The Effect of Information Systems Competency on Improving the Quality of Banking Services A Field Study in Algerian banks

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ABSTRACT

Cette étude visait à identifier l'effet de l'efficacité des systèmes d'information sur l'amélioration de la qualité des services bancaires algériens. Et pour atteindre les objectifs de l'étude, deux questionnaires ont été élaborés et distribués au niveau de chacun des gestionnaires de ces banques, ainsi que leurs clients, par rapport à l'échantillon de gestionnaires, une liste de sondage a été utilizé pour mesurer les dimensions de l'efficacité des systèmes d'information, et l'échantillon des clients de la banque , une autre liste de sondage a été utilizé pour mesurer les dimensions de la qualité de services bancaires, le nombre de questionnaires distribués aux gestionnaires des banques était (74), (62) d'entre eux ont été retournés et analysés. Alors que le nombre de questionnaires distribués aux clients de la banque était (80), (76) d'entre eux ont été retournés et analysés. Validité et la fiabilité des deux questionnaires ont été calculées. Les résultats de l'étude font référence à l'effet statistique significatif de l'efficacité des systèmes d'information sur l'amélioration de la qualité des services bancaires dans l'étude des banques de l'échantillon. L'étude montre également que toutes les corrélations étaient statistiquement significatives entre l'efficacité des systèmes d'information et ses diverses dimensions, et la qualité des services bancaires et de ses diverses dimensions, et les corrélations venues entre eux pour des degrés divers. Dans la lumière des résultats ; Certaines recommandations sont donnés.

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1. Introduction and Research Problem :

Witness our modern life, rapid development in various aspects where information has become an important component and a strategic resource under environmental conditions characterized by constant and rapid change.

The world has witnessed during the past few years a lot of shifts and changes in political, social and economic fields, and was the most prominent of these shifts and changes: globalization, privatization and free trade. The world has also witnessed many revolutions, it was notably: the technological revolution, and the revolution in information and knowledge, and the revolution in the knowledge-based economy, and the quality revolution.

Under these shifts and changes and revolutions, the interest of the information has increased by the institutions , the Owning of an accurate and correct information and that can be developed through an efficient information system is the source of the competitive advantage Acquisition for institutions from the other, and this by reducing costs, and the speed of data processing, product development, and to identify strengths and weaknesses of each of its operations, as well as through possession of feedback to enable them to monitor and compared the investigator with what was expected, and bridging the gaps at the lowest cost. So, various institutions worked to adopt many of the systems that govern and facilitate their operations, and make use of them in various fields especially those related to the improvement of quality level, which is one of the main requirements of modern management.

The algerian business environment was not free from all these developments on the side of information, this has affected on the Algerian institutions in various sectors, including the banking sector, which is the focus of the current study, and this is an effort to take advantage of information systems in the field of improving banking services, especially since the customer Today are looking for high values to his needs of goods and services, so, the banks should maintain their effectiveness and efficiency on an ongoing basis to provide their services in accordance with the wishes of their clients.

Based on the foregoing; the search problematic can be formulated as follows: **What is the impact of information system efficiency on improving the quality of the Algerian banking services?**

2. Research Objectives:

- Understanding the theoretical concepts relating to both the information systems and the banking service quality.
- Determine the nature of the correlations between the efficiency of information systems and the banking service quality in the Algerian banks.
- Analysis the impact of the information systems efficiency (hardware quality, efficient of workers, suitability of the information) on the banking service quality in the Algerian banks.
- Provide a set of recommendations on the subject of the study.

3. Research Importance:

The importance of research can be summarized as follows:

- The growing challenges and pressures that surround the banks sector from all sides and in every field increase the importance of the information and its role in the success of this sector and its continuation, as we find that the availability of appropriate information and in the appropriate time can provide banking services with   suitable quality and competitive price.
- The present study is an extension of previous studies that dealt with service quality, and its measurable, and banking services, also this study is a response to the demand of these previous studies to do more quality studies in other service sectors, and in other countries.
- The research practical importance is representing in the importance of the banking sector, this sector has been selected because of its large importance in supporting the national economy, and also it is more affected by the evolution in communications and information technology that the world is witnessing.

