

APPLICATION OF TOTAL QUALITY MANAGEMENT SYSTEM (TQMS) AND ITS IMPACT ON COMPETITION POLICY IN INDUSTRIAL PLANTS: AN EMPIRICAL STUDY ON FACILITIES OF INDUSTRIAL SECTOR IN JORDAN

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Abstract

The study aimed to examine the impact of implementation of total quality administrative systems as independent variables on the competitive policies used in Jordanian industrial facilities as dependent variable. The study also attempted to identify the realities of total quality management implementation and use in the industrial plants of Jordan, and to identify the competitive policies followed by these facilities. To achieve the objectives of the study, a questionnaire was designed to address the issue of the study by conducting a field study to test the hypotheses. The population of the study consisted of the workers in management and senior employees in industrial facilities that received the ISO 9000 certification from the International Organization for Standardization (ISO). The plants also obtained certification from the Jordanian Quality Mark and label the supervision of the Jordanian Institution for Standards and Metrology. Questionnaires were distributed to 121 individuals and 110 replied which represented a return rate of 90.9%. The study found that there is an interesting finding relating to the industrial facilities under study regarding the variables of total quality administrative system. The study indicated that the application of the variables of total quality administrative systems by these plants had a positive impact with varying levels and degrees. The highest level of impact was on customers followed by commitment of senior management to quality, continuous improvement, operational variable procedures, and finally the administrative systems which represents the least variable of application. This study

found that there is great interest by these facilities in accepting competitive policies and its application to varying levels of positive degrees. The results of this study showed that there is a significant relationship between all the variables of total quality administrative system adopted by the researcher in the study and the competitive policies which are followed by the industrial establishments in Jordan. The recommendation by the study includes: increasing the interest and awareness of applying all the dimensions of total quality, the establishments of measures to identify their progress toward meeting strategic objectives, appropriate policies and methods to achieve strategies in accurate and thoughtful manner. Furthermore, the plants in the study should increase their competitiveness as a strategic objective in order to meet the requirements of the new global economic order.

Keywords: Total quality management system, Competition policy

INTRODUCTION

Total quality management is considered important in the competitive marketing strategies at the level of organizations on one hand, and country level on the other hand. Quality represents specific behavior for a group of consumers. It is becoming imperative for businesses to provide goods and services of high quality to achieve a competitive advantage in their markets.

The appearance of total quality management as a concept of modern administrative began during the second half of the twentieth century in the US and in spite of its inception in U.S., its application spread to Japan. This

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approach to management of quality and customer service began in business sector but soon spread to reach public services offered to the citizens and the recipient. Whether the performance of the services were private, or government agencies the need for improved overall quality became essential. (Al-Abdul-Salam, 2004)

The features of the current global international trade, the complexity of the over lapping effects of science on the process of decision-making in confronting constant changes led to a situation which is characterized by competition on the local and global levels and therefore attention turned to total quality management (TQM). TQM which it considered by organizations to be an effective way to bring about radical changes in philosophy and style in the way work is done in order to achieve the highest levels of quality and to be used as a bridge to higher customer satisfaction and retention because any loss of any clients or customers may put the future of the organization and its survival at risk. (Aqili, 2001)

The industrial sector which is considered one of the most important in terms of productivity is a vital sector in the state due its physically progressive role and its impressive accomplishment in terms of growth in the economic, political, and social areas.

Developing the industrial sector became the target goal for all developing countries to achieve economic development and expansion. An expanding industrial sector meant higher percentage of economic development, more job opportunities,

increasing economic variation which is necessary to achieving social development, and to transform the technical and industrial capacities in these countries. (Okashah, Abo Darefeh, 1998)

If we considered expansion of the Jordanian economy as the desired goal, the success of marketing Jordanian products in the global markets is the first step to expanding the economy. At the same time no Jordanian company can attempt to compete in the global market without tangible excellence in marketing its products locally, competing with alternative foreign products on its soil. Therefore an adaptation strategic export competition should parallel with making climate to achieve superior distinction in price and quality in sectional market.

