

The Impact of Enterprise Resource Planning ERP System on Business Performance at Arab Potash Company

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ABSTRACT

The enterprise resource planning system (ERP) is one of the systems that is used to link the departments of the organization with each other departments. It is one of the pillars of the revolution in information technology and digital transformation. Also, the ERP also contributes to increase productivity in many institutions.

The study's aim is to detect the impact of the ERP system on business performance in the Arab Potash Company, by studying the three dimensions (effectiveness, efficiency and customer service) of the enterprise resource system and its impact on business performance in the period between 2006-2021, where data were collected from the annual reports of The Arab Potash Company and used statistical packages SPSS can be used to analyze data and test hypotheses, where the study found that there is statistically significant correlation of the ERP system on business performance at Arab Potash company. The study also recommended activating the role of information technology in developing weaknesses in the ERP system.

Keywords: Enterprise resource planning system (ERP), efficiency, effectiveness, Customer services, business performance.

➤ Introduction

Enterprise Resource Planning (ERP) system is an integration software product supporting the daily business operation and decision making. Its system helps many industrial and functional areas at integrated fashion. ERP system is used to automate operation from supply chain, inventory management manufacturing and production and cost accounting. Also, it is used at human resource section. ERP system is used to enhance competitive advantage by increase organization's ability to build accurate and timely information through enterprise and supply chain. (SINGLA, 2008, P.4).

ERP system replaced the manual and complex method through automated cross-functional transactions which reduces the cycle times (time from order to delivered). Also, it can reduce the cash cycle and the time is needed to prepare financial at end of quarter or the end of year. So, it reduces operation capital at financial area.

(Mabert et al. (2000, 2003), McAfee (1999), Stratman (2001) P. 33-53). ERP system is used to collect all organization data during the transaction and saved it centrally, update data in real time this allows origination to edit, retrieve data smoothly at any time, and forecast operation transaction in the future. (Bancroft et al. (1998) P.120).

Centralized transaction and stored facilitate data for organization management, ERP reports provide managers a clear image of performance at all parts of organization which can be used it to improve and take advantage of market opportunities (Scott and Vessey (2000), P. 213-232).

ERP system is seen as the production real-time data across the organization. This is important for a new business environment where effectiveness and efficiency, automation in real time data are the best factors of business success, providing real time data to improve decision making

process, and planning to improve customer satisfaction are the best benefited from ERP. (Duff and Jain, 1998; Gupta, 2000, P. 107-27)

Furthermore, (Daven, 2000; Hedman & Borell, 2002, P. 121-131) state business process improvement, improved connection between business units and enhance productivity, ERP system is the best technology used to improve the integration between all units at an organization and also improves employee productivity by managing of operational transactions and automating individual activity across business, ERP systems increase organization efficiency by utilizing organizational resources.

ERP systems covered business operations and provided:

- Integrated systems
- Common databases
- Real-time operations
- Support all applications / components
- Effective communication tools can manage information between internal and external units. Davenport (1998, P. 121-131).

ERP system proved other benefits such as: cost saving and improved ROI efficiently, reduced risk (automated core business operation, reduce human error) and improved business insight through improved decision making with single aggregated source of truth and real-time data. Davenport (1998, p. 121-131)

ERP system is the most used technology now to add a competitive advantage to the firm, this study aims is to test hypothesis that efficiency, effectiveness, and customer services on firm performance of Arab Potash Company. Sample population will be employee used ERP system at Arab Potash Company. The research population sample random sample will be for the period from 2006 until 2021.

According to above discussion, the study intends to define the ERP system's relevance to business performance at Arab Potash Company where ERP system was used from 2006 till 2021.

H13: customer services have positive effect on business performance at the Arab Potash Company.

➤ Problem of Research

Arab Potash Company is looking to increase productivity and reduce the cycle time between the departments, consequently increasing business performance. The problem was inferred from the work site, as I work in the Information Technology Department as a senior engineer, where I noticed that APC is looking for ways reduce its lost time and improve productivity. the process of improving cycle time will increase the profitability and business performance of APC in the present and the future.

➤ Research Questions

The main question of this study is:

- What is the effect of the ERP system on business performance in the Arab Potash company?

After completing this study, we will be able to answer the below sub-questions:

- What is the effect of Effectiveness on business performance system in the Arab Potash Company?
- What is the effect of Efficiently on business performance in the Arab Potash Company?
- What is the effect of Customer services on business performance in the Arab Potash Company?

➤ Study Hypotheses

To answer the enquiries of this study, the following hypotheses have been formulated:

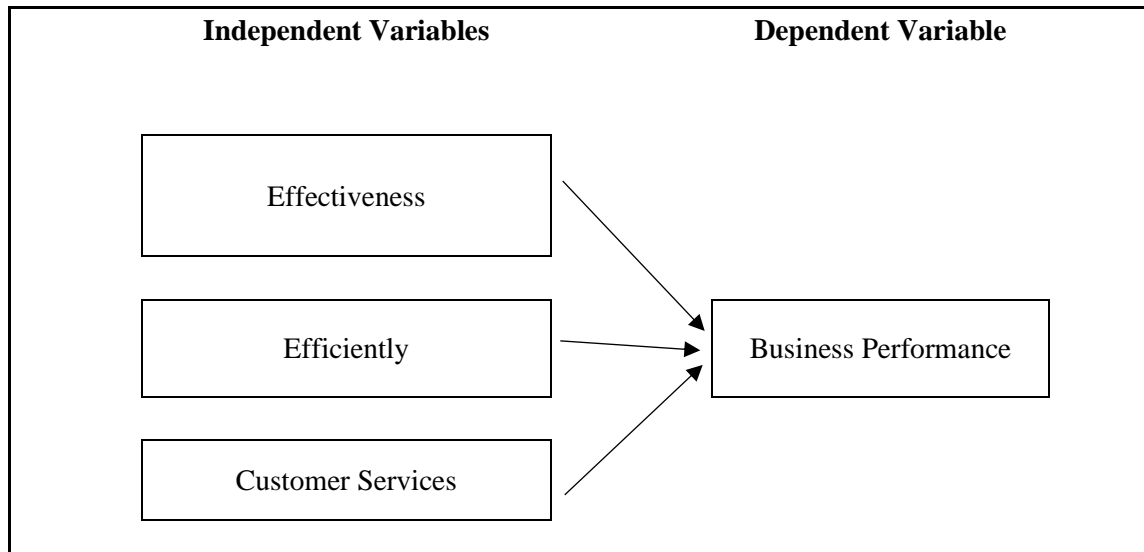
H1: ERP System has a Positive effect on business performance at the Arab Potash Company.

The main hypothesis above stems from the following sub-hypotheses:

H11: Effectiveness has positive effect on business performance at the Arab Potash Company.

H12: Efficiently of work has a positive effect on business performance at the Arab Potash Company.

Figure 1 (Study Model)



➤ Study Model

Figure 1 shows the research model, it studies the impact of three Independent Variables (Effectiveness, Efficiently and customer services) on dependent variables (ERP system) at the Arab Potash Company.

