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University of Huddersfield

The Implications of Applying Total Quality Management (TQM) On E-Learning in Egypt
"Suggested E-Learning Service Quality Model"

A Thesis submitted in partial fulfilment of the requirements
Of the Doctorate Degree of Philosophy in Quality Management

School of Business
September 2015

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Supervisor: Dr. R. Rollins
Co-supervisor: Dr. G.Worsdale

Abstract

Egypt is seeking to accelerate comprehensive and sustainable development and to achieve higher growth rates for the interest of all classes and categories of society. According to what was published in 1/7/2013 by the public association for adult education AEA at the information and decision support centre in Egypt; 14.9% of population in age between 15 and 35 years old are illiterate. Here, we have to ask:" How a society where 14.9% of its young working power is illiterate can execute the mentioned adopted strategy of development?!"The Egyptian young working power is poor educated due to the bad education system ranking 131 out of 144 in the world. There is a need for a good High Educational system, affordable to those who does not have the opportunity to leave there jobs, from where they gain to live, in order to have a good education to improve their social life, and help them being part of the required development. Making benefit from the technological revolution and the excitement and passion of using it, can give the chance to offer an E-learning service through which a human development could be achieved. Then, strategies could be well adopted to improve society. In Organizations; Total Quality Management (TQM) has become most widely used management acronym and is considered as the buzz word in the management practices, keeping an eye on details. TQM is mainly concerned with continuous improvement in all work, from high level strategic planning and decision-making, to detailed execution of work elements on the shop floor. On the other hand, Enterprises find ways to set themselves apart in the hyper-competitive global marketplace by applying e-service. E-Service may provide the greatest return on investment (ROI) and sets the foundation for adding and integrating other E-Business functionality in the future. Customers can achieve the service through web page without a need to any help or support at any time. E-service and Total quality management (TQM) seek for same goals, but from different perspectives. Now, what if an organisation offers an E-service while applying Total quality management (TQM)? Hoping to achieve a good affordable High educational E-learning system, it was decided to study **"The Implications of applying TQM on E-Learning in Egypt".** This is for the great impact of the E- learning quality on the education as main national issue in Egypt. E-Learning was implemented in the near past few years, through limited programs in national Universities, and the Egyptian E-learning University established in 2009. The Quality management were also taken as essential of management in the higher educational institutes there. This research take a track to suggest Total Quality management Model to improve E-learning service offered in one of the Higher Educational Institutes in Egypt. The suggested e-learning Model emphasize that the eight elements of TQM were engaged in the Baldrige criteria framework. Quality Function Deployment (QFD) the main tool of evaluation of all the processes. The Idea of this model is to use Quality function Deployment (QFD) to translate and plan the" voice of the customer" into the quality characteristique of the service before enter the market. QFD analyse the client's requirements,define how each requirement will be satisfied by the service,organize the needs,illustrate the relationship between the requirement of the customer in the market and the needs to fullfil them. The result will be transmitted to the leadership Management,who will deploy the quality ,and apply the eight Total Quality Management Principles going through the seven categories of the Baldrige Criteria. The result of all the model phases shall affect the learner through the afforded high quality E-learning service. The high qualified personnel educated through the high quality E-learning system, will affect the social culture and environment from where comes the "voice of cutomer", to be analyzed through the QFD, to the leadership management, and the improvement cycle continue.The suggested E-learning service Quality Model represents required emerged recognised set of procedures for validation of quality framework.

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Dedication

To the soul of my beloved mother, who started this trip with me, but couldn't stand to the end. She always wanted to see me achieving my goals; I wish she can see me from heaven.

 To my dear father who always waited for my success, and to my beautiful daughters who are always taking me as a role model.

To my Country "EGYPT".

Acknowledgments

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And I can't forget to express my sincere recognition for all my colleagues and professors who gave me the support till this precious moment in which I achieve my first step in a new track.

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List of Publications

#	Title of Publication	Media of Publication
1	E- Learning and Quality Circle	International Journal of Scientific and Research Publications, Volume 3, Issue 2, February 2013 1 ISSN 2250-3153 www.ijsrp.org
2	E-learning benchmark and quality function deployment role	Comprehensive Research Journal of Management and Business Studies (CRJMBS) Vol. 1(1) pp. 0013-017 October, 2013 Available online http://crjournals.org/CRJMBS/Index.htm Copyright © 2013 Comprehensive Research Journals
3	Total Quality Management (TQM) as addressed by Researchers	International Journal of Scientific and Research Publications, Volume 3, Issue 10, October 2013 1 ISSN 2250-3153
4	Suggested Model for E-learning Quality service	Journal of Business Management & Social Sciences Research (JBM&SSR) ISSN No: 2319-5614 Volume 4, No.1, January 2015 © 2012 The Author © Blue Ocean Research Journals 2012 www.borjournals.com Open Access Journals Blue Ocean Research Journals

Chapter one
Overview

1.1 Introduction

Total Quality Management is a description of the culture, attitude and organisation of a company or association, that attempts to provide customers with products and services that satisfy their needs (Dahlgaard,Kristinsen and Gopal K. Kanji, 1998). It is a management approach created in the 1950's, and has gradually turn out to be more popular since the early 1980's (Blackmon, 2005). It becomes the most widely used management acronym, and considered as the buzz word in the management practices. Its culture requires quality in all aspects of operations, with processes being done right the first time, and defects and waste eradicated from operations (Hashmi, 2010). Total Quality Management is a method by which management and employees can become involved in the continuous improvement of the production of goods and services (Faisal Talib,Zillur Rahman, M. N Qureshi, 2010). It has been well accepted by managers and quality practitioners as a change management quality approach (Arumugam et al., 2009). It plays a vital role in the development of management practices (Prajogo and Sohal, 2003; Hoang et al., 2006). Many researchers asserted TQM as an approach to improve effectiveness, flexibility, and competitiveness of a business to meet customers' requirements (Oakland, 1993), as the source of sustainable competitive advantage for business organisations (Terziovski, 2006), as a source of attaining excellence, creating a right first-time attitude, acquiring efficient business solutions, delighting customers and suppliers etc. (Mohanty and Behera, 1996) and above all as a source of enhancing organisational performance through continuous improvement in organisation's activities (Claver-Cortes et al., 2008; Teh et al., 2009).

It has been well accepted by managers as the source of sustainable competitive advantage for business organisations (Dahlgaard,Kristinsen and Gopal K. Kanji, 1998). Now, with the great rapid improvement of information technology, in a world where many E-business applications are fast becoming commodities, enterprises find ways to set themselves apart in the hyper-competitive global marketplace by applying E-service (Alex Douglas,LindsyMuir and Karon Meehan, 2003). It is in this new arena that real customer loyalty is created (Alex Douglas,LindsyMuir and Karon Meehan, 2003). For many companies, E-service may provide the greatest return on investment (ROI), and sets the foundation for adding and integrating other E-business functionality in the future (Jinli, Establishing Quality Assurance Systems for, 2009).

In an E- service solution, Customer entry into service organization is achieved by means of a service web page creating a new level of support, level zero (Manual, 2003). Through the service web page the customer can transact service related issues in a "self-serve" manner. Customer self-service offers a true 24x7 support structure for service transactions and problem resolution. Customer self-service functions include a number of the traditional service functions that are straight forward and efficient; meanwhile The Total Quality Management Process is the attention and control that must be given to all features of a product or service to ensure total customer satisfaction, in addition to the obvious characteristics; such as form, fit, function, and reliability (Baklizi, 2007). The Total Quality Management Process involves maintainability, storability, appearance, ease of application, end use of a product or service, efforts to accomplish error–free documentation and systems, and countless other aspects contributing to the overall value to the internal operations or the external customers (Alex Douglas,LindsyMuir and Karon Meehan, 2003)

1.1.1 Personal Background to the study.

Being the first employee hired at the Cairo Campus of the Arab Academy for Science, Technology and Maritime Transport (AASTMT), made the researcher in the Market of the High Education in Egypt since 1998. She could know the rules followed in Egypt, and how this business is working; its strengths, weaknesses, and opportunities.

1.1.2 Researcher Interest in TQM and E-learning.

TQM was applied at the Arab Academy for Science, Technology and Maritime Transport (AASTMT) since 1996, when the Productivity and Quality Institute has been established. The researcher was the first to work in applying the ISO 9001 requirement in High educational system offered at Cairo Campus. Also, she was from the few employees using the internet and e-mails to correspond with different departments' managers to accomplish the work, since she was responsible for managing all the educational and managerial affairs in Cairo Campus during the period from 1998 to 2004. The easiness in using the online correspondence convinced her that E-learning is the promotion of the Higher education system.

1.2 Research Problem:-

Between the Total quality Management and the E-service applications, common goals arise. Both seek for improving customer satisfaction, and productivity, through decreasing costs (Faisal Talib,Zillur Rahman, M. N Qureshi, 2010). But, what are the implications of applying Total Quality Management (TQM) on E- service? This is the aim of this research. E- Service is an umbrella term for services on the Internet. It includes E-commerce transaction services for handling online orders, application hosting by application service providers (ASPs) and any processing capability that is obtainable on the Web (Kavous Ardalan and Marist College, 2010). It also includes the "E-learning" service which considered automation perspective of E- services. In this perspective, the E-service shall be labeled as "online" if the processes under the E-service are fully automated (electronically enabled) and require no manual interaction; or, "partially online" if the service requires manual / offline interaction (whether from the service provider or from the end customer) at some point within one or more of the E-services processes (strategy, 2000). E- Learning service becomes a promotion to the next level of education. And it is the education level who improves societies. Therefore, the core of this research is "**The implications of applying Total Quality Management on E-learning in Egypt".**

1.3 Field of study

1.3.1 Social Field

To conduct a research we should chose a field where results can make difference, and achieve development (Blackmon, 2005). The most communities in need to development are the developing countries. According to the World Bank and IMF-UNDP reports, the human development rank of Egypt, remains low compared to many developing countries, due to the high population rate there. The thing which corrodes efforts made to improve various aspects of human development over the last three decades. Development gains in Egypt vanished, and country's limited resources were put under pressure to provide public health and education for an increasing population. The World Bank and IMF-UNDP published many reports about the human development (HDR). In 1990, the HDR focused on development of the people for the people and by the people. In 1996, the HDR focuses on the theme of poverty, where it concluded that 23% of Egyptians lived below the poverty line. The 1998/99 HDR focuses on education from human development lens. Then, in 2000/01 it was focused on the theme of globalization. It looked at Egypt's position in technology and information-led globalization, human capital issues and environment and

sustainable development. The 2002/3 and 2004 focused on the decentralization, and the last Human development report in 2005 proposed to policy makers a new pro-poor growth social contract and a vision for Egypt until 2015. This last report explores alternative scenarios that give numerical and time bound targets to meet the basic requirements and aspirations for Egypt's less privileged for a better life. It proposes and calculates the cost of pro-poor quality education for all, pro-poor health insurance for all, a target social insurance programme, and an integrated package of income transfers and service access for families in extreme poverty (George kossaifi and Halla Shafey, 2006).

A report published in 2008 by the information and decision support centre in Egypt, where it was claimed that Egypt is seeking to accelerate comprehensive and sustainable development and to achieve higher growth rates for the interest of all classes and categories of society. Egypt will adopt a comprehensive strategy for development, focusing on the following:

a- Liberating Egyptian economy, to comply with market mechanisms.

b- Enabling individuals to invest and work and encouraging initiatives and innovations.

c- Developing and organizing human resources administration to maximize returns of development.

d- Attracting and employing investments for building the capabilities of material economy. Achieving development and providing job opportunities.

e- Considering the social aspect of transformation and assisting marginal and poor people by society.

f- Ensuring justice and equality for all citizens and providing equal opportunities to all people (making, 2008)

And according to what was published in 1/7/2013 by the public association for adult education AEA at the information and decision support centre in Egypt; (AEA, 2013) 14.9% of population in age between 15 and 35 years old are illiterate. Here, we have to ask:" How a society where 14.9% of its young working power is illiterate can execute the mentioned adopted strategy of development?!"

When thinking about all the previous given data, arise the Idea of having an easy access way of high quality learning, affordable to those who does not have the opportunity to leave there jobs, from where they gain to live, in order to have a good education to improve their social life. Making benefit from the technological revolution and the

excitement and passion of using it, can give the chance to offer an E-learning service through which a human development could be achieved. Then, strategies could be well adopted to improve society.

The importance of E-learning in Egypt comes from the fact that, the e-Learning initiative will primarily upgrade the local corporate culture and support the private sector driven economy. It will enhance workforce performance through high quality, practical, state of the art e-Learning and human resources development activities in accordance with the government and business communities evolving needs. It can provide Women Empowerment.

Therefore, the field of this research has been chosen through one of the National Target in Egypt as a Developing Country. This field is 'The High Educational Institutes in Egypt', where the e-service were implemented in the near past few years and the Quality management were also taken as essential of management in these institutes. Thus, our research is mainly meant by **"The Implications of applying TQM on E-Learning in Egypt".** This is for the great impact of the E- learning quality on the education as main national issue in Egypt.

1.3.2   Educational Field:-

1.3.2.1 Higher education in Egypt

According to what was published by the National Tempus Office (office, 2014) the higher education system in Egypt is made up of 18 public universities with more than 2.4 million students, 12 public non-university institutions, and 15 private (profit-making) universities providing technical and professional training. Of the 12 non-university institutions, 8 are two year upper secondary-level technical institutes (MTI), and four- or five year higher education-level technical institutes. Those are joined by 115 private (profit making) institutes giving the same type of education. There is more than 63.000 teaching staff in the Egyptian higher education system.

Non-university education is offered by industrial, commercial, and technical institutes that provide two-year courses leading to diplomas in accountancy, secretarial work, insurance, computer or health sciences and electronics. Technical education schools provide five-year courses leading to advanced technical education diplomas in commercial, industrial, and agricultural fields (George kossaifi and Halla Shafey, 2006).

According to Era watch Country report 2011 about Egypt. There are three bodies for the governance and control of higher education in Egypt: the Ministry of Higher Education, the Supreme Council of Universities (SCU), and the Central Administration of Al-Azhar Institutes. The Ministry of Higher Education has jurisdiction over higher education through the supervision and coordination of all post-secondary education, planning, policy formulation, and quality control. It also oversees teacher training for basic education. The Supreme Council of Universities, founded in 1950, formulates the overall policy of university education and scientific research in universities and determines the number of students to be admitted to each faculty in each university.

Supervision and administration of the Al-Azhar higher education system is the responsibility of the Central Administration of Al-Azhar Institutes. The latter is a department of the Supreme Council of Al-Azhar, responsible for the development of the general policy and planning for the propagation of Islamic culture and the Arabic language throughout the Al-Azhar higher education system (AEA, 2013).

Since 2002, Tempus programme (Trans European Mobility Programme for University Studies). Includes FAQ, applicant information, events and other ... has played an important role in Egypt, with most of the Egyptian Universities participating in a total of 64 Tempus projects (52 JEPs and 12 SCMs). The subject areas were: Urban and Regional Planning, Microfinance, Health Care, Open and Distance Learning, European Studies, Engineering and Technology, Electrical Engineering, Chemistry, Bio-Chemistry, Cultural Heritage, Pharmacy, Translation and Interpreting, Management and Business, Information Technologies, Interdisciplinary Studies, Mechanical Engineering, Medicine and Surgery, Tourism and Leisure, Physical Education, and Biology. (office, 2014)

Tempus has had a strong impact on the Higher Education System in Egypt. The programme was very timely to accompany the implementation of the Higher Education Enhancement Strategy that was introduced in 2000 and revised twice, in 2002 and 2004. The main objectives of this strategy were in line with the objectives of Tempus (modernization of curricula, Introduction of Quality Assurance in Higher Education, etc.).

Although the direct impact of Tempus projects on the Egyptian Higher Education system is not directly visible, the program's long term involvement in the country and the introduction of competitiveness in Higher Education have been the main direct outcomes.

One of the main elements of impact of Tempus in Egypt is the introduction of quality education through partnerships with EU member states in different disciplines, with more than 170 IMG grants awarded to staff members from Egypt. Such a mechanism was one of the most demanded in the country, and shows the interest of Egyptian staff members in retraining and building bridges for cooperation. Many JEP projects introduced new concepts and programmes in the education system and were considered as self-sustainable success stories for the modernization of Higher Education in Egypt. (office, 2014)

1.3.2.2 Total Quality Management in Egypt:-

Total Quality Management is only applied as a general management process required by the Council of High Education in Egypt in order to accredit the overall offered education by the Institute. Established in 2007 by a Presidential Decree, the National Authority for Quality Assurance and Accreditation in Education (NAQAAE) is the accrediting body for all Egyptian educational institutions (higher education, pre-university and Al-Azhar education). NAQAAE main goal is to support Egyptian educational institutes by fostering their quality assurance practices. National Quality Institute in Egypt established 2012 to Introduce Training and qualifying programs in addition to consultation, certification to individuals on all levels in Quality, Environment, Safety, Standards assessment and the activities related to these fields. Provide consultancy services, academic and technical studies to all sectors. Assess Service Providers for training centres in fields of qualifying, training, consultation, conformity assessment and all the activities related to it according to set indicators in this respect. Carry out Studies and research in different fields of quality. Proposing, and developing methods of motivation to adopt the quality standards and criteria and to comprehend with rules and regulations for ethical practices in industry and trade. Coordinate and cooperate in exchanging expertise with Ministries, Organizations, Universities, and National and International bodies, signing mutual agreements, protocols for cooperation and aiding decision for individuals, production and service units in quality field. Cooperate with Institutes, Universities Educational organization nationally and internationally in the field of studies, research, certification and professional Diplomas in the field of quality. Sponsor public associations and organizations working in different fields of quality and encourage the establishment of public unions, conformity assessment and standards users union according to international criteria to ensure spreading awareness to support national & international trade. Join membership of similar institutes, associations and organizations regionally and internationally interested in the field of

quality including twinning with similar institutes. Hold Seminars, Conferences and publish printouts, professional periodicals in the field of quality to expose the community to the latest knowledge and the new results of scientific studies and research nationally, regionally and internationally. Design Work Plans for development and continuous improvement in quality requirements and criteria which complies with the international new aspects. Design work programs supporting the capabilities of production and service units in the field of Quality. Monitor and follow up indicators for implementation of quality programs, activities and compliance assessment for production and service units. Follow up the binding of implementing ideas ownership in the field of quality and increase the awareness for the importance of quality and its implementation. It awards Professional Certification, for those working in the field of quality, and conformity assessment. *(Eldesouki)*

1.3.2.3 Culture in High Education in Egypt with reference to both public and private Universities.

Inji Mounib, a Consultant of Crisis Management and Public Relations. Claimed in her article in dailynewsegypt.com published the 8 of March 2014, that it all started with the illusion of so-called "Public Education". Late President Nasser got this ultimate dream of making higher education available and for free just for everyone. Consequently, each and every citizen obtained the right to join university and get enrolled in one of its different faculties only based on his academic records at the end of secondary school. From the age of the primary school, the dream of the university, previously restricted and only for privileged and genius ones, became a real opportunity just for everyone. Unlike most developed countries and even unlike the common rule prior the 1950s of last century, the academic degree became a must-have within the Egyptian society and a sign of social respectful status. Your academic records dictate your moves and choices and not your desires, talents and aspirations. You wish to be an accountant; you turn to become a doctor with your high records in Thanaweya Amma (Egyptian Baccalaureate). You will neither realize your dream, nor manage to cope with your planned future imposed on you by law. The fact remains that higher education is not a must-have; it all depends on the choices the individual makes for his life and future. This dilemma resulted into a total dramatic social chaos. From one side, the large number joining, annually, the higher education universities and institutions led to a quasi loss of credibility and incapacity to invest in quality. The quality of the public universities is dramatically falling, giving birth to the increase of - private universities and colleges that are not necessarily offering good or better education.

However, they are offering another opportunity for higher education and, most importantly, opening a new horizon for outstanding well-rewarded business opportunities. Nothing wrong with the model, yet, the devil is in details. The crisis lies in the implementation not in the concept itself and the objectives behind it. It is not always comprehensive; it is still emerging, mostly underdeveloped, subjective and very individual. Subject to the full command of the P&L indicators, education, which is supposed to carry on human interests and pure abstract seeds turned into a business opportunity with an owner on the top seeking the lowest costs, the highest return and judging quality his own way. (Mounib, 2014)

1.4 Research Objectives

The objectives of this research can be summarized as follows:-

1- To evaluate the relationship between total quality management and E-Learning.
2- To evaluate the E-learning as an E-service provided in High Educational Institutes in Egypt.
3. To analyse the implications of applying TQM on E-learning in High Educational Institutes in Egypt

By analysing the implications of applying TQM on E-learning in High Educational Institutes in Egypt, Universities can move in parallel in developing E-Learning while applying the TQM of such newly developed services on the internet. We can have an overview about how to go forward for improving E-learning service, which will lead us to how to expand the market, to have more satisfied customers and increase the profitability. Using Total quality management techniques such as Quality function deployment, the eight total Quality Management principles, and the seven Baldrige criteria for business excellence, will offer a recognized set of procedures for validation of quality framework of E-learning, which enable universities to expand their market share by providing high quality more satisfactory E-learning service. The most important of all is offering a high quality E-learning service, following the quality standards in each related process, can give an opportunity to have a new educational system affordable to all people who do not have the chance to get a good formal education, especially in the developing countries like Egypt. This can have a great impact in improving the society in developing countries.

1.5 Research Questions

Based on the research objectives, the extensive literature review, seven research questions have been proposed. They are listed as follows:
Question 1: What is TQM?

Question 2: What is overall business performance within TQM?

Question 3: What are the effects of TQM implementation on overall E- Learning service performance?

Question 4: To what extent TQM is applied in High Educational Institutes in Egypt?

Question 5: To what extent the E-learning service is applied in High Educational Institutes in Egypt?

Question 6: What kind of TQM implementation model should be developed in order to guide High Educational Institute in implementing TQM in E- Learning service?

Question 7: How can this TQM implementation model be demonstrated in practice?

1.6 Hypothesis

Based on the empirical research findings, the following hypotheses were proposed:

1) TQM implementation has a positive effect on staff member's satisfaction.

2) TQM implementation has a positive effect on E-learning service quality.

3) TQM implementation has a positive effect on Students satisfaction.

4) TQM implementation has a positive effect on strategic Educational Institute performance.

5) Staff satisfaction has a positive effect on E- Learning service quality.

6) Staff satisfaction has a positive effect on Student satisfaction.

7) Staff satisfaction has a positive effect on strategic Educational Institute performance

8) E-Learning service quality has a positive effect on student satisfaction.

9) E- Learning service quality has a positive effect on strategic Educational Institute performance.

10) Student satisfaction has a positive effect on strategic Educational Institute performance.
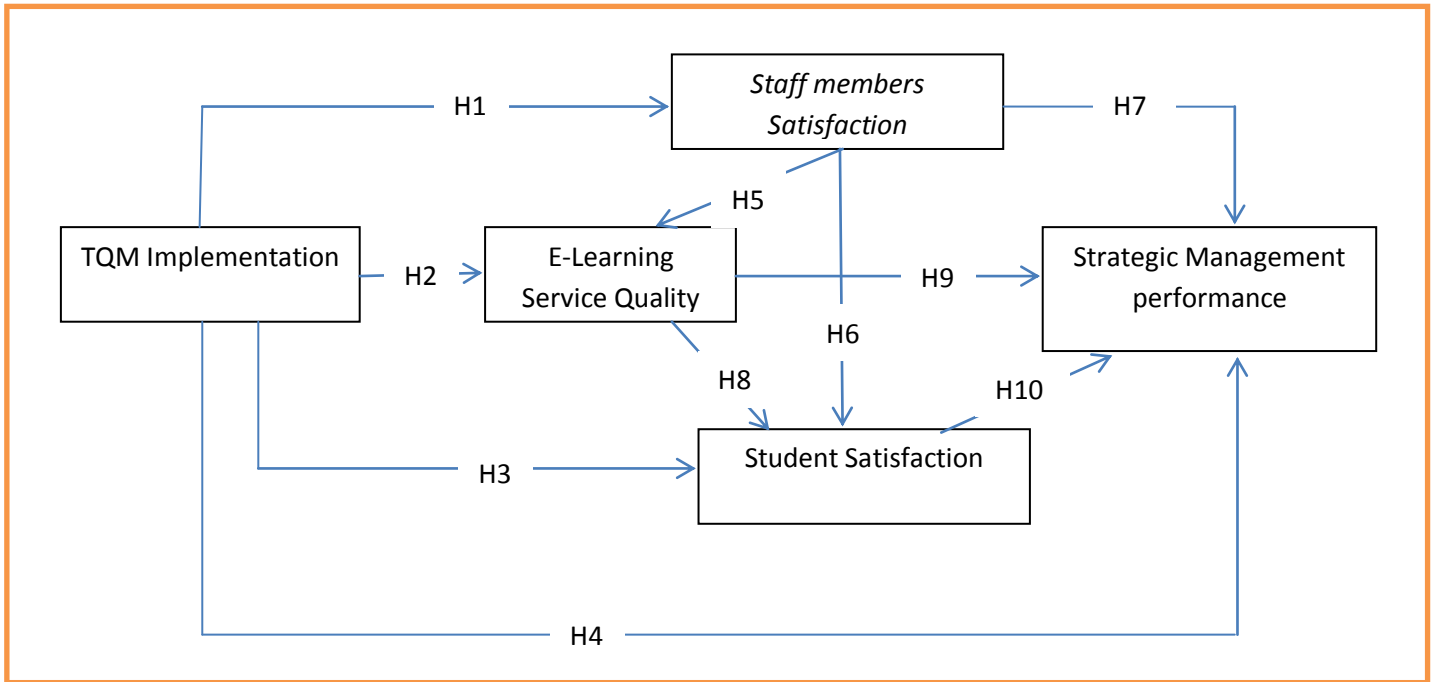
(**Figure 1-1**) Suggested theoretical model of TQM implementation and overall
High Educational Institute performance

1.7 Research methods

One of the fundamental building blocks of TQM is performance measurement, which is recognised as an important factor by some researchers many years ago (Phusavat, Anussornnitisarn, Helo, & Dwight, 2009). This factor includes financial and non-financial indicators (Wilson, Hagarty, & Gauthier, 2003). According to Phusavat et al. (2009), performance measurement can be considered as a significant factor in failure and success of each quality effort of the organization. Seven research questions and ten hypotheses were proposed to re-validate the TQM practices. The adoption of a theoretical model on TQM and E- Learning service High Education Institute performance would help managers, decision makers, and practitioners of TQM in better understanding of the TQM implications and to focus on the identified practices affecting E- Learning service.

Seven research questions and ten hypotheses were proposed to re-validate the TQM practices. The adoption of a theoretical model on TQM and E- Learning service High Education Institute performance would help managers, decision makers, and practitioners of TQM in better understanding of the TQM implications and to focus on the identified practices affecting E- Learning service. According to what is mentioned, and based on the above hypotheses, a theoretical model of TQM implementation and overall business performance was suggested in the figure below. The links between TQM implementation, staff satisfaction, E- Learning service quality, student satisfaction, and strategic High

Educational Institute performance are incorporated in one single model. In these hypotheses, TQM implementation is an independent variable and staff satisfaction, E-learning service quality, student satisfaction, and strategic High Educational Institute performance are dependent variables. (David, 2011)

The literature review is conducted to identify what TQM is and what overall High Educational Institute performance is. Through the literature review, we could answer the first three questions of this research: - what are TQM, The overall business performance within TQM, and the effects of TQM implementation on overall E-learning service performance. We could answer the fourth and fifth research Questions through the results of a Pilot Survey: - To what extent TQM is applied in High Educational Institutes in Egypt, and to what extent the E-learning service is applied in High Educational Institutes in Egypt?

In this research a new model of management is developed (see Figure 5-8 in chapter five). The voice of customers is the main source of information supplies, to help in offering a new high quality E- learning service. A combination of total quality management tools is used to work in harmony to form the new suggested model which will always provide a continuous improvement. A case study is used to provide a practical example of using this model in practice.

The research strategies adopted in this study can be characterised as approaches of quantitative (a questionnaire survey) and qualitative investigations (a literature review, structured interviews, and a case study). The research method chosen for this research is the empirical method. It is based on certain hypothesis testing through field experience to see the impact of the independent variable (TQM) to the dependent variable (E- Learning Service). The results of empirical research have significant honesty and trust that outweighs other researches.

1.8 Plan of the study

In this research we survey the implications of quality on E- Learning Service in High Educational Institute in Egypt.

First: - by analysing it's associated measurements items: The main dimensions of E-Learning service quality. (Alex Douglas,LindsyMuir and Karon Meehan, 2003)

1. Privacy / Security (protection of personal information, risk of fraud and financial loss)

2. Information quality (the suitability of the information to the student's purpose)

3. Ease of use (Effort of the end-user in using the website)

4. Graphic style (Presentation of graphics and text on the website)

5. Fulfilment (to how extent the website is reliable and responsive. The extent to which the site's promises about knowledge delivery are fulfilled)

This can be clearer in the following Table:-

(Table 1-1) The main dimensions of E-learning service quality

#	Dimensions of E-Learning service quality	General Description	Measurement items for the service
1	Privacy /Security	Safeguard the confidentiality of interactions. Privacy and authenticity of the exchanged information has to be ensured by considering Public Key Infrastructure (PKI) and Secure Socket Layer (SSL)	1-Summary and detailed reports to track certificate lifecycle. 2-Customisable enrolment pages for users to request renew and revoke certificates with multi lingual support. 3-Audit trails to help manage SSL certificates across the enterprise 4- Delegated administration to manage certificates, security and configurations. 5- customer support
2	Information Quality	Provide Intelligent, contextual responses to all students' inquiries within a specific time frame.	1-Time between the enquiries and responses. 2-Types and Numbers of enquiries
3	Ease of use	It must fit the existing technical infrastructure, be able to run in a multitude of environments. Simply, we have to be sure that the students and staff are able to communicate easily	Number of users
4	Graphic Style	It has to contain features that allow configuring overall response "hierarchy" to respond in a coordinated comprehensive fashion. These features include partitioning of the rule sets, automated learning and efficient handling of multiple languages where necessary.	1-Number of users 2-Number of access time

#	Dimensions of E-Learning service quality	General Description	Measurement items for the service
5	Reliability	It has to provide quick answers not only quick responses Recognising the best student's need instantly and give it preferential treatment.	1-Number of users 2-Number of access time
6	Responsiveness	Respond with the necessary information to formulate an intelligent response.	1-Number of users 2-Number of access time 3-Time between the enquiries and responses. 4-Types and Numbers of enquiries

Second: - Using Quality Techniques and tools to examine E-Learning Service quality. Because we need to identify the implications, then the deployment should be measured. Therefore, Quality function deployment is the chosen tool to be used in examining E-Learning service quality. (Press, 2001)

1.8.1 Quality Function Deployment (QFD) is:-

1. Understanding Customer Requirements.
2. Quality Systems thinking, psychology and knowledge
3. Maximising positive quality that adds value
4. Comprehensive Quality System for customer Satisfaction
5. Strategy to stay ahead of the game

In order to use Quality Function Deployment (QFD) we have to:-

1- Identify the e-service type.
2- Identify the internal and the external customers
3- Collect the internal and external customers voices
4- Document Customers requirement
5- Build a house of Quality to assess the needs of customers from the offered e-service.

In this research, based on the proposed hypotheses, a theoretical model of TQM implementation and overall performance was suggested above in **(Fig. 1) .**The Links between TQM implementation, Staff members satisfaction, E- Learning service Quality, Student Satisfaction, and Strategic management performance are incorporated in one single

model. TQM implementation is independent variable. E- Learning service quality, staff member's satisfaction, student satisfaction and strategic management performance are dependent variables. By using Quality Function Deployment (QFD) tool, we measure the implication of TQM implementation on each dependent variable. Then, by analysing the measurements we get, we conclude the implication of applying TQM on E- Learning service.

In order to do what is mentioned above, Interviews take place with board of director, Staff members and students. This has the target of examining the overall performance of the service. Thematic analysis used to analyse the result of these interviews. Also, Questionnaires are distributed to measure the staff members (internal customers) and students (external customers) satisfaction. The outcome of these questionnaires is analysed and transformed to quantitative data (percentages) by which we can measure the quality of service by referring to internal and external customers' satisfaction. The collected Data will be used in constructing a House of quality from which we can have a general view between the offered service specifications and student requirements and expectations. At the end we can know what should be developed or improved, and then according to what we get, we put our recommendations. A comparative study is made between the questionnaire results got from the Higher education Institute in Egypt, where the E-learning service is offered and the results of questionnaires of online course offered at a higher educational institute in UK. In order to validate the proposed E-learning Management suggested Model, it was applied in one of the High educations institutes in Egypt, and the customer's satisfaction is measured after applying the model.

As mentioned before, the field where this research is conducted has been chosen through one of the National Target in Egypt as a Developing Country. This field is 'The High Educational Institutes in Egypt', where the e-service were implemented in the near past few years and the Quality management were also taken as essential of management in these institutes.

1.8.2 The rationale for the study.

According to the literature review, it was found that e-learning is the promotion of the traditional educational system. But, it c causes serious concern to governments about safety of national system. Also, there is a need for:-

1- A good affordable high educational system to improve the Egyptian society.

2- A recognised set of procedures for validation of quality framework,

The suggested E-learning service Quality Model can provide a complete organised management system. It can eliminate serious concerns to the governments, and Quality Assurance agencies, about the safety of national system, legitimacy of the providers, and fake providers.

1.9 Research Structure

Chapter One: - provides an overview of the research. It covers the context of the problem, statement of the research problem, the research aim, objectives, and planning of the research.

Chapter Two: - reviews the literature dealing with the nature of Total Quality Management-. Specific attention is directed to reviewing existing models and theories with regard to E-service. The objective of this chapter is to create a theoretical foundation upon which the research will be based.

Chapter Three: - discusses the research design and the selection of the research method, techniques for data gathering and the procedure to be followed to arrive at trustworthy and confirmable results. The study's research methodology is chosen with consideration for the study's main research questions and the constraints and limitations of the study site. Alternative research methods are considered and reasons provided for non-selection. Taken together, Chapters Two and Three provide the methodological justification for the research study and its methods.

Chapter Four: - deals with the presentation of data and preliminary findings.

Chapter Five: - deals with the analysis of data and interpretation of results

Chapter Six: - concludes by summarizing the study. It draws conclusions and makes recommendations for practice of effective knowledge transfer across cultures. The study also suggests pointers for future research.

1.10 References and sources:-

1- Observations
2- Interviews
3- Questionnaire
4- Books
5- Periodicals
6- Internet

Chapter (2)

Literature Review

2.1 Introduction

(Washington, D.C.) – Egypt's education system is the largest in the Middle East, but also one of the worst performing in the world, ranking 131st out of 144 countries in the World Economic Forum's latest report on global competitiveness. As computers and internet access become more available and affordable, private sector innovators are trying to address Egypt's educational shortcomings by offering free online educational platforms intended to augment the Egyptian school curriculum. But despite the progress that has been made, questions remain about the viability of information and communications technology (ICT) to bring about effective and equitable development in the education sector. (Murr, 2015)

In a Middle East Institute (MEI) event held February 20, "Ahmed El Alfi" of Sawari Ventures and Nafham Education, "Sherif Kamel" of the American University in Cairo, and "Simon Thacker" of the World Bank's Education Global Practice, emphasized the importance of investing in online education initiatives and encouraged greater partnership between the public and private sectors. With a rapidly growing population, a high unemployment rate, and an internet penetration rate of only 50%, Egyptian society faces many challenges in improving the quality of education for its young population. (Murr, 2015)

Most students appreciate the flexibility of training schedule and employers enjoy a deep cost advantage by avoiding travel time and expenses, e-learning does require the learner to effectively manage his/her own time. There is a self –motivation and personal tenacity needed in order to succeed (Hoda Abdel Hafez, Sherif Kamel, 2015)

To study the implications of applying Total Quality management (TQM) on E-learning in High educational institutes in Egypt, as a sample of E-service offered. The following literature review has been made to gain some knowledge about the common factors of the field of study.

In this chapter; E-learning quality and Higher education and e-learning were illustrated. Then, through various readings, a paper titled Total Quality management (TQM) and

Continuous Improvement As Addressed by Researchers, published -IJSRP, Volume 3, Issue 10, October 2013 Edition, analyse some work produced in the field of Total Quality Management (TQM), to prove that, all targets and aims are achieved by relying on the same base and principles. Also, to study the criteria of each of Higher Education, E-learning, and Quality, in order to find a relationship to indicate a route to go through for improve of E-Learning programme in Higher Education, a paper titled **"E- Learning and Quality Circle"** has been published in IJSRP Volume 3 Issue 2 February 2013 edition. Then, to find relations between the role of benchmarking in evaluation of E- learning and Virtual Education, and the role of quality function deployment in planning and designing the route to continuous improvement; to maintain high quality of service, a paper titled "E-learning benchmark and quality function deployment role", published - Compr. Res. J. Manage. Bus. Std. October 2013 1(1): 013-017

2.2 E-learning Quality

In a Study about Fuzzy Evaluation of E-learning Teaching Quality by (He Yongqiang & Wang Jianxin, n.d.) Stated that at present, E-learning develops rapidly; in order to ensure teaching quality, it should establish a scientific and traditional evaluation system of teaching quality. Aiming at multifactor and fuzzy evaluation factor for teaching quality and using the data of questionnaire, it has established fuzzy evaluation index system and mathematical model for E-learning teaching quality; it supplies reference to establish and development of E-learning. From the evaluation result, it can be found that learners in E-learning centre think that factors of bad teaching quality mainly focus on weakness of fundamental facilities and multimedia equipment construction, indefiniteness of learning quality assurance policy, imperfection of teachers management, low participation of teachers and learners, the courseware's designing, transmission and maintain need to be improved. Therefore, if improves E-learning teaching quality, it should increase input on weak links, so that the E-learning can be developed healthily while ensuring teaching quality. Learners' evaluation of E-learning teaching quality is rational and uncertainty, even to some extent, it is ambiguity. Fuzzy evaluation of E-learning teaching quality can make the result more clear and qualification and overcome deviation of subjective evaluation. The learners' recognition of teaching quality can be acquired correctly in accordance with the evaluation result. At the same time, according to the evaluation result, E-learning centre can find reasons for low teaching quality and make corresponding solution, so to promote the development of E-learning continually.

A paper about Approaches to the validation of quality frameworks for e-learning by (Inglis, 2008) aims to compare the ways in which a range of quality frameworks have been validated and to identify a number of factors that have an impact on validation processes. Seven examples of published quality frameworks applicable to the field of e-learning are described and the methods used to validate each of the frameworks are identified and compared. The article concludes by considering a range of factors that have the potential to have an impact on such validation processes. Six methods of validation were found to have been used in relation to development of the seven frameworks that were examined: reviewing the research literature related to effectiveness in online learning; seeking input from an expert panel; undertaking empirical research; undertaking survey research; conducting pilot projects; and drawing on case studies. From the variety of approaches used and the ways in which they were used it was concluded that a recognised set of procedures for validation of quality frameworks has not yet emerged. The most important limitation of this study is that its findings are dependent on the particular quality frameworks selected for inclusion. The paper draws attention to the need for more attention to be paid to the development of methods of validation that are both objective and robust. No previous studies were located that have looked specifically at the processes used to validate quality frameworks.

A paper about Effectiveness of E-Learning System by (Mohammad, 2009) mentioned that web sites have become a mission critical component of the organization as more and more businesses have come to rely on it. A framework has been introduced to be used to evaluate the quality, completeness of the monitoring and to measure effectiveness of e-learning web site which has three areas of focus infrastructure, applications, and business functions. Each area is different; they cover the system aspects of the Web site. The infrastructure aspect concentrates on the operating system, server and network hardware, and other devices such as firewall. The application aspect pays a specific attention on the database, middle-ware, and the application itself. Business functions deals with the comprehensive management of a collection of applications. A plan to manage and address deficiencies of actual online site operation was suggested. A performance management policy was proposed; some security questions have been answered and evaluated. Two perspectives are the basis of the framework system and support. Methodology is used for proactive planning which involves three steps: preplanning, analysis, and review. A figure was used to support the analysis associated with the methodology. The developed

systematic methodology uses a series of Tables to drive and support the analysis. These Tables are used to clearly identify the monitoring and management components and focus on the used tools of the system activities, so system perspective has a focus on hardware and software grouped by infrastructure, application, and business components. The support perspective is centred on four processes, problem, performance, and security. A table is based on perspectives that incorporate tools, processes, organizational structure, and staff skills to evaluate system performance. The developed whole methodology focused on improvement of availability, performance, consistency, and reliability of E-learning system.

Enhancing e-learning quality through the application of the AKUE procedure model by (Bremer, 2011) describes the procedure model AKUE, which aims at the improvement and assurance of quality and cost efficiency in the context of the introduction of e-learning and the development of digital learning material. AKUE divides the whole planning and implementation process into four different phases: analysis, conception, implementation, and evaluation. AKUE analyses at which level of the organization or curriculum decisions have to be made. Accordingly, it differentiates various types of projects for which different planning methods and quality criteria are applied. For each step, specific worksheets and procedures are applied in order to support planning and decision making. Through the definition of outcomes and feedback loops at each step, quality standards and cost efficiency can be achieved.

Establishing Quality Assurance Systems for E-learning by (Jinli, 2009) states that Integration of technology in all forms of education has narrowed down the gap between the on- and off-campus students and has resulted in the use of the more broad-based term 'distributed learning'. E-learning is seen as a subset of distributed learning, focusing on students who may be separated in time and space from their peers and the instructor. The new forms and meanings it is acquiring, its convergence with traditional learning and its global impact pose several challenges. It has caused a serious concern to the governments and the quality assurance agencies all over the world about the safety of the national systems, legitimacy of the providers, protecting the public from fake providers, quality of the offerings etc. Many quality assurance agencies have responded to this need and there is considerable dialogue about ensuring quality in e-learning. The quality assurance aspects of e-learning that deviate markedly from that of the traditional education were highlighted,

and some specific suggestions as to how to implement the quality assurance system for e-learning were given.

A Technique for Quality Evaluation of E-Learning from Developers Perspective by (Majdi Abdellatief, Abu Bakar Md Sultan, Marzanah A. Jabar and Rusli Abdullah, 2011) states that E-learning is gaining more acceptance as days pass because it provides learning opportunity any time and in any place. Different people have different preferences in terms of learning style such as reading text, listing audio or video, speaking and communication. To support these different learning preferences, there is need for multiple e-learning delivery methods and teaching techniques. Furthermore, there are many stakeholders of e-learning systems such as system developers, administrators, instructors, instructional designers, multimedia designers, online facilitators, independent evaluators. Whose views are important indicators for a complete e-learning system evaluation, but the most important views of e-learning quality are user view, developer's view and manger's view. It has a main aim to propose a new technique to evaluate e-learning website quality from developer's view. To achieve this objective, an extensive study on related resources was conducted. The used technique adopts the weights of quality characteristics which are obtained by carefully selected questionnaires' from professional developers. The evaluation process using AHP technique was also presented, and the result of trial evaluation for validation of the used technique. Four quality characteristics named Service Content, System Functionality, Information Technology and System Reliability were proposed. As well as 11 sub characteristics with its attributes by following the structure of standard IOS/IEC 912. The results show that the proposed technique could be useful and effective for ensuring that high quality systems are developed.

Evaluating the quality of e-learning at the degree level in the student experience of blended by (Paul Ginns and Rob A. Ellis, 2009). It was reported that on the development of a scale for determining the quality of the student e-learning experience at the degree level when the student learning context is predominately a campus-based experience. Rapid developments in the use of information and communication technologies (ICT) in higher education require methods for evaluating the contribution of such tools to student learning, especially when they are complementing a face-to-face experience. The psychometric functioning of a proposed e-learning scale in relation to a well-validated degree-level teaching evaluation instrument was examined, the Student Course Experience

Questionnaire. The e-learning scale has suitable reliability and validity in the present sample of undergraduate students for quality assurance activities around ICT.

Assessment of Motivational Qualities for E-Learning Website by (Fauzi Mohd Saman,Wan Abdul Rahim Wan Mohd Isa,Noorfariani Azyanti Mazilan, 2010) mentioned that E-learning has been integrated in many university programs in Malaysia. However, there is little research in Malaysia to investigate the motivational quality of the e-learning applications. Thus, it aims to investigate the motivational quality of e-learning from one public university in Malaysia. 109 samples of undergraduate computing students from various programs from a computer science school were used. Website Motivational Checklist (Web MAC) professional was adopted to assess the motivational quality of e-learning website. The evaluation was done on four dimensions; (1) stimulating (2) meaningful, (3) organization and (4) easy-to-use. Several issues with the e-learning website were revealed under investigation. It end by stating that the total score for computing students when rating the e-learning of one of the public university in Malaysia is considered good (average too high for value / average too high for expectation for success). However, there are still room for improvement for dimensions of 'stimulating' (S), 'meaningful' (M) and 'easy-to-use' (E) for this e-learning website. The result suggests that the evaluated e-learning system needs improvement in terms of direction, usable and engagement. On the pretext of design, it shows the sense of disorientation in the design of an e-earning system. While much attention is given to efficiency, the aspect of ease of learning is somehow been neglected. In developing online learning systems, motivation and engagement are of utmost important. E-learning has been integrated in many university programs in Malaysia. However, there is still little research in Malaysia to investigate the motivational quality of the e-learning applications. There is also lacking of awareness among web developer of designer to include motivational elements in e-learning applications for public and private university in Malaysia. Thus, there is a need for more future work being conducted in this line of study.

E-learning as an enabler for quality in higher education by (Friesenbichler, 2011) mentioned that E-Learning offers many opportunities to fulfil universities´ general quality principles for learning and teaching as pointed out in their strategy papers. But to strengthen the role of e-learning as "enabler" for quality in higher education it must be guaranteed that e-learning itself fulfils certain quality requirements.

A paper about Quality in e-learning: a framework for promoting and assuring quality in virtual institutions by (D. Masoumi & B. Lindström, 2012) mentioned that with the growing demand for e-learning along with striving for excellence associated with globalization, there are worldwide calls for enhancing and assuring quality in e-learning, specifically in the context of the developing countries. Such calls for quality enhancement, accountability, added value, value for money, self-evaluation, and role players' satisfaction in higher education settings cannot go unheeded. Addressing the concerns regarding enhancing and assuring quality in e-learning, a comprehensive e-quality framework is developed by taking into account the pros and cons of the previous models, frameworks, and studies of e-quality. This e-quality framework offers a structured set of factors and benchmarks as a tool for practical quality work with e-learning in virtual institutions.

An Evaluation of E-Learning Websites in Jordan Universities based on ISOIIEC 9126 standard by (Mahmoud Baklizi,Salah Aighyaline, 2011) evaluate E-Learning website of Jordan universities based on ISOIIEC 9126 standard which uses six main characteristics to evaluate software, and each characteristic includes its own sub characteristics. The results show that the average of quality in E-Leaning websites is 65.45 %. The maximum quality of E-Learning website is Educational and social sciences group with 67.29%. Educational and social sciences group has quality level at 63.33% and 73.44% for Efficiency and Maintainability, respectively. The characteristics in reliability, Functionality and Portability are, respectively; 58.33%, 76.04% and 67.08% for Business group. Finally, Arts group has Usability level with 72.19%. The research results can be exploited as beneficial information for E-Learning webmaster to evaluate and improve the quality of E-Learning website according to the proposed quality model for optimizing the effective e-Learning. The results reflect the student's opinion about the website. The result might be used to improve the quality of E-Learning website for those universities.

Quality-oriented Evaluation of E-learning-based Experiences by (Félix Buendía, Elena Ejarque Antonio Hervás, 2008) states that the rapid development and the complexity of e-learning-based experiences require the use of methods and tools to evaluate them. It presents an evaluation method based on a "quality assurance" model in order to represent the several phases in the implementation of an e-learning experience as well as the quality criteria to be checked. Two evaluation cases are used to describe the method application in the context of higher education and some techniques and mechanisms to check these cases

in e-learning settings are reported. It has presented a method to evaluate e-learning based experiences. This evaluation method is based on a twofold approach that enables the specification of learning scenarios in which these experiences are developed and the selection of different workflows along the experience lifecycle. The proposed method allows the evaluator to generate mechanisms adapted to a specific evaluation case and systematically structured according to the quality assurance of e-learning-based experiences. Web applications have been developed to support the current evaluation method. Two examples of experiences based on higher education settings have been tested under the proposed method. The reported cases show the versatility of the evaluation method that is able to manage from "little" size experiences (e.g. lesson-level based on e-learning environments) to institutional e-learning projects (e.g. a blended-learning program). Further works plan to complete the current evaluation cases and to address new ones in order to validate the proposed method.