Statement of the Problem

Despite the fact that there are a lot of new studies on TQM, and there some enterprises and organizations who apply it in Jordan, its impact on Jordanian companies in not well known and therefore its direct effect on Jordanian companies especially ones in the industry sector -study case- this affection be clear in that local products couldn't compete imported one, so this organizations need to find new means and ways helping them developing their products to compete imported products. Because of that problem summarized in following question:

"What is the relationship between applying the system of TQM and the competitive polices that are followed by enterprises in Jordanian industrial sector?"

Significance of the Study

Significance of this study is summarized as follows:

1. This study will introduce a clear mechanism which supports the ability to compete by applying the systems of TQM.
2. This study will add to the Arabic library an empirical study in TQM that will enrich the libraries' applied studies area.

Purpose of the Study

This empirical study aims to achieve the following objectives:

1. Defining TQM systems in Jordanian industrial enterprises.
2. Identify the competitive polices followed by Jordanian industrial enterprises.
3. View the relationship between the systems of TQM in the Jordanian industry companies as an independent variable and competitive polices as a dependent variable.

Hypotheses of the study

Main hypotheses:

* There is a significant relationship between applying TQM on competitive polices of Jordanian industrial enterprises.

There are sub hypotheses:

1. There is a significant relationship at the level of indication () between focusing on customers and competitive polices in Jordanian industrial planets.
2. There is a significant relationship at the level of indication () between the commitment upper management and competitive

polices in Jordanian industrial planets.

3. There is a significant relationship at the level of indication () between the continuous improvement processes and competitive polices in Jordanian industrial.
4. There is a significant relationship at the level of indication () between administrative systems (AS) follow-up and competitive polices in the Jordan industrial enterprises.
5. There is a significant relationship at the level of indication () between operation procedures and competitive polices in the Jordanian industrial enterprises.

Research Model

Insert figure-1 here

RESEARCH METHODOLOGY

In this study we will use an analytical description method which aims to describe the phenomenon of TQM and its components by collecting data and information, and by explaining and analyzing them. The study will introduce subjective and specific image about the core of the research to describe TQM clearly and find the relationship between the elements of TQM and other elements engage that engage with them.

Population

Population of this study consisted of hall workers in upper management in the industrial enterprises which have Quality certificate in ISO 9000.

Research Instrument

A Questionnaire was developed to collect data on the principles of TQM and was divided to five variables. The researchers chose these variables depending on (Al Madhoun, 1999) study.

THEORETICAL FRAMEWORK AND LITERATURE REVIEW

Quality Concept

Quality concept which means nature of person or thing and degree of solidification go back to Latten word (Qualitas), in ancient days it means accurate and perfection through manufacturing historical monuments and ruins, like statues, castles and palaces for bragging rights, or to use for purpose of protection. Recently this concept has been changed after the development of Management Science, the appearance of large scale production, the industrial revolution, new large companies, and increasing competition. Quality concept has become new and ramose dimensions. (Al-Daradekeh, 2006)

Quality is known as: "production of commodity or services, at a high level of distinguished quality, which will meet customers' needs, wishes, expectations, happiness attainment, and satisfaction. All that accomplish by measurements previously put to produce items or provide service, and find distinguish characteristic in both of them. (Krajewski & Ritzman, 1990)

Also, quality is known as:"group of characteristics and traits which distinguishes a product and service, satisfies the needs of consumers and clients either through product design, performance abilities and these traits and characteristics will ensure satisfied and happy customers (Tawfiq, 2003)

Quality could be seen from three angles, the first one is linked to the quality of the design which are the qualities and characteristics that are developed when designing the products and services, the second one deals with the quality of production which are the traits that are achieved through process, the last one deals with quality performance which appears to consumer when they are using the output, in addition to necessity concentration on quality

through introducing this good and service to clients which known customers services.

