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كلية التجارة  
ماجستير إدارة الأعمال

## **“The Relationship between Quality Characteristics and the Effectiveness of ERP in Post Implementation Stage at UNRWA’s Gaza Field Office”**

"العلاقة بين خصائص الجودة وفعالية نظام تخطيط الموارد المؤسسية  
في مرحلة ما بعد التنفيذ في مكتب غزة الإقليمي-الأونروا"

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**A Thesis Submitted in Partial Fulfillment of the Requirements for the Degree of  
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إقرار

أنا الموقع أدناه مقدم الرسالة التي تحمل العنوان:

**“The Relationship between Quality Characteristics and the Effectiveness of ERP in Post Implementation Stage at UNRWA’s Gaza Field Office”**

"العلاقة بين خصائص الجودة وفعالية نظام تخطيط الموارد المؤسسية في مرحلة ما بعد التنفيذ في مكتب غزة الإقليمي-الأونروا"

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## نتيجة الحكم على أطروحة ماجستير

بناءً على موافقة شئون البحث العلمي والدراسات العليا بالجامعة الإسلامية بغزة على تشكيل لجنة الحكم على أطروحة الباحث/ اسماعيل سمور عليان أبو عمرة لنيل درجة الماجستير في كلية التجارة/ قسم إدارة الأعمال وموضوعها:

العلاقة بين خصائص الجودة وفعالية نظام تخطيط الموارد المؤسسية في مرحلة ما بعد التنفيذ في مكتب غزة الإقليمي - الأونروا  
The Relationship between Quality Characteristics and the Effectiveness of ERP in Post Implementation Stage at UNRWA's Gaza Field Office

وبعد المناقشة التي تمت اليوم الثلاثاء 22 جمادى الثانية 1438 هـ، الموافق 2017/03/21م الساعة

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واللجنة إذ تمنحه هذه الدرجة فإنها توصيه بتقوى الله ولزوم طاعته وأن يسخر علمه في خدمة دينه ووطنه.

والله ولي التوفيق ،،،

نائب الرئيس لشئون البحث العلمي والدراسات العليا



أ.د. عبدالرؤوف علي المتاعمة

## الملخص

توجهت العديد من المنظمات في العالم سواء الخدمية أو التجارية إلى تبني أنظمة معلومات حديثة، كنظام تخطيط الموارد المؤسسية ، من أجل مواجهة التحديات والمحافظة على وضعها في السوق وكسب ثقة المانحين ، لذا كان من ضمن هذه المنظمات، منظمات دولية وإغاثية كمنظمة الأونروا التي تعتبر أكبر مؤسسة إغاثية وخدمية تهتم بشئون اللاجئين الفلسطينيين.

لقد قامت الأونروا بتطبيق نظام تخطيط الموارد المؤسسية (REACH) في أبريل 2015 في كافة مناطق العمليات الخمسة (سوريا – لبنان-الأردن-الضفة –غزة) من أجل تحسين كفاءة عملياتها والتغلب على الصعوبات التي كانت موجودة في النظام القديم.

تهدف هذه الدراسة إلى فحص العلاقة بين خصائص الجودة (جودة النظام ، جودة الخدمة، جودة المعلومات، التوافقية، درجة التعقيد) وبين فعالية نظام تخطيط الموارد المؤسسية في مرحلة ما بعد التنفيذ (أثره على الفرد والمنظمة) على موظفي مكتب غزة الإقليمي فقط.

استخدم الباحث منهج التحليل الوصفي من خلال إعداد استبانة مصممة خصيصاً للتعامل مع متغيرات البحث ، تم القيام بمسح شامل لأفراد العينة ، حيث تم توزيع الاستبانة على (184) موظفاً داخل مكتب غزة الإقليمي ، تم استرداد (174) استبانة.

أظهرت نتائج الدراسة أن ثلاثة من المتغيرات المستقلة (جودة النظام ، جودة المعلومات، التوافقية ) تؤثر بشكل مباشر وذات دلالة احصائية في فعالية النظام ، أيضاً كشفت الدراسة أن كلاً من (جودة النظام وجودة المعلومات) تؤثر بشكل مباشر على استخدام الفرد ، وأن كلاً من (جودة النظام والتوافقية) لها تأثير مباشر على الكفاءة التنظيمية، كذلك أظهرت النتائج عدم وجود فروقات ذات دلالة إحصائية في استجابة المبحوثين تعزى إلى كلٍ من الجنس، العمر، المؤهلات، التعليم، الوظيفة الحالية، وأيضاً سنوات الخبرة باستخدام النظام.

وأوصت الدراسة بضرورة زيادة الوعي حول فوائد استخدام نظام تخطيط الموارد المؤسسية (REACH) ، وتعزيز التدريب لهذا النظام ، وتسهيل عملية التواصل الفعال من أجل حل مشاكل النظام بسرعة وبسهولة.

## **Abstract**

Many organizations in the world either commercial or service, started to adopt new information systems, such as Enterprise Resource Planning (ERP), in order to overcome challenges, keep surviving in the market and to gain donor's confidence. Therefore, among these organizations, there are international and relief organizations, for example United Nations Relief and Works Agency (UNRWA), which considered the biggest relief agency taking care of Palestinian refugees.

UNRWA started applying ERP (REACH) in April-2015 in all its operations areas (Syria, Lebanon, Jordan, West Bank and Gaza), in order to improve the efficiency of its processes, and to overcome the difficulties, which existed in the old system (RAMCO).

This study aims to investigate the relationship between quality characteristics (system quality, service quality, information quality, compatibility, and complexity) and effectiveness of ERP in post implementation stage at UNRWA's employees in Gaza Field, and to identify the impact of these characteristics on system usage (individual and organizational impact). The study followed the descriptive analytic approach, and used a comprehensive survey method through a developed questionnaire to measure the research variables. (184) questionnaires were distributed, (174) usable questionnaires were received. The study found that three of independent variables (system quality, information quality & compatibility) affect directly and positively on ERP effectiveness, also the study reveals that (system quality & information quality) affect directly and positively on individual usage. On the other hand, the study reveals that there was no significant difference among the respondents, toward each field due to gender, educational level, age, current job, level, and years of experience.

The study recommends that, there is a need to increase the awareness about REACH usage benefits, enhance training, and facilitate effective communications to sort out REACH problems quickly and easily.

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

﴿ وَإِنْ تَعُدُّوا نِعْمَةَ اللَّهِ لَا تُحْصُوهَا إِنَّ اللَّهَ  
لَغَفُورٌ رَحِيمٌ ﴾

[النحل: 18]

## **Dedication**

*To my beloved mother and father, whose care, and support have motivated me to achieve my ambitions.*

*To my wonderful wife and my children, for their unlimited encouragement.*

*To my beloved brothers and sisters*

**I dedicate this study**

## **Acknowledgement**

First and foremost, I would like to thank Allah, whose many blessings have made me who I am today.

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**Researcher**

**Ismail Sammour Abu Amra**



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## List of Abbreviations

<b>ERP</b>	:	Enterprise Resource Planning
<b>UNRWA</b>	:	United Nations Relief and Works Agency
<b>SQ</b>	:	System Quality
<b>SerVQ</b>	:	Service Quality
<b>IQ</b>	:	Information Quality
<b>COMP</b>	:	Compatibility
<b>CX</b>	:	Complexity
<b>II</b>	:	Individual Impact
<b>OI</b>	:	Organizational Impact
<b>UN</b>	:	United Nations
<b>UNICEF</b>	:	United Nations Children Fund
<b>UNDP</b>	:	United Nations Development Programme
<b>WFP</b>	:	World Food Programme
<b>GFO</b>	:	Gaza Field Office
<b>IT</b>	:	Information Technology
<b>PAS</b>	:	Poverty Assessment Survey
<b>MoU</b>	:	Memorandum of Understanding
<b>MIS</b>	:	Management Information System
<b>TTF</b>	:	Task Technology Fit
<b>TAM</b>	:	Technology Acceptance Model
<b>D&amp;M</b>	:	DeLone and Mclean
<b>SMEs</b>	:	Small Management enterprises
<b>BPR</b>	:	Business Process reengineering



<b>OLC</b>	:	Organizational Learning Capability
<b>CSFs</b>	:	Critical Success Factors
<b>MP</b>	:	Management Perception
<b>DOI</b>	:	Diffusion of innovation
<b>ANOVA</b>	:	Analysis of Variance
<b>PR</b>	:	Purchase Request
<b>PO</b>	:	Purchase Order
<b>SES</b>	:	Service Entry Sheet
<b>SD</b>	:	Standard Deviation
<b>WC</b>	:	Work Compatibility

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# **Chapter 1**

## **Introduction**

# **Chapter 1**

## **Introduction**

### **1.1 Introduction**

Among the most important features nowadays is information revolution, which makes organizations to search for developing their activities and works continuously, otherwise organizations will experience challenges and global competition, which may lead to disappearing from the market (Ifinedo et al., 2010), therefore it is important to keep up with the technological progress through integrated systems for all organization's activities

Accordingly, organizations both commercial and service should use computerized systems, that avail relevant and accurate information for all administrative levels inside the organization, as well as the stakeholders. So number of the organizations have made significant investments in Enterprise Resource Planning (ERP) systems that enable them to synergize the resources of (man, money, material, and machines), integrate business data throughout organizations, and support critical business functions such as , human resources, inventory management, manufacturing, sales, delivery, customer service, and finance (Ifinedo et al., 2010). ERP is an integrated system that provides support for the core data needs of the organization and will assist in performing effective management of human, financial and physical resources, it will help many parts of the organization share data and knowledge, reduce operational costs and improve management of business processes (Ifinedo et al., 2015).

The implementation of a new ERP system is required to cover UNRWA's core business areas (finance, procurement, inventory management, grant management and human resources), it replaces the legacy fragmented systems with one centralized platform. As a result, it expands the scope and availability of information to support strategic planning, management functions, and operational activities, improve efficiency and cost effectiveness of administrative and financial processes, embed and automate

stronger internal controls that align with UNRWA's rules and regulations, strengthen the visibility and transparency of activities supporting improved monitoring, and it will provide more comprehensive end reporting (Wickramasinghe & Karunasekara,2012).

ERP quality characteristics is essential to measure or evaluate ERP benefits and value for organizations (DeLone & McLean 2003), these dimensions are system quality (SQ), service quality (SerVQ),information quality (IQ), compatibility (COMP), complexity (CX) and their impact on system usage, ERP system usage represents in individual impact (II), and organizational impact (OI). Therefore, this study aims to examine the relationship between these dimensions , their impact on the organizational effectiveness, to what extend it is important? And what are the expected benefits of them?.

ERP system is generally considered an expensive investment, with costs ranging from half a million to \$300 million. Despite huge investment in ERP systems, benefits after implementation are not guaranteed (Hawari & Heeks,2009). Companies and organizations are often experience great difficulties and challenges in using, maintaining, or enhancing ERP systems after implementation, these challenges may turn the costly investment into a post implementation failure or even lead to a business disaster (Hsu et al., 2015). Therefore, the “ERP post-implementation” phase is considered as critical, difficult, and risky task(King & Burgess,2006).

Enterprise resource planning (ERP) systems have been implemented in many organizations worldwide, as they become now as a powerful information, technology solution for small and big organizations. It was implemented since years in many UN organizations such as UNICEF, UNDP, and WFP. In April-2015 it was implemented in UNRWA in partnership with WFP, and called it REACH system, this partnership gives UNRWA opportunity to significantly accelerate the design and implementation phases of the project and helping in minimizing risk.

## **1.2 Problem Statement :**

There are many obstacles and challenges experienced by organizations in ERP post implementation stage, which reflect the need of this study, number of the studies show that some of the companies fail taking benefits from ERP, although they invested huge amounts on it, Hawari and Heeks, (2009) confirmed this on their study to a Jordanian company as a case study and found that the company encounter partial failure at ERP post implementation stage. Accordingly, UNRWA is expected to avoid any partial potential failure and to gain some operational efficiency through standardized processes across the five fields (Syria, Jordan, Lebanon, West Bank and Gaza).

Based on interview with REACH focal point in UNRWA (El, Kurd,2016), UNRWA's old system was RAMCO, upon the agreement with the provider it started in 2002 till 2015, no technical support for the system will be available by the provider after that date (2015), i.e. it becomes obsolete and invalid, in addition the old system (RAMCO) has some problems, such as problems in design, and integration processes were not as hoped.

UNRWA started studying other options to RAMCO on 2010, one of these options was ERP (REACH), which was encouraged by some donors, and conditioned to UNRWA applying the system against covering part of its cost, being it is a universal system and applied in number of UN organizations. UNRWA welcomed the idea and started applying ERP system (REACH) in April-2015, in particular the new system was intended to overcome the obstacles which was existed in RAMCO, also it will support management, and programme reforms under the sustaining change initiative. UNRWA experienced few problems when it's launch, for instance data migration, from the old to the new system and change process for the end users, finally UNRWA has managed to overcome these problems successfully.

Hence, the current study focuses on studying the relationship between ERP quality characteristics (SQ, SerVQ, IQ, COMP, and CX) and their impact on system

usage ( individual and organizational impact) at UNRWA's Gaza Field Office (GFO). That means the study tries to answer the main question : "To what extent ERP quality characteristics affect system effectiveness in post implementation stage at Gaza Field Office?"

### **1.3 Research objectives :**

This study investigate the relationship between ERP quality characteristics and system usage, in post implementation stage for UNRWA's staff members at Gaza Field Office which lead to the following objectives :-

1. To examine the relationship between ERP quality characteristics (system quality, service quality, information quality, compatibility, and complexity) and system usage (individual & organizational impact).
2. To investigate the impact of ERP quality characteristics (system quality, service quality, information quality, compatibility, and complexity) on system usage (individual & organizational impact).
3. To Make recommendations on how organizations can get effective and successful ERP.

### **1.4 Research Questions**

RQ1: How do respondents evaluate REACH system quality?

RQ2 : How do respondents evaluate REACH service quality?

RQ3 : How do respondents evaluate REACH Information quality?

RQ4 : How do respondents evaluate the perceived compatibility?

RQ5 : How do respondents evaluate the perceived complexity?

RQ6 : How do respondents evaluate REACH impact on individual ?

RQ7 : How respondents evaluate REACH impact on organization?

### **1.5 Research Variables and Conceptual Framework:**

The study focuses on seven variables which are system quality, service quality, information quality, compatibility, complexity, individual impact, and organizational impact.

### **1. Dependent variables (ERP Effectiveness)**

- Individual Impact : “Relates to the extent to which the information produced by the system influences or affects management decisions” (Hawari & Heeks,2009)
- Organizational Impact : “It refers to the benefits that the organization can get from its ERP system, often measured by the extent to which customer service, decision-making processes” (Ifinedo et al., 2010).

### **2. Independent variables (ERP Quality Attributes)**

- System Quality : “refers to the measures of the information processing system itself(i.e. the quality of the performance of the IS from a technical perspective)” ( Hsu et al., 2015).
- Service Quality : “refers to the support that organization receives from the ERP provider, often measured by reliability, dependability, quality of expertise” (Ifinedo et al., 2010).
- Information Quality : “ features of the output/information provided by the ERP system, such as timeliness, availability, understandability, relevance and so forth” (Ifinedo et al., 2010).
- Compatibility : “ it refers to data captured in the ERP system and their format match current data needs” (Rajan & Baral,2015)
- Complexity : “ it refers to that ERP is so complicated, it is difficult to understand, what is going on, and takes much time from the normal duties during using it” (Rajan & Baral,2015).



## 1.6 Research Framework:

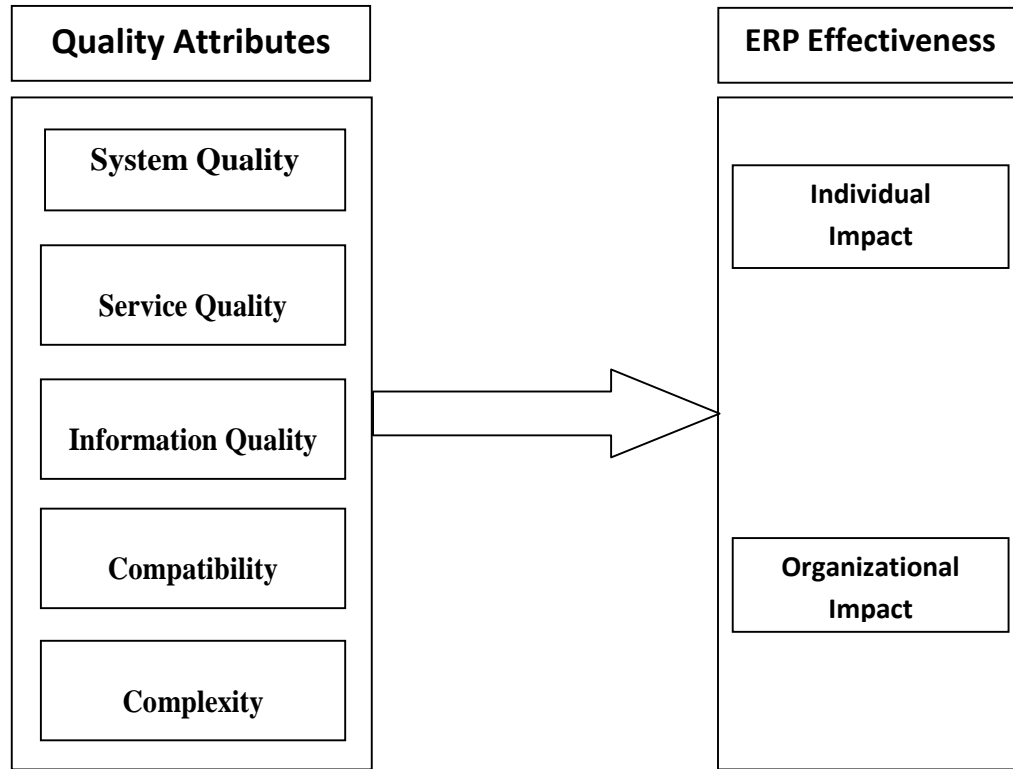


Figure (1.1) : The Research Framework

## 1.7 Research Hypothesis :-

Based on study analytical questions and study objectives, the following hypotheses can be derived :

**H1:** ERP quality characteristics (system quality, service quality, information quality, compatibility, and complexity) affect significantly and positively on system effectiveness (individual and organizational impact).

**H1a :** ERP quality characteristics (system quality, service quality, information quality, compatibility, and complexity) affect significantly and positively on individual impact.

**H1b** : ERP quality characteristics (system quality, service quality, information quality, compatibility, and complexity) affect significantly and positively on organizational impact.

**H2** : There are no significant differences among respondents towards ERP quality characteristics and ERP effectiveness due to gender, age, qualifications, current position, grade, and years of experience

## **1.8 Importance of the Research :-**

Scientific Importance : The current study is considered as an important reference, for those who are interested in the area of research, since it focuses on ERP dimensions, and ERP usage in post implementation stage.

Practical Importance : The current study helps top management and decision makers in UNRWA's Gaza Field Office to identify strengths and weaknesses of the currently used ERP system, also as UNRWA considered one of the biggest relief agencies in the world, therefore using a successful ERP will assist in decision making, planning, and control, which lead to enhance UNRWA's image among donors and beneficiaries.

