Evaluating Enterprise Resource Planning:
A Study on Aqaba Water Corporation

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Abstract:

Purpose - This paper aims to investigate the factors affecting Enterprise Resource Planning Systems implementation and Performance through measuring employee's satisfaction as they are End users of this system at Aqaba Water Company.

Methodology-The paper represents a case study based on qualitative and quantitative data, where interviews with three of the Company's managers were made and a survey with a Likert 5-points scale was distributed to all Company members.

Findings - ERP Systems implementation have significant effects on the employee satisfaction and performance of Aqaba Water Company. Moreover, along with Perceived Usefulness, Perceived Ease of Use, Behavioral Intention, Training, System Quality, Management support, and User Satisfaction variables have important factors that affect the success of Enterprise Resource Planning Systems implementation, the study found that all the previous mentioned variables are very important in achieving satisfied users especially having a high Quality System as in Aqaba Water Co., at the end system users were found satisfied with the system as it was easy to use , useful for their work, they were supported by their managers to use it, had on job training, and all that made them willing to use the system in their daily work as well as the future.

Practical implications - This research has implications for organizations that aim to assess and predict the adoption and user satisfaction of their ERP systems.

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Paper Type-Case Study

1. Introduction

The arising new technologies and the modern development in Information Technology sector provides a variety of tools and mechanisms for organizations to achieve their goals, making a good chance to build competitive advantages in several areas of management. Technology enhances the overall effectiveness and efficiency of an organization functions and processes. However, the success of organization depends on selecting the right technology, providing a proper infrastructure, as well as convenient culture and management policies. According to Porter (1991), it is seen that the key to organization's success in an increasingly competitive globalized market, is the ability to maintain and increase a competitive advantage. In this new paradigm, organizations cannot compete on their own. Success can only be achieved through cooperation with other organizations like truly integrated and flexible supply chains (Lambert & Cooper, 2000). In a study of Meulen & Rivera (2014), they understood that if an organization designated substantial percentages of money and flexible resources into firm's several business processes, they are going to meet market expectations. Mahmood et al. (2000) bridge the relationship between investments in technology and company's performance, specifically in the past two decades. However, today's organizations are skeptical when making decisions about those investments because they wait for a distinctive performance.

1.1. ERP Definition and Description

Enterprise Resource Planning (ERP) is a natural evolution of the 80's manufacturing resource planning (MRP II), inheriting all the concepts and theories that date back to the 60's with first attempts to rationalize lead times and possession stock costs. ERP rapidly became the standard enhancing operational efficiency with the integration of business processes throughout all organization. The ERP system started to emerge in the 1990s. While earlier systems focused on certain operations such as production, planning, and manufacturing related operations, ERP system differs from its predecessors by its ability to cover the whole organization's operations and support all of the key business processes at various business functions. ERP systems are standard adaptable software that can be customized to satisfy organization's needs. It composed of several modules, such as human resources, planning, sales, inventory, finance and production that are linked together with a single unified software that share information and data; providing cross-organization and flawlessly integration throughout the organization; allowing employees and business managers to generate reports that simplify business processes. The ultimate goal of ERP software vendors is to provide flexible modules that have more ability to share effectively business data and information.

The definition of ERP systems may differ based on entity concerned. Usually, ERP systems defined as comprehensive software packages that integrate all business processes and functions in order to provide a complete view from one IT architecture, in construction field the ERP system can be defined as "IT based computer platform that allows the integration of various business processes of an organization in order to increase efficiency, and thus profits, using a single database". Organizations are willing to invest in ERP systems in order to integrate their business processes into one IT architecture, simplify operations and speed up the decision-making process, improve customer services; efficient distribution system; and reduce operational expenses, and achieve corporate growth. ERP systems adoption is spreading all over the world that many organizations from different industries and sectors are starting to use these systems in many functional areas.

There are three main reasons why organizations are implementing an ERP system, firstly is to create a common database throughout the entire enterprise. Secondly is to help automate the organization's business process. The third reason is to generate and get access to information in a timely fashion. It is necessary to quantify the influence of success factors on the implementation process of ERP systems. understanding these factors contributes directly to choose the appropriate implementation strategies. Thus, we have chosen to study the effect of implementation of ERP system on the performance of Aqaba Water Company. The main objectives of this study are as follows: (1) to examine whether the implementation of ERP impacts organizational capabilities which in turn enhance firm performance (2) define the major challenges facing Aqaba Water Co. during the implementation process, and (3) identify the critical success factors and quantify their impact on ERP implementation. These objectives will be achieved using a questionnaire survey designed to collect data from ERP users in Aqaba Water Co. The collected data will be analyzed to investigate the perceptions of ERP users in terms of implementation success of such systems. The findings of this research are expected to provide leaders in the organization with guidance to implement ERP systems effectively and efficiently.

1.2. Aqaba Water Co. and ERP Implementation

Aqaba Water Company was established in 2004, its main goal is to increase the operational efficiency of the water and wastewater sectors in Aqaba Special Economic Zone in particular and the Governorate of Aqaba in general, in order to cope with the increasing demand for water and sewerage services and to improve the services provided to the public, which reflects positively on the investment climate and provides the suitable environment for all investment sectors. The Company started using ERP (ERP dynamic 365) in 2017, starting in IT department, from where the implementation spread to most of the organization's Departments; Human Resources, Accounting and Finance, Procurement and Warehouses, Auditing, Employee Self-Service, and Field-Service.

The main objectives of applying the system were to (1) reduce operational expenses (such as reducing paper work and spread sheets, reduce time and effort) (2) asses the decision-making process. (3) improve customer services (3) efficient distribution system expenses, these objectives can be classified into: (1) Operational Benefits, (2) Managerial Benefits, (3) Strategic Benefits, (4) IT infrastructure benefits, (5) Organizational benefits. In our study, we are looking forward examining whether the implementation of ERP system was successful in achieving the previously mentioned objectives. But the main question is: has the implementation of (ERP Dynamic 365) System in Aqaba Water Company had a

successful impact on the Company's performance and outcomes? how about the employees working at the company, are they satisfied with the new change?

