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AN EMPIRICAL INVESTIGATION ON FACTORS INFLUENCING ERP ALIGNMENT WITH OPERATIONAL PERFORMANCE OF JORDAN PHARMACEUTICAL COMPANIES

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ABSTRACT

In spite of the fact that Implementing and running ERP software's offers great advantages and benefits for pharmaceutical companies, ERP software's in Jordanian pharmaceutical companies has been highly unsuccessful. In this case, the alignment between business and ERP is a vital matter especially when ERP is an integral portion of the business and is utilized in leveraging certain special business competencies, in merging companies, restructuring industries, and also in facilitating global competition. However, there is still the lack of researches that investigates the factors influencing business-ERP alignment in the pharmaceutical companies. The study investigates the factors influencing ERP adoption and implementation in pharmaceutical companies. The questionnaire was distributed to the target sample and the obtained data was analysed through the SPSS statistical software. Results of the analysis revealed that all factors positively influenced business-ERP operational alignment in pharmaceutical companies. The study provides advanced knowledge of business-ERP operational alignment in pharmaceutical companies, which will help the ERP providers in such enterprises to understand the factors that influence the business-ERP operational alignment in pharmaceutical companies.

Keywords: *Enterprise Resource Planning, Pharmaceutical Companies, Task-Technology Fit Model (TTF),The Success of Information Systems Model (IS Success Model), Business-ERP Operational Alignment.*

1. INTRODUCTION

The present-day business market is impacted by the environmental uncertainty which may impart adverse impact on organizations. In order to survive and satisfy the needs of customers, organizations try to improve their competencies to adapt to such changes [1, 2]. Meanwhile, the use of new flexible and responsive technologies gives organizations competitive advantage [3]. It is in fact important for organizations to focus more on information technology development as one of their major competencies capabilities. In this regard, the information technology in question comprises of electronic data interchange (EDI) and enterprise resource planning (ERP) and both greatly affect organizational performance [3, 4].

In modern information technology, the main focus is business processes and communications between users of the processes, and for this reason, it is known as process and information technology [5]. Enterprise Resource Planning (ERP) programs are basic software programs that companies utilize in linking information in all domains of business. With the use of a common database and shared management reporting tools, these programs facilitate all the processes of business within a company [6]. ERP software provides user with business solutions that support the basic business processes and administrative functionality, and also all functions of business of an enterprise [7]. Furthermore, ERP software integrates business tasks associated with sales, marketing, manufacturing, logistics, accounting, and staffing. It also helps in optimizing the overall organization through information sharing and exchange from a common database. Meanwhile, processing and tracking of customer orders in different departments may sometimes be challenging. However, the use of ERP that involves the use of central database allows the departments to track the status of order of customers [6].

As highlighted in Adade-Boafo [8], the success rate of the implementation of ERP is considered as low, at 30%. As opposed to developed countries, the use of ERP systems in developing countries is late. In other words, there is imbalance in usage of ERP between both categories of countries, and this imbalance has been linked to the restricted resources and competencies, weak management and the lack of IT experts in the systems implementation in developing countries [9]. As reported in Bradds, et al. [10], the implementation and integration of ERP systems is a major task that calls for the use of cash expenditures, time commitments, and IT expert and business personnel. ERP systems implementation needs to be meticulously planned and thoroughly tested. Furthermore, comprehensive training needs to be provided, in addition of the provision of a change management process that generates a supporting culture.

ERP systems automate and incorporate the organization's basic functionality and facilitate the information flow among the different functions of an enterprise, while also permitting information sharing across organizational units and geographical locations [5]. As an example, using ERP system, user is able to connect various areas of pharmaceutical organization, that is, user could consolidate and integrate pharmaceutical manufacturing processes across many units, keep track on delicate operations across organization (quality, formulation, compliance, expiry management, and costing), suppliers and customers, into a solid system with joint data and discernibility [11]. Also, the use of ERP system leads to the formation of seamless integration of processes across functional areas with improved workflow, standardization of multiple practices of business and access to real time current data. Nonetheless, the implementation of ERP system is not only complicated, but dynamic as well because it requires a blend of technological and organizational interactions [12].