Importance to the community : it is important for organizations nowadays to understand deeply ERP quality characteristics, as investment in these systems costs huge amounts, and success in post implementation stage not guaranteed.

## **1.9 Study Limitations :**

The main limitations of the current study can be summarized into the following points :-

1. The research was based on one case organization(none profit organization), so the results cannot be generalized.
2. The results are for one operation area (GFO), not for all UNRWA's areas.

3. The research didn't take in consideration all ERP quality characteristics but part of them.

### **1.10 Structure of the Thesis**

This study consists six chapters, in chapter one introduction about ERP, also it includes problem statement, research variables, research model, research objectives, research hypothesis, research importance and structure of the thesis. Chapter two consist of literature review, it includes a brief discussion of relevant topics in Enterprise Resource Planning (ERP), System Quality (SQ), Service Quality (SerVQ), Information Quality (IQ), Compatibility (COMP), Complexity (CX), Individual Impact (II), Organizational Impact (OI), and briefing about UNRWA and Gaza Field Office (GFO). Chapter three presents relevant studies and research papers which related to ERP system, system usage, successful dimensions at post implementation stage, and system impact on individual and organization. Chapter four includes research design and methodology, which includes study population and sample, questionnaire design, piloting, and testing questionnaire for validity and reliability. Chapter five includes data analysis and results, it includes description of the characteristics of the sample, descriptive analysis and answering research questions. Finally Chapter six includes the conclusions and recommendations of the study.

### **1.11 Chapter Summary:-**

In this chapter the study presented a general introduction, it includes information about ERP, problem statement, research variables, research model, research objectives, research hypothesis, research importance and structure of the thesis.

# **Chapter 2**

## **Literature Review**

## **Chapter 2**

### **Literature Review**

#### **2.1 Introduction :**

This chapter provides a review of Enterprise Resource Planning (ERP) system, system usage and its impact on individual and organization, ERP benefits , definition of ERP quality characteristics such as system quality (SQ), service quality(SerVQ), information quality(IQ), compatibility (COMP), complexity (CX), individual impact (II) and organizational impact (OI).

#### **2.2 ERP Systems :**

Due to the continuous rapid changes worldwide in technology, organizations becomes in dire need to develop their systems, in order to keep surviving and experience challenges, therefore using enterprise resource planning (ERP) as integrated system is one of the most important options to overcome these challenges.

There are many definitions of ERP, for instance Rubina et.al., (2011) defined ERP that “ it is integrated, comprehensive, enterprise-wide business management systems that provides usable information, across and with different business functions”, another definition for Markus and Tanis (2000) “ it is commercial software packages that allow integration of transaction oriented data and business process throughout an organization”.

From the above definitions it is clear that ERP is an integrated system and single point of entry, that provides support for organizations and enable effective management of human, financial and physical resources, also it will help different parts of the organization share data and knowledge, reduce operational costs and improve management of business processes.

ERP systems are expensive and can be considered one of the largest investments of human and financial resources by the organization, (Dewey & DeBlois, 2006), They also provide the organization with a significant business process reengineering aspect, and the implementation project by the integration of produced industry best practices into the software. These embedded best practices often require the organization to change its operations to match those delivered in the system. (Markus & Tanis, 2000).

Despite the important benefits that are gained with the implementation of an ERP system, there are many disadvantages recognized in the implementation process, stated that the implementation of an ERP system is painful and the customization is costly and time consuming.

Companies and organizations are often experience great difficulties and challenges in using, maintaining, or enhancing ERP systems after implementation, these obstacles may change the huge investment into a post-implementation failure. Therefore, the “ERP post-implementation” phase, which called “post go-live” stage, is viewed as being critical and risky (Hsu, Yen & Chung-2015).

### **2.3 ERP System Usage :**

ERP system usage refers to the degree to which users use installed ERP functionalities (Jones & Gallivan, 2007), ERP system usage can be considered as a measure of how users apply and use the features of an ERP system (Nwankpa & Roumani,2014) , system usage has been identified as one of the sensitive factors that enhance and increase benefits derivable from an ERP installation. Therefore, system usage has been the most frequently used measure of IS success (Jonas & Björn, 2011). More usage by the end-users, will lead the firm to more achieve competitive advantage, as well as other goals of the ERP software implementation, ERP will help different department of the organization share data, knowledge, reduce operational costs and improve management of business processes, system usage has played a crucial role in

success models, effective system usage is considered a major indicator of productivity and success factors (DeLone & McLean, 2003).

Problems and obstacles with ERP system usage can result in failure to achieve the expected ERP benefits, existing literature identified factors affecting ERP system usage in post-implementation stage, for example Peterson, Gelman, and Cooke (2001) noted that a lack of understanding of the ERP system by end-users may affect system usage, while Nicolaou (2004) confirmed in his paper how inadequate training, insufficient support for end-users, and the lack of communications concerning system objectives, can negatively affect the capability of end-users to understand the newly adopted business processes, which lead to poor system usage. Others identified that ineffective change management, management support and the severity of the implementation mode are considered factors affecting system usage (Motwani, et al., 2002). Continuous problems with system usage cant encourage ERP users from frequently using the system, and can have them to resist and reject to use the system, or find a way around using it (Boudreau & Robey, 2005).

System usage is considered as a dependent variable in many empirical studies, according to Sun et., al (2009) current IT usage models do not venture into the outcomes of usage, but without studying outcomes and results, it cannot be cleared if IT investments are successful or not (Sun et al., 2009). Users are encouraged to use the system if it improves their task performance, effectiveness, efficiency or decision quality, otherwise they may avoid using a system, unless its usage is made mandatory (Bokhari, 2005). Although the adoption of an ERP system requires tremendous efforts, both of the technological and business perspectives of the implementation, neither IT practitioners nor researchers, have developed a specific method to evaluate and assess the related effects (Al- Mashari, 2002). The effects and outcomes of ERP usage should be investigated carefully from different aspects, especially with a view to study how the human aspect influences success?, and how users can improve ERP's performance significantly? (Genoulaz et al., 2005). Hence, in addition to understanding the factors which may affect and influence technology acceptance, it is also important to investigate

the impact of accepting, or rejecting a technology, from an individual or social system aspect (Rogers, 1995).

## **2.4 Effectiveness of ERP :**

Organizations adopt ERP aims to achieve and accomplish essential benefits, these benefits may be as improved business productivity, shortened time, lower cost, or efficiency communication (Nwankpa & Roumani, 2014) in fact, ERP benefits and outcomes can differ across industries and services, also in many cases they may depend on the implementing firms and organizations (Davenport, 2000).

ERP system provides a number of advantages for firms to improve the organization performance, based on information aspect, ERP system adoption can improve the interaction between the business process and the information is more reachable and usable (Shang & Seddon,2002). Also there are intangible benefits of ERP system implementation, for instance, more customer satisfaction, enhance flexibility, reduce quality costs, improve resource utilization, improve information accuracy, and improve decision making quality (Hammond,1999).

In conclusion, ERP benefits can be summarized as follows :  
(Tambovcevs,2013):-

1. ERP provides a comprehensive picture of information, that integrates activities, departments, and administrative levels into a composite action-response chain of events. Thus, entering a new order automatically, will reduce available material from stores, orders new material from suppliers, updates the production forecast, revises work schedules, and prepares new market projections.
2. Huge cost-reductions, and time-savings in all business activities.
3. Ability to manage service related personnel and related costs, through the use of the resource management module of the system.



4. Enhance the company's operating quality management system, through enable the enterprise to avoid much paperwork, strengthen the visibility and transparency of activities, and reduce personnel's occupation times
5. Effective and efficient production planning, by implementing the manufacturing management (scheduling) module of the system, more flexibility and project delivery times.
6. Ease communications and allow customization.

<b>Dimensions</b>	<b>Sub-dimensions</b>
<b>1. Operational</b>	1.1 Cost reduction 1.2 Cycle time reduction 1.3 Productivity improvement 1.4 Quality improvement 1.5 Customer service improvement
<b>2. Managerial</b>	2.1 Better resource management 2.2 Improved decision making and planning 2.3 Performance improvement
<b>3. Strategic</b>	3.1 Assist in business growth 3.2 Assist in business alliance 3.3 Building business innovations 3.4 Generating product differentiation 3.5 Building external linkages 3.6 Support e-commerce 3.7 Keep competitive advantage
<b>4. IT infrastructure</b>	4.1 Building business flexibility for changes. 4.2 IT cost reduction 4.3 Increased capability of IT infrastructure
<b>5. Organizational</b>	5.1 Changing work designs 5.2 Easing organizational learning 5.3 Empowerment 5.4 Building common vision 5.5 Shifting work focus 5.6 Increased employee satisfaction

**Figure (2.1) ERP Benefits framework**

**Source :** (Shang & Seddon,2002)

### **2.4.1 Individual Impact :**

Due to the rapid growth in use of computing, academicians and researchers have recognized that IT success can be measured by its effect on an individual's work (Law & Ngai, 2007). Organizations that spend huge investments on information Technology are concerned about how their investment will affect on organizational and individual performance (Rajan & Baral,2015).

Individual impact refers to the effect of the information system on individual end users, reflected by performance, individual productivity, decision quality, information awareness, inventory.etc. (Law & Ngai, 2007). Upon (Tsai et al., 2012) model, there are five dimensions to measure individual impact (II); organizational learning, enhancing individual productivity, benefits for individual's tasks, higher-quality decision making and saving time.

The effect of IT on work at the individual perspective is a direct consequence of system use, which considered a major factor in specifying organizational impact (Torkzadeh & Doll, 1999). Organizational users cannot realize valuable productivity or performance gains, if they do not use IT adequately and appropriately, (Sun et al.,2009). Firms are recognizing that individual user productivity with information systems, is one of the most important determinants for firm's organizational productivity (Gyampah, 2004).

### **2.4.2 Organizational Impact :**

Organizational impact refers to benefits that the organization gets from its ERP system, these benefits are often measured by the extent to which customer's service, decision making processes, and so forth have been enhanced and developed, (Ifinedo et al., 2010). But upon (Tsai et al., 2012) model, organizational impact (OI) can be measured through, customer service satisfaction, competitive advantage, ease of business process change, supporting decision making, and better utilization of organizational data resource.

In a research conducted by Hitt and Wu (2002) it was found that, firms adopted ERP systems practice better performance, in both terms of user's productivity and firm's performance; sales per employee, profit margins, return on assets, inventory turnover, asset utilization, payable and receivables accounts turnover, etc. On the other hand, some ERP implementations fails to gain a strong business benefits from the system as they hope, in particular to ERP usage and its impact on firm's performance, One of the important reasons for its failure is related with the unwillingness of their end-users to accept and understand ERP system. Therefore, a good understanding of users acceptance of ERP systems is essential to user productivity (Sun et al., 2009).

## **2.5 ERP Quality Characteristics :-**

As mentioned in the previous sections, success is not guaranteed in ERP post implementation stage , therefore, organizations should be careful in this stage to avoid any failure and minimize loss if existed, accordingly, each step in deployment process requires analysis, to specify what factors will lead to effective and efficient deployment.

ERP quality characteristics have an influence on ERP system usage and benefits, examination of these characteristics is needed to better understand the participators involved in the process of ERP implementation (Hsu, Yen, & Chung, 2015). Also this study need to examine the relationships between quality characteristics and system effectiveness, the following subsections discuss some of the important dimensions.

### **2.5.1 System Quality (SQ) :**

According to Wixom et al., (2011) , system quality refers to the measures of the information processing system itself (i.e., performance quality of the IS from a technical perspective) SQ is generally classified as (1) system related dimensions and (2) task related dimensions, system related dimensions measure the features that are unvaried across different uses, and independent of task, context, or application, such as

accessibility and reliability. Task related dimensions, measure the features that depend on particular tasks and settings, for instance flexibility response time, and integration.

The measure of system quality concentrates on the specifications of a target system, however some studies have investigated the benefits, use of the system and its efficiency, some studies have used the reliability, ease of use and response time, to support ERP users, to perform several tasks at the same time, and for various goals (Alloway & R., 2007). According to DeLone and McLean (2003), system quality is measured by the perceived ease of use, functionality, reliability, data quality, integration, flexibility, and portability, reflecting the user's needs dependence on system quality.

Many researchers have generally focused on the performance features of the system, to measure the system quality, these features were mostly captured from the model of Tsai et al., (2012) such as data accuracy, easy to learn, data integration, good characteristics and efficiency.

### **2.5.2 Service Quality (SerVQ):**

Service quality refers to the overall support offered by the service provider (Mclean,2008 ). To measure service quality it includes the following five dimensions :

- A) Tangibles : physical facilities, equipment and tools, and appearance of personnel.
- B) Reliability : ability to perform the expected service easily and accurately.
- C) Responsiveness : willingness to help customers, and provide prompt services to meet customer's requests.
- D) Assurance : professional knowledge, and courtesy of employees, and their capability to inspire trust and confidence.
- E) Empathy : caring and individualized attention that the firm provides to its customers.

Service quality turn around the idea that it is the result of comparisons, made by customers between their expectations about a service, and their perception of the way

the service has been carried out ( Parasuraman & Grewal,1998). SerVQ instrument has been the predominant method used to measure the degree of satisfaction, associated with consumer perception of service quality, especially related to the IS function. (Tsai et al., 2011).

### **2.5.3 Information Quality (IQ):**

Information is a very important dimension in ERP, therefore without accurate and relevant information, many constraints will experience organizations, including task efficiency benefits.

Information quality (IQ) refers to the measures of information system output (i.e., the quality of information the system produces, mainly in the form of reports or screens), the main measurement is the accuracy of information (whether information is accurate, consistent and updated) (Wixom,2011). The degree which of the information is helpful, relevant, accurate, and complete is also included in these dimensions. it is sensible to assume that, when users perceive that information is accurate, updated, consistent, relevant, complete, and the format is easy to understand, it would lead them to higher levels of extended use and satisfaction. Also European Journal of Information Systems (2008) identified Information quality that “the desirable characteristics of the system outputs; that is, management reports and Web pages, for example: relevance, understandability, accuracy, conciseness, completeness, understandability, currency, timeliness, and usability”. Model of (Tsai et al., 2012) confirmed that information quality can be measured by timely information, relevant information, important information, usable and available information.

From the above definitions, it is cleared that information quality concentrate on accuracy, relevance, conciseness, completeness, and timeliness.

#### **2.5.4 Compatibility (COMP) :**

Common problems in adopting ERP systems are widely known due to the poor fit between ERP systems and business process (Chen et al., 2009). In ERP implementation, systems are developed to support business processes, such as manufacturing, purchasing, or distribution, and so ERP implementation and business process should be closely connected (Tsai et al., 2010).

Compatibility means compatibility and interoperability with other systems (Haddara & Fagerstorm,2014). There is no one application that can conduct everything the organization requires, the selected ERP solution must be linked with all the internally developed systems, as well as the unique software, or products that the organization may be using to accomplish customized requirements, from this perspective, compatibility or integration with other systems is considered to be a critical criterion, for selecting the ERP solution.(Haddara,2014).

Upon (Karahanna et al., 2006) there are four dimensions reflecting the definition of compatibility; compatibility with existing work practices, compatibility with preferred work style, compatibility with prior experience, and compatibility with existing values.

Another definition for compatibility is “the degree to which an innovation is perceived as being consistent with the existing values, needs, and past experience of potential adopters” ( Moore & Benbasat,1991). ERP work compatibility (WC) refers to degree to which can ERP user do most of their tasks in ERP system, (Sun et al., 2009).

#### **2.5.5 Complexity (CX) :**

Enterprise resource planning systems, similar to other management information systems, are often recognized as a complex and difficult to implement (Xue et al., 2005). The complexity of the ERP system could negatively affect user’s attitudes towards using the system (Basoglu et al., 2007).

Accordingly, technological complexity means that “to what extent a new technology is more complicated for its user, than the previous technology used for the same purpose, and represents an increasing in the number of things the user must do at once” (Aiman & Green, 2002) the complex nature of ERP systems may limits and affects the amount of knowledge and understanding that users can absorb before actual usage (Helton & Davis, 2003).

Another definition for complexity is “the degree to which the results of an innovation are recognized as being difficult to use”. (Moore & Benbasat,1991).

## **2.5.6 UNRWA**

UNRWA was established on 1949 by United Nations General Assembly resolution, after the 1948 Arab-Israeli conflict, to carry out direct relief and works programmes for Palestine refugees, the Agency began its operations on May 1950, responding to the needs of Palestine refugees in that time. In the absence of a solution to the Palestine refugee problem, the General Assembly has repeatedly renewed UNRWA's mandate. Today, more than 5 million Palestine refugees are eligible for UNRWA services, UNRWA is unique in terms of its long-standing commitment to one group of refugees. It has contributed to the welfare and human development of four generations of Palestine refugees, defined as “persons whose normal place of residence was Palestine during the period 1 June 1946 to 15 May 1948, and who lost both home and means of livelihood as a result of the 1948 conflict”.

UNRWA’s services are available to all those living in its areas of operations, who meet this definition, who are registered with the Agency, and who need assistance. Furthermore, the descendants of Palestine refugee males are also eligible for registration. UNRWA is funded by receiving voluntary contributions from United Nations (UN) Member States. Also, to cover international staffing costs, UNRWA receives some funding from the regular budget of the UN, the Agency’s services involve primary and vocational education, primary health care, relief and social services, infrastructure and

camp improvement, microfinance and emergency response, and including in times of armed conflict. UNRWA provides its services assistance and protection to Palestine refugees in Jordan, Lebanon, Syria, Gaza Strip and West Bank, including East Jerusalem (“UNRWA Website,” 2016).

### **2.5.7 UNRWA’s Gaza Field Office (GFO)**

UNRWA delivers basic services to Palestine refugees in Gaza strip such as education, health care, relief, infrastructure and camp improvement and emergency assistance during crises, through 12,000 staff members in over 210 installations across Gaza Strip. For the ten years, UNRWA is experiencing a special situation in Gaza, due to the tightened closure imposed by Israeli occupation government since June 2007 which make UNRWA to double its efforts, in assisting the Palestinian refugees, GFO is considered as headquarters for all operations and installations in Gaza, it consist of 900 staff members for all departments and programmes. GFO services are concentrated on refugees, who lives in the eight recognized camps, in order to alleviate poverty and decrease unemployment rates among these refugees, GFO has made improvements in the recent years, these improvements include schools of excellence, excellent health services initiative, and poverty assessment survey (PAS) for poor families.(UNRWA-GFO Website).

UNRWA tries to keep up the current technological progress through using new information systems applications in its operations areas, SAP (REACH) implementation is considered a new experience in UNRWA as its operations are a bit complex in comparison with the other relief organizations. This system replaced the old used system (RAMCO) which started in 2006 and becomes obsolete, UNRWA is partnering with World Food Programme (WFP) in implementing ERP, this partnership was formalized in a Memorandum of Understanding (MoU) signed in December-2011, WFP partnership gives UNRWA an opportunity to significantly accelerate the design and implementation phases of the project, allowing to realize efficiency gains, leverage the knowledge WFP gained from their own implementation, and to help UNRWA to



minimize risk, noting that WFP's system covers all of UNRWA's core business in particular the areas of international personnel and grant management. (UNRWA-GFO Website).