Usually Marketing professionals look to Quality through a consumer point of view and his satisfaction with the item, while Production employees see quality from the manufacturing side by matching the extent of goods and services meet the standards or criterions that are established. (Grant, 1980)

In general, quality term takes several meanings which contain some different considerations depending on users, quality consider relatively differ by the body who use it, retail merchant could base on testing quality on Trademark or external appearance for product, whereas industrial could aware that input like: raw materials, and requirements supplies will affect online final quality for output, therefor he could depends on technical to test quality and quantity purchased, testing may be based on one criteria or accordance to manufacturing stages that assure required quality which takes several concepts. (Elwan, 2005)

LITERATURES REVIEW

Many studies have tackled this topic because of the need to learn the importance of total quality administrative systems as independent variables on the competitive policies used in industrial facilities as dependent variable. Studies also focused on topics which have a close relationship to TQM:

The study Bin Ishy (2010), aimed to know the impact of TQM in competitive policies of Algerian industrial establishments. To achieve this goal, the researcher chose stratified random sample from 110 employees from the population study which represented the industrial enterprises that were located in Biskra and their names are: Industry Foundation electric cable, foundation of Textile Industries, Grand Mills foundation of the south. The questionnaire was distributed and was verified for truthfulness and stability and included 20 clause distributed on the tow axis, they are: first, the application of TQM concepts by the industrial establishment, second, competitive policies that industrial companies follow. The results of study signaled that competitive policies that are used by industrial enterprises are as follows: company first creates interest for the introduced services

before the selling process begins in order to attract customers. The company markets its services through competitive pricing to sell its products and a promotional policy is used to motivate client to purchase the product again. The company takes consumers suggestions when developing new products. The study also had the following recommendations: First, it is necessary that different organizations utilize its resources in optimal way to achieve TQ. Second, TQM should be adopted as complete management methodology and all leaders and workers must follow it and abandon the traditional styles of management to achieve continuous improvement in all organizational activities.

A study by Kandil (2008) aimed to study the impact of applying variables TQMS as independent variables on competitive policies followed in Palestinian manufacturing establishments as dependent variable. The study also aimed to know the case of TQMS in Palestinian manufacturing establishments and the competitive policies followed by these enterprises. To achieve the goals of the study, a questionnaire was designed to study to variables in the field to test the problem statement. To test hypothesis, a population study consisting of workers in upper management in the industrial establishments that had a certificate of international standards ISO 9000 and establishments who had a certificate of Palestinian standards. (121) questionnaires were distributed on the study sample, (110) were recovered representing (90.9%). The study found that there is an interesting from industrial establishments by variables of TQMS, and applying most of these variables in different positive levels, the highest level of application was concentrating on clients and top management commitment to quality, continuous improvement, operating procedures, and finally, administrative system (AS) which represents the least variable from application. The study that there is an interesting from this establishment by competitive policies and apply it in different positive levels. Important recommendations in this study were: first, increasing interest and in applying all dimensions of TQM, second, the necessity of

these establishments to specify their strategic goals and choose adequate polices and methods to achieve them in accurate way. Finally, the necessity to increase their competitiveness as strategic goal consistent with requirements of new global economic system.

Alawneh (2006), this study aimed to recognize the extent of TQ elements (commitment of top management of quality, special goals and polices by quality, system of incentives and rewards, training and learning, formality of designing and analyzing, administration based on facts, dominant on operations, suppliers participation, participation and give authority), and its impact on quality level of programming in Jordanian software industry. The study also aimed to discover the nature of the relationship between TQM elements and the level of software quality software and to discover factors which help application of operation and trying to strengthen it. To achieve these objectives, the researcher distributed questionnaires to 100 directors working in developing software. The study found the following results: first, the element of TQM with the highest levels of application and use is commitment of top management by quality, followed by participation of clients, and other elements with lower percentages. The study also found that there is statistical relationship between all the elements of TQM and level of software quality. Finally, the study found that there is statistical difference between organizational characteristics of each company (number of employees, capital, age, and availability of quality division and level of application TQM elements). The level of applying TQM tends to increase as organization increase in size, in the number of employees, in capital, and in availability of quality divisions. The researcher emphasized the necessity of cooperation between top management and workers at all levels in the organization and the importance of TQM and the benefits of applying it. Without the support of top management and their acceptance of its importance any effort to apply TQM at any level will not succeed. In another study by Obeidat (2004) which aimed to explore the relationship between a group of independent factors including: technology, progress, speed of response or elasticity, quality,

level production power use, and maintenance which represents the distance production and competition ability for company. The findings of this study were: first, there is a significant statistical relationship between technology use and competitive capability, second, there is a relationship between development and research and competitive ability of a company, third, there is a relationship between quality and competitive ability of a company, and finally, there is a significant statistical relationship between level of power use in production and competitive ability of a company.