ERP software is an administrative system that allows collaboration between all company departments and furnishes user with an integrated database, aside from increasing the organization's capacity of production while improving the production processes capacity control and for pharmaceutical companies in Jordan, ERP system has imparted them with an extraordinary turnout [13]. Notably, the use of ERP software will decrease production losses, save time, allow automatic production process management, enhance performance, ease the process of communication, increase the efficiency and effectiveness of the chain of supply via inventory management, create structured work, and assures the completion of accurate pre-planned procurement processes and warehouse management [13, 14]. In other words, ERP systems are beneficial. Still, in Jordan, many organizations had failed in their ERP systems implementation. Relevantly, ERP systems can be successfully implemented if several factors are taken into account [9].

Business-IT alignment was mentioned in Information Resources Management Association[15] as the most crucial requirements that transfigure the IT-driven value into performance of business. Within the context of management, the notion of business-IT alignment became an underpinning concept because it presents insights into the connection between IT investment and business performance. Chakraborty and Sharma [16]accordingly highlighted business-IT alignment as a critical success factor in big IT projects which include ERP implementations. Still, the mechanism of alignment is ambiguous and complex, making the development of constructs of business-IT alignment model very challenging. As such, comprehensive conceptual models and empirical works on the impact of business-IT alignment on business performance within a dynamic business environment are still lacking [15, 17].

Somehow, on the part of the governments, there remain concerns about the consistent failure of IT projects in public organizations. several studies highlighted that these failures are mainly factored by the lack of descriptive and prescriptive methodologies to address it [18-20]. Accordingly, Marchewka [21] proposed a methodology following task-technology-fit theory in presenting a systematic approach in alleviating the hurdles in the identification of data and output irregularities during the assessment of off-the-shelf packages of

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ERP [22]. Relevantly, classical theory of task-technology fit (TTF) is an appropriate theory for providing the theoretical foundation to the issue in question. As posited by TTF, technologies that show superior fit with the tasks will be evaluated and used more in the organizations Zhang [23].

TTF suggests that users will chose the one technology that they find appropriate in performing their tasks (Alqatan [24]. Equally, the theory suggests that a new technology will be utilized if its functionality matches the activity of users. According to Williams [25], TTF model is underpinned by the principle that calls for the alignment of the technology functions with the business needs and operations, in order to achieve competitive advantage. Relevantly, models that combine business domain and IT in developing countries (e.g., Jordan) have been introduced [24, 26].

2. BARRIERS TO IMPLEMENTING ERP

A number of disadvantages associated with ERP system have been highlighted. For instance, the synergies evolving between functional areas through data sharing in one common platform might generate issues associated with confidentiality. Notably, issues of confidentiality are being examined in regards to IT security. Another disadvantage of ERP systems are the high implementation cost, making the systems burdensome or even impossible to small and medium-size companies. For instance, a single ERP module implementation can cost hundreds of thousands of US dollars in small firms, while the complex global ERP roll-outs can cost over one billion dollars in multinational corporations [27, 28]. Aside from the cost issue, ERP system is time consuming and may provide less than anticipated [29].

As shown by the literature, ERP implementations sometime did not generate the anticipated outcomes and the organization did not accomplish its objectives. Relevantly, failure of ERP implementations has been attributed to the high level of complexity from the immense changes caused by ERP in organizations, and not caused by the ERP software itself [30]. As justification, ERP implementation presses companies to abide by the principle of 'best practices' and establish the right reference models [31]. As discussed in Helo, et al. [32], ERP implementation problems are mainly caused by issues associated with organization and human (e.g., organizational culture, resistance to change, mismatched business processes, project mismanagement, commitment of top management, etc.) rather than by issues associated with technology (e.g., technological complexity, compatibility, standardization, etc.) [31]. Accordingly, Huang, et al. [33], and Seo [31] laid down the top ten risk factors that lead to failure of ERP implementation. The following Table 1 can be referred.