Therefore, UNRWA is expected to gain processes standardization across the agency to maximize organizational coherence and consistency, also it will enhance UNRWA's strategic planning process and help managing financial challenges more efficiently.

### **2.5.8 Chapter Summary :**

In this chapter the study presented the review for the literature, which is related to ERP, brief description to ERP quality characteristics, (system quality, service quality, information quality, compatibility, & complexity) next to this, ERP effectiveness (individual & organizational impact) then a brief description about UNRWA and Gaza Field Office .

# **Chapter 3**

## **Previous Studies**

## **Chapter 3**

### **Previous Studies**

#### **3.1 Introduction**

In this chapter, the study aims to provide an overview of the literature that studied ERP, most of these studies are about ERP success dimensions during post implementation stage, and concentrate on that there are significant relationship between ERP quality characteristics and system usage during post implementation stage.

#### **3.2 Previous Studies :-**

Twenty six studies were chosen to summarize ERP quality characteristics in post implementation stage and its impact on individual and organization. These studies were arranged in descending from 2016 to 2003.

##### **1. (Bader, 2016) “ Impact of E-Health System Implementation at UNRWA-Gaza Health Centers on Medical Performance and Health Care”**

This study aims to examine how the implementation of electronic health care system enhance medical performance and health care at UNRWA-Gaza health centers, independent variables, are information quality and system quality, mediation variables are, perceived ease of use and perceived usefulness, dependent variables are, user performance, physician patient relationship and patient care. Sample was 616 staff members from all categories, data were collected through a developed questionnaire distributed to 320 staff members, 247 usable responses were received. Study found that information quality has both direct and indirect positive impact on staff performance, system quality was found to have negative direct impact and positive indirect impact on staff performance, the study recommends that it is essential to correct the shortfall in the applied e-health system such as system availability, speed, and error detection, also it is

recommended that UNRWA should implement crowd management techniques such as queuing system and on-phone booking to minimize patient waiting time.

## **2. (Najem,2016) “The Impact of Hospital Information System Quality on the Health Care Quality (A Case Study on European Gaza Hospital)”**

The purpose of this study is to investigate the importance of hospital information systems usage inside European Gaza hospital, also it aimed to examine the effect of safety quality, information quality, performance quality and service quality on health care. Independent variables were safety quality, system quality, information quality, service quality, and performance quality, while dependent variable is healthcare quality, which include reduction of prescribing errors, healthcare outcomes improvement, and redesigning patients care pathway. The population was 548 employees, a questionnaire was distributed to 270 staff members, 250 out of them were received an usable. The study found that there was a significant relationship between performance quality, information quality and service quality and health care quality, also it found that health information quality had a positive impact on healthcare quality , and there was no significant differences among respondents towards each field due to gender, educational level, age, current job and qualifications in using the system.

The results of this study focused on that there is dire need to enhance the awareness about the benefits of information system and to develop health information system.

## **3. (Al-Gharbawi,2016) “Task-Technology Fit of MIS and its Impact on MIS User Acceptance and Satisfaction at UNRWA Relief and Social Services Area Offices – Gaza”**

This study aims to investigate the extent to which the technologies of the currently used Management Information System (MIS) fit the tasks, and to examine the impact of Task-technology fit on user acceptance and satisfaction of MIS at UNRWA’s Relief Offices, a research model was developed based on used models in the previous

studies “Task-Technology Fit (TTF), Technology Acceptance Model (TAM), and Delone and McLean IS success model, sample population was 350 employees, a questionnaire was developed to collect data, 217 usable response were received out of 274 were distributed. The results of the study reveal a strong effect of task-technology fit on perceived usefulness, perceived ease of use, and user satisfaction, also it concluded that “ Task Characteristics” has a significant negative relationship with Task-Technology Fit, finally it focused on that Technology Characteristics and Computer Self Efficacy have a significant positive relationship with Task-Technology Fit.

The study recommends that more training on using MIS is needed or redesign the tasks by management to better utilize IT, also management of relief programme suggested to evolve the currently used MIS taking into consideration the individual desires and needs of MIS users in order to improve user’s satisfaction and to enhance performance.

#### **4. (Abu-Safar, 2015) “Factors Affecting knowledge Sharing and ERP system Usage in the Context of ERP Post-Implementation”**

The aim of this research is to examine the factors affecting employees’ knowledge sharing and ERP usage in post implementation stage, at European Gaza Hospital, dependent variables were knowledge sharing and ERP usage, independent variables are social capital, self-efficacy, supervisory feedback, intrinsic motivation, and IT support. Target population was 625 employees, 265 questionnaires were distributed, 235 out of them were received and usable.

The results presents that social capital, IT support and self efficacy have a significant impacts on knowledge sharing, and it reveals that there is insignificant effect of intrinsic motivation, supervisory feedback and support on knowledge sharing. Social Capital, self-efficacy, supervisory feedback, and support and intrinsic motivation variables, have significant impact on ERP usage, while IT support has a non significant effect on ERP usage. The recommendations were improving training processes to enhance employee’s efficacy, providing staff members with the needed information

technology facilities, to overcome the complexity of knowledge, and creating a social network for employees to increase communications and knowledge share among them.

#### **5. ( Hsu, et al., 2015)“Assessing ERP post-implementation success at the individual level : Revisiting the role of service quality”**

This study aimed to examine how different qualities of an ERP system affect its post implementation success from the user’s perspective. The study used DeLone and Mclean IS success model (D & M,2003) which investigate the relationship between independent variables such as information quality, system quality, and service quality with the dependent variable system benefits.

This study collected data from (151) ERP users from (16) firms. To investigate the research model, a questionnaire was developed to collect data on each of the variables in the model, the study found that service quality in conjunction with system quality and information quality, significantly affects ERP post implementation success in terms of user satisfaction. Also it found that, service quality interact significantly with information quality. The study recommends that firms should move their focus from implementation difficulties and challenges, to post implementation successes, in order to receive the desired outcomes from their huge investments, also more management attention should be directed toward encouraging employees’ extended use of an ERP, finally managers should make interventions that are capable of elevating employees’ satisfaction as it is the key to successful IS use in the long run.

## **6. (Rajan & Baral, 2015) “ Adoption of ERP system : An empirical study of factors influencing the usage of ERP and its impact on end user”**

The purpose of this study is to find the impact of some of the individual, organizational, and technological factors on the usage of ERP and its impact on the end user. A questionnaire was designed, a total of (154) response were usable out of (181) distributed.

The results of the analysis reveals that computer self-efficacy, organizational support, training, and compatibility have a positive influence on ERP usage, which in turn has significant influence on individual performance, also the results presents that due to the visibility of information provided by the ERP there is an increase of both control and empowerment through the usage of ERP. The study recommends that organizations should understand and identify factors in terms of individual, organizational, and technological characteristics when a complex information system such as ERP is implemented in the organization, managers have to make employees satisfied with using the system, in order to improve their performance, and to empower them to make decisions. Future researches should assist in understanding how the factors vary at different stages in the implementation process of ERP.

## **7. ( Deshmukh et al., 2015)“ Investigation of Quality Benefits of ERP Implementation in Indian SMEs”**

This study aimed to examine quality benefits on implementation of ERP in Indian SMEs, which leads to objectives, such as identify whether there is a significant difference in quality benefits in SMEs with well defined IT system, and SMEs with not such well defined IT systems, identify various constructs for measurement of performance measures, and factors influencing performance measures, develop a conceptual model to identify relationship between performance measures, and various factors influencing on performance measures of ERP. Independent variables were training, Hardware and Software, Top management support, skill of workforce, and

project management, dependent variable is quality measures for ERP success implementation. Data collected through a developed questionnaire , samples were collected from (95) SMEs, the sample size is small due to the fact that very less numbers of SMEs have adopted ERP systems. The results reveal that Training, Hardware and software, project management, and Top Management support significantly influence Quality benefits, Indian enterprises have challenges to provide high quality products at low cost to remain more competitive in the world , Indian SMEs with ERP systems, are getting of Quality benefits to remain more competitive in this knowledge based economy; this will encourage such type of implementations in Indian SMEs. To improve productivity and overall business performance, action plan should be developed for switching over of organization from traditional system to low cost ERP solutions, like cloud based system, and open source ERP systems, for SMEs in order to face the global challenges.

#### **8. ( Nwankpa, 2015) “ERP system usage and benefit: A model of antecedents and outcomes”**

This study developed a theoretical model that examine the mediating effect of ERP system usage on ERP benefits, the study also identifies the antecedents of ERP system usage, independent variables were technical resources, organizational fit, extent of ERP implementation, dependent variable is ERP system benefits.

Data were collected from 157 end users across United States companies that implemented ERP packages at least 2 years prior to this study. A web-based survey instrument was developed, out of the 750 potential respondents, 687 contacted, 157 usable responses were received with a rate of 22.85%, the respondents represented major industries, the sample is well represented in terms of industry and size. The findings reveals that technical resources have a significant positive effect on ERP system usage, also it indicates that organizational fit is an important enabler of ERP system usage, the findings further our knowledge on how organizational factor can be applied to advance



ERP system usage in particular and gain expected ERP system benefit in general. Companies need to enhance usage among end-users.

### **9. (Almahamid & Awsi, 2015)“Perceived Organizational ERP Benefits for SMEs: Middle Eastern Perspective”**

This study aimed to investigate and analyze the impact of organizational and vendor environment factors on the perceived benefits of ERP at Jordanian SMEs, independent variables were organizational environment (top management support, Company-wide Support, Business Process Re-engineering, Effective Project Management, and Organizational Culture) and ERP Vendor Support, dependent variable is ERP perceived benefits (IT Infrastructure Benefits, Operational Benefits, Managerial Benefits, Strategic Benefits, and Organizational Benefits), eighteen (18) SMEs which implemented the ERP since a year agreed to participate in the study, the sample for this research is a random sample and represents 30% of the research population, a questionnaire was developed and distributed to 180 end-users, only 101 responses were valid for data analysis. The results reveals that organizational environment has a positive impact on the perceived benefits of ERP and the results also showed that business process reengineering (BPR), effective project management, company-wide support, and organizational culture have a positive impact on the perceived benefits of ERP, on the other hand top management support does not impact the perceived benefits of ERP, finally it showed that there is a significant positive impact of vendor environment represented by vendor support on ERP perceived benefits. This study recommends that future studies could extend the research model by adding other factors, that may change the perceptions of the perceived benefits of ERP, such as IT self-efficacy, types of leadership, and the turbulence of the business environment. Business organizations in Jordan that use ERP should give more attention, to combine company-wide support to ensure the success of the ERP system in delivering its perceived benefits, also business managers should measure perceived benefit levels frequently, in order to gauge the impact of ERP on organizational performance.

## **10. (Nwankpa & Roumani,2014) “Understanding the link between organizational learning capability and ERP system usage: An empirical examination”**

This paper aimed to investigate the impact of organizational learning capability (OLC) on ERP systems usage, independent variables were managerial commitment, systems perspective, openness and experimentation, and transfer and integration, dependent variable is ERP system usage.

Data for this study were collected using a survey, 1465 ERP system users contacted, usable responses were 520 resulting in a usable response rate of 35.49%. The results reveals a significant positive relationship between managerial commitment and user satisfaction, and it showed that user satisfaction has a significant positive effect on ERP system usage, this means that firm management can increase user satisfaction among ERP system users by creating processes, and structures that are capable of driving organizational learning among their users. It is clear that user satisfaction was found to be a strong predictor of ERP system usage. The study recommends that organizations should enhance effective training to the end-users in order to improve their skills in using the systems, it is important to facilitate efficient communication on the systems between the end-users, the organization management, and systems' implementers. Future research should examine behavioral aspects of the individuals and the collective impact on ERP implementation success, also it encourage further development through empirical work using the model in future research publications.

## **11. (Nwankpa,2014)“The Influence of Organizational Trust and Organizational Mindfulness on ERP Systems Usage”**

This paper examined how organizational trust, and organizational mindfulness, shape enterprise resource planning (ERP) system usage. It focused on five dimensions of trust: competence, openness and honesty, concern for employees, reliability, and identification. It also predicted that organizational mindfulness among ERP users positively influences ERP system usage.

The variables were how Organizational Trust (competence, openness and honesty, concern for employees, reliability, and identification) affects on organizational mindfulness and ERP system usage, (1,450) participants were invited to respond to the survey via email, a total of (231) questionnaires collected from ERP system users across the United States.

The results reveals that organizational trust dimensions affect ERP system usage, the results also support the idea that organizational trust (i.e., competence, openness and honesty, concern for employees, and identification) create supportive infrastructure-enabling organizational mindfulness, results indicate a strong effect between organizational mindfulness and ERP system usage, the study shows key antecedents of organizational mindfulness and underscores the importance of organizational mindfulness as a way of encouraging ERP system usage, the study recommends that, developing and enhancing an atmosphere of organizational trust with ERP users may help reduce the barriers, associated with ERP system use and by encouraging innovation and creating an environment where mistakes are opportunities to learn, employees will start to trust their management and feel encouraged to innovate and to think outside the box.

## **12. ( Ram & Corkindale,2013) “How critical are the critical success factors (CSFs) ”? Examining the role of CSFs for ERP.**

The aim of this study is to present whether the critical success factors (CSFs), for achieving stages of an ERP project have been empirically shown to be critical, the study focused on the importance of empirically establishing CSFs as “critical” rather than just identifying them as candidates for being CSFs, the authors used a systematic approach to review 627 refereed papers published between 1998 and 2010 on ERP, from which 236 papers related to CSFs on ERP were selected for analysis, the authors employed procedures from qualitative and interpretive research methods, to analyze and interpret the material using five-step procedure of gathering, categorizing, coding, analyzing and comparing the data. The population from which data would be collected, would include only peer- reviewed articles.

The authors found that CSFs that are identified, but not empirically tested for being CSFs should be carefully used, and the specific requirements of individual projects should be worked out and managed for their fulfillment, without recourse to attention to certain additional CSFs due to their having been claimed in the literature as a necessary CSF, the study provides evidence that not all CSFs identified in the ERP literature are empirically established as CSFs, thus raising concerns regarding the utility of CSFs that have not been empirically established, the results of the study can provide direction and guidance on which CSFs are robust and empirically established as CSFs. Managers can then focus on a particular set of CSFs and direct their efforts to managing them to assist in ERP project success. More work should be done to identify common and consistent measures for implementation success and performance outcomes, in order to clearly establish when a factor should be termed a CSF. Future studies could also investigate the relationships between, and interactions among CSFs that are empirically established as CSFs. The next step would be to review the impacts of the categorized CSFs on performance or success, the authors also propose that more studies are needed to investigate how to manage the identified CSFs, finally, in order to help managers in developing appropriate action plans and to increase ERP system usage in organizations, organizations need to create a foundation that breeds and entertains novelty, diversity, and conflicting perspectives.

### **13. ( Ali & Younis, 2013)“ The Impact of ERP System on User Performance”**

The purpose of this study is to present the impact of ERP systems on user performance in Tunisian companies, this study develops a model combining the Task Technology Fit (TTF), the Technology Acceptance Model (TAM) and Delone and McLean model to evaluate the user performance of ERP system.

A questionnaire distributed to (300) users of ERP system in Tunisian companies, the final sample size was established in 269 participants. The results of the structural equation analyzes supported the proposed model, and highlighted the important role of

perceived ease of use, and perceived usefulness in mediating effects between TTF, system quality, and information quality and performance users, the results also shows that TTF, system quality and information quality directly influences the user performance of ERP, and indirectly through perceived usefulness and perceived ease of use of ERP. This study recommends researchers and practitioners in IS to maximize ERP impacts, by improving training, and organizational support, in order to help users understand the benefits of using ERP system, and improving adaptability of these systems with user needs.

#### **14. ( Ruivo et al., 2013) “Differential Effects on ERP Post-Adoption Stages across Scandinavian and Iberian SMEs”**

The aim of this study is to present ERP use and value among SMEs across two distinct European regions (Scandinavia and Iberia), for data collection the study used a survey methodology to validate the research model and test the hypotheses. Data were collected using a web-survey, in total 2000 (1400 Iberian and 600 Scandinavian) firms received the web-survey, and 883 (558 Iberian and 325 Scandinavian) completed responses were received.

The study found that training is an important determinant for ERP use among Iberian SMEs, but is not important for Scandinavian SMEs, the importance of complexity differs across-regions, the relationship between ERP use and ERP value is significant for Iberian SMEs, but not for Scandinavian, the last one is the importance of ERP business value varies across both regions. This study recommends that managers have to adjust their strategies according to each region’s cultural traits. ERP post-implementation may be managed effectively and efficiently through transformational communications, (information obtained mainly from personal networks) such as classroom training, good practices examples, and industry group meetings.

#### **15. ( Seethamraju & Sundar,2013)“ Influence of ERP systems on business process agility”**

The purpose of this study is to analyze how key defining features of enterprise systems environment ; integration, process optimization, and best practices affect agility, standardization of processes has mixed effect on agility, and depends on the extent of standardization implemented, and whether it included prior simplification, primary data was collected using semi-structured interviews from 11 respondents.

The study found that the nature of the business process influenced the impact significantly, for example, in areas such as plant maintenance where there were a lot of manual, non-standardized processes and data, there was little potential for agility. On the other hand, in procurement, where information and processes were fully integrated, the process was very agile, especially because of the “enhanced understanding, and visibility of information and process”. Standardization of the processes, information, business rules, and technology platforms across the enterprise is expected to result in consistent execution, of the processes and improved efficiencies. Building agility into business processes and implementing them is not easy, and is dependent not just on the IT infrastructure, but also on other factors such as organizational culture, business process management capability, and process characteristics specific to a particular organization. Integration across hierarchical levels in the case organizations has resulted in improved visibility, centralization of control and improved decision making, which indirectly contributed to process agility, the study recommends that building agility into business processes and implementing them is not easy and is dependent not just on the IT infrastructure, but also on other factors such as organizational culture, business process management capability, and process characteristics specific to a particular organization.

## **16. (Oliveira et al., 2012)“ERP use and value: Portuguese and Spanish SMEs”**

The purpose of this paper is to identify the determinants that explain ERP post-adoption with regard to usage and value, and to specify the variations across Portugal and Spain, the paper presents that the extent of “ERP use”, affected by six factors

“compatibility, complexity, efficiency, best-practices, training, and competitive pressure”.

A survey methodology is developed for data collection, In total, 1,400 (1,000 Spanish and 400 Portuguese) 558 valid responses were returned, sample analysis finds that competitive pressure, training, best-practices, compatibility, and efficiency are important antecedents of “ERP use”. Together with usage, collaboration and analytics capabilities contribute to “ERP value”. The study reveals that the degree of “ERP use” and IT-enhanced capabilities, such as collaboration and analytics, contribute to value creation from ERP. Moreover, the study presents that for Portuguese firms “ERP value” is mainly explained by “ERP use”, collaboration, and analytics whereas for Spanish firms “ERP value” is mainly explained by collaboration, and analytics capabilities. The study provides evidence that system compatibility, and transactional efficiency, are important drivers for system usage, and value vary across countries in association with the number of years using ERP, it recommends that both countries’ managers should maintain priority on training programmes as well as using the ERP standard best-practices, there should be a different direction to study the maturity stages of ERP, and it recommends that further studies to compare industries are needed.