4. Research Hypotheses:

First: The Correlation Hypotheses

1. There is a positive correlation statistically significant between the information systems efficiency and improve the quality of the Algerian banking services.

1.1 There is a positive correlation statistically significant between the quality of the hardware used and improve the quality of the Algerian banking services.

1.2 There is a positive correlation statistically significant between the suitability of the information and improve the quality of the Algerian banking services.

1.3 There is a positive correlation statistically significant between the efficiency of workers in information systems and improve the quality of the Algerian banking services.

Second: The Impact Hypotheses

2. There is a significant impact of the information system efficiency on improving the quality of the Algerian banking services.

2.1 There is a significant impact of the quality of the hardware used on improving the quality of the Algerian banking services.

2-2 There is a significant impact of the suitability of the information on improving the quality of the Algerian banking services.

2.3 There is a significant impact of the   workers efficiency in information systems on improving the quality of the Algerian banking services.

5. Previous Studies:

(Beadles & Others, 2005) Study, entitled (The impact of human resource information systems: an exploratory study in the public sector) this study aimed to gather information on the application of human resources information systems, the future benefits, satisfaction on the system, and finally, Strategic Influence. It was concluded that 80% of HR managers believe that the human resources information systems have improved their ability to disseminate information and increased the amount of useful information. Moreover, 90% of HR managers believe that the human resources information produces value-added. And 60% of them answered that the system provides information useful in making decisions relating to promotions.

(Wang & Wang, 2006) Study, The purpose of this study is to identify the impact of internet on service quality in the banking sector, the result of this study shows that the internet has an important and positive effect on customer perceived bbanking

services and the service quality has been improved since the internet has been used in banking sector.

(Landrum & Others, 2009) Study, This study investiggates the service quality perceptions of professional information system users. This paper also examines the relationship between the relativr importance allocated by the system' s users to each of the five SERVPERF dimensions (dimensions that are shared with the SERVQUAL instrument) as measured by the points allocated to that dimension and the ratings provided for the individual items of the dimension . Findings suggest that users rate system responsiveness and reliability above other service quality dimensions. Moderating influencces in SERVPERF include gender and pressure to perform. The findings conclude that (1) companies that proveide client services and (2) designers of information systems that interface with users ahould emphhasize responsiveness and reliability; in cases of limited user resources, responsiveness and reliability should be emphasized over other SERVPERF performance dimensions.

(Saghier, Nathan, 2013) Study, The purpose of this study is to measure the quality of service from customer' perspective in the egyption banking, results based on a factor analysis identify four factors that influence users' evaluation of service quality of banking services, these factors are reliability, responsiveness, empathy and assurance.

 (Ensour, Alinizi, 2014) Study, this study aimed to identify the impact of management information systems (MIS) techniques on the quality of services provided at the university of Tabuk from the perspective of staff. To achieve the goals of the study, two questionnaires were developed and distributed on a random sample of 426 employees at the university of T abuk in the kingdom of saudi arabia, the results showed that the following sub- variable (hardware, software, security, and usability) have an impact on the quality of services provided at the university of T abuk in the kingdom of saudi arabia.

In light of the foregoing, agrees this study with previous studies on the importance of technology and information systems in service of the goals and orientations of business organizations, while different current study from previous studies in its focus on the

impact of information systems in terms of: (quality of hardware used, suitability of the information, the efficiency of workers) on improving the quality of the Algerian banking services, and also vary in terms of the practical field on the Algerian banks which is experiencing increasing competition, especially in light of the facilities granted to the foreign investor to expand and direct its activities in the banking sector in Algeria.