The findings of this research are expected to help the company find out what variables can affect the success of the system being implemented, improve the quality of the system, information, and the quality of services that can affect the level of use and the level of user satisfaction, it also will help provide us with guidance to implement ERP systems effectively and efficiently.

The structure of the remaining of this paper is as follows, section 2 displays several previous studies on ERP implementation with their results, section 3 presents the research methodology along with the identification of the technique applied to the proposed model and that of some existing models are compared, test hypotheses of the study, sampling and data collection, section 4 will present the data analysis and results, and finally the paper is concluded in section 5.

2. Literature Review

2.1. Enterprise Resource Planning (ERP)

Enterprise resource planning (ERP) systems are defined as "comprehensive, packaged software solutions that seek to integrate the complete range of a business's processes and functions in order to present a holistic view of the business from a single information and IT architecture" (Klaus & Blanton, 2000, p. 141). Uppström et al. (2015) define ERP systems as modules composed together of software packages with the modules containing human resources, sales, finance, production and other modules to provide integration for the whole organization to make information flow seamlessly through the business processes. Furthermore, from the era of 1990 until present, ERP systems became the standard system, replacing other legacy system such as MRP & MRP II. The market has become more mature and the expectation of ERP systems to become more flexible and adaptable is getting higher than before. Klaus & Blanton (2010) stated that stakeholder's resistance, which is defined as "the behavioral expression of a stakeholder's opposition to a system implementation during the implementation," was an important issue in the implementation of enterprise systems (ES). Peslak (2016) stated that ERP system consists of integrated modules that allow business process that cross business functional areas; one large real-time database that allows for a single entry and repository for information across business functions; and seamless business transactions across business functions. Subsequently, research in ERP increased over the past years. To acquire a general idea of the evolution of published literature about ERP, main academic databases were scanned for the term "Enterprise Resource Planning" in the period 1990 to 2019.

2.2. Recent ERP studies

ERP systems are designed to deal with the fragmentation of information, taking role as an integrative mechanism connecting diverse organizational units by shared data and software modules. There are many benefits of using ERP systems such as solutions to the problems of legacy systems, increased competitiveness, reduce development risk, and business efficiency (Themistocleous & Irani, 2001). Despite many advantages, ERP system implementation involves significant commitment of time, money, and effort. Hence, proper management of an ERP implementation is an active research area. For that reason, identification of the ERP critical success factors grabs remarkable attention of

researchers. While some of the studies analyze critical success factors and critical failure factors together (Al-Mashari et al., 2003).

Another remarkable study was conducted by (Somers & Nelson, 2001). In their study, case studies across 86 organizations were compiled, and impact of the ERP implementation was described. ERP adoption is mainly studied using several models and extensions mainly based on the contribution of psychology's Theory of Planned Behavior (TRA) (Fishbein & Ajzen, 1975) in IS technologies research. Although there are various models that explain user's adoption, the Technology Acceptance Model (TAM) (Davis, 1986, 1989) is the most referenced in this area of research, researchers working on ERP system's success in most cases apply the DeLone & McLean (D&M) IS success model as the main tool to evaluate the system's implementation success (Mardiana et al., 2015). In this case, success is understood as net benefits for the individual and the organization, where user satisfaction and use are the main success drivers (Delone & McLean, 2003). Other findings of the critical factors were taken into consideration to uncover the main determinants of ERP success and adoption (Al-Mashari et al., 2003). Accordingly, a set of papers about ERP adoption, success, and the main influencing dimensions were selected, each from a different publication to have a wider perspective on the matter.

Sharma & Shah (2015) advocate the implementation of Cloud ERP for improved supply chain productivity. Similarly, previous researchers (HassabElnaby et al., 2012; Ruiz-Mercader et al., 2006) explore the evidence that throws light on the relationship between Cloud ERP and organizational performance. Costa et al. (2016) found that system quality is a decisive determinant of user satisfaction with the ERP system, in practical terms, special care about system quality must always take place. All system components ought to be carefully defined in a holistic approach, to achieve perfect balance and consequently influence user satisfaction and adoption, where management support is essential. Those findings are helpful to companies involved in the ERPs implementation process. By evolving an active participation of management, and also paying particular attention to system quality, user adoption, and user satisfaction is achieved.

A previous study by (AboAbdo et al., 2019) showed that top management involvement and awareness, training and support for users, and implementation team composition are the most significant factors of ERP implantation success. The ERP implementation process is an IT process in its core, most of the critical success factors point that the human factors are the most critical. In this regard, the top management, the implementation team composition and training of users are reported the most critical success factors. Chen (2019) stated that in the implementation of an ERP system, there are several very important things which are the keys to the success of implementing an ERP system and should be improved by companies and ERP system developers, namely management commitment and training in the use of ERP systems. Darmaningrat et al. (2019) found that the most common reason of ERP implementation failure is a mixture of insufficient planning and too much customization of the ERP software. ERP system seems to convey special on-going risks, due to its uniqueness. They identified several factors and developed a framework to analyze and prioritize these factors based on the order of their importance. These factors, in the order of importance, include lack of top management commitment, ineffective communication, insufficient training, lack of user support, poor project management, relying on legacy systems, interdepartmental conflicts, composition of project team, failure in redesigning business processes, and lack of clarity about required changes.

3. **Research Methodology**

This section discusses the research design, provides a detailed outline of the approach used, and highlights the elements of the study.

3.1. Model Proposal

We have chosen a model that was previously adopted by (Costa et al., 2016), and have done some modifications on it in order to fit our study, we are going to discuss the main elements of the model and the reason for building it along with the reason for choosing it for our study case in this section. It was mentioned in the literature review section above, one of the most used models to study ERP adoption is the TAM. There are many variables that can explain why firms adopt information technology, and the research of (Davis,1986) mentioned two main independent variables: perceived usefulness (PU) and perceived ease of use (PE). Therefore, the system external variables have an indirect influence on the attitude toward using the system through the direct impact on PU and PE. The second model from which the study model was derived is the theory of planned behavior by (Ajzen, 1991). Where he assumed that attitude to use cannot exactly explain someone's behavior. He concluded that the subjective norms and the perceived behavioral control also had a huge impact.