### **17. (Madininos et al., 2011)“Factors affecting ERP system implementation effectiveness”**

The study seeks to introduce a conceptual framework that examine the way that human inputs, (top management, users, external consultants) are linked to communication effectiveness, conflict resolution and knowledge transfer, in the ERP consulting process, as well as the effects of these factors on ERP system effective implementation. A questionnaire was developed and distributed to a group of (361) Greek companies that have implemented an ERP system, (108) usable questionnaires were returned (response rate 31%). Independent variables were; top management support, user support, consultant support, communication effectiveness and knowledge transfer. On the other hand dependent variable was ERP system effective implementation. The main findings of the study can be summarized in the following:

first, The assistance provided by external consultants during the ERP implementation process is important, second knowledge transfer is an extremely significant factor, for ERP system success, knowledge transfer concerning technical aspects of ERP systems is more important than effective handling of communication, as well as conflict resolution among organizational members, third the role of top management support seems to be of less important than the one provided by users. The study recommends that hiring the right consultants are essential, especially since the consulting fees are quite significant, moreover ERP adopting companies should improve their knowledge management capabilities, in order to successfully facilitate the transfer of knowledge from consultants. Also in order to keep a successful ERP implementation, and gain sustainable competitive advantages, companies need to develop their internal knowledge capabilities before implementing an ERP system.

**18. (Tsai et al., 2011)“An empirical investigation of the impacts of internal/external dimensions on the project success or ERP: A structural equation model”**

This study aimed to develop an integrated framework for successful implementation of ERP systems, and understanding the relationships between the appropriate factors for ERP success. Independent variables were internal and external dimensions, such as service quality, project management, and information systems success theory, dependent variable was ERP system success. This study used data on the ERP implementation experience of the Top 500 largest corporations in Taiwan, including manufacturing and non-manufacturing, (4300) questionnaire were sent to these cooperation, (620) usable responses were received (14.41% response rate), the Likert Scale was used to measure relevant variables.

The results indicates a significant relationship of the service quality of system providers, and implementation consultants to the project management, and then from the project to the system performance . It recommends that, understanding of the



relationships between the relevant factors of ERP success, is necessary to satisfy the adopter's requirement, both practically and theoretically, moreover, higher satisfaction of service quality of system providers and implementation consultants, can benefit ERP implementation, leading to higher perceived service quality provided by external dimensions delivered.

**19. (Infinedo et al., 2010)“Relationships among ERP post-implementation success constructs : An analysis at the organizational level”**

There are two objectives of this study; the first one is exploring the relationship among six dimensions in ERP system success measurement model, the second one is enhance the body of the knowledge in the information system (IS) success evaluation domain, especially with its focus on ERP packages. Independent variables were system quality, Information quality, individual impact, and organizational impact, dependent variable was ERP system success. A survey was used to collect data from Finnish and Swedish firms, (500) companies were targeted, with each country providing roughly half the number, (122) questionnaires were returned (an effective response rate of 24.4%).

The results reveals strong support for five of the hypothesis which predicted a significant positive relationship between system quality, and the individual impact in the context of ERP systems, the finding seems to be suggesting that such a relationship might hold for a wide range of IS, also there are strong association between individual impact, and organizational impact, which indicate that higher levels of benefits for the individual using ERP, will ultimately lead to an overall gain for the adopting organization. It recommends that more work is expected for success measurement, or evaluation for ERP systems in adopting organizations, effectiveness of ERP systems in adopting organization can't be measured from single proxy construct, i.e., user satisfaction.

**20. ( Hawari & Heeks, 2009)“ Explaining ERP failure in a developing country : a Jordanian case study”**

This study aimed to identify why such ERP failure occurs? In other words, it focused on the following two main questions; How can the outcome of an ERP project be classified as a success or failure ? And How can we understand Why that ERP project outcome occurred? To answer these questions, the researcher used D and M model (1992) of information systems (IS) success, the sample was a single case study ( a medium-sized Jordanian manufacturing company) the primary data was captured in 2006, more than two years after ERP implementation, through structured and Unstructured interviews. The results were; ERP project began badly in this company, there was gaps between the assumptions and requirements built into ERP system design, and the actual realities of the client organization, the company face a partial failure, the technology infrastructure was much more basic, work processes were very far from best practice.

It recommends that there should be a follow up in analyzing ERP implementation in terms of fit between dimensions i.e. investigating whether mismatches between factors such as, organizational processes, staffing, structures and technology, or analyzing any mismatch between the assumptions and expectations of different stakeholder groups.

## **21. (Zabjek, et al., 2009) “The influence of business process management and some other CSFs on successful ERP implementation”**

The main goal of this study is to reveal the effect of business process management (BPM) and some other critical success factors (CSFs), on successful ERP implementation in companies, independent variables were; CSFs of ERP system implementation, organization culture and change management, top management support, business processes, and BPM on dependent variable; successful ERP implementation, data were collected during December, 2005-February,2006. A sample of (600) randomly selected Slovenian companies from different industries with more than fifty

employees were selected, a questionnaire was distributed to them, (152) completed questionnaires were gathered, which represents a 25.3% response rate.

Findings of this study confirmed the impact of CSFs (top management support, change management, & BPM ) on successful ERP implementation, these factors have a positive impact of successful ERP implementation, and should be treated as very important in ERP systems implementation projects, the results also support the importance of top management perception (MP), on successful ERP implementation, positive results of ERP implementations are usually not seen immediately, but only after some time of which the companies should have been aware before the ERP implementation was started, also successful ERP implementation have to include number of other CSFs, which are not included in this study, companies should treat BPM as a basis of business change, and therefore increase its usage, in order to increase a possibility for a successful ERP implementation.

## **22. ( Kemp & Low, 2008) “ ERP innovation implementation model incorporating change management”**

The purpose of this paper is to develop and provide a preliminary validation of a model, for how change management during ERP implementation affects the effectiveness of that ERP implementation? Independent variable is change management; (management support, implementation climate, financial resource availability and implementation policies and practices), dependent variable is ERP innovation effectiveness. The sample was a case study of a major Australian multinational organization, this organization was in the process of implementing ERP system, data collected through interviews and surveys reports. The results shows that change management is an important factor in an ERP implementation, some aspects of the change management program could have been better managed. The study recommended that managers should be informed of the motivation for implementing the ERP system, rather than just being informed of benefits, and be expected to defense the system within their departments, change management activity “Level of adoption cost”

should be specifically addressed, as a part of the change management process, also communications about the system must be very clear, and match with what the system actually offers.

### **23. (Chou & Chang, 2008) “The implementation factors that influence the ERP (enterprise resource planning) benefits”**

This study investigates ERP performance at the post-implementation stage, particularly from the perspective of managerial intervention, specifically it proposed that both customization and organizational mechanisms affect intermediate benefits (including coordination improvement and task efficiency), which in turn influence overall benefits, independent variables are customization, organizational mechanism, coordination improvement, and task efficiency, dependent variable is overall benefit. The study used a cross-sectional firm-level survey to empirically assess the research model, a questionnaire was used to collect data from organizations of Taiwan, the questionnaires distributed to 1100 organizations, the total returned responses was 269 (24% of response rate), useful respondents were 166.

The study shows that ERP benefits are affected not only by the original features of a firm such as (interdependence and differentiation of one plant), but also by managerial interventions (i.e. organizational mechanism or alignment). Given the critical role of ERP is a competitive advantage of today's world, and even more so in tomorrow's world. The study proposed performing two complementary tasks; customization, and organizational mechanism to improve ERP benefits.

### **24. ( King & Burgess, 2006) “Beyond critical success factors: A dynamic model of enterprise system innovation”**

The objective of this study is to understand more the relationships between critical success factors (CSFs), such as top management support, project team competence, interdepartmental co-operation, clear goals and objectives, project management, interdepartmental communication, vendor support, and management of

expectation, moreover, to encourage exploration of more appropriate implementation strategies, modeling and simulation, Somers and Nelson's (2001) ten CSFs was used with the aim of developing a causal model, that can be used to explain ERP project success or failure.

The results reveals that there are strong parallels between the combined ERP CSFs model and the simulation model, this suggests that it will be possible to build a simulation model for ERP innovation, and to use that model in a simulation study, in order to explore the effects of different project scenarios, such as increased top management support or reduced interdepartmental communication. The study recommends to develop a new model and to be validated via interviews, with key stakeholders in ERP-using organizations, once the set of CSFs and relationships have been validated, a full simulation model will be developed, and further validation of the simulation results undertaken with the supporting organizations, the simulation model will be used for further research into ERP implementation and benefits.

**Table (3.1): Summary of some previous studies**

#	The Study	Main Findings
1.	<i>Bader, (2016)</i>	Study found that information quality has both direct and indirect positive impact on staff performance, system quality was found to have negative direct impact and positive indirect impact on staff performance, and has only indirect positive impact on both physician-patient relationship and patient care.
2.	<i>Najem, (2016)</i>	The study found that there was a significant relationship between performance quality, information quality and service quality and health care quality, also it found that health information quality had a positive impact on healthcare quality, and there was no significant differences among respondents towards each field due to gender, level, age, and job in using the system.

#	The Study	Main Findings
3.	<i>Al-Gharbawi,(2016)</i>	The results of the study presents a strong effect of task-technology fit on perceived usefulness, perceived ease of use, and user satisfaction, also it shows that “ Task Characteristics” has a significant negative relationship with Task-Technology Fit, Finally it focused on that Technology Characteristics and Computer Self Efficacy have a significant positive relationship with Task-Technology Fit.
4.	<i>Abu-Safar,( 2015)</i>	The results reveals that social capital, IT support and self efficacy have a significant impacts on knowledge sharing, and it presents that there is insignificant effect of intrinsic motivation, supervisory feedback and support on knowledge sharing. Social Capital, self-efficacy, supervisory feedback, and support and intrinsic motivation variables, have significant impact on ERP usage, while IT support has a non significant effect on ERP usage.
5.	<i>Hsu, et.,al,( 2015)</i>	The study found that service quality in conjunction with system quality and information quality, significantly affects ERP post implementation success in terms of user satisfaction. More importantly, service quality was found to significantly interact with information quality and system quality to promote an ERP system’s post implementation success by increasing employees’ extended use. This study contributes to the literature by bringing together the three quality dimensions of the DandM model and demonstrating that all of them have significant impacts on ERP post-implementation success.
6.	<i>Deshmukh, et.,al, (2015)</i>	The results reveal that Training, Hardware and software, project management, and Top Management support significantly influence Quality benefits. Indian

#	The Study	Main Findings
		enterprises have challenges to provide high quality products at low cost to remain more competitive in the world , Indian SMEs with ERP systems are getting of Quality benefits to remain more competitive in this knowledge based economy; this will encourage such type of implementations in Indian SMEs.
7.	<i>Nwankpa, ( 2015)</i>	The findings indicate that technical resources have a significant positive effect on ERP system usage , The results of this study also indicate that organizational fit is an important enabler of ERP system usage. These findings contribute to a deeper understanding of ERP system benefit and provide a foundation for future investigations and insights for organizations faced with the challenge of maximizing the inherent values of their ERP systems.
8.	<i>Almahamid and Awsi, (2015)</i>	The study showed that organizational environment has a positive impact on the perceived benefits of ERP and the results also revealed that Business Process Reengineering (BPR), effective project management, company-wide support, and organizational culture have a positive impact on the perceived benefits of ERP. On the other hand top management support does not impact the perceived benefits of ERP. Also this study showed that there is a significant positive impact of vendor environment represented by vendor support on ERP perceived benefits.
9.	<i>Nwankpa and Roumani, (2014)</i>	The result shows a significant positive relationship between managerial commitment and user satisfaction and it shows that user satisfaction has a significant positive effect on ERP system usage, this means that firm management can increase user satisfaction among ERP system users by creating processes and structures that are

#	The Study	Main Findings
		capable of driving organizational learning among their users. It is clear that user satisfaction was found to be a strong predictor of ERP system usage.
10.	<i>Nwankpa, (2014)</i>	The results shows that organizational trust dimensions, competence, concern for employees, and identification affect ERP system usage. The results also support the idea that organizational trust (i.e., competence, openness and honesty, concern for employees, and identification) create supportive infrastructure-enabling organizational mindfulness.
11.	<i>Ram and Corkindale, (2013)</i>	This study provides evidence that not all CSFs identified in the ERP literature are empirically established as CSFs, thus raising concerns regarding the utility of CSFs that have not been empirically established, the results of the study can provide direction and guidance on which CSFs are robust and empirically established as CSFs. Managers can then focus on a particular set of CSFs and direct their efforts to managing them to assist in ERP project success
12.	<i>Ali and Younis, (2013)</i>	The results of structural equation analyzes supported the proposed model and highlighted the important role of perceived ease of use and perceived usefulness in mediating effects between TTF, system quality and information quality and performance users, the results also shows that TTF, system quality and information quality directly influences the user performance of ERP and indirectly through perceived usefulness and perceived ease of use of ERP.
13.	<i>Ruivo, et.,al,( 2013)</i>	Compatibility, efficiency, best-practices and competitive pressure are important factors in both regions concerning ERP usage, also training is an important determinant for



#	The Study	Main Findings
		ERP use among Iberian SMEs, but is not important for Scandinavian SMEs. The importance of complexity differs across-regions. The relationship between ERP use and ERP value is significant for Iberian SMEs, but not for Scandinavian. The last one is the importance of ERP business value varies across both regions.
14.	<i>Seethamraju and Sundar,(2013)</i>	The study found that the nature of the business process influenced the impact significantly. For example, in areas such as plant maintenance where there were a lot of manual, non-standardized processes and data, there was little potential for agility. On the other hand, in procurement, where information and processes were fully integrated, the process was very agile, especially because of the “enhanced understanding and visibility of information and process”. Building agility into business processes and implementing them is not easy and is dependent not just on the IT infrastructure, but also on other factors such as organizational culture, business process management capability, and process characteristics specific to a particular organization.
15.	<i>Oliveira, et.,al,( 2012)</i>	The study demonstrates that the degree of “ERP use” and IT-enhanced capabilities such as collaboration and analytics, contribute to value creation from ERP. Moreover, the study reveals that for Portuguese firms “ERP value” is mainly explained by “ERP use”, collaboration, and analytics, whereas for Spanish firms “ERP value” is mainly explained by collaboration and analytics capabilities. Also, the study provides evidence that system compatibility and transactional efficiency are important drivers for system usage.
16.	<i>Maditinos, et.,al,(2011)</i>	The main findings of the empirical study can be

#	The Study	Main Findings
		summarized as follows : (1) The assistance provided by external consultants during the ERP implementation process is essential; (2) Knowledge transfer is an extremely significant factor for ERP system success; knowledge transfer concerning technical aspects of ERP systems is more important than effective handling of communication, as well as conflict resolution among organizational members; (3) The role of top management support seems to be of less importance than the one provided by users.
17.	<i>Tsai, et.,al, (2010)</i>	The results indicate significant causal relationship of the service quality of system providers and implementation consultants to the project management and then from the project to the system performance
18.	<i>Infinedo, et. al, ( 2010)</i>	The results provide strong support for five of the hypothesis. Hypothesis one (H1) which predicted a significant, positive relationship between system quality and the individual impact in the context of ERP systems, this findings is consistent with other prior studies affirming the existence of such relationship. Thus, this finding seems to be suggesting that such a relationship might hold for a wide range of IS, also there are strong association between individual impact and organizational impact which indicate that higher levels of benefits for the individual using ERP will ultimately lead to an overall gain for the adopting organization
19.	<i>Hawari and Heeks, (2009)</i>	ERP project began badly in this company, there was gaps between the assumptions and requirements built into ERP system design, and the actual realities of the client

#	The Study	Main Findings
		organization. The company face a partial failure, the technology infrastructure was much more basic, work processes were very far from best practice.
20.	<i>Zabjek, et.al, (2009)</i>	Findings of this study confirmed the impact of CSFs (top management support, change management, and BPM ) on successful ERP implementation, these factors have a positive impact of successful ERP implementation and should be treated as very important in ERP systems implementation projects, the results also support the importance of top management perception (MP) on successful ERP implementation. Positive results of ERP implementations are usually not seen immediately, but only after some time of which the companies should have been aware before the ERP implementation was started
21.	<i>Kemp and Low, (2008)</i>	The study shows that change management is an important factor in an ERP implementation. Qualitative verification of a proposed ERP innovation implementation model that incorporates the effect of change management is provided. Some aspects of the change management program could have been better managed, also managers should be informed of the motivation for implementing the ERP system, rather than just being informed of benefits and be expected to advocate the system within their departments
22.	<i>Chou and Chang, (2008)</i>	The study confirmed that ERP benefits are affected not only by the original features of a firm (such as interdependence and differentiation of one plant) but also by managerial interventions (i.e. Organizational Mechanism or alignment). Also it contributes a deeper understanding of the relationships between the alignment and ERP benefits. Given the critical role of ERP in a

#	The Study	Main Findings
		competitive advantage of today's world and even more so in tomorrow's world.
23.	<i>King and Burgess, (2006)</i>	There are strong parallels between the combined ERP CSF model and the simulation model, this suggests that it will be possible to build a simulation model for ERP innovation and to use that model in a simulation study in order to explore the effects of different project scenarios, such as increased top management support or reduced interdepartmental communication.

### 3.2 Comments on the previous studies:-

The researcher used the previous studies to acquire a wide understanding to the context of the study literature, and to identify efforts in ERP implementation, which was necessary in selecting the variables, developing hypothesis and the environment of the research.

These previous studies were also important in the analysis process, as well as interpreting the results of the study, by comparing the findings with those of the previous studies. As shown, many researchers studied the system usage by using different variables affected it, and its impact on individual and organization in facilitating ERP system usage and successes.

The current study agrees with the most previous studies, concerning the relationship between ERP quality characteristics and system effectiveness, for instance, Hsu, et, al., (2015) study which aimed to examine how different qualities of an ERP system affect its post implementation success from the user's perspective, data collected from (16) firms, the study found that service quality in conjunction with system quality and information quality, significantly affects ERP post implementation success in terms of user satisfaction. Also it found that, service quality interact significantly with information quality. (Rajan & Baral, 2015) "The results of the analysis reveals that compatibility have a positive influence on ERP usage, which in turn has significant influence on individual performance. The study of (Bader,2016) which applied on

UNRWA' health centers to examine the impact of e-health on medical performance and health care, it confirmed that there are significant relationship and positive impact between service quality, and system quality on users. The study of (Al-Gherbawi,2016) which showed positive relationship and strong effect for using IT and user satisfaction. The study of (Najem, 2016) which showed strong relationship between system quality, service quality and information quality, on health care quality. The study of (Hsu, et., al, 2015) which showed system quality, service quality and information quality significantly affects ERP post-implementation success in terms of user satisfaction.

Some of the previous studies had addressed environments which were different of the environment that the current study addresses. For example, the study of (Bader,2016 ) disagree with the same study concerning information quality. This study contains on different independent variables which differ from DeLone and McLean's model-2003. DeLone and McLean's model-2003 contained only on three quality characteristics (system quality, service quality and information quality) but this study addressed another two which are compatibility and complexity of the system.