6. Theoretical Framework:

First: The Information System Conception
A. The Information System Definition:

(O'Brien, 1997: 4) defined information system as: "a group of individuals, hardware, software, networks, and data collected resources, transformation, and distribution of information in organizations."

And knew (Lajoinie, gallitre, roy, 2008: 6) information system as "an organized group of resources: hardware, software, personnel, data, procedures,..., that allows obtaining, processing, and storage of information (in the form of data, texts , images, sounds, ..) In, and between organizations. "

Also (laudon and laudon, 2010: 19) has defined information system as: "a set of interrelated components that collect (or relive) information, handle, store and distribute it to assist in decision-making, coordination, and control within the organization".

B. Information System Activities:

In the information system, three activities that contribute to the production of the necessary information in the organization: input, processing, output. **Input** is the activity through which the raw data submitted to the system from the source of the organization or its environment: What will be admitted to the system B can be the result of taking or retrieval the output of system A. **Processing** is the activity that transforms this raw data to give it meaning. **Output** is the distribution Activity of information that has been processed to users who need it. These three activities can be successive in a few seconds (in "selected" time) or realized in an asynchronous manner (in a "different" time). also, The information system contains the **Feedback** activity, which is the activity of converting the output

information to the appropriate users to assist them in evaluating the internal phase and re-enter if needed (for updating, for example). (Laudon and Laudon, 2010: 19)

C. The Fundamental Roles of Information Systems:

Information systems perform three roles in any type of organization: (O'Brien, 2000: 10) [9]

- Support of business process and operations.
- Support of decision making by its employees and management.
- Support of its strategies for competitive advantage.

Second: Banking Service Quality

A. Quality:

Quality has been defined from diverse perspective. According to deming, quality is "a predictable degrss of uniformity and dependability, at low cost and suited to the market" (munizu, 2013:186).

Also, Qualiy can be defined as "satisfying or exeeding customer requirements and expectations, and consequently to some extent it is the customer who eventually judges the quality of a product".

B. The Reason to Focus on Quality:

The main reason to focus on quality is to meet customer needs while remaining economically competitive in the same time. This means satisfying customer needs is very important for the enterprises to survive. The outcome of using quality practices is: (amoako, 2012:136)

- Understanding and improving of operational processes.
- Identifying problems quickly and systematically.
- Establishing valid and reliable service performance measure.
- Measuring customer satisfaction and other performance outcomes.

C. Service Quality:

An extensive range of literature over the 25 years has examined the concept of service and acknoledged the intangibility of services as one of the problems allied with measurement. Furthermore, in the sevice sector, where production, delivery and consumption can occur simultaneously, the conceot of quality refers to the matching between what customers expect and what they experience. Customers

evaluate service quality by comparing what they want or expect to what they actually get or perceive they are getting. When it comes to the service sector in banks, it turned out to be that they propose comparable kinds of services worldwide (Saghier, Nathan, 2013:2).

Service quality has been defined from at least four perspectives: (hernon, nitecki, 2001: 690)

Excellence. Although the mark of an uncompromising student and high achievement the attributes of excellence may change dramatically and rapidly. Excellence is often externally fefined.

Value. It incorporates multiple attributes, but quality and value are different constructs-one the perception of meeting or exceeding expectations and the otherstressing benefit to the recipient.

Conformance. To specifications. It facilitates precise measurement, but users of a service may not know or care about internal specifications.

Meeting and / or exceeding expectations. This definition is all encompassing and applies across service industries, but expectations change and may be shaped by experiences with other service providers.

According to lewis and booms (1983) service quality is "a measure of how well a delivered service matches the customers' expectations". (Amoako, 2012:136)

Also, service quality has been defined as "the overall assessment of a service by the customers", while other studies defined it as "the extent to which a service meets customer's needs or expectations". Service is assumed to be quality when it consistently conforms to customer expectations (Saghier, Nathan, 2013:2).