Venkatesh & Davis (2000) had worked on TAM model to come out with the improved one the TAM 2 (Technology Acceptance Model 2) which assume that social influence and instrumental processes influence usage intentions, (Venkatesh & Bala) also had further changes on TAM2 in 2008, to come out with a more improved model: TAM3. Having a more comprehensive approach, that indicated new elements PE (Perceived Ease of Use). It is very convincing -according to previous studies- that TAM is excellent to study IT (information Technology) adoption; Thus, it is used by researchers to study ERP.

Moving toward studying user satisfaction. it was clear that The DeLone & McLean (D&M) model for the success of Information system is the most used model, the researchers assumed in this model that information quality has an indirect effect on individual and organizational impact through the independent dimensions of use and user satisfaction**.** Later on, they underlined the importance of "Intention to Use" and "Use" variables inside the model, leading to significant relations for the study. Last but not least, individual and organizational impact were integrated into "Net Benefits" this last construct is assumed to be the main driver of these net benefits in several applications of the model, never forgetting that both acceptance and user satisfaction theories should be considered when studying user understanding of any information system. The researchers concluded that user satisfaction, had huge capabilities. Therefore, User satisfaction is the most important factor when investigating Information systems success. According to the previous information, we are going to discuss how do System Quality, Management Support and Training affect ERP system user satisfaction.

According to Costa et al. (2016), there are three relevant external factors that were identified: Training (TR), Management Support (MS) and System Quality (SQ). To measure these factor's effect on ERP implementation and success, important items were included evaluation: Perceived Usefulness (PU), Perceived Ease of Use (PE), Behavioral Intention (BI), actual Use (USE) and User Satisfaction (UT) to study the effect on the end users. We decided to exclude (Use) from our model, since perceived usefulness indicates the system usage. Perceived usefulness (PU) is the degree of which a person believes that using a particular system would enhance his/her work performance, while perceived ease

of use (PE) is the extent to which a person believes that using a particular system would be free of effort. Behavioral intention (BI), is the mediator for the user satisfaction. BI is the degree of an individual will to use the system in his/her job.

Previous Researches show that to guarantee a successful ERP system implementation, it is fundamental for an organization management to drive an organizational commitment. This commitment is critical to resolve conflicts and to help to ensure that cooperation towards the same goal. Encouragement to use and support for usage are key factors to management support (MS) and help to build a perception of the system's usefulness. System quality (SQ) is the degree to which the system is easy to use for accomplishing some task" system quality proven to be one of the most important constructs and exhibited the highest score among the external factors effect on the model. Training (TR) is very important for users to cope with all the functions and responsibilities. training is a measure of how easy it is for users to be trained on the system, to understand the content material, and to navigate through topics applied to daily tasks. This variable is relevant because it offers some insight into organization's culture toward human resources. User satisfaction (UT) is defined as the recipient response to the use of the output of an information system.
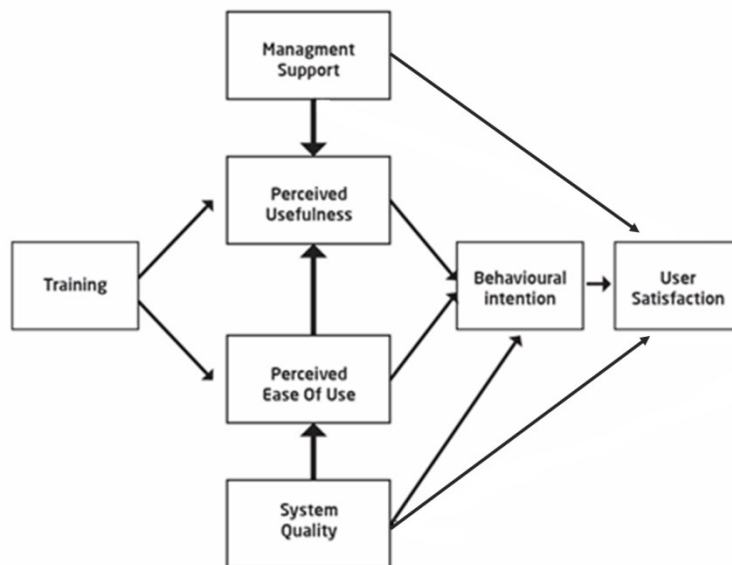

Figure 1. Proposed Model

Note: all previously mentioned models are provided in the visual section at the of this report.

3.2. Hypotheses to explain ERP Use and User Satisfaction
We believe that perceived usefulness (PU) is a good predictor of user's behavioral intention (BI) toward the use of ERP system.
H1. Perceived Usefulness has a positive impact on Behavioral Intention.
Perceived ease of use directly influences perceived usefulness. the impact was mediated by PU. This is because users are willing to adopt an application because of the functions it does for them, and for how easy it is for the system to do the functions"