# **Chapter 4**

## **Research Methodology**

## **Chapter 4**

### **Research Methodology**

#### **4.1 Introduction**

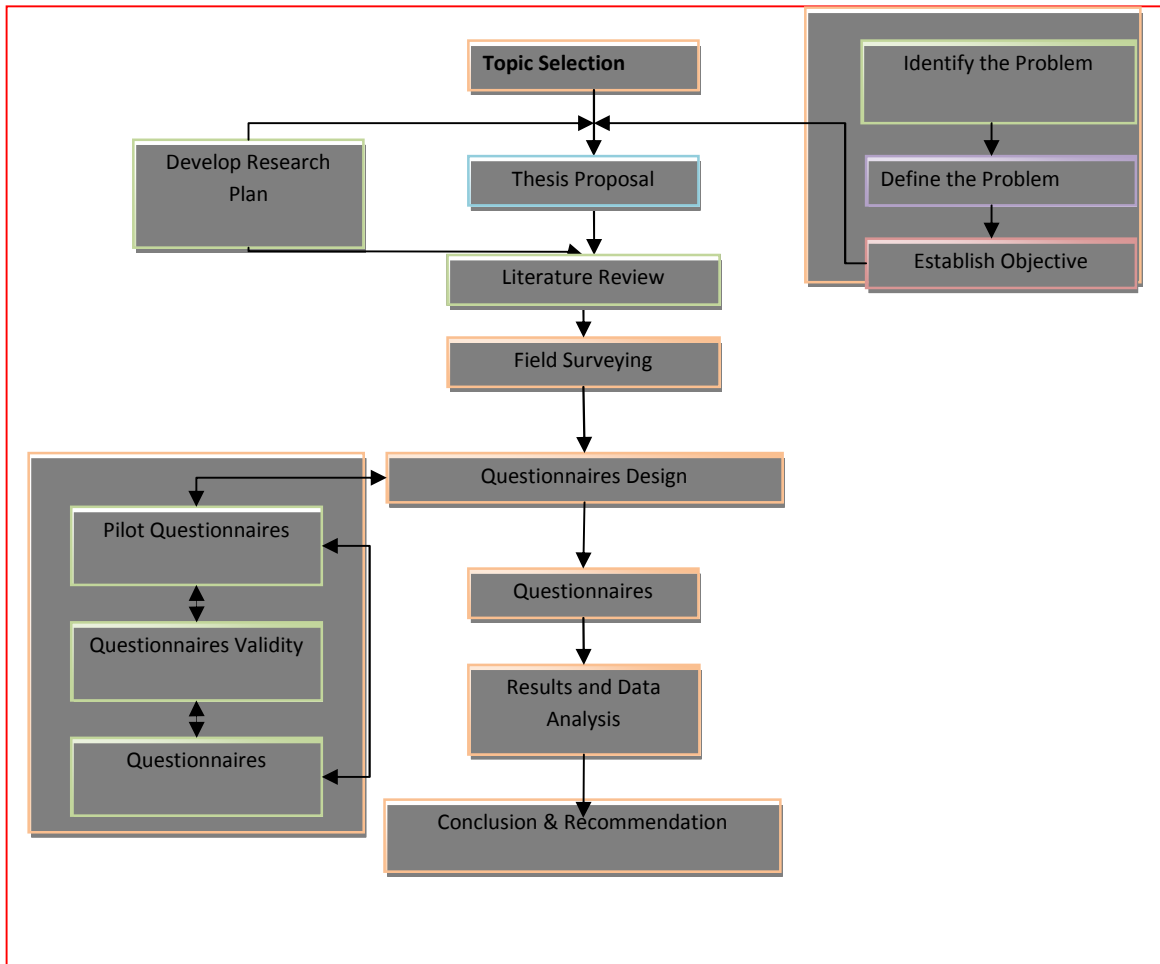
This chapter describes the methodology that was used in this research, the quantitative method used to conduct this study includes; the research design, population and sample, research instrument, data collection criteria and tools, also it presents the statistical methods, and tools used to carry out the research to answer the research questions, and to examine the research hypotheses. Finally, it presents the pilot study, and the statistical analysis used to test the research questionnaire for validity and reliability.

#### **4.2 Research Design**

The first phase of the research thesis include; identifying the problems, objective establishment, and development research plan, the second phase of the research include a summary of the comprehensive literature review, the third phase of the research include a field survey which was conducted, the fourth phase of the research focused on the modification of the questionnaire design, through distributing the questionnaire to pilot study, the purpose of the pilot study was to test and prove that the questionnaire questions are clear to be answered in a way that help to achieve the target of the study, the questionnaire was modified based on the results of the pilot study.

The fifth phase of the research focused on distributing questionnaire, this questionnaire was used to collect the required data in order to achieve the research objective, the sixth phase of the research was data analysis and discussion. Statistical Package for the Social Sciences, (SPSS) was used to perform the required analysis.

Figure (4-1) shows the methodology flowchart, which leads to achieve the research objective.



**Figure (4.1) methodology flow chart**

### 4.3 Research Instruments and Measures

In order to be able to select the appropriate method of analysis, the level of measurement must be understood, for each type of measurement, there is/are an appropriate method/s that can be applied and not others. In this research, ordinal scales were used, all items were measured using a seven-point Likert type scale (ranging from 1 = strongly disagree to 7= strongly agree) as follows :



**Table (4.1):**

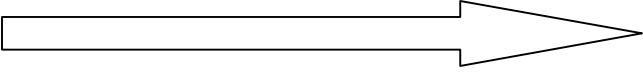
Item	Strongly disagree						Strongly agree
Scale	1	2	3	4	5	6	7

Table (4-2 ) shows measures of each variable :

**Table (4.2): shows measures of each variable**

S.No.	Variable	# of measured items	Study Name
1.	<b>System quality</b>	11	(Hsu, et al., 2015), (Infinedo, 2010), (Ali & Younes, 2013), (Oliveira & et. Al, 2013) and (Hawari & Heeks,2009).
2.	<b>Service Quality</b>	7	(Hsu, et al., 2015) and (Infinedo, 2010)
3.	<b>Information quality</b>	10	(Hsu,et al., 2015), (Infinedo, 2010) and (Hawari & Heeks,2009).
4.	<b>Compatibility</b>	6	(Moore & Benbasat,1991), (Rajan & Baral, 2015) and (Ruivo, et al., 2012)
5.	<b>Complexity</b>	5	(Rajan & Baral, 2015), (Ruivo, et al., 2012), and (Bueno & Salmeron, 2008)
6.	<b>Individual Impact</b>	5	(Hsu, et al., 2015), (Infinedo, 2010), and (Rajan & Baral, 2015)
7.	<b>Organizational Impact</b>	7	(Infinedo, 2010), (Hawari & Heeks,2009) and (Ifinedo, 2007)

### **4.3.1 Population and Sample**

Current study used a comprehensive approach in studying Gaza Field Office Area only, which include (209) employees using SAP (REACH) system. Therefore, questionnaires were distributed to the research population, (174) questionnaires were received, with a response rate 83.25%.

### **4.3.2 Data Collection**

In order to collect the needed data for this research we used primary and secondary sources, to introduce the theoretical literature, the following data sources were used:

1. Books and references.
2. Scientific journals and academic magazines.
3. Reports and Statistics issued by UNRWA.
4. Internet articles and websites.

Primary data were collected by a questionnaire, that was derived from previous researches and was adapted to suit the case of the current research. The questionnaire was developed and piloted before distribution, in order to validate the content of questionnaire in terms of accuracy, validity, and reliability . The final version of the questionnaire was distributed to a research population to collect the primary data regarding the factors of the research variables.

### **4.3.3 Pilot Study**

A pilot study for the questionnaire was conducted before collecting the results of the sample. It provides a trial run for the questionnaire, which involves testing the wordings of question, identifying ambiguous questions, testing the techniques that used to collect data, and measuring the effectiveness of standard invitation to respondents, (30) questionnaires were distributed to an exploratory sample during November-2016 in order to examine the questionnaire validity and reliability. After ensuring the questionnaire validity and reliability, the questionnaire distributed to the rest of the population.

#### **4.3.4 Duration and place of the Study**

The study has been conducted on the period of June,2016-January,2017. Data collection was carried out during the first three weeks of November-2016, the study was applied on staff members at UNRWA's Gaza Field Office.

#### **4.4 Statistical Analysis Tools and Statistical Tests**

##### **4.4.1 Validity of Questionnaire**

Validity refers to the degree to which an instrument measures what it is supposed to be measuring, validity has a number of different aspects and assessment approaches, statistical validity is used to evaluate instrument validity, which include internal validity and structure validity.

##### **4.4.2 Internal Validity**

Internal validity of the questionnaire is the first statistical test that used to test the validity of the questionnaire, it is measured by a scouting sample, which consisted of 50 questionnaires through measuring the correlation coefficients between each item in one field and the whole field.

Table (4-3) clarifies the correlation coefficient for each item of the " System quality " and the total of the field. The p-values (Sig.) are less than 0.05, so the correlation coefficients of this field are significant at  $\alpha = 0.05$ , so it can be said that the items of this field are consistent and valid to be measure what it was set for.

**Table (4.3): Correlation coefficient of each item of " System quality "**

No.	Item	Pearson Correlation Coefficient	P –Value (Sig)
1.	REACH is easy to use	.837	0.000*
2.	REACH is easy to learn	.811	0.000*
3.	REACH is always processes data accurately	.885	0.000*
4.	REACH is flexible- it avail many options to the user	.856	0.000*
5.	REACH is reliable, it performs tasks without mistakes and problems	.859	0.000*
6.	REACH allows data integration	.770	0.000*
7.	REACH is efficient	.903	0.000*
8.	REACH allows for customization	.754	0.000*
9.	REACH meets user’s requirement	.801	0.000*
10.	REACH has timely information	.867	0.000*
11.	REACH has data confidentiality	.564	0.000*

\* Correlation is significant at the 0.05 level

Table (4.4) clarifies the correlation coefficient for each item of the " Service quality " and the total of the field. The p-values (Sig.) are less than 0.05, so the correlation coefficients of this field are significant at  $\alpha = 0.05$ , so it can be said that the items of this field are consistent and valid to be measure what it was set for.

**Table (4.4): Correlation coefficient of each item of " Service quality "**

No.	Item	Pearson Correlation Coefficient	P-Value (Sig)
1.	When users have a problem, the IS dept. shows a sincere interest in solving it	.907	0.000*
2.	The IS dept. has up-to-date hardware and software	.864	0.000*
3.	The IS dept. is dependable When you face any problem	.903	0.000*
4.	The IS dept. provides its services at the times it promises	.912	0.000*
5.	I feel safe in my transactions with the IS dept. staff	.778	0.000*
6.	REACH system has a good interface	.792	0.000*
7.	REACH provides the right solution to requests	.832	0.000*

\* Correlation is significant at the 0.05 level

**Table (4.5): Correlation coefficient of each item of " Information quality "**

<b>No.</b>	<b>Item</b>	<b>Pearson Correlation Coefficient</b>	<b>P –Value (Sig)</b>
1.	REACH provides output that seems to be exactly what I need	.705	0.000*
2.	Information needed from the REACH is always available	.683	0.000*
3.	Information from the REACH is in a form that is readily usable	.850	0.000*
4.	The information on REACH is important	.864	0.000*
5.	The information on REACH is brief/concise	.875	0.000*
6.	The information on REACH is usable	.872	0.000*
7.	REACH provides prompt information to users	.816	0.000*
8.	REACH provides you with accurate information	.801	0.000*
9.	The information contained in REACH is timely and regularly updated	.742	0.000*
10.	The information in REACH are easily retrievable	.765	0.000*

\* Correlation is significant at the 0.05 level .

Table (4.5) clarifies the correlation coefficient for each item of the " Information quality " and the total of the field. The p-values (Sig.) are less than 0.05, so the correlation coefficients of this field are significant at  $\alpha = 0.05$ , so it can be said that the items of this field are consistent and valid to be measure what it was set for.

Table (4.6) clarifies the correlation coefficient for each item of the " Compatibility " and the total of the field. The p-values (Sig.) are less than 0.05, so the correlation coefficients of this field are significant at  $\alpha = 0.05$ , so it can be said that the items of this field are consistent and valid to be measure what it was set for.

**Table (4.6): Correlation coefficient of each item of " Compatibility "**

<b>No.</b>	<b>Item</b>	<b>Pearson Correlation Coefficient</b>	<b>P-lue (Sig.)</b>
1.	Using REACH fits into my work style	.819	0.000*
2.	Data captured in REACH and their format match my current data needs	.877	0.000*
3.	The REACH matches my current processing procedure	.813	0.000*
4.	REACH is compatible with other's software	.883	0.000*
5.	REACH is compatible with other's hardware	.839	0.000*
6.	REACH is compatible with other's networks	.837	0.000*

\* Correlation is significant at the 0.05 level

Table (4.7) clarifies the correlation coefficient for each item of the " Lack of complexity " and the total of the field. The p-values (Sig.) are less than 0.05, so the correlation coefficients of this field are significant at  $\alpha = 0.05$ , so it can be said that the items of this field are consistent and valid to be measure what it was set for.

**Table (4.7): Correlation coefficient of each item of " Lack of Complexity "**

<b>No.</b>	<b>Item</b>	<b>Pearson Correlation Coefficient</b>	<b>P-Value (Sig)</b>
1.	Using REACH didn't takes much time from my normal duties	.785	0.000*
2.	Working with REACH is not complicated, it is easy to understand what is going on	.711	0.000*
3.	It doesn't takes too long to learn how to use REACH effectively and efficiently	.755	0.000*
4.	I feel comfortable when I use REACH	.478	0.000*
5.	It is easy for UNRWA's employees to get the REACH to do what they want it to do	.398	0.000*

\* Correlation is significant at the 0.05 level

Table (4.8) clarifies the correlation coefficient for each item of the " Individual Impact" and the total of the field. The p-values (Sig.) are less than 0.05, so the correlation coefficients of this field are significant at  $\alpha = 0.05$ , so it can be said that the items of this field are consistent and valid to be measure what it was set for.

**Table (4.8): Correlation coefficient of each item of " Individual Impact"**

<b>No.</b>	<b>Item</b>	<b>Pearson Correlation Coefficient</b>	<b>P-Value (Sig)</b>
1.	REACH enhances individual creativity	.830	0.000*
2.	REACH improves individual productivity	.950	0.000*
3.	REACH enhances higher-quality of decision making	.847	0.000*
4.	REACH is beneficial for individual's tasks	.934	0.000*
5.	REACH saves time for individual tasks and duties	.897	0.000*

\* Correlation is significant at the 0.05 level

Table (4.9) clarifies the correlation coefficient for each item of the " Organizational Impact" and the total of the field. The p-values (Sig.) are less than 0.05, so the correlation coefficients of this field are significant at  $\alpha = 0.05$ , so it can be said that the items of this field are consistent and valid to be measure what it was set for.

**Table (4.9): Correlation coefficient of each item of " Organizational Impact "**

No.	Item	Pearson Correlation Coefficient	P-Value (Sig)
1.	REACH reduces organizational costs	.873	0.000*
2.	REACH improves overall productivity	.945	0.000*
3.	REACH enables e-business/e-commerce	.831	0.000*
4.	REACH provides us with competitive advantage	.893	0.000*
5.	REACH increases customer service/satisfaction	.942	0.000*
6.	REACH facilitates business process change	.918	0.000*
7.	REACH allows for better use of organizational data resource	.912	0.000*

\* Correlation is significant at the 0.05 level

#### 4.4.3 Structure Validity of the Questionnaire

Structure validity is the second statistical test, that used to test the validity of the questionnaire structure, by testing the validity of each field, and the validity of the whole questionnaire. It measures the correlation coefficient between one field, and all the fields of the questionnaire, that have the same level of liker scale.

Table (4.10) clarifies the correlation coefficient for each field and the whole questionnaire. The p-values (Sig.) are less than 0.05, so the correlation coefficients of all the fields are significant at  $\alpha = 0.05$ , so it can be said that the fields are valid to be measured what it was set for to achieve the main aim of the study.



**Table (4-10) Correlation coefficient of each field and the whole of questionnaire**

No.	Field	Pearson Correlation Coefficient	P-Value (Sig)
1.	System quality	.935	0.000*
2.	Service quality	.885	0.000*
3.	Information quality	.904	0.000*
4.	Compatibility	.935	0.000*
5.	Lack of Complexity	.603	0.000*
6.	Use REACH	.983	0.000*
7.	Individual Impact	.932	0.000*
8.	Organizational Impact	.960	0.000*
9.	Individual and Organizational Impact	.886	0.000*

\* Correlation is significant at the 0.05 level

## **4.5 Reliability of the Research**

The reliability of an instrument is the degree of consistency, which measures the attribute; it is supposed to be measuring (George & Mallery ,2006). The less variation an instrument produces in repeated measurements of an attribute, the higher its reliability, reliability can be equated with the stability, consistency, or dependability of a measuring tool. The test is repeated to the same sample of people on two occasions and then compares the scores obtained by computing a reliability coefficient (George & Mallery ,2006). To insure the reliability of the questionnaire, Cronbach's Coefficient Alpha should be applied.

### **4.5.1 Cronbach's Coefficient Alpha**

Cronbach's alpha (George D. & Mallery P, 2006) is designed as a measure of internal consistency, that is, do all items within the instrument measure the same thing? The normal range of Cronbach's coefficient alpha value between 0.0 and + 1.0, and the higher values reflects a higher degree of internal consistency. The Cronbach's coefficient alpha was calculated for each field of the questionnaire.

Table (4.11) shows the values of Cronbach's Alpha for each field of the questionnaire and the entire questionnaire. For the fields, values of Cronbach's Alpha

were in the range from 0.652 and 0.966. This range is considered high; the result ensures the reliability of each field of the questionnaire. Cronbach's Alpha equals 0.979 for the entire questionnaire which indicates an excellent reliability of the entire questionnaire.

**Table (4.11) Cronbach's Alpha for each field of the questionnaire**

<b>No.</b>	<b>Field</b>	<b>Cronbach's Alpha</b>
1.	System quality	0.946
2.	Service quality	0.935
3.	Information quality	0.937
4.	Compatibility	0.903
5.	Lack of Complexity	0.652
6.	Use REACH	0.974
7.	Individual Impact	0.947
8.	Organizational Impact	0.961
9.	Individual and Organizational Impact	0.966

Therefore, it can be said that the researcher proved that the questionnaire was valid, reliable, and ready for distribution for the population sample.

#### **4.5.2 Statistical analysis Tools**

The researcher used quantitative data analysis method. Data analysis made utilizing (SPSS 23), the researcher utilize the following statistical tools:

- Kolmogorov-Smirnov test of normality.
- Pearson correlation coefficient for Validity.
- Cronbach's Alpha for Reliability Statistics.
- Frequency and Descriptive analysis.
- Stepwise regression.
- Analysis of Variance (ANOVA).
- Parametric Tests (One-sample T test, Independent Samples T-test

#### **4.6 Chapter Summary**

This chapter presented a description of the research methodology, that is followed in the implementation of the field study, through introducing the methodology that adopted in the study, then it specified the population and data collection methodology of primary and secondary data, including measurements and questionnaire design, finally it presented the pre-pilot validation and the results of statistical validity of the questionnaire after piloting.

# **Chapter 5**

## **Data Analysis and Results**

## Chapter 5

### Data Analysis and Results

#### 5.1 Introduction

This chapter includes the stages of data analysis process of the collected responses, and present analysis results with explanations of these results, also it provides a clear idea about the respondents' demographic data, and provides the variance explained with SPSS tools.