Whereas Al- Rousan (1999) attempted to show impact of strategic choice on competitive advantage for Jordanian pharmaceutical companies and attempted to treat problems in weakness in recognize relationship between loops (strategic path, strategic option, and competitive advantage) through main hypothesis searching by existence incorporeal relationship between strategic option in public competitive strategic field and competitive advantage which the company has. This study found that Jordanian pharmaceutical companies tend to depend on a differentiation strategy in larger degree than lower cost strategy because pharmaceutical manufacturing by nature requires high quality levels in their products in order from them to be accepted and approved for use. The study also found that the reason Jordanian pharmaceutical companies have a pricing competitive advantage has to do with their abilities to control other activities beyond by cost such production and direct labor costs.

Another study by Al-Tarawneh (1996) aimed to measure extent that Jordanian industrial companies are applying the concepts of TQM in their decision making, market studies, raw materials, planning and production control, business environment, individuals, storage, distribution, quality control, development and modernization, communications, and the external environment. The findings if the study showed that companies are applying these dimensions and the degree of application do not vary according to the characteristics of those companies. The study also showed the aspect relating to institutions that have the most influence and power affects degree of application of the dimensions of TQM.

Consequently the researcher recommended increasing the attention by organizations and this could motivate companies to increase their use of TQM principles, as well increasing knowledge of TQ in terms of providing specialists and required data and the need for continuous follow up. The researcher also emphasized the need to understand the external environment by companies including level of competition, laws and legislations and trying to collect all data relating to these aspects.

The study of Smadi, Al-Khawaldeh (2006), aimed to develop public framework used by management for self-appraisal for applying TQMS in industrial companies. In addition to encouraging management to go forward and accomplish the application process, this frame could be used to help management understand the scope required in the stages for TQMS application. Furthermore, there must be concentration on important targets by managers to improve performance quality according to company's mission and vision. The researcher adopted putting this frame principle of TQM, and obtained criteria for global and local quality certification, and also a group of studies in the same content. This study found that the industrial companies in the study were aware of TQMS and there are no significant differences between them in understanding the TQMS system and its applications. The study also showed that these companies also concentrated some principles of TQM and neglected others. Concentration was greater on: leadership, and participation of workers and less concentration were placed on principle of serving the client. The researcher recommended that companies concentrate on all TQM principles without exceptions during and after applying this frame. Another study by Chong, Rundus (2004), aimed at testing the impact of TQM practices and market competition intensity on organizational performance by testing the relationship between focusing on clients as the most important pillar of TQM and between organizational performance, through testing the relationship between focusing on product design and organizational performance. There are two fundamental hypotheses to achieve these objectives: first, testing the relationship between TQM and market competition and

organizational performance; the first hypotheses deals with market competition greater positive relationship increased between focusing on customers and organizational performance, second one, the more market competition greater the more positive relationship greater between concentration on product design and organizational performance. For achieving this purpose the researcher distributed a questionnaire to the random sample from industrial companies in Australia and he found a significant relationship between market competition and concentration on clients and organizational performance. He also he found more market competition greater more relationship between organizational performance for establishment and product design increased, also founded in this study that enterprises who work in high level of competition environment should produce and market products have high quality to face wishes and expectations of consumers and competitive quality criteria.