Definitions:

➤ Effectiveness

Effective and efficiently are used to measure the performance of the organization or activity, where the "Goyal" defined the effectiveness as a system output that represents the cusses of the existence of the system, which is used to determine the quality of system (Goyal,1998,P22). Effectiveness is measured by shipping cost to Aqaba at the Arab Potash Company.

➤ Efficiently

Effectiveness is concerned with achieving the objective and the output while efficiency is using of the resources to achieve output (Elliott & Strkin,1988, P.58). Efficiently is measured by

factory land production costs at the Arab Potash Company.

➤ Customer Services

Information satisfaction is the degree to which the user of the system feels that it provide their information needs, return costs, and sales discounts (cost reduction and cycle time of using ERP system) is one of the success measures of ERP system at the organization.

➤ Business Performance

Firm performance is the organization's ability to use its resources to obtain results consistent with its objective (Peterson,et al,2003, P. 200-230). It is measured by the annual production of potash.

➤ Objective of Study

This research explored the impact of ERP system on business performance at the Arab Potash Company, which forms the main objective of this thesis.

Three objectives that were divided from main objective:

- 1- Find the impact of the Effectiveness of ERP system on the business

performance at the Arab Potash Company.

- 2- Determining the impact of the Efficiency of ERP system on the business performance at the Arab Potash Company
 - 3- Finding the impact of the customer services of ERP system on the business performance at the Arab Potash Company.
- **Theoretical Framework & literature review:**
 - **Theoretical Framework :**

ERP system is one of the information Technology software's, ERP system will enhance the performance of all sectors in our firm by building a huge database, in order for us to retrieve data

easily leading to a better management of the inventory of the potash products.

There are many factors of the ERP system that directly affect the firm's

performance such as improved productivity, reduction of cost, quality of work, profit improvement ...etc. In this study we will be able to find the relationship between a firm's performance and implementing an enterprise system resource ERP system (ALOK and DEEPIT,2011, P. 60).ERP system was modified and developed in accordance with demand and need of business community, the reason of many software packages was design to control inventory (ALOK and DEEPIT,2011,P. 65), Figure 2 show how ERP system connect all sector in firm.



Figure 2 (Enterprise Resource Planning)

- **ERP system :**

ERP system was found to reduce the cost, and this will be reflecting on the performance of the firm, Furthermore, several researches contradict that ERP system financial benefits are achieved after the implementation ERP system. Kennerley and Neely (2001.P. 103-113) are a good example of this, when it was decided that ERP systems had little effect on return on sales. According to Wieder et al. (2006 P. 439–456) studies stated that specific financial benefits of ERP system were not accumulated when comparing ERP users to non-ERP users. Nicolaou (2004.P. 79-

105) stated that ERP adopters had a worse ratio of G&A expenses to sales for than non-adopters indicating a drop in financial performance from this perspective. Wei (2008. P.168-181). Additionally some researchers discovered long term positive impact of ERP on financial performance, while other claim that ERP system can only help maintain current performance and does not increase it financially.

The ERP system is a set of integrated multi-module application software packages that is designed to support multiple business tasks and that considers those business tasks as a whole,

allowing to be shared data between all departments. This system would aid firms and organizations in increasing production and maintaining competitiveness.

Accounting, human resources, customer order processing, purchasing, finance, inventory management, manufacturing/operations, distribution, planning, and customer service are

examples of typical features. Figure 3 provides an overview of an ERP system modules. ERP functions are concerned with efficient Supply Chain Management, collaborative forecasting and planning, customer relationship management, product lifecycle management, e-procurement, and e-business operations (Alshawi, 2004.P.454-462).

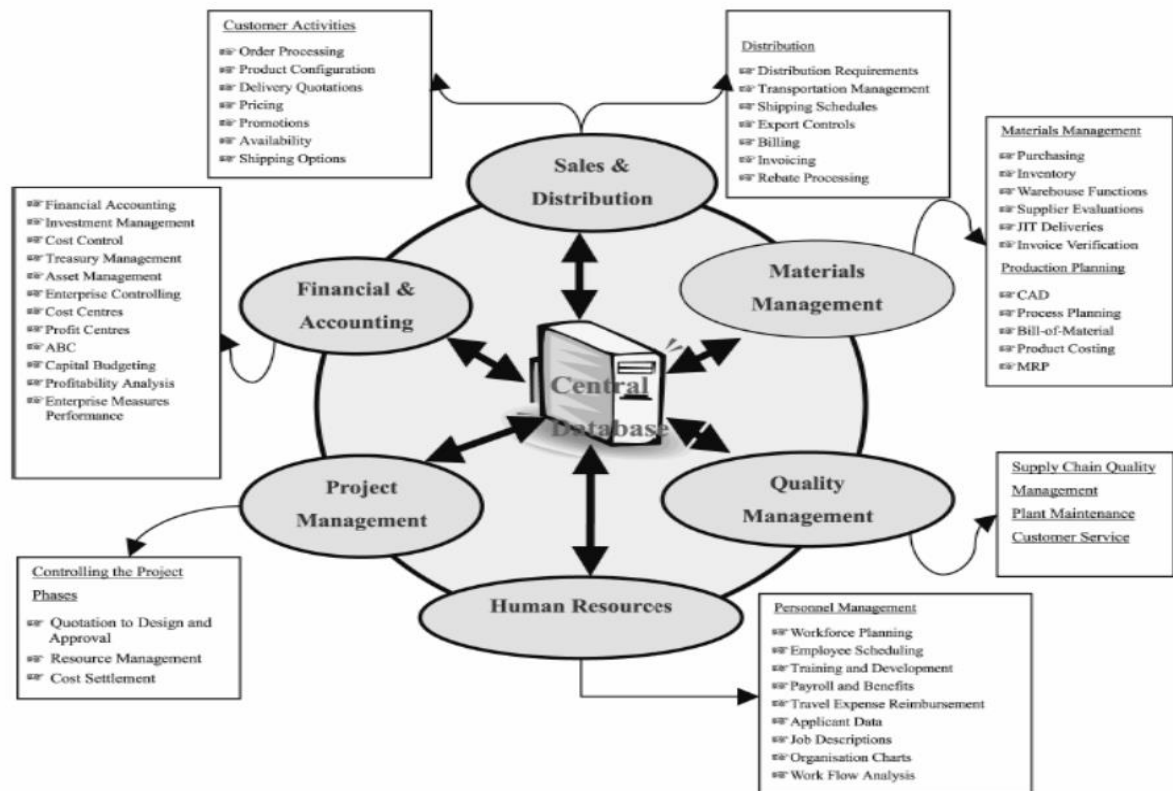


Figure 3: ERP modules

SAP, Oracle, Sage, and Microsoft are among the leading providers of proprietary ERP system. ERP systems, which traditionally been employed by huge organizations, are increasingly their way into SMEs, who typically struggle to find the resources and cash needed to implement a leading brand proprietary ERP system. ERP software server and site licenses are generally expensive. Also, installation cost of ERP systems is expensive. In this case open sources provides alternative solutions. Open Source ERP system offers an accessible and affordable curve of

adoption. Organizations can download the system for free, try it out, and run demos; They allow cost savings, specifically license expenses; They also provide a level of flexibility that is harder to find in proprietary ERPs, which are often rigid and generic, requiring a large amount of customization for each implementation (Fougatsaro,2009.P.14).