#### 5.2 Test of normality

The One-Sample Kolmogorov-Smirnov test procedure compares the observed cumulative distribution function for a variable with a specified theoretical distribution, which may be normal, uniform, Poisson, or exponential. The Kolmogorov-Smirnov Z is computed from the largest difference (in absolute value) between the observed and theoretical cumulative distribution functions. This goodness-of-fit test tests whether the observations could reasonably have come from the specified distribution. Many parametric tests require normally distributed variables. The one-sample Kolmogorov-Smirnov test can be used to test that a variable of interest is normally distributed (Henry, C. and Thode, Jr., 2002).

Table (5.1) shows the results for Kolmogorov-Smirnov test of normality, p-value for each variable is greater than 0.05 level of significance, then the distributions for these variables are normally distributed. Consequently, parametric tests should be used to perform the statistical data analysis.

**Table (5.1) Kolmogorov-Smirnov test**

No.	Field	Kolmogorov-Smirnov	
		Statistic	P-value
1.	System quality	0.427	0.993
2.	Service quality	0.403	0.997
3.	Information quality	0.520	0.949
4.	Compatibility	0.607	0.855
5.	Lack of Complexity	1.149	0.143
6.	Individual Impact	0.802	0.540
7.	Organizational Impact	0.419	0.995

### 5.3 Respondents Characteristics

The researcher describes and analyzes the respondent's personal characteristics (gender, marital status, age, years of experience, qualifications, current position, and grade), each one of them is described and analyzed separately.

The frequency and percentage for each variable is listed according to the survey categories. The following table describes the results :

#### 5.3.1 Gender

**Table (5.2): Gender**

<b>Variable items</b>	<b>Frequency</b>	<b>Percentage %</b>
Male	101	58.0
Female	73	42.0
<b>Total</b>	<b>174</b>	<b>100.0</b>

As shown in Table (5.2), the percentage of gender group from males which is equal to 101 ( 58.0%) by the gender group from female is equal to 73 (42.0%), The researcher finds the distribution of the respondents according to the gender in UNRWA is nearly consistent with the general distribution of the population in Gaza

#### 5.3.2 Marital Status

**Table (5.3): Marital Status**

<b>Variable items</b>	<b>Frequency</b>	<b>Percentage %</b>
Single	20	11.5
Married	154	88.5
<b>Total</b>	<b>174</b>	<b>100.0</b>

As shown in Table (5.3), the percentage of marital status group from single which is equal to 20 ( 11.5%) by the marital status group from married is equal to 154 (88.5%).

### 5.3.3 Age

**Table (5.4): Age**

<b>Variable items</b>	<b>Frequency</b>	<b>Percentage %</b>
Less than 25 years	8	4.6
From 25-35 years	52	29.9
From 36-45 years	64	36.8
More than 45 years	50	28.7
<b>Total</b>	<b>174</b>	<b>100.0</b>

As shown in Table (5.4), the percentage of age group from less than 25 years old which is equal to 8 ( 4.6%) by the age group from 30 to 35 which is equal to 52 (29.9%), by the age group from 36 to 45 years old is equal to 64 (36.80%), by the age group who are above 45 years old is 50 (28.7%). From the researcher's point of view, the low percentage of respondents less than 25 years old can be attributed to the restricted employment policy adopted by UNRWA in the last years.

### 5.3.4 Years of experience

**Table (5.5): Years of Experience**

<b>Variable items</b>	<b>Frequency</b>	<b>Percentage %</b>
Less than 5 years	21	12.1
From 5-10 years	39	22.4
More than 10 years	114	65.5
<b>Total</b>	<b>174</b>	<b>100.0</b>

As shown in Table (5.5), the percentage of experience group from less than 5 years which is equal to 21 ( 12.1%) by the experience group from 5 to 10 which is equal to 39 (22.4%), by the experience group who are above 10 years experience which is 114 (65.5%), this indicates that UNRWA has a restricted employment policy during the last years and to a lack of early retirement.

### 5.3.5 Qualifications

**Table (5.6):Academic Qualification**

<b>Variable items</b>	<b>Frequency</b>	<b>Percentage %</b>
PhD or above	1	0.6
Master degree	38	21.8
Bachelor Degree	120	69.0
Diploma	15	8.6
Secondary School	-	-
<b>Total</b>	<b>174</b>	<b>100.0</b>

As shown in Table (5.6), the percentage of qualification group from PhD or above which is equal to 1 ( 0.6%) by the qualification group from master group which is equal to 38 (21.80%), by the qualification group from bachelor degree is equal to 120 (69.0%), by the qualification group from Diploma is 15 (8.60%), by the qualification group from secondary school is equal zero. The bachelor degree has the highest percentage of the respondents that indicate that UNRWA is rich with the qualified candidates.

### 5.3.6 Employee's field of work (Job Title)

**Table (5.7): Employee's Job Title**

<b>Variable items</b>	<b>Frequency</b>	<b>Percentage %</b>
Employee	119	68.4
Senior Staff	43	24.7
Dept. Head/Deputy	12	6.9
<b>Total</b>	<b>174</b>	<b>100.0</b>

As shown in Table (5.7), the percentage of post title group for employees which is equal to 119 ( 68.40%) by the post title group senior staff which is equal to 43 (27.7%), post title group who are department heads or deputies which is 12 (6.9%). The highest degree is for employees, that means most of REACH users are normal staff members (clerks, Admin. Assistants..etc.) they are using REARCH on daily basis for raising purchase requests (PRs), purchase order (POs), service entry sheet (SES) .. etc.



### 5.3.7 Grade (Level)

**Table (5.8): Employee's Grade (Level)**

<b>Grade</b>	<b>Frequency</b>	<b>Percentage %</b>
5-10	116	66.7
11-15	45	25.9
16-20	13	7.5
<b>Total</b>	<b>174</b>	<b>100.0</b>

As shown in Table (5.8), the percentage of grade group from 5-10 which is equal to 116 ( 66.7%) by the grade group from 11-15 which is equal to 45 (25.9%), by grade group from 16-20 is equal to 13 (7.5%). It is noticed that the highest percentage rate is among employees from grade 5- 10 that's confirm what the researcher said that most of REACH users are normal staff members (clerks, Admin. Assistants..etc).

### 5.4 Statistical Analysis and Answering Research Questions

T-test is used to determine if the mean of a item is significantly different from a hypothesized value 4. If the P-value (Sig.) is smaller than or equal to the level of significance,  $\alpha = 0.05$ , then the mean of a item is significantly different from a hypothesized value 4. The sign of the Test value indicates whether the mean is significantly greater or smaller than hypothesized value 4. On the other hand, if the P-value (Sig.) is greater than the level of significance  $\alpha = 0.05$ , then the mean a item is insignificantly different from a hypothesized value 4.

The Independent Samples T-test is used to examine if there is a statistical significant difference between two means among the respondents toward the relationship between ERP quality characteristics and its impact on individual and organization in post implementation stage-case study: SAP (REACH) implementation at UNRWA's employee in Gaza Field Office due to (gender and Marital Status).

The One- Way Analysis of Variance (ANOVA) is used to examine if there is a statistical significant difference between several means among the respondents toward the relationship between ERP quality characteristics and its impact on individual and organization in post implementation stage-case study: SAP (REACH) implementation at UNRWA’s employee in Gaza Field Office due to (age, years of experience, qualifications, post title and grade). The researcher describes the collected data from the second part of the questionnaire, these findings will be discussed and interpreted to provide an overview of responses and increase our understanding of study variables.

#### 5.4.1 Answering the First Research Question :

*RQ1 : “How do respondents evaluate REACH System quality”?*

To answer this question, the mean, S.D, and p-value are calculated for each item of the field “System quality”. The results are presented in Table (5.9) ranked.

**Table (5.9) : Means and Test Values for “System Quality”**

No.	Item	Mean	S.D	Prop. mean (%)	Test value	P-value (Sig.)	Rank
1.	REACH is easy to use	4.42	1.54	63.14	3.60	0.000*	6
2.	REACH is easy to learn	4.45	1.48	63.63	4.03	0.000*	5
3.	REACH is always processes data accurately	4.74	1.58	67.73	6.18	0.000*	3
4.	REACH is flexible- it avail many options to the user	4.16	1.64	59.36	1.25	0.106	11
5.	REACH is reliable, it performs tasks without mistakes and problems	4.35	1.68	62.10	2.72	0.004*	9
6.	REACH allows data integration	4.75	1.55	67.86	6.33	0.000*	2
7.	REACH is efficient	4.17	1.60	59.62	1.42	0.078	10
8.	REACH allows for customization	4.42	1.59	63.12	3.46	0.000*	7
9.	REACH meets user’s requirement	4.35	1.60	62.21	2.91	0.002*	8
10.	REACH has timely information	4.53	1.48	64.66	4.67	0.000*	4
11.	REACH has data confidentiality	4.83	1.51	69.01	7.19	0.000*	1
	<b>All items of the field</b>	4.47	1.27	63.85	4.89	0.000*	

\* The mean is significantly different from 4

Table (5.9) shows that the mean of item #11 “REACH has data confidentiality” equals 4.83 (69.01%), Test-value = 7.19, and P-value = 0.000 which is smaller than the level of significance  $\alpha = 0.05$ . The sign of the test is positive, so the mean of this item is significantly greater than the hypothesized value 4. It is concluded that the respondents agreed to this item.

On the other hand the mean of item #4 “REACH is flexible- it avail many options to the user” equals 4.16 (59.36%), Test-value = 1.25, and P-value = 0.106 which is greater than the level of significance  $\alpha = 0.05$ . Then the mean of this item is insignificantly different from the hypothesized value 4. It is concluded that the respondents (Do not know, neutral) to this item. The mean of the field “System quality” equals 4.47 (63.85%), Test-value = 4.89, and P-value= 0.000 which is smaller than the level of significance  $\alpha = 0.05$ . The sign of the test is positive, so the mean of this field is significantly greater than the hypothesized value 4. We conclude that the respondents agreed moderately and satisfied with REACH quality, this agreed with (Naijim,2016), (Bader,2016) and (Abu-Safar, 2015). Concerning REACH flexibility and efficiency, more work is needed to increase their rates among users.

#### **5.4.2 Answering the Second Research Question :**

*RQ2 : “How do respondents evaluate REACH Service quality”?*

To answer this question, the mean, S.D, and p-value are calculated for each item of the field “Service quality”. The results are presented in Table (5.10) ranked.

**Table (5.10) : Means and Test Values for “Service Quality”**

No.	Item	Mean	S.D	Proportional mean (%)	Test value	P-value (Sig.)	Rank
1.	When users have a problem, the IS dept. shows a sincere interest in solving it	4.38	1.62	62.59	3.09	0.001 *	6
2.	The IS dept. has up-to-date hardware and software	4.54	1.46	64.87	4.86	0.000 *	3
3.	The IS dept. is dependable When you face any problem	4.50	1.58	64.33	4.18	0.000 *	4
4.	The IS dept. provides its services at the times it promises	4.54	1.55	64.91	4.62	0.000 *	2
5.	I feel safe in my transactions with the IS dept. staff	5.06	1.43	72.25	9.73	0.000 *	1
6.	REACH system has a good interface	4.39	1.54	62.64	3.30	0.001 *	5
7.	REACH provides the right solution to requests	4.08	1.48	58.22	0.67	0.253	7
	<b>All items of the field</b>	4.49	1.28	64.11	5.02	0.000 *	

\* The mean is significantly different from 4

The mean of item #5 “I feel safe in my transactions with the IS dept. staff” equals 5.06 (72.25%), Test-value = 9.73 and P-value = 0.000 which is smaller than the level of significance  $\alpha = 0.05$ . The sign of the test is positive, so the mean of this item is significantly greater than the hypothesized value 4. It is concluded that the respondents agreed to this item.

The mean of item #7 “REACH provides the right solution to requests” equals 4.08 (58.22%), Test-value = 0.67, and P-value = 0.253 which is greater than the level of significance  $\alpha = 0.05$ . Then the mean of this item is insignificantly different from the

hypothesized value 4. It is concluded that the respondents (Do not know, neutral) to this item.

The mean of the field “Service quality” equals 4.49 (64.11%), Test-value = 5.02, and P-value= 0.000 which is smaller than the level of significance  $\alpha = 0.05$ . The sign of the test is positive, so the mean of this field is significantly greater than the hypothesized value 4. We conclude that the respondents generally agreed to items of service quality and confirm that they have perception that service quality is good, this agreed with the study of (Naijim,2016) and inconsistent with the study of (Bader,2016).

### **5.4.3 Answering the Third Research Question :**

*RQ3 : “How do respondents evaluate REACH Information quality”?*

To answer this question, the mean, S.D, and p-value are calculated for each item of the field “Service quality”. The results are presented in Table (5.11) ranked.

**Table (5.11) : Means and Test Values for “Information Quality”**

No.	Item	Mean	S.D	Proportional mean (%)	Test value	P-value (Sig.)	Rank
1.	REACH provides output that seems to be exactly what I need	4.32	1.53	61.74	2.78	0.003*	8
2.	Information needed from the REACH is always available	4.26	1.47	60.84	2.32	0.011*	9
3.	Information from the REACH is in a form that is readily usable	4.13	1.53	59.04	1.14	0.127	10
4.	The information on REACH is important	4.99	1.34	71.35	9.81	0.000*	1
5.	The information on REACH is brief/concise	4.56	1.42	65.15	5.21	0.000*	7
6.	The information on REACH is usable	4.94	1.24	70.52	9.90	0.000*	2
7.	REACH provides prompt information to users	4.66	1.52	66.58	5.70	0.000*	5
8.	REACH provides you with accurate information	4.91	1.38	70.18	8.70	0.000*	3
9.	The information contained in REACH is timely and regularly updated	4.83	1.46	69.05	7.54	0.000*	4
10.	The information in REACH are easily retrievable	4.62	1.47	66.01	5.56	0.000*	6
	<b>All items of the field</b>	4.62	1.20	66.06	6.86	0.000*	

\* The mean is significantly different from 4

The mean of item #4 “The information on REACH is important” equals 4.99 (71.35%), Test-value = 9.81, and P-value = 0.000 which is smaller than the level of significance  $\alpha = 0.05$ . The sign of the test is positive, so the mean of this item is significantly greater than the hypothesized value 4. It is concluded that the respondents agreed to this item.

The mean of item #3 “Information from the REACH is in a form that is readily usable” equals 4.13 (59.04%), Test-value = 1.14, and P-value = 0.127 which is greater than the level of significance  $\alpha = 0.05$ . Then the mean of this item is insignificantly different from the hypothesized value 4. We conclude that the respondents (Do not know, neutral) to this item.

The mean of the field “Information quality” equals 4.62 (66.06%), Test-value = 6.86, and P-value= 0.000 which is smaller than the level of significance  $\alpha = 0.05$ . The sign of the test is positive, so the mean of this field is significantly greater than the hypothesized value 4. We conclude that all t-test values are positive and all means are greater than 4, hence, the respondents generally agreed to all items of information quality and confirm that REACH retain high quality of information, this consistent with (Najim,2016), (El, Gharbawi,2016) and (Bader,2016) studies.

#### 5.4.4 Answering the Fourth Research Question :

*RQ4 : “How do respondents evaluate REACH perceived compatibility”?*

To answer this question, the mean, S.D, and p-value are calculated for each item of the field “compatibility”. The results are presented in Table (5.12) ranked.

**Table (5.12) : Means and Test Values for “Compatibility”**

No.	Item	Mean	S.D	Proportional mean (%)	Test value	P-value (Sig.)	Rank
1.	Using REACH fits into my work style	4.48	1.39	64.00	4.53	0.000*	3
2.	Data captured in REACH and their format match my current data needs	4.58	1.41	65.40	5.41	0.000*	1
3.	The REACH matches my current processing procedure	4.56	1.47	65.11	5.00	0.000*	2
4.	REACH is compatible with other’s software	4.10	1.50	58.56	0.87	0.193	6
5.	REACH is compatible with other’s hardware	4.24	1.59	60.55	1.97	0.025*	5
6.	REACH is compatible with other’s networks	4.41	1.49	63.04	3.63	0.000*	4
	<b>All items of the field</b>	4.40	1.27	62.81	4.11	0.000*	

\* The mean is significantly different from 4

The mean of item #2 “Data captured in REACH and their format match my current data needs” equals 4.58 (65.40%), Test-value = 5.41, and P-value = 0.000 which is smaller than the level of significance  $\alpha = 0.05$ . The sign of the test is positive, so the mean of this item is significantly greater than the hypothesized value 4. We conclude that the respondents agreed to this item.

The mean of item #4 “REACH is compatible with other’s software” equals 4.10 (58.56%), Test-value = 0.87, and P-value = 0.193 which is greater than the level of significance  $\alpha = 0.05$ . Then the mean of this item is insignificantly different from the hypothesized value 4. We conclude that the respondents (Do not know, neutral) to this item.

The mean of the field “Compatibility” equals 4.40 (62.81%), Test-value = 4.11, and P-value= 0.000 which is smaller than the level of significance  $\alpha = 0.05$ . The sign of the test is positive, so the mean of this field is significantly greater than the hypothesized value 4. We conclude that all means are greater than 4, hence, the respondents generally agreed moderately to all items of compatibility, that’s consistent with the study of (Rajan&Baral,2015).

#### **5.4.5 Answering the Fifth Research Question :**

*RQ5 : “How do respondents evaluate perceived complexity”?*

To answer this question, the mean, S.D, and p-value are calculated for each item of the field “lack of complexity”. The results are presented in Table (5.13) ranked.



**Table (5.13) : Means and Test Values for “lack of complexity”**

No.	Item	Mean	S.D	Proportional mean (%)	Test value	P-value (Sig.)	Rank
1.	Using REACH didn't takes much time from my normal duties	3.80	1.56	54.25	-1.71	0.045*	4
2.	Working with REACH is not complicated, it is easy to understand what is going on	4.18	1.61	59.72	1.46	0.072	1
3.	It doesn't takes too long to learn how to use REACH effectively and efficiently	3.73	1.51	53.32	-2.33	0.011*	5
4.	I feel comfortable when I use REACH	4.05	1.57	57.80	0.39	0.349	2
5.	It is easy for UNRWA's employees to get the REACH to do what they want it to do	4.02	1.55	57.39	0.15	0.441	3
	<b>All items of the field</b>	3.95	0.97	56.45	-0.65	0.257	

\* The mean is significantly different from 4

The mean of item #2 “Working with REACH is not complicated, it is difficult to understand what is going on” equals 4.18 (59.72%), Test-value = 1.46, and P-value = 0.072 which is greater than the level of significance  $\alpha = 0.05$ . Then the mean of this item is insignificantly different from the hypothesized value 4.

The mean of item #3 “It doesn't take too long to learn how to use REACH ” equals 3.73 (53.32%), Test-value = -2.33, and P-value = 0.011 which is smaller than the level of significance  $\alpha = 0.05$ . The sign of the test is negative, so the mean of this item is significantly smaller than the hypothesized value 4. We conclude that the respondents disagreed to this item.