D. Service Quality Model:

Among the models for measuring service quality, the most acknowledged and applied model in diversity of industries si the SERVQUAL (service quality) model developed by parasuraman et al. the SERVQUAL (service quality) model of parasuraman et al. (1988) proposed a five dimensional construct of perceived service quality tangibles, reliability, responsiveness, assurance and empathy as instruments for measuring srvice quality: (Saghier, Nathan, 2013:4-5)

Reliability:

Reliability depends on handling customers' services problems; performing services right the first time; provide services at the promised time and maintaining error-free record. Furthermore, they stated reliability as the most important factor in conventional service. Reliability also consists of accurate order fulfillment; accurate recoord; accurate quote; accurate in billing; accurate calculation of commissions; keep services promise. He also mentioned that reliability is the most important factor in banking services.

Responsiveness:

Responsiveness defined as the willingness or readiness of employees to provide service. It involves timeliness of services. It is also involves understanding needs and wants of the customers, convenient operating hours, individual attention given by the staff, attention to problems and customers ' safety in their transaction.

Empathy:

Parasuraman et al. (1985) defined empathy as caring and individual attention the firm provides its customers. It involves giving customers individual attention and employees who understand the needs of their customers and convenience business hours.

Assurance:

Parasuraman et al. (1985) defined Asurance as knowledge and courtesy of employees and their ability to inspire trust and confidence.

Tangibility:

Parasuraman et al. (1985) defined Tangibility as the appearance of physical facilities, equipment, personnel, and written materials.

7. Research Methodology:

7-1. Research Methodology User:

The study adopted the descriptive analytical research methodology, at the level of descriptive research; the desktop survey was conducted in addition to viewing on theoretical and practical studies and researches. At the level of analytical research field, a questionnaire has been used for the purpose of disclosure of the views of the bank's managers and customers on a number of

variables and assumptions, which are the basis of this scientific research. All of the data will be analysed, and an appropriate statistical methods will be used to address them through the program: Statistical Package for Social Sciences.

7-2. Society and The Research Sample:

The field study Has been conducting on the level of each of the managers of these banks, as well as their customers, with respect to a sample of managers ,a list of survey designed has brought to them to measure the dimensions of information systems efficiency, and the sample of bank's clients has brought to them a list of survey designed to measure the quality of banking service dimensions we take into account when selecting customers to fill out questionnaires that the client already has a deal many times with the bank to judge the quality of banking service provided to him.

The number of distributed questionnaires to the bank managers was (74) director, recalled (62) of them, so the percentage of a recovery is (83.78%). and it is a good recovery rate.

The number of the distributed questionnaires to the bank's customers was (80) client, recalled (76) of them, so the percentage of a recovery is (95%), and it is a good recovery rate.

7-3. Search Tool:

7-3.1. Tool Description: The development of each of the two forms of the survey by taking advantage from the literature and previous studies, this is as follows:

The Survey Form-Oriented Managers:
Part I: singled out this part data and personal information (demographic variables) for members of the study sample (sex, educational qualification, the administrative level, and years of experience).
Part II: This section included a series of paragraphs their number was (24) paragraph measure (the efficiency of information systems), from (1-9) measured the quality of the hardware used, and the paragraphs (10-16) measured the efficiency of workers in information systems, While the paragraphs (17-24) measured the suitability of the information.

The Survey Form-Oriented Clients:

Part I: singled out this part data and personal information (demographic variables) for members of the study sample (sex, educational qualification, income, and age).

Part II: The second part has been included 35 paragraph of the quality of banking service distributed on five factors: material things concrete factor measured by paragraphs (1-6), while paragraphs (7-16) measured reliability factor, while the paragraphs (17-20) measured the safety factor, and the paragraphs (21-28) measured the response to the Client, and measured the paragraphs (29-35) empathy with the client.

7-3.2. Tool Validity: to ascertain the veracity of the tool, the two forms of survey offered to some of professors, specialists, for the purpose of arbitration and verify the authenticity of the paragraphs content, and after it has been taking proposed observations and amendments to some of the paragraphs; arbitrators approved on the two forms of the survey sample.