Semantic P2P-based Learning Resources Personalized Recommendation System Design by (Qing Yang, Yuan yuan,Junli Sun,KaiMin Cai, 2011) mentioned that as the system size expansion, P2P-based E-Learning system where study participants cannot effectively found the learning resources cannot reflect the dynamic learning and characteristic of the participants, and individualized. Based on the analysis of semantic web and ontology modelling, learning resources personalized recommendation system based on semantic P2P technology was proposed to improve the teaching quality of E-Learning System. It design computer science learning resources personalized model "SPLRRS", and fully consider the learning preferences while ontology modelling, a good solution for the problem when the system scale, the learner's personalized service issues. The next study step is to establish the corresponding experimental system, the system will be built on the platform JXTA developed by Sun, on this basis to build P2P application, to better address the computer learning resource personalized recommendations in E –Learning environment.

The Effects of E-*Learning System Service Quality and Users' Acceptance on* Organizational Learning by (Wong, 2011) examines the effects of e-learning system service quality and users" acceptance on organizational learning. The sample was drawn from 15 companies certified by the E-Learning Quality Certification Center of Taiwan. The authors used UTAUT, SERVQUAL, and SLAM scales to collect data, and the structural equation model (SEM) to examine the hypothesized model. The results show that (1) e-learning system service quality has a positive effect on acceptance and use of e-

learning technology, (2) the latter has a positive effect on organizational learning effectiveness, and (3) acceptance and use of e-learning technology plays a full mediating role in the relationship between e-learning system service quality and organizational learning effectiveness. Although e-learning system service quality has no direct effect on organizational learning effectiveness, the result has practical implications for institutions in that e-learning system service quality can strengthen organizational learning effectiveness via well-structured e-learning technology. While implementing e-learning, institutions should manage both e-learning technology, and the quality of e-learning service. The more users are satisfied with e-learning service, the more organizational learning will be enhanced.

Quality Parameters for the E-Learning Omega System by (Ksenija Klasni,Sanja Seljan,Hrvoje Stan, 2008) states that Learning and teaching are considered to be the main activities in higher education. The environment in which these activities take place is rapidly changing and it is getting more and more oriented towards teaching with the help of the new technologies, namely e-learning system, relying not only on technical skills but also on motivation and contextualisation. It presents different views towards the quality of e-learning, and the research regarding the quality of the e-learning Omega system (Moodle) conducted at the Faculty of Humanities and Social Sciences, University of Zagreb presented in relation to different European policies. It conclude that positive attitudes towards Omega, perceiving its qualities and the possibilities of positive changes by its use, are typical for those students who were, thanks to their information literate teachers and their own information literacy, given the opportunity for a better familiarization with Omega. It is our opinion that the quality education, and specially education and educational engagements using Omega, are not possible without a quality educated and prepared teachers. If we review the situation in the context of a concept of technological pedagogical content knowledge, which implies that the modern quality teacher is the only one that understands and successfully uses these three knowledge components, we realize that the component referring to the technology and the use of technology in education is the key problem in the process of integration of Omega in the educational system on Zagreb's Faculty of Humanities and Social Sciences. It seems that teachers are still having "problems" with unavoidable characteristic of a quality teacher, which is reflected in students' attitudes and satisfaction. Still, the good news is that the situation, as it seems, is moving into the right direction because the students from the lower study years are more satisfied with Omega use. To this fact we should probably

congratulate the new "Bologna" university educational system. At the end we would like to notice that this research didn't involve all aspects of analysed problem partially because of the practical limitations, but mostly because of the complexity of the research subject. Anyhow, researches on this thematic should be conducted regularly with a view to a better understanding of a situation considering the quality of omega's integration in educational system and students' satisfaction with the way of its use. The results of such researches could serve as a foundation and a guideline in undertaking of appropriate steps with the objective of enhancement of universal education quality. According to the presented results the future of e-learning is seen in blended learning not only in formal setting, but also in the lifelong learning. It demand not only pure technical skills, but also social dimension (motivation, contextualisation, learners' needs, recognition) in order to develop different type of skills and knowledge and to be quality oriented.

Usability Evaluation in an Exploratory Design-Based Research Approach of Convenience Store New Employee Training e-Learning Material by (Chiung-Sui Chang,Wan-Tzu Wong,Yi-Chia Cheng,Ya-Ping Huang, 2009) states that A large number of organizations have adopted e-Learning programs, and far fewer have addressed the usability of their learning applications. To ensure the quality of e-Learning training material, they utilized the usability evaluation heuristic in the design and development processes. The application of exploratory, and usability evaluations during the design-based research study is described. Additionally, participant selection, data collection and analysis; and results relevant to usability portions of this study are presented. Usability evaluations in this study informed the convenience store new employee training e-Learning material in two central ways:

1).by ensuring the product features matched the needs of target users and
2). Identifying usability deficiencies.
 Usability findings from the design and research of the e-Learning material were presented. The informal usability evaluation conceptualized with interviews could be still part of this phase 4 of research, but formal usability evaluation could also be conducted. The authors hope this study can provide an example for professionals who are interested in developing e-Learning materials.
All studies related to the field of E-learning quality focus on the importance of evaluation of the provided service. Each study presented different way of evaluation. All studies advocate the necessity of evaluation to achieve improvements.

2.3 Higher Education and E- Learning

In a book titled Quality in learning – a capability approach in higher education- Edited by John Stephenson & Susan Weil. It was claimed that Higher education need to be able to achieve the interrelated purposes within the context of expanding numbers, diminishing resources and external accountability, and with an increasingly diverse mixture of student. It should be judged by the extent to which it:

(1) gives students the confidence and ability to take responsibility for their own continuing personal and professional development;

(2) Prepares students to be personally effective within the circumstances of their lives and work; and

(3) Promote the pursuit of excellence in the development, acquisition and application of knowledge and skills.

Capability approaches to learning improve the quality of student learning was supported to be through emphasizing the application of knowledge and skills, the negotiation of programmes, collaboration with others and structured reflection progress.

The External and internal factors influencing and supporting the way in which programmes in higher education are developing were revealed to include:

1- The debate about management and business education,
2- Changing interpretations of manager's role;
3- Development of our understanding of learning processes;
4- And various initiatives that are raising issues about learning processes and outcomes generally in HE, including Expertise higher education, Higher education for capability and BTEC/SCOTVEC.

The concerning of studies with relevance and performance effectiveness was explored, while developments should focus attention not only on the "what" of learning but also on the "how". Encouragement of the growing uses of alternative sources of learning, and the focus on the different ways of learning in HE courses, to the integration of what is taught and what is utilised both in work and in life generally was advocated, as well as, taking account of the world outside HE institutions, of professional and organisational practice, while delivering courses, determine means in which theory and practice can be strongly linked .It is inferred that In this way, learners are encouraged to recognise that they can continue developing over time, rather than restricting their opportunities to those provided on educational and training courses.

In another book titled The digital University- Building a learning community –by Reza Hazemi and Stephen Hailes (Eds) Series edited by: Dan Diaper and Colston Sanger discussed the considerable effort which has been put into support of real- time collaboration based on video conferencing, clarifying that in the academic world, less attention has been focused on the requirements of asynchronous collaboration. Explaining that while academics have continued to rely largely on e- mail and the web, there are also numerous groupware products now available and in use in many commercial environments. In both commercial and academic environments, more emphasis is and has been placed on having good tool for asynchronous collaboration. The reason can be attributed to the fact that, asynchronous tools simplify business processes, remove paper from the environment, and operate on the same items that the business itself uses. The material that once was printed on paper and posted can now be delivered via e-mail and the web. Realising that this electronic approach increase the sharing efficiency, but it does not exploit the full potential of the technology as an enabler of reengineering of the educational process itself. Synchronous collaboration was advocated as important, and likely to become increasingly so as more people move away from traditional office or campus environments such a way that they can only be virtually present at meetings and so forth. In all of these cases, however, multimedia conferencing cannot capture persons attend in face to face meetings and so is less than the ideal in this respect, Though it enables those who cannot simultaneously be collocated to communicate in a cost- effective way.

New tools were reasoned to may relieve some of the problems of synchronous collaboration like information overload in a virtual classroom; however it is likely that universities will remain structured much as they are today until forced by external circumstances to change. It was claimed that Synchronous collaboration will help distance learners, but asynchronous collaboration will help both distance learners and those that are present on campus, and will also aid in the whole process of organising teaching and research, allowing those delivering the services to act more efficiently.

The spent of a large amount of institutions resource (both time and money) was asserted while introducing distance learning on training faculty to manage the new technical and administrative aspects of distance courses. Faculty need to learn to manage critical dimensions of the new environment in which their courses are taking place was claimed, dimensions like metaphor, meaning, culture, role, time, awareness, and collaboration.

Distance learning was articulate to involve many different technologies used alone or in combination. Although many of decisions to be made about which of the many possible technologies and media will work best for specific purposes. New technology requires rethinking the teaching dynamics because we do not have the option of using familiar approaches. It gives us an opening to change the way we manage the teaching and learning process in general. The question is: "how can learners are engaged in more expressive learning activities? Facilitating distance learning is not about taking our old lesson plans and transporting them for delivery using new media. Rather, it is about expanding our available tools to create new learning dynamics aligned with the best thinking about adult learning.

Distance learning was praised because of its ability to scale up to reach larger numbers of students at standardized levels of quality but an expert lecturing to a group of passive students is engaging in didactic one way teaching weather that lecture is delivered from a stage of auditorium or via broadcast television to students sitting in their living rooms.

It was inferred that distance learning technologies are particularly well suited to a more dynamic approach to managing learning. Good teachers have always been open to changing their lesson plans based on student input. New media makes it easier. For example it is easy to provide additional reading materials based on student interest instead of having to rely on textbook ordered weeks or months before the course began. Online environments can provide space for continuing conversation among students about what is working and what is not working in the course.

It was claimed that the same technology can also contribute to more participatory course design, articulating that in a master level business course at George mason university, the professor contacted most of the course members via e-mail during the summer to find out about their interests, expectations, concerns, and skills so that he could take those into consideration when designing a course offered in the fall semester. He was able to use that information to create preliminary project teams and develop initial assignments that reflected the specific need of course participants.

the tension between delivering content resources which are essentially one way communication (article, books, video, expert lectures) and providing the two way interaction around that material which make it meaningful to learners was praised as one of the things many distance learning programs perceive as a significant problem is. The usual

fact of the same media environment being not optimal for both needs was claimed, clarifying that an environment that does a great job of sorting and organising materials of various kinds is not essentially a good place to hold the discussion stimulated by that material, which reveal how hard is to conduct a role- playing exercise in a file cabinet, and infer that there is more to develop a relationship among a collaborative learning group sharing access to a file folder.

It was asserted that the new frame work of managing distance learning should be about managing the learning process rather than managing courses. The importance of the way to plug one kind of technology into another or the capability of faculty to be more effective on video was overlooked, while the way of using technology to pull resources and group dynamics in new techniques to make vital changes in every part of the learning process was supported.

Introducing E-learning in High education require new methods of course design, teaching, and evaluating students. It will also, expand the variety of cultures, and eliminate borders between people all over the world. Thus, it will bring a wide change in learning process which can affect the society's culture.

2.4 Total Quality Management (TQM) and Continuous Improvement As Addressed by Researchers

Researchers in the field of Total quality management are usually seeking to find models and theories for continuous improvement. Here is an analysis some work produced in this field, to prove that, all targets and aims are achieved by relying on the same base and principles. Terms may differ from researcher to another, but the result is produced from the same ground.

Comparison between Total Quality Management (TQM) Framework for e-learning based on EFQM and Kirkpatrick models - by Jeanne Schreurs – Universiteit Hasselet, Diepenbeek,Belgium- (2006) and Applying Total Quality Management in Academics-by Dheeraj Mehortra (March 2010):-

 Jeanne Schreurs identifies the EFQM Excellence model as "a famous quality Management tool", which has been translated to be useful in e-learning quality Management. She describes how she developed the e-learning stakeholder model. She presented the Kirkpatrick model of e-learning and developed Kirkpatrick-EFQM self-assessment framework.

To take the challenge to support and enhance quality management in e-learning, Jeanne Schreurs defined quality, and find the way to assess it, and embed it in the existing operational procedures of the learning organisation. She could determine the kind of quality management system which has to be implemented. She focused in her paper on the assessment of quality.

Schereurs argues that the way to become an excellent learning department is by balancing and satisfying the needs of all stakeholders. The subject asserted by Dheeraj Mehrotra (March, 2010) in his paper about applying Total quality Management in academics, explains four pillars of Total Quality Management.

He argues in principle number 1 "Synergistic relationships" how essential is the focus on suppliers and customers- which are relevant to stakeholders in Jane Schereurs paper- as well as the teamwork and collaboration.

Schereurs maintains the strategy of continuous learning, innovation and improvement to achieve excellence. This correlate with principle number 2 "Continuous improvement and self-evaluation" by Dheeraj Mehrotra (March, 2010); where continual improvement of personnel abilities is highlighted as well as the win-win approach in Total quality Management.

Believing in Deming rule by Dheeraj Mehrotra (March, 2010) that "no human being should ever evaluate another human being" and that we should have a self-evaluation as part of improvement process; Jane Schereurs reveals the EFQM model as a tool of quality assessment which enable the organisation to identify its strengths and weaknesses, benchmark with other organisations, and identify areas for improvement.

As the fourth principle of Total quality management in academic by Dheeraj Mehrotra (March ,2010) is Leadership, and the insists of top management success responsibility ; Schereurs guarantees leadership, Policy and strategy , resources , and processes as enabler criterion of the EFQM Model in the E-learning Organization . She recommends the result criterion to be Client satisfaction, People satisfaction, impact on society, and impact on the company's success.

Schereurs discussed Kirkpatrick Evaluation model, to prove that it is self-evaluation model, which is composed of four levels of quality evaluation. Then, she merged the EFQM total quality model (TQM) for e-learning with Kirkpatrick model to have a

"Kirkpatrick-EFQM self-assessment framework", through which, the internal stakeholders of the company shall assess the quality of e-learning activity.

Thus, when we compare the two studies, we can realise that, following the four principles of introducing Total quality management to academics, can guarantees having new assessment models to assure total quality management, and to uphold the continuous improvement for both traditional and virtual learning.

Baldrige Model by Denis Leonard and Bill Denney, 2007 and Total quality Management (TQM) Principles by Kurram Hashmi, 2010:-

If we look back to the mid of 1990's we can find the "Baldrige Model" where the strategic flow starts with leadership and ends with results. Through the figure below (fig.1), we realise that, Organizations will never make large improvement, unless senior leadership is actually engaged, to get a wave of reactions all over the organization, to achieve continuous improvement.
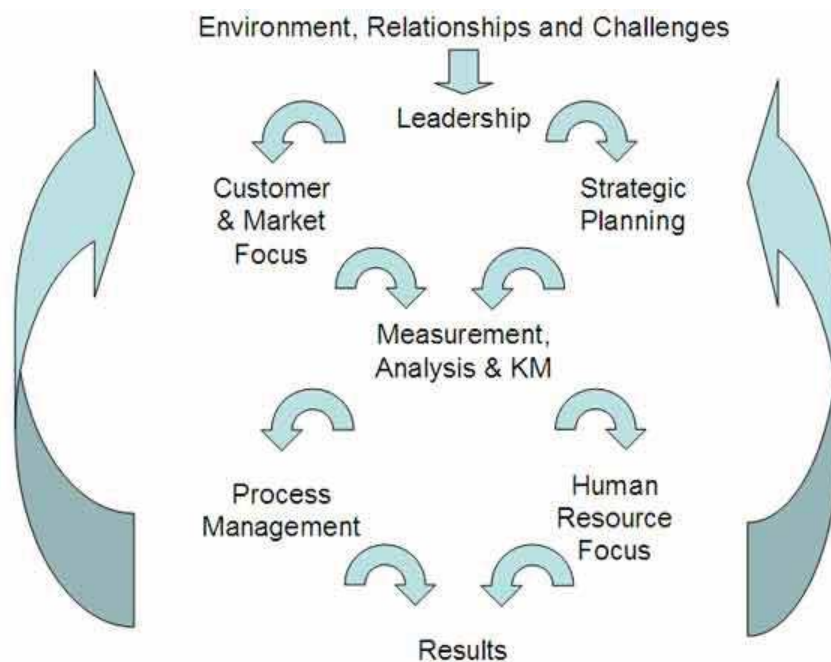
(Figure 2-1) Baldrige Leadership flow

(Denis Leonard and Bill Denney, 2007)

While the traditional Baldrige model (Figure 2) shows the link from the leadership triad (Leadership, planning, and customer focus) to the results triad (staff, processes, and results) and how measurements affect both, as well as, giving a basic view of how all the pieces fit together, to assert that, It's a systems view of the criteria and how they penetrate the entire organization.
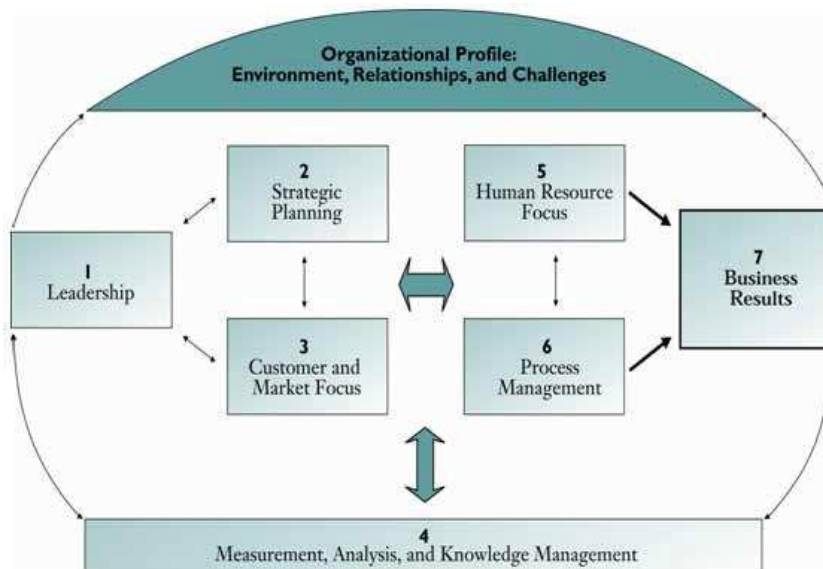
(Figure 2-2) Baldrige Model

(Denis Leonard and Bill Denney, 2007)

The Education Criteria in baldrige model, maintained by "Denis Leonard and Bill Denney" in paper about "Aspects of Baldrige – Valuable perspectives" – Published in *Quality Digest*'s Quality Insider, July 2007, are a set of questions about seven critical aspects of managing and performing as an organization:

1.   Leadership
2.   Strategic planning
3.   Customer focus
4.   Measurement, analysis, and knowledge management
5.   Workforce focus
6.   Operations focus
7.   Results

These questions work together as a unique, integrated performance management framework. Answering the questions helps to:-

- align resources;
- identify strengths and opportunities for improvement;
- improve communication, productivity, and effectiveness; and
- Achieve strategic goals.

As a result,

- Ever-improving value is delivered to students, other customers, and stakeholders, which contributes to organizational sustainability.
- Organization's overall effectiveness and capability is improved.

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- Organization improves and learns.
- Workforce members learn and grow.

In other hand, Khurram Hashmi (March 16,2010),in his paper "Introduction and Implementation of Total quality Management" guarantees that Total Quality Management is mainly concerned with continuous improvement in all work starting from strategic planning and decision making till the executive work elements. Also, he argues that the key principles of TQM are:-

1- Management Commitment:-
- Plan (drive , direct)
- Do (deploy, support ,participate)
- Check (review)
- Act (recognize, communicate, revise)

2- Employee empowerment:-
- Training
- Suggestion scheme
- Measurement and recognition
- Excellence teams

3- Fact based decision making
- SPC (statistical Process Control)
- DOE,FMEA
- The 7 statistical tools
- TOPS (Ford 8D –team –oriented problem solving)

4- Continuous improvement:-
- Systematic measurement and focus on CONQ
- Excellence team
- Cross functional process management
- Attain, Maintain, improve standards

5- Customer focus:-
- Supplier partnership
- Service relationship with internal customer
- Never compromise quality
- Customer driven standards

Total quality Management principles and Baldrige model and the TQM frame work for e-learning based on EFQM and Kirkpatrick models, all have the same target to achieve, while each claims different approach, starting from the same base of principles.

If we draw a figure for the previous principles of Total quality Management we will have the following (fig.3) which is similar to Baldrige model.

(Figure 2-3) Principles of TQM

In spite of the different approaches to address Total Quality Management (TQM) implementations and applications, researchers insists that to achieve excellence, top management should be involved in the application of quality. They strongly believe that all functions, all employees should participate in the improvement process. They reveal the importance of evaluation to achieve continuous improvement.

Theories and models in the field of Total Quality Management start from the same base of principles and end to same results (the importance of teamwork and continuous improvement…etc.) but in different approaches.

2.5 E- Learning and Quality Circle

Many services have been transformed to E- service which an umbrella term for services on the internet. E- Learning is one of the most important E- services offered. It is most used in training or higher education courses. At the same time Quality of education is the aim of all the High Educational Institute, especially in the Arab world. In this paper we try to

study the criteria of each of Higher Education, E-learning, and Quality, in order to find a relationship to indicate a route to go through for improving of E-Learning programme in Higher Education.

2.5.1 Higher Education

Higher education should be judged by the extent to which it:

(1) gives students the confidence and ability to take responsibility for their own continuing personal and professional development;

 (2) Prepares students to be personally effective within the circumstances of their lives and work; and

(3) Promote the pursuit of excellence in the development, acquisition and application of knowledge and skills.

Higher education will need to be able to achieve these interrelated purposes within the context of expanding numbers, diminishing resources and external accountability, and with an increasingly diverse mixture of student. Capability approaches to learning improve the quality of student learning by emphasizing the application of knowledge and skills, the negotiation of programmes, collaboration with others and structured reflection progress. (John stephenson & Susan Weil, 1992, pp. 1-7)"

The growing uses of alternative sources of learning, and the focus on the different ways of learning in HE courses, encourage the integration of what is taught and what is utilised both in work and in life generally. Courses which take account of the world outside HE institutions, of professional and organisational practice, demonstrate ways in which theory and practice can be strongly linked. In this way, learners are encouraged to recognise that they can continue developing over time, rather than restricting their opportunities to those provided on educational and training courses. (John stephenson & Susan Weil, 1992, p. 75)

2.5.2 Distance learning

Distance learning was praised because of its ability to scale up to reach larger numbers of students at standardized levels of quality but an expert lecturing to a group of passive students is engaging in didactic one way teaching weather that lecture is delivered from a stage of auditorium or via broadcast television to students sitting in their living rooms. (Reza Hazemi & Stephen Hailes, 2002, p. 29)

Many institutions introducing distance learning spend a large amount of their resources (both time and money) on training faculty to manage the new technical and administrative aspects of distance courses. Instead, faculty need to learn to manage critical dimensions of the new environment in which their courses are taking place, dimensions like metaphor, meaning, culture, role, time, awareness, and collaboration.

Distance learning can involve many different technologies used alone or in combination. Although many of decisions to be made about which of the many possible technologies and media will work best for specific purposes. New technology requires rethinking the teaching dynamics because we do not have the option of using familiar approaches. It gives us an opening to change the way we manage the teaching and learning process in general. The critical part of the question, "How can we engage learners in more meaningful learning activities?" Facilitating distance learning is not about taking our old lesson plans and transporting them for delivery using new media. Rather, it is about expanding our available tools to create new learning dynamics aligned with the best thinking about adult learning. (Reza Hazemi & Stephen Hailes, 2002, pp. 27-28)

The new frame work of managing distance learning should be about managing the learning process rather than managing courses. The kinds of questions we need to be asking ourselves are not about how to plug one kind of technology into another or how faculty can be more effective on video. The more important questions are about how to use technology to leverage resources and group dynamics in new ways to make fundamental changes in every part of the learning process. (Reza Hazemi & Stephen Hailes, 2002, p. 38)

Many governments and organisations in various countries are developing ways of measuring and producing guidelines for e-learning quality in higher education. For example:

- UNESCO/OECD (2005) recognise e-learning in their guidelines on quality provision in cross-border higher education;
- Lee, Thurab-Nkhosi, and Giannini-Gachago (2005) worked collaboratively across two countries to develop a quality assurance tool for e-learning;
- KeKang, Hai, Chun, and Bin (2005) developed an authoritative index system of quality assurance for web based curricula, teaching processes, and the supporting service system;

- Weir, Kulski, and Wright (2005) explore the extent to which Australian frameworks and strategies for quality assurance ensure online provision of high-quality transnational educational programs. (Alexander,S. & Golia,T., 2007)
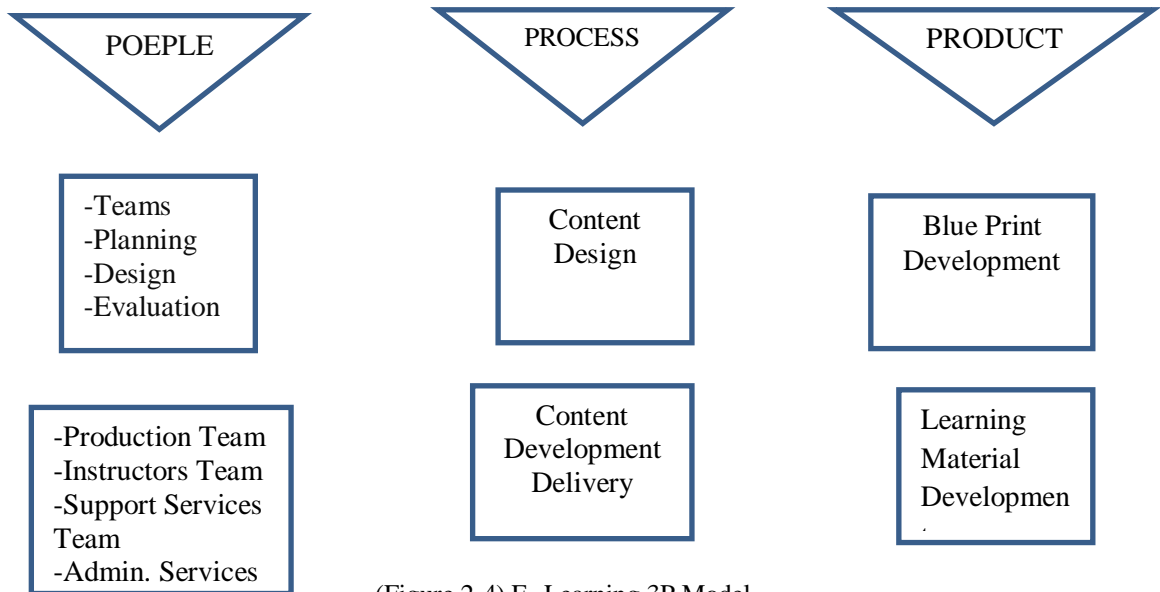
(Figure 2-4) E- Learning 3P Model

(By Prof. Badr El Huda Khan)

International Conference on E-learning (ICEL) 2012 Cairo

*Instructional design helps professors to design the course to deliver it in a better way
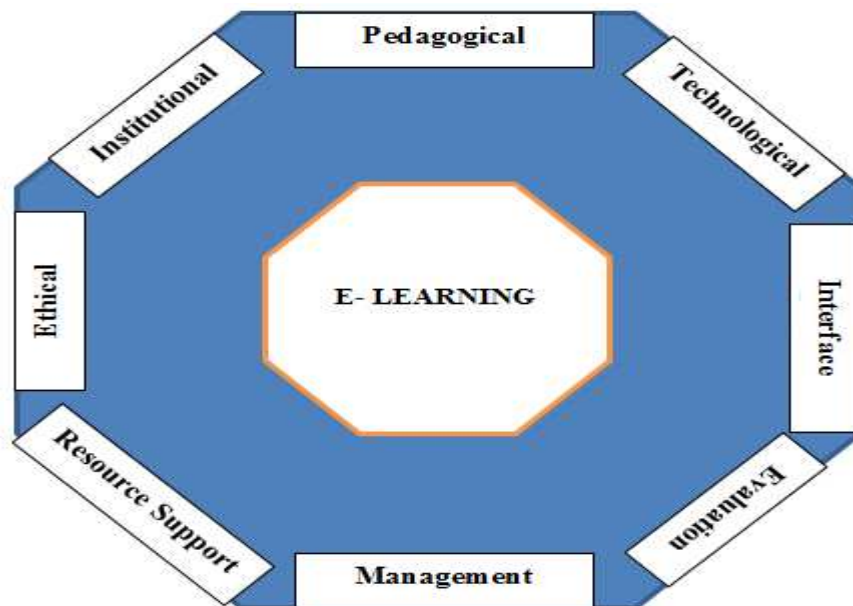
(Figure 2-5) Learning and Teaching issues in

E- Learning (magdy, 2012)

(By Prof. Badr El Huda Khan)

International Conference on E-learning (ICEL) 2012 Cairo

2.5.3 E-learning system quality

Research into evaluating e-learning systems comes from two directions: the educationalists and the software developers. Many educators have shown significant interest in the pedagogical evaluation of e-learning systems, that is, in course design issues and how to promote good learning (Laurillard 1993; Reeves 1992). Although these fundamental issues of course design are vital, these studies do not assist educators in evaluating the quality of the system as such, and therefore do not incorporate frameworks to support decision making regarding review of existing systems and the purchase of new ones.

There is also a vast body of literature relating to various technical frameworks for software developers who wish to improve the quality of the e-learning systems they are developing. A systematic approach is the IEEE Learning Technology Standard Committee (LTSC) reference model, IEEE P1484.1 LTSA. This model has five layers, which focus on reusability and portability, and compares different e-learning systems by numerical rating scales for various factors, e.g., assessment, administration, curriculum development, etc. *(O'Droma, M. S., Ganchev, I. & McDonnell, F. 2003)*. The Sharable Content Object Reference Model (SCORM) is another widely known framework. It supports content compatibility, that is the portability of content from one e-learning system to another and the re-usability of learning objects by extensive cataloguing using metadata (Bohl, Schelhase, Sengler & Winand 2002). The Instructional Management Systems (IMS) project is another approach to defining technical specifications in order to promote interoperability between e-learning systems (IMS Global Learning Consortium). These standards focus on technical aspects of e-learning systems and neglect the Human Computer Interaction (HCI) component, that is, how the user will interact with the system. More importantly, they are too complicated for the average educator or educational administrator to understand and apply when choosing an e-learning system. They are specially designed for technical trained system developers.

The few studies that have been undertaken for educators and people working in educational institutions who need to evaluate e-learning systems are often inadequate. This is due to the lack of systematic tools or approaches. For example, Roberts (2002) gains a good overview of Blackboard using surveys, focus groups and interviews, but the results are too general and do not provide detailed analysis of features such as usability. In another study, the Learning and Teaching Technology Group (LTTG) undertook a comparison of Blackboard and Web CT. Their main approach was an evaluation based on the number of times students accessed different tools in the system, e.g. discussion board, group areas and others.

Nevertheless, these quantitative counts are not meaningful without details of the subject design, for

Example: how the group area activities were incorporated into the learning environment. The rest of their paper offers a miscellaneous group of features for evaluation, e.g. data integration, pricing, hardware or software platforms and ease of access. However, there is no system or justification for their choice of features and many common usability criteria are omitted. A third approach we examined was "20 Questions", which Driscoll and Dennehy (2002) propose putting to suppliers of the system. They resolve the adoption of an e-learning system into two factors, organisational and technical, although only a few of their questions deal with organisational issues and the main emphasis is on the technical issues, e.g. back end integration and the partitioning of the system. Student interaction with the system receives very little attention in their approach. Likewise, Parisotto (2003) focuses broadly on high level issues in evaluating e-learning systems. He considers three organisational perspectives (academic, administrative and IT support) but fails to discuss the operational levels, that is, the system in use.
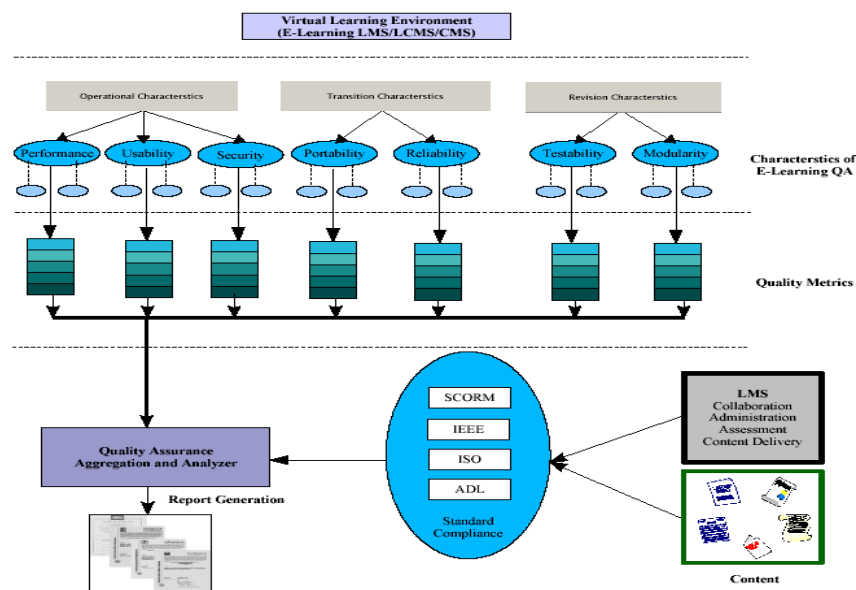
(Figure 2-6) Virtual learning environment

http://www.google.com.eg/imgres?num=10&hl=ar&tbm=isch&tbnid=NilV9qAwTM-OIM:&imgrefurl=http://cdachyd.in/products/qaael&docid=OTrKyYSQYC4WTM&imgurl=http://cdach

2.5.4 A Quality Circle

A Quality Circle is a volunteer group composed of workers (or even students) who meet to discuss workplace improvement, and make presentations to management with their ideas, especially relating to quality of output in order to improve the performance of the organization, and motivate and enrich the work of employees. Typical topics are improving occupational safety and health, improving product design, and improvement in manufacturing process.

The ideal size of a quality circle is from eight to ten members. Quality circles have the advantage of continuity; the circle remains intact from project to project. Quality circles were first established in Japan in 1962, and Kaoru Ishikawa has been credited with their creation. The movement in Japan was coordinated by the Japanese Union of Scientists and Engineers (JUSE).

The use of quality circles then spread beyond Japan. Quality circles have been implemented even in educational sectors in India and QCFI (Quality Circle Forum of India) is promoting such activities.

There are different quality circle tools, namely:

1-The Ishikawa diagram - which shows hierarchies of causes contributing to a problem

2- The Pareto Chart - which analyses different causes by frequency to illustrate the vital cause

3- The PDCA-Deming wheel - Plan, Do, Check, Act, as described by W. Edwards Deming (strategyvectormodel.com, 2008)

2.5.4.1 E- Learning Stages versus Quality Circle:-

-Planning (PLAN)

-Designing (PLAN)

-Production (DO)

- Evaluation (CHECK)

-Delivery (ACT)

-Instruction (ACT)

-Marketing (ACT)
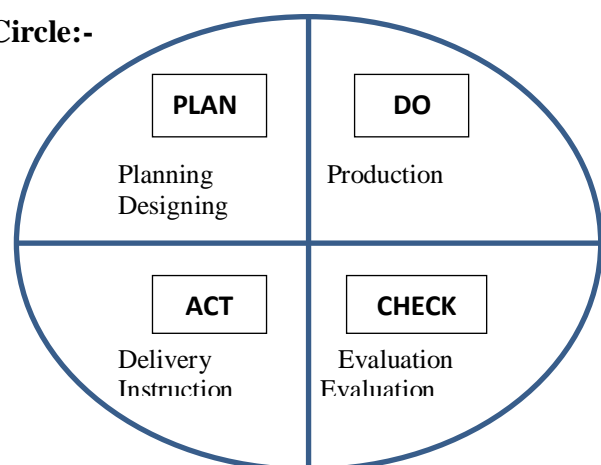
(Figure 2-7) E-learning Stages versus Quality circle

High quality E-learning System must be meaningful to Learners, Instructors, Technical and Support staff in the Organisation. It should be:-

- Easily accessible
- Clearly organized
- Well written
- Authoritatively presented
- Learner centred
- Affordable
- Efficient
- Flexible and,
- Has a Facilitated learning environment.

2.5.4.2 The different objectives of the quality circle
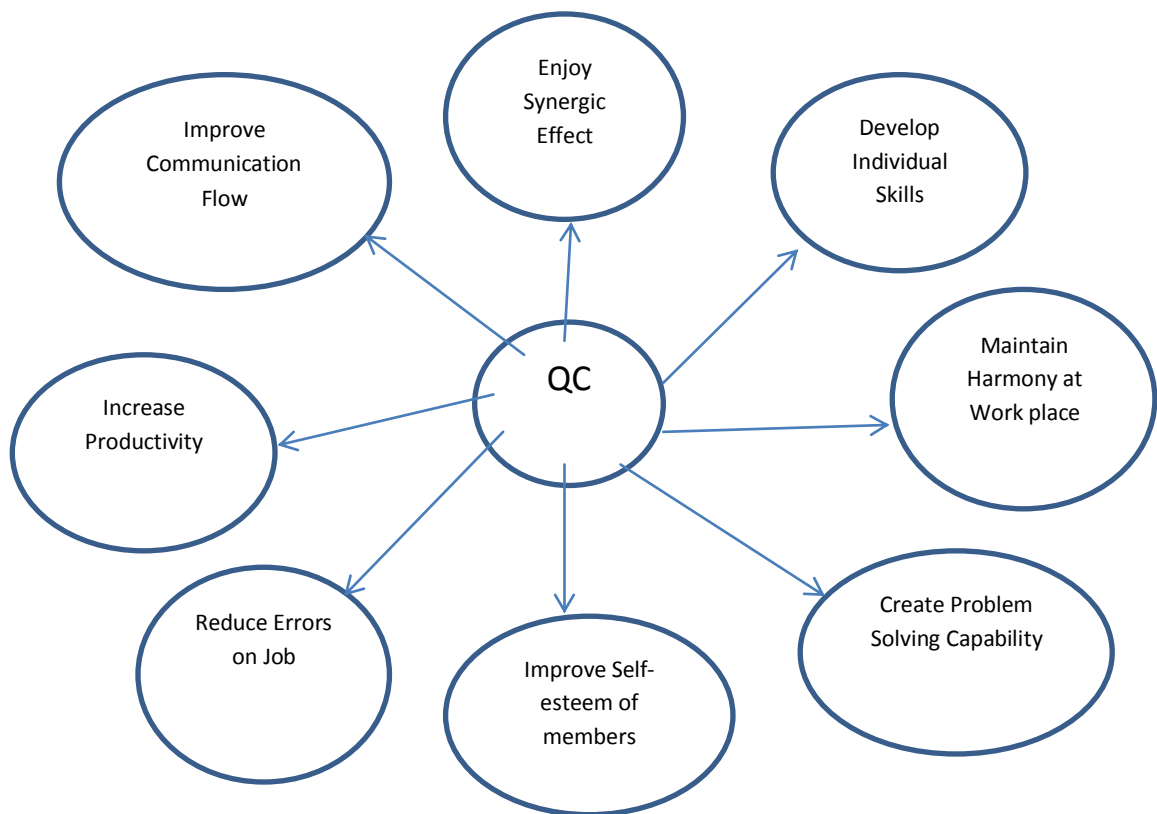
(Figure 2-8) objectives of the quality circle

By (magdy, 2012)

It is recommended that the quality circle be introduced in the organization for building the quality culture, quality circle is voluntary movement, employees in the organization should be motivated to join this movement. (magdy, 2012)

When quality circle will be introduced in the Higher education institute which offers an E-learning programme, then it will be easily accessible, clearly organized, and well written. It will be also, authoritatively presented, Learner centred, and Affordable. As well as Efficient, Flexible and, has a Facilitated learning environment.

2.5.5 E- learning in Higher Education in Egypt
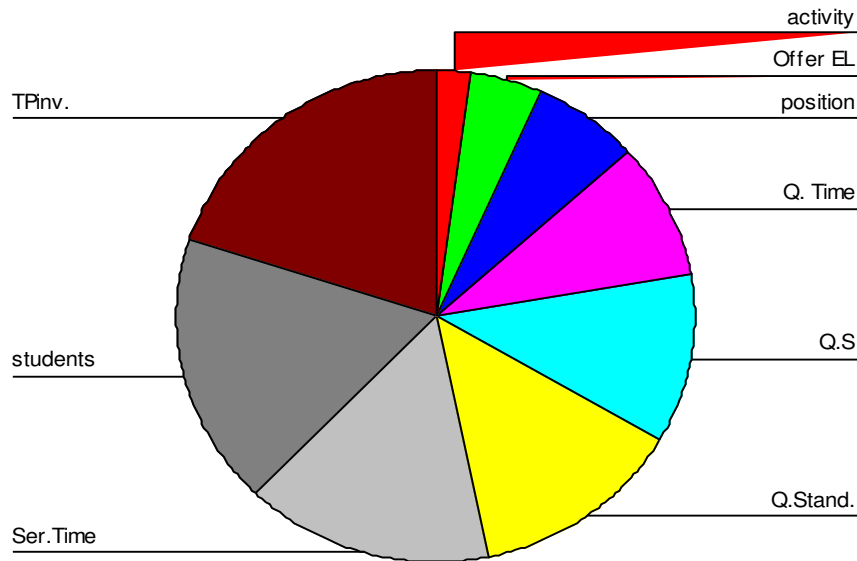
(Figure2-9) challenges meet Higher Education in Egypt

(Khouly, 2010)

Higher education in Egypt faces many challenges like,

- high student numbers,
- financing of education,
- governance and management of the education system, and
- Quality assurance.

Therefore, the national institutional ICT policies and initiatives adopted the e-learning as a teaching strategy to overcome the challenges of the traditional lecturing style. In this manner, the National E-learning Centre (NELC) was established, Egyptian E-learning University (EELU) established 2008 to provide e-learning nationally, regionally, and internationally, and one of the Information and Communication Technology Project (ICTP) outcomes, to serve as a technical unit within the Supreme Council of Universities to

promote and support the development of e-learning in Egypt by improving the development of the e-learning content. (Khouly, 2010)

2.5.5.1 National E-learning Center (Khouly, 2010)

The National E-Learning Centre (NELC) is a building block within the Higher Education Information Center, SCU. Its primary objective is to 'promote and support the development of e-learning in Egypt by improving the development of the learning content to the highest maturity level, to achieve strong presence both locally and regionally'. The further objectives of the NELC (**http://www.nelc.edu.eg**) are to:

- provide an e-learning infrastructure to defined, high quality specifications;
- provide a range of e-learning tools to defined, high quality standards;
- provide information, training and support for staff and students in the use of e-learning tools and facilities, in collaboration with the universities;
- provide nationwide co-ordination for e-learning development, where the center will integrate courses produced by other projects;
- focus on both asynchronous and synchronous learning;
- produce courses on a competitive basis;
- promote the use of appropriate standards and specifications in e-learning development, including conformity with accessibility guidelines and standards;
- provide support to universities in their evaluations of e-learning developments and, where appropriate, carry out such evaluations, especially at institutional level;
- adopt standards for courseware development in Egypt;
- Encourage courseware export and offshore development.

In order to meet these objectives, the NELC's revised a strategic plan aims to develop a robust infrastructure at each of the public universities, capable of facilitating an effective e-learning system. This will be achieved through the establishment of an e-learning centre at each of the 17 Egyptian universities. These centres are able to develop pedagogically sound e-courses that fully utilize the potential of ICT in an interactive way. Each will be staffed by a centre director, instructional designer, e-content developers, graphics designers and subject-matter experts. The NELC monitors the progress of the university centres and develops national standards. The university centres are networked with the NELC through the Egyptian Universities Network (EUN). (Khouly, 2010)

2.5.5.2 Enabling E-Learning in Higher Education (Khouly, 2010)

- 18 e-learning labs (6 PCs + server + LAN) have been installed in all universities (17 public universities + Alazhar University).

- 20 e-learning labs for students (20 PCs + LAN) accessibility have been installed in all universities and branches. Figure 7, shows that 81.4% of Egyptian higher education institutions had computer labs and Internet access in 2008, and 98.7% of Egyptian higher education institutions had PCs in 2008, while 81.4% had electronic labs.
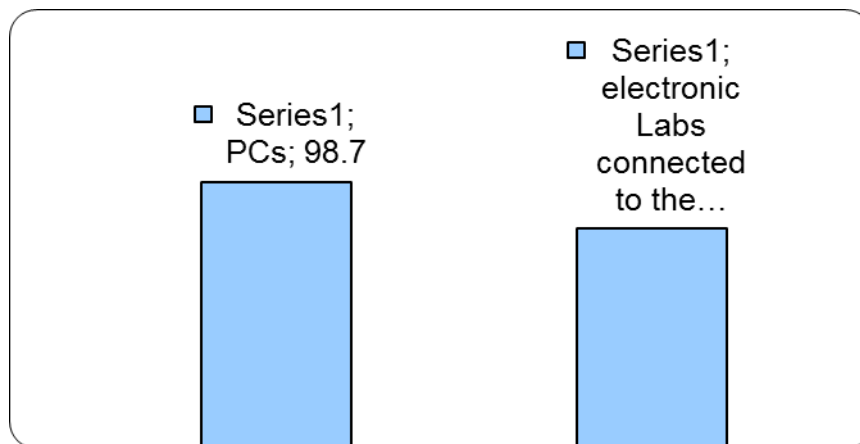
(Figure 2-10) 81.4% of Egyptian higher education institutions

Had computer labs and Internet access in 2008

By (Khouly, 2010)

- Equipping Faculty of Engineering–Ain-shams University with a wireless network (Siemens).

- Equipping Faculty of Engineering – Assuit University and Ain-shams University with latest technologies of e-learning offered by HP (the 2 faculties of Engineering won the labs in the HP e-learning competition).

- Developed and inaugurated phase I (1.2 million scanned research pages) of Science and Technology Portal.

- Multinationals' e-content:

- The NetAcad curricula of Cisco were mapped to the Technical Colleges Curricula (3 colleges).

- Creating a CCNA network in all faculties of Engineering and Computer Science (36 faculties).

- Currently studying e-courses from Microsoft and Oracle to be accredited as part of the higher education curricula in all faculties of Engineering and Computer Science (36 faculties).

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- Studying MS e-content for disabled (visually impaired/hearing impaired) for TOT training.
- Getting new 30 Cisco CCNA bundles to be used in all universities
- Multi-core was implemented in Cairo University
- ICDL was accredited and implemented in Helwan University (Khouly, 2010)

2.5.5.3 Improving Faculties of Education (Khouly, 2010)

- Accrediting **Intel: Teach to the Future** course as an undergraduate course in all faculties of education (26 faculties).
- Implementation of **Intel: Teach to the Future** started fall 2007 in 12 faculties. Summer training of 7021 undergraduate students from all faculties of Education on MS Innovative Teacher Program
- TOT training on **Intel: Teach to the Future** in all faculties of Education
- Focused training of 120 Master trainers staff members in faculties of Education on

2.5.5.4 Exposing Students to Advanced ICT Tools (Khouly, 2010)

- Current training of 3,000 students on ICDL
- 220 undergraduate students were trained on advanced ICT tools. (Oracle)
- Trained 500 teaching assistances on advanced ICT tools (Oracle).

Currently all faculties of Engineering and Computer Science are joining 2 international academic initiatives offered by Oracle and IBM allowing them to get exposed to more than 1000 technical e-content as well as development tools, aiming an improvement in the software industrial sector at large and e-learning technologies in particular.

2.5.5.5 Enhancing ICT Infrastructure in Higher Education (Khouly, 2010)

- Inaugurating phase I of the Egyptian Universities Research Network (34Mbps to all universities and research institutes, connection to Internet II)
- Equipping the above network with a video conferencing system interconnecting all public universities + Alazhar University.
- Equipping the new Cultural Affairs and Scholarships premises with the necessary ICT infrastructure and video conferencing system interconnecting it with 10 remote Egyptian cultural bureaus abroad.
- Equipping 4 faculties of Engineering and computer science in 4 Universities (Cairo, Assuit, Alexandria and Mansoura) as well as the Information Technology institute (ITI) with Multi-core labs, offered by Intel.

2.5.5.6 Track Events (Khouly, 2010)

- Assuit and Ein-shams universities won 2 awards in the international e-learning competition offered by HP.
- EEI cooperation protocol between MCIT and MoHE signed.
- EEI cooperation protocol between 4 universities and Intel signed.

2.5.5.7 Egyptian E-learning University (EELU)

EELU (http://www.eelu.edu.eg/wps/portal) is a private non-profit University established with the Decree, No. 233, of the President of the Arab Republic of Egypt in the 16th August 2008 to provide distance education through 24-hour online learning with a vision to be a leading university providing e-learning nationally, regionally, and internationally. EELU gives educational opportunity to learners who cannot attend a campus university.