The mean of the field “Lack of Complexity” equals 3.95 (56.45%), Test-value = -0.65, and P-value= 0.257 which is greater than the level of significance  $\alpha = 0.05$ . The

mean of this field is insignificantly different from the hypothesized value 4. We conclude that the respondents disagree to the field of Lack of Complexity in REACH, that's confirm more efforts from UNRWA is required to make REACH less complicated, through enhance training and workshops. This study consistent with (Rajan&Baral,2015) which showed complexity had a negative effect on perceived ease of use and perceived usefulness. That's confirm that ERP is complex information system and the complexity of it could negatively affect user's attitude towards using the system.

To summarize using REACH, the mean, S.D, and p-value are calculated for each item of ERP success dimension. The results are presented in Table (5.14) ranked.

**Table (5.14) : Means and Test Values for “Using REACH”**

<b>Item</b>	<b>Mean</b>	<b>S.D</b>	<b>Proportional mean (%)</b>	<b>Test value</b>	<b>P-value (Sig.)</b>	<b>Rank</b>
System quality	4.47	1.27	63.85	4.89	0.000*	3
Service quality	4.49	1.28	64.11	5.02	0.000*	2
Information quality	4.62	1.20	66.06	6.86	0.000*	1
Compatibility	4.40	1.27	62.81	4.11	0.000*	4
Lack of Complexity	3.95	0.97	56.45	-0.65	0.257	5
<b>All Items of Use REACH</b>	<b>4.44</b>	<b>1.06</b>	<b>63.37</b>	<b>5.42</b>	<b>0.000*</b>	

\*The mean is significantly different from 4

Table (5.14) shows the mean of all items equals 4.44 (63.37%), Test-value = 5.42 and P-value =0.000 which is smaller than the level of significance  $\alpha = 0.05$ . The mean of all items is significantly different from the hypothesized value 4. We conclude that the respondents agreed to all items of Use REACH.

### 5.4.7 Answering the Sixth Research Question :

RQ6 : How do respondents evaluate REACH impact on individual ?

To answer this question, the mean, S.D, and p-value are calculated for each item of the field “individual impact”. The results are presented in Table (5.15) ranked.

**Table (5.15) : Means and Test Values for “Individual Impact”**

No.	Item	Mean	S.D	Proportional mean (%)	Test value	P-value (Sig.)	Rank
1.	REACH enhances individual creativity	3.75	1.55	53.59	-2.11	0.018*	5
2.	REACH improves individual productivity	4.03	1.62	57.64	0.28	0.389	4
3.	REACH enhances higher-quality of decision making	4.26	1.55	60.88	2.21	0.014*	1
4.	REACH is beneficial for individual’s tasks	4.22	1.58	60.28	1.83	0.034*	2
5.	REACH saves time for individual tasks and duties	4.10	1.71	58.55	0.76	0.225	3
	<b>All items of the field</b>	4.07	1.47	58.19	0.66	0.256	

\* The mean is significantly different from 4

The mean of item #3 “REACH enhances higher-quality of decision making” equals 4.26 (60.88%), Test-value = 2.21, and P-value = 0.014 which is smaller than the level of significance  $\alpha = 0.05$ . The sign of the test is positive, so the mean of this item is significantly greater than the hypothesized value 4. We conclude that the respondents agreed to this item.

The mean of item #1 “REACH enhances individual creativity” equals 3.75 (53.59%), Test-value = -2.11, and P-value = 0.018 which is smaller than the level of significance  $\alpha = 0.05$ . The sign of the test is negative, so the mean of this item is significantly smaller than the hypothesized value 4. We conclude that the respondents disagreed to this item.

The mean of the field “Individual Impact” equals 4.07 (58.19%), Test-value = 0.66, and P-value= 0.256 which is greater than the level of significance  $\alpha = 0.05$ . The mean of this field is insignificantly different from the hypothesized value 4. We conclude that the respondents agreed to the field of “Individual Impact”, that’s confirm our study is consistent with (Bader,2016), (El-Gherbawi,2016) and (Naijem,2016) studies.

#### 5.4.8 Answering the Seventh Research Question:

*RQ7 : How do respondents evaluate REACH impact on organization ?*

To answer this question, the mean, S.D, and p-value are calculated for each item of the field “organizational impact”. The results are presented in Table (5.16) ranked.

**Table (5.16) : Means and Test Values for “Organizational Impact”**

No.	Item	Mean	S.D	Proportional mean (%)	Test value	P-value (Sig.)	Rank
1.	REACH reduces organizational costs	3.71	1.60	52.97	-2.39	0.009*	7
2.	REACH improves overall productivity	4.09	1.54	58.40	0.74	0.229	2
3.	REACH enables e-business/e-commerce	4.34	1.50	62.04	2.99	0.002*	1
4.	REACH provides us with competitive advantage	3.93	1.63	56.15	-0.56	0.289	4
5.	REACH increases customer service/satisfaction	3.88	1.59	55.47	-0.96	0.169	5
6.	REACH facilitates business process change	3.83	1.58	54.73	-1.40	0.082	6
7.	REACH allows for better use of organizational data resource	4.00	1.57	57.14	0.00	0.500	3
	<b>All items of the field</b>	3.97	1.42	56.75	-0.26	0.399	

\* The mean is significantly different from 4

The mean of item #3 “REACH enables e-business/e-commerce” equals 4.34 (62.04%), Test-value = 2.99, and P-value = 0.002 which is smaller than the level of significance  $\alpha = 0.05$ . The sign of the test is positive, so the mean of this item is significantly greater than the hypothesized value 4. It is concluded that the respondents agreed to this item.

The mean of item #1 “REACH reduces organizational costs” equals 3.71 (52.97%), Test-value = -2.39, and P-value = 0.009 which is smaller than the level of significance  $\alpha = 0.05$ . The sign of the test is negative, so the mean of this item is significantly smaller than the hypothesized value 4. We conclude that the respondents disagreed to this item.

The mean of the field “Organizational Impact” equals 3.97 (56.75%), Test-value = -0.26, and P-value= 0.399 which is greater than the level of significance  $\alpha = 0.05$ . The mean of this field is insignificantly different from the hypothesized value 4. It concludes that the respondents disagreed to the field “Organizational Impact”, that’s inconsistent with the studies of (Bader,2016) and (Naijem,2016).

**Table (5.17): Means and Test values for " Individual and Organizational Impact**

Item	Mean	S.D	Proportional mean (%)	Test value	P-value (Sig.)	Rank
Individual Impact	4.07	1.47	58.19	0.66	0.256	1
Organizational Impact	3.97	1.42	56.75	-0.26	0.399	2
<b>All Items of Individual and Organizational Impact</b>	<b>4.01</b>	<b>1.37</b>	<b>57.30</b>	<b>0.11</b>	<b>0.458</b>	

\*The mean is significantly different from 4

Table (5.17) shows the mean of all items equals 4.01 (57.30%), Test-value = 0.11 and P-value = 0.458 which is greater than the level of significance  $\alpha = 0.05$ . The mean of all items is insignificantly different from the hypothesized value 4. We conclude that the respondents agreed to all items of Individual and Organizational Impact.

## 5.5 Hypothesis Analysis :

**Hypothesis (H1): ERP quality characteristics (system quality, service quality, information quality, compatibility, and complexity) affect significantly and positively on system effectiveness (individual and organizational impact).**

**Table (5.18): Correlation Analysis**

Variable /Correlation	System quality	Service quality	Information quality	Compatibility	Complexity	Use REACH	Individual Impact	Organizational Impact	Individual and Organizational Impact
System quality	1								
Service quality	.708*	1							
Information quality	.842*	.744*	1						
Compatibility	.796*	.670*	.822*	1					
Lack of Complexity	.527*	.333*	.412*	.444*	1				
<b>Use REACH</b>	.942*	.834*	.936*	.887*	.567*	1			
Individual Impact	.783*	.635*	.802*	.709*	.458*	.818*	1		
Organizational Impact	.709*	.591*	.720*	.754*	.369*	.758*	.816*	1	
<b>Individual and Organizational Impact</b>	.776*	.638*	.791*	.769*	.425*	.821*	.939*	.965*	1

- All correlation coefficient are significant at 0.05 level.

From the above table (5-18), it could be concluded that ERP success dimension (system quality, service quality, information quality, compatibility, and complexity have a significant relationship on system usage. The results came in line with what previous studies concluded for instance Bader, (2016), Naijim (2016), and Hsu et, al. (2015).

**Hypothesis (H1a) ERP quality characteristics (system quality, service quality, information quality, compatibility, and complexity) affect significantly and positively on individual.**

There is a statistical significant effect at  $\alpha \leq 0.05$  for Using REACH on Individual and Organizational Impact.

We used Stepwise regression, and obtain the following results as shown in table (5-19).

**Table (5.19):Result of Stepwise regression analysis**

Variable	B	T	Sig.	R	R-Square	F	Sig.
(Constant)	-0.366	-1.545	0.124	.830	0.688	124.453	0.000**
Information quality	0.369	3.551	0.000*				
Compatibility	0.301	3.486	0.001*				
System quality	0.302	3.300	0.001*				

\* The variable is statistically significant at 0.05 level

\* \* The relationship is statistically significant at 0.05 level

Table (5.19) shows the Multiple correlation coefficient  $R = 0.830$  and  $R\text{-Square} = 0.688$ . This means 68.8% of the variation in Individual and Organizational Impact is explained by Information quality, Compatibility and System quality, also it shows the analysis of variance for the regression model.  $F=124.453$ ,  $\text{Sig.} = 0.000$ , so there is a significant relationship between the dependent variable Individual and Organizational Impact and the independent variables " Information quality, Compatibility and System quality " .



Based on stepwise regression method, the variables " Service quality and Lack of Complexity" have insignificant effect on Individual and Organizational Impact.

**The estimated regression equation is:**

$$\text{Individual and Organizational Impact} = -0.366 + 0.369* (\text{Information quality}) + 0.301* (\text{Compatibility}) + 0.302* (\text{System quality})$$

The estimated regression equation is used to predict the value of Individual and Organizational Impact for any give values (responses) to the independent variables "Information quality, Compatibility and System quality ".

This hypothesis

can be divided into the following sub-hypotheses:

**There are statistical significant effect at  $\alpha \leq 0.05$  for Use REACH on Individual Impact.**

**We used Stepwise regression, and obtain the following results in table (5.20):**

**Table (5.20):Result of Stepwise regression analysis**

<b>Variable</b>	<b>B</b>	<b>T</b>	<b>Sig.</b>	<b>R</b>	<b>R-Square</b>	<b>F</b>	<b>Sig.</b>
(Constant)	-0.597	-2.350	0.020	.826	0.682	182.624	0.000**
Information quality	0.600	6.068	0.000				
System quality	0.426	4.566	0.000				

\* The variable is statistically significant at 0.05 level

\*\* The relationship is statistically significant at 0.05 level

Table (5.20) shows the Multiple correlation coefficient  $R = 0.826$  and  $R\text{-Square} = 0.682$ . This means 68.2% of the variation in Individual Impact is explained by Information quality and System quality.

Also, the table shows an Analysis of Variance for the regression model.  $F=182.624$ ,  $\text{Sig.} = 0.000$ , so there is a significant relationship between the dependent variable Individual Impact and the independent variables " Information quality and System quality ".

Based on stepwise regression method, the variables " Service quality, Compatibility, and Lack of Complexity" have insignificant effect on Individual Impact.

The estimated regression equation is:

$$\text{Individual Impact} = -0.597 + 0.600* (\text{Information quality}) + 0.426* (\text{System quality})$$

The estimated regression equation is used to predict the value of Individual and Organizational Impact for any give values (responses) to the independent variables "Information quality and System quality ".

**H1b : ERP quality characteristics (system quality, service quality, information quality, compatibility, and complexity) affect significantly and positively on organizational.**

There are statistical significant effect at  $\alpha \leq 0.05$  for Use REACH on Organizational Impact as shown in table (5-20).

**Table (5.21):Result of Stepwise regression analysis**

Variable	B	T	Sig.	R	R-Square	F	Sig.
(Constant)	-0.031	-0.118	0.906	.775	0.601	128.178	0.000**
Compatibility	0.574	6.462	0.000				
System quality	0.331	3.716	0.000				

- \* The variable is statistically significant at 0.05 level

- \*\* The relationship is statistically significant at 0.05 level

Table (5.21) shows the Multiple correlation coefficient  $R = 0.775$  and R-Square = 0.601. This means 60.1% of the variation in Organizational Impact is explained by Compatibility and System quality.

Table (5.21) shows the Analysis of Variance for the regression model.  $F=128.178$ ,  $Sig. = 0.000$ , so there is a significant relationship between the dependent variable Individual and Organizational Impact and the independent variables " Compatibility and System quality ".

Based on stepwise regression method, the variables " Information quality, Service quality and Lack of Complexity" have insignificant effect on Organizational Impact.

The estimated regression equation is:

$$\text{Organizational Impact} = -0.031 + 0.574* (\text{Compatibility}) \\ + 0.331* (\text{System quality})$$

The estimated regression equation is used to predict the value of Organizational Impact for any give values (responses) to the independent variables "Compatibility and System quality".

From the above explanation, it could be summarized that ERP success dimension (system quality, service quality, information quality, compatibility, and complexity have statistically significant positive direct impact on individual and organization. The results agreed with what previous studies concluded for instance Bader, (2016), Najjim (2016), and Hsu et, al. (2015)

**Hypothesis (H2) : There are no significant differences among respondents towards ERP quality characteristics and ERP effectiveness due to gender, age, qualifications, current position, grade, and years of experience.**

This hypothesis can be divided into the following sub-hypotheses:

**There are statistical significant differences in response of research sample due to gender as shown in table (5-22).**

**Table (5.22): Independent Samples T-test of the fields and their p-values for gender**

No.	Field	Means		Test Value	Sig.
		Male	Female		
1.	System quality	4.50	4.43	0.322	0.748
2.	Service quality	4.49	4.48	0.031	0.975
3.	Information quality	4.57	4.70	-0.723	0.470
4.	Compatibility	4.40	4.40	-0.010	0.992
5.	Lack of Complexity	3.94	3.97	-0.162	0.871
	<b>Use REACH</b>	4.43	4.45	-0.136	0.892
1.	Individual Impact	3.97	4.21	-1.045	0.298
2.	Organizational Impact	3.87	4.11	-1.117	0.266
	<b>Individual and Organizational Impact</b>	3.91	4.16	-1.168	0.244
	<b>All items of the questionnaire</b>	4.30	4.38	-0.470	0.639

**There are statistical significant differences in response of research sample due to marital status as shown in table (5.23).**

**Table (5.23): Independent Samples T-test of the fields and their p-values for marital status**

No.	Field	Means		Test Value	Sig.
		Married	Single		
	System quality	4.39	5.11	-2.428	0.016*
	Service quality	4.42	5.01	-1.972	0.050*
	Information quality	4.53	5.32	-2.793	0.006*
	Compatibility	4.33	4.90	-1.895	0.060
	Lack of Complexity	3.91	4.25	-1.465	0.145
	Use REACH	4.36	5.00	-2.568	0.011*
	Individual Impact	4.02	4.46	-1.256	0.211
	Organizational Impact	3.91	4.47	-1.669	0.097
	Individual and Organizational Impact	3.95	4.46	-1.578	0.116
	All items of the questionnaire	4.27	4.87	-2.357	0.020*

\* The mean difference is significant a 0.05 level

Table (5.22) shows that the p-value (Sig.) is greater than the level of significance  $\alpha = 0.05$  for each field, then there is insignificant difference among the respondents toward each field due to gender. We conclude that the personal characteristics' gender has no effect on each field.

Table (5.23) shows that the p-value (Sig.) is smaller than the level of significance  $\alpha = 0.05$  for the fields "System quality, Service quality, Information quality and Use REACH", then there is significant difference among the respondents toward this fields due to marital status. We conclude that the personal characteristics' marital status has an effect on this fields.

For the other fields, the p-value (Sig.) is greater than the level of significance  $\alpha = 0.05$ , then there is insignificant difference among the respondents toward these fields due to marital status. We conclude that the personal characteristics' marital status has no effect on the other fields.

**There are statistical significant differences in response of research sample due to age as shown in table (5.24).**

**Table (5.24):ANOVA test of the fields and their p-values for age**

No.	Field	Means			Test Value	Sig.
		Less than 35 years	From 36-45 years	More than 45 years		
1.	System quality	5.10	4.07	4.22	13.181	0.000*
2.	Service quality	5.01	4.18	4.25	8.217	0.000*
3.	Information quality	5.19	4.28	4.38	11.670	0.000*
4.	Compatibility	4.91	4.09	4.17	8.125	0.000*
5.	Lack of Complexity	4.14	3.79	3.93	1.982	0.141
	<b>Use REACH</b>	4.96	4.11	4.22	12.731	0.000*
1.	Individual Impact	4.39	3.91	3.90	2.161	0.118
2.	Organizational Impact	4.36	3.75	3.80	3.408	0.035*
	<b>Individual and Organizational Impact</b>	4.36	3.82	3.84	3.022	0.051
	<b>All items of the questionnaire</b>	4.82	4.04	4.13	10.030	0.000*

\* The mean difference is significant a 0.05 level

Table (5.24) shows that the p-value (Sig.) is greater than the level of significance  $\alpha = 0.05$  for the fields “Lack of Complexity, Individual Impact and Individual and Organizational Impact”, then there is insignificant difference among the respondents toward this fields due to age. We conclude that the personal characteristics’ age has no effect on this fields.

For the other fields, the p-value (Sig.) is smaller than the level of significance  $\alpha = 0.05$ , then there is significant difference among the respondents toward these fields due to age. We conclude that the personal characteristics’ age has an effect on the other fields.

For the other fields, The mean for the category " Less than 35 years " respondents have the highest among the other age category, then we conclude that the category " Less than 35 years " respondents is agreed much more than the other age category.

**There are statistical significant differences in response of research sample due to years of experience as shown in table (5-25).**

**Table (5-25):ANOVA test of the fields and their p-values for years of experience**

No.	Field	Means			Test Value	Sig.
		Less than 5 years	from 5-10 years	More than 10 years		
1.	System quality	5.03	5.07	4.16	10.881	0.000*
2.	Service quality	5.33	4.81	4.22	8.931	0.000*
3.	Information quality	5.25	5.14	4.33	10.992	0.000*
4.	Compatibility	4.70	4.87	4.18	5.234	0.006*
5.	Lack of Complexity	3.99	4.23	3.85	2.234	0.110
	<b>Use REACH</b>	4.95	4.91	4.18	10.755	0.000*
1.	Individual Impact	4.79	4.29	3.87	4.221	0.016*
2.	Organizational Impact	4.58	4.20	3.78	3.527	0.032*
	<b>Individual and Organizational Impact</b>	4.67	4.22	3.82	4.142	0.018*
	<b>All items of the questionnaire</b>	4.89	4.75	4.09	9.084	0.000*

\* The mean difference is significant a 0.05 level

Table (5.25) shows that the p-value (Sig.) is greater than the level of significance  $\alpha = 0.05$  for the field “Lack of Complexity”, then there is insignificant difference among the respondents toward this field due to years of experience. We conclude that the personal characteristics’ years of experience has no effect on this field.

For the other fields, the p-value (Sig.) is smaller than the level of significance  $\alpha = 0.05$ , then there is significant difference among the respondents toward these fields due to years of experience. We conclude that the personal characteristics’ years of experience has an effect on the other fields. For the other fields, The mean for the category " Less than 5 years " respondents have the highest among the other years of experience category, then we conclude that the category " Less than 5 years " respondents is agreed much more than the other years of experience category.