Senda & Younes (2010), QM concenter comprehensive administrative system for using organization sources to increase products and company services quality and meeting clients needs and improve production operations where supporters QM say there is positive relationship between implement exercising TQM and measurements performance, also there is strong positive relationship between TQM and organizational performance, this study tried to know direct impacts and indirect for practicing TQM on operating and finance performance, study sample include managers of QM in Tunisian companies they were 66 managers, the findings of this study there is no direct impact but there is indirect relationship between using TQM and improving finance performance in and in the same time there is an impact to execute TQM on operational performance. Mohammad & Saeed (2011), their study aimed to know most important obstacles facing success executing for exercising TQM in Iranian factories, they studied establishments which invested in QM at the end 2009 in Iran, it concluded all managers for industrial enterprises, also there is relationship between principles of TQM and obstacles success

implement TQM, and they found most important obstacles for success like: management commitment, failed using right model to TQM in addition resources problem. Finally, a study for Nathan et al (2011), suggested model for exercising of TQM toward cooperative level in supplying chain, study model depend on depth literatures in this field, study findings provided progressed type for TQM to improve cooperative supplement series through applying TQM exercise.

ANALYZING DATA AND HYPOTHESIS TESTING

After distributing the questionnaire, 110 questionnaires were recovered that were valid for statistical analyses. The data was analyzed by SPSS were as follow:

Test the internal consistency of the instrument of the study

Table 1 shows the internal consistency test (Cronbach's Alpha), showed that there is strong consistency for study instrument where coefficient of internal consistency was (0.959).

Insert table-1 & 2 here

Through Table No. (2), we see the following:

1. Answers members sample did not differ by these questions and there is no noticeable variance, values of standard deviations were few and it did not exceed one.
2. The largest arithmetic average within this group of paragraphs was (4.52) indicating approval, the lowest arithmetic average was (4.12) also refers approval.

Analyzing second axis paragraphs (Top Management Quality Adherence)

Top management quality adherence contains (11) paragraphs, the researcher incurred through them by identifying the extent of top management commitment in the establishments under study.

Insert table-3 here

Through Table No. (3), we see the following:

1. Members sample answers did not differ on this group of questions and there is no clear variance, where standard

deviation values were few it didn't exceed one.

2. Larger mean in this group of paragraphs (4.66) indicates approval; smallest mean (3.56) also indicates approval.

Analyzing third axis paragraphs (continuous improvement)

Continuous improvement axis contains (7) paragraphs, the researcher targeted through these paragraphs knowing the extent establishment are interested in continuous improvement of quality.

Insert table-4 here

Through Table No. (4), we see the following:

1. Answers did not differ among respondents to this group of questions and there was no variance, where values of standard deviation were few, and didn't exceed one.
2. Largest mean within this group of paragraphs (4.58) indicates approval, lowest mean (3.69) which refers approval.

Analyzing fourth axis paragraphs (Management Systems)

Management systems axis contains (7) paragraphs, the researcher targeted through these paragraphs to know the extent of harmonized management system in industrial establishments to TQM.

Insert table-5 here

Through Table No. (5), we see the following:

1. Answers did not differ among respondents to this group of questions and there was no variance, where values of standard deviation were few, and didn't exceed one.
2. Largest mean within this group of paragraphs (4.06) indicates approval, lowest mean (2.78) which refers approval.

Analyzing fifth axis paragraphs (Operating Procedures)

Operating procedures axis contains (10) paragraphs in which the researcher under attack through these paragraphs knowing extent of corresponding operating procedures in industrial establishments to TQ.

Insert table-6 here

Through Table No. (6), we see the following:

1. Answers did not differ among respondents to this group of questions and there was no variance, where values of standard deviation few, and didn't exceed one.
2. Largest mean within this group of paragraphs (4.45) indicates approval, lowest mean (2.59) which refers approval.

Analyzing part three axis (Competitive Policies)

Insert table-7 here

From Table (6), there is clear adoption by industrial enterprises of competitive policies, value of mean average for all these policies axes (4.17), while value of relative weight of total axes (83.4%).

Insert table-8 here

- Hypothesis number one from Table (8), correlation coefficient between focusing on customers and competitive policies in Jordanian industrial plants is (0.654) and significance level (0.000) which is less than (0.05) which indicates there is sufficient evidence from sample data to say there is significant relationship between concentrating on customers and competitive policies in industrial plants of Jordan, due to importance of principle focusing on customers as one principle of TQ could considered most important among them, since main objective follow competitive policies to reach as many customers as possible and therefore it is logical justification for existence of this link.