The scope of EELU is not only intended to cover Cairo but also can be extended to cover all the governorates in Egypt and some Arab countries and as a start point there are three learning centres located in Cairo, Delta (Tanta) and upper Egypt (Assuit).

Students can access courses' materials, lectures, and any piece of information through both the EELU Intranet and the Internet.

This type of learning permits collaboration between the students and the instructors and among the students themselves. In addition, students can learn remotely from different geographically distant locations. In this manner, EELU provides a virtual educational environment that reduces dependence on the concept of physical and geographical proximities between student and teacher and in the meantime provide maximum educational interactions, benefits and management. (Khouly, 2010)

2.5.5.8 Other Relevant Initiatives (Khouly, 2010)

Higher Education Enhancement Project Fund (HEEPF) and TEMPUS have funded more than 75 projects in the Egyptian universities to develop e-content in different fields (http://www.heepf.org.eg).

Although the worldly recognized e-learning was not clear for many of the faculty staff members participating in HEEPF projects, yet many projects developed electronic courses

that could be displayed on a screen using the PowerPoint (453 courses distributed on 64 projects) during the four cycles of HEEPF first phase. When calculating the number of courses that were subject to e-learning, they were 213 courses using one of the e-learning management systems (LMS), i.e. Moodle and A-Tutor. (Khouly, 2010)
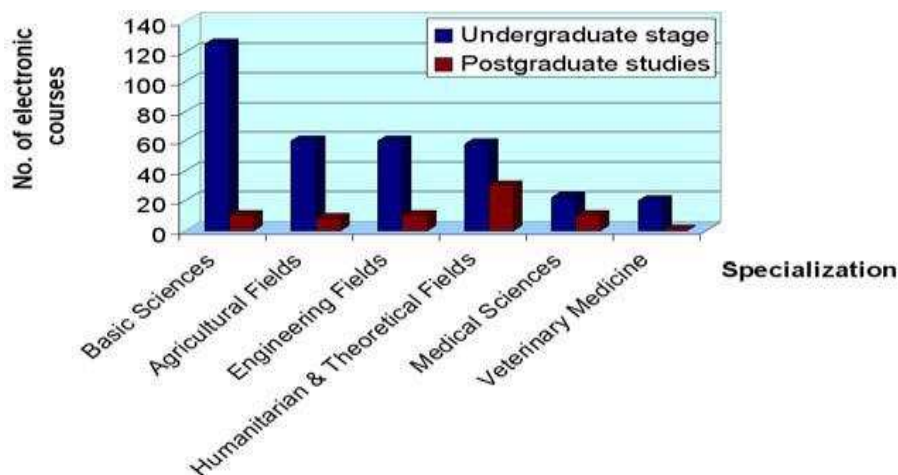
(Figure2-11) A graph of the number of electronic courses produced for the
Undergraduate and postgraduate stages
(Khouly, 2010)

The graph in Figure 8 (HEEPF, 2008), shows the number of electronic courses produced for the enhancement of the educational process in both the undergraduate and post-graduate stages according to the different theoretical and scientific specializations through HEEPF financed projects during the four cycles.

The share of different specializations and universities of electronic courses can be summed up as follows:

- Sciences: (147 courses of which 46 were subject to e-learning systems). Assuit University produced the largest number of courses in sciences. Compared to other universities, Helwan University excelled in the number of courses that were subject to e-learning systems.

- Engineering: about half the number of science courses (72 courses). Cairo Univ. comes at the top with regards to the number of courses that use e-learning systems.

- Information Technology: (7 courses)

- Medical sciences (Medicine, Pharmacy, and Dentistry): (30 courses implemented through 11 projects of which 26 use e-learning systems)

- Agriculture: (78 courses produced through 9 projects of which 23 used e-learning systems)

- Higher Institute for Public Health: (7 courses produced through one project)

- Veterinary Medicine: (23 courses produced through 7 projects)
- Education: (57 courses produced through 5 projects of which 46 use e-learning management systems) The Faculty of Girls had one project which developed 8 courses using e-learning systems.
- Arts: (24 courses produced through 2 projects)

2.6 Perspectives of E- learning Quality from 2004 to 2012

Many researchers have addressed E-learning quality from different perspectives, adopting different approaches. Going through the years from 2004 to 2012, here some interpretations of some researchers interested in quality of E-learning.

Bee Bee Chua and Laurel Evelyn, claims in there paper published 2004 with a title of "Applying the ISO 9126 model to the evaluation of an e- learning system" that there is no agreement on a standard framework for evaluating system quality. The ISO 9126 Quality model was proposed as a useful tool to evaluate it, mainly for teachers and educational administrators. The validity of the model was demonstrated in a case study where it was applied to an available E-learning system and demonstrates how it can be used to detect design flaws. It was proposed to be used as the basis for a comparison to appraise purchase decisions, and to be appropriate to other e-learning systems. Many flaws were discovered with the system. Some were critical to user satisfaction and some were minor. It was proven that the ISO 9126 model is useful in evaluating e-learning system. It was recommended to be improved by having a global characteristic to summarise the overall user satisfaction, and to extend the sub-characteristics included under usability, to include more specific appearance factors based on accepted Human Computer Interaction (HCI) usability principles.

In 2005, Fiona Concannon, Antoinette Flynn and Mark Campbell in a paper titled "What campus-based students think about the quality and benefits of e-learning" discuss that there is a trend in Irish universities to utilise the benefits of the e-learning as a mechanism to improve learning performance of campus-based students. It was claimed that whilst traditional methods, such as face-to-face lectures, tutorials, and mentoring, remain dominant in the educational sector, universities are investing heavily in learning technologies, to facilitate improvements with respect to the quality of learning. It reveals that the technology to support reuse and sharing of educational resources, or learning objects, is becoming more stable, with interoperability standards maturing. However,

debate has raged about what constitutes effective use of learning technology. It was expanded upon a study carried out in 2003 examining students' perceptions of e-learning in a large undergraduate accounting class environment. As a result, improvements were made to the instructional design of the course, to enable students to engage interactively with content. The subsequent study, adopted a broad range of techniques to understand students' learning experience in depth. An insight into how these students really work and learn using technologies was provided.

In 2007, Mahmoud Baklizi published a paper about Evaluation of E-learning websites in Jordan Universities based on ISO IEC 9126 standards. The aim of this paper was to evaluate E-Learning website of Jordan universities based on ISOIIEC 9126 standard which uses six main characteristics to evaluate software. It discusses each characteristic which includes its own sub- characteristics. It concludes to results showing that the average of quality in E-Leaning websites is 65.45 %. It claims that the results reflect the student's opinion about the website, and it might be used to improve the quality of E-Learning website for those universities.

In 2008, in a paper by Alistair Inglis, the ways in which a range of quality frameworks have been validated were compared, and a number of factors that have an effect on validation processes were identified. Seven examples of published quality frameworks related to the field of e-learning were described, and the methods used to validate each of it were identified and compared. As a conclusion, a range of factors that have the potential to effect on such validation processes were considered. Six methods of validation were found to have been used in relation to development of the seven frameworks that were examined: reviewing the research literature related to effectiveness in online learning; seeking input from an expert panel; undertaking empirical research; undertaking survey research; conducting pilot projects; and drawing on case studies. From the variety of approaches used and the ways in which they were used it was concluded that a recognised set of procedures for validation of quality frameworks has not yet emerged. Findings were dependent on the particular quality frameworks selected for inclusion. A need for more attention to be paid to the development of methods of validation that are both objective and robust was uphold. The importance of not falling into the trap of substituting intuition by developers of quality frameworks, and guesswork for evidence-based validation processes was asserted. It insists that if the validity of judgements about quality depends on the appropriateness of the make-up of the quality framework that is being used, then it is turn dependent on the adequacy of the procedure used to validate the framework. It declares

that the failure of contributors to the quality literature to recognise the importance of validation, points to what is potentially be a major weakness in the implementation of quality processes. It reveals that validation itself requires a set of agreed processes. Perhaps this initial attempt to focus attention on the importance of validation in relation to the development of quality frameworks will lead to discussion about the best methods to employ in validation. The methods of constructing quality frameworks were suggested to merit further refinement. It should not be expected that a standard procedure for the construction of such frameworks will emerge quickly. The validity of a particular approach to measuring quality needs to be subject to continual review was concluded. It requires contributors to research in the field need to be more conscious of the limitations of quality frameworks and the threats to the validity of judgements based on those frameworks that come from their design and validation.

Félix Buendía, Elena Ejarque Antonio Hervás in a paper titled "Quality-oriented Evaluation of E-learning-based Experiences" presented a method to evaluate e-learning based experiences. This evaluation method was based on a twofold approach that enables the specification of learning scenarios in which these experiences are developed and the selection of different workflows along the experience lifecycle. The proposed method allows the evaluator to generate mechanisms adapted to a specific evaluation case and systematically structured according to the quality assurance of e-learning-based experiences. Web applications have been developed to support the current evaluation method. Two examples of experiences based on higher education settings have been tested under the proposed method. The reported cases show the versatility of the evaluation method that is able to manage from "little" size experiences (e.g. lesson-level based on e-learning environments) to institutional e-learning projects (e.g. a blended-learning program). Further works plan to complete the current evaluation cases and to address new ones in order to validate the proposed method.

Ksenija Klasniü, Sanja Seljan and Hrvoje Stanþiü in a paper titled "Quality Parameters for the E-Learning Omega System" different views towards the quality of e-learning have been presented, and the research regarding the quality of the e- learning Omega system (Moodle) conducted at the Faculty of Humanities and Social Sciences, University of Zagreb presented in relation to different European policies. It was concluded that positive attitudes towards Omega, perceiving its qualities and the possibilities of positive changes by its use, are typical for those students who were, thanks to their information literate teachers and their own information literacy, given the opportunity for a better

familiarization with Omega. It is our opinion that the quality education, and specially education and educational engagements using Omega, are not possible without a quality educated and prepared teachers. If we re- view the situation in the context of a concept of technological pedagogical content knowledge, which implies that the modern quality teacher is the only one that understands and successfully uses these three knowledge components, we realize that the component referring to the technology and the use of technology in education is the key problem in the process of integration of Omega in the educational system on Zagreb's Faculty of Humanities and Social Sciences. It seems that teachers are still having "problems" with unavoidable characteristic of a quality teacher, which is reflected in students' attitudes and satisfaction. Still, the good news is that the situation, as it seems, is moving into the right direction because the students from the lower study years are more satisfied with Omega use.

In 2009, Jennifer Ireland, Helen Mary Correia, and Tim Mark Griffin in a paper titled Developing quality in e-learning: a framework in three parts", the features of a new e-learning quality framework developed for a large multi-campus university was introduced and described. The framework was explicitly designed to improve the quality of e-learning sites and the quality of online student learning, by developing the skills of the academics who design the sites. A range of existing models and literature on evaluative frameworks in e-learning and positions the new framework within that context was examined. It describes the features that distinguish the new framework from existing models and explains how these differences are tailored to develop the e-learning design skills of academic staff and to encourage greater engagement with e-learning quality initiatives across the university. Several features of the new framework that differ from other models were identified and the inclusion of these features were explained in terms of the support they provide for quality improvement at a university where academics are the main designers of e-learning sites. A contribution was made to the literature on quality initiatives in e-learning by introducing a new quality framework that differs in significant respects from other models, and may be useful to other universities where academics are the main designers of e-learning sites.

Dr. Sarmad Mohammad in his paper titled "Effectiveness of e-learning system" published in the international conference of computer engineering and technology, a framework has been introduced to be used to evaluate the quality, completeness of the monitoring and to measure effectiveness of e-learning web site which has three areas of focus: - infrastructure, applications, and business functions. Each area is different; they cover the

system aspects of the Web site. The infrastructure aspect focuses on the operating system, server and network hardware, and other devices such as fire wall. The application aspect pays a specific attention on the database, middle-ware, and the application itself. Business functions deals with the comprehensive management of a collection of applications. A plan to manage and address deficiencies of actual online site operation was suggested. A performance management policy was proposed, some security question have been answered and evaluated.

Jin li presents in the 1st. International Conference on Information Science and Engineering (ICISE2009) a paper about "Establishing Quality assurance Systems for E-learning". It discuss that the Integration of technology in all forms of education has narrowed down the gap between the on- and off-campus students and has resulted in the use of the more broad-based term 'distributed learning'. It claims that E-learning is seen as a subset of distributed learning, focusing on students who may be separated in time and space from their peers and the instructor. It praises that the new forms and meanings it is acquiring, its convergence with traditional learning and its global impact pose several challenges. It reveals that it has caused a serious concern to the governments and the quality assurance agencies all over the world about the safety of the national systems, legitimacy of the providers, protecting the public from fake providers, quality of the offerings. It declares that many quality assurance agencies have responded to this need and there is considerable dialogue about ensuring quality in e-learning. It highlights the quality assurance aspects of e-learning that deviate markedly from that of the traditional education, and suggests how to implement the quality assurance system for e-learning. It concludes that, as the developments indicate; e-learning has changed the nature of education and the quality assessment mechanisms. It poses challenges to the conventional ways of quality assurance. In particular, the e-learning provisions that cross national borders cause concern to the quality assurance agencies all over the world. The implication is that along with "how to assess" the new forms of e-learning, the quality assurance agencies have to reflect on "how to coordinate the quality assurance activities" at the international level. It recommends that the philosophy, principles and standards routinely applied to evaluate or accredit traditional units should be adjusted and modified to assess the quality and effectiveness of e-learning. It suggests a solution by pooling the knowledge and resources together to identify better ways of assessing e-learning, without losing sight of its distinct characteristics.

Paul Ginns and Rob A. Ellis in a paper titled "Evaluating the Quality of E-learning at the degree level in the student experience of blended learning" reports the development of a

scale for determining the quality of the student e-learning experience at the degree level when the student learning context is a campus-based experience. They claim that rapid developments in the use of information and communication technologies (ICT) in higher education require methods for evaluating the contribution of such tools to student learning, especially when they are complementing a face-to-face experience. The psychometric functioning of a proposed e-learning scale was examined in relation to a well-validated degree-level teaching evaluation instrument, the Student Course Experience Questionnaire. They clarify that the e-learning scale has suitable reliability and validity while used on a sample of undergraduate students for quality assurance activities around ICT. They discussed the development of an emerging construction to help measure the quality of e-learning at the university degree level, where online activities are used to complement face-to-face experiences.

In 2010, a paper by Fausi Mohd Saman and Wan abdul Rahim Wan Mohd Isa titled Assessment of Motivational Qualities for E-Learning Website, aims to investigate the motivational quality of e-learning from one public university in Malaysia. 109 samples of undergraduate computing students from various programs from a computer science school were used. Website Motivational Checklist (WebMAC) professional to assess the motivational quality of e-learning website was adopted. The evaluation was done on four dimensions; (1) stimulating (2) meaningful, (3) organization and (4) easy-to-use. Several issues with the e-learning website under investigation were revealed. Further improvements of the e-learning features were recommended. It was claimed that in spite attention given to efficiency, the aspect of ease of learning has been neglected. It was asserted that developing online learning systems, motivation and engagement are of greatest important. While E-learning was combined in many university programs in Malaysia, there is still little research to investigate the motivational quality of the e-learning applications. A lack of awareness among web developer of designer to include motivational elements in e-learning applications for public and private university in Malaysia was revealed. A need for more future work to be conducted in this line of study was asserted.

Da Shi in a paper titled "The measurement of the CSI of e-learning Courseware" argues that, in the past few years, with the information technology development and the application of streaming media technology, teaching forms break the restriction of time and space. Internet plays an important role in e-learning. The e-learning courseware will influence the quality of study, even in the future development of distance education.

Therefore, the way to measure the quality of e- learning courseware becomes increasingly important. Based on the theory of customer relationship management, the customer satisfaction of the e-learning courseware was analysed in a qualitative way.

In 2011 Martina Friesenbichler Karl-Franzens In her paper titled "E-learning as an enabler for quality in higher education published in the 14th International Conference on interactive Collaborative Learning, claims that e-Learning offers many opportunities to fulfil universities´ general quality principles for learning and teaching as pointed out in their strategy papers. But to strengthen the role of e-learning as "enabler" for quality in higher education it must be guaranteed that e-learning itself fulfils certain quality requirements.

Galamoyo Male, Colin Pattinson in a research paper about "Enhancing the quality of e-learning through mobile technology: A socio-cultural and technology perspective towards quality e-learning applications", presents part of the work of an on-going research project that is looking at socio- cultural and technological developments from a mobile technology convergence view; in order to show how culturally aware convergence developments in mobile technology can be adopted and employed for the betterment of society. A scenario for a mobile technology was presented to enable learning environment in support of the conventional learning approach with a focus on enabling parental involvement and contribution to the daily learning objectives of their children and hence enhancing a quality learning experience. It further critically discusses issues of interface design – at both the device and application levels – that will have an impact on the quality of e-learning, with a focus on mobile technology. The way interface design can positively enhance the quality defining characteristics of learning in an e-learning environment was shown. Ways of achieving these characteristics of learning through effective e-learning were reported. This is done by addressing requirements for quality-learning through effective interface-design considerations, towards meeting the overall quality requirements of learning that should be intrinsic to a holistic e-learning environment. The value of human computer interaction and the critical factors of promoting productive interaction were addressed. It was claimed that there are several factors affecting quality of e-learning as a tool and approach to flexible and independent learning. The advent and use of mobile technology has been investigated from a socio-cultural and technological perspective in two continents. It was declared that limitations lie in the depth of investigations and how far the findings can be applied to the diversity of learners. As the effects of cultures and the rapid technological advancements take toll on teaching and learning the findings reported in this paper have far reaching implications for learners from different cultures and also for attempts at bridging existing

digital divide. Originality/value – The approach adopted in the research is unique by virtue of new findings and ideas presented. The opportunities for mobile devices and technology was highlighted to play a role in the development of communities through technology aided learning (e-learning), with a focus on e-learning systems and technology requirements for delivering a quality learning experience. It concludes that E-learning systems are designed with a primary objective of assisting learners towards achieving identified learning objectives. It explains that objectives born of a desire to learn resulting from the learner's need to achieve in a particular subject area and driven by a human need to achieve or attain a particular goal in society. It urges that it is fundamental that e-learning systems are designed to assist learners or users achieve their societal aspirations. It asserts that an e-learning design-focus should be to present to the learner and other learning support entities an e-learning solution that enhances the chances of the leaner meeting the demands and expectations of and from their learning program. It recommends that the system must be developed from a learner-centred approach, providing mechanisms for automatic or manual adaptation in order for the system to meet the needs of different learners as much as possible. It guaranteed that this can be achieved to some extent by providing as much customisable features as possible. In designing flexible systems, accessibility and usability features play an important role towards system acceptance, use and value. It asserts that the internal learning environment of an e-learning system should be inclusive and learner-centred in its design, taking into consideration both the technical (hardware and software) and non-technical (social, cultural, human) system dimensions. It urges that a learner centred e-learning system should be designed to meet the learner's requirements in the way the learner accesses and interacts with the system, as well as in the learning or teaching approaches presented to the learner by the learning system. It asserts that the effectiveness of the adopted learning style will not only depend on how it is realised at interface level, but will also depend on its appropriateness to the learner. It recommends that it is important that at the various components of an e-learning system, the design should maintain an awareness of among others, the learner's profile. It explores that accepting that e-learning systems are likely to be used by learners who potentially will have different learning profiles, the system hence needs to be designed with the capability of building learner profiles as one of the primary requirements before the actual learning process begins.it argues that a continuous awareness of the variables that have some influence on the learner's profile is thus an important aspect of developing adaptable learner centred e-learning systems. This can be challenging. It reveals that extending these systems with a model for self-adaptive system capability is even more challenging in its

requirement for an involvement of intelligent cognitive models. Of the different components of an e-learning system, closest to the learner is the e-learning application interface and the e-learning device. It is through these that the learner begins to develop a view of e-learning as an effective or otherwise, approach to learning. It explains that even though the effective performance of an e-learning solution depends on all its components, the interface is the user's view to the system and hence the importance of interface designs. It highlighted and emphasised on some fundamental aspects of the socio-cultural view to the development and use of e-learning systems and e-learning support systems, the challenges in developing fully particularly in the extensive formal learning environment. It claims that the aim of further work in this area is to focus on the development of the socio-cultural reference model.

Qing Yang1, Yuan yuan1, Junli Sun1, KaiMin Cai1 in a paper titled Semantic "P2P-based Learning Resources Personalized Recommendation System Design", discusses that as the system size expansion, P2P-based E- Learning system where study participants cannot effectively found the learning resources, cannot reflect the dynamic learning characteristic of the participants, and individualized. Learning resources personalized recommendation system based on semantic P2P technology to improve the teaching quality of E-Learning System was proposed relying on the analysis of semantic web and ontology modelling. Computer science learning resources personalized model "SPLRRS" was designed. While ontology modelling was considered, the learning preferences, good solution for the problem, the system scale, and the learner's, personalized service issues. It was proposed to have The next study step to establish the corresponding experimental system, which will be built on the platform JXTA developed by Sun, to build P2P application, in order to offer better computer learning resource personalizing recommendations in E -Learning environment.

Wan-Tzu Wong and Neng-Tang Norman Huang in a paper titled "The Effects of E-Learning System Service Quality and Users' Acceptance on Organizational Learning" examine the relationships among "acceptance and use of e-learning technology" , "e-learning system service quality", and "organizational learning" from the end-users" perspective. The significant direct effect of "e-learning system service quality" on "acceptance and use of e-learning technology", and "acceptance and use of e-learning technology" on "organizational learning", indicate that the quality of technology service, together with e-learning satisfaction, will affect the results of organizational learning.

Majdi Abdellatief, Abu Bakar Md Sultan, Marzanah A. Jabar and Rusli Abdullah in a paper titled "A Technique for Quality Evaluation of E-Learning from Developers Perspective" state that E-learning is gaining more acceptance as days pass because it provides learning opportunity any time and in any place. Different people have different preferences in terms of learning style such as reading text, listing audio or video, speaking and communication. To support these different learning preferences, there is need for multiple e-learning delivery methods and teaching techniques. Furthermore, there are many stakeholders of e-learning systems such as system developers, administrators, instructors, instructional designers, multimedia designers, online facilitators, independent evaluators. Whose views are important indicators for a complete e-learning system evaluation, but the most important views of e-learning quality are user view, developer's view and manger's view. A new technique to evaluate e-learning website quality from developer's view was proposed. An extensive study on related resources was conducted. The weights of quality characteristics which are obtained by carefully selected questionnaires' from professional developers were adopted. The evaluation process using AHP technique and the result of trial evaluation for validation of our technique Result was presented by proposing four quality characteristics named Service Content, System Functionality, Information Technology and System Reliability. 11 sub- characteristics with its attributes by following the structure of standard ISO/IEC 9126 were proposed. It was concluded that the proposed technique could be useful and effective for ensuring that high quality systems are developed. (Majdi Abdellatief, Abu Bakar Md Sultan, Marzanah A. Jabar , 2011)

In 2012 C. Bremer published his paper about "Enhancing e-learning quality through the application of the AKUE procedure model". The procedure model AKUE was described. It aims at the improvement and assurance of quality and cost efficiency in the context of the introduction of e-learning and the development of digital learning material. It was explained that AKUE divides the whole planning and implementation process into four different phases: analysis, conception, implementation, and evaluation. It was asserted that AKUE analyses at which level of the organization or curriculum decisions have to be made. Accordingly, it differentiates various types of projects for which different planning methods and quality criteria are applied. For each step, specific worksheets and procedures are applied in order to support planning and decision making. It was concluded that through the definition of outcomes and feed- back loops at each step, quality standards and cost efficiency can be achieved.

D. Masoumi & B. Lindstrom in a paper about Quality of e-learning: a framework for promoting and assuring quality in virtual institutions claim that With the growing demand for e-learning along with striving for excellence associated with globalization, there are worldwide calls for enhancing and assuring quality in e-learning, specifically in the context of the developing countries. They assert that such calls for quality enhancement, accountability, added value for money, self-evaluation, and role players' satisfaction in higher education settings. They addressed (D.Masoumi & Lindstrom, 2012) the concerns regarding enhancing and assuring quality in e-learning, a comprehensive e-quality frame work is developed by taking into account the pros and cons of the previous models, frameworks, and studies of e-quality. They present e-quality framework offers a structured set of factors and benchmarks as a tool for practical quality work with e-learning in virtual institutions.

2.7 E-learning Benchmark And Quality function deployment role

To achieve high quality for e-learning service, we should maintain continuous improvement to achieve customer satisfaction. We should have scientific approaches to evaluate the service, in order to plan for next level of improvement. Benchmark is a way to evaluate the e-learning service. But the priority comes to the design of method provided by Quality Function Deployment to achieve customer's needs. The paper is based on illustration of previous studies, in order to find relations between the role of benchmarking in evaluation of E- learning and Virtual Education, and the role of quality function deployment in planning and designing the route to continuous improvement; to maintain high quality of service.

2.7.1 Benchmarking E- learning and Chinese standard system

Sarojni Choy from Queensland University of Technology argues in his study published in 2007, that E-learning has impact in the vocational Educational training (VET) sector. This impact was specified through the development of a suite of quantitative and qualitative indicators come from Australian flexible framework. These indicators were used to design a survey to gather quantitative data for benchmarking. Choy illustrates in his study the ways of approach of VET providers towards e-learning benchmarking, the benefit achieved and lesson learned. He exemplified how base line indicators were adopted by the VET providers to inform organisational plans for e-learning outcomes. Benchmarking of e-learning was categorised under three purposes: - Reporting, Performance management, and

service improvement. Those three purposes were the scale of E- learning quality from Saionji Choy point of view.

In february2009 a criteria to evaluate a virtual learning environment was illustrated by M.Sannia,G. Ercoli and T.Leo in a paper about "Evaluation of a virtual Learning Environment for the Professional Training in Public Administration" , claims that in order to evaluate the quality of the learning system, they have considered the quality of the communication system, the quality of the support services and the didactic staff, the quality of the administrative services, and the quality of the learning objects. M.Sannia, G. Ercoli and T.Leo assert that the achievement of a virtual learning environment (VLE) depends on the easy access to the information, staff expressly trained, effective administrative service, and didactical material prepared.

This was maintained by the Application of E-learning Standardization Technology By: Li Zheng, LeiXu and Yu Shan Li - Tsingua University – China - Published in October 2009. Where the authors claimed that, the Chinese Standards system is relative with the development over the past few years. They explained that the research work of standards is divided into five categories: *"fundamental guidance* – learning resources – learners – learning environment – and education ma*nagement"*. They announced that some of these five categories were adopted from IMS or IEEE. And, that Part of the unification of platforms and resources problem was solved through these five categories. They guaranteed that "Architecture and Reference" standard provides the platform framework of E- learning. They articulated the different standards Models such as "Learning Object Metadata (LOM) – Content Packaging (CP) – *and learner Model",* and they explained the role of each standard.

The authors explained the standard- setting, and argued that it is only a part of the standardisation work, and that the more important is the promotion of these standards. They claimed that the open standardized learning platform is the base of standards applications. And, that the learning system structure design is based on "System Architecture" standard with "Learning system architecture and service interface" standard. The author argues the "system Architecture" standard which is based on LSTA of IEEE. And, demonstrates how it provides high level system structure of e-learning through the following.
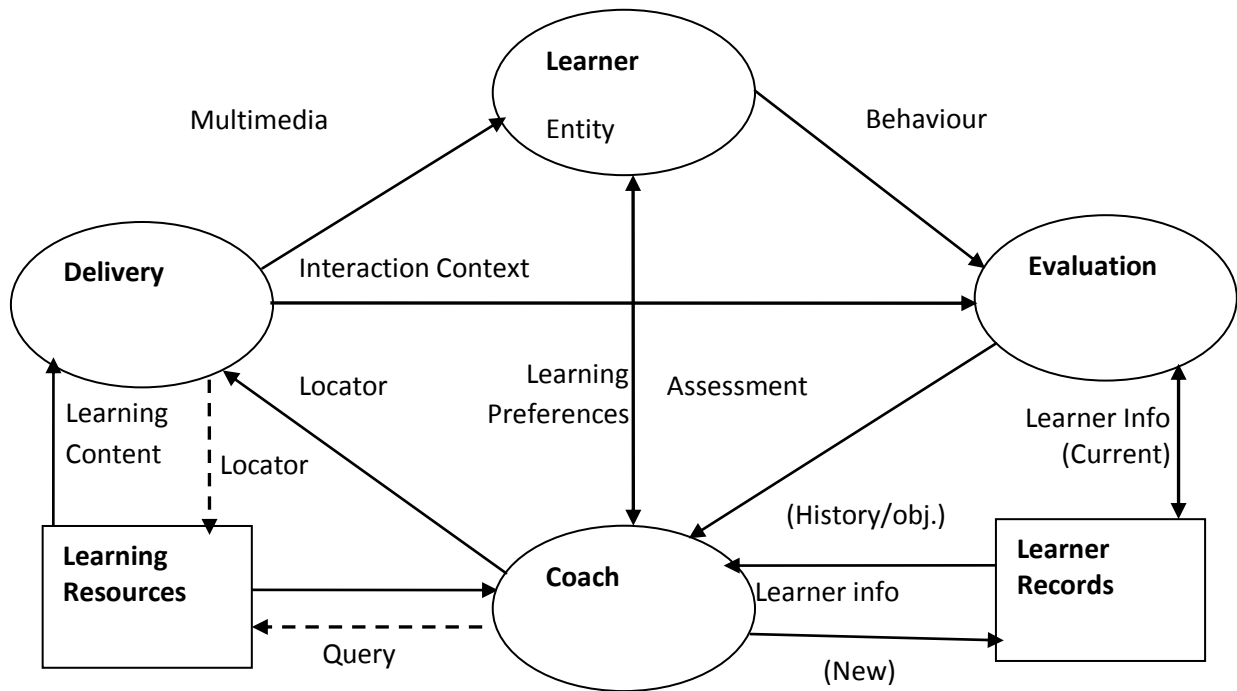
(Figure2-12) Learning Technology Systems Architecture from IEEE

(Li Zhemg, Lei Xu and Yushan Li, 2009)

It explains three categories:-

(Processes): learner Entity, Evaluation, coach, Delivery

(Stores): Learner Records, Learning Resources

(Flows): Learning Parameters, Behaviour, Interaction context, Learner information, assessment query, Catalogue information, Locator, Learning content, Multimedia.

The author claims that this architecture model is education, content, culture, and platform irrelevant. And, it was adopted as concept model of learning system. An abstract framework and core interface were designed based on this concept model.

The authors explained the digital education learning platform system layered architecture. They started with the Base facilities considered as the infrastructure layer, which includes a variety of hardware and software. Then they went to the Basics Services layer, which they claimed as integrated service, could be used as educational service, rather than digital educational platform. They argued the next layer, which is the education service layer, insisting that it provides a core education application, with integrated services, necessary for digital educational platforms. The authors ends the framework by the education application layer, which they revealed as the core of many applications used in proper

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education service, and presented to user; such as Learning content Management and evaluation systems.

2.7.2 Quality function deployment role

It is very important to have standards to maintain the quality of e-learning service. But, the aim of quality is always to achieve customer satisfaction. Here, reveal the importance of Quality Function Deployment (QFD), to ensure that the voice of customer derives all actions concerned with quality. It can help keep high standards of benchmarking. "Quality *Function Deployment (QFD) is a method to transform user's needs into technical targets* and task control regulation of product development in different phases reasonably and *effectively so as to products designed and produced really satisfy users' needs".* (Chang Jigling, Song Tong , Li Chuncan, Song Tao, 2009). Building a house of Quality with a base of Technical competition ability, walls of What's matrix(Users requests, Relationship between users requests and Technical requirements, and evaluation), ceiling of Technical requirements, and a roof of How's Matrix; accomplish the process of quality function deployment in revealing a plan for continuous improvement.
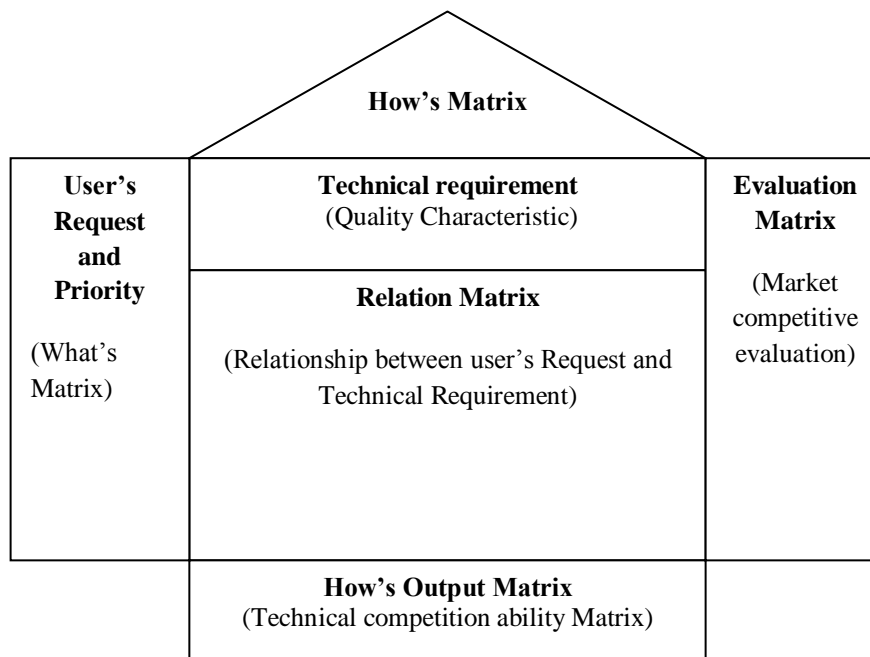
(Figure 2-13) House of Quality

(Chang Jigling, Song Tong , Li Chuncan, Song Tao, 2009)

This was reasoned by Giovanna Avellis (Technopolis Csata, Italy), in her article about "Enhancing Quality of Learning Contents with Quality Function Deployment. She aimed to develop a scheme to enhance the quality of learning contents by applying the product

marketing and manufacturing concept of Quality Function deployment QFD) improved by the approach used in decision support systems, to assure that quality requirements, especially the Non Functional Requirements (NFR), are traced in the learning contents.

Avellis insists to address the main issues of Evaluation of Learning Resources, and to manage the traceability of quality requirements to architectures. She claimed that Quality of learning resources is attracting more and more attention in e-Learning for two reasons:-

1- On the technical side; it is usually not clear to those involved in the development, how to measure the various quality criteria on a day-to-day basis (i.e. formative analysis), nor how to achieve them and measure them on completion (summative analysis).

2- On the customer's side; the issue does simply not know what to ask for.

To this end, a distinction has been made between basic quality factors; such as functionality, reliability, ease of use, economy, safety, and extra quality factors; such as flexibility, repair ability, adaptability, understand ability, documentation and enhance ability. She asserts that quality factors related to the external, or observable, quality of a learning resource are the most important , and particularly in the world of e-learning; where technical strategies are emerging in parallel with educational and pedagogical strategies. And, that they are also important in the framework of mobile learning, where the constraints of mobile devices and the supported software are very important for delivering effective contents, in addition to mobile quality factors identified so far such as accessibility, navigation, presentation and system user operation.

Avellis developed a scheme to manage and evaluate quality of learning contents, based on the work done on Quality Function Deployment (QFD) [Mizuno, Akao 1978] and in the area of design rationale [Lee, 1991].
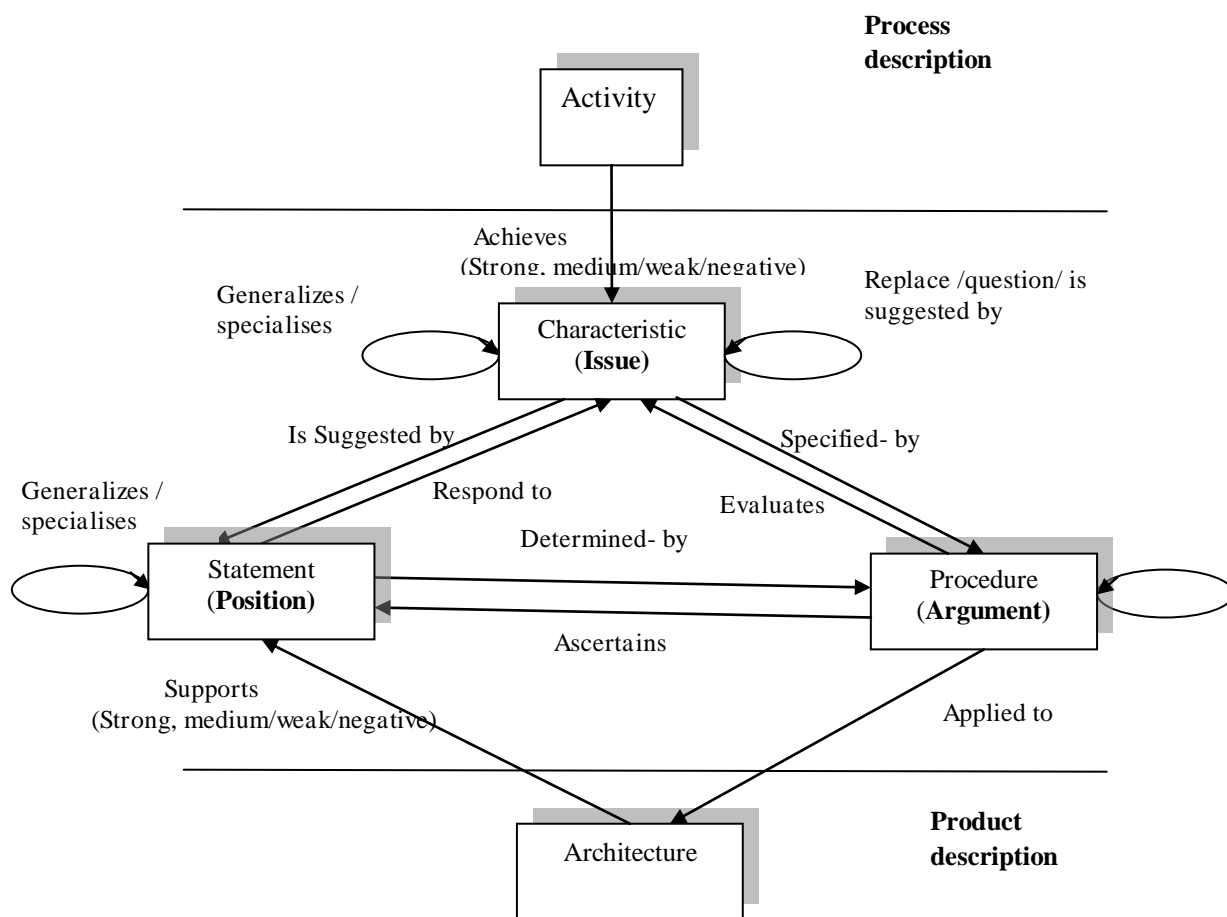
(Figure 2-14) Non-functional Requirements Representation scheme to Architecture

(Avellis, n.d.)

She considered the "issue-position-arguments" model [Conklin, Begeman 1988]. In her scheme, she defined an "issue", as a problem to solve, Representing quality characteristics/sub characteristics to evaluate. She defined an "argument", as a supporting justification of the issue, representing procedure which helps to determine which design alternative to choose to implement in the related quality requirement or NFR. Finally, she defined a "position" as a solution to the problem, representing either a statement of the NFR, which gives a quality goal to be supported by the final design, or design alternatives. And, she claims a statement is an ascertainable property (possibly measurable, characterising NFRs).

Avellis warns that the motivation for software architecture is to have a basis for understanding and standardising systems and their components. Software has yet to achieve the level of reclaim realised by hardware disciplines. Although software is easy to reproduce, its variations are much more difficult to standardise, identify and control. Also, she infers that great improvements have been made by focusing on well-defined areas of

knowledge or activity domains [Arango, Prieto-Diaz 1991]. Architectures provide a means for structuring knowledge of the system within a domain, including their requirements. The possibilities for reuse are greatest when the specifications are the least constrained at the architectural level. She insists that reuse is normally considered only at the implementation phase. This practice limits reuse to fine-grained modules at best, and fails to allow for broader use of assets at a subsystem or higher level, by neglecting to plan at the early stages of development.

2.7.3 Between learning system technology architecture and quality function deployment.

In order to praise the Idea of the interaction between researchers approaches, the relationship between learning system technology architecture and quality function deployment, is claimed in the following figure, where we merged the two approaches in a house of quality.
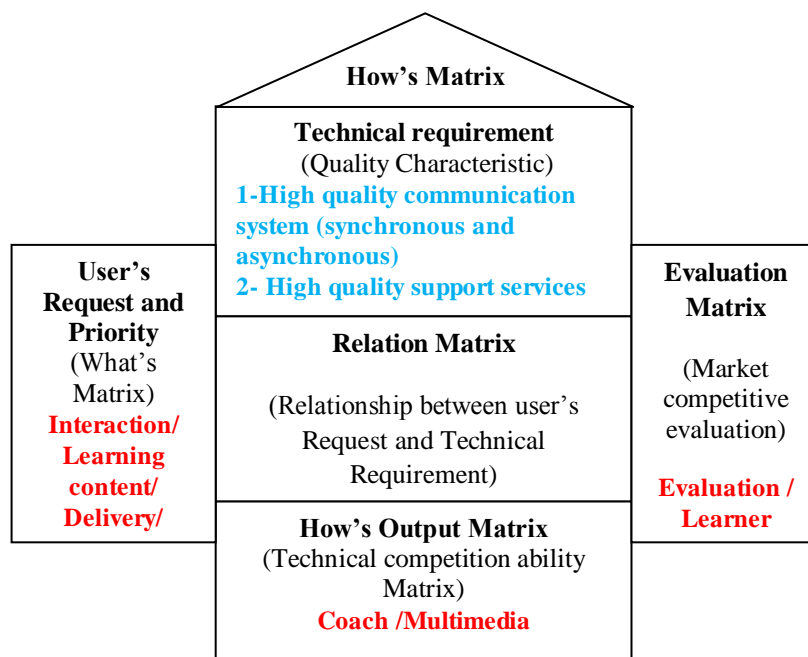
(Figure 2-15) merge between Learning system technology architecture and QFD

In the figure above, the learning system technology architecture characteristics were illustrated in the house of Quality, in order to have a merge between the two approaches to achieve high quality, and continuous improvement for E-learning service. Characteristics of Learning System Technology architecture were classified in groups according to sections in the house of quality. Interaction, Learning content, Delivery, and learning

preference were classified in "What's matrix". Coach and Multimedia were classified in "How's output Matrix", while Query, Learner information, and assessment were classified in "Relation Matrix". And, Evaluation/Learner records and behaviour were classified as "Evaluation matrix". In order to process what's, how's, relation, and evaluation matrix; Technical requirements, which represent the quality characteristics, should be specified. Four Characteristics were considered to be the tolls of processing the above mentioned four matrixes:-

1-High quality communication system (synchronous and asynchronous)

2- High quality support services and didactic staff

3- High quality administrative service

4- High quality of learning object.

The how's Matrix presenting the roof of the house of quality will differ from organization to another, according to the strategies of the top management.

Authors in Italy and China strongly believe that System Architecture standard provides the platform frame work of e-learning. Therefore, planning for providing e-learning service is important to produce it in a high quality. Quality function deployment, as a tool of planning and designing, is judged to be an important tool to achieve continuous improvement. While E-learning benchmark is based on quality of service and its continuous improvement, Quality Function Deployment offers the best way to gain the competition of benchmarking.

2.8 Summary

- All studies related to the field of E-learning quality focus on the importance of evaluation of the provided service. Each study presented different way of evaluation. All studies advocate the necessity of evaluation to achieve improvements.

- Introducing E-learning in High education require new methods of course design, teaching, and evaluating students. It will also, expand the variety of cultures, and eliminate borders between people all over the world. Thus, it will bring a wide change in learning process which can affect the society's culture.

- Theories and models in the field of Total Quality Management start from the same base of principles and end to same results (the importance of teamwork and continuous improvement…etc.) but in different approaches.

- Quality Function Deployment offers the best way to gain the competition of benchmarking.

Chapter Three

Research methodology

3.1   Introduction

Research methodology is a way to systematically solve the research problem. It may be understood as a science of studying how research is done scientifically. In it we study the various steps adopted in studying the research problem along with the logic behind them. It is necessary to know not only the research methods/techniques but also the methodology.

Bryman (2004: 453) identifies a paradigm as a cluster of believers and dictates which, for scientists in a particular discipline influence what should be studied, how research should be done [and] how results should be interpreted. Paradigms are opposing worldviews or belief systems that are a reflection of and guide the decisions that researchers make (Argimate, 2007)

This chapter discuss the main layers of this research which consist of:-

1- Philosophies

2- Approaches

3- Strategies

4- Choices

5- Time horizons

6- Techniques and procedures

Then we come out to the chosen approach and alternative research strategies

3.2   Philosophies

Research Philosophy describes a "theory" of research in a particular field and explains the assumptions that underline the research approach. (Blackmon, 2005)

When undertaking research of this nature, it is important to consider different research paradigms and matters of ontology and epistemology. Since these parameters describe perceptions, beliefs, assumptions and the nature of reality and truth (knowledge of that reality), they can influence the way in which the research is undertaken, from design through to conclusions, and it is therefore important to understand and discuss these aspects in order that approaches congruent to the nature and aims of the particular inquiry are adopted, and to ensure that researcher biases are understood, exposed, and minimised.

Whilst James and Vinnicombe (2002) caution that we all have inherent preferences that are likely to shape our research designs, Blaikie (2000) describes these aspects as part of a series of choices that the researcher must consider and he shows the alignment that must connect these choices back to the original Research Problem. If this is not achieved, methods incompatible with the researcher's stance may be adopted, with the result that the final work will be undermined through lack of coherence.

Blaikie (1993) argues that these aspects are highly relevant to Social Science since the humanistic element introduces a component of 'free will' that adds a complexity beyond that seen in the natural sciences and others, such as Hatch and Cunliffe (2006) draw attention to the fact that different paradigms 'encourage researchers to study phenomena in different ways', going on to describe a number of organisational phenomena from three different perspectives, thus highlighting how different kinds of knowledge may be derived through observing the same phenomena from different philosophical perspectives. As well as stimulating debate, Denzin and Lincoln (2003) and Kvale (1996) highlight how these different positions can result in much tension amongst academics. (Flowers, 2009)

a) Positivism

Positivism means "scientific" and positivist methodologies argue it's possible and desirable to study social behaviour in ways similar to those used by natural scientists to study behaviour in natural world. (Chris.livesey, 2006)

It is derived from the philosophy of science: A view of scientific methods and a philosophical approach, theory, or system based on the view that, in the social as well as natural sciences, sensory experiences and their logical and mathematical treatment are together the exclusive source of all worthwhile information (john j. macioni, 2007) positivism Introspective and intuitional attempts to gain knowledge are rejected. It is any system that confines itself to the data of experience and excludes a priori or metaphysical speculations. Though the positivist approach has been a recurrent theme in the history of western thought from the Ancient (Egyptians) to the present day, the concept was developed in the early 19th century by the philosopher and founding sociologist, Auguste Comte to be concerned with positive facts and phenomena, and excluding speculation upon ultimate causes or origins (collins w. , 2009)

a) Realism

The question of the nature and plausibility of realism arises with respect to a large number of subject matters, including ethics, aesthetics, causation, modality, science, mathematics, semantics, and the everyday world of macroscopic material objects and their properties. Although it would be possible to accept (or reject) realism across the board, it is more common for philosophers to be selectively realist or non-realist about various topics: thus it would be perfectly possible to be a realist about the everyday world of macroscopic objects and their properties, but a non-realist about aesthetic and moral value. In addition, it is misleading to think that there is a straightforward and clear-cut choice between being a realist and a non-realist about a particular subject matter. It is rather the case that one can be more-or-less realist about a particular subject matter. Also, there are many different forms that realism and non-realism can take (Miller, 2010)

The doctrine that universals have a real objective   existence,   and that objects of sense Perception has an existence independent of the act of perception. (collins, 2009)

Realism,   or Realist or Realistic are   terms   that   describe   any   manifestation   of   this philosophical realism, the belief that reality exists independently of observers, whether in philosophy itself or in the applied arts and sciences. In this broad sense it is frequently contrasted   with Idealism. (encyclopedia w. t., 2011)

Realism is any philosophical theory that emphasises the existence of some kind of things or objects, in contrast to theories that dispense with things in question in favour words, ideas, or logical constructions. In particular, the term stands for the theory that there is a reality quite independent of the mind. In this sense, realism is opposed to idealism, the theory that only minds and their content exist. (encyclopedia E. C., 2012)

b) Interpretivism

It refers to approaches emphasizing the meaningful nature of people's participation in social and cultural life. The methods of natural science are seen as inappropriate for such investigation. Researchers working within this tradition analyse the meanings people confer upon their own and others' actions (encyclopedia E. o., 2007) Interpretivist methodology leans towards the collection of qualitative data and uses methods such as unstructured interviews and participant observation that provide this type of data. (Chris.livesey, 2006)

Interpretive methods of research and analysis play a role in educational research in two different senses. In one sense, they are used in many disciplines and fields as primary

means to create a narrative, to making meaning, or to making cultural or policy critiques. For example, in humanistic studies of education, such as philosophy of education and history of education, the interpretation of texts, events, human actions, narratives, and concepts forms the basis of inquiry. In these or other cases, the analysis of language can play a central role. In legal analysis in education, for example, the use of interpretive methods involves the analysis of case law, legislation, and administrative policy. In cultural studies or discourse analysis in education, the interpretation of culture, practices and artefacts, or language itself plays a central role in studying social patterns of inclusion, exclusion, and the dynamics of power. In some varieties of curriculum theory, the interpretation of textbooks and other materials plays a key role in explaining how society reflects judgments about knowledge and value in their curricular choices. In the history of education, the interpretive research specialization yields valuable insights regarding mastery of historical research methods (e.g., oral history, review of original source documents), but also in terms of knowledge about the major interpretive debates in the field that have shaped the scholarship and focus of historical research in education.