7-3.3. Tool Reliability: the value of reliability was reached through coefficient (Cronbach's Alpha), as follows:

Table (1): Test reliability (Coefficient of Cronbach's Alpha)

Variable name	efficient information systems	banking service quality	overall stability of the questionnaire
Reliability coefficient (alpha Cronbach)	0.875	0.882	0.942

Illustrated by the table; reliability coefficients for all the variables of the study are high and suitable for the purposes of the study, indicate the consolidation of the overall concept of the content of the two questionnaires and the concept of each question.

8. Statistical Treatment:

To verify hypotheses, a number of tests has been using, including: (simple linear regression analysis, Spearman correlation coefficient, Cronbach's Alpha).

9. Hypotheses Test:

First: Testing Correlation Hypotheses

To test each hypothesis of correlation hypotheses, Spearman correlation coefficient were used and the correlation matrix was as follows:

Table (2): Correlation Matrix

Variables	material things concrete	reliability	Safety	the esponse to the Client	empathy with the client	banking service quality
The quality of the hardware	0,941[**]	0,745[**]	0,473[**]	0,572[**]	0,434[**]	0,853[**]
The efficiency of workers	0,532[**]	0,955[**]	0,580[**]	0,344[**]	0,422[**]	0,793[**]
Suitability of the information	0,552[**]	0,729[**]	0,799[**]	0,592[**]	0,514[**]	0,828[**]
Efficient information systems	0,806[**]	0,931[**]	0,674[**]	0,569[**]	0,514[**]	0,945[**]

* * Means That The Correlation Moral at The Level of 0.01.

Seen from the table above, the following:

- The existence of a positive correlation statistically significant between the independent variable (the efficiency of information systems) and its various independent dimensions (the quality of the hardware used, the efficiency of workers, Suitability of the information), and the dependent variable (banking service quality) in all its dimensions (physical things tangible, reliability, safety, the response to the client, empathy with the client) at a significance level (0.01).

- The Stronger correlation represented the relationship between (the efficiency of workers) and (reliability) and the value of correlation coefficient was (0, 955) at a significance level (0.01).

- Lowest correlation was between (the efficiency of workers) and (responding to the client), which was worth (0, 344) at a significance level (0.01).

And therefore; the research hypothesis can be accepted: **(there is positive correlation statistically significant between the efficiency of information systems   and improve the service quality in the Algerian banks).**

Second: Testing Influence Hypotheses:

2-1 - The effect of the independent variable (the quality of the hardware used) on the dependent variable (to improve the quality of banking service) using simple linear regression method.

The impact of the quality of the hardware used on improving the service quality is testing through a simple linear regression coefficient, and outlined steps up as follows:

Table (3) : **Summary of the regression model**

Correlation coefficient	Regression coefficient	Regression coefficient Adj	Rtandard error of estimate
0,853	0,727	0,723	0,180

This can be explained; that the quality of the hardware used interpreted (72.7 %) of the variation in improving the banking service quality, the explanatory power is high, which indicates that there is a statistically significant impact to the quality of the hardware used on improving the banking service quality.

Table(4) : Results of Analysis of Variance

Source	degree of freedom	sum of squares	Mean squares	value of F calculated	level of F significance
Regression	1	5,237	5,237		
Error	60	1,962	0,033	160,176	**0,000**
Total	61	7,199			

The level of F significance, (P-Value = 0,000 < 0, 05) so the regression model is significant.

Table (5): The Results of Simple Linear Regression Analysis

Variables	B	standard error	Beta	value of T calculated	level of significance T
Fixed	1,259	0,202		6,220	0,000
The quality of the hardware used	0,638	0,050	0,853	12,656	**0,000**

Evidenced by the statistical results presented in Table (5), and follow-up coefficient (Beta), and test (T) that the quality of the hardware used have a significant effect on improving the banking service quality, as the value of coefficient (Beta) is (0,853), and it is statistically significant at the level of significance (5%).