- Hypothesis number two from table (8), correlation coefficient between senior management commitment to quality and competitive policies in Jordanian industrial plants is (0.733) and level of significance (0.000) which is less than (0.05), there is enough evidence from sample data to say that there is a significant relationship between top management commitment to quality and competitive policies in the Jordanian industrial plants, researcher attributes this link cause in case a commitment from senior management whether there is commitment to produce high quality, or was commitment to access and satisfy as many customers as possible, thus presence of senior management committed providing high quality product and seeking

through this product to achieve a competitive advantage, that determine follow different competitive policies to define product and present to customer.

- Hypothesis number three from Table (8), correlation coefficient between continuous improvement of processes and quality and between competitive policies in Jordanian industrial plants is (0.714) and level significance (0.000), which is less than (0.05) which indicates there are sufficient evidence from the sample data to say that there is a significant relationship between continuous improvement of operations, quality and competitive policies in Jordanian industrial plants, researcher dues this link importance continuous improvement of processes and quality in produce products satisfy and saturation customers wishes, where as product quality consider important competitive factor between each establishment and other, most competitive policies company followed centered around product quality and its ability satisfying consumers wishes and needs.

- Hypothesis number fourth from Table (8), correlation coefficient between followed administrative systems and competitive policies in Jordanian industrial plants is (0.391) and level significance (0.000) which is less than (0.05) which indicates there are sufficient evidence from the sample data to say that there is a significant relationship between followed administrative systems and competitive policies in Jordanian industrial plants , researcher attributes link reason to importance of appropriate and harmonization administrative systems followed in company related by TQMS with competitive policies.

- Where as hypothesis number five from Table (8), correlation coefficient between operational procedures and competitive policies in Jordanian industrial plants is (0.645) level of significance (0.000) which is less than(0.05), which indicates sufficient evidence of sample data to say there is significant relationship between operational procedures and competitive polices in Jordanian industrial plants, due researcher reason for this link to the importance appropriate and harmonized followed operational procedures in enterprises

related TQMS with competitive polices, in case operating procedures available and applied in active form inside company that guaranty introduce high quality product satisfy client and wishes desires.

RESULTS AND RECOMMENDATIONS

Results

- The study showed there is statistical relationship at significant level)) between following focusing strategy on clients as variable of TQMS and competitive policies followed in Jordanian industrial establishments.
- The study also found that there is statistical relationship at significant level)) between top management commitment in quality as variable of TQMS and competitive policies followed in Jordanian industrial establishments.
- There is statistical relationship at significant level)) between continuous improvement as variable of TQMS and competitive policies followed in Jordanian industrial establishments.
- The study found there is statistical relationship at significant level)) between TQMS and competitive policies followed in Jordanian industrial establishments.
- Also there is statistical relationship at significant level)) between operational procedures accredited and competitive policies followed in Jordanian industrial establishments.
- Existence of a significant relationships between most magnitude TQ and used competitive policies inferred it increasing attention in all dimensions application, whereas content of this application means expansion and ability drawing right policies.

RECOMMENDATIONS

According to findings reached by this study, the following recommendations could be given:

- Increasing interest and awareness of applying all TQ dimensions, even with some changes or adjustment.

- Establishments should specify their temporary and strategic goals, and choose proper policies and methods to achieve them in accurate and thoughtful form.
- Establishments should increase their competitive ability as strategic target with consistent and requirements of new global economic system decrease the weakness of the competitive abilities for developing countries. If they do not find way to confront and deal with him, they will be at a competitive disadvantage.
- Increase interest and attention by enterprises towards making clear plan about quality with specific goals set by management.
- Increase interest and attention by enterprises to use scientific styles and tolls for improving quality.
- All establishments should structure division control and organize all quality requirements.
- Increase employees' participation and empowerment for preparing plans to develop quality.
- Establishment should show more interest towards developing annual training plan to develop employees' skills and abilities.

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Table-1 The Distribution of Respondents as to Whether the efficient and effective management of human resources in Nigerian Universities is significantly correlated to the efficient and effective application of Information Communication Technology (ICT) in the management of the Universities.