Regarding Shang and Seddon (2000, P.39) ERP system was providing a lot of benefit that enhance the performance of the firm as listed below:

- **Managerial benefit**

ERP system collects information in a single data base so, it allows to employees and managers to access data quickly and effectively, availability of data at single location enhance the time needed to search. Furthermore, the data stored is accurate and saved in a safe place.

- **Strategic benefits**

After applying an ERP system most firms found it easy to access on customers and customers issue can be addressed effectively, which is enhance the relationship with customers and develop products collaboratively with customer. This will lead to customer satisfaction and achieving competitive advantages.

- **Information Technology benefits**

Implementation of ERP system will lead to increase the contribution of the IT department on all section of firm, where it can access on all section, improve the productivity of each sections, and managed time is used to manufacture the products.

➤ **Effectiveness**

An effective management information system is characterized by ease. That is, it is easy for the beneficiary of the system among them to understand the use of the system and to achieve the optimal use of the system and then achieve the desired goals. It is also characterized by flexibility, which is the most important characteristic must be provided in the effective management information system because of revolutions in knowledge, technologies, and communications. This requires continuous changes to maintain its effectiveness (Tasi, 2010. P.26-37).

Effectiveness refers to how well a company achieves its goals or how its outputs interact with economic and social environment. Usually organizations success is determined by its policy aims or the degree to which it achieves its own objectives (Zheng, 2010.P.,763-771). Meyer and Herscovitch (2001.P.299-

326) organizational commitment was used to assess organizational effectiveness. Workplace commitment can take many different shapes, such as relationship between leader and staff, employee's identification with the organization, participation in the decision-making process, an individual psychological attachment. Shiva and Suar (2010.P.117-150) agree that improving performance is possible by transforming employees' attitudes towards organization from a lower to a higher level of maturity. As a result, human capital management and effectiveness principles should be closely linked.

Heilman (2011.P.29-32), that organizational effectiveness is assessing the progress towards mission and goal, to enhance the effective management must strive for better leadership, interaction, and communication.

➤ **Efficiently**

The relationship between input and output or how the input transformed to output is the efficiently (Low, 2000. P.252-262), there is difference between organization efficiency and business efficiently, where business efficiently focuses on the performance of input to output ratio while organizational efficiently reveals internal improvement process such as culture, community, and organizational structure. Siengthai (2012.P.29-42) provides seven dimensions of measure organization efficiency: organizational strategy, development of employee's skills, development of employee's styles, management system building, corporate structure, motivation of staff and subordinate goals.

Organizational performance is depending on both efficiently and effectiveness where it is the multiplying of both values, it is important to understand that efficiency which reveals its operational excellence in the source of utilization process (Gulati, 2010.P. 51-74).

➤ **Customer Services**

System of activity that consists of customer support, complain process and ease of reporting compliant, customer services, and its support your customer to an enjoyable experience with you. Today customer services go far beyond traditional telephone services, it use mail, social media, and text message (Turel and Serenko, 2006, P.314-331).

Customer services may provide by person, or by automated customer services such as application, an advantage of automated customer

services is given services all the time. We can increase automated customer services by using the artificial intelligence where customer was feel to chat with a live agent and will get customer self-services benefits (Medes ,2009. P. 450-451).

Regarding studies (Christopher, 1999.P.443-354;Varca, 2004.P.457-467; Lee, 2004.P.248-292) there are five components of successful customer services as show in figure 4 below, customer services orientation , corporate image, handling customer problem, verbal and nonverbal communication.

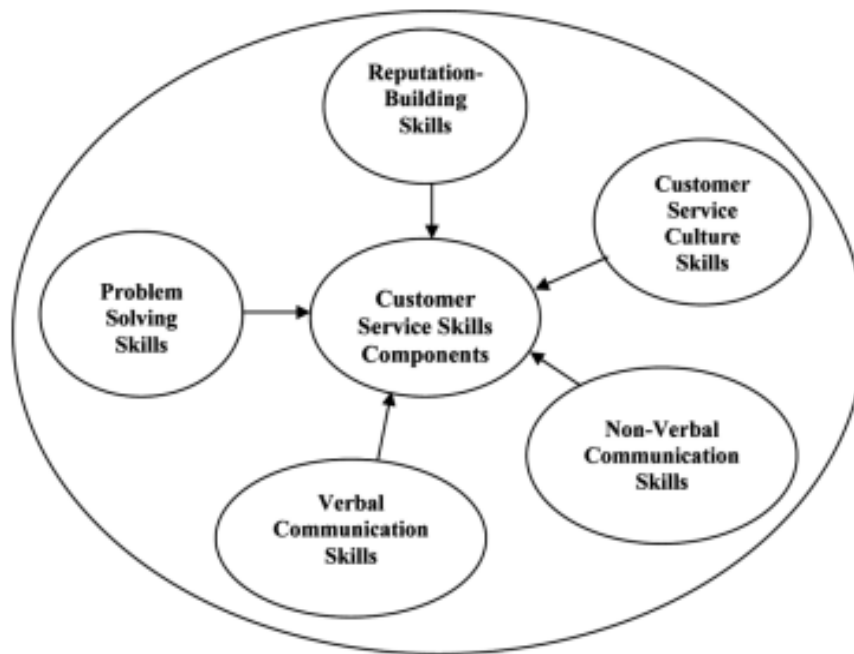


Figure 4. the five component of customer services skills

- **Reputation-building skills**

One of the most significant assets of service organizations is their reputation, an organization's image is described as a major part of service quality (Akroush, 2008, P.98-122). In creating tangible cues to solved problems created by the unique characteristics of services. Corporate image is one of the unique marketing

assets and capabilities that affect business performance, according to empirical evidence (Gronroos, 1984. P.36-44). Boyd et al. (1994. P.9-15) found that customers choose a service firm mostly based on its reputation. Denby-Jones (1995.P.66-69) discovered that developing a corporate image requires an organizational dedication and consistent customer services delivery. Doyle (2001.P.255-258) argues that one

of the most important paths to establishing a great brand reputation is to provide superior customer service. Similarly, vein Tilley (1999.P.181-191) argues that creating a brand is more than just having a name, logo or design activity; it's about how a firm goes to create customer value.

- **Problem solving skills**

One of the most important aspects of today's customer service personal success is their ability to solve problems. According to Harris (2007.P.151-160), problem-solving is the process of actively resolving a difficult situation. Swartzlander (2004.P.220-230) says that understanding how to creatively and fairly solve client problems is necessary. Service business and a customer goals may different, and they may also be opposed. The ideal way is to come up with a creative solution to the problem that benefits all parties. Odgers (2008.P.22-36) says that as customer complaints are escalated to next level of the company, the price of services increase. Many people avoid problem-solving, according to Harris (2007.P.151-160). The rationale for Harris's opinion is that many employees lack the essential skills to solve problems effectively.

- **Verbal communication skills**

Communication is the process by which information, ideas and understanding are shared between two or more people (Harris, 2007.P.151-160). Communication is a critical component of good customer service programs and procedures, according to almost customer service literature. Broadly, communication is divided into verbal and non-verbal using traditional and non-traditional means available to communicate with clients (Anderson and Bolt, 2008.P.53-66). During the interaction process between the client and services provider customers attitude are heavily influenced by verbal communication skills. Words, a collection of symbols, the rules for mixing words and grammar are all example of verbal communication skills.