In the second sense, interpretive methods play a part in the application of any modes of research, whether quantitative, qualitative, or evaluative. Researchers often speak of "interpreting" the data, or "interpreting the results of statistical analyses." In this more generic sense interpretive methods are not the primary research specialization: they are the one analytical skill along with many in a wider mode of inquiry. This specialization pertains to the first sense of interpretive methods, not to the second, more generic, sense.

The Interpretive Research Specialization

1. Provide a foundation for student to be able to understand general methodological issues and problems in educational research;

2. includes basic course work in conceptual analysis, documentary and other kinds of discursive analysis, and epistemological analysis;

3. emphasizes coursework that connects method to disciplinary study;

4. Help students develop critical and interpretive tools to be used to analyse both the limitations of educational research itself and substantive problems in the field of educational policy and practice;

5. prepare students to interpret and analyse a variety texts and other cultural artefacts, including but not limited to documents, curricula, discursive products, film, theory, policy, and law; and,

6. Provides students develop skills that they will use as independent researchers using interpretive methods alone or in conjunction with other research skills. (Illinois, 2006)

c) Objectivism

One of several doctrines holding that all reality is objective and external to the mind and that knowledge is reliably based on observed objects and events. (Rand, 2012) Objectivism is a philosophy created by the Russian-American philosopher and novelist Ayn Rand (1905–1982). Objectivism's central tenets are that reality exists independent of consciousness, that human beings have direct contact with reality through sense perception, that one can attain objective knowledge from perception through the process of concept formation and inductive logic, that the proper moral purpose of one's life is the pursuit of one's own happiness (or rational self-interest), that the only social system consistent with this morality is full respect for individual rights embodied in laissez faire capitalism, and that the role of art in human life is to transform humans' metaphysical ideas by selective reproduction of reality into a physical form—a work of art—that one can comprehend and to which he can respond emotionally.

Rand characterized Objectivism as "a philosophy for living on earth," grounded in reality, and aimed at defining man's nature and the nature of the world in which he lives.

"My philosophy, in essence, is the concept of man as a heroic being,

With his own happiness, as the moral purpose of his life, with productive achievement, as *his noblest activity, and reason as his only absolute".*

By: Ayn Rand, Atlas Shrugged

The name "Objectivism" derives from the idea that human knowledge and values are objective: they exist and are determined by the nature of reality, to be discovered by one's mind, and are not created by the thoughts one has.[3] Rand stated that she chose the name because her preferred term for a philosophy based on the primacy of existence— "existentialism"—had already been taken.

Objectivism holds that the information provided to the mind by the senses is completely valid. It holds further that information is the foundation of all other knowledge.

Objectivism asserts that man can form concepts, and that concepts are objective. It rejects the idea that concepts are the product of arbitrary decision by society, and the idea that concepts are created by a supreme being.

Objectivism asserts that logic is man's means of concept formation/knowledge, and that truths are absolutes. Emotions and intuitions are not means of knowledge: that you feel strongly that 2+2=5 doesn't matter. It also follows that Objectivism

rejects scepticism (i.e., such ideas as that truth is inside your head; that there are no absolutes; that truths are all subjective) and mysticism (i.e., the idea, for example, that knowledge will be given to you by a supreme being without you having to reason). (McKeever, 2006)

d) Subjectivism

It is derived from the philosophy of social Science: The quality of being subjective, the doctrine that all knowledge is restricted to the conscious self and its sensory states; it is a theory or doctrine that emphasizes the subjective elements in experience. It means that at any of various theories, the only valid standard of judgment is that of the individual. For example, ethical subjectivism holds that individual conscience is the only appropriate standard for moral judgment (Heritage T. A., 2009)

Subjectivism is a certain way of conceptualizing subjectivity. Subjectivity is what makes us subjects rather than objects. Subjectivity includes processes denoted by the terms mental, mind, conscious, experience, agency, will, intentionality, thinking, feeling, remembering, interpreting, understanding, learning, and psyche. These subjective processes comprise the activity of subjects. Without subjectivity, we would only be physical objects devoid of activity (Ratner, http://www.sonic.net/~cr2/subjectivism.htm, 2008)

Subjectivism dominates qualitative methodology. It construes interactions between researcher and subjects (through interviews in particular) and the active interpretation of data - which are central features of qualitative research - as a license for the free exercise of subjective processes. The subject is free to express whatever subjective idea he or she desires, and the researcher is free to subjectively interpret data.

The subjectivistic tendency in qualitative research (which is contradicted by an objectivistic tendency that is described in the entry on objectivism) claims that the world, including the psychological world of subjects, is unknowable. Consequently, the researcher constructs an impression of the world as he or she sees it, without regard for whether this subjective impression corresponds to any reality beyond. The researcher's subjectivity is a world unto itself, which is the classic definition of subjectivism. Validity and objectivity are irrelevant issues here, as is methodology. There is no point developing a rigorous methodology to apprehend and measure psychological reality because it simply does not exist. Qualitative research, in this view, consists in researchers developing and comparing their own accounts of psychology. This subjectivist approach to qualitative research is expressed by Ken Gergen's statement of social constructionism/postmodernism: "There

is no means of declaring that the world is either out there or reflected objectively by an 'in here'" (Gergen, 2001, p. 805).

The constructionist is not, then, interested in truth as a scientific outcome, a universal or transcendent propositional network. There may be local truths, established within various scientific fields, within the various communities of humankind, and these must surely be honoured from within the traditions of these communities. However, the future well-being of the world community depends on facilitating dialogue among these local traditions. Declarations of truth beyond tradition are, in this sense, a step toward tyranny and, ultimately, the end of communication (Gergen, 2004).

To tell the truth, on this account, is not to furnish an accurate picture of what actually happened but to participate in a set of social conventions .To be objective is to play by the rules within a given tradition of social practices .To do science is not to hold a mirror to nature but to participate actively in the interpretive conventions and practices of a particular culture. The major question that must be asked of scientific accounts, then, is not whether they are true to nature but what these accounts offer to the culture more generally" (Gergen, 2001, p. 806). "A postmodern empiricism would replace the 'truth game' with a search for culturally useful theories and findings with significant cultural meaning (ibid., p. 808). Arguments about what is really real are futile (ibid., p. 806). A strand of feminism amplifies this by repudiating the notion of a real world of phenomena that can and should be objectively apprehended. Instead science is equated with the subjectivity of researchers. These feminists denounce scientific objectivity as nothing more than a political ideology that is promoted by men to oppress women.

 For instance, Liz Stanley & Sue Wise (1983, p. 169) assert that objectivity is "an excuse for a power relationship every bit as obscene as the power relationship that leads women to be sexually assaulted, murdered and otherwise treated as mere objects. The assault on our minds, the removal from existence of our experiences as valid and true, is every bit as questionable." Stanley & Wise agree with Gergen's position that "there are many (often competing) versions of truth. This, if any, is `the' truth is irrelevant. And even if such a thing as `truth' exists, this is indemonstrable" (Stanley & Wise, 1983). This position is subjectivistic because it places the subjectivity of researchers at the centre of things, and denies worldly phenomena apart from the researcher's subjectivity.

Subjectivism in qualitative research additionally accepts subjective accounts of subjects about their psychology as the object of research. The objective is to validate subjective interpretations, meanings, and understandings. This line of research does not seek to explain subjects' subjective accounts in terms of external influences. For this would deny

originality and agency to subjects' subjectivity. Nor does this line of research seek to evaluate subjects' subjective accounts by comparing them to other sources of information -- such as other people's accounts of the same psychological phenomenon. Subjectivistic research would not compare a child's account of her experience with her parents' account of her experience – for example, the child says she was unhappy five years ago and resented her parents, while the parents show photographs of the child appearing very happy with them. For this kind of comparison too would challenge the originality and agency of the subject's subjective account. It might prove that the subject misinterpreted her experience or some other event. External data is eschewed by subjectivistic research because it transcends the pure subjectivity of the agent.

Howard Garfunkel's ethnomethodology, for example, abstains from judging peoples' statements as to their accuracy, adequacy, value, importance, necessity, practicality, success, or consequences. It only refers to conditions outside individuals when they do. If subjects do not mention social conditions, they are not introduced by the researcher. Thus, even if a person objectively fits the category of lower class (because of her education, occupation, income, family background), she must be regarded as middle class if this is how she subjectively sees herself. (Ratner, http://www.sonic.net/~cr2/subjectivism.htm-subjectivism in qualitative methodology, 2008)

e) Pragmatism

Pragmatism is a philosophical movement that includes those who claim that an ideology or proposition is true if it works satisfactorily, that the meaning of a proposition is to be found in the practical consequences of accepting it, and that unpractical ideas are to be rejected. Pragmatism originated in the United States during the latter quarter of the nineteenth century, although it has significantly influenced non-philosophers—notably in the fields of law, education, politics, sociology, psychology, and literary criticism. (Dermid, 2006)

An American movement in philosophy founded by C. S. Peirce and William James and marked by the doctrines that the meaning of conceptions is to be sought in their practical bearings, that the function of thought is to guide action, and that truth is pre-eminently to be tested by the practical consequences of belief. (Webster, 2007)

The core of pragmatism was the pragmatist maxim, a distinctive rule or method for becoming reflectively clear about the contents of concepts and hypotheses: we clarify a hypothesis by identifying its practical consequences. This raises some questions. First: what, exactly is the content of this maxim? What sort of thing does it recognize as a practical consequence of some theory or claim? Second, what use does such a maxim

have? Why do we need it? And third, what reason is there for thinking that the pragmatist maxim is correct? (maler.fsu.edu, 2005)

The characteristic idea of philosophical pragmatism is that ideas and practices should be judged in terms of their usefulness, workability, and practicality and that these are the criteria of their truth, rightness and value. It is a perspective that stresses the priority of action over principles (Reason, 2006)

f) Functionalist

The doctrine in the philosophy of mind, are defined by their causes and effects according to which mental states. The metaphor, upon which the functionalist perspective is based, is a very simple one. Society is compared to a human body, with interacting parts all working toward a common goal of keeping the organism functioning properly.

The modern origin of functionalist perspective is credited to the French sociologist Emile Durkheim (1857- 1917). He was particularly fascinated by how modern, secular, capitalist societies managed to remain stable despite the decline of church, the nobility, and the old ruling elites. Where would moral beliefs come from in modern life and why would people follow them? (Heritage t. a., 2009) .Though it was shaped by Harvard sociologist Talcott Parsons during the mid-20th Century. According to Bohm, functionalism can be summed up with one simple premise: "the world is a system of interrelated parts, and each part makes a necessary contribution to the vitality of the system (Menna, 2009)

Functionalist theories incorporate four features

1- They stress that human behaviour is governed by stable patterns of social relations or social structures, for example, Durkheim emphasised how patterns of social solidarity influence suicide rate. The social structures typically analysed by functionalists are macrostructures.

2- Functionalist theories show how social structures maintain or undetermined social stability. That is why functionalists are sometimes called "structural functionalists"; they analyse how the parts of society (structures) fit together and how each part contributes to the stability of the whole (its function). Thus Durkheim argued that high social solidarity contributes to the maintenance of social order, but the growth of industries and cities in 19th century Europe lowered the level of social solidarity and contributed to social instability. One aspect of instability, said Durkheim, is a higher suicide rate. Another is frequent strikes by workers.

3- Functionalist theories emphasise that social structure are based on shared values. Thus, when Durkheim wrote about social solidarity, he sometimes meant the frequency and intensity of social interaction, but more often he thought of social solidarity as a kind of moral cement that binds people together.

4- Functionalisms suggest that re-establishing equilibrium can best solve most social problems. Durkheim said social stability could be restored in late 19th century Europe by creating new associations of employers and workers that would lower workers' expectations about what they could expect from life. If more people could agree on wanting less, said Durkheim, social solidarity would rise and there would be fewer strikes and lower suicide rates. (RobertJ.Brym and John Lie, 2007)

g) Radical humanist

1. All those who place the individual prior to the group by testing the society's progress through the facilities enjoyed by each one of the individuals living in it are Radical Humanists.

2. All those who are not fooled by the rhetoric of Political Parties and take them as the lesser evils to be borne with till their real representatives are able to arise from the grass-roots are Radical Humanists.

3. All those who feel that the Government is a tool to their betterment and not vice versa; and that Parliament needs to be built from the base to the top where each citizen is able to participate in its functioning from the premises of his own working place are Radical Humanists.

4. All those who are not swayed by the whimsical definitions given by self-proclaimed saints and priests of the outer and inner space in the cosmos are Radical Humanists.

5. All those who are able to guide their emotions through reason and are perfectly aware of their occasional illogical outbursts and are later able to rationalise and channelize their emotions are Radical Humanists.

6. All those who have a scientific approach towards their existence and are not bewildered by the unexpected happenings in their lives and around them are Radical Humanists.

7. All those who have empathy for the sufferings around them and are compassionate in their behaviour towards the lesser privileged in the society are Radical Humanists.

8. All those who stand by and support the rights of those groups which are lesser in number are Radical Humanists.

9. All those who meet, associate, make acquaintances and friends with people due to common interests, hobbies, habits or may be similar goals without bothering about the

colours of their skin, the sir names they write, the places they belong to or the faiths they accept or reject are Radical Humanists.

10. All those who realise that national boundaries may be good for managing the countries' affairs but tend to become liabilities when kept above human-beings' interests are Radical Humanists.

11.   All those who continue to believe that wars were never inevitable but have been forced upon people as a result of the competing inflated egos of the heads of nations are Radical Humanists.

12.   Although, all those who agree that economics is an important factor, but not the only one, in influencing human life and its survival are Radical Humanists.

13.   All those who are worried with the imbalance created by man upon nature and environment and want to undo it are Radical Humanists.

14.   All those humble and honest people who strive for freedom to pave their paths with the small truths of life to define their own harmless happiness are Radical Humanists.

15.   The name plates may be missing but the houses are intact and the residents are on their right path!

16.   Radical Humanism is that logical thought-process which develops and comes naturally to all sensible minds! (Sarwat, 2012)

h) Radical structuralist

It is inferential role of logical compounds uniquely described without any further constrains. This prevents a semantic reading as there are no special features like introduction or elimination rules, in the virtue of which certain laws are valid, as might be required by a proof- theoretic semantic. (Popper, 2006)

The radical structuralist paradigm assumes that reality is objective and concrete. It uses scientific methods to find the order that prevails in the phenomenon. It views society as a potentially dominating force. This paradigm is based on four central notions. First, there is the notion of totality, i.e., the phenomenon as a whole. This notion emphasizes that the totality shapes and is present in all its constituent parts. Second, there is the notion of structure. The focus is upon the configurations of social relationships, called structures. The third notion is that of contradiction. Structures, or social formations, contain contradictory and antagonistic relationships within them which act as seeds of their own decay. The fourth notion is that of crisis. Contradictions within a given totality reach a point at which they can no longer be contained. The resulting political and economic crises indicate the point of transformation from one totality to another, in which one set of

structures is replaced by another of a fundamentally different nature. (Kavous Ardalan and Marist College, 2010)

3.3   Approaches

a) Deductive

Deduction is the process by which we arrive at a reasoned conclusion by logical generalization of a known fact. A hypothesis testing is called deductive research. (Sekaran, 2003) It is a top down approach, where conclusion follows logically from premises (available facts). Argument based on laws, rules and accepted principles are generally used for deductive reasoning. Formal logic has been described as "the science of deduction". (Burney, 2008)

Deductive methods involve beginning with a general concept or given rule and moving on to a more specific conclusion. Solving a math problem or conducting a science experiment is just like the mysteries presented by Sherlock Holmes. Clues are presented concerning the conclusion and using the information given as well as previous knowledge, you can solve the mystery!

Deductive reasoning is the process of reaching a conclusion that is guaranteed to follow, if the evidence provided is true and the reasoning used to reach the conclusion is correct. The conclusion also must be based only on the evidence previously provided; it cannot contain new information about the subject matter. Deductive reasoning was first described by the ancient Greek philosophers such as Aristotle. "Drawing conclusions by applying rules or principles; logically moving from a general rule or principle to a specific solution" (Woolfolk, 2001, p. 286) (Wiked, 2008)

To use the deductive method, here is what you need to do:

1. You have to start somewhere, and you start with **undefined terms**. You pick undefined terms to be very common and self-evident, and then you just have to assume that everyone will be "on the same page". For Euclid, undefined terms were things like point, line, etc. You can discuss what you mean by an undefined term, but you can't define everything.

2. Once you have agreed on some undefined terms, you can use them to create **definitions**. Euclid, for instance, could give a precise definition of a triangle in terms of points and lines.

3. Next, you need to pick some simple, obviously true statements about the undefined terms and definitions. These statements are called **axioms** or **postulates**. You want to keep the number of axioms to a minimum - Euclid had 5 axioms for all of geometry. (One was "Two points determine a line.")

4. Now, things can get interesting. You can combine your axioms, definitions, and undefined terms with the rules of logic to **prove** that other statements must be true. These statements are called **theorems**. (Oh, yes, you remember trying to prove theorems!)

5. Once a theorem is **proven,** you can use it, along with other proven theorems, axioms, definitions, and undefined terms to prove other theorems. (Stanbrough, 2009)

b) Inductive

Induction is a process where we observe certain phenomena and on this basis arrive at conclusions. Hypotheses were not originally formulated to get generated through the process of induction. After the data are obtained, some creative insights occur, and based on these, new hypotheses could get generated to be tested later. (Sekaran, 2003) It is a bottom up approach, where conclusion is likely based on premises. It involves a degree of uncertainty. Observations tend to be used for inductive arguments. The study of inductive reasoning is generally carried out within the field known as informal logic or critical thinking. (Burney, 2008)

The inductive method, also referred to as the scientific method, is a process of using observations to develop general principles about a specific subject. A group of similar specimens, events, or subjects are first observed and studied; finding from the observations are then used to make broad statements about the subjects that were examined. These statements may then become laws of nature or theories. (Wiked, 2008)

The Inductive (Scientific) Method is:-

1. State the Question: What information do you wish to obtain?

2. Make Observations: Gather information that will help answer your questions by researching, making, and recording direct observations of the subject

3. Form a Hypothesis: After gathering an adequate amount of information, apply what you have observed to form an educated guess or prediction of what the answer to your question is

4. Test: Test your hypothesis by performing an experiment that includes a variable

5. Analyse: Examine the results of your experiment to understand what they imply

6. Draw a Conclusion: Based on the interpretation of your results, develop a general principle as an answer to your question. (Wiked, 2008)

Answers to issues can be found either by the process of deduction or the process of induction, or by a combination of the two.

3.4 Strategies

a) Experiment

The term experiment is often used as a generic label for any kind of scientific research (Rybarova, 2006). An experiment is a structured process for testing how varying one or more inputs affects one or more outcomes. (Blackmon, 2005) Irrespective of the precise design of a particular experiment, with all the possible variations, all experimentation is concerned essentially with relationships between selected variables and in investigating cause and effect (Babbie2001;McBurney and white 2004;Parson and Tille 2004;Wysocki2004) (Lancaster, 2009)

However, a research study must meet specific criteria to qualify as an experiment

The goal of experimental strategy is to establish the existence of a cause-effect relationship between two variables. In an experiment we are trying to show that changes in one variable are directly responsible for causing changes in the other variable. (Rybarova, 2006)

b) Survey

A survey is a way to collect data from a range of respondents by asking them questions. Surveys are especially useful for capturing facts, opinions, behaviours or attitudes. (Blackmon, 2005)

Sample survey theory is concerned with methods of sampling from a finite population of N units and then making inferences about finite population quantities on the basis of the sample data. A method of sampling coupled with a method of estimation given the sample data is often referred to as a sampling strategy, and typically corresponds to a set of rules which tell one how to obtain a sample of units from the finite population and then how to manipulate the resulting sample data to estimate the value of a quantity defined for the entire population. (Chambers, 2004)

Advantages of Using Surveys

1- Surveys allow researchers to collect a large amount of data in a relatively short period of time.

2- Surveys are less expensive than many other data collection techniques.

3- Surveys can be created quickly and administered easily.

4- Surveys can be used to collect information on a wide range of things, including personal facts, attitudes, past behaviours and opinions.

Disadvantages of Using Surveys

1- Poor survey construction and administration can undermine otherwise well-designed studies.

2- The answer choices provided on a survey may not be an accurate reflection of how the participants truly feel.

3- While random sampling is generally used to select participants, response rates can bias the results of a survey.

Types of Survey Data Collection

Surveys can be implemented in a number of different ways. Chances are good that you have participated in a number of different market research surveys in the past.

Some of the most common ways to administer survey include:

1- Mail - An example might include an alumni survey distributed via direct mail by your alma mater.

2- Telephone - An example of a telephone survey would be a market research call about your experiences with a certain consumer product.

3- Online - Online surveys might focus on your experience with a particular retailer, product or website.

4- At home interviews - The U.S. Census is a good example of an at-home interview survey administration (Cherry, 2009)

c) Case Study

Case studies involve in-depth, contextual analyses of similar situations in other organisations, where the nature and definition of the problem happen to be the same as

experienced in the current situation. (Sekaran, 2003) Case studies that are qualitative in nature are, however, useful in applying solutions to current problems based on past problem solving experiences. They are also useful in undertaking certain phenomena, and generating further theories for empirical testing. (Sekaran, 2003)

Case study research strategies can be difficult to grasp because many of their features are found in other research methods and designs. Case studies, for example, often use multiple methods and triangulation of data, which can be found in approaches which are not case studies. The lack of an accepted definition has resulted in case study meaning different things in different research traditions. Case studies can use either qualitative or quantitative methods, can be prospective or retrospective, can have an inductive or deductive approach to theory, can focus on one case or many, can describe, explain or evaluate. Case study strategies allow different data collection methods to be used, as long as they are appropriate to the research questions posed. (Catherine E Walshe, 2004)

The case study is not a "pure" research method, because data will be collected from multiple sources and using several methods such as surveying, interviewing, participant observation and archival research. A case study design does not dictate to use of any particular technique for collecting or analysing data, but it does have definite implications for the choice of the unit analysis to which one or more techniques will be applied (Blackmon, 2005)

d) Action research

Action research is a consultancy evolving project with interplay among problem, solution, effects or consequences, and new solution. A sensible and realistic problem's definition and creative ways of collecting data are critical to action research, which is undertaken by consultants who want to initiate change processes in organizations. (Sekaran, 2003) In fact action research is more a strategy approach to research than a specific methodology. A wide variety of methodologies may be used, including observational research, questioning and surveys, and even laboratory experimentation. (Lancaster, 2009)

e) Grounded theory

Grounded theory method is a systematic generation of theory from data that contains both inductive and deductive thinking. One goal is to formulate hypotheses based on conceptual ideas. Others may try to verify the hypotheses that are generated by constantly comparing conceptualized data on different levels of abstraction, and these comparisons

contain deductive steps. Another goal of a grounded theory study is to discover the participants' main concern and how they continually try to resolve.

Grounded theory method does not aim for the "truth" but to conceptualize what's going on by using empirical research. In a way grounded theory method resembles what many researchers do when retrospectively formulating new hypotheses to fit data. However, applying the grounded theory method the researcher does not formulate the hypotheses in advance since preconceived hypotheses result in a theory that is ungrounded from the data. The use of description in a theory generated by the grounded theory method is mainly to illustrate concepts. (Strauss, 2009)

When Glaser and Strauss (1967) originated grounded theory, it was seen as an approach challenging the status quo in social research, as contemporary studies were dominated by the testing of 'grand theory' and were deductive in nature. It is a way of generating new theory grounded in the field but also set in the context of existing theory. Therefore it does not set out to test an existing hypothesis (Kennedy &Lingard 2006), but rather seeks to generate theory from the research situation in the field as it is. The grounded theory approach is not linear but concurrent, iterative and integrative, with data collection, analysis sand conceptual theorizing occurring in parallel and from the outset of the research process (Duhscher& Morgan 2004).This process continues until the theory generated explains every variation in the data (Benton 2000) (Gerry McGhee, 2007)

f) Ethnography

Ethnography is a qualitative research method aimed to learn and understand cultural phenomena which reflect the knowledge and system of meanings guiding the life of a cultural group. It was pioneered in the field of socio-cultural anthropology but has also become a popular method in various other fields of social sciences—particularly in sociology, communication studies, and history ——that study people, ethnic groups and other ethnic formations, their ethno genesis, composition, resettlement, social welfare characteristics, as well as their material and spiritual culture. It is often employed for gathering empirical data on human societies and cultures. Data collection is often done through participant observation, interviews, questionnaires, etc. Ethnography aims to describe the nature of those who are studied (i.e. to describe a people, an ethnos) through writing. In the biological sciences, this type of study might be called a "field study" or a "case report", both of which are used as common synonyms for "ethnography" (http://en.wikipedia.org/wiki/Ethnography)

Ethnography is the branch of anthropology that involves trying to understand how people live their lives. It's central to gaining a full understanding of customers and the business itself. (Anderson, 2009)

g) Archival research

It is a research conducted through archives. An archive is a way of sorting and organizing older documents, whether it be digitally (photographs online, E-mails, etc.) or manually (putting it in folders, photo albums, etc.). Archiving is one part of the curating process which is typically carried out by a curator. The art of searching for archives consists of four main steps:

1. Thinking about questions to find the archive in mind. Ask:

Do I need specific information or am I just curious about a broad topic?

 What is my topic of interest?

Should I be using an archive or a library?

2. Get the basic facts about the topic of interest.

3. Use websites associated with the particular archive building to search for the archive.

4. Decide if one should visit the archive building for further assistance. (http://en.wikipedia.org/wiki/Archival_research, 2011)

3.5   Choices

a) Mono method

Adopting a single approach to research, for example quantitative approach, or qualitative approach, to the exclusion of other types of approaches

(http://skillsforlearning.leedsmet.ac.uk/glossary/definitions/mono_method.shtml, 2012)

b) Mixed method

Combining qualitative and quantitative approaches into the research methodology, using mixed methods approaches as the pragmatic paradigm has become more firmly embedded in mainstream research. Mixed methods can answer simultaneously confirmatory and exploratory questions, they provide stronger inferences through depth and breadth in answer to complex social phenomena, and they provide the opportunity through divergent findings for an expression of differing viewpoints. (Argimate, 2007)

c) Multi- method

Multi-method studies are not limited to the blending of qualitative and quantitative research but can also appear in the artful combination of different quantitative methods in the same study. Pager and Quillian (2005), for example, combined a social experiment with a follow-up survey in their study of racial discrimination in hiring practices. The first portion of their study uses an "audit" methodology, sending "testers" to apply for jobs at

various employers who had advertised positions. This experiment is designed to compare the success of Black and White applicants who are portrayed (fictitiously) as having or not having criminal records. Pager and Quillian returned to the same employers six months later to conduct a survey of the employer's attitudes about hiring different types of employees. In addition to uncovering discrepancies between employers' deeds versus words, this follow-up survey allowed a comparison of the insights that can be gained from survey versus experiment.

In another case, You and Khagram (2005) combined aggregate national data (i.e., one data point per country) with a multi-level statistical analysis of survey data from 30 countries. They used the survey data to bolster their claim that countries with more inequality have more corruption because there is a higher normative acceptance of corruption in countries characterized by higher levels of inequality. (Jacobs, 2005)

3.6   Time horizons

The value of information depends on future changes in technologies, prices, and evidence. Finite time horizons for decision problems can be seen as a proxy for the complex and uncertain process of future change. (Zoe Philips, 2008)

This means that information should always be updated as fast as changes in technologies, prices and evidence, in order not to lose value.

a) Cross-sectional

Data is collect only once. It is not necessarily gathered at the same time. It may take a longer period. For example: to find out from bank employees scattered all over the country their favoured month for taking leave. Or one can ask men between the ages of 35-44 for choice of colour of a shirt in a survey lasting for two weeks. (hafeezrm, 2009)

b) Longitudinal

Data would be collected at several points of time say temperature of a patient in the morning and evening for three consecutive days etc. Similarly, one may like to note employee behaviour before and after raise of pay or promotion. There are other examples like sales before and after advertisement, annual confidential reports of employees for the last five years etc. (hafeezrm, 2009)

3.7   Techniques and procedures

a) Data collection

It is an important aspect of any type of research study. Inaccurate data collection can impact the results of a study and ultimately lead to invalid results.

Data collection methods for impact evaluation vary along a continuum. At the one end of this continuum are quantitative methods and at the other end are qualitative methods for data collection.

The quantitative data collection methods rely on random sampling and structured data collection instruments that fit diverse experiences into predetermined response categories. They produce results that are easy to summarise, compare, and generalise.

Quantitative research is concerned with testing hypotheses derived from theory, being able to estimate the size of phenomenon of interest. Depending on the research question, participants may be randomly assigned to different treatments. If this is not feasible, the researcher may collect data on participant and situational characteristics in order to statistically control for their influence on the dependent, or outcome, variable. If the intent is to generalise from the research participants to a larger population, the researcher will employ probability sampling to select participants.

Typical quantitative data gathering strategies include:

1- Experiments/clinical trials.

2- Observing and recording well-defined events.

3-Obtaining relevant data from management information systems.

4-Administering surveys with closed-ended questions (e.g., face-to face and telephone interviews, questionnaires etc.)

I- Interviews

In Quantitative research (survey research); interviews are more structured than in Qualitative research. (http://www.stat.ncsu.edu/info/srms/survpamphlet.html

In a structured interview, the researcher asks a standard set of questions and nothing more. (Leedy and Ormrod, 2001) **Face -to -face interviews** have a distinct advantage of enabling the researcher to establish rapport with potential participants and therefor gain their cooperation. These interviews yield highest response rates in survey research. They also allow the researcher to clarify ambiguous answers and when appropriate, seek follow-up information. Disadvantages include impractical when large samples are involved time consuming and expensive. (Leedy and Ormrod, 2001)

Telephone interviews are less time consuming and less expensive and the researcher has ready access to anyone on the planet that has a telephone. Disadvantages are that the response rate is not as high as the face-to- face interview as but considerably higher than the mailed questionnaire. The sample may be biased to the extent that people without phones are part of the population about whom the researcher wants to draw inferences.

Computer Assisted Personal Interviewing (CAPI): is a form of personal interviewing, but instead of completing a questionnaire, the interviewer brings along a laptop or hand-held computer to enter the information directly into the database. This method saves time involved in processing the data, as well as saving the interviewer from carrying around hundreds of questionnaires. However, this type of data collection method can be expensive to set up and requires that interviewers have computer and typing skills.

II- Questionnaires

Paper-pencil-questionnaires can be sent to a large number of people and saves the researcher time and money. People are more truthful while responding to the questionnaires regarding controversial issues in particular due to the fact that their responses are anonymous. But they also have drawbacks. Majority of the people who receive questionnaires don't return them and those who do might not be representative of the originally selected sample. (Leedy and Ormrod, 2001)

Web based questionnaires: A new and inevitably growing methodology is the use of Internet based research. This would mean receiving an e-mail on which you would click on an address that would take you to a secure web-site to fill in a questionnaire. This type of research is often quicker and less detailed.

Questionnaires often make use of Checklist and rating scales. These devices help simplify and quantify people's behaviours and attitudes. A **checklist** is a list of behaviours, characteristics, or other entities that the researcher is looking for. Either the researcher or survey participant simply checks whether each item on the list is observed, present or true or vice versa. A **rating scale** is more useful when behaviour needs to be evaluated on a continuum. They are also known as Likert scales. (Leedy and Ormrod, 2001)

Qualitative data collection methods play an important role in impact evaluation by providing information useful to understand the processes behind observed results and assess changes in people's perceptions of their well-being. Furthermore qualitative methods can be used to improve the quality of survey-based quantitative evaluations by

helping generate evaluation hypothesis; strengthening the design of survey questionnaires and expanding or clarifying quantitative evaluation findings. These methods are characterized by the following attributes:

- they tend to be open-ended and have less structured protocols (i.e., researchers may change the data collection strategy by adding, refining, or dropping techniques or informants)
- they rely more heavily on interactive interviews; respondents may be interviewed several times to follow up on a particular issue, clarify concepts or check the reliability of data
- they use triangulation to increase the credibility of their findings (i.e., researchers rely on multiple data collection methods to check the authenticity of their results)
- generally their findings are not generalizable to any specific population, rather each case study produces a single piece of evidence that can be used to seek general patterns among different studies of the same issue

Regardless of the kinds of data involved, data collection in a qualitative study takes a great deal of time. The researcher needs to record any potentially useful data thoroughly, accurately, and systematically, using field notes, sketches, audiotapes, photographs and other suitable means. The data collection methods must observe the ethical principles of research.

The qualitative methods most commonly used in evaluation can be classified in three broad categories:

1- in-depth interview
2- observation methods
3- document review

Different ways of collecting evaluation data are useful for different purposes, and each has advantages and disadvantages. Various factors will influence your choice of a data collection method: the questions you want to investigate, resources available to you, your timeline, and more.
(http://people.uwec.edu/piercech/researchmethods/data%20collection%20methods/data%20collection%20methods.htm)

III Data analysis

The data obtained from a study may or may not be in numerical or quantitative form, that is, in the form of numbers. If they are not in numerical form, then we can still carry out qualitative analysis based on the experiences of the individual participants. If they are in numerical form, then we typically start by working out some descriptive statistics to summarise the pattern of findings.

There is an important distinction between quantitative research and qualitative research: In quantitative research, the information obtained from the participants is expressed in numerical form. Studies in which we record the number of items recalled, reaction times, or the number of aggressive acts is all examples of quantitative research. In qualitative research, on the other hand, the information obtained from participants is not expressed in numerical form. The emphasis is on the stated experiences of the participants and on the stated meanings they attach to themselves, to other people, and to their environment. Those carrying out qualitative research sometimes make use of direct quotations from their participants, arguing that such quotations are often very revealing. (Eysenck., 2004)

3.8   Chosen Approach and alternative research strategies

There is a wide variety of views of what research consists of. Also, there are alternative perspectives of what the process of undertaking research should look like (Blaxter et al. 1996). The mission of research is to generate knowledge. While reading, discussing and investigating, researcher gains knowledge. The way of conducting the research is influenced by the obtained believes from gained knowledge; such as theoretical paradigms and perspectives of research. The choice of the research approach should be based on the type of research questions settled. (hansson, 2007)

This research adopted the **interpretivism philosophy**, where the collected data was interpreted by using qualitative and quantitative data analysis. Qualitative data was collected to know the variety of High Educational Institute in Egypt applying Total quality Management while offering E-learning. A pilot survey was executed through the International conference on E-learning (ICEL) 2012 which was held by the Egyptian E-learning University (EELU) from 9-11 July 2012 in Cairo – Egypt. 200 questionnaires were distributed during the conference; only 22 were collected with significant answers. The result of pilot survey shows that the High Educational Institutes in Egypt which apply E- learning do not apply Total quality Management as a system to manage the E- learning

process. Total Quality Management is only applied as a general management process required by the Council of High Education in Egypt in order to accredit the overall offered education by the Institute. And this was assured through the interview made with some of the staff members of some Egyptian Universities who were attending the ICEL 2012. (See appendix 1) Then, Quantitative data was analysed to know the numbers and percentages of staff and students satisfied from the offered service before and after the application of the suggested model. The questionnaire was built in two parts: - the first part consists of 19 questions to measure the Evaluation of the instructors for the work at e- learning program. The second part was to measure the student satisfaction from the offered online courses. It was divided into five sections: - the first section measure the satisfaction of the learner from the content, it consists of 15 Questions. The second section measure the satisfaction of the learner from the instructor, it consists of 21 questions. The third section measure the satisfaction of the learner from the other learners in the course, it consists of 7 questions. The fourth section measure the satisfaction of the learner from the technology used in offering the e-learning service, it consists of 9 questions. The fifth and the last section measure the general satisfaction from the offered E-learning service, it consists of 6 questions. The above mentioned questionnaires were sent to the E-learning University in Dubai after contacting them through a phone call through which I got the e-mail of a contact person who did not reply any of my mails for a month. Then, referring to my supervisor, he sent me a list of names of the involved Academics in the Technology enhanced learning Cluster at the Open University. There were 23 names, to which I sent a request to each of them asking to help me with my questionnaire. All the answers I got were a refuse to get involved in such work.

The approach of this research is deductive, where concepts were generalised to reach a conclusion; The concepts of applying Quality Function Deployment, Baldrige criteria, and the eight elements of Total Quality Management, guide to a conclusion of while merging them together we could have a continuous endless improvement process for E-learning. In order to build this model, more literature review was made about:-

1- Application of E-learning standardization technology By :Li Zheng, LeiXu and Yu shan LiTsingua University – China (Chapter 22 from a book titled " Advanced Learning" Edited by Raquel Hijin – NeiraPublished online www.intechopen.com 1 October 2009, where The Author describes E- learning problems occurs with rapid development. He claims different organizations who are dedicated to solve those problems:-"IEEE –

LTCSC- Learning Technology Standard Committee – IMS – IMS Global learning Consortium ...” He defined China E-learning Technology Standardization Committee (CELTSC) as a subcommittee under Standardization Administration of the People's Republic of China (SAC). He reveals that this Committee (CELTSC) is the research institute and management organization for standards development, as well as, associated API and application system models. It plays an important role in the international standards development, and its application promotion and localization. He also claims that the Chinese Standards system is relative with the development over the past few years. He explains the research work of standards divided into five categories: "fundamental guidance – learning resources – learners – learning environment – and education management". He announces that some of these five categories were adapted from IMS or IEEE. And, that Part of the unification of platforms and resources problem was solved through these five categories. He guarantees that "Architecture and Reference" standard provides the platform framework of E- learning. He articulates the different standards Models such as "Learning Object Metadata (LOM) – Content Packaging (CP) – and learner Model", and he explains the role of each standards.

2- The Baldridge Business Model By: Paul steel in 2012 who argued in this paper "that Baldrige, integration of systematic processes is the most active approach to accelerate organizational improvement. On the web page http://www.Baldrige.com accessed the 23rd of September 2013, it is claimed that the Baldrige Criteria are built upon a set of core values and concepts. These core values are embedded in the seven Baldrige Categories:

1. Leadership
2. Strategic Planning
3. Customer Focus
4. Measurement, Analysis, and Knowledge Management
5. Workforce Focus
6. Operations Focus
7. Results

Each of these Categories is divided into Items and Areas to Address. The first six Categories each have two Items, while Results has six. The following figure presents Baldrige core categories.

3- The eight Elements of Total Quality Management By Nayantara Padhi published In 2010 to explains that these elements help TQM to describe a philosophy that makes Quality the driving force behind Leadership, design, planning, and improvement. He groups them in a form of a house where the foundation is the Integrity & Ethics. The Bricks were Leadership, Teamwork, and training. Recognition represented the roof, while Communication was the binding mortar.

4- Evaluation of a Virtual Learning Environment for the Professional Training in Public Administration doi:10.3991/ijac.v2i1.589 M. Sannia1, G. Ercoli2 and T. Leo21 University of York, York, UK, 2 Università Politecnica delle Marche, Ancona, Italy, Where the authors describe a framework for the evaluation of a virtual learning environment in the Public Administration context. The question of e-learning education of the Italian Public Administration employees was explained, and the characteristics of these learners were analysed. These adults do not belong to the Internet Generation but they have to use the new educational tools, with the problems that this implies. In conclusion, the authors supplied a variety of important elements for the design of an e-learning course. An efficient course must be consistent to the proposed course, the organization strategies and the roles performed by the employees. Therefore, it is important to offer not a generic course but training finalized to provide a professional improvement. The criteria that we have presented would be a useful tool to carry out evaluation by e-learning designer in the PA. The indicators that we had proposed here are the general criteria of quality. The authors have thought that these criteria can be useful to reflect about the things that we consider important in the VLE design. The authors think that the efficacy of the learning experience can be estimated through impact evaluation that is the impact that the knowledge had in a specific Public Administration. Therefore, the achievement of a Virtual Learning Environment (VLE) depends on many factors: easy access to the information, staff expressly trained to help the students, an effective administrative service, and didactical material prepared on purpose.

5- Quality Function Deployment for Service - Hand Book. By:- MBA Luis Bernal Dr. Utz Dornberger MBA Alfredo Suvelza MBA Trevor Byrnes Where the authors defined Quality Function Deployment (QFD) as a system aims to translate and plan the "voice of customer" into the quality characteristics of products, processes and services in order to reach customer satisfaction". It is also defined as a quality and planning tool to allows the market entry for the reflection of "voice of customer" along the service development path.

It provides possibility for transformation of service development processes from reactive to proactive. The Quality Function Deployment (QFD) methodology is based on the development of a series of matrices called "House of Quality", due to a roof-like structure in its top. This house can be divided in "rooms" QFD starts with the establishment of objectives, which represent the answer to "What?" what is desired in order to reach the new service's development? These objectives derive from clients' requirements and are called the "Voice of the Customer". After completing the client's requirements list (What?), comes the definition of "How". The "how" are the design requirements of the service. It is necessary to define how each client's requirement will be satisfied by the service. These are measurable features that can be evaluated at the end of the development process. Relations between the client and design requirements are not always 1:1; there are complex relationships and varying levels of strength. A single design requirement may have an influence on several of the customer's requirements. Illustrated in the following table is a matrix that shows the relationships between "What" and "How"; defined by three strength levels: weak relation, medium relation and strong relation. The QFD technique allows for a competitor assessment with Benchmarking. The competitor's services are compared to the company's services. Benchmarking is carried out for "What" and "How". The two companies' services are compared along the lines of client requirements ("What"). A characteristic measure is determined for each service feature. Next, the clients' perception of the satisfaction requirements will be assessed and compared to the competitors'.

In the technical competitor comparison (How's), the design requirement fulfilment will be compared. It is recommended that the designer of the service make this evaluation. Benchmarking compares the delivery of desired consequences to that of the competition. The importance level states the relative significance of each client ("What") and design requirement ("How") to achieve the desired goal. "What" relative significance is established through an evaluation by the customer. The relative scale used (1-5 or 1-10) should be set up so that customer importance is seen as more significant the larger the number is. For each column ("How"), the ("What") importance level is multiplied by the corresponding weighting. This creates a value for each relationship between client and design requirement. The importance of the design requirements ("How") is computed by adding the values together. "How" is integrated by establishing the correlation between all of the elements. The matrix describes the strength of the relationships between the design requirements. The aim is to identify which requirements support each other and which ones do not. Positive correlations mean that the service development efficiency can be increased

without competing or duplicate effort. Deciding which features are absolutely necessary to the service is aided by negative correlations; by increasing one feature, there is a decrease in another and vice versa. If there are no negative correlations, there could be a mistake in a previous step. The technical design trade-offs necessary for meeting customer needs are shown on the roof of the house. The relationship between each pair of requirements must be considered. It is important to display positive, negative, or no correlation. Four papers were published:-

1- E-Learning and Quality Circles
IJSRP Volume 3 Issue 2 February 2013 edition.
2- E-learning benchmark and quality Function deployment role
Comp. Res. J. Manage. Bus. Std. October 2013 1(1): 013-017
3- Total quality Management (TQM) and Continuous Improvement as addressed by researchers
    International Journal of Scientific and Research Publications, Volume 3, Issue 10, October 2013 1 ISSN 2250-3153 www.ijsrp.org

4-A model to improve e-learning service was developed and published in "Journal of Business Management & Social Sciences Research (JBM&SSR) ISSN No: 2319-5614 Volume 4, No.1, January 2015".

The suggested e-learning Model emphasize that the eight elements of TQM were engaged in the Baldrige criteria framework. Quality Function Deployment (QFD) on the top of the model is the main tool of evaluation of all the processes. The Idea of this model is to use Quality function Deployment (QFD) to translate and plan the" voice of the customer" into the quality characteristique of the service before enter the market. QFD analyse the client's requirements,define how each requirement will be satisfied by the service,organize the needs,illustrate the relationship between the requirement of the customer in the market and the needs to fullfil them. The result will be transmitted to the leadership Management,who will deploy the quality ,and apply the eight Total Quality Management Principles going through the seven categories of the Baldrige Criteria. The two principles of TQM:- "Integrity and Ethics" represent the "Strategic Planning" in the baldrige criteria, at the base of the E-learning process. The "Comunication" represents the "Customer Focus" comes at the second place. "The Recognition" represents "The Measurements, Analysis knowledge Management"at the third place, in the middle of the process to evaluate the first two steps In order to continue on a strong base through the remained two processes:-

"Team work" which represents the workforce category,and " The Training" which represents the "Operation Focus" category. On the top of the five mentioned phases of management, comes the frontage of the process in sort of:-

1-Administrative service:- concerned with enrollment,payment, and virtual library services.
2-Support service and staff:- concerned with the orientation support,teamwork,and pedagogical and technical support.
3-Learnig object service:-concerned with accessability,usability, and dedactic.

The result of all the previous phases shall affect the learner through the afforded high quality E-learning service. The high qualified personnel educated through the high quality E-learning system, will affect the social culture and environment from where comes the "voice of cutomer", to be analyzed through the QFD, to the leadership management, and the improvement cycle continue. (See Figure 5-9 in Chapter five)

It was decided to get a chance to apply it to improve an E- learning service offered in an high Education association in Egypt. An Association were the MOODLE was applied to offer online courses for undergraduates students in Egypt and the Arab countries was chosen, since it was an Arab League Organization. Then,Compare the satisfaction from the online program offered at UON to the one offered in Egypt.

Knowing the difference between the delivered online courses at UON while applying quality requirements and the delivered online course in the HEI in Egypt will help to facilitate changing the culture of resistance to apply the suggested model. Also, analyse the the satisfaction of instructors and students before and after applying the suggested model to improve the offered online courses at the chosen association. This can give a sign to the implications of applying Total Quality Management (TQM) on E- learning as an offered E- service.

Three strategies were followed in this research; at the biginning, **survey strategy** was followed. To validate the offered E-learning service, it is a way to collect data from a range of respondents by asking them questions. Surveys are especially useful for capturing facts, opinions, behaviours or attitudes. (Blackmon, 2005) Sample survey theory is concerned with methods of sampling from a finite population of N units and then making inferences about finite population quantities on the basis of the sample data. A method of sampling coupled with a method of estimation given the sample data is often referred to as a

sampling strategy, and typically corresponds to a set of rules which tell one how to obtain a sample of units from the finite population and then how to manipulate the resulting sample data to estimate the value of a quantity defined for the entire population. (Chambers, 2004) In this survey, a self-completion questionnaire with closed questions is developed. The self-completion questionnaire is very similar method of business research, and the research instrument has to be especially easy to follow and its questions have to be particularly easy to answer. In this study two questionnaires were developed to collect data: The first questionnaire to evaluate instructor's Satisfaction for the work at e- learning program, and it includes 19 quantitative questions with Likert scale five. The second Questionnaire to measure Student Satisfaction from Online Courses, it includes 58 questions distributed on five dimensions

 a **case study** was adopted as a strategy. It involves in-depth, contextual analyses of similar situations in other organisations, where the nature and definition of the problem happen to be the same as experienced in the current situation. (Sekaran, 2003) Case studies that are qualitative in nature are, however, useful in applying solutions to current problems based on past problem solving experiences. They are also useful in undertaking certain phenomena, and generating further theories for empirical testing. (Sekaran, 2003) Case study research strategies can be difficult to grasp because many of their features are found in other research methods and designs. Case studies, for example, often use multiple methods and triangulation of data, which can be found in approaches which are not case studies. The lack of an accepted definition has resulted in case study meaning different things in different research traditions. Case studies can use either qualitative or quantitative methods, can be prospective or retrospective, can have an inductive or deductive approach to theory, can focus on one case or many, can describe, explain or evaluate. Case study strategies allow different data collection methods to be used, as long as they are appropriate to the research questions posed. (Catherine E Walshe, 2004)

The case study is not a "pure" research method, because data will be collected from multiple sources and using several methods such as surveying, interviewing, participant observation and archival research. A case study design does not dictate to use of any particular technique for collecting or analysing data, but it does have definite implications for the choice of the unit analysis to which one or more techniques will be applied (Blackmon, 2005).