H2. Perceived ERP Ease of Use of has a positive impact on Perceived Usefulness.
Hence, we (as well as Costa et al., 2016) believe that perceived ease of use will have a positive effect on behavioral intention.
H3. Perceived ERP Ease of Use has a positive impact on end users behavioral Intention.
Training has a very important impact on how successful is ERP system implementation and maintenance. employees need to know that the right flow of information can help the organization as well as their own tasks, Thus, we believe that training will have a positive effect on both perceived ERP usefulness and ease of use.
H4. User Training has a positive impact on Perceived ERP Usefulness.
Training strongly effects the perceived system ease of use.
H5. User Training has a positive impact on Perceived Ease of Use.
Recent studies showed a significant impact of System quality on the perceived ERP ease of use.
H6. ERP System Quality has a positive impact on Perceived ERP Ease of Use.
Firms found in previous studies that the most significant influence of user behavioral intention was the ERP system quality. Therefore, we believe that the ERP system quality may have a positive effect on user behavioral intention.
H7. ERP System Quality has a positive impact on Behavioral Intention.
System quality in previous studies was also considered to be the most critical construct to explain user satisfaction, thus, we assume that system quality has a strong and positive effect on user satisfaction.
H8. ERP System Quality has a positive effect on User Satisfaction.
Management support has a very important effect in generating the usefulness of Information Systems, furthermore having management support is essential to motivate system's use leading to more satisfied users. Thus, we consider that management support positively affects the ERP usefulness as well as ERP user satisfaction.
H9. Management Support has a positive impact on Perceived Usefulness.
H10.Management Support has a positive impact on ERP User satisfaction.
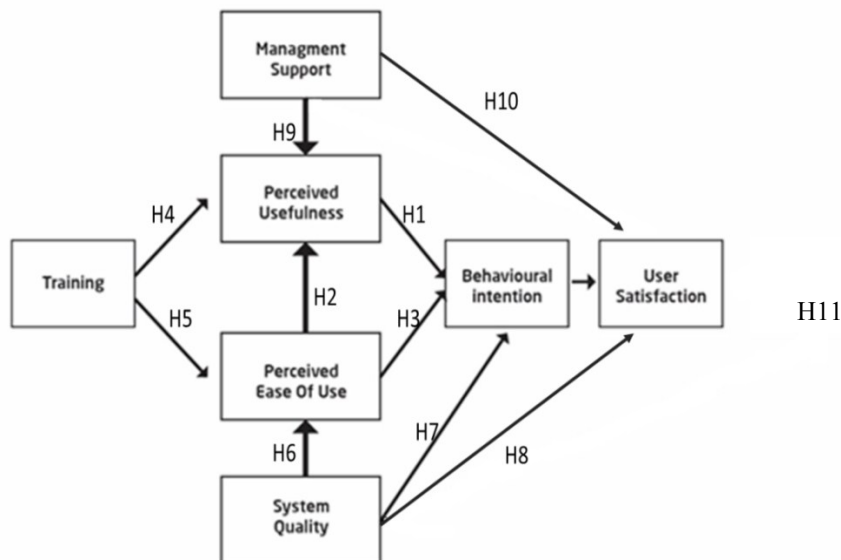
Figure 2. Research Hypotheses

3.3. Measurement Instrument

This research is descriptive research with a quantitative and qualitative approach. The population of this research is Aqaba water company's employees who have used an enterprise resource planning business system of 150 Employee. As for the quantitative approach, a questionnaire was designed to investigate the impact of various success factors on the implementation process of ERP system. The questionnaire prepared based on a research model taken from a study conducted by Costa et al. (2016), where the success factors suited the situation of the company under study, we have made some modifications to let it fit our study, by eliminating questions related to (USE) variable, and question number 10 in (BI) section as it is very similar to the other questions (measures) related to measuring (BI). The questionnaire consists of seven parts (factors): Training, System Quality, Perceived Usefulness, Perceived Ease of Use, and Behavioral Intention, Management Support, User Satisfaction. These six parts (factors) were addressed by 25 questions. It consisted of two sections, namely:

1. Part A-demographic information such as Gender, Department, and Years of Experience.
2. Part B – Enterprise Resource Planning system success factors.

Respondents were asked to indicate the extent to which they agreed with each of the statements indicated in Part B of the questionnaire using a five-point Likert scale, ranging from strongly agree (5) to strongly disagree (1). Likert scales have a high degree of validity, provide single scores from a set of items, are reliable, provide for ranking of respondents and are easy to construct (3). The questionnaire was administered to a large group of respondents from the following departments: Human resources, purchasing, warehouse, Employee Self-Service, Internal Auditing, Field-Service and finance accounting. The final survey instrument was then ready to send. Appendix A contains the final measurement items used for testing the structural model.

The second data source were 4 semi-structured interviews with four members from Aqaba water company. Three interviewees were in top management positions, and the other was in a senior position. The interviewees have been chosen as they are considered the super enterprise users, who make decisions on the system and make changes on its data. The same interview guide was used for all the interviews, but with different types of questions depending on business field of each department. Managers were encouraged to describe how they dealt with the system and what is the difference between doing their jobs before and after using this system.

The first interview was with the financial manager, Mr. Alaa' Addin Mahmoud, who briefly spoke about how the current system allows him to easily see all the financial transactions that are being issued minute by minute through dashboards on the system's interface. He as well talked about the full systemic approval cycle that they use in the department – all department employees- to approve or reject those transactions, and how he can easily export a financial report only by a one click, he added that the work has all become paper less.

The second interview was with the ERP application engineer, Ms. Sanna Batayneh, who talked about the processes her company followed to be able to use their current system, and about her own experience with this system, and with giving us some examples of how this system succeeded in managing their business by using one interface.

The third interview was with the IT Manager, Mr. Ahmad Abu-Soud, who showed us various presentations of his company's procedures, then how they engineered them from

manually use to a system full-use. he talked about the full integration between the systems that are used in other departments and ERP system, and he gave us an example of the Scada system that their Technical maintenance department uses for reading the operational details of their underground wells and to be updated of their status, he as well gave us an example of an issue occurred once in the field where one of the pumps which drives water to various utilized area has been broken where ERP system role in the situation was that it sent him a notification with the pumps details describing which pump is broken and other details of the malfunction. and he furtherly detailed how each department uses the ERP system and what are the interfaces and the layouts that are being showed for each employee based on his job authority, he added that his company has only 20 enterprise users and each employee has a team reviewer user. The enterprise user is the user that can post the financial transactions and do a change on the system, and the team reviewer user is only allowed in the section of self-services that are related to HR Practices and the stationery and office's maintenance Processes, and as we asked him about the training, they took to learn using the system, he mentioned that the training was mostly an on-job training in addition to the courses some of Company members has taken.

The fourth interview was with Mr. Ra'ed Zuraiqat, the Procurement and Warehouses manager, who advised that his department still use some papers procedures since their company is a governmental company and all their "Request for proposals" that their cost is more than JOD 5000, must be published in the newspapers, also their department as it deals with external people (Suppliers and vendors), and the ERP system is an internal system only , they have to use emails, verbal conversations to communicate with them, also they must receive all offers in Sealed envelopes, he mentioned that they took a training course in addition to on job training which helped them in the department to become keen on using the system.

All interviewees were encouraged to speak about their experiences of use the ERP system and to give examples of how this system influence their communications with other employees and their daily jobs. We perceived the informants as willing to speak about the questions we asked, and we did not experience any "branded" communication during the interviews.