- **Nonverbal communication skills**

Nonverbal communication skills are also important part of providing successful customer service, as stated by Swartzlander (2004.P.220-230). studies have resulted that two-thirds of a message comes from non-verbal communication and one-third comes from words. A mixed message usually has two meanings in a single

communication: one is verbal and positive, and other is nonverbal and negative. People tend to think the nonverbal (Swartzlander, 2004.P.220-230). A communication is composed of 55 percent nonverbal cuse,38 percent voice signals, and 7 percent the words was use. As a result, body language is used to interpret 93 percent of all conversations.

- **Customer service culture skills**

Throughout the last five decades, a successful business depends on the marketing concept (Webster, 1994a, 1994b.P.8-32). It asserts that discovering the needs and wants of target markets and offering the desired satisfaction more effectively than competitors is the key of achieving corporate goals. Customer orientation is the foundation of the marketing concept. Market-oriented firms are concerned with identifying their talents and resources as well as identifying the needs and expectations of their consumers (e.g., customer service skills). To develop a satisfied customer, all customer orientation methods should begin and end with the consumer in mind (Webster, 1994b.P.8-32).

- **Business Performance**

Business performance at the firms is mostly assessed by return through changes in the price of stock and dividends, and it is the ability of organization to use all effective resources (Peterson,2003 P.200-230).

Job performances can be divided into two categories: contextual and task. Task performance depends on cognitive ability, while contextual performance depends on personality. Task performance is linked to behavioral roles identified in job descriptions and pay scales. They are strongly linked to organizational success, Contextual performance, on the other hand, are value-based and include other behavioral responsibilities that are not recognized in job descriptions but are compensated; they are additionally jobs that are only indirectly tied to organizational performance (Wiley,2015 P.255-272).

By finding the most effective approach to organize and schedule resources and enhance productivity, ERP system can improve company's performance. Workflow that streamline corporate processes carefully manage employee performance, and analyze results are just a few examples of how ERP accomplishes

this. This provides data visibility to business leaders, allowing them to identify which areas of their operations are the most productive and which need to be improved. ERP may also provide data visibility to customers and vendors, allowing them to see data in real time and improve partnerships across the board.

Traditionally, two types of measurements are used to evaluate the success of an ERP system: financial and technical (Fabris 1996.P.63-78). The main focus of a financial evaluation is on cost variances between actual and budgeted costs. Software license and maintenance expenses, hardware leasing payments, network and communication costs, and payroll costs are all important cost categories. Financial assessments include a number of issues:

The majority of the “controlled” costs were determined in the past and are difficult to change now. As a result, the influence of such knowledge is restricted.

Another challenge is valuing of intangible products associated with an ERP information system, like as training, support, or custom software.

The MIPS (Multiprocessor without interlocked pipelined stages) achieved is one criterion used to evaluate technical ERP performance. Those system features are simple to measured but they have a weak link with overall ERP strategy.

Faced with these limitations of both traditional evaluation views, the Balanced Scorecard can be expanded to include of ERP software control.

According to Annick Bourguignon’s definition “Performance is achieving organizational objectives”. This definition is used in all managerial fields (management control, general politics, human resources management). The Performer is the one who achieves their goals. As a result, performance is determined by the objective/purpose. When goals are diverse, performance is multidimensional is subjective since it is the result of operation, which by its subjective nature, involves approaching a reality to a desire. As defined by Annick Bourguignon “performance is closely linked to the objectives”, which makes it difficult to find a common

definition of this concept. As a result, achieving any goal or purpose requires a particular level of performance. We should note that the concept of performance cannot be properly defined because there is no default classification of the objectives. Performance, according to Bourguignon, can only be accomplished when specific goals are met. According to Demeestère quoted by Matei L. (2006.P.91), the concept of performance in the public sector occurs at the intersection of three concepts in terms of:

- Implementation of the institution’s guiding principles using its own policy tools.
- Concentrate on particular groups.
- Customers, users, and other participants in the institution’s public services.
- Making the best use of institutional resources in order to achieve the desired outcomes.

➤ Literature Review

This section reviews previous studies in ERP system how this study is different from reviewed literature.

In March 2005, Nicolaou & Andreas, studied organizational performance effect of ERP systems usage on a sample of 247 firm used in Nicolaou [Nicolaou, A.I. 2004a. “Firm performance effects in relation to the implementation and use of ERP systems. *Journal of Information Systems*” 18: 79–105] where he found ERP system has a positive impact on business performance and high interaction between the adoption of ERP system and the change event for the ROA (Return on Asset), and increases the organizations awareness of the importance of ERP system on the business performance (Nicolaou & Andreas.2005, 18-35). To study the linkage between perceived job characteristics and information system environment characteristics before and after replacement of old information with new type this aim of study Clemmons in 2005 titled THE impact of information technology on organization : a study of ERP system influences on job design and organizational culture Was applied on a sample of 130 workers at tow organization where it find the ERP system was changed the clutter of organization and added a new item on work environment(Clemmons,2005,P.48-148) .

More studies found the ERP system has an effect on productivity improvement, decreases Information Technology use, and enhances the cash management in the organization. Ashim Raj conducted a study on the impact of ERP system on small and Mid-size public sector applied on two public companies namely PTL and PUNCOM located in north India, where it was found that the organization that use ERP system that has high performance compared to the organization does not use ERP system through a questionnaire- interview. (Ashmin Raj, 2008, P.124)

Eetzady studied the impact of ERP system investment on organizational performance, this study applied on public companies in the United Kingdom 79 company used the ERP system and 79 did not use the ERP system, it found no difference on financial performance on both groups. However, the ERP system to improving decision making (Eetzady, 2008, P.58-93)

In May 2008, Madapusi, studied the post-implementation evaluation of ERP system on a sample of public sector Indian mining firm which had implemented a 100 user ERP systems license. The study's objective is to discover the key success factor of ERP system user support refers to the acceptance of the ERP system by all the employees of the business unit, where the researcher was divided the ERP into 14 modules that include all firms business application and he found the diversity of ERP modules and key success factors effect positively on the implementation of ERP system which effect the performance of firms and gain many advantages (Madapusi, 2008, P.129-256).

From another point of view, Dickover studied the evaluating a structured equation model for Enterprise Resources Planning system business impact using public sector environment. This study was evaluated the effectiveness of ERP system on the success business environment at public section. This study targeted users of ERP system in two public organizations at the United State and used questioner distributed on a population sample, this study found a relationship between higher level of

interdependence correlated with positive business impacts from ERP and higher-level differentiation correlated with negative business effect, where the result of the study found the feature of work to be the most important as success or failure factors ERP implementation (Dickover, 2009, P.64).

The re-valuation in information technology systems led to improve planning, manager skills. Efficiently of system and of the environment of works as it goes with employee satisfaction. This is the result of study Effectiveness of ERP Integration Towards Managerial Performance (Alexander, 2009, P. 66- 124) which was applied on a sample contain of 30 mid-management, it's improved managers understanding of the ERP system and its effect on the employee satisfaction.