Table 1: Top ten risk factors of ERP risk

Priority	Name
1	Lack of senior manager commitment
2	Ineffective communications with users
3	Insufficient training of end-users
4	Failure to get user support
5	Lack of effective project management methodology
6	Attempts to build bridges to legacy applications
7	Conflicts between user departments
8	Composition of project team members
9	Failure to redesign business process
10	Misunderstanding of change requirements

These risk factors present numerous organizational considerations as follows: organization fit, skill mix, project management and control, software system design, user involvement and training, and technology planning.

Several dependent, independent and interdependent variables have been found to impact the implementation success of an ERP system [34, 35]. Further, it was asserted in Rose and Schlichter [36] that alignment is a critical success factor in the process of ERP implementation. In this regard, the capacities of software tool need to be fully understood so that the tool can be aligned with the business strategy by determining the appropriateness and effectiveness of the software in

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fulfilling the needs of the organization, and its optimal use in expanding the organizational goals [37]. An organization should thus demonstrate its readiness in transforming their businesses so that they could match with the software to decrease the level of customizations [38, 39].

3. ERP SOFTWARE ISSUES IN JORDANIAN PHARMACEUTICAL

In Jordan today, pharmaceutical companies are in serious competition with one another. For these companies, Obeidat, et al. [40] accordingly mentioned the need to assure effective usage and management of assets to assure market survival and success. In Jordan, among the challenges faced by the pharmaceutical companies include higher level of competition, expanding and shifting demands of customer, and transfer of imprecise information. As reported in Al-Qeed, et al. [41], and Fatafta, et al. [3], these challenges have prompted the companies to utilize technologies (e.g. ERP) to allow them to quickly adapt, while facilitating their efforts in increasing their quality in all practices to improve performance.

The current environment is characterized by technological development and the intensifying need for speedy accomplishment. As a way to remain relevant in such environment, Jordanian pharmaceutical companies need to develop the appropriate work systems, by specifically developing the information technology sector for improving their position and accomplishing performance of high levels, which will allow the company to supersede its rivals, and hence, the relevance of Enterprise resource planning (ERP) application. ERP systems increase the efficiency and effectiveness of the company, allowing the company to satisfy the requirements of customer within high quality specifications, and thus, achieving the competitive advantage [13]. Nevertheless, it may seem unreasonable for pharmaceutical companies to fall back in new technology adoption [42]. Nonetheless, ERP systems application in Jordanian pharmaceutical companies has been highly unsuccessful [9]. In addition, the implementation of ERP is still modest in the pharmaceutical organizations such as Hikma [43]. Accordingly, various factors have been found to contribute to the successful implementation of ERP systems while also preventing the failure and losses of those unsuccessful

The lack of Business-IT Alignment has been widely linked to the failure of modern organization in obtaining value from their IT investment [26, 44, 45]. In this case, the alignment between business and ERP is a vital matter especially when ERP is an integral portion of the business and is utilized in leveraging certain special business competencies, in merging companies, restructuring industries, and also in facilitating global competition [46]. However, Klischewski and Elragal [47] mentioned in their study that the empirical data and succeeding analysis in business-IT alignment in Jordanian organizations are still rare [48]. Conversely, business-IT alignment has been reported as the most outstanding issue that modern enterprises have to deal with Huang, et al. [49], and Jonathan, et al. [44], in addition to the core issues still impeding alignment in the pharmaceutical industry [50, 51].

The general significance of operational alignment has been mentioned in various past studies in the improvement of organizational performance and in the formation of business value from IT [52]. Nonetheless, studies on the operative level were primarily concentrating on a sub domain of operational alignment, contributing to high research specificity [53]. It also calls for the need to perform analysis on a bigger picture. Furthermore, the operational level appears to be inadequately explored, in addition to inadequate knowledge regarding the antecedents and performance effects [54, 55]. As such, the present study will attempt to close this gap through making the operational alignment between ERP and business in Jordanian pharmaceutical companies. It was mentioned in Barth and Koch [56] that it is possible to utilize the identified critical success factors as a foundation for the progress of a prescriptive process model for projects for ERP upgrade. Accordingly, a company must successfully implement ERP for its future competitive strategy. The success of ERP is measurable as its reliability and utility perceived by users, and both factors are also dimensions of the task-technology fit model [57]. The Task-Technology Fit (TTF) model, within this context, examines the link between information system usage and its performances, via the application of a regular software functions analysis and the perceived needs of users [58]. The model presents the foundation for the analysis of the aforementioned factors that elucidate the usage of an ERP system and its interactions with the performances of users specifically by examining the link between the tasks needs of clients and the system functionalities. Goodhue and Thompson [59] reported TTF as a valuable indicator of implementation success of IS. Still, as mentioned in

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Hsiao and Chen [60], and Tennant, et al. [61], empirical studies that look into the role of TTF in the IT (e.g. ERP) infusion stage are still inadequate in the health care industry.