3.4. Sampling and Data Collection
Aqaba Water Co. employees from several levels are considered end users who work with ERP systems in their organization routine tasks, but system excessive users (enterprise users) are only 150. The research population is employees in Aqaba Water Company using ERP. based on the Slovin formula, the total sampling of the population of 150 users of the ERP information system is:
n= N / (1+ (N x e^2)), where N: population, n=sample size, e: error margin
Since we have chosen the research to have a Confidence Interval of 95%, then error must equal 5%
n = 150 / (1+ (150 x 0.05^2))
n = 150 / (1+ (150x 0.0025))
n = 150 / (1+ 0.375)
n = 150 / 1.375
n = 109.09
The value of n shows the number of samples of 109.09 rounded to 109 Therefore, the number of sampling required for this research is 109 sampling.

The data was collected qualitatively through interviews with three managers from three departments in the company (Manager of Finance, Manager of IT, and Manager of Procurement and warehouses) and quantitively by the means of an online survey addressed by email to end-users that work with ERP systems in the company routine tasks, activities and business processes. Employees were reached by the assessment of Aqaba Water Co.'s IT department which sent emails to end-users to aid this endeavor. The Demographic Data of employees who responded to the survey are reported as follows:

Table 1. Demographic profile

Category	Category	Frequency	Percentage
Gender	Male	78	71.6
	Female	31	28.4
	Total	109	100
Age	21 to less than 30 years old	32	29.4
	30 to less than 45 years old	65	59.6
	45 and above	12	11
	Total	109	100
Department	Human Resources	17	15.6
	Accounting and Finance	9	8.3
	Procurement and warehouses	10	9.2
	Auditing	5	4.6
	Field-Service	17	15.5
	Employee Self-service	38	34.9
	Information Technology	13	11.9
	Total	109	100
Experience	Less than 3 years	13	11.9
	3-less than 5 years	19	17.5
	5 years and more	77	70.6
	Total	109	100

As shown above in table (1), the responses of the study shows that there are typically more males working at the company than females, most of them are with ages between 30 and 45 (middle aged) and workers are mainly with experiences above 5 years, where ERP system is most used for employee's self-services.

4. Data and Results

The evaluation of Enterprise Resource planning adoption in Aqaba Water Company has been done by studying the effect of the various variables of our proposed model on achieving ERP user satisfaction, in which they have been measured using 5-points Likert

scale, descriptive analysis was conducted in order to study the characteristics of the sample as well as the independent and dependent variables, reliability and validity analysis were conducted through CFA and SEM analysis.

4.1. Descriptive Analysis

In the descriptive analysis, mean and standard deviation were calculated, where the mean refers to where data is centralized around, and standard deviation measures the variation of the data, here, in this study we need small values of standard deviation for each variable and each measure to ensure that data is distributed very close to the mean, the level of each measure was determined using this equation:

(Highest point – lowest point)/highest point = (5-1)/5=4/5=0.8 (compared with the means)

1-1.80 very low

1.81-2.6 low

2.61-3.4 moderate

3.41-4.2 high

4.21-5 very high

The following two tables (Table 2 and Table 3) in this section shows the descriptive analysis results:

Table 2. Descriptive analysis of variables

Type of Variable	Variables	Mean	Standard Deviation	Level	Order
Independent	Training	3.067	1.21782	Moderate	3
	System Quality	3.435	1.11086	high	2
	Management Support	3.610	1.18509	high	1
Mediator	Perceived Usefulness	3.514	1.09916	high	2
	Perceived Ease of Use	3.461	1.11501	high	3
	Behavioral Intentions	3.642	1.20779	high	1
Dependent	User Satisfaction	3.417	1.12580	high	1

The table above shows that Training has a moderate mean which refers to that responses of users might have not got enough training, Management Support, System Quality are highly existing, while Perceived Usefulness, Perceived Ease of Use, Behavioral Intentions and User Satisfaction are also highly existing and this is a good sign for now.

Table 3. Descriptive analysis of variables measures

Variables	Mean	Standard Deviation	Level	Order
Training				
TR1	3.03	1.287	moderate	3
TR2	3.05	1.265	moderate	2

TR3	3.13	1.233	moderate	1
System Quality				
SQ1	3.56	1.150	high	1
SQ2	3.48	1.167	high	2
SQ3	3.36	1.229	moderate	5
SQ4	3.45	1.221	high	3
SQ5	3.39	1.193	moderate	4
SQ6	3.39	1.193	moderate	4
Management Support				
MS1	3.55	1.243	high	2
MS2	3.67	1.262	high	1
Perceived Usefulness				
PU1	3.53	1.175	high	2
PU2	3.48	1.206	high	3
PU3	3.45	1.182	high	4
PU4	3.60	1.218	high	1
Perceived Ease of Use				
PE1	3.45	1.287	high	3
PE2	3.45	1.174	high	3
PE3	3.47	1.167	high	2
PE4	3.48	1.229	high	1
Behavioral Intentions				
BI1	3.65	1.272	high	1
BI2	3.63	1.207	high	2
User Satisfaction				
UT1	3.46	1.198	high	1
UT2	3.36	1.175	moderate	3
UT3	3.46	1.190	high	1
UT4	3.39	1.312	moderate	2

4.2. Assessment of Measurement Model

To test the model reliability as well as the properties of each item in it, a CFA (Confirmatory Factor Analysis) test was conducted, table (4) below shows Properties of the fit model, factor loading of each measurement item was recorded, as it is shown below, it is pretty clear that there is a huge evidence of convergent validity since all factor loadings exceed 0.5, and as a result of that Composite reliabilities exceeded 0.6 indicating

a huge consistency in scale items , AVE (Average Variance Extracted) also exceeded 0.5 confirming the convergent validity, Cronbach alpha's values all exceeded 0.7 and this is also an evidence on internal consistency.

Composite Reliability= $(\sum \lambda i)2/((\sum \lambda i)2+ \sum V(\delta i))$

AVE= $\sum \lambda i2/(\sum \lambda i2+ \sum V(\delta i))$, λi = factor loading, V (δi) = Error Variance of indicator variables

The Data below Represents a fit and reliable model that doesn't need and modifications.