In February 2009, John J. studied the impact of ERP system through prism of account theory which applied on 147 firms from an industrial group, where it focus on the impact of ERP system on the finance auditing and managerial gains, they find the ERP system has a positive impact on internal control for information and accounting, it also limited impact on managerial gains (John J. 2009, P.174-177).

Gibbs in 2010 make conducted a study the evaluating users participation and user influence in an enterprise system, the study's objective to examine the relationships between participation, user influence and the construction of user satisfaction between system access and users participation, the study used qualitative approach and applied on sample of 20 users from HR section. The result of this study ERP system show a good relation between users satisfaction and the system but need more efforts to ensure good participation from ERP users (Gibbs, 2010, P.81).

TSAI, Wen-Hsien, et applied a study to explore the impact of business process on the ERP system effectiveness, using questionnaire survey and AVOVA analysis on 5000 large companies, this study focused on the relation between ERP system and rearranging work procedure inside the firm when used ERP system, the results showed no gap between system and business process (Tasi et, 2010, P.26-31).

Management support, information participation, clutter, employee satisfaction are factors that support the implantation of ERP system in organization (Garg,2010,P.243) studied the impact of ERP system on organization productivity in an information technology organization applied on 74 employees from the information technology department, finding in this study the implementing of ERP system increased capabilities and productivity of organization and ERP system has positive social change by improving the working atmosphere that led to higher productivity.

The implementation of ERP system has positive effect on organization information system, it also uses new management accounting practices and quality of IS provided for operational planning in a higher level of organization, these results found by (GALANI, Despina et al., 2010,P.774-779) who studied the impact of ERP system on accounting process which applied on a sample of 30 organization from Greece used ERP system. Also it found very high satisfaction from customer and cost reduction.

The implementation of an ERP system in organization effect positively on business and financial performance of the organization, when the organization employees prospect business strategy (Hwang,2012,P.30-54) applied study of the impact of ERP implementation on organizational capabilities and firm performance on a sample of 400 companies, also find ERP system does not adjust the cost only but also support a product and innovation.

To examine the relationship between characteristics of Chief Financial Officers (CFOs) and ERP system adoption, (HIEBL, Martin RW, 2017. P. 30) applied a survey on 296 mid and large size Austrian firm, the author found the firm has external finance managers have adopted ERP system more than firm with internally CFOs promoted and firms with less capital have adopted ERP system.

In 2018 Aremu et al. P.245-255, was to study determinants of ERP system adoption on organization performance among medium

enterprises applied on 217 companies of various sizes in Oyo state, Nigeria. The goal of this research is an enhanced theoretical framework that examines issues concerning ERP system. The result found that technological and organizational structures have high impact on the adoption of ERP system and the effectiveness of ERP adoption on organization performance.

Isaac Mahmoud P. 688-671 study in 2013 entitled "The impact of strategic and tactical factors on the successful implementation of the ERP system". The study's objective to explore the strategic and tactical factors that affect the success of ERP systems where the study was applied to a group of employees who use the organization's resource system in the Jordanian services sector and the outcomes showed that strategic factors (support for senior management and project management) and tactical factors (communications, training and education of users, and supporting ERP joining suppliers) affect the successful implementation of ERP systems.

Bashir and Mohammed S. 264-285 study in 2017 entitled "The role of ERP in strengthening the pillars of governance". The study aimed to focus on the most important concepts of ERP systems and governance in the organization and the extent to which the organization's resource system affects the pillars of governance (oversight and risk management) where the study was applied to the institution of cleaning materials (Henkel) and included all 13 users of the organization's resource system, and the outcomes of the study showed that there is no relationship between the organization's resource system (system quality, quality of information, quality of service) and governance pillars.

Shoshan Siham P. 149-212 study in 2018 entitled "The impact of the conduct of human competencies on institutional performance.". The study's objective to identify the impact of the smoothing of human competencies with different habits on the institutional performance from the perspectives of the balanced card where the study was applied to a group of employees in the cement company Ain Al-Touta using the questionnaire and the results showed the existence of a statistically significant effect to

facilitate human competencies on institutional performance.

Mohammed Al Sayed's study in 2018 entitled "The application of ERP systems established to activate modern cost management tools". The study's objective to explore the effect of the application of the system at institution to adopt modern methods in cost management and performance evaluation where the study applied to a group of users of the institution's resources system in Egyptian facilities and the results showed that the workers in the facilities that applied the system resources system are aware of the possibilities of the system in supporting modern mechanisms in cost management as the study found that there is a lack of application of modern mechanisms for cost management and performance evaluation in facilities that apply the resource system.

The study of Dadash Amana and Buzian p. 39-52 in 2019 entitled "The impact of using the resources of the institution in improving the performance of the institution). The study aimed to study the organization's resource system with its elements (marketing, management, accounting, human resources) in improving the performance of the institution, where the study was applied to the Sonatark Foundation in Algeria as the study found that there relation between organization's resources and performance.

Heba Ismail P. 193-229 study in 2019 entitled "Impact of the application of ERP to profit management in Egyptian joint stock companies". The study's goal to find out the effect of the application of the ERP system on profit management and whether the system affects the opportunistic practices carried out by the administration to evaluate its profits, where the study applied on 89 Egyptian joint stock companies where it found that there is a relationship between the application of the enterprise system and the management of the morgues through optional benefits and through the real activity.

Hamed Faraj's 2020 study, p. 328-384, entitled "The impact of the use of the Foundation's resource system on increasing the efficiency of cost systems used to mislead the digital transformation of facilities". The study's

goal to identify the impact of the use of the enterprise resources system to increase cost systems in the shadow of digital transformation, where the study applied to a sample of a group of workers in the Republic of Egypt and the results were the existence of modern cost systems commensurate with the developments digital transformation such as the consumption accounting system and the target cost system as it found that the use of the enterprise resources system leads to increase efficiently to join the costs used in digital transformation.

Rabah P. 481-496 study in 2020 entitled "Impact of the quality of automated ERP information on performance creativity". The study aimed to be completed by the resource planning system plays an important role in producing high quality information where this study has been applied to several institutions in the regions: Sitaf and Bouarij Tower. The results showed that the automation of the organization's resource system leads to high-quality information and a distinct increase in the effectiveness and efficiency of basic ERP, a significant increase in added values resulting from the coordination of controls of shared program resources.

Khalil's study in 2020 entitled "The level of adoption of the ERP system and its impact on achieving the quality of the accounting information system in the Jordanian industrial sector". The study's goal was to identify the views of stakeholders about the level of adoption of the ERP system and the impact on the quality of accounting information systems applied to the internal interests of financial managers, accountants and technology providers information in industrial companies where the results found that the presence of a statistically significant effect on the use of each supply system on the quality of accounting information systems.

Mohammed Hammam P. 677-716 study in 2020 entitled "The impact of the quality of the ERP system on organizational development". The study aimed to study the impact of the quality of the ERP system on achieving organizational development where the study was applied to a sample of electricity sector companies in

Jamouria Egypt and the results showed that the quality of the ERP system contributes to the integration of data and information in different sections.