Looking at previous experience, in the same field, outside Egypt; we could find In University of Nottingham (UON), where online Sustainability course was offered; the

majority of students rated their online learning experience positively. Case study was applied in Egypt on "The Arab Academy for Science, Technology and Maritime Transport", where it was announced the launch of the new E-Learning System, using MOODLE as learning environment In 2009.

When the suggested Model of E-learning Quality service was offered to be apply to improve the E-learning process, **The Experiment strategy** was adopted. The suggested e-learning Model emphasise that the eight elements of TQM were engaged in the Baldrige criteria framework. QFD on the right top of the model is the main tool of evaluation of all the processes. It will allocate the customers' needs to the Leadership management, who will align functions activity to deploy the eight elements of TQM, to produce a high quality E-learning system, which will affect the social culture and environment of the development countries people. The main process of the offered service is the communication. It appears in the Model comprising the core activities of the teaching and learning process. Communication could be Synchronous; concerned with chat, video conference, and shared blackboard. Or, Asynchronous; concerned with Electronic bulletin board, messaging, calendar, document repository, and wiki. The process of teaching and learning includes three mains activities affecting the learner:-

1-Administration service: - concerned with enrolment, payment, and virtual library.

2- Support service and staff: - concerned with team work, orientation support, and pedagogical and technical support.

3- Learning Object:-concerned with accessibility, usability, and didactic.

The whole process of teaching and learning should interact with Integrity and ethics, teamwork, and training. Then the output arises in sort of high quality e-learning service, well-educated qualified members of society, and improvement of culture and environment. The circle will revive to deliver continuous improvement of E-learning quality service.

How it works :-
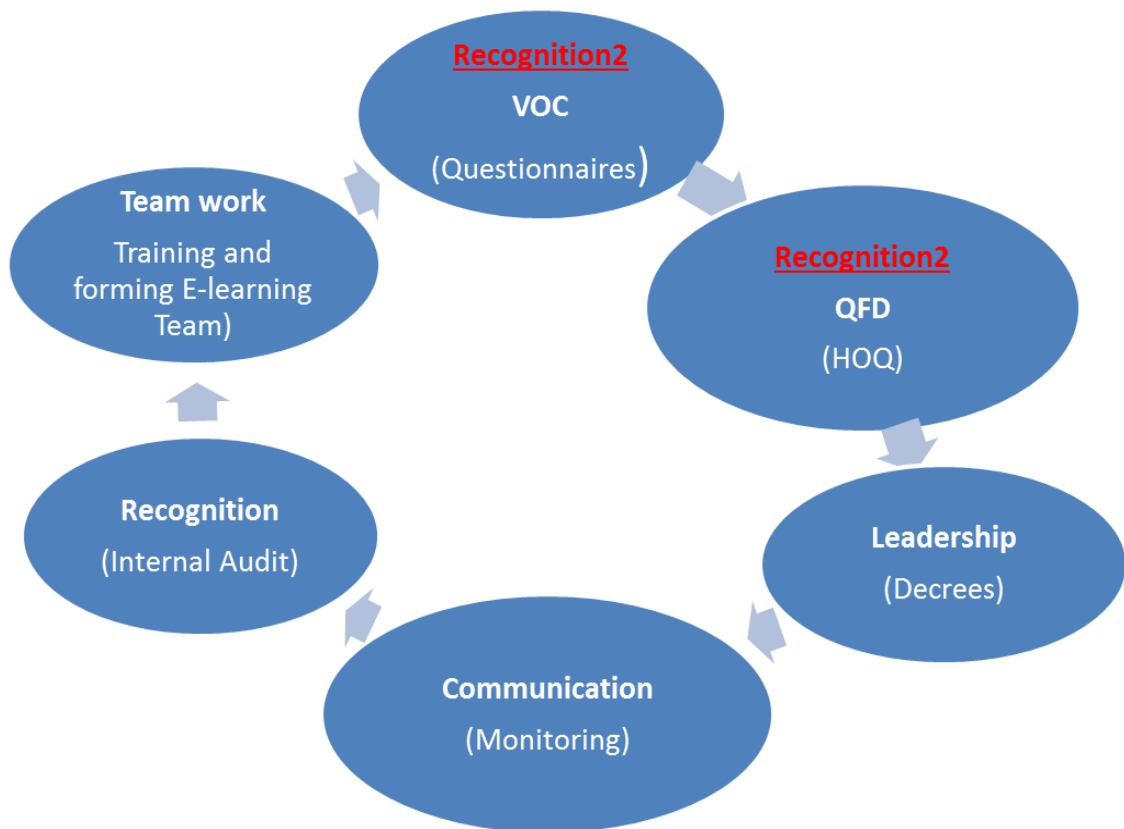
(Figure3-1) the implementation cycle of the suggested Model

In this research many **choices** were followed, according to the situation and the need to reach a specific goal.by using qualitative and quantitative data, this research followed the **mixmethod.** Combining qualitative and quantitative approaches into the research methodology, using mixed methods approaches as the pragmatic paradigm has become more firmly embedded in mainstream research. Mixed methods can answer simultaneously confirmatory and exploratory questions, they provide stronger inferences through depth and breadth in answer to complex social phenomena, and they provide the opportunity through divergent findings for an expression of differing viewpoints. (Argimate, 2007). To apply qualitative approach, a pilot survey was executed through the International conference on E-learning (ICEL) 2012 which was held by the Egyptian E- learning University (EELU) from 9-11 July 2012 in Cairo – Egypt. 200 questionnaires were distributed, only 22 were collected with significant answers.. Then, to apply quantitative approach, questionnaires were distributed during the conference; questionnaire was built in two parts: - the first part consists of 19 questions to measure the Evaluation of the instructors for the work at e- learning program. The second part was to measure the student satisfaction from the offered online courses.

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When the suggested model was offered to be implemented to improve E-learning service, it turn to be **action research.** It is a consultancy evolving project with interplay among problem, solution, effects or consequences, and new solution. A sensible and realistic problem's definition and creative ways of collecting data are critical to action research, which is undertaken by consultants who want to initiate change processes in organizations. (Sekaran, 2003) In fact action research is more a strategy approach to research than a specific methodology. A wide variety of methodologies may be used, including observational research, questioning and surveys, and even laboratory experimentation. (Lancaster, 2009) the suggeated model was applied to improve an E- learning service offered in an high Education association in Egypt. By analysing the satisfaction of instructors and students before and after applying the suggested model to improve the offered online courses at the chosen association, gave a positive sign to the implications of applying Total Quality Management (TQM) on E- learning as an offered E- service.

The techniques and procedures Data collection is an important aspect of any type of research study. Inaccurate data collection can impact the results of a study and ultimately lead to invalid results.

Data collection methods for impact evaluation vary along a continuum. At the one end of this continuum are quantitative methods and at the other end are qualitative methods for data collection.

The quantitative data collection methods rely on random sampling and structured data collection instruments that fit diverse experiences into predetermined response categories. They produce results that are easy to summarise, compare, and generalise.

Quantitative research is concerned with testing hypotheses derived from theory, being able to estimate the size of phenomenon of interest. Depending on the research question, participants may be randomly assigned to different treatments. If this is not feasible, the researcher may collect data on participant and situational characteristics in order to statistically control for their influence on the dependent, or outcome, variable. If the intent is to generalise from the research participants to a larger population, the researcher will employ probability sampling to select participants.

Typical quantitative data gathering strategies include:

1- Experiments/clinical trials.

2- Observing and recording well-defined events.

3-Obtaining relevant data from management information systems.

4-Administering surveys with closed-ended questions (e.g., face-to face and telephone interviews, questionnaires etc.)

The procedures and technique used are:-

1) Face to face Interviews

In Quantitative research (survey research); interviews are more structured than in Qualitative research. (http://www.stat.ncsu.edu/info/srms/survpamphlet.html

In a structured interview, the researcher asks a standard set of questions and nothing more. (Leedy and Ormrod, 2001) **Face -to -face interviews** have a distinct advantage of enabling the researcher to establish rapport with potential participants and therefor gain their cooperation. These interviews yield highest response rates in survey research. They also allow the researcher to clarify ambiguous answers and when appropriate, seek follow-up information. Disadvantages include impractical when large samples are involved time consuming and expensive. (Leedy and Ormrod, 2001). Face to face interviews were made with deans of colleges at AASTMT where the suggested model was implemented.

2) Paper- pencil Questionnaires

It can be sent to a large number of people and saves the researcher time and money. People are more truthful while responding to the questionnaires regarding controversial issues in particular due to the fact that their responses are anonymous. But they also have drawbacks. Majority of the people who receive questionnaires don't return them and those who do might not be representative of the originally selected sample. (Leedy and Ormrod, 2001). Paper pencil questionnaires were used to collect data from instructors and students of the offered E-learning programme before and after applying the suggested model. Also, it was used to collect qualitative data through the pilot survey made at the conference held by the Egyptian E-learning University in 2012.

3) Data analysis

The data obtained from a study may or may not be in numerical or quantitative form, that is, in the form of numbers. If they are not in numerical form, then we can still carry out qualitative analysis based on the experiences of the individual participants. If they are in numerical form, then we typically start by working out some descriptive statistics to summarise the pattern of findings.

There is an important distinction between quantitative research and qualitative research: In quantitative research, the information obtained from the participants is expressed in numerical form. Studies in which we record the number of items recalled, reaction times, or the number of aggressive acts is all examples of quantitative research. In qualitative research, on the other hand, the information obtained from participants is not expressed in numerical form. The emphasis is on the stated experiences of the participants and on the stated meanings they attach to themselves, to other people, and to their environment. Those carrying out qualitative research sometimes make use of direct quotations from their participants, arguing that such quotations are often very revealing. (Eysenck., 2004)

The results of the Questionnaires were analysed using descriptive statistics, and there are many basic techniques for analysing qualitative and quantitative data. In this study, the software of Statistical Package for the Social Sciences (**SPSS**) for Windows was chosen to analyse the data.

The time horizon means that the value of information depends on future changes in technologies, prices, and evidence. Finite time horizons for decision problems can be seen as a proxy for the complex and uncertain process of future change. (Zoe Philips, 2008)

This means that information should always be updated as fast as changes in technologies, prices and evidence, in order not to lose value.

in this research, the time horizon is **longitudinal**, to guarantee the continuous improvement. Data would be collected at several points of time before, during and after the application of the suggested model. Similarly, note employee behaviour before and after the application of the suggested model.

Chapter Four

E-learning in Egypt

4.1 Introduction

Our field of study is conducted in Egypt where the higher education system is made up of 18 public universities with more than 2.4 million students, 12 public non-university institutions, and 15 private (profit-making) universities providing technical and professional training. At the same time and according to what was published in 1/7/2013 by the public association for adult education AEA at the information and decision support centre in Egypt; 14.9% of its young working power (between 15 and 35 years old) is illiterate.

4.2 Pilot Survey

A pilot survey was executed through the International conference on E-learning (ICEL) 2012 which was held by the Egyptian E- learning University (EELU) from 9-11 July 2012 in Cairo – Egypt. 200 questionnaires were distributed during the conference; only 23 were collected with significant answers. The result of pilot survey shows that the High Educational Institutes in Egypt which apply E- learning do not apply Total quality Management as a system to manage the E- learning process. Total Quality Management is only applied as a general management process required by the Council of High Education in Egypt in order to accredit the overall offered education by the Institute. And this was assured through the interview made with some of the staff members of some Egyptian Universities who were attending the ICEL 2012. Only two main questions were asked to interviewees from Egyptian E-learning University, Cairo University, Mansoura University, and Helwan University: -

1- Do you offer E- learning program?

   The answer was YES for all.

2- Do you apply TQM in your e-learning program?

   The answer was NO for all

The results we got are illustrated in the following table (Table 4-1)

(Table 4-1) Results of Pilot Survey

Id	Position	Activity	offer e-learning	No. of Students	People involved	years offering e-learning	Apply Quality	Quality standard	years of applying quality
1	IT Expert	Telecom	yes	130 000	130000	5	yes	ISO9001	3
2	Software	Develop	yes	300	300	1	No	0	0
3	univ. Prof	education	no	0	0	0	0	0	0
4	AUC instr.	cont. edu	no	0	0	0	0	0	0
5	Dir. E-learn	education	yes	150	150	4	Yes	ISO15189	0
6	Developer	education	yes	200	1000	2	No	0	0
7	Ass. Prof	education	yes	49	1000	17	no	0	0
8	G.M	Software	yes	15000	1200	2	yes	CMMI	4
9	Lecturer	education	no	0	0	0	yes	0	0
10	Lecturer	education	no	0	0	0	yes	0	0
11	founder	Ar.Lang.tech	yes	40	0	1	no	0	0
12	Teacher	school	no	No	0	0	0	0	0
13	Teacher	consulting	no	No	0	0	0	0	0
14	lecturer at SA	teaching	yes	20	all staff	2	yes	don't know	4
15	Lecturer	education	no	0	0	0	yes	0	6
16	comp. trainer	school	yes	100	120	5	yes	0	0
17	Lecturer	education	no	0	0	0	no	0	0
18	Comp.syst	e-learning	no	0	0	0	no	0	0
19	Master St.	education	no	0	0	0	no	0	0
20	Q.A mngr.	furniture	no	0	0	0	yes	ISO9000	3
21	Admin	education	no	0	0	0	no	0	0
22	Lecturer	education	yes	80	60	1	yes	ISO9000	1
23	van holand	e-learning	yes	14	8	3	no	0	0

1- Do not work in the field of High Education = 36.36%

2- Do not have neither e- learning nor TQM = 22.73%

3- Have Both E-learning and TQM = 9.09 %

4- Have E-learning and do not have TQM = 18.18%

5- Do not have E- learning and have TQM = 13.63%

6- Offer E-learning outside Egypt in Saudi Arabia. = 4.54%

When thinking about all the previous given data, arise the idea of having an easy access way of high quality learning, affordable to those who does not have the opportunity to leave there jobs, from where they gain to live, in order to have a good education to improve their social life. Making benefit from the technological revolution and the excitement and passion of using it, can give the chance to offer an E-learning service

through which a human development could be achieved. Then, strategies could be well adopted to improve society.

Therefore, the field of this research has been chosen through one of the National Target in Egypt as a Developing Country. This field is 'The High Educational Institutes in Egypt', where the e-service were implemented in the near past few years and the Quality management were also taken as essential of management in these institutes. Thus, our research is mainly meant by **"The Implications of applying TQM on E-Learning in Egypt".** This is for the great impact of the E- learning quality on the education as main national issue in Egypt.

Before starting our research study, we had to look at previous experience in the same field, outside Egypt. The University of Nottingham (UON) in United Kingdom offered online course in 2013, and a seminar was held about this experience in March 2014.

4.3 Experience of offering Online course at University of Nottingham (UON)

In University of Nottingham, an online Sustainability course was offered. It followed the standard procedures in that a module was written that had to be approved, with learning outcomes and assessments .Students were invited to evaluate the module, and a sample of student work was moderated by an examinations board. So, the courses would follow the guidelines of the University of Nottingham, as set out in Their Quality Manual, and these in turn would be designed to fit with the requirements of the UK Quality Assurance Agency.

This online course cost them only 14000£. They accomplished the whole mission in one year. The work team were composed of 2 members of school of education, one philosopher concerned with Ethics, one member specialised in language, one member from art and design, and 3 members (Engineers) concerned with transferring modules to e-books, they offered 5 modules which were transformed to e-books. Over 200 third party open resources were included across those 5 modules. Open Educational resources were used from Jorum, MIT OCM- U-now- Open learn, OCWC ,Connexions , OER COMMONS , MERLOT ,OER Africa , and Xpert. They were aiming to reduce effort, share knowledge, and promoting learning. Six facilitators works in this course, they were selected from the Post graduates students at the university of Nottingham. To accomplish the sustainability online course, the students study 30 credit hours. The evaluation of the exam is Pass OR Fail. But starting the next year a grading system will be provided according the system of grading at the undergraduate school of education at UON.

The responses of students and members of staff to closed and open questions in the online feedback questionnaire made by *" A. Bowman" in 2013* was analysed during week 10 of the UON's Perspectives on Sustainability NOOC in order to examine participants' perceptions of useful and challenging characteristics of the NOOC where these pertained to online learning.

The majority of respondents rated their online learning experience as OK (37%) or good (42%), with online minority participants stating their online experience was poor (2%). See figure below.
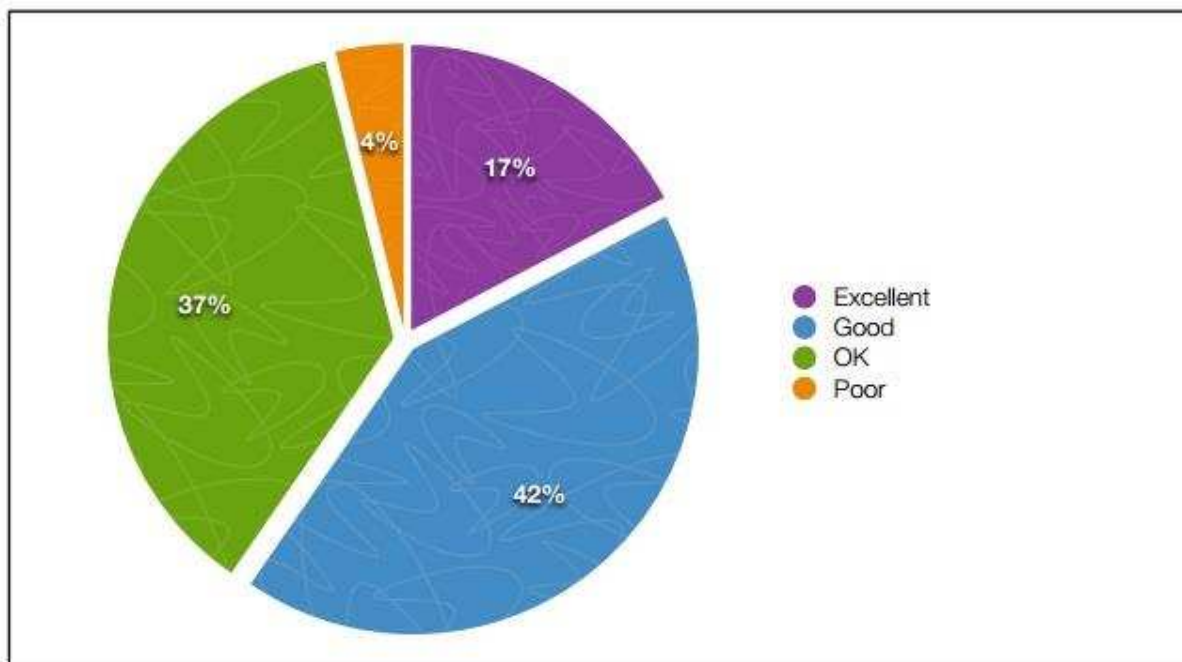
(Figure 4-1) Respondents' ratings of their online learning experience at UON

Results have shown that what participants liked the most regarding their online learning experience were its online nature, flexibility, communication with peers from other campuses and the interactive activities and tasks available on Moodle. On the other hand, what students perceived as challenging about the NOOC include the lack of normal University environment, asynchronous interaction and technological infrastructure problems such as the adoption of Moodle as a Virtual Learning Environment. Recommendations put forward by students and staff, include overcoming the difficulties listed previously and amongst, others, setting online groups that would allow for more social interaction. With regards to future NOOCs, the majority of respondents (74%) said they would take another UON course were it taught entirely online, whilst a small minority (10%) stated they would not take this option. Although, the majority of students rated their online learning experience positively, only a few students commented on what they found useful about their online learning experience. The majority of students stated that what

they liked best about the course was its online nature and the flexibility online learning provides them.
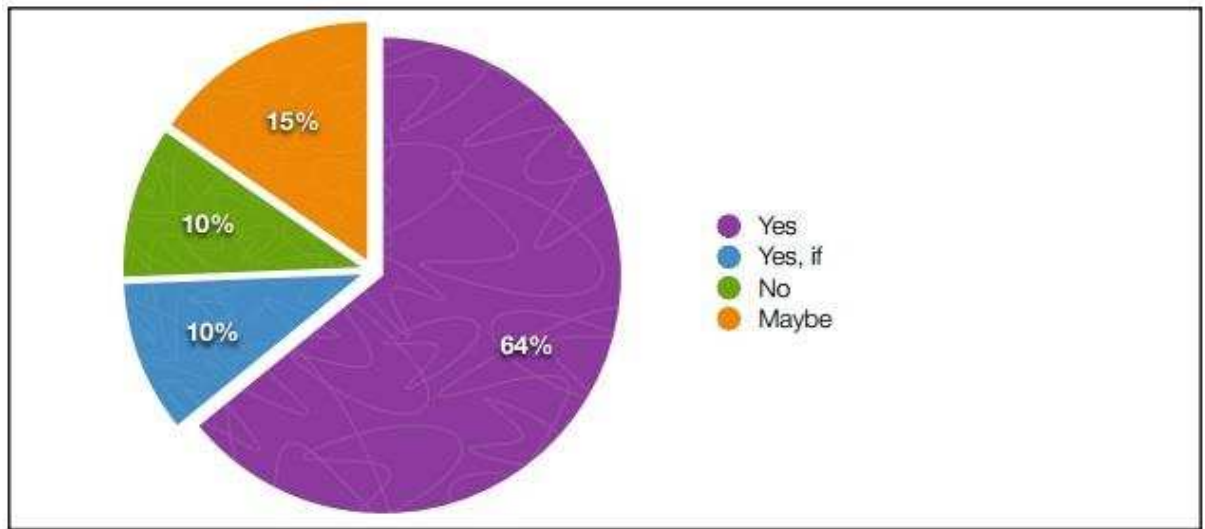
(Figure 4-2) Number of students that would take UON course taught entirely online

While the data used in UON analysis is small, this section of the report has demonstrated a promising outcome with regards to teaching a complex topic to a large number of students in the University who, report not only learning at their own pace and at their own intensiveness, but who have also benefitted from understanding global points of view.

4.4 Case study

4.4.1 Overview

The Arab League, having its Head Quarter in Cairo- Egypt, It has a great Arab Organisation specialized in education, Training and consultations, which is "The Arab Academy for Science, Technology and Maritime Transport".

Establishing the Arab Academy for Science, Technology and Maritime Transport (AASTMT) as a regional institute for maritime transport started as a notion in the Arab League Transport Committee's meetings on 11th of March, 1970. This notion came after the Arab League's Council issued, in its fifty third session, decree no. 2631/1970 stipulating the endorsement of founding a regional centre for maritime transport training. The decree commissioned the Arab Republic of Egypt, on behalf of all the Arab countries, to ask for a technical aid from the United Nations" organizations specialized in the field of maritime transport. Over more than 30 years, the AASTMT has had many achievements in education, training and research in the fields of maritime transport, engineering and management sciences. This is due to the methodological application of modern technology

in these fields. The AASTMT was thus able to move from regionalism to internationalism. In 2007, the AASTMT was among the institutes that occupied the first six positions on the list of the ISO's (International Organization for Standardization) international educational institutes who were to receive the Organization's award for standard levels of higher education.

AASTMT has extended its activities from its main headquarters in Alexandria, to Cairo, South of the Valley and Latakia in an attempt to offer its distinct services to the sons of all the Arab countries. This is due to the fact that the AASTMT is considered a unique model for the collective Arab work on the lands of Egypt, which owns all of its assets (public property).

Other than Maritime Studies, AASTMT offers a variety of undergraduate and post graduate studies in the fields of Engineering and technology, Computer Sciences, International Transport and Logistics, Management and technology, Languages and Communication, and Total Quality Management. In 2009, it was announced the launch of the new E-Learning System, using MOODLE as learning environment. The total number of students in all branches at the AASTMT in Egypt was 18400 students by the first semester 2010. By the second semester 2013 the total number of students was 18531 students, and by the first semester of 2014 (the last semester) it becomes 20076 students.

(Figure 4-3) Announcement of E-learning system at AASTMT in 2009

4.4.2 Population

In Order to choose our sample from this large population, we had to have a deep look to the numbers of students in each college in each Campus, and how these numbers were developed since the announcement of launching the new E-learning system in October

2009. The first start of study after this announcement was the first semester 2010. Our case study started the second semester 2013.

4.4.2.1 Distribution of Students in Campuses and Branches

The distribution of total numbers of students among AASTMT Campuses and Branches is as shown in the following table:-

Table (4.2) Distribution of students among AASTMT Campuses and Branches

Distribution of students among AASTMT Campuses and Branches in Egypt			
Campuses and Branches	Total number of students in 2010	Total number of students in 2013	Total number of students in 2014
Alexandria Campus	10984	10340	10773
Abukir Branch	8718	8186	8216
Miami Branch	2266	2154	2557
Cairo Campus	7152	7336	8192
Heliopolis Branch	6099	6722	7440
Dokki Branch	1053	599	698
Smart Village Branch	0	15	54
South Valley Campus	254	855	1111
Total Number of students in Egypt	18390	18531	20076

4.4.2.2 Distribution of Students in Colleges

The distribution of students in colleges among AASTMT campuses and branches each year since the first semester 2010 is as shown in the following tables:-

Table (4-3) Number of students in colleges by semester from 2010 till 2014

Number of students in colleges by semester from 2010 till 2014									
Alexandria Campus									
Miami Branch	First semester					Second Semester			
Years	2010	2011	2012	2013	2014	2010	2011	2012	2013
College of Business Administration and Technology	2041	2246	2254	2101	2353	2089	2158	2183	2040
College of Languages and Media	1	1	38	93	175	1	1	38	98
Abou kir Branch	First semester					Second Semester			
Years	2010	2011	2012	2013	2014	2010	2011	2012	2013
College of Maritime Transport	3344	2437	1935	1909	1690	2964	2246	1970	1792
Technical and professional studies	25	2	3	22	36	18	5	3	21

Number of students in colleges by semester from 2010 till 2014									
Alexandria Campus									
institute									
College of Engineering and technology	3992	4533	5256	5294	5175	3790	4516	5287	5207
College of Computer and Information technology	161	142	175	206	290	152	144	167	204

Table (4-4) Number of students in each college by semester

Number of students in each college by semester from 2010 till 2014									
Cairo Campus									
Dokki Branch	**First semester**					**Second Semester**			
Years	2010	2011	2012	2013	2014	2010	2011	2012	2013
College of Business Administration and Technology	556	509	425	310	336	524	497	397	287
College of International transport and logistics	495	489	416	326	362	492	472	384	312
Heliopolis Branch	**First semester**					**Second Semester**			
Years	2010	2011	2012	2013	2014	2010	2011	2012	2013
College of Engineering and technology	3087	3350	3692	3835	3768	3050	3376	3646	3703
College of Computer and Information technology	204	216	208	210	254	189	212	197	198
College of Business Administration and Technology	1306	1367	1427	1522	1791	1268	1375	1403	1494
College of International transport and logistics	1497	1479	1326	1118	1200	1440	1427	1235	1062
College of Languages and Media	4	4	89	244	426	2	3	106	263
Smart Village Branch	**First semester**					**Second Semester**			
Years	2010	2011	2012	2013	2014	2010	2011	2012	2013
College of Engineering and technology	3	7	85	278	498	2	8	97	288

Number of students in each college by semester from 2010 till 2014									
Cairo Campus									
College of Business Administration and Technology	1	1	2	18	78	1	1	3	22

Table (4-5) Distribution of students at South Valley Campus in colleges by semester

Number of students in each college by semester from 2010 till 2014									
South Valley Campus									
	First semester				**Second Semester**				
Years	2010	2011	2012	2013	2014	2010	2011	2012	2013
College of Engineering and tech.	122	187	386	561	721	122	189	386	569
College of Business Administration and Technology	69	94	112	142	162	65	93	110	143
College of International transport and logistics	63	88	109	145	198	63	84	104	143

4.4.2.3 Use of E-learning in Colleges

Interviews were made with the deans of colleges to know how many courses delivered online using the MOODLE. In Alexandria Campus, the Moodle is not used to teach any course due to technical problems (according to what deans said). In south valley, the situation was the same. At last in Cairo Campus, I found that the only college who deliver part of each its 48 face to face courses online - in sort of videos, PDF, and Power point materials uploaded Through the MOODLE - was the College of Business Administration and Technology in Heliopolis Branch. This study started, in the second semester 2013, the number if students at this College were 1403 Students. It ends up the last semester (First semester 2014) to be 1791 students.

4.4.2.3.1 Variation of number of students in College of Business Administration-Heliopolis

Since the announcement of launching E-learning system at AASTMT, the first study was at the first semester 2010, when the number of students at the College of Business Administration-Heliopolis was 1306 students. This number varies between decrease and increase till the second semester 2013 to be 1494 students, then 1791students at the first semester 2014. The following graphs show the variation in number of students at College of Business Administration –Heliopolis:-
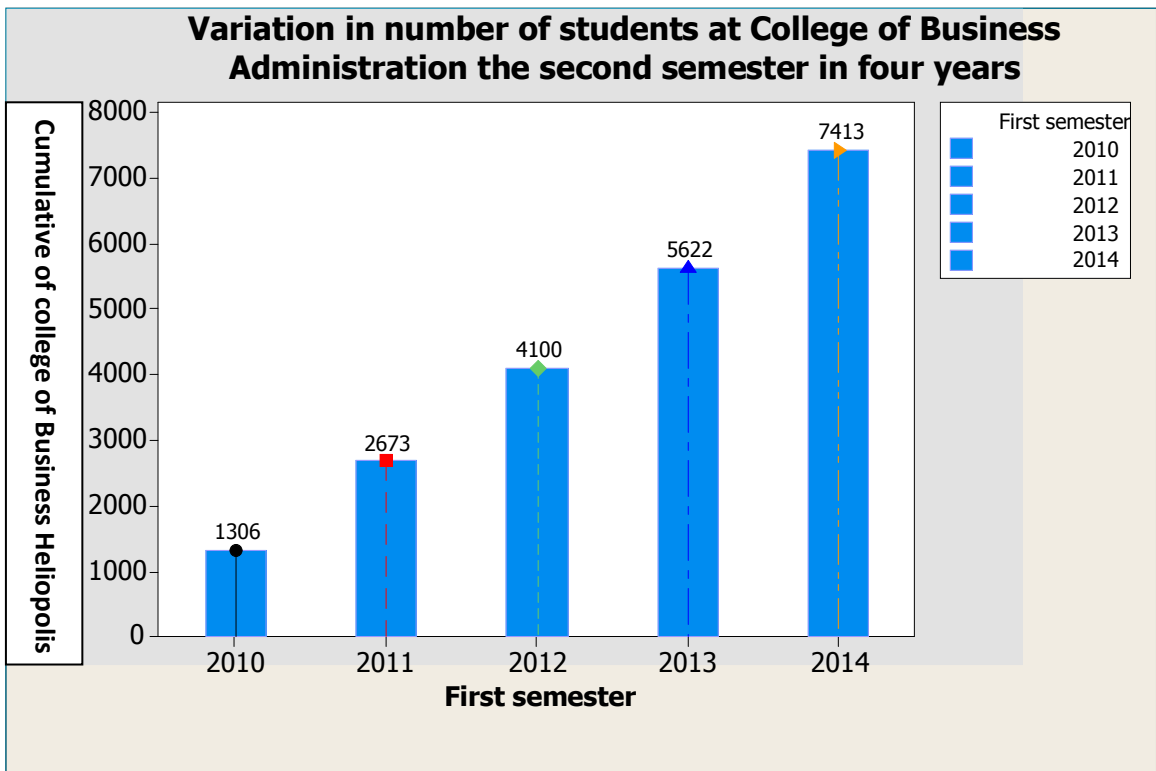
(Figure 4-4) Variation in number of students at the College of Business Administration in Heliopolis

The first semester in four years
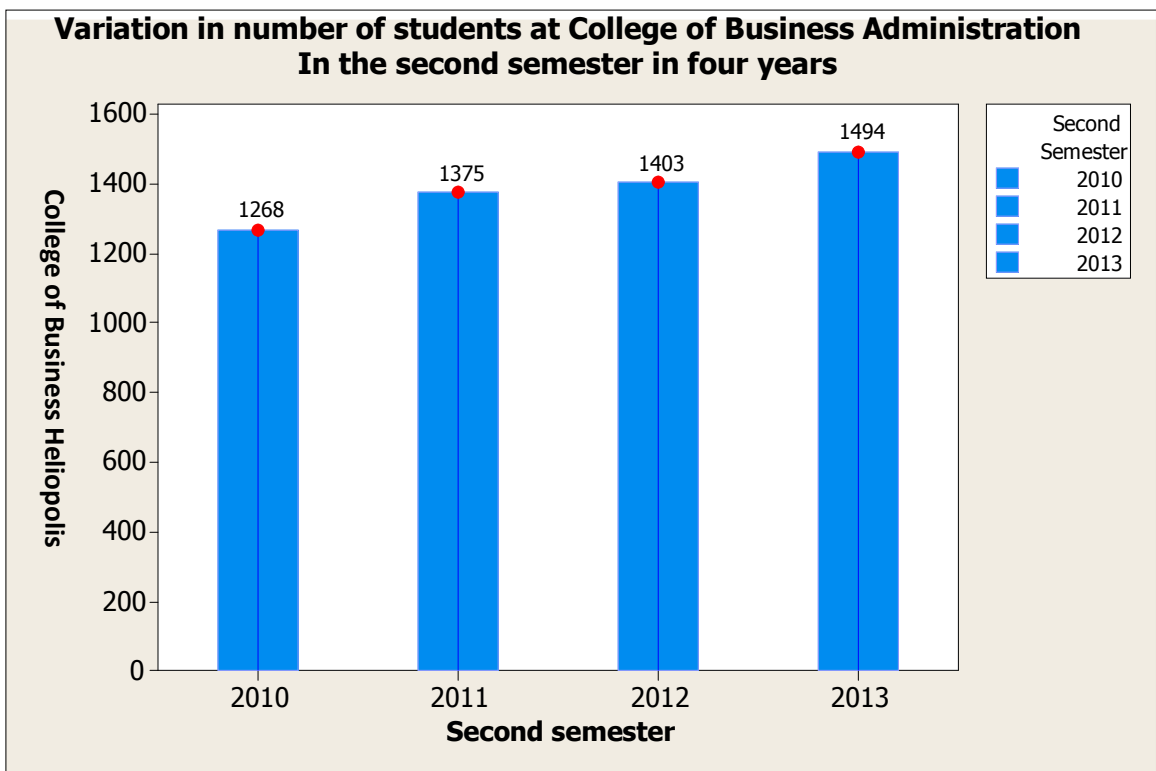
(Figure 4-5) Variation in number of students at the College of Business Administration in Heliopolis

The second semester in four years

4.4.2.3.2 Faculty members at the College of Business Administration-Heliopolis

Learning is not just about students, but it is a relationship between instructor and student through learning environment. Thus, we had to know the number of teaching staff members at AASTMT as well, to be able to collect our required data through the designed questionnaires. Thus, we refer to the Deanery of Faculty affairs at AASTMT. According to the data delivered by the Assistant Dean for Faculty Affairs, the total number of teaching staff members is 192 members for Maritime studies, and 1221 members for other studies. So, the total number of AASTMT Faculty members is 1413 teaching staff, from which 501 members - about 35.5% - are in Cairo Campus. The number of faculty members at the college of Business Administration and technology in Heliopolis Branch – the only college using online teaching - is 93 faculty members from a total of 501. It represents 18.56% from the total number of Faculty members in Cairo Campus. The following table shows the distribution of these members in colleges.

Table (4-6) Distribution of Faculty Members in Cairo Campus in colleges

Numbers of Faculty members in Colleges at AASTMT -Cairo Campus						
Colleges	**Professors**	**Associate Professors**	**Teachers**	**Teaching Assistants**	**GTAs**	**Total**
College of Business Administration and Technology -Dokki	2	4	11	31	12	**60**
College of Business Administration and Technology -Smart village	0	0	0	0	1	**1**
College of Business Administration and Technology -Heliopolis	2	5	8	46	32	**93**
College of Computer and Information technology	3	2	6	4	9	**24**
College of Languages and Media - Heliopolis	2	3	5	10	13	**33**
College of Languages and Media- Smart village	0	0	0	0	1	**1**

Numbers of Faculty members in Colleges at AASTMT -Cairo Campus						
Colleges	Professors	Associate Professors	Teachers	Teaching Assistants	GTAs	Total
College of International Transport and logistics	2	3	8	37	12	62
College of Engineering and technology -Heliopolis	22	23	26	77	71	219
College of Engineering and technology- Smart village	1	0	1	2	4	8
Total numbers of faculty members in Cairo Campus	34	40	65	207	155	501

4.4.3 Data Collection Method

Data collection is the process of gathering and measuring information on variables of interest, in an established systematic fashion that enables one to answer stated research questions, test hypotheses, and evaluate outcomes. The data collection component of research is common to all fields of study including physical and social sciences, humanities, business, etc. While methods vary by discipline, the emphasis on ensuring accurate and honest collection remains the same. The goal for all data collection is to capture quality evidence that then translates to rich data analysis and allows the building of a convincing and credible answer to questions that have been posed.

Five popular ways has been recognized for collecting and analysing empirical data in business research. It includes experiments, survey, and analysis of archival information, histories and case studies. The study used survey as the main method strategy to research. In surveys, data are standardized, and comparison is easy, however it costs much time to do it.

All data collection techniques, questionnaire has proved to be most useful survey instrument; it helps collect standardized data which allows easy comparison and statistical application. According to Collis and Hussey (2003), despite disadvantage associated with potential low response rates, written questionnaire has following advantages Collis and Hussey (2003)

- It is cost effective compared to face-to-face interviews, especially for a large sample size and distant geographic areas;

- Most people tend to be familiar with questionnaires, which tends to reduce any apprehensiveness;

- A self-administered questionnaire reduces interviewer bias, as the researcher's own opinions will not influence respondents.

During the survey research, there are some errors which cannot be avoided. Bryman and Bell (2003) suggested that there are four main factors will make survey research error as shown in Figure (4-6):

- Sampling error: this kind of error arises because it is extremely unlikely that one will end up with a truly representative sample, even when probability sampling is employed.

- Sampling-related error: this kind of error arises from activities or events that are related to the sampling process and that are connected with the issue of generalize ability or external validity of findings.

- Data-collection error: this source of error includes such factors as: poor question wording in self – completion questionnaire.

- Data processing error: this kind of error arises from faulty management of data, in particular errors in the coding of answers.
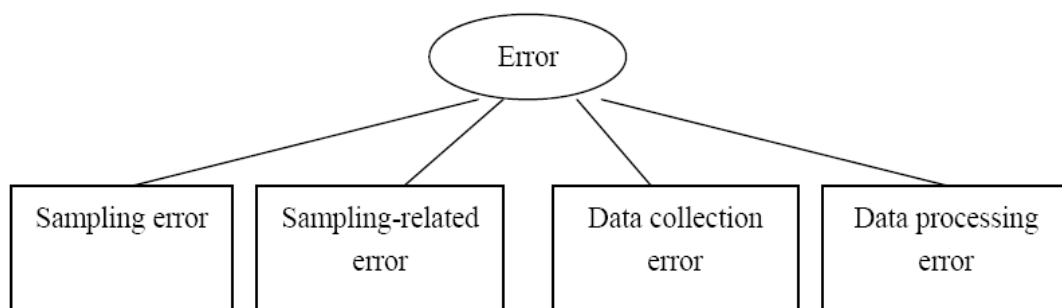
(Figure 4-6) four sources of error in social survey research

4.4.4 Questionnaires

4.4.4.1 Questionnaire Design

In this survey, a self-completion questionnaire with closed questions is developed. The self-completion questionnaire is very similar method of business research, and the research instrument has to be especially easy to follow and its questions have to be particularly easy

to answer. Meanwhile, whether to ask a question in an open or closed format is one of the most significant considerations for many researchers. According to Bryman and Bell (2003), closed questions have some advantages:

- It is easy to process answers.
- It enhances the comparability of answers.
- Makes them easier to show the relationship between variables.
- It is better than open question for this study.

In this study two questionnaires were developed to collect data:

- The first questionnaire to evaluate instructor's Satisfaction for the work at e- learning program, and it includes 19 quantitative questions with Likert scale five (Appendix A)
- The second Questionnaire to measure Student Satisfaction from Online Courses, it includes 58 questions distributed on five dimensions (Learner Contents, Learner Instructor, Learner to Learner, Learner Technology, and General Satisfaction) with (26) qualitative questions, (23) quantitative questions with Likert scale five, and (9) quantitative questions with Likert scale three (Appendix B)

4.4.4.2 Validity

An instrument is valid if it measures what it is intended to measure and accurately achieves the purpose for which it was designed. Validity is a matter of degree and discussion should focus on how valid a test is, not whether it is valid or not. No test instrument is perfectly valid; researcher needs some kind of assurance that the instrument being used will result in accurate conclusions. Validity involves the appropriateness, meaningfulness, and usefulness of inferences made by the researcher on the basis of the data collected. Validity can often be thought of as judgmental. Content validity is determined by judgments on the appropriateness of the instruments Content, which identifies three principles to improve content validity:

- Use a broad sample of content rather than a narrow one.
- Emphasize important material.
- Write questions to measure the appropriate skill.

These three principals were addressed when writing the survey items. To provide additional content validity of the survey instrument, the researcher formed a focus group of five to ten experts in the field of Computer literacy who provided input and suggestive

feedback on survey items. Members Of the focus group were educators at the college and/or high school level who have taught or are currently teaching computer literacy skills. Comments from the focus group indicated that the skills listed in the survey were basic/intermediate skills and were appropriate for all college students to know and be able to do. Some members of the Focus group suggested that the survey might be a bit long and that skills could be generalized and consolidated for a more concise survey.

4.4.4.3Reliability

Reliability is defined as be fundamentally concerned with issues of consistency of measures. There are three prominent factors related to considering whether a measure is reliable: stability, internal reliability and inter-observer consistency. In this study, internal reliability will be considered. **Bryman and Bell (2003)** suggested that a multiple-item measure in which each answers to each questions are aggregated to form an overall score, we need to be sure that all our indicators are related to each other. It can be test use Cronbach's alpha method. The result of 0.6 and above implies an acceptable level of internal reliability.

In statistics, Cronbach's α (alpha) is a coefficient of internal consistency. It is commonly used as an estimate of the reliability of a psychometric test for a sample of examinees. It was first named alpha by Lee Cronbach in 1951, as he had intended to continue with further coefficients. In this survey, there are total 300 feedbacks from sample population. To test the internal reliability, the Cronbach's alpha is calculated for items designed for the same construct according to equation (4.1).

$$\alpha = \frac{k}{k-1}\left[1 - \frac{\sum S_i^2}{S_t^2}\right] \qquad (4.1)$$

Where

- **K** is the number of items (paragraphs) test.
- S_i^2 Is a variance response to each paragraph of the test.
- S_t^2 Is variance of the total answers of paragraphs of the test.

Table (4-6) shows that all constructs for the two questionnaires, which have Cronbach's alphas for instructor's Satisfaction of the first questionnaire equal (0.815), and Cronbach's alphas for dimensions of Student's Satisfaction of the second questionnaire ranges between

(0.804, 0.845), which larger than 0.6 (a level considered "acceptable" in most social science research).

Table (4-7) Cronbach's alpha for constructs of the two questionnaires

Variables	Dimensions	Number of Items	Cronbach's Alpha
instructor's Satisfaction (1st questionnaire)	Control	19	0.815
Dimensions of Student's Satisfaction (2nd questionnaire)	Learner – Content	8	0.804
	Learner – Instructor	15	0.870
	Learner – Technology	9	0.845
Total		32	0.837

4.5 Case Selection and Sampling

A population is the whole group that the research focuses on. Sample is the segment of the population that is selected for investigation (Bryman and Bell, 2003). In quantitative research, the need to sample is one that is almost invariably encountered. And sampling constitutes a key step in the research process in social survey research. In this research, the case selection is focused on two populations the first one for instructors work at e- learning program, and the second population for the students learn from these Online Courses and programs.

The size of the instructors sample is determined through two steps:

- Step one: Determine the size of the sample without taking into account the research community using equation (4.2):

$$n = \frac{t^z p(1 - p)}{d^2} \quad (4.2)$$

Where

- n is the sample size required.
- t is the number of standard units, ± 1.96 for the 95% confidence level.

- p is the proportion of vocabulary that having the characteristics in question which is 50%.
- d is the limit of error of 5% to 95% confidence level.

Substitute in equation (4.2), sample size required (n) before amendment is:

$$n = \frac{(1.96)^2 \times 0.5 \times (0.5)}{(0.05)^2} = \frac{3.8416 \times 0.25}{0.0025} = \frac{0.9604}{0.0025} \cong 385$$

The researcher finds the required instructor's sample size (n) equal 385

- Step two: Determine the size of the instructor's sample taking into consideration the size of the community using equation (4.3).

$$n1 = \frac{n}{1 + n/N} \quad (4.3)$$

- n1 sample size modified with size of research community.
- n sample size without taking into account research community.
- N size of instructors population which equal (20) members.

Substitute in the equation (4.3) the sample size required (n1) after amendment is:

$$n1 = \frac{385}{1 + 385/20} = 19.01 \cong 19$$

The first sample size was chosen to be (19) from instructors community; and questionnaires were distributed to instructors to ask for their help, (18) answered the questionnaire and (17) feedbacks are complete, i.e. no missing data in the questionnaire.

The same procedure was applied for the second questionnaire for the students whose population size is (60), and the second sample size was chosen to be (52) from students community; and questionnaires were distributed to students to ask for their help, (51) answered the questionnaire and (50) feedbacks are complete, i.e. no missing data in the questionnaire.

4.6 Statistical Tools

The results of the survey were analysed using descriptive statistics, and there are many basic techniques for analysing qualitative and quantitative data. In this study, the software

of Statistical Package for the Social Sciences (**SPSS**) for Windows was chosen to analyse the data. To achieve the objectives of the study and answer their questions, the researcher distributed two questionnaires, the first Questionnaire which designed to measure the instructor's Satisfaction for the current work at e- learning program, (17) were collected at response rate of (92.31%), And the second Questionnaire which designed to measure the student Satisfaction from Online Courses distributed on the students and (50) were collected at response rate of (92.31%). Then the data was entered in the computer program **SPSS**, and the data collected was analysed and hypotheses were tested through statistical methods, among them the following:

- Distributions and frequency tables: include frequencies, percentages for the qualitative variables of the questionnaire, which aims to identify the frequency responses of personnel (instructors, students) of the study sample.

- The Cronbach's alpha are calculated to assess the reliability of those items, it is used to verify the stability of the measuring tools used. For construct with alpha under certain threshold (0.6), items within each construct are to be checked in order to ensure that the items have high correlations.

- Arithmetic means and standard deviations: After reliability confirmed, the summated averages of the items in each construct will be studied further. And to rule on the response of the study sample, and to identify the answers to the dispersal of personnel of the study sample.

- One Sample t test: used to compute a confidence interval and performs a hypothesis test of the population mean $\mu = \mu_0$ when population standard deviation σ is unknown.

- Two Sample t test: used to compute a confidence interval and performs a hypothesis test of the difference between two populations means when σ is unknown and samples are drawn independent from each other, or testing the equality of two population means.

4.7 Instructors Satisfaction from e- learning before Improvement

Table (4-2) shows the answers of instructors work at e- learning program before Improvement, which has a mean (3.237), against standard deviation equal (0.502), Also, the statements of e- learning program have mean ranges between (2.750, 3.625), and standard deviation ranges between (0.463, 1.302).

It is also noted from Table (4-7) that:

- Statement (19) which states that "Overall, are you satisfied with this e-learning program as a place to work?", has achieved the highest mean (3.625) and standard deviation (0.518).
- While construct (1) which states that "How easy is it to get the resources you need to teach e- learning program?", has achieved the least mean (2.750) and standard deviation (1.282).