ERP implementation can reap enormous benefits for successful pharmaceutical companies- or it can be disastrous for organizations that fail to manage the implementation process[62]. we must ask ourselves two critical questions, "What are the factors influencing business-ERP alignment in pharmaceutical companies?" and "Is it possible to propose a business-ERP alignment model for pharmaceutical companies based on extended TTF model with quality characteristics?"

4. SIGNIFICANCE OF THE RESEARCH

The significance of this study can be seen from the fact that the outcome can be applied to the development of the business-ERP operational alignment model. Specifically, the outcome will become a guide, through the three key characteristics of alignment – these characteristics need to be comprehensively examined. Accordingly, the present study will improve our understanding of the following issues:

I. It demonstrates Relevance of business-ERP operational alignment and its Benefits for pharmaceutical companies in a Developing Countries, such as Jordan.

An implementation of ERP costs roughly $15 million [63]. Further, roughly 58% of ERP implementations surpass their intended budgets while schedule delays occurred to 65% of these implementations [8, 64]. For many organizations, it is very challenging to align ERP with business needs [13, 65], and for pharmaceutical industry, there are also challenges to be faced. These challenges have been attributed to harsh global competition. Also, the industry is pressured to improve quality while decreasing cost. For developing countries including Jordan, Alkhalidi and Abdallah [66] reported that such situation is even more obvious, as many pharmaceutical companies in these countries are struggling to preserve their market shares while increasing the efficiency and effectiveness of their operations [13]. The present study is of value to the business practice as it imparts knowledge on successful ERP implementation and on practices used by stakeholders in decreasing the high rate of failure, in addition to the overruns of cost and budget of ERP implementations.

The future success of organizations depends on their ability to innovate and improve their businesses continuously, and ERP is the key to this and therefore the key to a successful future. This study aims to provide the knowledge for practitioners in pharmaceutical companies in developing countries as a guide to further development of Business-ERP operational Alignment, where it is creating a better understanding of how ERP enables or innovates business for both IT and business professionals.

II. It Addresses the Factors that Influence Business-ERP operational Alignment in Pharmaceutical companies

An insightful theoretical framework is important in academic research because such framework will provide guidance to the research objectives, research questions and hypotheses development. In the model proposed in this study, many perspectives are included, and these include the factors that underpin the success or failure of ERP projects. For pharmaceutical companies, the proposed model may assist in decreasing the number of failures of ERP projects. Furthermore, the present study will deepen the understanding of the relationship between alignment and performance of pharmaceutical companies.

As demonstrated in various past studies, misalignment or lack of alignment between ERP software and business can prevent enterprises from achieving the maximum potential of their ERP investments. Comparatively, organizations with high alignment level are usually found to demonstrate superior business efficiency, effectiveness, and performance. Also, the impact of alignment on performance has been examined in a number studies but most of these study were focusing on private sector in developed countries and only a handful took place in developing countries [67]. Also, in developing countries, the gap between ERP software and business has been repeatedly documented [68, 69]. By conducting this research in Jordan pharmaceutical companies, the present study attempts to bridge the gap in the literature.

This study extends the TTF factors with quality factors to align ERP software with business in pharmaceutical companies, to examine how ERP alignment can contribute in achieving competitive advantage. This study will use the Jordanian pharmaceutical industry as the foundation for gaining knowledge about the factors that impact

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business-ERP operational alignment. Also, this study will provide valuable information to other developing countries so that they can take advantage of business-ERP operational alignment particularly among pharmaceutical companies. Furthermore, identification of factors that influence business-ERP operational alignment is important for businesses to be successful in the long term. Also, the discovery of the factors that have the greatest influence can be used as a tool for pharmaceutical companies in the future.