Ghada and Asra study p. 72-94 in 2020 entitled (The impact of the effectiveness of the implementation of the ERP system on the excellence of operational performance in tourism companies). The study's objective was to study the impact of the application of the institution system to the operational performance where the study applied to a number of workers in the tourism sector in Egypt using a questionnaire and the results showed that the organization's resources system is a set of ready-made programs that integrate among them to form a central database to provide the needs of all the newspapers in the company information and facilitate the process of sharing information to ensure the company achieve competitive advantage.

Arab and Ggroori study p.73-128 in 2020 entitled "The role of the foundation's resource system in improving financial statements". The study aimed to know the role of the ERP system in improving the financial lists for decision-making by the different circuits and the results found that the organization's resources system leads to increased confidence in the information of financial statements and helps to make decisions quickly and on the right basis and reduces the chances of errors and facilitates the work of the accountant.

Faisal Al-Ruwai's study p. 665-700 in 2020 entitled "The impact of the application of the ERP system established on the financial and market performance of industrial companies listed on the Saudi financial market". The study aimed to test the extent to which the application of the ERP system affects the financial performance of industrial companies listed on the Saudi financial market, where the study was applied to a sample of 40 industrial companies listed in the financial market. The results showed that there is a positive and moral impact of the application of the established ERP system on the financial performance of companies in the sample of the study and also the presence of a positive impact on market performance.

Study of a boat and ghoual Naseem p. 96-109 in 2021 (impact of ERP on the interaction of functional information systems in the economic institution). This study aimed to identify the impact of the ERP system on the interaction of information systems on a sample of 52 users of the system within the institutions in Algeria, where the results showed that there is a great concern among the officials of the institution in the application and evaluation of the system of resources of the foundation.

Amani Nabil P. 130-182 study in 2021 entitled "Implications of integrating ERP systems and accounting for resource consumption in the shadow of digital transformation to support competitiveness". The study aimed to analyze the impact of integration between the ERP system and the efficiency of resource consumption in the shadow of digital transformation, where the study was applied in Sadat City in the Republic of Egypt and included the sample of the study on 20 companies where the researcher concluded that the competitive advantage of the establishment is influenced by two factors: the competition it faces and the strength of its competitive position, as the system of planning the resources establishment and the system of accounting consumption in raising the efficiently of operational processes and improving the quality of products.

What distinguishes the current study from other studies?

This kind of study is the first of its kind in the APC in Jordan which studies the ERP system applied in the Arab Potash Company from 2006 till 2021.ERP project is the largest among projects of the information technology in Arab Potash Company ,as it include all sectors of the company from finance, maintenance, projects, marketing and human resources through studying the dimensions of the ERP system (efficiently, effectiveness and customer services).

As one of the aims of this study is to link the ERP system to the APC general performance, which leads to improving productivity and giving it a competitive advantage.

➤ Methodology

➤ Scientific methods

This study adopts a descriptive and cause-effect research approach, it used to explore cause-and-effect relationships between two or more variables. It was conducted on data collected from Annual Production Reports on the ERP system of APC to determine the impact of ERP system on business performance.

➤ Community and sample study

The study population consisted of one of the companies in the mining and extraction industries sector, which is the APC.

➤ Data Collection Methods

The study based on the secondary sources for collecting the data and information which are necessary for achieving the study's objectives and goals, which are the scientific and literary sources that were relied upon to treat and prepare the theoretical aspect of the current study, such as books, scientific journals, university theses, published research, and scientific reports available on the internet related to the topics of the stud.

Additionally, the annual reports of the APC, for the period (2006-2021), were relied on to collect the primary data for the study.

Table (1): Correlation matrix test for the independent variables

Variables	Effectiveness	Efficiently	Customer Services
Effectiveness	1.000		
Efficiently	0.683**	1.000	
Customer Services	0.692**	0.515*	1.000

(**) at 0.01 significance level

(*) at 0.05 significance level

Based on Table (1), it is evident that all correlation coefficient values of the independent variables were less than (0.80) and ranged between (0.515 - 0.692), which proves that the

Multiple linear correlation test (Multicollinearity)

The Multicollinearity test aims verify the independence of the independent variables by making sure that they are without the multiple linear correlation problem, where the multiple linear correlation indicates the presence of a high linear correlation between the independent variables. This correlation negatively affects the accuracy and validity of the measurements and leads to a hugeness in the coefficient of determination value R^2 , thus exceeding the actual value. To check the presence of this problem, the multiple linear correlation coefficient (correlation matrix) has been calculated. If the values of the correlation coefficient are less than (0.80), this means that the problem of multiple linear correlations does not exist in the data. This problem was also verified by calculating the Variance Inflation Factor (VIF) and Tolerance, where if the range of VIF value comes out to be between (1-10), and the range of Tolerance value comes out to be between (0.1-1.0), it proves the lack of a multiple linear correlation problem in the data (Guajarati, 2004). The results turned out to be as following:

problem of multiple linear correlation is not present in the data.

The VIF and Tolerance were calculated to confirm the previous result, and the results are presented in Table (2):

Table (2): Test for (VIF) and Tolerance for the independent variables

Variables	VIF	Tolerance
Effectiveness	2.058	0.486
Efficiently	3.656	0.274
Customer Services	3.741	0.267

By referring to Table (2), it is quite evident that the VIF values ranged between (2.058-3.741), which is limited to (1-10), and the values of

Tolerance ranged between (0.267 - 0.486), which is limited to (0.1 - 1.0). This confirm that the

problem of multiple linear correlation between the independent variables is not present.

➤ **Statistical analysis tools**

The Statistical Package for Social Sciences (SPSS) V.20 was employed to process and analysis data using many statistical methods, which are as follows:

- 1- Descriptive Statistics, to describe the study variables using the arithmetic mean, standard deviations, and maximum and minimum values.
- 2- The multicollinearity test includes the correlation matrix, VIF, and Tolerance to ensure that the problem of linear correlation between independent variables is not found in the data.
- 3- Multiple, simple and stepwise linear regression analyses to test all study hypotheses

➤ **Procedures**

From qualitative and interpretive data analysis using SPSS, descriptive analysis is presented first, followed by correlation and regression analysis. The test of independent variables relationship measured by efficiency, effectiveness and customer services of ERP system. The business performance is evaluated using users' satisfaction, and efficiently related measurements like as labor productivity.

➤ **Data analysis and hypothesis testing**

This part of the study presents the values of the descriptive statistics measures used to describe the variables of the study model, where the study aimed to determine the impact of the ERP system on business performance at APC for the period the between (2006-2021).

First: Describe the business performance variable

The business performance variable was measured by the company's annual production quantity in tons, and the following is a description of this variable.

Table (3): Describe the business performance variable for the period between (2006-2021)

Scale (Tons)	Business Performance
Mean	2,103,945
Standard Deviation	395,610
Maximum Value	2,620,000
Minimum Value	1,119,994

It is clear from the Table (3) that the mean of the company's annual production amounted to (2.104) million tons, with a standard deviation of (0.396) million tons, and that the largest amount of production amounted to (2.620) million tons, while the lowest amount of production was (1,120) million tons.