Table 4. Properties of the fit model

Construct and Indicator	Factor Loading	Std. Error	Square multiple correlation	Error Variance	Cronbach Alpha	Composite Reliability	AVE
Perceived Usefulness					0.939	0.909	0.715
q1	0.782	0.085	0.612	0.39			
q2	0.887	***	0.786	0.21			
q3	0.837	0.079	0.701	0.29			
q4	0.869	0.077	0.753	0.25			
Perceived Ease of Use					0.937	0.908	0.711
q5	0.866	***	0.749	0.29			
q6	0.736	0.088	0.542	0.47			
q7	0.980	0.072	0.791	0.19			
q8	0.863	0.079	0.745	0.27			
Behavioral Intentions					0.946	0.921	0.853
q9	0.952	***	0.907	0.15			
q10	0.944	0.048	0.891	0.16			
Training					0.963	0.941	0.843
q11	0.920	0.045	0.846	0.21			
q12	0.953	***	0.909	0.12			
q13	0.934	0.049	0.872	0.16			
System Quality					0.969	0.954	0.755
q14	0.850	0.067	0.722	0.26			
q15	0.892	0.063	0.796	0.19			
q16	0.884	0.067	0.782	0.23			
q17	0.912	***	0.833	0.17			
q18	0.880	0.066	0.775	0.22			
q19	0.859	0.069	0.737	0.26			
Management Support					0.882	0.852	0.513
q20	0.830	***	0.905	0.15			
q21	0.951	0.071	0.689	0.49			
User Satisfaction					0.942	0.908	0.712
q22	0.802	0.077	0.643	0.37			
q23	0.811	0.075	0.685	0.34			
q24	0.894	0.067	0.800	0.19			
q25	0.879	***	0.773	0.26			

4.3. Assessment of Structural Model

The model quality was assessed through SEM analysis (Structural Equation Modelling) to examine the model Hypotheses, and the analysis as shown in table 5 and 6 shows the measurement model fit indices , and the Model Hypothesis Respectively where the model

is fit enough as chi-square needs to be as low as can be to indicate higher correlation between the various data, chi-square equals 282.799 with 10 degree of freedom (P=0.00 < 0.05) and RMSEA (Root mean square error of approximation) is 0.053 and this is good since it should fall between 0 and 1, other important indices were X^2/df=282.799/10=28.28, IFI (increment fit model)=0.736, CFI (Comparative Fit index)=0.733, GFI (Goodness of fit index)=0.644, NFI (Normed Fit index) =0.729, according to these data the model seems to fit the sample data.

Table 5. Model fit indices

Model	Chi-Square	df	X^2/df	IFI	CFI	GFI	NFI	RMSEA
Initial Model	282.799	10	28.28	0.736	0.733	0.644	0.729	0.053

The SEM analysis revealed that Model Hypotheses are Supported ,Thus our model is valid, Perceived Usefulness affected Behavioral Intentions, H1 was supported, H2 and H3 were Supported, Training affected Perceived usefulness and Perceived ease of use positively thus H4 and H5 were supported, System Quality highly affected Perceived ease of use and User satisfaction as well as affecting Behavioral Intentions but in a smaller amount, H6, H7 and H8 were supported, Management Support affected Perceived usefulness Strongly and User Satisfaction, H9 and H10 were Supported, Perceived Ease of Use affected Perceived Usefulness and Behavioral Intentions, Behavioral Intentions affected User Satisfaction Positively, therefore H11 was supported. The Coefficient of Determination R^2 as shown in Figure 3 below provides a high measure of how well variables affect each other in our model referring to the validity of the model.

Table 6. Summary of proposed results for the theoretical model

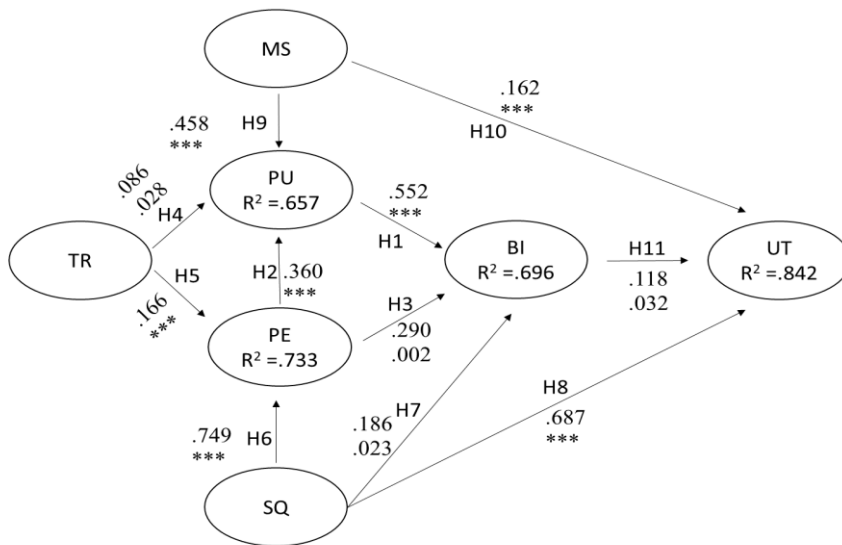|			Estimate	S.E.	T-value	P-value	
PE	<---	TR	.166	.041	4.049	***	supported
PE	<---	SQ	.749	.045	16.717	***	supported
PU	<---	MS	.458	.039	11.620	***	supported
PU	<---	PE	.360	.048	7.552	***	supported
PU	<---	TR	.086	.039	2.202	.028	supported
BI	<---	PU	.552	.069	8.057	***	supported
BI	<---	PE	.290	.095	3.038	.002	supported
BI	<---	SQ	.186	.082	2.274	.023	supported
UT	<---	SQ	.687	.045	15.403	***	supported
UT	<---	BI	.118	.055	2.144	.032	supported
UT	<---	MS	.162	.034	4.820	***	supported

Figure 3. Structural Model Results

5. Discussion and Conclusions

Enterprise resource planning (ERP) systems are used by organizations looking to manage their business functions within a centralized and integrated system, this study offers the main components to look at very closely in order to assess the adoption of ERP systems in the organization , our work model measures the success or failure of the system implementation through examining the user satisfaction which is affected by various factors, which are Training and its effect on Perceived usefulness and Perceived ease of use, Management Support which affects User satisfaction as well as perceived usefulness, System Quality which affects in its turn the Behavioral Intentions to use the system and the User Satisfaction. The Descriptive analysis shows that there were a little focus from the Company on Training the employees on how to use the system and that appeared clear in the responses of the three questions that asked the employees whether they've got enough training courses or not and most of their responses were locating between (neutral to agree) which meant that although they were trained somehow, they have not got an excessive training focusing on the use of the system, this engages with what the interviewees said about on job training, as they mentioned that the training did not actually take place in classes for most of the employees.