Item	Question	Strongly Agree.	Agree.	Undecided	Strongly Disagree.	Disagree.	Total
1	You are ICT compliant	150 (141) 49.01%	125 (101) 40.84%	20 (35) 6.53%	5 (17) 1.63%	6 (12) 1.96%	306 100%
2	Many staffs of the University are not ICT compliant?	140 (141) 45.75%	110 (101) 35.94%	30 (35) 9.80%	10 (17) 3.26%	16 (12) 5.22%	306 100%
3	Many staffs of the University hate ICT related jobs	140 (141) 45.75%	100 (101) 32.67%	40 (35) 13.07%	16 (17) 5.22%	10 (12) 3.26%	306 100%
4	Many jobs in the university are ICT related	110 (141) 35.94%	125 (101) 40.84%	16 (35) 5.22%	45 (17) 14.70%	10 (12) 3.26%	306 100%
5	work in the University has been made easier with ICT	170 (141) 55.55%	50 (101) 16.33%	70 (35) 22.87%	10 (17) 3.26%	6 (12) 1.96%	306 100%
Total		710	510	176	86	58	1540

Source: Field Study, 2011

Table-2 Calculation of X² Test on Data of Table 4.6 Which States That the efficient and effective management of human resources in Nigerian Universities is significantly correlated to the efficient and effective application of Information Communication Technology (ICT) in the management of the Universities.

Fo	Fe	Fo-fe	(fo-fe) ²	$\left(\frac{fo-fe}{fe}\right)^2$
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150	141	9	81	0.57
125	141	-16	253	1.82
20	141	-121	14641	103.84
5	141	-136	18496	131.18
6	141	-135	18225	129.26
140	101	39	1521	15.06
110	101	9	81	0.80
30	101	-71	5041	49.91
10	101	-91	8281	81.99
16	101	-85	7225	71.53
140	35	105	11025	315
100	35	65	4225	120.71
40	35	5	25	0.66
16	35	-19	361	10.31
10	35	-25	625	17.86
110	17	93	8649	508.76
125	17	108	11664	686.12
16	17	-1	1	0.06
45	17	28	784	46.18
10	17	-7	49	2.88
170	12	158	24964	2080.33
50	12	38	1444	120.33
70	12	58	3364	280.33
10	12	-2	4	0.33
6	12	-6	36	3
			Total	4,757.96

Source: Field Study, 2011

From chi-square distribution table, we have $(0.05, 16) = X^2 = 26.2962$

Table-3 The Distribution of Respondents on Whether the Poor application of information communication technology (ICT) in Nigerian Universities significantly correlates with the structural, operational, economic and socio-cultural issues in the management of the Universities.

Item	Question	Strongly Agree.	Agree.	Undecided	Strongly Disagree.	Disagree.	Total
6	The University's Personnel Department jobs are ICT related and they are treated as such	141 (133) 46.07%	125 (119) 40.84%	25 (24) 8.17%	5 (14) 1.63%	10 (13) 3.26%	306 100%
7	The free internet facility in the University is making job easier for the staffs	130 (133) 42.48%	130 (119) 42.48%	6 (24) 1.96%	30 (14) 9.80%	10 (13) 3.26%	306 100%
8	There is a relationship between (ICT) and Human Resources management in the University	160 (133) 52.29%	110 (119) 35.95%	20 (24) 6.53%	11 (14) 3.59%	5 (13) 1.63%	306 100%
9	Payment of salaries and other remunerations in the University has been made easier and simpler with the	136 (133) 44.44%	112 (119) 36.60%	30 (24) 9.80%	26 (14) 8.50%	2 (13) 0.65%	306 100%

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	inception of ICT						
10	The adoption of ICT in the University call for training and re-training of staffs	114 (133) 37.25%	122 (119) 39.87%	40 (24) 13.07	17 (14) 5.56%	13 (13) 4.25%	306 100%
	Total	681	609	121	68	89	1568

Source: Field Study, 2011

Table-4 Calculation Of X² Test On Data Of Table 4.8 Which States That Poor application of information communication technology (ICT) in Nigerian Universities significantly correlates with the structural, operational, economic and socio-cultural issues in the management of the Universities.