**There are statistical significant differences in response of research sample due to qualification as shown in table (5-26).**

**Table (5-26):ANOVA test of the fields and their p-values for qualification**

No.	Field	Means			Test Value	Sig.
		Master degree and above	Bachelor degree	Diploma		
1.	System quality	4.16	4.54	4.70	1.630	0.199
2.	Service quality	4.27	4.58	4.34	0.966	0.383
3.	Information quality	4.37	4.68	4.83	1.250	0.289
4.	Compatibility	4.02	4.49	4.59	2.255	0.108
5.	Lack of Complexity	3.92	3.92	4.29	1.016	0.364
	<b>Use REACH</b>	4.18	4.50	4.60	1.531	0.219
1.	Individual Impact	3.81	4.10	4.53	1.420	0.244
2.	Organizational Impact	3.56	4.07	4.30	2.357	0.098
	<b>Individual and Organizational Impact</b>	3.66	4.08	4.40	2.024	0.135
	All items of the questionnaire	4.06	4.40	4.55	1.794	0.169

Table (5.26) shows that the p-value (Sig.) is greater than the level of significance  $\alpha = 0.05$  for each field, then there is in significant difference among the respondents toward each field due to qualification. We conclude that the personal characteristics' qualification has no effect on each field.

**There are statistical significant differences in response of research sample due to post title as shown in table (5-27).**

**Table (5-27):ANOVA test of the fields and their p-values for post title**

No.	Field	Means			Test Value	Sig.
		Employee	Senior Staff	Department Head		
1.	System quality	4.51	4.50	3.93	1.166	0.314
2.	Service quality	4.55	4.47	3.96	1.142	0.322
3.	Information quality	4.66	4.74	3.85	2.795	0.064
4.	Compatibility	4.47	4.34	3.82	1.510	0.224
5.	Lack of Complexity	4.01	3.90	3.62	0.973	0.380
	<b>Use REACH</b>	4.49	4.45	3.86	1.942	0.147
1.	Individual Impact	4.12	4.19	3.21	2.288	0.105
2.	Organizational Impact	4.04	3.89	3.64	0.524	0.593
	<b>Individual and Organizational Impact</b>	4.07	4.01	3.46	1.068	0.346
	<b>All items of the questionnaire</b>	4.39	4.35	3.76	1.818	0.165

Table (5-27) shows that the p-value (Sig.) is greater than the level of significance  $\alpha = 0.05$  for each field, then there is in significant difference among the respondents toward each field due to post title. We conclude that the personal characteristics' post title has no effect on each field.



There are statistical significant differences in response of research sample due to grade as shown in table (5-28).

**Table (5-28):ANOVA test of the fields and their p-values for grade**

No.	Field	Means			Test Value	Sig.
		5-10	11-15	16- 20		
1.	System quality	4.55	4.41	4.00	1.164	0.315
2.	Service quality	4.54	4.47	4.03	0.938	0.393
3.	Information quality	4.68	4.66	3.98	2.073	0.129
4.	Compatibility	4.44	4.45	3.83	1.385	0.253
5.	Lack of Complexity	4.02	3.82	3.77	0.960	0.385
	<b>Use REACH</b>	4.50	4.42	3.94	1.612	0.202
1.	Individual Impact	4.15	4.14	3.15	2.818	0.062
2.	Organizational Impact	4.01	4.00	3.52	0.728	0.485
	<b>Individual and Organizational Impact</b>	4.07	4.06	3.37	1.570	0.211
	<b>All items of the questionnaire</b>	4.40	4.33	3.81	1.726	0.181

Table (5.28) shows that the p-value (Sig.) is greater than the level of significance  $\alpha = 0.05$  for each field, then there is in significant difference among the respondents toward each field due to grade. We conclude that the personal characteristics' grade has no effect on each field.

# **Chapter 6**

## **Conclusions and Recommendations**

## **Chapter 6**

### **Conclusions and Recommendations**

#### **6.1 Introduction**

Being the final chapter in this thesis, it will summarize the key findings and conclusions of the current study and it includes recommendations and theoretical suggestions for future research.

#### **6.2 Conclusions**

This research investigates the relationship between ERP quality characteristics (system quality, service quality, information quality, compatibility, and complexity) in post implementation stage and system effectiveness ( individual and organizational impact).

**In light of the findings that presented in the previous chapter, there are important conclusions as follow :**

1. The findings confirmed that three of quality characteristics (system quality, information quality, and compatibility) have a positive and direct effect on system effectiveness (individual and organizational impact) equal to 0.633, the highest correlation coefficient was the relationship between information quality and system effectiveness which is equal to 0.660; while the lowest correlation coefficient was the relationship between lack of complexity and system usage which equal to 0.564.
2. The findings reveals that ERP quality characteristics; (system quality & information quality) affect significantly and positively on individual.
3. ERP quality characteristics (system quality& compatibility) affect significantly and positively on organization.
4. There are no significant differences among respondents, towards ERP quality characteristics and ERP system effectiveness, due to gender, age, qualifications, current position, grade, and years of experience.

### **6.3 Recommendations**

In the light of the study result and findings, the researcher recommends the following :-

1. UNRWA is recommended to increase the awareness about benefits of REACH among end-users .
2. UNRWA is recommended to enhance REACH training courses.
3. UNRWA is recommended to improve communication concerning REACH problems.
4. UNRWA is recommended to get feedback from end users after two years of implementation and take their notes in consideration.
5. In order to enhance the ease of using REACH, GFO management should improve the flexibility of using REACH.

### **6.4 Benefits and implication of this study:**

#### **6.4.1. Theoretical implications :**

The results of this study offer important research implications for extending ERP quality characteristics and the assessment of a successful ERP system at its post implementation stage. This study contributes to the literature by bringing together the five characteristics (system quality, service quality, information quality, compatibility and complexity) and demonstrating that all of them have significant relationship and impacts on ERP post implementation effectiveness (Hsu,2015). This study complement the previous studies in ERP, by demonstrating the relationship and the impact of ERP quality characteristics and system effectiveness.

#### **6.4.2 Practical implications :**

The finding offer useful implications for UNRWA's top management, attention should be directed towards encouraging employees' extended use of REACH, enhancing the awareness of usage benefits, and realizing the operational and strategic effectiveness of REACH implementation. For best results, managers suggested to

receive feedback from the end-users after nearly two years of implementation in order to check the reasons that affects system usage.

## **Future Research**

1. It is important to study the relationship between ERP quality characteristics, and system usage in the five UNRWA's operations areas, in order to reach to a comprehensive evaluation of REACH.
2. Our study focused only on nonprofit organization (UNRWA), therefore, different results may emerge when investigating other organizations.
3. This study did not include all ERP quality characteristics. It is recommended that new characteristics to be addressed in future studies.
4. This study used a developed questionnaire based quantitative survey methodology, future studies may use different methodologies and compare results.
5. Few studies have examined the relationship and the impact of compatibility and complexity on system effectiveness. Future studies are recommended to study these characteristics more.
6. It is important to study REACH user satisfaction and acceptance.
7. Future research is recommended to replicate this study in new situations to confirm and to generalize the findings of this study on relief organizations at least.

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# Appendices

## الاستبانة: (A) Appendix



الجامعة الإسلامية-غزة  
عمادة الدراسات العليا  
كلية التجارة  
قسم إدارة الأعمال

عزيزي/الموظف/ة :

يقوم الباحث بإجراء دراسة بعنوان "العلاقة بين خصائص الجودة وفعالية نظام تخطيط الموارد المؤسسية في مرحلة ما بعد التنفيذ في مكتب غزة الإقليمي-الأونروا " من أجل استكمال متطلبات الحصول على درجة الماجستير في إدارة الأعمال من الجامعة الإسلامية بغزة. سأكون شاكراً لكم إن وافقتم على تعبئة الاستبيان ، ولكم كامل الحرية والإرادة في عدم الإجابة عن أي سؤال لا ترغبون الإجابة عنه.

الرجاء قراءة التعليمات الواردة تحت كل فقرة والإجابة بأمانة على كل سؤال ، مع العلم بأن إجاباتكم سيتعامل معها بسرية تامة ولن تستخدم إلا لأغراض البحث العلمي فقط.

شاكرين لكم حسن استجابتكم وتعاونكم معنا ،،،

الباحث: اسماعيل أبو عمرة

أولاً : المعلومات الشخصية

1. الجنس :  ذكر  أنثى
2. الحالة الاجتماعية :  متزوج  غير متزوج
3. العمر :  أقل من 25 سنة  من 25 – أقل من 35 سنة  من 35 – أقل من 45 سنة  من 45 سنة فأكثر

4. عدد سنوات الخبرة :

- أقل من 5 سنوات  من 5 – 10 سنوات  أكثر من 10 سنوات

5. المستوى التعليمي :

- دكتوراة أو أعلى  ماجستير  بكالوريوس
- دبلوم  ثانوية عامة

6. المسمى الوظيفي :

- موظف  موظف مسئول/رئيس قسم  نائب /مدير دائرة

7. الدرجة الوظيفية :

- من 5-10  من 11-15  16-20



## ثانياً :- استخدام النظام (REACH-SAP)

الرجاء الاختيار بناءً على درجة موافقتك للعبارات التالية (1- غير موافق بشدة ، 7 موافق بشدة )

#	البند	1	2	3	4	5	6	7
<b>(أ) جودة النظام :</b>								
1.	يتميز النظام بسهولة الاستخدام							
2.	يتميز النظام بسهولة التعلم							
3.	يعالج النظام البيانات بدقة							
4.	يتميز النظام بمرونة كافية بحيث يوفر خيارات متعددة للمستخدم							
5.	يعتبر النظام موثوقاً به بحيث يؤدي المهام المطلوبة بدون أخطاء أو مشاكل							
6.	يسمح النظام بتكامل البيانات عبر ربطها ببعض							
7.	يتميز النظام بالكفاءة في سرعة الأداء وتنفيذ المهام							
8.	يسمح النظام بتخصيص المخرجات حسب الحاجة							
9.	يلبي النظام حاجات المستخدم							
10.	يوفر النظام المعلومة عند الحاجة إليها							
11.	يحافظ النظام على سرية البيانات							
<b>(ب) جودة الخدمة :</b>								
(1- غير موافق بشدة ، 7 موافق بشدة )								
1.	يُبدى قسم أنظمة المعلومات الجهوزية الكاملة في حل أي مشكلة تواجه المستخدمين							

							2. يتوافر لدى قسم أنظمة المعلومات برامج وأجهزة حديثة
							3. يتم الاعتماد على قسم أنظمة المعلومات في حل المشاكل التي تواجه المستخدمين
							4. يقوم قسم أنظمة المعلومات بتزويدنا بالخدمات في وقتها
							5. يشعر الموظف بالأمان في تعامله مع موظفي قسم أنظمة المعلومات
							6. يمتلك النظام واجهة استخدام جيدة
							7. يوفر النظام الحل المناسب لجميع طلبات المستخدمين



### (ج) جودة المعلومات :

(1- غير موافق بشدة ، 7 موافق بشدة )

							1. يزودني النظام بمخرجات تتوافق بالضبط مع حاجاتي في العمل
							2. تتاح المعلومات بشكل دائم من النظام
							3. تكون معلومات النظام مصاغة في شكل يمكن استخدامه بسهولة
							4. تعتبر معلومات النظام مهمة
							5. تعتبر معلومات النظام مختصرة وموجزة
							6. تعتبر معلومات النظام مفيدة
							7. يزودنا النظام بمعلومات فورية للمستخدمين
							8. يزودنا النظام بمعلومات دقيقة
							9. يتم تحديث المعلومات في النظام باستمرار
							10. يمكن استرجاع المعلومات من النظام بسهولة



### (د) التوافقية/الملاءمة :

(1-غير موافق بشدة ، 7 موافق بشدة)							
							1. يتناسب استخدام النظام مع طريقة عملي
							2. تتلاءم مخرجات النظام مع احتياجات من البيانات
							3. يتلاءم النظام مع اجراءات العمل الحالية
							4. يعتبر النظام متوافق مع البرامج الأخرى
							5. يعمل النظام على أجهزة حاسوب ذات مواصفات مختلفة وأنظمة تشغيل مختلفة
							6. يتوافق النظام مع الشبكات الأخرى

### (هـ) درجة عدم التعقيد في النظام :

(1-غير موافق بشدة ، 7 موافق بشدة)

								1. لا يتطلب استخدام النظام وقت طويل من مهامه العادية
								2. لا يعتبر استخدام النظام معقد جداً ، لذا من السهل أن تفهم ماذا يحدث خلاله
								3. تعلم كيفية استغلال النظام استغلالاً أمثلاً لا يأخذ وقتاً طويلاً
								4. يشعر المستخدم بالراحة عند استخدام النظام
								5. يمكن القول بأنه من السهل على الموظفين استخدام النظام في ما يريدون فعله

### (و) أثر استخدام النظام على الفرد :

(1-غير موافق بشدة ، 7 موافق بشدة)

								1. يعزز النظام إبداع الموظفين في أعمالهم
								2. يحسن النظام إنتاجية الموظفين
								3. يعزز النظام من جودة اتخاذ القرارات
								4. يعتبر النظام مفيد لإنجاز مهام الأفراد
								5. يوفر النظام إمكانية إنجاز المهام الوظيفية في وقت أقل

### (ح) أثر استخدام النظام على المؤسسة :

(1-غير موافق بشدة ، 7 موافق بشدة)

								1. يقلل النظام التكاليف التنظيمية
								2. يحسن النظام إنتاجية المنظمة/القسم الإجمالية
								3. يسمح النظام بإنجاز الأعمال عبر الممارسات الالكترونية
								4. يزودنا النظام بميزة تنافسية
								5. يزيد النظام من رضا المستفيدين من الخدمة
								6. يتميز النظام بمرونة في تغيير إجراءات العمل (العمليات)
								7. يسمح النظام بالاستغلال الأمثل لموارد البيانات التنظيمية

## Appendix (B): Questionnaire

Islamic University-Gaza  
Dean of High Studies  
Faculty of Commerce  
Business Management Department



Dear Colleague,

I'm gathering research information about "***The Relationship between Quality Characteristics and the Effectiveness of ERP in Post Implementation Stage at UNRWA's Gaza Field Office***" in order to complete my thesis in business administration at the Islamic University of Gaza.

I'll be grateful to you if you would answer the questions of this questionnaire, with reserving your right not to answer any question you do not want to answer, noting that the survey will take nearly 15-20 minutes to complete.

Please read the instructions associated with each section and each question carefully and answer honestly. Your responses to the items asked in this questionnaire will be treated with total and absolute confidentiality and will be used for research science purposes only.

Thank you for your cooperation and for taking the time and effort to fill out this questionnaire

Researcher : Ismail Abu Amra

**Part One: Personal Information:**

1. Gender :  Male  Female
2. Marital Status :  Married  Unmarried
3. Age :  Less than 5 years  from 25-35 years  
 From 36-45 years  more than 45 years
4. Number of experience years :  
 Less than 5 years  from 5-10 years  More than 10 years
5. Qualifications :  Secondary school  Diploma  
 Bachelor degree  Master degree  
 PhD or above
6. Post Title :  Employee  Senior Staff   
Department Head/Deputy
7. Grade :  5-10  11-15  16- 20

**Part Two: The following statements describe the usage of REACH**

Please indicate to What extent do you agree on the following statements regarding system quality? the appropriate number based on the scale: (7–strongly agree, 1–strongly disagree)

<b>1. System quality :</b>								
#	Item	1	2	3	4	5	6	7
1	REACH is easy to use							
2	REACH is easy to learn							
3	REACH is always processes data accurately							
4	REACH is flexible- it avail many options to the user							
5	REACH is reliable, it performs tasks without mistakes and problems							
6	REACH allows data integration							
7	REACH is efficient							
8	REACH allows for customization							
9	REACH meets user’s requirement							
10	REACH has timely information							
11	REACH has data confidentiality							
<b>2. Service quality :</b>								
<b>To what extent do you agree on the following statements regarding service quality?</b>								
7–strongly agree, 1–strongly disagree.								
#	Item	1	2	3	4	5	6	7
1.	When users have a problem, the IS dept. shows a sincere interest in solving it							
2.	The IS dept. has up-to-date hardware and software							
3.	The IS dept. is dependable When you face any problem							
4.	The IS dept. provides its services at the times it promises							
5.	I feel safe in my transactions with the IS dept. staff							

6.	REACH system has a good interface							
7.	REACH provides the right solution to requests							

**3. Information quality**



**To what extent do you agree on the following statements regarding information quality?**


#	Item	1	2	3	4	5	6	7
1	REACH provides output that seems to be exactly what I need							
2	Information needed from the REACH is always available							
3	Information from the REACH is in a form that is readily usable							
4	The information on REACH is important							
5	The information on REACH is brief/concise							
6	The information on REACH is usable							
7	REACH provides prompt information to users							
8	REACH provides you with accurate information							
9	The information contained in REACH is timely and regularly updated							
10	The information in REACH are easily retrievable							

**4. Compatibility :**

**To what extent do you agree on the following statements regarding compatibility?**

#	Item	1	2	3	4	5	6	7
1	Using REACH fits into my work style							
2	Data captured in REACH and their format match my current data needs							
3	The REACH matches my current processing procedure							
4	REACH is compatible with other's software							
5	REACH is compatible with other's hardware							



6	REACH is compatible with other's networks							
<b>5. Lack of Complexity:</b>								
<b>To what extent do you agree on the following statements regarding Lack of Complexity?</b>								
#	Item	1	2	3	4	5	6	7
1	Using REACH didn't takes much time from my normal duties							
2	Working with REACH is not complicated, it is easy to understand what is going on							
3	It doesn't takes too long to learn how to use REACH effectively and efficiently							
4	I feel comfortable when I use REACH							
5	It is easy for UNRWA's employees to get the REACH to do what they want it to do							

**6. Individual Impact :**

**To what extent do you agree on the following statements regarding individual impact?**

#	Item	1	2	3	4	5	6	7
1	REACH enhances individual creativity							
2	REACH improves individual productivity							
3	REACH enhances higher-quality of decision making							
4.	REACH is beneficial for individual's tasks							
5	REACH saves time for individual tasks and duties							

**7. Organizational Impact :**

**To what extent do you agree on the following statements regarding organizational impact?**

#	Item	1	2	3	4	5	6	7
1	REACH reduces organizational costs							
2	REACH improves overall productivity							
3	REACH enables e-business/e-commerce							
4	REACH provides us with competitive advantage							
5	REACH increases customer service/satisfaction							
6	REACH facilitates business process change							
7	REACH allows for better use of organizational data resource							

**Appendix (C): List of Experts who Reviewed the Questionnaire**

<b>Name</b>	<b>Place of Work</b>
Dr. Sami Abu Naser	Al-Azhar University
Dr. Ahmad Mahmoud	Al-Azhar University
Dr. Wasim El Habil	Islamic University
Dr. Iyad El Agha	Islamic University
Dr. Hisham Madi	Islamic University
Dr. Sami Abu Rous	Islamic University
Dr. Tamer Fatayer	Al-Aqsa University
Dr. Hazem El Baz	Al-Aqsa University