Knowledge of the factors (task-characteristics, technology- characteristics, individual characteristics and quality characteristics) and how they can impact business-ERP operational alignment in pharmaceutical companies is of particular interest, as it can be used as a guideline during the development of ERP software's in business activities among pharmaceutical companies.

III.It Provides the Basis for Future Research into business-ERP operational alignment in Other Sectors of the Jordanian Economy.

This study may impart a positive social impact on local communities' social change. This owes to the fact that ERP implementation assists stakeholders in pharmaceutical industry in their efforts of increasing profitability. This allows pharmaceutical firms to have extra accessible funds for other projects, for instance, funding for pharmacies and hospitals, and also philanthropic donations, all of which, may enhance the condition of communities. In addition, the findings from this research can provide a deeper understanding of the perceptions of pharmaceutical companies regarding ERP software's used in business. This information will allow researchers, software developers, and marketers of pharmaceutical companies to develop solutions that address their issues. In addition, this research can be used as a guideline for future research, and can assist businesses in making decisions that involve minimizing the difficulties in the operational alignment between business and ERP in pharmaceutical companies.

5. FACTORS INFLUENCING ALIGNMENT

In essence, the alignment between IT and businesses denotes the state of fit between IT investment, direction, strategy and where the business is heading. Also, the alignment encompasses an attempt to generate and constantly maximize the value of IT in catering to the processes and functions of business [48]. Business-IT Alignment, or BIA entails the correct and timely application of information technology (IT), in line with the strategies, goals and needs of business [112]. Equally, BIA involves the links between business and IT at the strategic or planning level, which entails the level to which the mission, objectives, and plan of business is support the IT mission, objectives, and plans support. [72, 113].

For IT related businesses today, business and IT alignment is crucial, because such alignment increases the effectiveness of the business [55]. The need for alignment between business and IT is common among businesses that utilize information technology. Such alignment impacts both businesses owners and shareholders, and both parties are generally aiming for increased performance. The alignment also impacts employees who feel the impacts of business investments in IT on their performance. While serving the organization, employees establish perceptions concerning how well the IT in their business setting provides supports to their needs [114].

Business-IT alignment studies have been primarily concentrating on the strategic level and functional level [115]. Specifically, the strategic level alignment is about whether the organization's goals, activities and processes are in line with the organization's supporting IS. Additionally, Sabegh and Motlagh [116] highlighted the five aspects that contribute to strategic alignment as follows: IT resource management, performance management, knowledge sharing, IT architecture and IT infrastructure. Meanwhile, functional alignment relates to the effectiveness optimization of IT systems that support the processes of business. Both functional and operational alignment are crucial to organization as they are regarded as key success factors of business-IT alignment. It was reported in Baker and Niederman [117] that misalignment at the operational level is among the causes of mergers and acquisitions failures [55]. Operational alignment is conceptualized as the adequateness of IT functions support for the business activities goals and priorities in departments [54]. For instance, in major IT projects such as ERP implementations, business-IT alignment is considered as a critical success factor[16, 17, 118, 119]. Notably, the alignment involves various interacting dynamic factors. Accordingly, relevant literature has been providing clear picture of critical factors for ERP systems implementation. Nonetheless, the

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interaction and impacts among these critical factors are yet to be fully explored operationally.

Achieving and sustaining the alignment/fit of an organization is very complex yet fundamental [67, 120] as it allows organizations to strategically adopt IT to achieve business goals. It is agreed that the process of alignment requires complete awareness of the factors able to cause an impact [121]. Accordingly, those such as Luftman and Brier [122], Chan, et al. [123] and Gutierrez and Lycett [124] have studied the factors proposed, confirming or otherwise rejecting the positive relation with alignment.

According to Khazanchi [125], it is clear that the concept of fit has broad utility to various areas of theory development wherein "the performance is a function of match, congruence, intersection or union of two or more factors" [126]. Fit as matching in this research context implies that there is a match between two theoretically related variables without reference to a criterion variable [127].