Table (4-8) Satisfaction of instructors work at e- learning program before Improvement

#	Statements	Mean	Standard Deviation.
1	How easy is it to get the resources you need to teach e- learning program?	2.750	1.282
2	How safe do you feel teaching his e-learning program?	3.625	0.916
3	How useful is the feedback the principal at this e-learning program gives you?	3.500	1.195
4	How much support does the administration at this e-learning program give to the teaching staff?	3.375	0.916
5	How reasonable are the expectations for student achievement at this e-learning program?	3.620	1.061
6	How much does this e-learning program give attention to standardized tests?	3.500	0.756
7	How well do instructors at this e-learning program collaborate with each other?	3.250	1.282
8	How much attention does this e-learning program give to your professional growth?	3.375	1.302
9	How much financial support does this e-learning program give you for your professional growth?	3.125	0.641
10	10. Overall, are you satisfied with the teaching experience at this e-learning program?	3.250	0.707
11	How positive are your interactions with other members of your department working in e-learning program?	3.125	0.991
12	How effective is the leadership of your department chair toward e-learning program?	3.375	0.916
13	How much do you feel your department chair values your input in making decisions concerning e-learning program?	3.000	1.069
14	How effectively do you feel your talents are being used by your department in the E-learning program?	2.875	1.246
15	How fair are the administrative procedures at the E-learning program?	3.250	0.463

#	Statements	Mean	Standard Deviation.
16	Are you satisfied with the senior administration at this e- learning program?	3.250	0.707
17	How manageable is your teaching requirement at this e-learning program?	3.125	0.835
18	How fair is your pay at this e-learning program?	3.000	0.756
19	Overall, are you satisfied with this e-learning program as a place to work?	3.625	0.518
e- learning program Mean and Std Dev.		3.237	0.502

To validate and confirm these results, researcher developed 1-Sample T test between instructor's perceived answers and their expectations (researcher proposed value 4.5 of Likert scale five), and Table (4-9) shows the results of this test:

Table (4-9) 1 Sample-T for instructors satisfaction for current work at e- learning program

Variables	Mean	StDev	SE Mean	Upper Bound of C. I	T Calculated	P Value
Overall instructor's satisfaction	3.237	0.502	0.178	3.573	-7.11	0.000

From Table (4-9), researcher concludes that, Null hypothesis which states "Overall perceived instructor's satisfaction exceeds their expectations for the work at e- learning program" is rejected, and the alternative hypothesis is accepted, that means there is a gap between instructor's perceived answers and their expectations for satisfaction and this is proved through:

- (P value = 0.000) which is less than (0.05), and (T Calculated = -7.11) which is less than (T Tabulated) that equal (-2.365) and this confirm previous result.
- Also, this is confirmed through confidence interval where its upper bound is (3.573), which does not include the value (4.5).

These results confirm there is a gap between instructor's perceived satisfaction and their expectations; and it means that instructor's perception for satisfaction of the work at e-learning program does not exceed their expectation.

To confirm the previous results, a comparison between the answers of instructors (perceived values) for all statements of e- learning program and their expectation were done by developing (19) 1-Sample T test and Table (4-10) shows the results of these tests:

Table (4-10) 1 Sample-T for elements of instructor's satisfaction

Variables	Mean	St. Dev	SE Mean	Upper Bound of C. I	T Calculated	P Value
Statement 1	2.750	1.282	0.453	3.609	-3.86	0.003
Statement 2	3.625	0.916	0.324	4.239	-2.70	0.015
Statement 3	3.500	1.195	0.423	4.301	-2.37	0.025
Statement 4	3.375	0.916	0.324	3.989	-3.47	0.005
Statement 5	3.125	0.641	0.227	3.554	-6.07	0.000
Statement 6	3.500	0.756	0.267	4.006	-3.74	0.004
Statement 7	3.250	1.282	0.453	4.109	-2.76	0.014
Statement 8	3.375	1.302	0.460	4.247	-2.44	0.022
Statement 9	3.125	0.641	0.227	3.554	-6.07	0.000
Statement 10	3.250	0.707	0.250	3.724	-5.00	0.001
Statement 11	3.125	0.991	0.350	3.789	-3.92	0.003
Statement 12	3.375	0.916	0.324	3.989	-3.47	0.005
Statement 13	3.000	1.069	0.378	3.716	-3.97	0.003
Statement 14	2.875	1.246	0.441	3.710	-3.69	0.004
Statement 15	3.250	0.463	0.164	3.560	-7.64	0.000
Statement 16	3.250	0.707	0.250	3.724	-5.00	0.001

Variables	Mean	St. Dev	SE Mean	Upper Bound of C. I	T Calculated	P Value
Statement 17	3.125	0.835	0.295	3.684	-4.66	0.001
Statement 18	3.000	0.756	0.267	3.506	-5.61	0.000
Statement 19	3.625	0.518	0.183	3.972	-4.78	0.001

From Table (4-10), it was concluded that, Null hypotheses which states "perceived elements of instructor's satisfaction exceeds their expectations for the work at e- learning program" are rejected, and the alternative hypotheses are accepted, that means there are gaps between instructor's perceived answers and their expectations for elements of satisfaction and this is proved through:

- P value ranges between (0.000, 0.025) which are less than (0.05), and T Calculated which ranges between (-7.84, -2.37) which is less than (T Tabulated) that equal (-2.365) and this confirm previous results.
- Also, this is confirmed through confidence interval where its upper bound is ranges between (3.506, 4.301), which does not include the value (4.5).

These results confirm there is a gap between instructor's perceived satisfaction and their expectations; and it means that instructor's perception for satisfaction of the work at e-learning program does not exceed their expectation.

4-8 Student Satisfaction from Online Courses before Improvement

Evaluation of the second Questionnaire which designed to measure Student Satisfaction from Online Courses includes 58 questions distributed on five dimensions (Learner Contents, Learner Instructor, Learner to Learner, Learner Technology, and General Satisfaction) with (26) qualitative questions, (23) quantitative questions with Likert scale five, and (9) quantitative questions with Likert scale three as follows:

- Learner Contents: which includes 15 questions (1–7) qualitative questions, (8 up to 15) quantitative questions with Likert scale five.
- Learner Instructor: which includes 21 questions (1–6) qualitative questions, (7 up to 21) quantitative questions with Likert scale five.

- Learner to Learner: includes 7 qualitative questions
- Learner Technology: includes 9 quantitative questions with Likert scale three.
- General Satisfaction: includes 6 qualitative questions

Analysis of the second Questionnaire needs for researcher to compare the perceived answers for Student on these dimensions with the expected values for these dimensions (researcher proposed value 4.5 of Likert scale five). To fulfil these tasks the researcher developed the following:

- Distributions and frequency tables for Student's perceptions for (qualitative questions) on each dimensions of Satisfaction.

- Calculation of mean and standard deviation of Student's perceptions for (quantitative questions) on each dimensions of Satisfaction.

- (1-Sample P) test developed between Student's perceptions and their expectation on dimensions of Satisfaction (qualitative questions) on Online Courses.

- (1-Sample T) test developed between Student's perceptions and their expectation on dimensions of Satisfaction (quantitative questions) on Online Courses.

4-8-1 Student Satisfaction on Learner Contents before Improvement

To evaluate Student Satisfaction on Learner Contents from Online Courses which includes 15 questions divided into two parts, the first part includes (1 up to 7) qualitative questions, and second part includes (8 up to 15) quantitative questions with Likert scale five, researcher developed for qualitative questions (1-7) distributions and frequency tables for Student's perceptions for these questions, and (1-Sample P) test between Student's perceptions and their expectation, but for quantitative questions (8-15) researcher calculate mean and standard deviation for these questions and developed (1-Sample T) test between Student's perceptions and their expectation as follows:

4-8-1-1 Analysis of qualitative data of Contents before Improvement

Table (4-11) shows the answers of Students on the qualitative questions (1-7), it is clear that the percentage of all questions ranges between (16%, 50%) which are less than the expected value (90%), and that means the Students are not satisfied with these Contents and it needs improvement.

Table (4-11) perceived student satisfaction for qualitative data of Learner Contents from Online Courses

before Improvement

No	Dimensions	frequency	Percentage
1	The websites linked to the course facilitate learning.	16	32%
2	The course documents/ lessons/ lecture notes facilitate learning.	8	16%
3	The assignments/Projects in the course facilitate learning.	11	22%
4	Learning activities in the course require application of problem solving skills which facilitate learning.	17	34%
5	Learning activities require critical thinking which facilitate learning.	15	30%
6	Preparations for quizzes/ exams in the online course facilitate learning.	20	40%
7	The online classes help to improve written communication skills.	25	50%

Also to confirm validity and significance of this result, 1-Sample P test was applied and results are summarized in Table (4-12), which prove previous results through:

- (P value = 0.000) is less than (0.05), and researcher reject Null hypothesis, which states that "perceived student satisfaction for qualitative data of Learner Contents from Online Courses before Improvement exceeds their expectation", and accept alternative hypothesis.

- Also, this is confirmed through confidence interval where its upper bound ranges between (0>270, 0.624) which does not include the value (0.900).

Table (4-12) Results of 1 Sample-P test for perceived student satisfaction for qualitative data of Learner Contents from Online Courses before Improvement

Questions of Learner Contents	X	N	Sample p	Upper Bound C.I.	P value
Question 1	16	50	0.320	0.445	0.000
Question 2	8	50	0.160	0.270	0.000
Question 3	11	50	0.220	0.338	0.000
Question 4	17	50	0.340	0.465	0.000
Question 5	15	50	0.300	0.424	0.000
Question 6	20	50	0.400	0.526	0.000
Question 7	25	50	0.500	0.624	0.000

These results confirm that students are not satisfied with the part one of Learner Contents from Online Courses.

4-8-1-2 Analysis of Quantitative data of Contents before Improvement

Table (4-13) shows the answers of Students on the Quantitative questions (8-15) **of Learner Contents**, which has a mean (3.330), against standard deviation equal (0.633), Also, the statements of **Learner Contents** have mean ranges between (2.660, 3.960), and standard deviation ranges between (0.856, 1.201).

Table (4-13) Overall student's satisfaction from content of e- learning program before improvement

Ser	Statements	Mean	Standard Deviation.
8	How much did success in the course depend upon understanding ideas, rather than memorizing facts?	3.400	1.030
9	How well did section or lab fit in with the other parts of the course?	3.220	1.148
10	Were you given too many assignments, too few assignments, or	3.960	0.856

Ser	Statements	Mean	Standard Deviation.
	about the right amount?		
11	How easy were the assignments in this course?	2.660	1.062
12	How worthwhile was the course material?	2.840	1.076
13	How useful were the assignments in helping you understand the material?	3.160	1.201
14	How organized was the course content?	3.360	1.064
15	Were you satisfied with the course content, neither satisfied nor dissatisfied with it, or dissatisfied with it?	4.040	1.068
Learner Contents Mean and Std Dev.		3.330	0.633

It is also noted from Table (4-13) that:

- Statement (15) which states that "Were you satisfied with the course content, neither satisfied nor dissatisfied with it, or dissatisfied with it?", has achieved the highest mean (4.040) and standard deviation (1.068).

- While construct (11) which states that "How easy were the assignments in this course?", has achieved the least mean (2.660) and standard deviation (1.062).

To validate and confirm these results, researcher developed 1-Sample T test between Student's perceived answers and their expectations, and Table (4-13) shows the results of this test:

Table (4-14) 1 Sample-T for Student's perceived answers and their expectations at e- learning program

Variables	Mean	StDev	SE Mean	Upper Bound of C. I	T Calculated	P Value
Overall instructor's satisfaction	3.330	0.633	0.090	3.480	-13.06	0.000

From Table (4-13), researcher concludes that, Null hypothesis which states "perceived student satisfaction for Quantitative data of Learner Contents from Online Courses before Improvement exceeds their expectation", and accept alternative hypothesis, and that means there is a gap between student's perceived satisfaction and their expectations on Learner Contents and this is proved through:

- (P value = 0.000) which is less than (0.05), and (T Calculated = -13.06) which is less than (T Tabulated) that equal (-2.010) and this confirm previous result.
- Also, this is confirmed through confidence interval where its upper bound is (3.480), which does not include the value (4.5).

These results confirm there is a gap between student's perceived satisfaction and their expectations, and to confirm the previous results a comparison between the answers of students (perceived values) for all statements of Learner Contents and their expectation were done by developing (8) 1-Sample T test and Table (4-14) shows the results of these tests:

(4-15) 1 Sample-T for elements of student's satisfaction

Variables	Mean	StDev	SE Mean	Upper Bound of C. I	T Calculated	P Value
Statement 8	3.400	1.030	0.146	3.644	-7.55	0.000
Statement 9	3.220	1.148	0.162	3.492	-7.88	0.000
Statement 10	3.960	0.856	0.121	4.163	-4.46	0.000
Statement 11	2.660	1.062	0.150	2.912	-12.26	0.000
Statement 12	2.840	1.076	0.152	3.095	-10.91	0.000
Statement 13	3.160	1.201	0.170	3.445	-7.89	0.000
Statement 14	3.360	1.064	0.151	3.612	-7.57	0.000
Statement 15	4.040	1.068	0.151	4.293	-3.04	0.002

From Table (4-14), researcher concludes that, Null hypotheses which states "perceived elements of student's satisfaction exceeds their expectations for Learner Contents from Online Courses before Improvement" are rejected, and the alternative hypotheses are accepted, that means there are gaps between perceived student's satisfaction and their expectations for elements of satisfaction and this is proved through:

- P value ranges between (0.000, 0.002) which are less than (0.05), and T Calculated which ranges between (-12.26, -3.04) which is less than (T Tabulated) that equal (-2.010) and this confirm previous results.
- Also, this is confirmed through confidence interval where its upper bound is ranges between (2.912, 4.293), which does not include the value (4.5).

These results confirm there is a gap between student's perceived satisfaction and their expectations; and it means that students for satisfaction of **Learner Contents** do not exceed their expectation.

4.8.2. Student Satisfaction on Learner – Instructor before Improvement

To evaluate Student Satisfaction on dimension Learner Instructor from Online Courses which includes 21 questions divided into two parts, the first part includes (1 up to 6) qualitative questions, and second part includes (7 up to 21) quantitative questions with Likert scale five, researcher developed for qualitative questions (1-6) distributions and frequency tables for Student's perceptions for these questions, and (1-Sample P) test between Student's perceptions and their expectation, but for quantitative questions (7-21) researcher calculate mean and standard deviation for these questions and developed (1-Sample T) test between Student's perceptions and their expectation as follows:

4.8.2.1. Analysis of qualitative data of Learner Instructor before Improvement

Table (4-16) shows the answers of Students on the qualitative questions (1-6), it is clear that the percentage of all questions ranges between (52%, 64%) which are less than the expected value (90%), and that means the Students are not satisfied with these Learner Instructor and it needs improvement.

Table (4-16) Perceived answers for students to evaluation of instructor before improvement

No	Dimensions	frequency	Percentage
1	In the online class, the instructor was an interactive member of the discussion group offering direction to posted comments.	32	64%
2	In the online course, feedback is received timely from the instructor (within 24 to 48 hrs.)	30	60%
3	In the online course there is a Lack of feedback from the instructor which frustrate learner.	28	56%
4	In the online course, learner can get individualized attention from	27	54%

No	Dimensions	frequency	Percentage
	instructor when needed.		
5	The learner can feel the presence of the instructor in the online class. Continuously	31	62%
6	In the online class the instructor encourage communication	26	52%

Also to confirm validity and significance of this result, researcher apply 1-Sample P test and results are summarized in Table (4-16), which prove previous results through:

- (P value = 0.000) is less than (0.05), and researcher reject Null hypothesis, which states that "perceived student satisfaction for qualitative data of Learner Instructor from Online Courses before Improvement exceeds their expectation", and accept alternative hypothesis.
- Also, this is confirmed through confidence interval where its upper bound ranges between (0.643, 0.753) which does not include the value (0.900).

Table (4-17) Results of 1 Sample-P test for Evaluation of learner-instructor dimension before improvement

Questions of Learner Contents	X	N	Sample p	Upper Bound C.I.	P value
Question 1	32	50	0.640	0.753	0.000
Question 2	30	50	0.600	0.717	0.000
Question 3	28	50	0.56	0.680	0.000
Question 4	27	50	0.540	0.662	0.000
Question 5	31	50	0.620	0.735	0.000
Question 6	26	50	0.520	0.643	0.000

These results confirm that students are not satisfied with the part one of Learner Instructor from Online Courses.

4.8.2.2. Analysis of Quantitative data of Learner Instructor before Improvement

Table (4-18) shows the answers of Students on the Quantitative questions (7-21) of Learner Instructor, which has a mean (3.330), against standard deviation equal (0.633),

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Also, the statements of Learner Contents have mean ranges between (2.660, 3.960), and standard deviation ranges between (0.856, 1.201).

Table (4-18) Overall Student's satisfaction from Instructors in online program before improvement

Ser	Statements	Mean	Standard Deviation.
7	How clearly did your instructor explain how students would be graded?	3.400	1.143
8	How fair was your instructor's grading?	3.380	1.086
9	How concerned was your instructor with how well students were learning?	3.240	1.117
10	How motivating was your instructor?	2.860	1.195
11	How well did your instructor relate course topics to each other?	2.960	1.228
12	How much did your instructor stress the importance of understanding ideas, rather than memorizing facts?	3.260	1.084
13	Did your instructor present the material too quickly, too slowly, or at about the right speed?	4.120	1.043
14	Were you satisfied with your instructor's teaching, neither satisfied nor dissatisfied with it, or dissatisfied with it?	3.860	1.161
15	How clearly did your instructor explain the objectives of the course?	3.400	1.050
16	How many of the course objectives did your instructor meet?	3.440	0.884
17	How knowledgeable in the course content was your instructor?	3.280	1.011
18	How clearly did your instructor explain difficult material?	3.560	1.072
19	How well did your instructor distinguish between the most important topics and the least important topics?	3.080	1.027
20	How much class time was spent discussing the most important topics?	3.540	1.092
21	How much class time was spent discussing the least important topics?	3.220	1.130
Learner Instructor Mean and Std Dev.		3.373	0.702

It is also noted from Table (4-18) that:

- Statement (13) which states that "Did your instructor present the material too quickly, too slowly, or at about the right speed?", has achieved the highest mean (4.120) and standard deviation (1.043).
- While construct (10) which states that "How motivating was your instructor?", has achieved the least mean (2.860) and standard deviation (1.195).

To validate and confirm these results, researcher developed 1-Sample T test between Student's perceived answers and their expectations, and Table (4-13) shows the results of this test:

Table (4-19) 1 Sample-T for Overall student's satisfaction from e- learning program before improvement

Variables	Mean	StDev	SE Mean	Upper Bound of C. I	T Calculated	P Value
Overall student's satisfaction	3.373	0.702	0.099	3.540	-11.35	0.000

From Table (4-19), researcher concludes that, Null hypothesis which states "perceived student satisfaction for Quantitative data of Learner Instructor from Online Courses before Improvement exceeds their expectation", and accept alternative hypothesis, and that means there is a gap between student's perceived satisfaction and their expectations on Learner Instructor and this is proved through:

- (P value = 0.000) which is less than (0.05), and (T Calculated = -11.35) which is less than (T Tabulated) that equal (-2.010) and this confirm previous result.
- Also, this is confirmed through confidence interval where its upper bound is (3.540), which does not include the value (4.5).

These results confirm there is a gap between student's perceived satisfaction and their expectations, and to confirm the previous results a comparison between the answers of students (perceived values) for all statements of Learner Instructor and their expectation were done by developing (15) 1-Sample T test and Table (4-14) shows the results of these tests:

Table (4-20) 1 Sample-T for elements of elements of student's satisfaction for Learner Instructor from Online Courses before Improvement

Variables	Mean	Std. Dev	SE Mean	Upper Bound of C. I	T Calculated	P Value
Statement 7	3.400	1.143	0.162	3.671	-6.81	0.000
Statement 8	3.380	1.086	0.154	3.637	-7.29	0.000

Variables	Mean	Std. Dev	SE Mean	Upper Bound of C. I	T Calculated	P Value
Statement 9	3.240	1.117	0.158	3.505	-7.98	0.000
Statement 10	2.860	1.195	0.169	3.143	-9.70	0.000
Statement 11	2.960	1.228	0.174	3.251	-8.87	0.000
Statement 12	3.260	1.084	0.153	3.517	-8.09	0.000
Statement 13	4.120	1.043	0.147	4.367	-2.58	0.007
Statement 14	3.860	1.161	0.164	4.135	-3.90	0.000
Statement 15	3.400	1.050	0.148	3.649	-7.41	0.000
Statement 16	3.440	0.884	0.125	3.650	-8.48	0.000
Statement 17	3.280	1.011	0.143	3.520	-8.53	0.000
Statement 18	3.560	1.072	0.152	3.814	-6.20	0.000
Statement 19	3.080	1.027	0.145	3.323	-9.78	0.000
Statement 20	3.540	1.092	0.154	3.799	-6.22	0.000
Statement 21	3.220	1.130	0.160	3.488	-8.01	0.000

From Table (4-20), researcher concludes that, Null hypotheses which states "perceived elements of student's satisfaction exceeds their expectations for **Learner Instructor** from Online Courses before Improvement" are rejected, and the alternative hypotheses are accepted, that means there are gaps between perceived student's satisfaction and their expectations for elements of satisfaction and this is proved through:

- P value ranges between (0.000, 0.007) which are less than (0.05), and T Calculated which ranges between (-9.78, -2.58) which is less than (T Tabulated) that equal (-2.010) and this confirm previous results.
- Also, this is confirmed through confidence interval where its upper bound is ranges between (3.143, 4.367), which does not include the value (4.5).

These results confirm there is a gap between student's perceived satisfaction and their expectations; and it means that students for satisfaction of Learner Instructor do not exceed their expectation.

Conclusion:-Students cannot judge the course content. The satisfaction with the course content is between slight and moderate.4.4.3.2.12 Learner to instructor Figure (4-37) interaction of instructor Observation:-Only 55.1% agree that the instructor inter

4.8.3. Student Satisfaction on Learner – Learner before Improvement

To evaluate Student Satisfaction on dimension **Learner – Learner** from Online Courses which includes 7 qualitative questions, researcher developed distributions and frequency tables for Student's perceptions for these questions, and (1-Sample P) test between Student's perceptions and their expectation as follows:

Table (4-20) shows the answers of Students on the qualitative questions (1-7), it is clear that the percentage of all questions ranges between (50%, 64%) which are less than the expected value (90%), and that means the Students are not satisfied with these **Learner – Learner** and it needs improvement.

Table (4-21) Perceived answers for students to evaluation objectives of Learner – Learner in online program before improvement

No	Dimensions	frequency	Percentage
1	The online discussion board provides opportunity to problem solving with other learners.	26	52%
2	The online discussion board provides opportunity to critical thinking with other learners.	28	56%
3	The discussion board in the online class is a waste of time.	30	60%
4	In the online class, learner is able to ask for clarification from a fellow student when needed.	25	50%
5	The online course creates a sense of community among learners.	29	58%
6	The online course encourages learners to discuss ideas and concepts covered with other learners.	31	62%
7	Learner at the online course receives timely feedback from other learners in the class (within 24-48 hrs.)	32	64%

Also to confirm validity and significance of this result, researcher apply 1-Sample P test and results are summarized in Table (4-22), which prove previous results through:

- (P value = 0.000) is less than (0.05), and researcher reject Null hypothesis, which states that "perceived student satisfaction for qualitative data of **Learner – Learner** from Online Courses before Improvement exceeds their expectation", and accept alternative hypothesis.
- Also, this is confirmed through confidence interval where its upper bound ranges between (0.624, 0.753) which does not include the value (0.900).

Table (4-22) Results of 1 Sample-P test for Evaluation objectives of Learner – Learner in online program before improvement

Questions of Learner Contents	X	N	Sample p	Upper Bound C.I.	P value
Question 1	26	50	0.520	0.643	0.000
Question 2	28	50	0.560	0.680	0.000
Question 3	30	50	0.60	0.717	0.000
Question 4	25	50	0.500	0.624	0.000
Question 5	29	50	0.580	0.699	0.000
Question 6	31	50	0.620	0.735	0.000
Question 7	32	50	0.640	0.753	0.000

These results confirm that students are not satisfied with the dimension **Learner – Learner** from Online Courses.

4.8.4. Student Satisfaction on Learner – Technology before Improvement

To evaluate Student Satisfaction on dimension **Learner – Technology** from Online Courses which includes 9 quantitative questions with Likert scale three, researcher calculate mean and standard deviation for these questions and developed (1-Sample T) test between Student's perceptions and their expectation. Table (4-22) shows the answers of Students on the Quantitative questions (1-9) of **Learner – Technology**, which has a mean (2.049), against standard deviation equal (0.470), Also, the statements of this dimension

have mean ranges between (1.940, 2.140), and standard deviation ranges between (0.685, 0.824).

Table (4-23) Overall student's satisfaction from technology at e- learning program before improvement

Ser	Statements	Mean	Standard Deviation.
1	Most difficulties encountered when using computers, can be dealt with.	1.940	0.740
2	Enjoy working with computers.	2.140	0.729
3	Very confident in abilities to use computers.	2.029	0.685
4	Computer software packages make learning easier	2.120	0.824
5	Learner of online courses considered to be a skilled computer user	2.080	0.695
6	Learner of online courses find working with computers very easy	2.100	0.814
7	Computers make learner much more productive	2.060	0.740
8	Using computers makes learning more interesting	1.980	0.769
9	Computers are a good aids to learning	2.000	0.700
Learner – Technology Mean and Std Dev.		2.049	0.470

It is also noted from Table (4-23) that:

- Statement (2) which states that "Enjoy working with computers", has achieved the highest mean (2.140) and standard deviation (0.729).
- While construct (1) which states that "Most difficulties encountered when using computers, can be dealt with", has achieved the least mean (1.940) and standard deviation (0.740).

To validate and confirm these results, researcher developed 1-Sample T test between Student's perceived answers and their expectations, and Table (4-23) shows the results of this test:

Table (4-24) 1 Sample-T for Overall student's satisfaction from technology at e- learning program before improvement

Variables	Mean	St.Dev	SE Mean	Upper Bound of C. I	T Calculated	P Value
Overall instructor's satisfaction	2.049	0.470	0.067	2.160	-36.89	0.000

From Table (4-24), researcher rejects Null hypothesis which states "perceived student satisfaction for the dimension **Learner – Technology** from Online Courses before Improvement exceeds their expectation", and accept alternative hypothesis, and that means there is a gap between student's perceived satisfaction and their expectations on **Learner – Technology** and this is proved through:

- (P value = 0.000) which is less than (0.05), and (T Calculated = -36.89) which is less than (T Tabulated) that equal (-2.010) and this confirm previous result.
- Also, this is confirmed through confidence interval where its upper bound is (2.160), which does not include the value (2.7).

These results confirm there is a gap between student's perceived satisfaction and their expectations on the dimension **Learner Technology**, and to confirm the previous results a comparison between the answers of students (perceived values) for all statements of Learner to technology and their expectations were done by developing (9) 1-Sample T test and Table (4-25) shows the results of these tests:

Table (4-25) 1 Sample-T for comparison between the answers of students for all statements of Learner Instructor and their expectations

Variables	Mean	Std. Dev	SE Mean	Upper Bound of C. I	T Calculated	P Value
Statement 1	1.940	0.740	0.105	2.115	-24.47	0.000
Statement 2	2.140	0.729	0.103	2.313	-22.90	0.000
Statement 3	2.020	0.685	0.097	2.182	-25.61	0.000
Statement 4	2.120	0.824	0.117	2.315	-20.42	0.000
Statement 5	2.080	0.695	0.098	2.245	-24.62	0.000
Statement 6	2.100	0.814	0.115	2.293	-20.84	0.000

Variables	Mean	Std. Dev	SE Mean	Upper Bound of C. I	T Calculated	P Value
Statement 7	2.060	0.740	0.105	2.235	-23.32	0.000
Statement 8	1.980	0.769	0.109	2.162	-23.17	0.000
Statement 9	2.000	0.670	0.099	2.166	-25.26	0.000

4.8.5 Student Satisfaction on General Satisfaction before Improvement

To evaluate Student Satisfaction on dimension **General Satisfaction** from Online Courses which includes 6 qualitative questions, researcher developed frequency table for Student's perceptions for these questions, and (1-Sample P) test between Student's perceptions and their expectation, and Table (4-25) shows the answers of Students on the qualitative questions (1-6), it is clear that the percentage of all questions ranges between (60%, 80%) which are less than the expected value (90%), and that means the Students are not satisfied with the dimension **General Satisfaction** and it needs improvement.

Table (4-26) Perceived answers for Student Satisfaction on dimension General Satisfaction from Online Courses

No	Dimensions	frequency	Percentage
1	Learner is satisfied with this online course.	31	62%
2	Learner likes to take another online course.	30	60%
3	The online course did not meet the learner needs.	40	80%
4	Learner would recommend the online course to others.	35	70%
5	Learner learned as much in the online course as compared to a face to face course.	34	68%
6	Learner feels online courses are as effective as face to face courses.	36	72%

Also to confirm validity and significance of this result, researcher apply 1-Sample P test and results are summarized in Table (4-27), which prove previous results through:

- P value ranges between (0.000, 0.025) which is less than (0.05), and researcher reject Null hypothesis, which states that "perceived student satisfaction for qualitative data of **General Satisfaction** from Online Courses before Improvement exceeds their expectation", and accept alternative hypothesis.
- Also, this is confirmed through confidence interval where its upper bound ranges between (0.717, 0.887) which does not include the value (0.900).

Table (4-27) Results of 1 Sample-P test for Evaluation objectives of perceived student satisfaction for qualitative data of General Satisfaction from Online Courses before Improvement

Questions of Learner Contents	X	N	Sample p	Upper Bound C.I.	P value
Question 1	31	50	0.620	0.735	0.000
Question 2	30	50	0.600	0.717	0.000
Question 3	40	50	0.800	0.887	0.025
Question 4	35	50	0.700	0.805	0.000
Question 5	34	50	0.68	0.788	0.000
Question 6	36	50	0.720	0.822	0.000

These results confirm that students are not satisfied with the dimension **General Satisfaction** from Online Courses.

4.9 Summary

- According to pilot survey in Egypt, the e-Learning was implemented in High Education in the near past few years, and the Quality management were also taken as essential of management in these institutes.

- looking at previous experience in the same field, outside Egypt; In University of Nottingham (UON), where online Sustainability course was offered. the majority of students rated their online learning experience positively

- Case study was applied in Egypt on "The Arab Academy for Science, Technology and Maritime Transport", where it was announced the launch of the new E-Learning System, using MOODLE as learning environment In 2009,

- the case selection is focused on two populations the first one for instructors work at e-learning program, and the second population for the students learn from these Online Courses and programs.

- The results of the survey were analysed using descriptive statistics, and there are many basic techniques for analysing qualitative and quantitative data

- In this study, the software of Statistical Package for the Social Sciences (**SPSS**) for Windows was chosen to analyse the data

- The results of statistical analysis confirm that instructor's perception for satisfaction of the work at e- learning program does not exceed their expectation.

- The results of statistical analysis confirm that student's perception for satisfaction from the e- learning program does not exceed their expectation.

<h1 style="text-align: center;">Chapter Five</h1>
<h1 style="text-align: center;">Suggested Model for E-learning Quality service</h1>

5.1 Introduction

E-learning considered being a solution for the challenges of spreading participation, learning for continuing professional development, reduction of resources, and internationalization. Concerns always hover around the quality and efficiency of the education offered through e-learning service. Applying Total Quality Management philosophy through the E-learning system can increase confidence in this style of education. To be successful implementing TQM, its eight key elements should be the main focus. Meanwhile, The Baldrige Criteria provide a comprehensive way to achieve and sustain high performance across the entire educational organization. It is applied to improve schools and its student's education. It is a valuable framework for measuring performance and planning in an uncertain environment. The Criteria help education organizations achieve and sustain the highest national levels of:-

1. student learning outcomes
2. customer satisfaction, safety, and engagement
3. product and service outcomes, and process efficiency
4. workforce satisfaction, safety, and engagement
5. budgetary, financial, and market results
6. social responsibility

The measurement, analysis and knowledge management in the Baldrige criteria examine how the organization selects, gathers, analyses, manages, and improves its data information, and knowledge assets, and how its information technology is managed. It also examines how organization uses review findings to improve its performance. Consequently, there is a need for quality function deployment to evaluate potential responses against needs, to align and compare external realities, internal activities, and financial targets. The main role of QFD is to obtain the voice of internal and external customers and stakeholders, and align functions and activities to deploy "Quality" appropriately for success.

The Suggested E-learning Model aims to improve the opportunity of learning in the developing countries Society. The Idea of this Model is based on a merge between the Eight Elements of Total Quality Management (Ethics- Integrity – Trust – Training –

Teamwork –Leadership – Recognition –Communication) (Padhi, 2010), Baldrige criteria for performance excellence framework (steel, 2012),and Quality function deployment.

5.2 The elements of quality
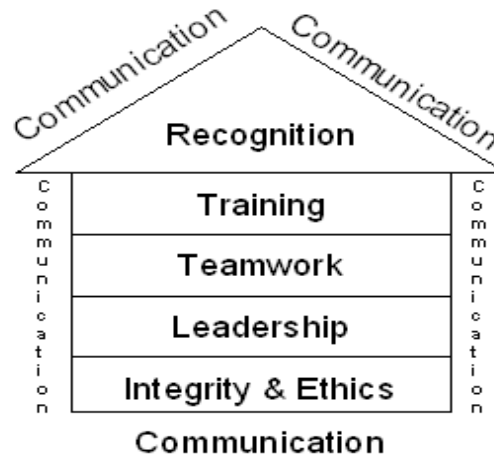
(Figure 5-1) TQM Key Elements

In 2010 Nayantara Padhi explains in his paper "the eight Elements of TQM", that these elements help TQM to describe a philosophy that makes Quality the driving force behind Leadership, design, planning, and improvement. He groups them in a form of a house where the foundation is the Integrity & Ethics. The Bricks were Leadership, Teamwork, and training. Recognition represented the roof, while Communication was the binding mortar.

5.3 Baldrige criteria framework

In 2012, Paul steel argued in his paper "The Baldrige Business Model" that Baldrige, integration of systematic processes is the most active approach to accelerate organizational improvement.
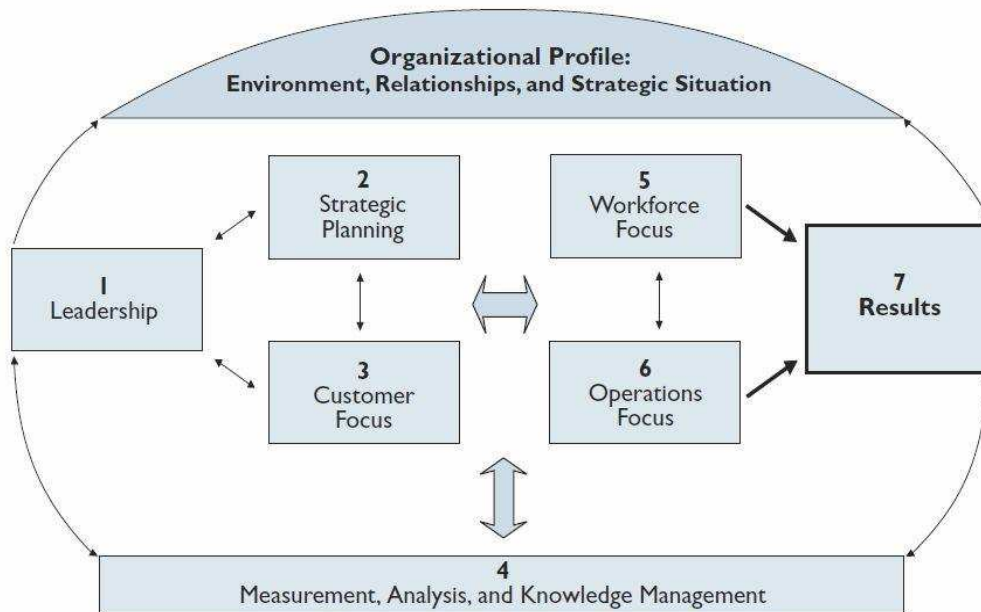
(Figure 5-2) Baldrige Criteria

On the web page http://www.Baldrige.com accessed the 23rd of September 2013, it is claimed that the Baldrige Criteria are built upon a set of core values and concepts. These core values are embedded in the seven Baldrige Categories:

8. Leadership
9. Strategic Planning
10. Customer Focus
11. Measurement, Analysis, and Knowledge Management
12. Workforce Focus
13. Operations Focus
14. Results

Each of these Categories is divided into Items and Areas to Address. The first six Categories each have two Items, while Results has six. The following figure presents Baldrige core categories.

(Figure 5-3) Baldrige core categories

These values and concepts are the foundation for incorporating key business requirements within a framework that creates a basis for action and feedback.

5.4 Quality Function deployment system

Referring to (Joseph P, Ficalora and Louis Cohen, 2010)in there book "Quality Function Deployment and Six sigma", it was asserted that QFD is a method to plan and develop structured product or service, to enables a development team to identify the customer wants and needs, and then evaluate thoroughly each anticipated product or service capability in meeting those needs. And according to what was explained in the Quality Function Deployment (QFD) handbook of "International SEPT Program" at UNIVERSITAT LEIPZIC (MBA. Luis Bernal, Dr. Utz Dornnburger, MBA. Alfredo Suvelza, MBA. Trevor Byrnes, 2009), QFD system aims to translate and plan the "voice of customer" into the quality characteristics of products, processes and services in order to reach customer satisfaction".

It declares that QFD is a quality and planning tool to allows the market entry for the reflection of "voice of customer" along the service development path. It provides possibility for transformation of service development processes from reactive to proactive.

It articulates that in order to use QFD, some factors should be treated:-

1. Competitiveness:-

Where it claims that the three main important aspects for the competitiveness development are: -

a) Quality:-

Clients provide more importance to the quality and distinction of offered services. When a client is lost for a decrease in service quality, he conveys his poor service experience to others, creating an increase in potential of customer loss.

b) Cost:-

Low process costs allow attainment of competitive price, and increase in market share in short term, but not profitable in the long run.

c) Opportunities:-

Opportunities are related to "time to market". Mature processes for new service development can lead to shorter development time. Shorter time could mean a more agile response to the market, and may increase the competitive capability.

As a deduction, to increase competitiveness, it is recommended to have short "time to market" high quality low cost service.

2. The quality lever :-

It articulates that the quality lever is a concept of predicting the effects of development on the quality of service. The idea is that production improvements can lead to a lower cost-benefit ratio in comparison with the increase of service quality. On the other hand, the improvements achieved in service and process design has a larger influence concerning the mechanics of a lever.

Improvements in the design of the service can have influence 100 times more than improvements in the production process.
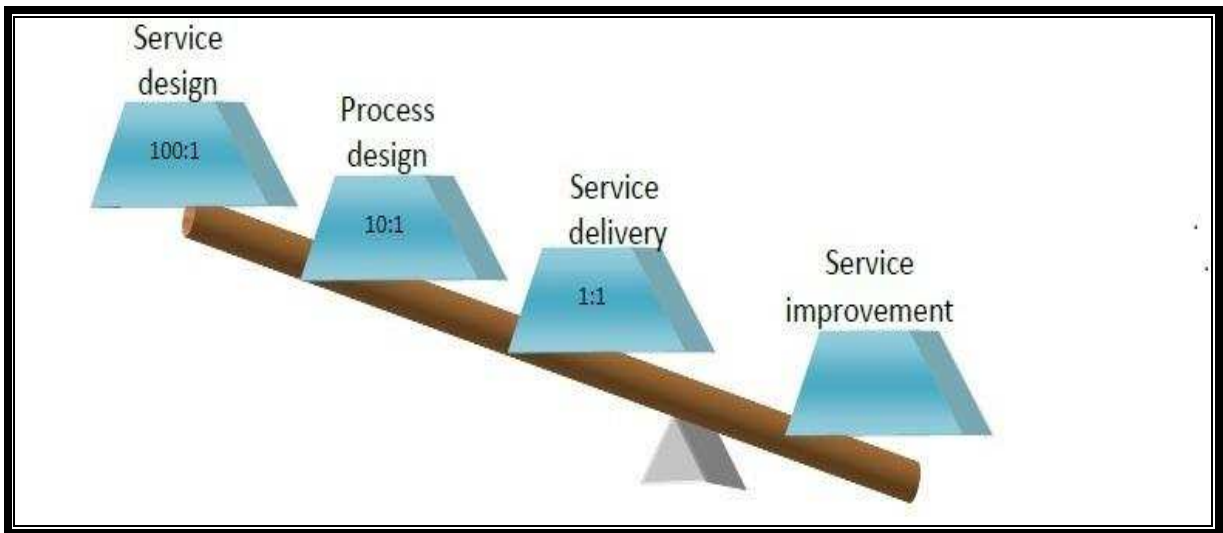
(Figure 5-4) Quality Lever

QFD is a tool that gives possibility to reactive service development processes to be transformed into proactive processes.

3. QFD Technique:-

> Where it praises that QFD technique is based on the analysis of the clients' requirements, which are expressed in qualitative terms, such as: "easy to use", "safe", "comfortable" or "luxurious".

(Figure 5-5) QFD Technique

It emphasises that QFD makes the transition of these fuzzy requirements into quantitative service design requirements possible to develop a service. It clarifies that services are developed through the integration of different components, which provide the functionality, that satisfy client requirements.

 It asserts that firm organization is another feature that effects service development. It clarifies that because the importance of the service development process is not known by all the employees, the establishment of a fitting communication system is mainly important. It claims that this system must retain the meaning of the clients´ requirements during the development process.

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4. QFD Advantages:-

It explains that applying QFD is simple, but provides detailed results. It articulates benefits derived from QFD application in firms as follows:

a) Preventive Design:-

The biggest advantage of QFD is promoting the development of services in a proactive way. When applying QFD, more than 90% of changes on service design are performed before the market entry takes place. These changes are less expensive since they are performed "in the worksheet". This makes it possible to prevent the problems instead of reacting to them.

b) Reduction of Development Time :-

QFD application allows reducing costs and the time needed to introduce the new service to the market.

c) Client Satisfaction:-

QFD´s is oriented to the "voice of the customer" and not to the "thoughts of the developer". With the emphasis on the consumer, all decisions made during the service design are targeted at the customer.

5. QFD-Methodology:-

Where it asserts that, the QFD methodology is based on the development of a series of matrices called "House of Quality", due to a roof-like structure in its top. It explains that this house can be divided in "rooms". It gives a tour through its different "rooms" as it is shown below.
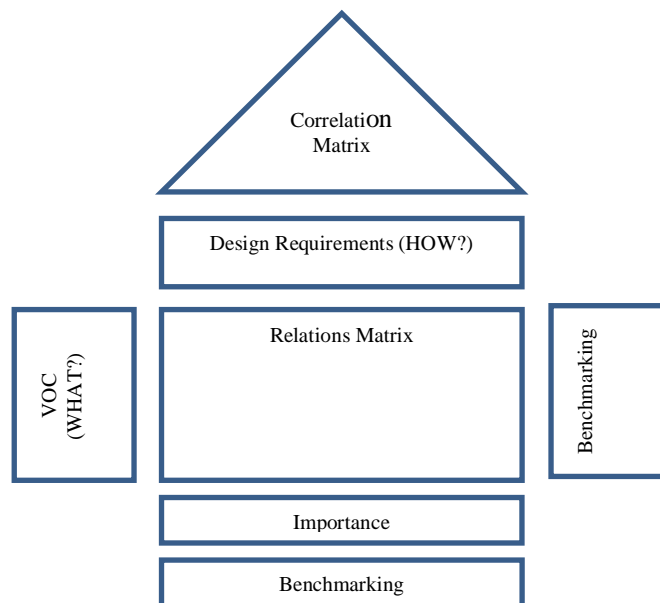
(Figure 5-6) series of matrices of House of Quality

a) "Voice of the Customer" (VOC)

QFD starts with the establishment of objectives, which represent the answer to "What?" what is desired in order to reach the new service's development? These objectives derive from clients' requirements and are called the "Voice of the Customer".

Table (5-1) "What List"

Client's requirements (WHAT?)

It reasons that sometimes the client requirements are general, vague and difficult to implement directly; a more detailed description is needed. It clarifies that there are three kinds of service characteristics that must be differentiated. The requirements mentioned directly by the clients will be called "performance requirements"; other wants are difficult for clients to verbalize. These "wants" are essential parts of the service and perform basic functions that the user expects and considers as given. These basic functions are known as "basic requirements". The third kind of service feature is an "emotional requirement"; it reflects a need that the client has not appreciated before. Performance, basic and emotional is the three kinds of quality and is shown in the "Kano Model".
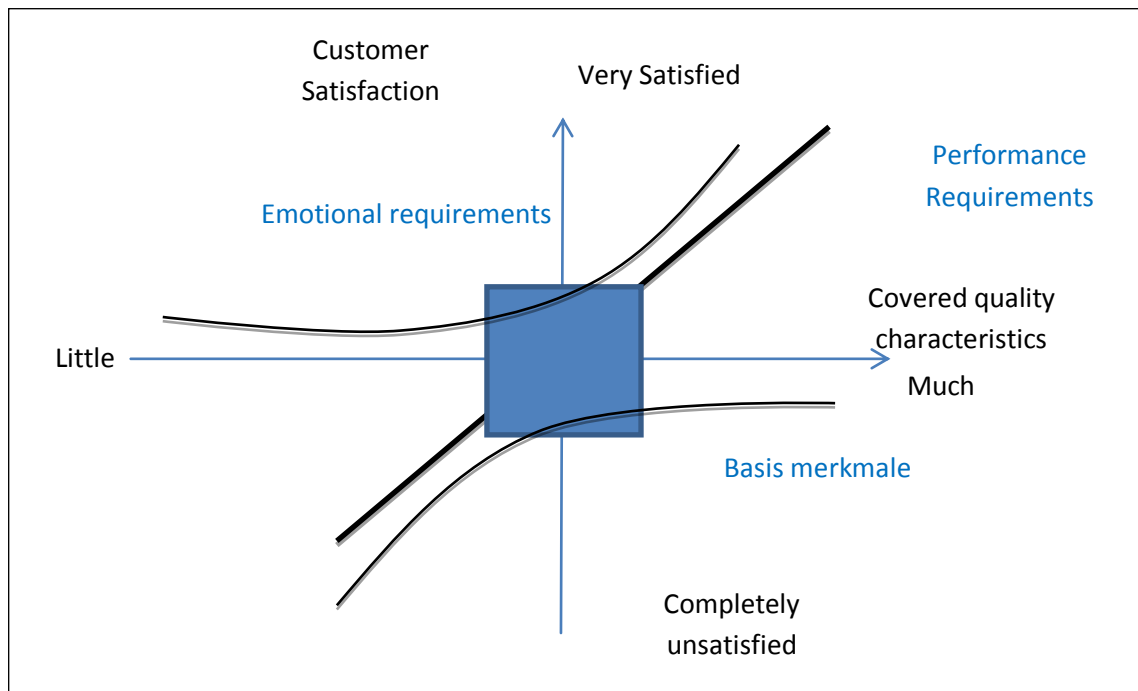
(Figure 5-7) Kano Model

It explains that the attributes and consequences of the service are focused on. It clarifies that the background technical staff develops the requirements to meet the needs of the customers. Together with the service providers, they consider the process that support customer needs, and develop the requirements for the process, as well as the key success factors. It explains that the interview process shall enable the service providers to come up with a list of customers concerns, from which consequences shall be developed, and weighted in order to prioritize them.

Table (5-2) House of quality with suppositious customer input and importance weightings

		CTQs														VOCcustomer importance	VOCrelative importance
VOC																	
1.First consequence																8:00	9.88%
2.Second consequence																9:00	11.11%
3. third consequence																5:00	6.17%
4. Fourth consequence																9:00	11.11%
5. Fifth consequence																10:00	12.35%
6. Sixth consequence																5:00	6.17%
7.Seventh consequence																8:00	9.88%
8. Eighth consequence																9:00	11.11%
9. Ninth consequence																8:00	9.88%
10. Tenth consequence																10:00	12.35%

b) Design requirements

It clarifies that after completing the client's requirements list (What?), comes the definition of "How". The "how" are the design requirements of the service. It insists that it is necessary to define how each client's requirement will be satisfied by the service. It

confirms that these are measurable features that can be evaluated at the end of the development process.

Table (5-3) "HOW?" List.

Design Requirements (HOW?)							

It praises that the development team must identify all alternatives, and selects the method that should be used to address the customer's needs. The transformation of the customer's needs into design or technical requirements shall be made by the service provider using the brainstorming. The design requirements shall be organized using a tree diagram, to describe which methods or techniques are required to satisfy the specific design requirements chosen to fill the need. Next, the team must select the process that will meet the selected requirements and determine whether a measurement can be applied to each process.

c) Relation matrix

It clarifies that the relations between the client and design requirements are not always 1:1; there are complex relationships and varying levels of strength. A single design requirement may have an influence on several of the customer's requirements. Illustrated in the following table is a matrix that shows the relationships between "What" and "How"; defined by three strength levels: weak relation, medium relation and strong relation.

Table (5-4) Relation matrix

Client's requirements (WHAT?)	Design requirements (HOW?)			
	○	◎	△	
	◎	○		
	△	○	△	◎
		○		
			◎	
				△

QFD	
△	Weak
○	Medium
◎	Strong

An empty column indicates no relationship between the customer and design requirements. This may reveal that the translation from "what" to "How" was not properly conducted. Technical "How's" with no relationship with customer needs should be eliminated.

d) Benchmarking

It praises that the QFD technique allows for a competitor assessment with Benchmarking. It claims that the competitor's services are compared to the company's services. Benchmarking is carried out for "What" and "How". The two companies' services are compared along the lines of client requirements ("What"). A characteristic measure is determined for each service feature. Next, the clients' perception of the satisfaction requirements will be assessed and compared to the competitors'. It reveals that in the technical competitor comparison (How's), the design requirement fulfilment will be compared. It is recommended that the designer of the service make this evaluation.