Second: Describe the independent variables

The study included (3) independent variables: effectiveness, efficiency, and customer services. Where effectiveness is measured by the company's operational costs, efficiency was measured in shipping costs to Aqaba, while customer services are measured by return costs. The following is a description of these variables for the period between (2006-2021).

Table (4): Describe the independent variables for the period between (2006-2021)

Scale (JD)	Operational Costs	Shipping Costs to Aqaba	Return Costs
Mean	286.867	32.913	68.430
Standard Deviation	64.881	13.002	83.686
Maximum Value	394.958	58.701	286.159
Minimum Value	154.310	9.661	8.522

It is clear from the Table (4) that:

- 1- The mean of operational costs (286.867) million dinars, with a standard deviation (64.881) million dinars, and the highest value was (394.958) million dinars, while the lowest value was (154.310) million dinars.
- 2- The mean shipping cost to Aqaba (32.913) million dinars, with a standard deviation (13.002) million dinars, and the highest value was (58.701) million dinars, while the lowest value was (9.661) million dinars.
- 3- The mean of return costs (68.430) million dinars, and with a standard deviation (83.686) million dinars, and the highest value was (286.159) million

dinars, while the lowest value was (8.522) million dinars.

➤ Hypothesis Test

The hypothesis aims to examine the effect of the ERP system on business performance. The main hypothesis was tested using multiple and stepwise linear regression analysis, while the branches of this hypothesis were tested using simple linear regression analysis.

Testing the main hypothesis

The main hypothesis aims to test the impact of the ERP system on the business performance, as this hypothesis states that:

H1: “ERP System has a Positive effect on business performance in Arab Potash Company”. To test this hypothesis, multiple regression analysis was used.

Table (5): Results of multiple linear regression analysis for the main hypothesis

Independent variable	Model summary		ANOVA		Coefficients				
	R	R ²	F	Sig F*	Independent variables	B	Std. Error	T	Sig t*
business Performance	0.943	0.889	32.166	0.000	Effectiveness	0.334	0.082	4.056	0.002
					Efficiently	0.178	0.067	2.668	0.020
					Customer Services	0.252	0.072	3.486	0.004

*The effect is statistically significant at the ($\alpha \leq 0.05$) level.

Table (5) demonstrates that there is a strong and positive correlation between the ERP system and business performance, where the correlation coefficient reached ($R=0.943$), and the coefficient of the determination reached ($R^2=0.889$), which means that (88.9%) of the variance in the business performance was explained by the ERP system, with other factors held constant.

Table (5) shows the significance of the model, where the calculated F value (32.166) with a statistical significance of (Sig F= 0.000), which is less than 0.05. This show that there is an effect that is statistically significant of the ERP system on the business performance at a level of significance of ($\alpha \leq 0.05$).

It is visible from the Table (5) that the value of B at the (Effectiveness) variable has reached (0.334); and the calculated T value was (4.056) with a level of significance of (Sig T=0.002), which is less than (0.05). This show that Effectiveness has a positive effect on the business performance at ($\alpha \leq 0.05$).

Furthermore, Table (5) shows that the value of (B) at the (Efficiently) variable has reached (0.178); and the calculated T value was (2.668) with a level of significance of (Sig T=0.020), which is less than (0.05). This show that efficiently has a positive effect on the business performance at ($\alpha \leq 0.05$).

Moreover, Table (5) shows that the value of (B) at the (Customer Services) variable has reached (0.252); and the calculated T value was (3.486) with a level of significance of (Sig T=0.004), which is less than (0.05). This show that Efficiently has a positive effect on the business performance at ($\alpha \leq 0.05$).

According to the above, the main hypothesis is accepted, which states **ERP System has a positive effect on business performance in Arab Potash Company.**

To show the arrangement of independent variables and to determine the most important and most influential variables in the business performance, a Stepwise Linear Regression

analysis was used, and the results were as show in Table (6):

Table (6): Results of the stepwise regression analysis for the main hypothesis

Model	Variables	B	T	Sig T*	R	R ²	F	Sig F*
First	Customer Services	0.451	6.260	0.000	0.858	0.737	39.191	0.000
Second	Customer Services	0.303	3.570	0.003	0.908	0.824	30.383	0.000
	Effectiveness	0.177	2.533	0.025				
Third	Customer Services	0.252	3.486	0.004	0.943	0.889	32.166	0.000
	Effectiveness	0.334	4.056	0.002				
	Efficiently	0.178	2.668	0.020				

*The effect is statistically significant at the ($\alpha \leq 0.05$) level.

It is quite clear from Table (6) that the (Customer Services) variable came in the first rank and explains the (73.7%) of the variance in the business performance. By adding the (Effectiveness) variable to the previous variable in the second model, the percentage of explanation increased to reach (82.4%), while adding the (Efficiently) variable to the previous two variables in the third model increased the explanation percentage to reach (88.9%)

Testing the hypotheses branching from the main hypothesis

The first sub-hypothesis test

This hypothesis aims to test the effect of effectiveness on the business performance, as this hypothesis states that:

H1₁: “Effectiveness has a positive effect on business performance in Arab Potash Company”. To test this hypothesis, a simple regression analysis was used.

Table (7): Results of simple linear regression analysis for the first sub - hypothesis

Independent variable	Model summary		ANOVA		Coefficients				
	R	R ²	F	Sig F*	Independent variables	B	Std. Error	T	Sig t*
Business Performance	0.807	0.651	26.119	0.000	Effectiveness	0.350	0.068	5.111	0.000

*The effect is statistically significant at the ($\alpha \leq 0.05$) level.

Table (7) demonstrates that there is a strong and positive correlation between Effectiveness and business performance, where the correlation coefficient reached ($R=0.807$), and the coefficient of the determination reached ($R^2=0.651$), which means that (65.1%) of the variance in the business performance was explained by the Effectiveness, with other factors held constant.

Moreover, table (7) Also shows the significance of the model, where the calculated F value (26.119) with a statistical significance of (Sig F=0.000), which is less than 0.05. This shows that there is a statistically significant effect of the

Effectiveness on the business performance at a level of significance of ($\alpha \leq 0.05$).

It is clear from the Table (7) that the value of B at the (Effectiveness) variable has reached (0.350); and the calculated T value was (5.111) with a level of significance of (Sig T=0.000), which is less than (0.05). This indicates that Effectiveness has a positive effect on the business performance at ($\alpha \leq 0.05$).

According to the above, the first sub hypothesis is accepted, which states: **“Effectiveness has a positive effect on business performance in Arab Potash Company”.**

The second sub-hypothesis test

This hypothesis aims to test the effect of Efficiently on the business performance, as this hypothesis states that:

H1₂: “Efficiently of work has a positive effect on business performance in Arab Potash Company”. Simple regression analysis was used to test this hypothesis.

Table (8): Results of simple linear regression analysis for the second sub - hypothesis

Independent variable	Model summary		ANOVA		Coefficients				
	R	R ²	F	Sig F*	Independent variables	B	Std. Error	T	Sig t*
Business Performance	0.799	0.638	24.700	0.000	Efficiently	0.380	0.076	4.970	0.000

*The effect is statistically significant at the ($\alpha \leq 0.05$) level.