We have set the previous Hypotheses under testing and came out with that all of them are very helpful in knowing whether the system is going to pass the test or not, System Quality appeared to be the most important factor to take care of since it had a huge impact on system ease of use and user satisfaction, we also found that usefulness of the system is acquired with less need to excessive training since some tasks are easy to accomplish through -that was also mentioned by the interviewees-, another factor to focus on is the effect of Management Support on Perceived usefulness, in other words. The Company should support its members to use such work enhancing and integrating system and explain and clarify how will the system make work easier and more effective on the

Organization and Individual Basis and that was observed from the responses. The study was conducted on Aqaba Water Company in Aqaba-Jordan, since ERP system has been adopted by the Company for about 3 years, as it showed a good source of data, the results of our study approved that -in fact- The adoption of ERP system in Aqaba Water Co. has been successful since company members are satisfied with it and optimistic about the future of the Company after inserting such useful work integrating system into it.

ERP System nowadays, can be invested to create a competitive advantage, it integrates work process together achieving a smoother and swifter work flow, it can also be environment friendly since it reduces the paper work, most of Competing organizations are interested in adopting such system. According to the literature review , any new system adoption assessment is measured through three main components (management support, system quality and Training) since having managers who motivate the members in the organization to use the new systems adopted through several approaches including compensations and incentives, offering training courses which removes the fogginess for users and make them more familiar of the work done through it, in addition the system quality has the large piece of the pie, as having a system that is clean of glitches, works very well, never falls down, drive the user to continually count on in saving and working data through. Referring to the Hypotheses of the study, the most effective component to examine is the system quality, and after that comes the Management Support and Perceived Usefulness, so for any company which in its turn looking to adopt ERP system it should pay high attention on the quality of the software it is purchasing, motivation of organization members and the needs to cover.

5.2. Limitations
Our study had one limitation, which was that the study was conducted on only one company, that if we had a chance to study more than one company in our region, we would have got more relevant and model supporting data, and we would have a wider look on the system adoption.

5.3. Recommendations and Future Work
According to our study model, we recommend a wider look on System Quality and to Study its effects on further variables rather than Perceived Ease of Use and User Satisfaction from the same model as well as new variables, since it showed a huge influence on the Evaluation Process, in addition, Management Support also shows to be an important factor to also look at.

Appendix A. Measurement items

	Perceived Usefulness	1	2	3	4	5
q1	Using the system improves my performance in my job.					
q2	Using the system in my job increases my productivity.					
q3	Using the system enhances my effectiveness in my job.					
q4	I find the system to be useful in my job.					
	Perceived Ease of Use	1	2	3	4	5
q5	My interaction with the system is clear and understandable.					
q6	Interacting with the system does not require a lot of					