Table (5-5) Benchmarking
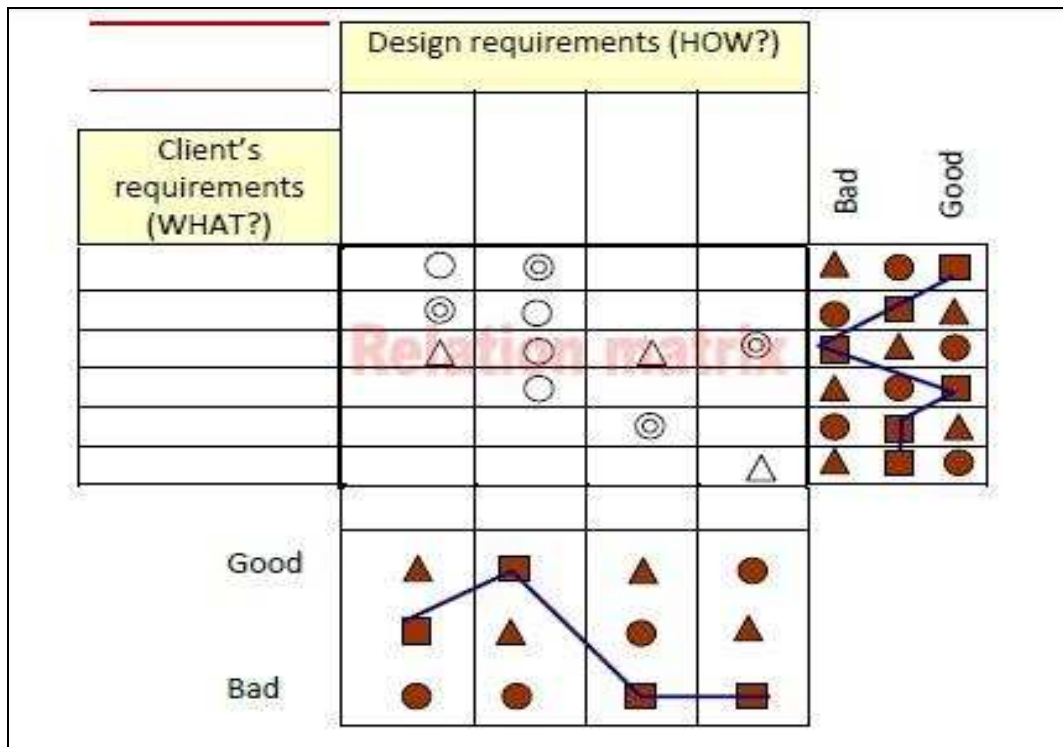
The benchmarking compares the delivery of desired consequences to that of the competition.

e) Importance level

It clarifies that the importance level states the relative significance of each client ("What") and design requirement ("How") to achieve the desired goal. "What" relative significance is established through an evaluation by the customer. It explains that the relative scale used (1-5 or 1-10) should be set up so that customer importance is seen as more significant the larger the number is. For each column ("How"), the ("What") importance level is multiplied by the corresponding weighting. This creates a value for each relationship between client and design requirement. The importance of the design requirements ("How") is computed by adding the values together.

Table (5-6) Weight of the relationship symbols.

△	Low	1
◯	Medium	3
◎	Strong	9

Table (5-7) Importance level

Client's requirement (WHAT?)	Importance	Design requirement (HOW?)			
	5	○	◎		
	3	◎	○		
	2	△	○	△	◎
	1		○		
	4			◎	
	2				△
Importance		63	81	42	24

It claims that the importance level of "HOW" approximates the most important design requirement for customer satisfaction. All design requirements require a weight to be calculated. The weight is made from the weighted sum of the elements in the column corresponding to a design requirement multiplied by VOC important in that row. Weights for all specifications are calculated the same way.

f) The correlation matrix

It is a triangular table. "How" is integrated by establishing the correlation between all of the elements. The matrix describes the strength of the relationships between the design requirements. The aim is to identify which requirements support each other and which ones do not. Positive correlations mean that the service development efficiency can be increased without competing or duplicate effort. Deciding which features are absolutely necessary to the service is aided by negative correlations; by increasing one feature, there is a decrease in another and vice versa. If there are no negative correlations, there could be a mistake in a previous step.

Table (5-8) Correlation matrix
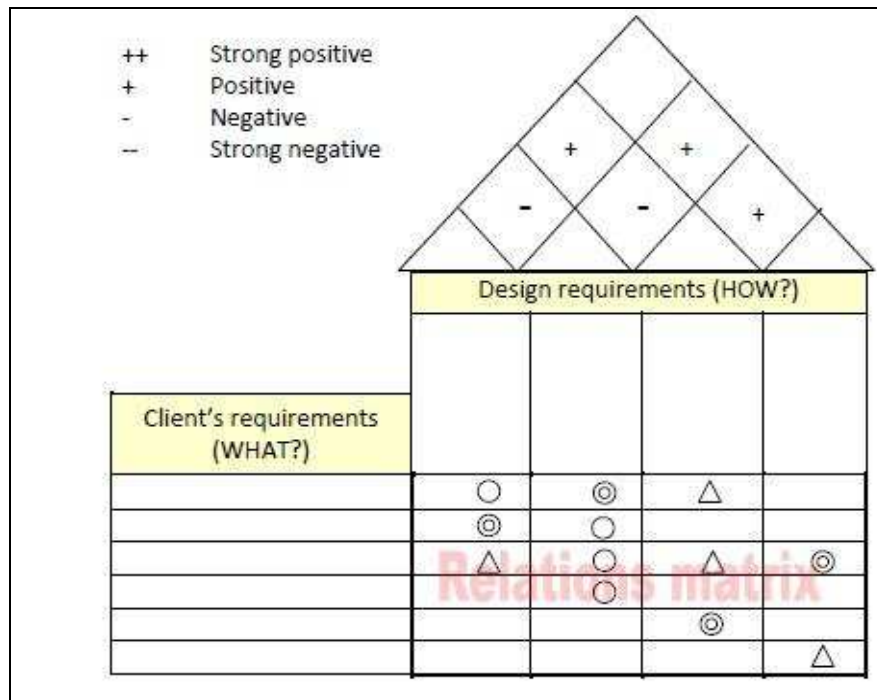
The technical design trade-offs necessary for meeting customer needs are shown on the roof of the house. The relationship between each pair of requirements must be considered. It is important to display positive, negative, or no correlation.

5.5 The suggested E-learning Model

The suggested e-learning Model emphasise that the eight elements of TQM were engaged in the Baldrige criteria framework. QFD on the right top of the model is the main tool of evaluation of all the processes. It will allocate the customers' needs to the Leadership management, who will align functions activity to deploy the eight elements of TQM, to produce a high quality E-learning system, which will affect the social culture and environment of the development countries people. The main process of the offered service is the communication. It appears in the Model comprising the core activities of the teaching and learning process. Communication could be Synchronous; concerned with chat, video conference, and shared blackboard. Or, Asynchronous; concerned with Electronic bulletin board, messaging, calendar, document repository, and wiki. The process of teaching and learning includes three mains activities affecting the learner:-

1-Administration service: - concerned with enrolment, payment, and virtual library.

2- Support service and staff: - concerned with team work, orientation support, and pedagogical and technical support.

3- Learning Object:-concerned with accessibility, usability, and didactic.

The whole process of teaching and learning should interact with Integrity and ethics, teamwork, and training. Then the output arises in sort of high quality e-learning service, well-educated qualified members of society, and improvement of culture and environment. The circle will revive to deliver continuous improvement of E-learning quality service.

(Figure 5-8) The Suggested E-learning Model

High Quality E-Learning Service

Society culture & environme

7
Learner
(Results)

Integrity and ethics (strategic Planning) 2

Communication (Customer Focus) 3

Recognition (Measurements, Analysis and Knowledge Management) 4

Teamwork (workforce) 5

Training (operation focus) 6

Admin. Service

Support service & staff

Learning Object

1
Leadership

Quality Function deployment

Voice of customer

(Figure 5-9) The suggested E-learning Process

5.5.1 General explanation of the E-learning process Model

The Idea of this model is to use Quality function Deployment (QFD) to translate and plan the" voice of the customer" into the quality characteristique of the service before enter the market. QFD analyse the client's requirements,define how each requirement will be satisfied by the service,organize the needs,illustrate the relationship between the requirement of the customer in the market and the needs to fullfil them. The result will be transmitted to the leadership Management,who will deploy the quality ,and apply the eight Total Quality Management Principles going through the seven categories of the Baldrige Criteria.

In the Figure above, The two principles of TQM:- "Integrity and Ethics" represent the "Strategic Planning" in the baldrige criteria, at the base of the E-learning process. The "Comunication" represents the "Customer Focus" comes at the second place. "The Recognition" represents "The Measurements, Analysis knowledge Management"at the third place, in the middle of the process to evaluate the first two steps In order to continue on a strong base through the remained two processes:- "Team work" which represents the workforce category,and " The Training" which represents the "Operation Focus" category. On the top of the five mentioned phases of management, comes the frontage of the process in sort of:-

1- Administrative service:- concerned with enrollment,payment, and virtual library services.
2- Support service and staff:- concerned with the orientation support,teamwork,and pedagogical and technical support.
3- Learnig object service:-concerned with accessability,usability, and dedactic.

The result of all the previous phases shall affect the learner through the afforded high quality E-learning service. The high qualified personnel educated through the high quality E-learning system, will affect the social culture and environment from where comes the "voice of cutomer", to be analyzed through the QFD, to the leadership management, and the improvement cycle continue.

5.6 Cost of the suggested model
5.6.1 Pricing educational programs

According to (Philip Kotler, Karen F.A.Fox, 2002) in the book titled "Strategic Marketing for Educational Institutions", it is claimed that most educational institutions depend heavily on tuition and fees to keep operating expenses. Therefore, pricing issues are very important. Pricing issues were examined, and the following issues were addressed:-

a) The relationship between pricing decisions and institutional mission and goals. It was explained that for most educational programs, while setting prices, three factors should be taken in consideration:
   1) Customer oriented factor
   2) Customer demand oriented factor
   3) Competition oriented factor.

Example of how tuition used to be set:-

Financial manager should calculate the following:-

1) The expected operating expenses for the coming year
2) The project revenues from endowments, donations, and other sources.

$$revenues - cost = tuition\ (amount\ must\ covered)$$
$$tuition \div number\ of\ students\ expected = tuition\ for\ each\ student$$

3) The estimated tuition compared with leaks from competitors
4) The tuition sent for approval

b) How customers look at the price. It was explained that education institution which set prices, often overlook the meaning of the price for the customer which could be summarise in consumer costs and benefits:-
   1) Consumer costs:-
      - Time and effort
      - Family savings
      - Loans
      - Work-study jobs
      - Outside scholarships
      - School scholarships
   2) Customer benefits:-
      - Career prospects
      - Prestige
      - Ingoing experience
      - Program uniqueness

It praises that price is just one component of the marketing mix that influences customer choices. Prospective students will be interested in the school's program, quality, and features; location and communication by and about the institution.

c) Institutional responses on price and value. It was explained that each school recruitment and admission process is a match between seeking attractive students and others who see themselves benefiting from education in the institution, taking in consideration achieve revenue goals. It considers four main sources of revenue as follows:

$$
\begin{aligned}
revenue = \\
(average\ annual\ tuition\ per\ student\ per\ year \times \\
number\ of\ student\ enrollment) + \\
(average\ room\ payment\ per\ person\ per\ year \times \\
number\ of\ students\ in\ residence\ hall) + revenue\ from\ other\ services + \\
net\ contribution\ of\ overhead + donations + return\ on\ endowment
\end{aligned}
$$

d) Maximizing net tuition revenue. It was explained that this can be achieved through allocating tuition costs among students using different pricing.

- Unit price
- Two part price
- Term pricing
- Scaled pricing
- Differential pricing
- Negotiated tuition
- Quantity discounts
- Time based discounts

e)   Determining cost recovery prices for educational programs. It was explained that educational institutes are considering that launching a new program is a mean to generate additional revenue. If the new program will nit at least pay for itself, the institution may decide not to move into a new area. In this case, the institution should carry out a breakeven analysis to determine how much money should be collected and how many students should pay, in order to cover the program costs. The breakeven analysis to determine program viability. It is used to determine, for any proposed price, how many places should be sold to fully cover the costs; this is known as the breakeven volume. First

the director would calculate the fixed costs of the program. Second, he should calculate the variable costs. Third, he should estimate the price (tuition per student)

5.6.2 Cost of online program

In case of starting a new online program, consisting of 5 modules, we had to calculate the cost, and to determine the cost recovery price.

Table (5-9) Estimated fixed cost of online program

#	Assets:-	Price
1	server I core 5	20000 EGP
2	software Licence	3600 EGP
3	Smart Board	11800 EGP
4	Projector	2800 EGP
5	Lab top	2200 EGP
6	Router	350 EGP
7	E-net	700EGP
8	Cables	300 EGP
9	Furniture	10000 EGP
10	Admission software	12000 EGP
11	Monitoring software	10000 EGP
12	Financial software	10000 EGP
13	Quality control software	1000 EGP
14	Wages	600000 EGP
Total fixed cost :-		**684750 EGP = 58273.70£**

Table (5-10) Estimated variable cost of online program

#	Variable costs /year:-	Price
1	Place allowance	120000 EGP
2	Electricity	12000 EGP
Total variable cost :-		**132000 EGP = 11233.48£**

Total Cost = Total fixed cost + Total variable cost

Total Cost = 684750 EGP ~ (58273.7 £) + 132000 EGP ~ (11233.48 £)

Total Cost = <u>816750 EGP~ (69507.18 £)</u>

To know how many places should be sold to fully cover the costs, the Break even volume should be calculated.

$$Breakeven\ volume = \frac{Fixed\ cost}{Price - Variable\ cost}$$

If we assume that: - the price of the online course is similar to the face to face course which is approximately 30000EGP / year / student ~ 2553.064 £.

So, $Breakeven\ volume = \frac{684750}{30000-132000} = 6.7 \sim$ **<u>7 students</u>**

5.7 Implementation of the suggested E-learning process

It was planned to validate the suggested E- learning model against two situations:-

1- New product development.
2- Ingoing product development.

For the first situation, approach has been made to introduce a new training program to the elementary teachers in Egypt. The program name was "Social and behavioural skills development program"; It aims to Teachers and supervisor's empowerment of interaction and communication with students and other members of the community with sophistication. And through which appear institutions, verbal social relations. The process

by which these skills are being received called "social raising and development aspects of Visual or auditory sensory or mobility". The program content would include:-

1- Personal skills; Also known as human skills, or the skills used by anyone and excellence is to interact and communicate with others. Those skills include the skill of convincing, effective listening, delegate and lead.

2- Social communication skills which are derived behaviour that achieves social solidarity. And according to Schneider and bayren (1985) who made analysis and practice on the steps of the Bundeswehr social skills (included 51 studies). It resulted that procedural requirement steps for training social skills top the list of the largest effect size.

3- Methods of social knowledge, where behavioural experts prefer to use the term "behavioural" to refer to social skills, Not only the exercise of behavioural skills to enhance social skills, but also other skills required while dealing with the various communities including collective addiction treatment, as in the scientific approach to reform society and family training. It is advisable to practice behavioural skills for people with marginal Borderline personality disorders, depression, developmental disorders, developmental behavioural. Psychologists aims from the perspective of the model in the development of key skills, pay profile and open up to different environments and circumstances, reduces stress and collisions, and raises the chances of correcting these errors and modify them through the proper skills.

the program could measure social skills by the way they deal with other people and the different reactions to their actions .The way to deal with those around you is important, so there are many tests that will help you learn about the personality types that should characterize these people. Program would focus on Life skills, Visual culture, audio-visual culture, Language culture. The project went forward to prepare materials through collaboration with professors of Education at Helwan University. But, it couldn't go further due to National Policies in Egypt.

For the second situation, to validate the suggested model, and clarify its idea, this model was applied at the Arab Academy for Science, Technology and Maritime Transport (AASTMT) at the College of Business and Technology in Heliopolis. Taking the findings of the questionnaires mentioned in the previous chapter as voice of customer, and guided by what was explained at the Quality Function Deployment hand book in the previous

section of this chapter, a house of quality was built using the QFD Online (www.QFDOnline.com) (app

For the instructor evaluation for work in online courses the following competitive analysis graph show where is our program from the one offered at University of Nottingham (UoN) and the Egyptian E-Learning University.
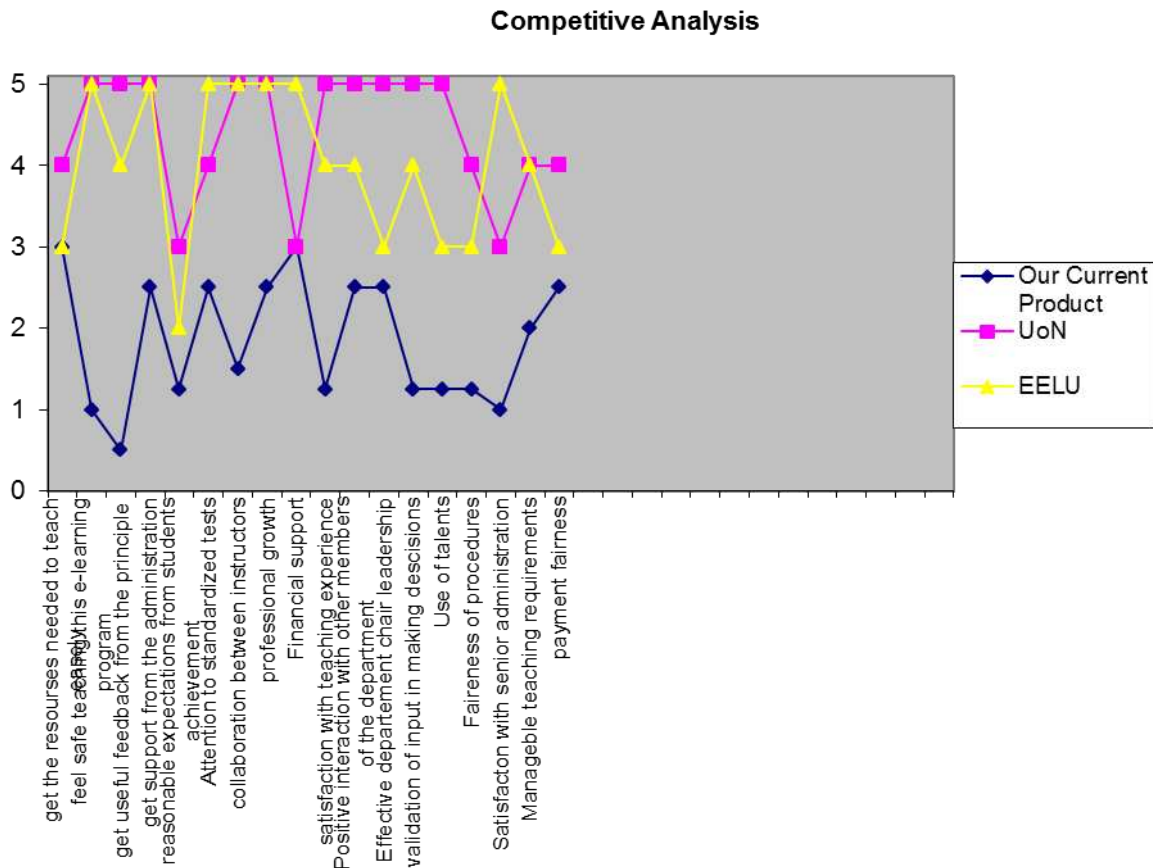
(Figure 5-10) Graph of competitive analysis using the House of Quality
to benchmark the instructor's evaluation

As we can see in the above figure, the instructor's evaluation for our E-learning program is far from competitiveness with both programs offered in UK through University of Nottingham, and in Egypt through the E-learning Egyptian University.

The results were as shown in the following table:-

Table (5-11) House of Quality Summary – Instructors evaluation for the work at E-learning program.

Row Number	Quality Characteristics (a.k.a. "Functional Requirements" or "Hows")	Minimize (▼), Maximize (▲), or Target (x)	Target or Limit Value	Max Relationship Value	Requirement Weight	Relative Weight (Relative Importance)
1	Privacy / Security	x	0	9	396.64	15.83%
2	Information Quality	x	0	9	381.88	15.24%
3	Ease of Use	x	0	9	363.09	14.49%
4	Graphic Stile	▲	2	9	261.07	10.42%
5	Reliability	x	0	9	517.45	20.65%
6	Responsiveness	▲	3	9	585.91	23.38%

As we can realise from the table, responsiveness comes on the top of importance for the instructor. In the second place comes the reliability. The Privacy and the information quality come in the third place, relatively together. Then, come the Ease of use in the fourth place, and at last comes the graphic stile.

For the students satisfaction from online courses the following competitive analysis graph show where is our program from the one offered at University of Nottingham (UoN) and the Egyptian E-Learning University.
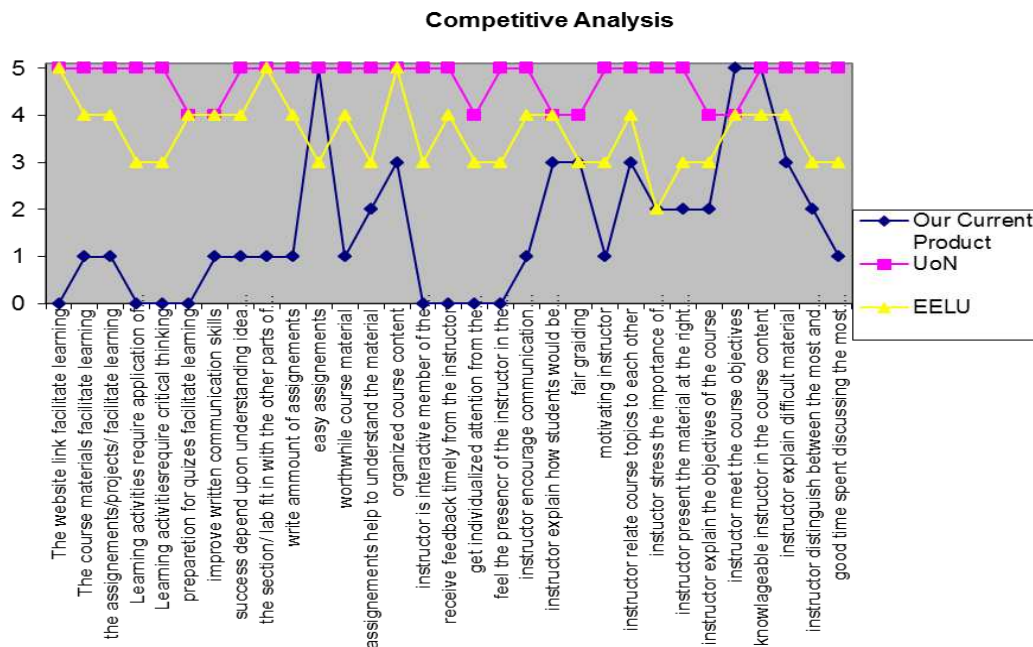
(Figure 5-11) Graph of competitive analysis using the House of Quality
to benchmark the students satisfaction

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As we can see in the above figure, the student's satisfaction from our E-learning program is far from competitiveness with both programs offered in UK through University of Nottingham, and in Egypt through the E-learning Egyptian University

The summary was as shown in the following table:-

Table (5–12) House of Quality Summary – students' satisfaction from online courses.

Row Number	Quality Characteristics (a.k.a. "Functional Requirements" or "Hows")	Minimize (▼), Maximize (▲), or Target (x)	Target or Limit Value	Max Relationship Value	Requirement Weight	Relative Weight (Relative Importance)
1	Privacy/ Security	x	0	9	669.67	15.40%
2	Information Quality	x	0	9	706.68	16.25%
3	Ease of use	x	0	9	730.33	16.79%
4	Graphic style	▲	2	9	670.69	15.42%
5	Reliability	x	0	9	740.62	17.03%
6	responsivness	▲	3	9	831.11	19.11%

As we can realise from the table, responsiveness comes on the top of importance for the instructor. In the second place comes the reliability. The Ease of use and the information quality come in the third place, relatively together. Then the Privacy and security and Graphic style come at the end of the important requirements of students.

According to the results got from the house of Quality for both instructors and students, a group of procedures is taken to improve the quality factors of the E-learning system. To improve the responsiveness, an agreement has been made with the ministry of communication to train 15 teaching assistant to prepare online teaching materials, also staff members has been trained to teach courses online. Procedures have been taken according to quality requirements to improve the E-learning system. A quality manual has been developed to provide information regarding the E-learning department and the suggested E-learning service system. (Appendix E)

5.7.1 Instructors Satisfaction from e- learning after Improvement

After applying the suggested model, the same questionnaires were distributed to know if there is improvement happened or not. The same analysis using the house of quality was adopted. For the instructors satisfaction from online courses the following competitive

analysis graph show where is our program from the one offered at University of Nottingham (UoN) and the Egyptian E-Learning University.
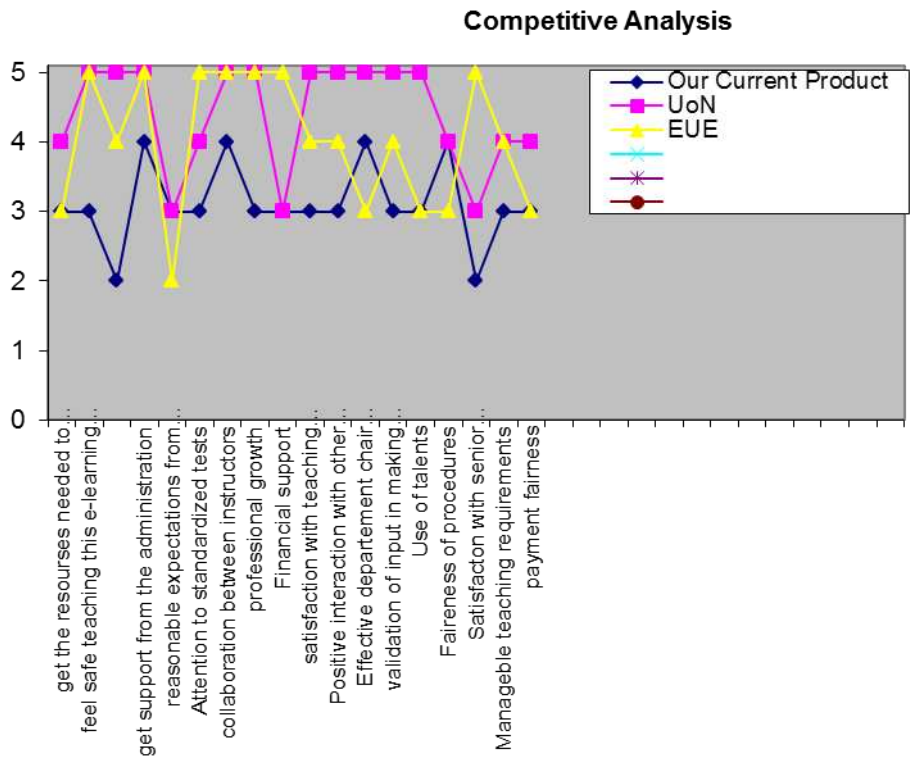
(Figure 5-12) Graph of competitive analysis using the House of Quality
to benchmark the instructor's evaluation after improvement

As we can see in the above figure, the instructor's evaluation for our E-learning program starts to be in the range of competitiveness with both programs offered in UK through University of Nottingham, and in Egypt through the E-learning Egyptian University.

Table (5-13) shows the answers of instructors for the improved work at e- learning program, which has a mean (4.675), against standard deviation equal (0.053), Also, the statements of e- learning program have mean ranges between (4.506, 4.877), and standard deviation ranges between (0.084, 0.348).

Table (5-13) Answers of instructor's Satisfaction after improvement

#	Statements	Mean	Standard Deviation.
1	How easy is it to get the resources you need to teach e- learning program?	4.668	0.142
2	How safe do you feel teaching his e-learning program?	4.636	0.098
3	How useful is the feedback the principal at this e-learning program gives you?	4.653	0.151
4	How much support does the administration at this e-learning program give to the teaching staff?	4.625	0.180
5	How reasonable are the expectations for student achievement at this e-learning program?	4.619	0.129
6	How much does this e-learning program give attention to standardized tests?	4.75	0.134
7	How well do instructors at this e-learning program collaborate with each other?	4.564	0.097
8	How much attention does this e-learning program give to your professional growth?	4.747	0.140
9	How much financial support does this e-learning program give you for your professional growth?	4.692	0.122
10	Overall, are you satisfied with the teaching experience at this e-learning program?	4.596	0.139
11	How positive are your interactions with other members of your department working in e-learning program?	4.575	0.137
12	How effective is the leadership of your department chair toward e-learning program?	4.612	0.157

#	Statements	Mean	Standard Deviation.
13	How much do you feel your department chair values your input in making decisions concerning e-learning program?	4.684	0.249
14	How effectively do you feel your talents are being used by your department in the E-learning program?	4.670	0.169
15	How fair are the administrative procedures at the E-learning program?	4.747	0.348
16	Are you satisfied with the senior administration at this e- learning program?	4.704	0.141
17	How manageable is your teaching requirement at this e-learning program?	4.701	0.237
18	How fair is your pay at this e-learning program?	4.670	0.148
19	Overall, are you satisfied with this e-learning program as a place to work?	4.877	0.112
e- learning program Mean and Std. Dev.		4.675	0.053

It is also noted from Table (5-13) that:

- Statement (19) which states that "Overall, are you satisfied with this e-learning program as a place to work?" has achieved the highest mean (4.877) and standard deviation (0.054).
- While construct (14) which states that "How effectively do you feel your talents are being used by your department in the E-learning program?" has achieved the least mean (4.506) and standard deviation (0.251).

To validate and confirm these results, researcher developed 1-Sample T test between instructor's perceived answers and their expectations, and Table (5-14) shows the results of this test:

Table (5-14) 1 Sample-T for Overall instructors satisfaction

Variables	Mean	Std.Dev	SE Mean	Lower Bound of C. I	T Calculated	P Value
Overall instructor's satisfaction	4.675	0.053	0.009	4.660	19.65	0.000

From Table (5-14), we could conclude that, Null hypothesis which states "Overall perceived instructor's satisfaction does not exceed their expectations for the improved work at e- learning program" is rejected, and the alternative hypothesis is accepted, that means there is no gaps between instructor's perceived answers and their expectations for satisfaction and this is proved through:

- (P value = 0.000) which is less than (0.05), and (T Calculated = 14.32) which is greater than (T Tabulated) that equal (2.030) and this confirm previous result.
- Also, this is confirmed through confidence interval where its lower bound is (4.615), which does not include the value (4.5).

These results confirm there is no gap between instructor's perceived satisfaction and their expectations; and it means that instructor's perception for satisfaction of improved work at e- learning program exceeds their expectation.

To confirm the previous results, a comparison between the answers of instructors (perceived values) for all statements of e- learning program and their expectation were done by developing (19) 1-Sample T test and Table (5-15) shows the results of these tests:

Table (5-15) 1 Sample-T for elements of instructor's satisfaction

Variables	Mean	Std.Dev	SE Mean	Lower Bound of C. I	T Calculated	P Value
Statement 1	4.668	0.142	0.024	4.629	7.14	0.000
Statement 2	4.636	0.098	0.016	4.608	8.31	0.000
Statement 3	4.653	0.151	0.025	4.611	6.10	0.000
Statement 4	4.625	0.180	0.030	4.574	4.16	0.000
Statement 5	4.619	0.129	0.022	4.582	5.52	0.000
Statement 6	4.756	0.134	0.022	4.718	11.45	0.000
Statement 7	4.564	0.097	0.016	4.536	3.92	0.000
Statement 8	4.747	0.140	0.023	4.708	10.62	0.000
Statement 9	4.692	0.122	0.020	4.657	9.44	0.000
Statement 10	4.596	0.139	0.023	4.557	4.16	0.000
Statement 11	4.575	0.137	0.023	4.536	3.26	0.001
Statement 12	4.612	0.157	0.026	4.568	4.29	0.000
Statement 13	4.684	0.249	0.041	4.614	4.44	0.000
Statement 14	4.670	0.169	0.028	4.622	6.01	0.000
Statement 15	4.747	0.348	0.060	4.650	4.27	0.000
Statement 16	4.704	0.141	0.024	4.664	8.68	0.000
Statement 17	4.701	0.237	0.040	4.634	5.08	0.000
Statement 18	4.670	0.148	0.025	4.658	8.11	0.000
Statement 19	4.887	0.112	0.019	4.846	20.16	0.000

From Table (5-15), researcher concludes that, Null hypotheses which states "perceived elements of instructor's satisfaction does not exceeds their expectations for improved work at e- learning program" are rejected, and the alternative hypotheses are accepted, that means perceived elements of instructor's satisfaction exceeds their expectations for elements of satisfaction for improved work at e- learning program, and this is proved through:

- P value ranges between (0.000, 0.001) which are less than (0.05), and T Calculated which ranges between (3.26, 20.16) which is greater than (T Tabulated) that equal (2.030) and this confirm previous results.
- Also, this is confirmed through confidence interval where its lower bound ranges between (4.536, 4.846), which does not include the value (4.5).

These results confirm perceived elements of instructor's satisfaction exceed their expectations for elements of satisfaction for improved work at e- learning program.

5.7.2 Students Satisfaction from Online Courses after Improvement

After applying the suggested model, the same questionnaires were distributed to know if there is improvement happened or not. The same analysis using the house of quality was adopted. For the students satisfaction from online courses the following competitive analysis graph show where is our program from the one offered at University of Nottingham (UoN) and the Egyptian E-Learning University.
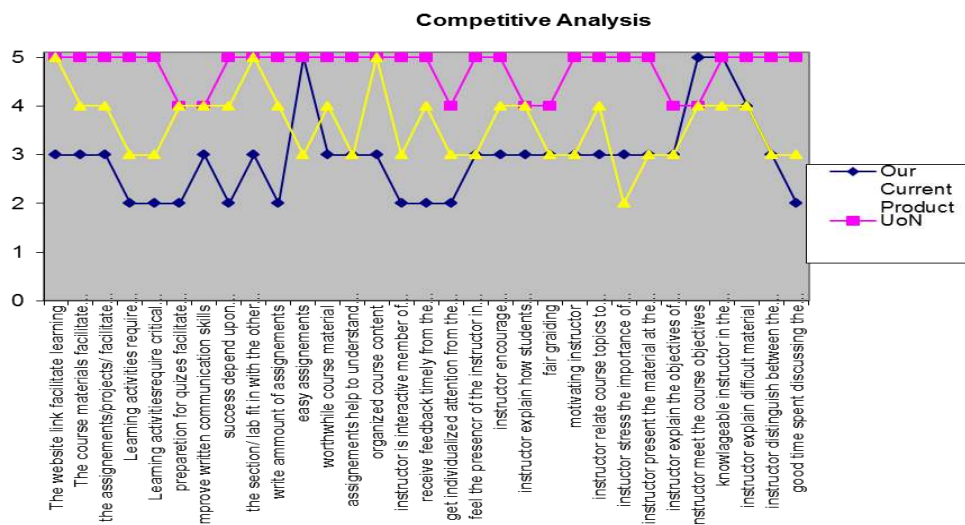
(Figure 5-13) Graph of competitive analysis using the House of Quality

to benchmark the students satisfaction after improvement

As we can see in the above figure, the student's satisfaction from our E-learning program starts to be in the range of competitiveness with both programs offered in UK through University of Nottingham, and in Egypt through the E-learning Egyptian University.

Evaluation of the second Questionnaire which designed to measure Student Satisfaction from Online Courses includes 58 questions distributed on five dimensions (Learner Contents, Learner Instructor, Learner to Learner, Learner Technology, and General Satisfaction) with (26) qualitative questions, (23) quantitative questions with Likert scale five, and (9) quantitative questions with Likert scale three as follows:

- Learner Contents: which includes 15 questions (1–7) qualitative questions, (8 up to 15) quantitative questions with Likert scale five.
- Learner Instructor: which includes 21 questions (1–6) qualitative questions, (7 up to 21) quantitative questions with Likert scale five.
- Learner to Learner: includes 7 qualitative questions
- Learner Technology: includes 9 quantitative questions with Likert scale three.
- General Satisfaction: includes 6 qualitative questions

Analysis of the second Questionnaire needs for researcher to compare the perceived answers for Student on these dimensions with the expected values for these dimensions (researcher proposed value 4.5 of Likert scale five). To fulfil these tasks the researcher developed the following:

- Distributions and frequency tables for Student's perceptions for (qualitative questions) on each dimensions of Satisfaction.

- Calculation of mean and standard deviation of Student's perceptions for (quantitative questions) on each dimensions of Satisfaction.

- (1-Sample P) test developed between Student's perceptions and their expectation on dimensions of Satisfaction (qualitative questions) on Online Courses.

- (1-Sample T) test developed between Student's perceptions and their expectation on dimensions of Satisfaction (quantitative questions) on Online Courses.

5.7.2.1 Student Satisfaction on Learner Contents after Improvement

To evaluate Student Satisfaction on Learner Contents from Online Courses which includes 15 questions divided into two parts, the first part includes (1-7) qualitative questions, and second part includes (8-15) quantitative questions with Likert scale five, researcher developed for qualitative questions (1-7) frequency distribution table for Student's perceptions for these questions, and (1-Sample P) test between Student's perceptions and their expectation, but for quantitative questions (8-15) researcher calculate mean and standard deviation for these questions and developed (1-Sample T) test between Student's perceptions and their expectation as follows:

5.7.2.1.1 Analysis of qualitative data of Contents after Improvement

Table (5-16) shows the answers of Students on the qualitative questions (1-7), it is clear that the percentage of all questions ranges between (92%, 98%) which are more than the expected value (90%), and that means the Students are satisfied with these Contents and it has been improved

Table (5-16) Answers for 1st part of 1st dimension of Student's Satisfaction (learner Contents) after improvement

No	Statements	frequency	Percentage
1	The websites linked to the course facilitate learning.	46	92%
2	The course documents/ lessons/ lecture notes facilitate learning.	47	94%
3	The assignments/Projects in the course facilitate learning.	48	96%
4	Learning activities in the course require application of problem solving skills which facilitate learning.	46	92%
5	Learning activities require critical thinking which facilitate learning.	47	94%
6	Preparations for quizzes/ exams in the online course facilitate learning.	46	92%
7	The online classes help to improve written communication skills.	49	98%

Also to confirm validity and significance of this result, researcher apply 1-Sample P test and results are summarized in Table (5-17), which prove previous results through:

- P value ranges between (0.750, 0.995) which is greater than (0.05), and researcher cannot reject Null hypothesis, which states that "perceived student satisfaction for Learner Contents from Online Courses after Improvement exceeds their expectation".
- Also, this is confirmed through confidence interval where its upper bound ranges between (0.972, 0.999) which include the value (0.900).

Table (5-17) Results of 1 Sample-P test for Evaluation objectives of Student's Satisfaction (learner Contents) after improvement

Questions of Learner Contents	X	N	Sample p	Upper Bound C.I.	P value
Question 1	46	50	0.920	0.972	0.750
Question 2	47	50	0.940	0.983	0.888
Question 3	48	50	0.960	0.993	0.966
Question 4	46	50	0.920	0.972	0.750
Question 5	47	50	0.940	0.983	0.888
Question 6	46	50	0.920	0.972	0.750
Question 7	49	50	0.980	0.999	0.995

These results confirm that students are satisfied with the part one of the first dimension Learner Contents from Online Courses.

5.7.2.1.2 Analysis of Quantitative data of Contents after Improvement

Table (5-18) shows the answers of Students on the Quantitative questions (8-15) of Learner Contents, which has a mean (4.706), against standard deviation equal (0.064),

Also, the statements of Learner Contents have mean ranges between (4.622, 4.860), and standard deviation ranges between (0.085, 0.319).

Table (5-18) Answers for 2nd part of 1st dimension of Student's Satisfaction (learner Contents) after improvement

#	Statements	Mean	Standard Deviation.
8	How much did success in the course depend upon understanding ideas, rather than memorizing facts?	4.622	0.151
9	How well did section or lab fit in with the other parts of the course?	4.638	0.145
10	Were you given too many assignments, too few assignments, or about the right amount?	4.708	0.085
11	How easy were the assignments in this course?	4.860	0.319
12	How worthwhile was the course material?	4.770	0.165
13	How useful were the assignments in helping you understand the material?	4.760	0.140
14	How organized was the course content?	4.668	0.135
15	Were you satisfied with the course content, neither satisfied nor dissatisfied with it, or dissatisfied with it?	4.623	0.106
Learner Contents Mean and Std. Dev.		4.706	0.064

It is also noted from Table (5-18) that:

- Statement (11) which states that "How easy were the assignments in this course?" has achieved the highest mean (4.860) and standard deviation (0.319).
- While construct (8) which states that "How much did success in the course depend upon understanding ideas, rather than memorizing facts?" has achieved the least mean (4.662) and standard deviation (0.151).

To validate and confirm these results, researcher developed 1-Sample T test between Student's perceived answers and their expectations, and Table (5-19) shows the results of this test:

Table (5-19) 1 Sample-T for Overall of Student's Satisfaction (learner Contents) after improvement

Variables	Mean	Std.Dev	SE Mean	Lower Bound of C. I	T Calculated	P Value
Overall student's satisfaction	4.706	0.064	0.009	4.691	22.78	0.000

From Table (5-19), researcher reject Null hypothesis which states "perceived student satisfaction for Quantitative data of Learner Contents from Online Courses after Improvement do not exceed their expectation", and accept alternative hypothesis, and that means there is no gap between student's perceived satisfaction and their expectations on Learner Contents and this is proved through:

- (P value = 0.000) which is less than (0.05), and (T Calculated = 22.78) which is greater than (T Tabulated) that equal (2.010) and this confirm previous result.
- Also, this is confirmed through confidence interval where its lower bound is (4.691), which does not include the value (4.5).

These results confirm there is no gap between student's perceived satisfaction and their expectations, and to confirm the previous results a comparison between the answers of students (perceived values) for all statements of Learner Contents and their expectation were done by developing (8) 1-Sample T test and Table (5-20) shows the results of these tests:

Table (5-20) 1 Sample-T for elements of student's satisfaction from content of online program after improvement

| Variables	Mean	Std.Dev	SE Mean	Lower Bound of C. I	T Calculated	P Value
Statement 8	4.622	0.151	0.021	4.586	5.70	0.000
Statement 9	4.638	0.145	0.021	4.604	6.71	0.000
Statement 10	4.708	0.085	0.012	4.688	17.30	0.000
Statement 11	4.860	0.319	0.045	4.785	7.99	0.000
Statement 12	4.770	0.165	0.023	4.730	11.53	0.000
Statement 13	4.760	0.140	0.020	4.727	13.15	0.000
Statement 14	4.668	0.135	0.019	4.636	8.81	0.000
Statement 15	4.623	0.106	0.015	4.598	8.26	0.000

From Table (5-20), researcher rejects Null hypotheses which states "perceived elements of student's satisfaction do not exceed their expectations for Learner Contents from Online Courses after Improvement", and the alternative hypotheses are accepted, that means there are no gaps between perceived student's satisfaction and their expectations for elements of satisfaction and this is proved through:

- (P value = 0.000) which are less than (0.05), and T Calculated which ranges between (5.70, 17.30) which is greater than (T Tabulated) that equal (2.010) and this confirm previous results.
- Also, this is confirmed through confidence interval where its lower bound ranges between (4.586, 4.785), which does not include the value (4.5).

These results confirm there is no gap between student's perceived satisfaction and their expectations; and it means that students for satisfaction of Learner Contents exceed their expectation.

5.7.3 Students Satisfaction on Learner – Instructor after Improvement

To evaluate Student Satisfaction on dimension Learner Instructor from Online Courses which includes 21 questions divided into two parts, the first part includes (1 up to 6) qualitative questions, and second part includes (7 up to 21) quantitative questions with Likert scale five, researcher developed for qualitative questions (1-6) distributions and frequency tables for Student's perceptions for these questions, and (1-Sample P) test between Student's perceptions and their expectation, but for quantitative questions (7-21) researcher calculate mean and standard deviation for these questions and developed (1-Sample T) test between Student's perceptions and their expectation as follows:

5.7.3.1 Analysis of qualitative data of Learner Instructor after Improvement

Table (5-21) shows the answers of Students on the qualitative questions (1-6), it is clear that the percentage of all questions ranges between (92%, 96%) which are more than the expected value (90%), and that means the Students are satisfied with these Learner Instructor and has been improved.

Table (5-21) Answers for 1st part of 2nd dimension of Student's Satisfaction (Learner Instructor) after improvement

No	Statements	frequency	Percentage
1	In the online class, the instructor was an interactive member of the discussion group offering direction to posted comments.	47	94%
2	In the online course, feedback is received timely from the instructor (within 24 to 48 hrs.)	48	96%
3	In the online course there is a Lack of feedback from the instructor which frustrate learner.	49	98%
4	In the online course, learner can get individualized attention from instructor when needed.	46	92%
5	The learner can feel the presence of the instructor in the online class. continuously	47	94%
6	In the online class the instructor encourage communication	48	96%

Also to confirm validity and significance of this result, researcher apply 1-Sample P test and results are summarized in Table (5-22), which prove previous results through:

- P value ranges between (0.750, 0.995) which is greater than (0.05), and researcher cannot reject Null hypothesis, which states that "perceived student satisfaction for Learner Instructor from Online Courses after Improvement exceeds their expectation".
- Also, this is confirmed through confidence interval where its upper bound ranges between (0.972, 0.999) which include the value (0.900).

Table (5-22) Results of 1 Sample-P test for Evaluation objectives of perceived student satisfaction for Learner Instructor from Online Courses after Improvement

Questions of Learner Contents	X	N	Sample p	Upper Bound C.I.	P value
Question 1	47	50	0.940	0.983	0.888
Question 2	48	50	0.960	0.993	0.966
Question 3	49	50	0.960	0.999	0.995
Question 4	46	50	0.920	0.972	0.750
Question 5	47	50	0.940	0.983	0.888
Question 6	48	50	0.960	0.993	0.966

These results confirm that students are satisfied with the part one of Learner Instructor from Online Courses.

5.7.3.2 Analysis of Quantitative data of Learner Instructor after Improvement

Table (5-23) shows the answers of Students on the Quantitative questions (7-21) of Learner Instructor, which has a mean (4.743), against standard deviation equal (0.039), Also, the statements of Learner Instructor have mean ranges between (4.625, 4.838), and standard deviation ranges between (0.064, 0.241).

Table (5-23) Answers for 2nd part of 2nd dimension of Student's Satisfaction (Learner Instructor) after improvement

#	Statements	Mean	Standard Deviation.
7	How clearly did your instructor explain how students would be graded?	4.714	0.137
8	How fair was your instructor's grading?	4.717	0.140
9	How concerned was your instructor with how well students were learning?	4.660	0.241
10	How motivating was your instructor?	4.835	0.155
11	How well did your instructor relate course topics to each other?	4.669	0.140
12	How much did your instructor stress the importance of understanding ideas, rather than memorizing facts?	4.699	0.169
13	Did your instructor present the material too quickly, too slowly, or at about the right speed?	4.749	0.101
14	Were you satisfied with your instructor's teaching, neither satisfied nor dissatisfied with it, or dissatisfied with it?	4.808	0.195
15	How clearly did your instructor explain the objectives of the course?	4.625	0.101
16	How many of the course objectives did your instructor meet?	4.724	0.164
17	How knowledgeable in the course content was your instructor?	4.830	0.137
18	How clearly did your instructor explain difficult material?	4.838	0.165
19	How well did your instructor distinguish between the most important topics and the least important topics?	4.698	0.064
20	How much class time was spent discussing the most important topics?	4.768	0.146
21	How much class time was spent discussing the least important topics?	4.819	0.185
Learner Instructor Mean and Std. Dev.		4.743	0.039

It is also noted from Table (5-23) that:

- Statement (18) which states that "How clearly did your instructor explain difficult material?" has achieved the highest mean (4.838) and standard deviation (0.165).
- While construct (15) which states that "How clearly did your instructor explain the objectives of the course?" has achieved the least mean (4.625) and standard deviation (0.101).