Table (8) demonstrates that there is a strong and positive correlation between efficiently and business performance, where the correlation coefficient reached ($R=0.799$), and the coefficient of the determination reached ($R^2=0.638$), which means that (63.8%) of the variance in the business performance was explained by the efficiently, with other factors held constant.

Table (8) Also shows the significance of the model, where the calculated F value amounted to (24.700) with a statistical significance of ($\text{Sig F}=0.000$), which is less than 0.05. This shows that there is a statistically significant effect of the efficiently on the business performance at a level of significance of ($\alpha \leq 0.05$).

It is clear from the Table (8) that the value of B at the (efficiently) variable has reached (0.380); and the calculated T value was (4.970) with a level of significance of ($\text{Sig T}=0.000$), which is less than (0.05). This indicates that efficiently has a positive effect on the business performance at ($\alpha \leq 0.05$).

According to the above, the second sub hypothesis is accepted, which states: **“Efficiently of work has a positive effect on business performance in Arab Potash Company”.**

The third sub-hypothesis test

This hypothesis aims to test the effect of customer services on the business performance, as this hypothesis states that:

H1₃: “customer services have positive effect on business performance in Arab Potash Company”. Simple regression analysis was used, to test this hypothesis.

Table (9): Results of simple linear regression analysis for the third sub - hypothesis

Independent variable	Model summary		ANOVA		Coefficients				
	R	R ²	F	Sig F*	Independent variables	B	Std. Error	T	Sig t*
Business Performance	0.793	0.629	35.609	0.000	customer services	0.616	0.103	5.967	0.000

*The effect is statistically significant at the ($\alpha \leq 0.05$) level.

Table (9) demonstrates that there is a positive and strong correlation between customer services and business performance, where the correlation coefficient reached ($R=0.793$), and the coefficient of the determination reached ($R^2=0.629$), which means that (62.9%) of the variance in the business performance was

explained by the customer services, with other factors held constant.

Table (9) Also shows the significance of the model, where the calculated F value (35.609) with a statistical significance of ($\text{Sig F}=0.000$), which is less than 0.05. This shows that there is a statistically significant effect of the customer

services on the business performance at a level of significance of ($\alpha \leq 0.05$).

It is clear from the table (9) that the value of B at the (customer services) variable has reached (0.616); and the calculated T value was (5.967) with a level of significance of (Sig T=0.000), which is less than (0.05). This indicates that customer services have a positive effect on the business performance at ($\alpha \leq 0.05$).

According to the above, the third sub hypothesis is accepted, which states: **“Customer services have a positive effect on business performance in Arab Potash Company”**.

➤ **Result**

Based on the hypothesis tests, the study reached the following outcomes:

1. There is a statistically significant effect of the ERP system on business performance; this may be due to the role of the ERP system in improving the company's operations, by providing a system of integrated applications that support and assist in the management, organization and conduct of many activities, accounting operations, resource management, change orders, cost estimates and inventory management.
2. There is a statistically significant effect of efficiency in business performance; this may be due to the fact that the company's possession of efficiency helps it achieve the greatest amount of production with minimal resources and costs, which is reflected positively in improving business performance and achieving quality in it.
3. There is a statistically significant effect of efficiently on business performance; this may be due to the fact that the company's ability to use its resources optimally, and perform the right business, helps it succeed in achieving its goals and thus improve and develop its performance.
4. There is a statistically significant impact of customer services on business performance, and it is the most influential dimension in business

performance; this may be due to the role of the customer services system in improving relations with customers, and achieving their satisfaction by providing information related to their changing needs and aspirations, reducing errors and delivering on time

The results of the current study are in agreement with the results of the study (Nicolaou & Andreas, 2005), which concluded that the ERP system has a positive impact on business performance, it agreed with the result of the study (Clemmons, 2005), which concluded that the ERP system was change the clutter of organization and added new item on work environment. It agreed with the result of the study (Ashmin Raj, 2008), which found that the organization that use enterprise resource planning system that has high performance compared with other organization does not use ERP system. It agreed with the result of the study (john, 2009), which found that the ERP system has positive impact on internal control for information and accounting. It agreed with the result of the study (Tasi et al., 2010), which found that the companies that consider business process reengineering in ERP system will have better implementation performance. It agreed with the result of the study (Garg, 2010), which found that the implementing of ERP system was increase capabilities and productivity of organization and ERP system has positive social change by improving the working atmosphere that led to higher productivity. It agreed with the result of the study (Galani, Despina et al., 2010), which found that The implementation of Enterprise Resources Planning ERP system has positive effect on organization information system and use new management accounting practices and quality of IS provided for operational planning in higher level of organization. It agreed with the result of the study (Hwang, 2012), which found that The implementation of ERP system in

organization effect positively on business and financial performance of organization when organization employs prospector business strategy. It agreed with the result of the study (Ismail, 2019), which found that there is a relationship between the application of the enterprise system and the management of the morgues through optional benefits and through the real activity. It agreed with the result of the study (Faraj's, 2020), which found that the use of the enterprise resources system leads to increased efficiency to join the costs used in digital transformation. It agreed with the result of the study (Khalil, 2020), which found that there is a statistically significant effect on the use of each supply system on the quality of accounting information systems. It agreed with the result of the study (Hammam, 2020), which found that the quality of the ERP system contributes to the integration of data and information in different sections. It agreed with the result of the study (Ghada and Asra, 2020), which found that the organization's resources system is a set of ready-made programs that integrate among them to form a central database to provide the needs of all the newspapers in the company information and facilitate the process of sharing information to ensure the company achieve competitive advantage. It agreed with the result of the study (Arab and Ggroori, 2020), which found that the organization's resources system leads to increased confidence in the information of financial statements and helps to make decisions quickly and on the right basis and reduces the chances of errors and facilitates the work of the accountant. It agreed with the result of the study (Al-Ruwai's, 2020), which found that there is a positive and moral impact of the application of the ERP system established on the financial performance of companies in the sample of the study and also the presence of an positive impact on market performance. It agreed with the result of the study

(Nabil, 2021), which found that the competition it faces and the strength of its competitive position, as the system of planning the mower establishment and the system of accounting consumption in raising the efficiency of operational processes and improving the quality of products

While, the result of the current study differed with the result of study (Eetzady,2008), which concluded that there was no difference in financial performance between the company used enterprise resource planning system and other no used ERP system and ERP system was contributing to improve decision making. It differed with the result of the study (Bashir and Mohammed, 2017), which concluded that there is no relationship between the organization's resource system (system quality, quality of information), Quality of service) and governance pillars.

➤ **Recommendations**

According to previous results, this study recommends the following:

1. The Arab Potash Company should conducts more improvement and development processes in the ERP system because of its impact on the performance of activities and operations.
2. The Arab Potash Company should holds training courses and workshops that contribute to improving the capabilities and skills of users of the ERP system, to benefit more from the benefits, it achieves.
3. The Arab Potash Company should includes all departments of the company with the application of the ERP system to ensure the optimal use of available resources and capabilities.
4. The Arab Potash Company should activates the role of the information technology department within the company in addressing the weak points in the system and providing appropriate solutions to system problems and reducing them.

5. Conducting more research and studies dealing with the impact of the ERP system on improving business performance, by comparing the company's performance before and after using the system and relying on new variables.

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