There are several factors that have been discussed in the business and IT alignment literature to affect the relationship between these two dimensions at the operational level of organizations. These factors can be either socially or technically oriented affecting the interactions between business and IT as emphasized in the socio-technical systems theory [128]. Social aspects such as culture values, behavior, knowledge and skills can affect the business and IT alignment relationship. Similarly, technical aspects related to IT systems can affect the business performance and therefore the alignment between these two dimensions. Managing these social and technical aspects and maintaining balanced relationship between them are essential to ensure their effectiveness [129, 130].

Lee, et al. [17] study titled "Developing a socio-technical framework for business-IT alignment" developed a framework for evaluating business-IT alignment. Specifically, the authors emphasize internal business-IT alignment between businesses and IS groups, which is a typical setting in recent boundary-less, networked business environments. The results indicated that alignment between business and IS groups increased IS effectiveness and business performance. Business-IT alignment resulting from socio-technical arrangements in firms' infrastructure has positive impacts on business performance.

Luftman [131] study titled "The Impact of Organizational Characteristics of IT-Business Alignment: A Field Study" examined the effects of organizational characteristics, such as organizational structure or the reporting position of the Chief Information Officer (CIO), on IT business alignment and its influence on performance. This research produces specific insights to organize the IT function within the organization in ways that can improve alignment and firm performance. The results provide two novel insights on which organizational characteristics enhance IT-business alignment: 1. hybrid or federated IT organizational structures achieve significantly higher levels of IT business, while decentralized IT organizations achieve significantly lower levels of IT-business alignment; 2. CIO-CEO reporting structure leads to significantly higher levels of IT-business alignment than CIO-CFO reporting structure, which leads to lower levels of alignment. The implications of this study are clear; no industry is immune to the alignment conundrum and every industry has an opportunity to improve IT-business alignment by organizing and positioning the IT function properly. In this section, the factors affecting the alignment/ fit between IT and business are summarized in Table 1.

Table 1: Summary Of Literature Review On Factors Affecting The Alignment/ Fit Between IT And Business

TITLE	Ser_Q	Inf_Q	Sys_Q	KSI	Conf	Con	Cox	Ind_C	Task_C	Tech_C	AREA
[80]								√			Theoretical
[81]								√	√	√	healthcare
[82]	√	√	√								healthcare
[83]								√			University
[84]								√	√		enterprise resourceplanning systems (ERPS)
[85]									√	√	The technical

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											ICT consultancy firm
[86]								√	√	√	The automotive auction companies
[87]							√	√	√	√	healthcare
[88]	√	√	√								E-learning
[89]	√										Mobile technology
[90]			√								healthcare
[91]	√	√	√								Theoretical
[92]									√	√	social media
[93]		√							√	√	a web-based course management and discussion system
[94]									√	√	4 industries including healthcare
[95]								√	√	√	University
[96]									√	√	healthcare
[97]								√	√	√	16 area offices of Relief and Social Services Programme (RSSP)
[98]									√	√	E-learning
[99]					√						University
[100]									√	√	healthcare
[101]									√	√	people's daily life
[102]									√	√	University
[103]	√	√	√						√	√	all users of e-Procurement system
[104]								√	√	√	University
[60]								√	√	√	healthcare
[105]		√	√								End-users of cloud ERP working in companies in Taiwan
[106]		√							√	√	web-based learning
[107]	√	√	√								Intelligent tutoring systems
[108]	√	√	√								Technology-Supported Learning
[109]	√										Online purchase

Ser_Q: Service Quality, Inf_Q: Information Quality, Sys_Q: System Quality, KSI: Knowledge Sharing Intention, Conf: Confirmation, Con: Content characteristics, Cox: Context characteristics, Ind_C: Individual characteristics, Task_C: Task characteristics, Tech_C: Technology characteristics

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Based on the literature review that covers Business-IT alignment in various organizations, Business-ERP alignment is the best solution to several challenges plaguing pharmaceutical companies. Nevertheless, there are barriers have in implementing Business-IT alignment in developing countries:

First, it is clear that majority of studies focused on the effect of technology characteristics, task characteristics and individual characteristics upon the technology-task fit. Such factors are significant factors affecting performance in university level [95, 99, 104], Enterprise resource planning (ERP) [84, 105], web-based learning [93, 98, 106], mobile technology [89] as well as healthcare [81, 82, 86, 96, 100, 143]. Based on literature review, there were no studies dedicated to examine and test the impact of technology characteristics, task characteristics and individual characteristics and quality characteristics on technology-task fit among pharmaceutical companies.