To validate and confirm these results, researcher developed 1-Sample T test between Student's perceived answers and their expectations, and Table (5-24) shows the results of this test:

Table (5-24) 1 Sample-T for Overall Student's Satisfaction (Learner Instructor) after improvement

Variables	Mean	Std.Dev	SE Mean	Lower Bound of C. I	T Calculated	P Value
Overall student's satisfaction	4.743	0.039	0.006	4.734	43.82	0.000

From Table (5-24), researcher reject Null hypothesis which states "perceived student satisfaction for Quantitative data of Learner Instructor from Online Courses after Improvement do not exceed their expectation", and accept alternative hypothesis, and that means there is no gap between student's perceived satisfaction and their expectations on Learner Instructor and this is proved through:

- (P value = 0.000) which is less than (0.05), and (T Calculated = 43.82) which is greater than (T Tabulated) that equal (2.010) and this confirm previous result.
- Also, this is confirmed through confidence interval where its lower bound is (4.734), which does not include the value (4.5).

These results confirm there is no gap between student's perceived satisfaction and their expectations, and to confirm the previous results a comparison between the answers of students (perceived values) for all statements of this dimension and their expectation were done by developing (15) 1-Sample T test and Table (5-25) shows the results of these tests:

Table (5-25) 1 Sample-T for elements of perceived student satisfaction for Quantitative data of Learner Instructor from Online Courses after Improvement

Variables	Mean	Std.Dev	SE Mean	Upper Bound of C. I	T Calculated	P Value
Statement 7	3.400	1.143	0.162	3.671	-6.81	0.000
Statement 8	3.380	1.086	0.154	3.637	-7.29	0.000
Statement 9	3.240	1.117	0.158	3.505	-7.98	0.000
Statement 10	2.860	1.195	0.169	3.143	-9.70	0.000
Statement 11	2.960	1.228	0.174	3.251	-8.87	0.000
Statement 12	3.260	1.084	0.153	3.517	-8.09	0.000
Statement 13	4.120	1.043	0.147	4.367	-2.58	0.007
Statement 14	3.860	1.161	0.164	4.135	-3.90	0.000
Statement 15	3.400	1.050	0.148	3.649	-7.41	0.000
Statement 16	3.440	0.884	0.125	3.650	-8.48	0.000
Statement 17	3.280	1.011	0.143	3.520	-8.53	0.000
Statement 18	3.560	1.072	0.152	3.814	-6.20	0.000
Statement 19	3.080	1.027	0.145	3.323	-9.78	0.000
Statement 20	3.540	1.092	0.154	3.799	-6.22	0.000
Statement 21	3.220	1.130	0.160	3.488	-8.01	0.000

From Table (5-25), researcher concludes that, Null hypotheses which states "perceived elements of student's satisfaction exceeds their expectations for **Learner Instructor** from Online Courses before Improvement" are rejected, and the alternative hypotheses are

accepted, that means there are gaps between perceived student's satisfaction and their expectations for elements of satisfaction and this is proved through:

- P value ranges between (0.000, 0.007) which are less than (0.05), and T Calculated which ranges between (-9.78, -2.58) which is less than (T Tabulated) that equal (-2.010) and this confirm previous results.
- Also, this is confirmed through confidence interval where its upper bound is ranges between (3.143, 4.367), which does not include the value (4.5).

These results confirm there is a gap between student's perceived satisfaction and their expectations; and it means that students for satisfaction of Learner Instructor do not exceed their expectation.

5.7.4 Students Satisfaction on Learner – Learner after Improvement

To evaluate Student Satisfaction on dimension Learner – Learner from Online Courses which includes 7 qualitative questions, researcher developed frequency table for Student's perceptions for these questions, and (1-Sample P) test between Student's perceptions and Table (5-26) shows the answers of Students on the qualitative questions (1-7), it is clear that the percentage of all questions ranges between (92%, 98%) which are greater than the expected value (90%), and that means the Students are satisfied with these **Learner – Learner.**

Table (5-26) Answers 3rd dimension of Student's Satisfaction (Learner – Learner) after improvement

No	Statements	frequency	Percentage
1	The online discussion board provides opportunity to problem solving with other learners.	47	94%
2	The online discussion board provides opportunity to critical thinking with other learners.	46	92%
3	The discussion board in the online class is a waste of time.	48	96%
4	In the online class, learner is able to ask for clarification from a fellow student when needed.	46	92%
5	The online course creates a sense of community among learners.	49	98%
6	The online course encourages learners to discuss ideas and concepts covered with other learners.	46	92%
7	Learner at the online course receives timely feedback from other learners in the class (within 24-48 hrs.)	48	96%

Also to confirm validity and significance of this result, researcher apply 1-Sample P test and results are summarized in Table (5-27), which prove previous results through:

- P value ranges between (0.750, 0.995) which is greater than (0.05), and researcher cannot reject Null hypothesis, which states that "perceived student satisfaction for Learner – Learner from Online Courses after Improvement exceeds their expectation".
- Also, this is confirmed through confidence interval where its upper bound ranges between (0.972, 0.993) which include the value (0.900).

Table (5-27) Results of 1 Sample-P test for Evaluation objectives of Student's Satisfaction (Learner – Learner) after improvement

Questions of Learner Contents	X	N	Sample p	Upper Bound C.I.	P value
Question 1	47	50	0.940	0.983	0.888
Question 2	46	50	0.920	0.972	0.750
Question 3	48	50	0.960	0.993	0.966
Question 4	46	50	0.920	0.972	0.750
Question 5	49	50	0.980	0.999	0.995
Question 6	46	50	0.920	0.972	0.750
Question 7	48	50	0.960	0.993	0.966

These results confirm that students are satisfied with the third dimension Learner – Learner from Online Courses.

5.7.5 Students Satisfaction on Learner Technology after Improvement

To evaluate Student Satisfaction on dimension Learner – Technology from Online Courses after Improvement which includes 9 quantitative questions with Likert scale three, researcher calculate mean and standard deviation for these questions and developed (1-Sample T) test between Student's perceptions and their expectation, and Table (5-28)

shows the answers of Students on the Quantitative questions (1-9) of Learner Technology, which has a mean (2.835), against standard deviation equal (0.030), Also, the statements of this dimension have mean ranges between (2.800, 2.880), and standard deviation ranges between (0.041, 0.186).

Table (5-28) Answers fourth dimension of Student's Satisfaction (Learner Technology) after improvement

#	Statements	Mean	Standard Deviation.
1	Most difficulties encountered when using computers, can be dealt with.	2.880	0.041
2	Enjoy working with computers.	2.800	0.092
3	Very confident in abilities to use computers.	2.856	0.046
4	Computer software packages make learning easier	2.818	0.081
5	Learner of online courses considered to be a skilled computer user	2.830	0.059
6	Learner of online courses find working with computers very easy	2.802	0.104
7	Computers make learner much more productive	2.832	0.053
8	Using computers makes learning more interesting	2.875	0.128
9	Computers are a good aids to learning	2.824	0.186
Learner – Technology Mean and Std. Dev.		2.835	0.030

It is also noted from Table (5-28) that:

- Statement (1) which states that "Most difficulties encountered when using computers, can be dealt with", has achieved the highest mean (2.880) and standard deviation (0.041).

- While construct (2) which states that "Enjoy working with computers", has achieved the least mean (2.800) and standard deviation (0.092).

To validate and confirm these results, researcher developed 1-Sample T test between Student's perceived answers and their expectations, and Table (5-29) shows the results of this test:

Table (5-29) 1 Sample-T for Overall Student's Satisfaction (Learner Technology) at e- learning program after improvement

Variables	Mean	Std.Dev	SE Mean	Lower Bound of C. I	T Calculated	P Value
Overall student's satisfaction	2.835	0.030	0.004	2.828	32.27	0.000

From Table (5-29), researcher rejects Null hypothesis which states "perceived student satisfaction for the dimension Learner – Technology from Online Courses after Improvement do not exceeds their expectation", and accept alternative hypothesis, and that means there is no gap between student's perceived satisfaction and their expectations on Learner – Technology and this is proved through:

- (P value = 0.000) which is less than (0.05), and (T Calculated = 32.27) which is greater than (T Tabulated) that equal (2.010) and this confirm previous result.
- Also, this is confirmed through confidence interval where its Lower bound is (2.828), which does not include the value (2.7).

These results confirm there is no gap between student's perceived satisfaction and their expectations on the dimension Learner Technology, and to confirm the previous results a comparison between the answers of students (perceived values) for all statements of this dimension and their expectation were done by developing (9) 1-Sample T test and Table (5-30) shows the results of these tests:

Table (5-30) 1 Sample-T for elements of student's perceived satisfaction and their expectations on the dimension Learner Technology after improvement

Variables	Mean	Std.Dev	SE Mean	Lower Bound of C. I	T Calculated	P Value
Statement 1	2.880	0.040	0.006	2.870	31.14	0.000
Statement 2	2.800	0.092	0.013	2.778	7.65	0.000
Statement 3	2.856	0.046	0.007	2.845	24.00	0.000
Statement 4	2.818	0.081	0.012	2.799	10.28	0.000
Statement 5	2.830	0.059	0.008	2.816	15.56	0.000
Statement 6	2.802	0.104	0.015	2.778	6.96	0.000
Statement 7	2.832	0.053	0.007	2.819	17.14	0.000
Statement 8	2.875	0.128	0.018	2.844	9.62	0.000
Statement 9	2.824	0.186	0.026	2.780	4.72	0.000

From Table (5-30), researcher reject Null hypotheses which states "perceived elements of student's satisfaction do not exceed their expectations for Learner – Technology from Online Courses after Improvement", and the alternative hypotheses are accepted, that means there are no gaps between perceived student's satisfaction and their expectations for elements of satisfaction and this is proved through:

- (P value = 0.000) which is less than (0.05), and T Calculated which ranges between (4.72, 31.14) which is greater than (T Tabulated) that equal (2.010) and this confirm previous results.
- Also, this is confirmed through confidence interval where its lower bound is ranges between (2.778, 2.870), which does not include the value (4.5).

These results confirm there is no gap between student's perceived satisfaction and their expectations; and it means that students for satisfaction of **Learner Technology** exceed their expectation.

5.7.6 Students Satisfaction on General Satisfaction after Improvement

To evaluate Student Satisfaction on fifth dimension General Satisfaction from Online Courses which includes 6 qualitative questions, researcher developed frequency table for Student's perceptions for these questions, and (1-Sample P) test between Student's perceptions and their expectation, and Table (5-31) shows the answers of Students on the qualitative questions (1-6), it is clear that the percentage of all questions ranges between (92%, 96%) which are greater than the expected value (90%), and that means the Students are satisfied with this dimension.

Table (5-31) Answers fifth dimension of Student's Satisfaction (General Satisfaction) after improvement

No	Statements	frequency	Percentage
1	Learner is satisfied with this online course.	47	94%
2	Learner likes to take another online course.	46	92%
3	The online course did not meet the learner needs.	47	94%
4	Learner would recommend the online course to others.	48	96%
5	Learner learned as much in the online course as compared to a face to face course.	47	94%
6	Learner feels online courses are as effective as face to face courses.	46	92%

Also to confirm validity and significance of this result, researcher apply 1-Sample P test and results are summarized in Table (5-31), which prove previous results through:

- P value ranges between (0.750, 0.966) which is greater than (0.05), and researcher cannot reject Null hypothesis, which states that "perceived student satisfaction for General Satisfaction from Online Courses after Improvement exceeds their expectation".
- Also, this is confirmed through confidence interval where its upper bound ranges between (0.972, 0.983) which does include the value (0.900).

Table (5-32) (1 P Test) for fifth dimension (General Satisfaction) after Improvement

Questions of Learner Contents	X	N	Sample p	Upper Bound C.I.	P value
Question 1	47	50	0.940	0.983	0.888
Question 2	46	50	0.920	0.972	0.750
Question 3	47	50	0.940	0.983	0.888
Question 4	48	50	0.960	0.993	0.966
Question 5	47	50	0.940	0.983	0.888
Question 6	46	50	0.920	0.972	0.750

These results confirm that students are satisfied with the fifth dimension General Satisfaction from Online Courses.

In general we can realize improvement of satisfaction from the offered E-learning program after partially applying the suggested E-Learning quality system.

5.8 Summary

- The Idea of this Model is based on a merge between the Eight Elements of Total Quality Management, Baldrige criteria for performance excellence frame work, and Quality function deployment.
- The main process of the offered service is the communication. It appears in the Model comprising the core activities of the teaching and learning process.

- The Idea of this model is to use Quality function Deployment (QFD) to translate and plan the" voice of the customer" into the quality characteristique of the service before enter the market.

- The result of all theSuggested Model phases shall affect the learner through the afforded high quality E-learning service.

- The cost of suggested Model was calculated according to according to (Philip Kotler, Karen F.A.Fox, 2002) in the book titled "Strategic Marketing for Educational Institutions".

- To validate the suggested E- learning model, an approach has been made to introduce a new training program to the elementary teachers in Egypt. But, it couldn't go further due to National Policies in Egypt. In the meantime, the suggested model was applied at the Arab Academy for Science, Technology and Maritime Transport (AASTMT) at the College of Business and Technology in Heliopolis.

- a house of quality was built using the QFD Online

- Competitive analysis shows where is our program from the one offered at University of Nottingham (UoN) and the Egyptian E-Learning University before and after the application of the suggested model

- The same statistical analysis used before applying the suggested model was used after its application.

- After applying the suggested model, results of analysis shows improvement in satisfaction from the offered E-learning program, as well as the decrease of the Gap between our program, and the ones offered by University of Nottingham and the Egyptian E-learning University**.**

Chapter six
Conclusions and Recommendations

6.1 Introduction

In this chapter the conclusion of our research is presented to infer that achieving its objectives, reveal the importance of applying Total Quality Management on E-learning service in Egypt. It declares the implication of applying Total Quality Management on E-service, especially E-learning. This research had four objectives to achieve, seven questions to answer, and ten hypotheses to prove. Social perspective was considered while implementing this research, but couldn't be reached as targeted due to Organizational policies.

6.2 Achievement of research objectives

The four objectives of this research were achieved as follows:-

1- The relationship between total quality Management and e-service was evaluated. The research could achieve its objectives by examining the relationship between total quality management and e-service. We could find that when quality circle will be introduced in the Higher education institute which offers an E- learning programme, then it will be easily accessible, clearly organized, and well written. It will be also, authoritatively presented, Learner centred, and Affordable. As well as Efficient, Flexible and, has a Facilitated learning environment.

2- E-learning as an E- service provided in High educational Institutes in Egypt was evaluated. When we examined the E-learning as an E-service provided in High Educational Institutes in Egypt, we could find that only 9.09% of Higher education institutes in Egypt offer E-learning and apply Total quality management as a general management process required by the Council of High Education in Egypt in order to accredit the overall offered education by the Institute. Although, 18.18% offer E-learning and do not apply Total Quality Management. On the other side, we found that 13.63% of the higher education institutes in Egypt do not offer E-learning and do not apply Total Quality Management.

3- The feasibility of applying the total quality management on E-learning in Egypt was discussed, and we could find that the cost of E-learning program is affordable, and

according to the calculated break even volume, only 7 students can cover the program cost. Also, applying Total Quality Management on E-learning will fulfil the requirements of the American Accreditation board of E-learning (DETC)

4- While analysing the implications of applying TQM on E-learning in High Educational Institutes in Egypt, we could realise that Applying Quality requirements increase the satisfaction of customers. It means increase the efficiency of the offered service. It could expand the market and increase revenues of the Higher education institutes in Egypt. Also, if it applied as a social responsibility from the institutions it could defeat poverty and ignorance, expand knowledge, improve the society culture and behaviour through interacting with different nationalities, and giving the chance to everybody everywhere to learn whatever they like whenever it is suitable to them. But, the risk of applying individual E-learning program is high, due to political and cultural issues, while it can be to the minimum if it is applied trough a well stable Educational institute. The suggested E- learning model achieved improvement of the E-learning program offered. It is difficult to start a new E-learning program in Egypt with new Ideas, due to cultural and political issues.

6.3   Research approach results

This research was based on a multi method choice. The collected data was a mix between quantitative and qualitative. It was analysed using statistical methods. Referring to results of analysis and literature reviews, the suggested model was designed. It was applied to be validated. Better results could be achieved if the suggested model was applied as planned, in two situations; to start a new program, and to improve a running program. Organisational policies, culture, and resistance for change affect the implementation of the suggested model as it was planned. The Suggested model was implemented only to partially improve a running e-learning program.

 Through the literature review, we could answer the first three questions of this research:-

1- What is TQM (Q1)

2- The overall business performance within TQM   (Q2)

4-   The effects of TQM implementation on overall E-learning service performance (Q3)

We could answer the following research Question through the results of the Pilot Survey executed through the International conference on E-learning (ICEL) 2012 which was held by the Egyptian E- learning University (EELU) from 9-11 July 2012 in Cairo – Egypt.:-

1-To what extent TQM is applied in High Educational Institutes in Egypt? (Q4)

3- To what extent the E-learning service is applied in High Educational Institutes in Egypt? (Q5)

To Identify the kind of TQM implementation model (Q6), literature reviews was made:-

- Application of E-learning standardization technology By :Li Zheng, LeiXu and Yu shan LiTsingua University – *China (Chapter 22 from a book titeled " Advanced Learning" Edited by Raquel Hijin –* NeiraPublished online www.intechopen.com 1 October 2009

- The Baldridge Business Model By :Paul steel in 2012

- The eight Elements of Total Quality Management By Nayantara Padhi published In 2010

- Evaluation of a Virtual Learning Environment for the Professional Training in Public Administration doi:10.3991/ijac.v2i1.589 M. Sannia1, G. Ercoli2 and T. Leo21 University of York, York, UK, 2 Università Politecnica delle Marche, Ancona, Italy

- Quality Fuction Deployment for Service - Hand Book. By:- MBA Luis Bernal Dr. Utz Dornberger MBA Alfredo Suvelza MBA Trevor Byrnes

Three papers were published:-

1- E-Learning and Quality Circles

IJSRP Volume 3 Issue 2 February 2013 edition.

2-E-learning benchmark and quality Function deployment role

Compr. Res. J. Manage. Bus. Std. October 2013 1(1): 013-017

3-Total quality Management (TQM) and Continuous Improvement as addressed by researchers

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Then a total Quality Management Model to improve E-learning service was suggested where we should Apply Quality function Deployment, Focus on eight key elements of TQM, and Use the Baldrige criteria for performance excellence framework.

The fourth paper was published:-

Suggested Model for E-learning Quality service

To demonstrate the Total Quality Management suggested model in practice (Q7), the field of study was chosen putting in consideration a social perspective of illiterate and poverty of Egyptian people. It was planned to implement the suggested model under two situations: - the first was to start a new program to serve society, which couldn't be achieved due to Organizational policies, and culture resistance. But, it could be implemented under the second situation which is the improvement of a running program. A case study of a High educational Institute in Egypt was made, and the suggested model was partially applied.

While measuring the Instructors Satisfaction before Applying the Suggested E-learning Quality Model The significance level (P Value) which is = 0.05 varies between 0.000 and 0.025 < 0.05. But After Applying the suggested model, the significance level varies between 0.000 and 0.01< 0.05. The null Hypothesis stating that Instructor's satisfaction from work at E-learning program does not exceed their expectations is rejected. And the alternative hypothesis is accepted. This means that instructors are satisfied from work at E-Learning program.

While measuring the Learner to content Satisfaction before Applying the Suggested E-learning Quality Model The significance level (P Value) which is = 0.05 varies between 0.000 and 0.002 <0.05. But After Applying the suggested model, the significance level varies between 0.750and 0.995 >.005. The null Hypothesis stating that student satisfaction from content exceeds their expectation could be accepted after applying the suggested E-learning Quality Model. This means there is improvement happened and we could achieve students' satisfaction from the contents of E-learning courses.

While measuring the Learner to instructor Satisfaction before Applying the Suggested E-learning Quality Model The significance level (P Value) which is = 0.05 varies between 0.000 and 0.007 <0.05. But After Applying the suggested model, the significance level varies between 0.750and 0.995 >.005. The null Hypothesis stating

that student satisfaction from Instructors exceeds their expectation could be accepted after applying the suggested E-learning Quality Model. This means there is improvement happened and we could achieve students' satisfaction from the instructors of E-learning courses.

While measuring the Learner to Learner Satisfaction before Applying the Suggested E-learning Quality Model The significance level (P Value) which is = 0.05 varies between 0.000 and 0.000 <0.05. But After Applying the suggested model, the significance level varies between 0.750and 0.995 >.005.   The null Hypothesis stating that student satisfaction from Learner to Learner exceeds their expectation could be accepted after applying the suggested E-learning Quality Model. This means there is improvement happened and we could achieve students' satisfaction from the communication with other learners of E-learning courses.

While measuring the Learner to Technology Satisfaction before Applying the Suggested E-learning Quality Model The significance level (P Value) which is = 0.05 varies between 0.000 and 0.000 <0.05. After Applying the suggested model, the significance level remains between 0.000and 0.000 <.005. The alternative Hypothesis stating that student satisfaction from technology exceeds their expectation could be accepted after applying the suggested E-learning Quality Model. This means that students are satisfied from the technology of E-learning courses.

While measuring the General Students Satisfaction before Applying the Suggested E-learning Quality Model The significance level (P Value) which is = 0.05 varies between 0.000 and 0.025 <0.05. But After Applying the suggested model, the significance level varies between 0.750and 0.996 >.005.   The null Hypothesis stating that General student's satisfaction from E-learning program exceeds their expectation could be accepted after applying the suggested E-learning Quality Model. This means there is improvement happened and we could achieve students' satisfaction from the overall   E-learning program.

In general we could have an E-learning quality system with an endless continuous improvement process. Total Quality Management applications in this system imply positively to achieve required customers' satisfaction.

6.4 Summary of the work done, emphasising the contribution to knowledge.

Egypt will adopt a strategy for development, while 14.9 of its working force are poor educated because the bad education system ranking 131 of 144 in the world. There is a need for a good educational system affordable and easy to use for poor people to help them being part of the required development. In organisations, TQM has become the most widely management acronym keeping an eye on details. Also, E-service is applied to compete in market place, to achieve the highest return on investment. Customer can achieve the service through webpage without a need to any help at any time. Hoping to achieve a good affordable E-learning System, it was decided to study the implications of applying TQM on E-learning in Egypt. TQM practices were established through seven questions and ten hypotheses. Literature review, survey, and questionnaires were used to apply case study. All studies related to the field of E-learning quality focus on the importance of evaluation of the provided service. Each study presented different way of evaluation. All studies advocate the necessity of evaluation to achieve improvements. Introducing E-learning in High education, require new methods of course design, teaching, and evaluating students. It will also, expand the variety of cultures, and eliminate borders between people all over the world. Thus, it will bring a wide change in learning process which can affect the society's culture. Theories and models in the field of Total Quality Management start from the same base of principles and end to same results (the importance of teamwork and continuous improvement…etc.) but in different approaches. Quality Function Deployment offers the best way to gain the competition of benchmarking. An E-learning Quality model was developed and implemented relying on transmitting the voice of customer (Staff members and Students) to leadership through applying QFD analysis using HOQ, and then applies the eight TQM elements with the seven Baldrige criteria for business excellence. The model was implemented to be validated. Customer satisfaction (staff members and Students) was measured before and after applying the model. House of Quality (HOQ) and SPSS software were used to analyse the customer satisfaction before and after applying the model. During the implantation of the research four papers were published in international journals to gain credibility for the work in each stage. Those papers were downloaded through the research gate by 50 researchers around the world. The application of the suggested model achieves improvement of satisfaction for both instructors and students. It offered an endless improvement cycle of the process.

6.5 The lessons learned from this experience

Culture is main issue to consider while seeking introducing new ideas and concepts. Changing culture is the most difficult thing. Personal interests and benefits, Politics and policies considered as big resistant to change. To make change in society, mutual benefit should take place. This research couldn't go so far without the support of the top management. Change happens from top to bottom by force.

6.6 Lessons from undertaking research

While conducting this research, many codes were revealed. First, not everyone wants to cooperate, unless there is a mutual benefit. Second, organisations policies are main issue to consider, if we want the change. Third, surveys and literature review are important to choose the field of study. Fourth, people culture affect improvement. Fifth, the variety of knowledge help researcher to find his way to his target.

Adopting an interpretive philosophy for this research provided the ability to understand general methodological issues and problems. It helped to interpret and analyse texts, and facts. It guided to develop critical thinking, and achieve the new model of E-service quality process.

6.7 The possible limitation of the work.

The suggested model is considered to be a recognised emerged set of procedures for validation of quality framework. It can be used as management system for any organisation. It guarantees safety of national system, legitimacy of the providers, reveal fake providers.

6.8 Recommendations

➢ The way to deliver E-learning courses in Egypt needs to be improved.

➢ It is recommended to use Quality Function Deployment to offer the best way to gain the Competition of E-learning benchmark.

➢ Applying the suggested Model in Higher educational Institutes, can give people in my country and other developing ones the opportunity to have a good education while working to live. The good education could develop their mind and way of

thinking, which be reflected in their outputs. It could bring them hope in better future. Also, such a kind of education will expand the market for institutions, and allow to people who work in them to be part of the globalization through being expanded to different culture. This model can unify the illiterate poor people all over the world under the same level of education without discrimination.

➢ Offering an accredited E-learning to illiterate people in Egypt should become a national project to improve the society. It could be sponsored through none governmental Organisations, which can have a plan of cultural awareness and human development.

6.9 Future areas of research

The process of E-learning is not all what is needed to be improved. Quality does not imply process only. The course design offered through E-learning program should be considered. It is important to apply the quality requirements on E-learning courses contents. Also, it is important to reveal new online teaching methods with high quality performance teachers. The future work recommended emerged from research could be Measurements of Quality of online course content and Teachers performance.

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Appendix A

Pilot Survey

The following is the questionnaire used to execute the pilot survey:

Name: - --

Position:---

Name of Organisation: ---

Activity of Organisation: --

Country: ---

Tel / Mobile: --

E-mail: --

1- Do you offer E-learning Service through your organization?   YES ☐ No ☐

2- If yes, how many students do you have in this program

Please indicate a number: -------------------------------------

3- How many people involved in the E-learning service?

Please indicate a number: ---------------------------------------

4- Since when your organization offer the E-learning service?

Please indicate a year: ---

1- Do you apply Quality Management System in your organization? YES ☐ NO ☐

2- If yes, which quality standard do you follow?

- ISO 19796-1:2005(E)

-ISO /IEC 15939

-ISO 9001:2000

-Other: _____

3- Since when your organization apply Quality management system?

Please indicate a year:- --

Appendix B

(Table 2-1) E- Learning Pivot table of a pilot survey about Applying TQM and E- Learning in Egypt

Sum of years of applying quality	Sum of years offering e-learning	Sum of id	Row Labels
0	**0**	**21**	**Admin**
0	**0**	**21**	**education**
0	0	21	no
0	**0**	**21**	**0**
0	0	21	0
0	**0**	**21**	**no**
0	0	21	0
0	**17**	**7**	**Ass. Prof**
0	**17**	**7**	**education**
0	17	7	yes
0	**17**	**7**	**49**
0	17	7	1000
0	**17**	**7**	**no**
0	17	7	0
0	**0**	**4**	**AUC instr.**
0	**0**	**4**	**cont. edu**
0	0	4	no
0	**0**	**4**	**0**
0	0	4	0
0	**0**	**4**	**0**
0	0	4	0
0	**5**	**16**	**comp. trainer**
0	**5**	**16**	**school**
0	5	16	yes
0	**5**	**16**	**100**
0	5	16	120
0	**5**	**16**	**yes**
0	5	16	0

Sum of years of applying quality	Sum of years offering e-learning	Sum of id	Row Labels
0	0	18	Comp.syst
0	0	18	e-learning
0	0	18	no
0	0	18	0
0	0	18	0
0	0	18	no
0	0	18	0
0	2	6	Developer
0	2	6	education
0	2	6	yes
0	2	6	200
0	2	6	1000
0	2	6	no
0	2	6	0
0	4	5	Dir. E-lear
0	4	5	education
0	4	5	yes
0	4	5	150
0	4	5	150
0	4	5	yes
0	4	5	ISO15189
0	1	11	founder
0	1	11	Ar.Lang.tech
0	1	11	yes
0	1	11	40
0	1	11	0
0	1	11	no
0	1	11	0
4	2	8	G.M
4	2	8	Software
4	2	8	yes

Sum of years of applying quality	Sum of years offering e-learning	Sum of id	Row Labels
4	2	8	15000
4	2	8	1200
4	2	8	yes
4	2	8	CMMI
3	5	1	IT Expert
3	5	1	Telecom
3	5	1	yes
3	5	1	130 000
3	5	1	130000
3	5	1	yes
3	5	1	ISO9001
7	1	73	Lecturer
7	1	73	education
6	0	51	no
6	0	51	0
6	0	51	0
0	0	17	no
0	0	17	0
6	0	34	yes
6	0	34	0
1	1	22	yes
1	1	22	80
1	1	22	60
1	1	22	yes
1	1	22	ISO9000
4	2	14	lecturer at SA
4	2	14	teaching
4	2	14	yes
4	2	14	20
4	2	14	all staff
4	2	14	yes

Sum of years of applying quality	Sum of years offering e-learning	Sum of id	Row Labels
4	2	14	don't know
0	**0**	**19**	**Master St.**
0	**0**	**19**	**education**
0	0	19	no
0	**0**	**19**	**0**
0	0	19	0
0	**0**	**19**	**no**
0	0	19	0
3	0	20	Q.A mngr.
3	**0**	**20**	**furniture**
3	0	20	no
3	**0**	**20**	**0**
3	0	20	0
3	**0**	**20**	**yes**
3	0	20	ISO9000
0	**1**	**2**	**Software**
0	**1**	**2**	**Develop**
0	1	2	yes
0	**1**	**2**	**300**
0	1	2	300
0	**1**	**2**	**no**
0	1	2	0
0	**0**	**25**	**Teacher**
0	**0**	**13**	**consulting**
0	0	13	no
0	**0**	**13**	**no**
0	0	13	0
0	**0**	**13**	**0**
0	0	13	0
0	**0**	**12**	**school**
0	0	12	no

Sum of years of applying quality	Sum of years offering e-learning	Sum of id	Row Labels
0	**0**	**12**	**no**
0	0	12	0
0	**0**	**12**	**0**
0	0	12	0
0	**0**	**3**	**univ. Prof**
0	**0**	**3**	**education**
0	0	3	no
0	**0**	**3**	**0**
0	0	3	0
0	**0**	**3**	**0**
0	0	3	0
0	**3**	**23**	**van Holland**
0	**3**	**23**	**e-learning**
0	3	23	yes
0	**3**	**23**	**14**
0	3	23	8
0	**3**	**23**	**no**
0	3	23	0
21	**43**	**276**	**Grand Total**

Appendix C

Questionnaires

Evaluation of the instructors for the work at e- learning program

1. How easy is it to get the resources you need to teach e- learning program?

○ Extremely easy

○ Very easy

○ Moderately easy

○ Slightly easy

○ Not at all easy

2. How safe do you feel teaching his e-learning program?

○ Extremely safe

○ Very safe

○ Moderately safe

○ Slightly safe

○ Not at all safe

3. How useful is the feedback the principal at this e-learning program gives you?

○ Extremely useful

○ Very useful

○ Moderately useful

○ Slightly useful

○ Not at all useful

4. How much support does the administration at this e-learning program give to the teaching staff?

○ A great deal

○ A lot

○ A moderate amount

○ A little

○ None at all

5. How reasonable are the expectations for student achievement at this e-learning program?

○ Extremely reasonable

○ Very reasonable

○ Moderately reasonable

○ Slightly reasonable

○ Not at all reasonable

6. How much does this e-learning program give attention to standardized tests?

○ Much too much

○ Somewhat too much

○ Slightly too much

○ About the right amount

○ too little

7. How well do instructors at this e-learning program collaborate with each other?

○ Extremely well

○ Very well

○ Moderately well

○ Slightly well

○ Not at all well

8. How much attention does this e-learning program give to your professional growth?

○ A great deal

○ A lot

○ A moderate amount

○ A little

○ None at all

9. How much financial support does this e-learning program give you for your professional growth?

○ A great deal

○ A lot

○ A moderate amount

○ A little

○ None at all

10. Overall, are you satisfied with the teaching experience at this e-learning program?

○ Extremely satisfied

○ Moderately satisfied

○ Slightly satisfied

○ Neither satisfied nor dissatisfied

○ dissatisfied

11. How positive are your interactions with other members of your department working in e-learning program?

○   Extremely positive

○   Very positive

○   Moderately positive

○   Slightly positive

○   Not at all positive

12. How effective is the leadership of your department chair toward e-learning program?

○   Extremely effective

○   Very effective

○   Moderately effective

○   Slightly effective

○   Not at all effective

13. How much do you feel your department chair values your input in making decisions concerning e-learning program?

○   A great deal

○   A lot

○   A moderate amount

○   A little

○   None at all

14. How effectively do you feel your talents are being used by your department in the E-learning program?

○   Extremely effectively

○   Very effectively

○   Moderately effectively

○   Slightly effectively

○   Not at all effectively

15. How fair are the administrative procedures at the E-learning program?

○ Extremely fair

○ Very fair

○ Moderately fair

○ Slightly fair

○ Not at all fair

16. Are you satisfied with the senior administration at this e- learning program?

○ Extremely satisfied

○ Moderately satisfied

○ Slightly satisfied

○ Neither satisfied nor dissatisfied

○ dissatisfied

17. How manageable is your teaching requirement at this e-learning program?

○ How manageable is your teaching requirement at this university? Extremely manageable

○ Very manageable

○ Moderately manageable

○ Slightly manageable

○ Not at all manageable

18. How fair is your pay at this e-learning program?

○ How fair is your pay at this university? Extremely fair

○ Very fair

○ Moderately fair

○ Slightly fair

○ Not at all fair

19. Overall, are you satisfied with this e-learning program as a place to work?

○ Extremely satisfied

○ Moderately satisfied

○ Slightly satisfied

○ Neither satisfied nor dissatisfied

○ dissatisfied

Appendix D

Questionnaire to measure
Student Satisfaction from Online Courses

<u>Learner – Content:-</u>

1- The websites linked to the course facilitate learning.

Yes	NO

2- The course documents/ lessons/ lecture notes facilitate learning.

Yes	NO

3- The assignments / Projects in the course facilitate learning.

Yes	NO

4- Learning activities in the course require application of problem solving skills which facilitate learning.

Yes	NO

5- Learning activities require critical thinking which facilitate learning.

Yes	NO

6- Preparations for quizzes/ exams in the online course facilitate learning.

Yes	NO

7- **The online classes help to improve written communication skills.**

Yes	NO

8- **How much did success in the course depend upon understanding ideas, rather than memorizing facts**?

○ A great deal

○ A lot

○ A moderate amount

○ A little

○ None at all

9- How well did section or lab fit in with the other parts of the course?

○ Extremely well

○ Very well

○ Moderately well

○ Slightly well

○ Not at all well

10- Were you given too many assignments, too few assignments, or about the right amount?

○ Much too many

○ Somewhat too many

○ Slightly too many

○ About the right amount

○ too few

11- How easy were the assignments in this course?

○ Extremely easy

○ Very easy

○ Moderately easy

○ Slightly easy

○ Not at all easy

12- How worthwhile was the course material?

○ Extremely worthwhile

○ Very worthwhile

○ Moderately worthwhile

○ Slightly worthwhile

○ Not at all worthwhile

13- How useful were the assignments in helping you understand the material?

○ Extremely useful

○ Very useful

○ Moderately useful

○ Slightly useful

○ Not at all useful

14- How organized was the course content?

○ Extremely organized
○ Very organized
○ Moderately organized
○ Slightly organized
○ Not at all organized

15- Were you satisfied with the course content, neither satisfied nor dissatisfied with it, or dissatisfied with it?

○ Extremely satisfied
○ Moderately satisfied
○ Slightly satisfied
○ Neither satisfied nor dissatisfied
○ dissatisfied

Learner – Instructor:-

1- **In the online class, the instructor was an interactive member of the discussion group offering direction to posted comments.**

| Yes | NO |

2- **In the online course, feedback is received timely from the instructor (within 24 to 48 hrs.)**

| Yes | NO |

3- **In the online course there is a Lack of feedback from the instructor which frustrate learner**.

| Yes | NO |

4- **In the online course, learner can get individualized attention from instructor when needed**.

| Yes | NO |

5- **The learner can feel the presence of the instructor in the online class**.

| Yes | NO |

6- **In the online class the instructor encourage communication continuously.**

| Yes | NO |

7- **How clearly did your instructor explain how students would be graded?**

○ Extremely clearly

○ Very clearly

○ Moderately clearly

○ Slightly clearly

○ Not at all clearly

8- **How fair was your instructor's grading?**

○ Extremely fair

○ Very fair

○ Moderately fair

○ Slightly fair

○ Not at all fair

9- **How concerned was your instructor with how well students were learning?**

○ Extremely concerned

○ Very concerned

○ Moderately concerned

○ Slightly concerned

○ Not at all concerned

10- **How motivating was your instructor?**

○ Extremely motivating

○ Very motivating

○ Moderately motivating

○ Slightly motivating

○ Not at all motivating

11- **How well did your instructor relate course topics to each other?**

○ Extremely well

○ Very well

○ Moderately well

○ Slightly well

○ Not at all well

12- **How much did your instructor stress the importance of understanding ideas, rather than memorizing facts?**

○ A great deal

○ A lot

○ A moderate amount

○ A little

○ None at all

13- **Did your instructor present the material too quickly, too slowly, or at about the**

○ Much too quickly

○ Somewhat too quickly

○ Slightly too quickly

○ About the right speed

○ too slowly

Were you satisfied with your instructor's teaching, neither satisfied nor dissatisfied with it, or dissat with it?

○ Extremely satisfied

○ Moderately satisfied

○ Slightly satisfied

○ Neither satisfied nor dissatisfied

○ dissatisfied

14- **How clearly did your instructor explain the objectives of the course?**

○ Extremely clearly

○ Very clearly

○ Moderately clearly

○ Slightly clearly

○ Not at all clearly

15- **How many of the course objectives did your instructor meet?**

○ How many of the course objectives did your instructor meet? All of them

○ Most of them

○ About half of them

○ Some of them

○ None of them

16- **How knowledgeable in the course content was your instructor?**

○ How knowledgeable in the course content was your instructor? Extremely knowledgeable

○ Very knowledgeable

○ Moderately knowledgeable

○ Slightly knowledgeable

○ Not at all knowledgeable

17- **How clearly did your instructor explain difficult material?**

○ Extremely clearly

○ Very clearly

○ Moderately clearly

○ Slightly clearly

○ Not at all clearly

18- **How well did your instructor distinguish between the most important topics and the least imp**
topics?

○ Extremely well

○ Very well

○ Moderately well

○ Slightly well

○ Not at all well

19- **How much class time was spent discussing the most important topics?**

○ A great deal

○ A lot

○ A moderate amount

○ A little

○ None at all

20- **How much class time was spent discussing the least important topics?**

○ A great deal

○ A lot

○ A moderate amount

○ A little

○ None at all

<u>Learner – Learner:-</u>

1- The online discussion board provides opportunity to problem solving with other learners.

        ☐ Yes   ☐ NO

2- The online discussion board provides opportunity to critical thinking with other learners.

        ☐ Yes   ☐ NO

3- The discussion board in the online class is a waste of time.

        ☐ Yes   ☐ NO

4- In the online class, learner is able to ask for clarification from a fellow student when needed.

        ☐ Yes   ☐ NO

5- The online course creates a sense of community among learners.

        ☐ Yes   ☐ NO

6- The online course encourages learners to discuss ideas and concepts covered with other learners.

        ☐ Yes   ☐ NO

7- Learner at the online course receives timely feedback from other learners in the class (within 24-48 hrs.)

        ☐ Yes   ☐ NO

Learner – Technology:-

1- Most difficulties encountered when using computers, can be dealt with.

Always	Sometimes	Never

2- Enjoy working with computers.

Always	Sometimes	Never

3- Very confident in abilities to use computers.

Always	Sometimes	Never

4- Computer software packages make learning easier

Always	Sometimes	Never

5- Learner of online courses considered to be a skilled computer user

Always	Sometimes	Never

6- Learner of online courses find working with computers very easy

Always	Sometimes	Never

7- Computers make learner much more productive

Always	Sometimes	Never

8- Using computers makes learning more interesting

Always	Sometimes	Never

9- Computers are a good aids to learning

Always	Sometimes	Never

<u>General Satisfaction:-</u>

1-Learner is satisfied with this online course.

Yes		NO

2- Learner likes to take another online course.

Yes		NO

3-The online course did not meet the learner needs.

Yes		NO

4- Learner would recommend the online course to others.

Yes		NO

5- Learner learned as much in the online course as compared to a face to face course.

Yes		NO

6-Learner feels online courses are as effective as face to face courses.

Yes		NO

Appendix E

Quality management system manual for e-learning program

1. Policy and objectives

1.1 Policy

The E-learning department is committed to the online provision of education and training services – through High educational institute - to a multinational student and customer base, and to ensure that these services conform to agreed customer requirements.

These online services are provided by academically qualified and technically competent members of staff who continuously seek to achieve levels of performance which will enhance the reputation of the organization.

It is our policy to ensure that our online services satisfy the requirements of appropriate registration, accreditation and certification agencies.

Commitment to this policy is demonstrated by the implementation of an e- learning program following a quality management system which satisfies the requirements of ISO 9001:2008, ISO26000, ISO20000, ISO29000, and Distance education and training council(DETC) Merged Quality Management System Manual, supported by quality Plans and Quality Management Procedures.

1.2 Objectives

Through the implementation of our e-learning quality system program we seek to achieve the following objectives:-

1- Gain international recognition as an "Accredited e-learning program provider" in the fields of education and training.
2- Have a significant impact in human development, and integrate social responsibility into the organization.
3- Improve levels of customer satisfaction.
4- Improve morale amongst members of staff.
5- Improve internal and external communications.
6- Create a culture which identifies opportunities to change and improve our systems.
7- Identify and eliminate areas of inefficiency and non-effectiveness.
8- Achieve consistency for the various processes in the organization.

1.3 Scope

Although this manual describes the Institute e-learning quality system in total, the scope of the currently e- learning programs is:-

1- "The development and delivery of online courses of programs of study leading to bachelor degrees"
2- " The development and delivery of online training programs leading to professional certificate"

These programs are provided by the colleges, Continuous education and community service department, and training departments of the organization.

2. Responsibilities

2.1 Head of E-learning department

The Head of E- learning department is responsible for articulating the department strategy, and monitoring and approving associated policies and plans. He is also responsible for coordinating the activities and functions of various organizational units in the E-learning department.

2.2 Executive department committee

Executive committee is responsible for establishing and implementing business strategy and monitoring performance. The executive committee is responsible for periodically reviewing the effectiveness of the E-learning Department Quality Management system.

2.3 Developers

Developers report to the head of E-learning department. They are responsible for developing and implementing systems and practices in accordance with strategy established by the executive committee. They are also responsible for monitoring and reporting on the performance of activities within their area of responsibility.

Each developer establishes and maintains a quality plan which describes their area of responsibility contributes to and participates in the E-learning quality management system.

2.4 Senior Instructors

Senior instructors report to the president of E-learning department. They are primarily responsible for education, and training. They establish, implement and maintain programmes of study, and training courses in line with educational and business strategies by the executive committee.

2.5 Administrators

Administrators report to the Head of E-learning department, and provide support in the area of human resource, Finance and budgeting, procurement and logistics, health service, information centre, Catering service, and community services.

2.6 Internal Auditor

The internal auditor is responsible for ensuring that the quality management system is implemented effectively throughout the E-learning department, and for reporting on its effectiveness to senior management through the management review process.

3.0 Quality System

To support its business objectives the e- learning department has implemented a quality management system which complies with the eight elements of TQM engaged in the Baldrige criteria framework and apply the requirements of ISO 9001:2008, ISO26000, ISO20000, ISO29000, and Distance education and training council(DETC).

3.1 Documentation

To ensure consistent methods of management throughout the E-learning department, a suite of documentation has been established as follows:

3.1.1 Quality Management System Manual

This document contains the E-learning Department policy and objectives for quality. It defines the key responsibilities of who manage the various functions within the E-learning department, and gives a summary of the core business and supporting processes which enable it meet its business objectives.

3.1.2 Quality Plans

These documents contain further detail as for the E-learning department and services provided within the department. They also contain a matrix of the applicable management procedures. A list of existing quality plans is included with this manual.

3.1.3 Quality Management Procedures

These documents describe the key processes within the E-learning department. They define responsibilities and methods of control and ensure compliance with the eight elements of TQM engaged in the Baldrige criteria framework and apply the requirements of ISO 9001:2008, ISO26000, ISO20000, ISO29000, and Distance education and training council (DETC). They fall into three categories: Core business, Business Support and ISO support procedures. A matrix of Core Business procedures is attached to each quality plan. A matrix of Business & ISO Support procedures can be found at the end of this manual.

3.1.4 Work Instructions

These documents supplement management procedures and are developed when there is a need to provide perspective detail in order to ensure consistency in the performance of a task.

3.1.5 Codes of Practice

These documents provide detailed information regarding standards and criteria which are required for the provision of the E-learning department services. Other sources and types of document exist within the E-learning department which are used by staff in the performance of their tasks.

3.1.6 E-library

The E-library includes all the E-books, E- References, E- periodical, and publications which are used by the staff and students in the performance of their tasks.

3.1.7 Standards

All the national and international standards and codes related to the activities performed in the E-learning department, including ISO 9001:2008, ISO26000, ISO20000, ISO29000, and Distance education and training council(DETC) requirements.

3.2 Quality Planning

The implementation of quality plans and management procedures ensure that the ISO and Distance education and training council (DETC) requirements for quality planning are satisfied. In addition the following activities take place to ensure that the E-learning department is capable of meeting its objectives for business Quality.

3.2.1 Financial planning

The financial officer is responsible for putting the financial strategic plan for the E-learning department and assuring the effectiveness of its implementation.

3.2.2 Human resource planning

The human resource officer is responsible for analysis of all the activities performed in the E-learning department and plan accordingly for the recruitment and development of the staff.

3.2.3 Facilities planning

The procurement and logistics officer is responsible for ensuring the appropriate facilities on the form of equipment used in performing the different activities in the E- learning department.

4.0 Core Business Activities

The E-learning Department offers a range of services in the core activities of education, and training.

4.1 Education

4.1.1   Programs

The E-learning department offers online courses of Business administration programs leading to bachelor degrees. Also, it offers online training programs leading to professional certificate.

4.1.2 Provided in collaboration with

1-College of business administration and technology,

2-Continuing education and community service department.

4.1.3 Core processes
1) Marketing of online training programs
2) Development of online training programs
3) Approval of online training programs
4) Development of online courses
5) Approval of online courses
6) Delivery of online courses
7) Review /Modify/ withdraw online courses
8) Prepare and conduct online examinations

4.2 Software systems monitoring

4.2.1 Purpose

The purpose of software system is to ensure the integrity of software systems and associated data.

4.2.2 Scope
All software systems developed or purchased by E-learning department

4.2.3 Definitions
4.2.3.1 Stand-alone system: Application software which is used on a single personal computer or on a Local Area Network.
4.2.3.2 Networked system: Application software which is distributed via a network from the Information Centre.

4.2.4 Distribution of Software Systems

4.2.4.1 The head of e-learning department shall maintain a software register (app. 7.1) of stand-alone software received by them. This shall exclude software which is networked to them.
4.2.4.2 The head of e-learning department shall send a copy of the software register to the information centre manager.
4.2.4.3 The head of e-learning department shall maintain a software distribution list (app. 7.2) which records the users of the software listed in (app. 7.1)
4.2.4.4 1 the head of e-learning department shall ensure that software is distributed in accordance with appropriate license agreements.
4.2.4.5 The information centre manager shall control the distribution of networked software systems through the software information security system.
4.2.5 Control of Software Systems
4.2.5.1 The dean/ manager shall establish access rights for software systems and record these on app. 7.2.
4.2.5.2 All software systems shall have self-checking anti-virus systems.

4.2.5.3 Where practicable or specified, all software systems shall include automatic back-up systems. Failing these backup systems shall be selected and implemented according to section 4.2.6 of this procedure.

4.2.5.4 The dean / manager shall ensure that operating system software is stored in a secure environment away from the user locations.

4.2.6 Back-Up Methods

4.2.6.1 Data stored on stand-alone systems which have no automatic back-up shall be backed-up daily weekly or monthly.

4.2.6.2 The frequency of back-up shall be decided by local management and shall be recorded on the back-up log (app. 7.3).

4.2.6.3 The media for back-up can be chosen from the following, depending on the volume of data to be transferred

a) External Floppy Drives ex.:

- Diskettes
- Zip Drive
- Jaz Drive

b) Tapes

c) External Hard Drive

4.2.6.4 Regardless of the type of media and frequency, all back-up systems shall contain two sets of media, one of which is used (in rotation) for each back-up situation.

4.2.6.5 Those performing back-up activities shall record the time and date on the media used and shall update the back-up log.

4.2.6.6 All back-up media shall be stored safely and separately from the system on which the data is used.