And therefore; effect hypothesis was accepted, which provides **a significant effect of the quality of the hardware used on** improving the banking service quality **in the Algerian banks.**

2.2 - Effect of suitability of the information on improving the banking service quality using simple linear regression method.

Effect of suitability of the information on improving the banking service quality was measured through simple linear regression coefficient, and described steps as follows:

Table (6):Summary of the Regression Model

Correlation coefficient	regression coefficient	regression coefficient Adj	standard error of estimate
0,828	0,686	0,681	0,194

This can be explained; suitability of the information in this model explains what amount (68.6 %) of the variation in the values of improving the banking service quality which is a high proportion of impact.

Table (7):Results of Analysis of Variance of Variance

Source	degree of freedom	sum of squares	Mean squares	value of F calculated	level of significance F
Regression	1	4, 937	4,937		
Error	60	2,261	0,038	131,014	**0,000**
Total	61	7,199			

The level of F significance, (P-Value = 0,000 < 0, 05) so the regression model is significant.

Table (8):The Results of Simple Linear Regression Analysis

Variables	B	standard error	Beta	value of T calculated	level of significance T
Fixed	0,209	0,315		0,664	0,509
Suitability of the information	0,935	0,082	0,828	11,446	**0,000**

Evidenced by the statistical results presented in Table (8), and follow-up coefficient (Beta), and test (T) that the suitability of the information have a significant effect on improving the banking service quality, as the value of coefficient (Beta) is (0,828), and it is statistically significant at the level of significance (5%).

And therefore; effect hypothesis was accepted, which provides **a significant effect for the suitability of information on improving the banking service quality in the Algerian banks.**

2-3 - Effect of efficiency of workers on improving the banking service quality using simple linear regression method.

Effect of efficiency of workers on improving the banking service quality was measured through simple linear regression coefficient, and described steps as follows:

Table (9):Summary of the Regression Model

Correlation coefficient	regression coefficient	regression coefficient Adj	standard error of estimate
0,793	0,629	0,623	0,210

This can be explained; (62. 9 %) of the total deviations in the values of improving the banking service quality is interpreted by the efficiency of workers in the information system which is a high explanatory power.

Table (10): Results of Analysis of Analysis of Variance

Source	degree of freedom	sum of squares	Mean squares	value of F calculated	level of significance F
Regression	1	4,531	4,531		
Error	60	2,667	0,040	101,934	**0,000**
Total	61	7,199			

The level of F significance, (P-Value = 0,000 < 0, 05) so the regression model is significant.

Table (11):The Results of Simple Linear Regression Analysis

Variables	B	standard error	Beta	value of T calculated	level of significance T
Fixed	1,741	0,206		8,449	0,000
The efficiency of workers	0,545	0,054	0,793	10,096	**0,000**

Evidenced by the statistical results in the table (11), and follow-up coefficient (Beta), and test (T) that the efficiency of workers have an impact on improving the banking service quality, as the value of coefficient (Beta) is (0,793), and it is statistically significant at the significance level (5%).

And therefore; effect hypothesis was accepted, which provides **a significant effect to the efficiency of workers in the information system on improving the banking service quality in the Algerian banks.**

Through the above hypothesis we can accept the major research hypothesis provides **a significant effect to the efficiency of information systems on improving the banking service quality in the Algerian banks.**

10. Search Results:

Based on the above analysis, the following conclusions can be installed:

- Correlation Relationships Between the Variables:

1. There is significant positive correlation between the efficiency of information systems and the banking service quality at the level of significance (0, 01).

2. There is significant positive correlation between the dimensions of the efficiency of information systems (quality of the hardware used, suitable information, the efficiency of workers), and the dimensions of the banking service quality (material things tangible, reliability, safety, responding to the client, empathy with the client) at the level of significance (0, 01).

3. The strongest correlations were among (the efficiency of workers) and (reliability), and the least was among (the efficiency of workers) and (responding to the client) at a significance level (0.01).