Second, although appropriate enablers and inhibiters can assist in enhancing the ability of an organization to build an operational alignment and accordingly sustain it, this does not ensure that the organization enhances its performance. Moreover, the findings of empirical studies on operational alignment are limited as most of the data have been collected in the last two decades. Organizations today more greatly depend on IT, and investments in technology have increased remarkably; only a few studies have used sophisticated quantitative data analysis [67].

Third, task-technology fit theory posits that performance outcomes are likely to be enhanced when IT capabilities are appropriately matched with the tasks that they are intended to support [144]. Abimbola [145] stated that the premise upon which TTF is built is that the outcome is predicated upon the degree of alignment. However, there is a lack of empirical studies, particularly in the health care industry in exploring the role of TTF in the IS infusion stage about IS being integrative and exploratory used [143, 146].

Finally, businesses should be aware of their IT resources, which is something they often neglect to do. This is important because their business' competitiveness depends a lot on the quality of their technology resources and whether these resources nimble or efficient enough to meet changing market needs [91]. There are several studies that have proposed effective measures of website quality by providing its dimensions. According to Alqatan [24], website quality is comprised of many dimensions namely information, system and service quality. He proposed a scale of a three-dimensional website quality model where both information and system quality are described from a technical point of view and service quality is described from the customer's point of view [147]. Despite of that majority of studies focused on the importance of effect of quality characteristics (information quality, system quality and service quality) upon the technology-task fit. However, only few of quality factors have received substantial research attention to measure their impact on task-technology fit [106, 107]. This study is seeking to fill this gap by investigating the impact of quality characteristics on technology-task fit among pharmaceutical companies.

6. REVIEW OF ALIGNMENT MODELS/ TOOLS

This section presents the most important theories that related to business-IT alignment, including TTF model (Task-Technology Fit model) and Information Systems Success Model (IS success model).

Task-Technology Fit Model (TTF)

IT management is aimed at accomplishing the best fit between technology, user and task. This implies the capacity of user participation in the selection process or a good user support in enhancing the fit between these three aspects (technology, user and task). As such, in the execution of a given task, it is important that individuals are sufficiently motivated and knowledgeable. Further, the technology must present sufficient functionality and performance in lending support to the task. Also, it is important that user is adequately trained in the application of the technology in question. [81] indicated that inadequate fit may result in issues during projects implementation.

In demonstrating the significance of fit between characteristics of technologies and user tasks, Goodhue and Thompson [59] proposed task-technology fit (TTF) theory in order to accomplish the impacts of individual performance. TTF is influenced by antecedents such as task characteristics and technologies, while also affecting IS utilization and performance significantly. Meanwhile, IS utilization directly impacts individual performance, significantly. The basic TTF model is presented in Figure 1 as proposed by Goodhue and Thompson [59].

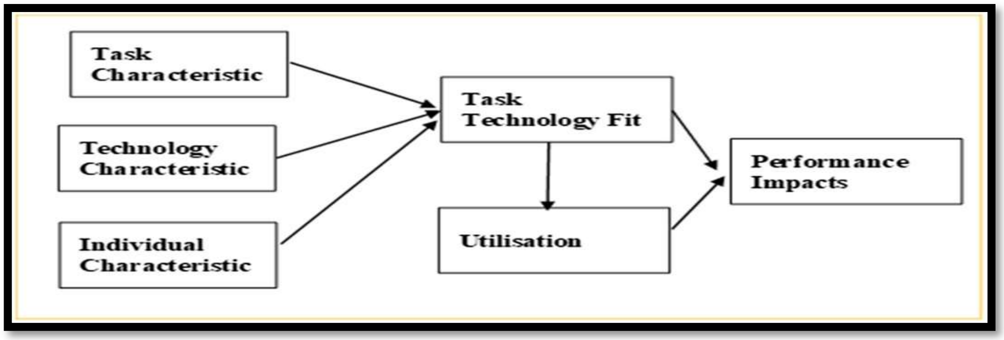

Figure 1: Task-Technology Fit (TTF) Model

The model can be applied on a particular technology by identifying the tasks of a potential user and analyzing the technology's support towards the tasks, after which the fit between technology, tasks and the fit outcome (utilization) can be measured [148]. The constructs of TTF model and their definitions are summarized in Table 2.