		1	2	3	4	5
	my mental effort.					
q7	I find the system to be easy to use.					
q8	I find it easy to get the system to do what I want it to do.					
	Behavioral Intention	**1**	**2**	**3**	**4**	**5**
q9	I intend to continue using the ERP in the future.					
q10	I plan to continue to use the ERP frequently.					
	Training	**1**	**2**	**3**	**4**	**5**
q11	According to user's program training, please rate the degree of how was training on the system.					
q12	According to user's program training, please rate the degree of how was their understanding of the content training material.					
q13	According to user's program training, please rate the degree of how worthy is navigating through the topics after training and applied in daily tasks.					
	System Quality	**1**	**2**	**3**	**4**	**5**
q14	Our ERP is easy to navigate.					
q15	Our ERP allows me to easily find the information I am looking for.					
q16	Our ERP is well structured.					
q17	Our ERP is easy to use.					
q18	Our ERP offers appropriate functionality.					
q19	Our ERP offers comfortable access to all the business applications I need.					
	Management support	**1**	**2**	**3**	**4**	**5**
q20	My supervisor actively encourages me to use the ERP.					
q21	My organization 's leadership explicitly supports the ERP.					
	User Satisfaction	**1**	**2**	**3**	**4**	**5**
q22	The ERP supports adequately my area of work and responsibility.					
q23	The ERP is efficient.					
q24	The ERP is effective.					
q25	The ERP satisfies me on the whole.					
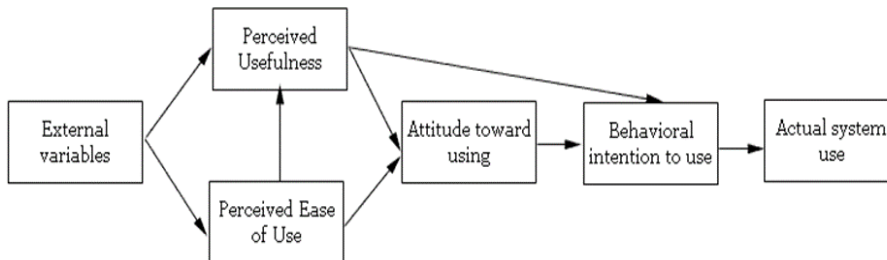
Visual A. TAM (Technology Acceptance Model)
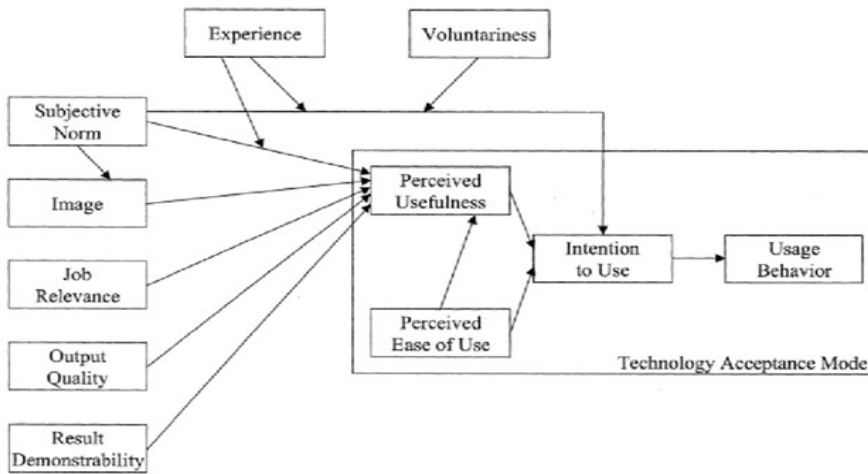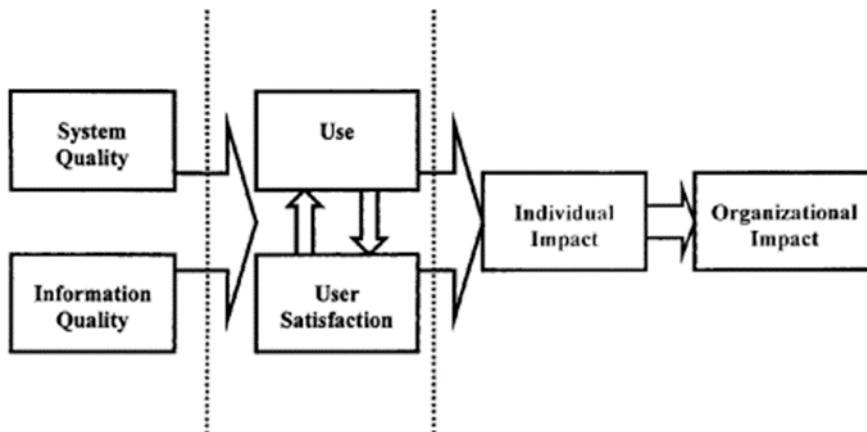
Visual B. TAM2 (Technology Acceptance Model 2)
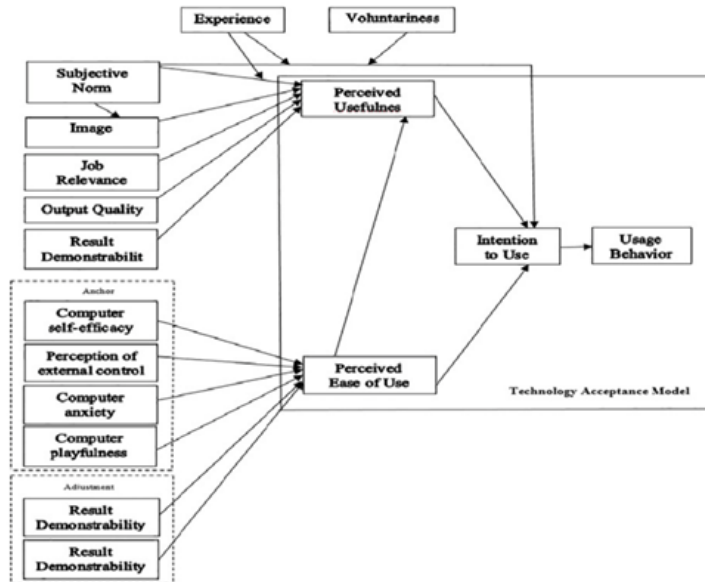
Visual C. TAM3 (Technology Acceptance Model 3)
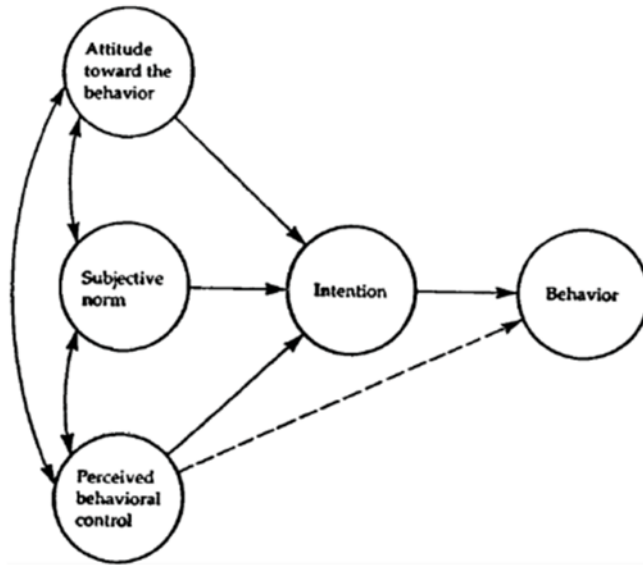
Visual D. Theory of Planned Behavior (TPB)

Visual E. (D&M) Model for IS Success

C.J. Costa et al. / Computers in Human Behavior 63 (2016) 659e671
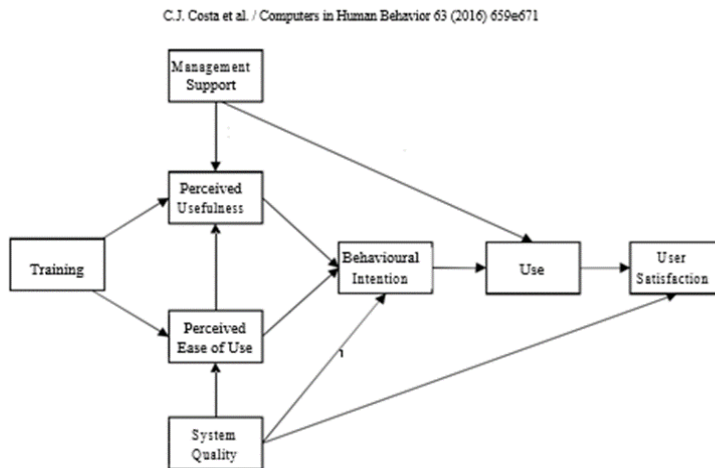
Visual Costa et al. 2016

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