Fo	Fe	fo-fe	(fo-fe) ²	$\left(\frac{fo-fe}{fe}\right)^2$
141	133	8	64	0.48
125	133	8	64	0.48
25	133	108	11664	87.69
5	133	128	16384	123.19
10	133	123	15129	113.75
130	119	11	121	1.02
130	119	11	121	1.02
6	119	113	17769	107.30
30	119	89	7921	66.56
10	119	109	11881	99.84
160	24	136	18496	770.67
110	24	86	7396	308.17
20	24	-4	16	0.67
11	24	-13	169	7.04
5	24	19	361	15.04
136	14	122	14884	1063.14
112	14	98	9604	686
30	14	16	265	18.29
26	14	12	144	10.29
2	14	-12	144	10.29
114	13	101	10201	784.69
122	13	109	11881	913.92
40	13	27	729	56.08
17	13	4	16	1.23
13	13	0	0	0
			Total	5,246.85

From chi-square distribution table, we have (0.05, 16) = 26.2962

Table-5 The Distribution of Respondents on Whether that the expected gains of effective and proper application of information communication technology (ICT) in the Nigerian Universities have eluded the University of Nigeria relates significantly the poor application of ICT in the University.

Item	Question	Strongly Agree.	Agree.	Undecided	Strongly Disagree.	Disagree.	Total
11	Training and development of the University staffs, especially those of Personnel Department has	100 (134) 32.68%	110 (91) 35.94%	54 (34) 17.64%	26 (26) 8.49%	16 (22) 5.23%	306 100%

	been adequate since the advent of ICT.						
12	Information Communication Technology (ICT) has connected/linked the University of Nigeria to other Universities within and outside the country	134 (134) 43.79%	108 (91) 35.29%	20 (34) 6.54%	25 (26) 8.16%	19 (22) 6.21%	306 100%
13	The University of Nigeria has experienced increased competitive advantage over other Universities since the introduction and adoption of ICT in the University	130 (134) 42.48%	110 (91) 35.95%	20 (34) 6.54%	28 (26) 9.15%	18 (22) 5.88%	306 100%
14	ICT has its limitations in enhancing Human Resources Management in the University of Nigeria Nsukka such as poor application.	131 (134) 42.81%	60 (91) 19.61%	62 (34) 20.26%	32 (26) 10.45%	21 (22) 6.86%	306 100%
15	With proper application, ICT will greatly enhance both job and human resources management in the University of Nigeria Nsukka	174 (134) 56.86%	65 (91) 21.24%	12 (34) 3.92%	17 (26) 5.55%	38 (22) 12.42%	306 100%
	Total	669	453	168	128	112	1530

Source: Field Study, 2011

Table vi: Calculation of X² Test on Data of Table 4.10: That the expected gains of effective and proper application of information communication technology (ICT) in the Nigerian Universities have eluded the University of Nigeria relates significantly the poor application of ICT in the University.

Fo	Fe	fo-fe	(fo-fe) ²	$\left(\frac{fo-fe}{fe}\right)^2$
100	134	-34	1156	8.63
110	134	-24	576	4.30
54	134	-80	6600	47.76
26	134	-108	11664	87.04
16	134	188	13924	103.91
134	91	43	1849	20.32
108	91	17	289	3.18
20	91	-71	5041	55.40
25	91	-66	4356	47.87
19	91	-72	5184	56.97
130	34	96	9216	271.06
110	34	76	5776	189.88
20	34	-14	196	5.76
28	34	-6	36	1.06

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18	34	-16	256	7.52
131	26	105	11025	424.04
60	26	34	1156	44.40
62	26	36	1296	49.85
32	26	6	36	1.38
21	26	-5	25	0.96
174	22	152	23104	1050.88
65	22	43	1849	84.05
12	22	-10	100	4.55
17	22	-5	25	1.14
38	22	16	256	11.64
			Total	2,562.85

Source: Field Study, 2011

From chi-square distribution table, we have $(0.05, 16) = 26.2962$