And therefore; hypothesis of the research related to the existence of a significant correlation between the efficiency of information systems and improving the banking service quality in the Algerian banks was accepted.

- Effect Relationships Between Variables:

1. The quality of the hardware used in the information system affect positively and significantly on improving the banking service quality.

2. There is positively affect of the suitability of the information on improving the banking service quality.

3. The efficiency of workers in the information system affect positively and significantly on improving the banking service quality.

And therefore; hypothesis of the research related to the existence of a significant effect to the efficiency of information systems on improving the banking service quality in the Algerian banks was accepted.

11. Recommendations:

Depending on the results presented, we can propose the following recommendations:

Maximizing the use of information system in improving the banking service quality because there is a strong correlation and impact among the efficiency of the information system and the banking service quality.

Continuous updating of operating systems in banks under study between the duration and the other, to make sure they do not impede the work of information systems, and to avoid any expectations can occur unexpectedly.

Training of information systems and beneficiaries of the operating systems in general, by sending them in specialized courses operating systems, and subjected to tests on systems that trained them, to be sure of the feasibility of training on those systems, and should not be limited to the training process of these on how to use systems only, but must also include recognition capabilities of the hardware and software used.

The bank's departments Should give importance to the workers, understanding the proper entrance to ensure the quality of banking services through the creation of appropriate work environment, and motivate them financially and morally, as well as trying to select the best workers, and lay the foundations for their choice according to the most important skills that have proven the importance of availability to the bank staff who have direct contact with customers.

The need for systems to deal with customer complaints, and encourage customers to progress complaints in the case of its existence and to make the channels of communication with official's centers in the bank is open to customers in the event of the existence of complaint.

Increase senior management support for users of the information system and those who support it through encouraging them to use the information system and understand their different needs, and to explore their views about the problems they face when using the system until it is overcome.

References:

(1) Amoako, k George (2012), **Improving customer service in banking industry- qase of ghana commercial bank (GCB) - ghana**, international business research, vol .5, no. 4.

(2) Beadles 2, Nicholas Aston, & lowery, Cristopher M, & John, Kim (2005). **The Impact of human resource information systems: An Exploratory study in the public sector**. Communication of the IIMA, Vol 5, Issue 4.

(3) Chun wang, zheng wang (2006), **the impact of internet on service quality in the banking sector**, master thesis, department of business adminisrtration and social science, lulea university of technology.

(4) El saghier, niveen, Nathan, demyana (2013), **Service quality dimentions and customer' satisfactions of banks in Egypt,** proceedings of 20^{Th} international business research conference, 4 – 5.

(5) Hernon, peter, nitecki, danuta a. (2001), **Sevice quality: a concept not fully explored**, library trends, vol 49, no 4.

(6) Hiyam S. Ensour, Tareg M. alinizi (2014), **The Impact of Management Information Systems (MIS) Technologies on The Quality of Services Provided at The University of Tabuk,** International Journal of Netzork Security & Its Applications (IJNSA), Vol.6, No.2.

(7) Landrum, hollis, and others (2009), **Measuring IS system service quality with SERVQUAL: users' perceptions of relative importance of the five SERVPERF dimensions,** the international journal of an emerging trandiscipline, volume 12.

(8) Laudon, Kenneth C., & Laudon, Jane Price (2010). **Management des systèmes d'information. france**: Pearson Education, Inc.

(9) Munizu, Musran (2013), **the impact of total quality management practices towards competitive advantage and organizational performance: case of fishery industry in south sulawesi province of indonesia,** pakistan journal of commerce and social sciences, vol.7(1).

(10) O'Brien, James (1997), **Introduction to Information System, Irwin: The Mc Graw- Hill Companies,** Inc, 9th Edition.

(11) O'Brien, James (2000), **Introduction to information systems essentials for the internetworked enterprise**, the Mc Graw hill companies, Inc, United States of America, ninth edition.