management is measured in Saudi construction industries as per engineer and front line staff's understanding about benefits of TQM (Anderson et al, 1994). Effective quality management can enhance organization's competitive abilities and provide strategic advantages whether it reflects management's perception of quality (Dean & Devid, 1994). To find effectiveness of quality in Saudi construction industry, the regression analysis result shows quality management has higher degree on management strategy and profitability. As a result of regression test for quality management in table 10, the significant value of hypothesis one is less than 0.05. The result described is very significant within 95% of confidence level which means quality management has influence on improving quality. To conclude, quality management has greater degree of profitability through analyzing benefit of TQM and quality improvement related to management perception and long term strategy. The positive hypothesis result refers that in terms of practicing quality management to the organization process, quality management is beneficial for overall business efficiency.

#### 4.05 CONTROL

Ho: Saudi construction industry adopting quality control perceptions will have no positive influence on quality.

The level of significant value for linear regression test is 0.05. From table 10, it is clear to see the significant value is 0.020 (p-value= 0.020). As a result, p-value is less than alpha 0.05 ( $\alpha=0.020<0.05$ ). The statistic is considered as a most significant which means researcher can be 95% of confidential level for quality control has positive influence on quality. Therefore, a result shows Ho is rejected. Therefore it can be concluded quality control has a great influence on quality.

Quality control is essential for organizational success and brings in benefits such as improving profitability, satisfying clients and increasing competitive advantage (Ronald, et al, 1992). Quality control ensures continuous improvement, providing more effort to quality environment. To find the effectiveness of quality control in construction industries, the regression testing shows quality control has positive influence on quality. As a result of regression for quality control in table 10, the significant value of hypothesis one is less than 0.05. The result describes it has influence within 95% of confidence level which means quality control has strong influence on service quality. The management of quality control is a leading positive way to long term strategy with operation processes to measure actual quality performance and check whether products can meet desired requirement.

#### 4.06 ASSURANCE

Ho: Construction industry adopting quality assurance will have no positive influence on reducing defects  
The level of significant value for linear regression test is 0.05. From table 10, it is clear to see the significant value is 0.017 (p-value= 0.017). As a result, p-value is less than alpha 0.05 ( $\alpha=0.017<0.05$ ). The statistic is considered as a most significant which means researcher can be 95% of confidential level for quality assurance has positive influence on quality. Therefore, a result shows Ho is rejected. Therefore it can be concluded quality assurance has a great influence on quality.

Quality assurance plays important role in organizational climate in terms of inspecting the process of quality (Atkinson, 2003). Quality assurance could be beneficial for their organization through increasing

company turnover and reducing operational defects (Dale, et al, 1994). To find the effectiveness of quality assurance in construction industries, the regression testing shows quality assurance has positive influence on reducing defects. As a result of regression for quality assurance in table 10, the significant value of hypothesis one is less than 0.05. The result described along with it has influence within 95% of confidence level which means quality assurance has strong influence on reducing operational defects. Finally, quality assurance has positive influence on reducing defects and will prove the quality in design stage itself, but not in control stage because of all the activities done before manufacturing or planning process of product and service are pre planned. The management of quality assurance leads in positive way to maintain the long term strategy with new operating approaches that avoid or reduce chances in future that might become a cause for defects.

#### 4.07 INSPECTION

Ho: Quality inspection in Saudi construction will have no an important influencing factor on quality. The level of significant value for linear regression test is 0.05. From table 10, it is clear to see the significant value is 0.965 (p-value= 0. 965). As a result, p-value is greater than alpha 0.05 (alpha=0. 965 >0.05). Therefore it can be concluded that inspection has no significant impact on the quality. Hence the null hypothesis is accepted. Furthermore, the relationship between inspection and quality is found to be negative.

#### 5.0 CONCLUSION

Understanding quality management in Saudi construction industry was important at the early stage of this research because it helped the writer to understand factors that affect TQM in this sector. Combined with the actual situation of the quality management in Saudi and survey analysis on effectiveness of TQM, the writer eventually identified the main factor of TQM that has improving competitiveness and profits. After analyzing the four dimensions of quality management and effectiveness of TQM by using the regression analysis, the most influential factors of TQM affecting the quality has been found. Among the four dimensions considered in this paper, quality management, control, and assurance found to be very significant towards the TQM, while inspection found to be non-significant towards quality. The theoretical implication of this study can be highlighted in the form of quality management as this research concluded that quality management has a greater impact on quality. The practical implications also can be given in the area of quality management, because quality management has a significant impact on the industry, therefore managers should give a special notation to this issue.

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