Table 2: Constructs Of The TTF Model

VARIABLE	DESCRIBE
Task characteristics	Tasks refer to actions taken by individuals when they transform inputs into outputs. Characteristics of task include those that may motivate a user to largely depend on specific IT aspects.
Technology characteristics	Technologies refer to tools utilized by individuals in their achieving their tasks. In the realm of IS research, technology refers to computer systems comprising of hardware, software and data, and user support services comprising of training and help lines, offers to help users achieve their tasks.
Task-Technology fit	Such fit is considered as the level to which a technology helps an individual in his task performance.
Utilization	Utilization is described as the behavior of using technology in task completion.
Performance impact	This is related to the achievement of individual's task portfolio.

Bere [104] argued that once a fit occurs in the task-technology fit model, utilization will automatically occur. This study has confirmed that perceived performance impacts can be assessed directly from the task-technology fit construct. This reduced the complexity of the original task-technology fit model by eliminating the utilization construct. If utilization is not voluntary, performance impacts will depend more on the TTF rather than utilization [149]. The utilization construct was excluded from TTF model in the previous relevant studies [96, 100, 143]. Therefore, the utilization construct is excluded from TTF model in this study.

Ammenwerth, et al. [81] stated that the quality of fit relies on the object's attributes. Within the dimensions of fit, there are several impacting attributes including attributes on individual level, attributes on task level, and attributes on technology level, as exemplified as follows:

I. Attributes on individual level include motivation and interest towards the task to be performed, IT knowledge, flexibility and openness towards new working manners, organizational context, team culture, collaboration within a team, and organizational politics.

II. Attributes on task level includes task complexity, organization of the tasks to be accomplished, and activities and their interdependence.

III. Attributes on technology level includes constancy and usability of hardware or software tool, tool costs, and functionality and obtain ability of tools in a given clinical condition.

The TTF model is in agreement withDeLone and McLean [150]model, especially in terms of utilization and user attitudes towards technology. However, TTF model distinct itself in two significant ways. Firstly, TTF model proposes the significance of task-technology fit (TTF) in describing how technology causes performance impacts. Notably, TTF is an integral missing construct, or, in many past models, this construct has been just implied. Secondly, TTF appears to be more explicit concerning the connections between the constructs, and this presents a more solid theoretical foundation on several issues associated with the effect of IT on performance. In this regard, among the issues prevalent are on the following: selecting the surrogate measures of Management Information System (MIS) success, comprehending the effect imparted by user involvement on performance, and establishing superior diagnostics for problems associated with IT.

In Lin [151], within the domains of m-Health systems, a significant impact of fit among the characteristics of technology (i.e., user interface, applicability, and portability), individual (i.e., computer self-efficacy, self-immersion and user experience), and task (i.e., non-routine, timeliness, mobility and interdependence) on task performance has been reported especially in regards to fulfilling the expectations, positive attitude, and satisfying the needs of user. As noted by the author, TTF theory presents valuable outlook in the scrutiny of the linkages among TTF, utilization, and performance. Still, as highlighted by some [60, 61], the role of TTF within the infusion stage of IS about IS being integrative and exploratory has not been empirically examined adequately, especially within the context of healthcare industry.

Technologies including computer systems that comprise data, software and hardware, and user support service that includes help lines and training (among others) are for facilitating user in their task completion. Within the extant IS/IT literature, Ahearne, et al. [152] accordingly reported the availability of various advanced models that can forecast the use of IT and its impact on performance. Wu, et al. [22] reported that It was indicated in Wu, et al. [22] that fitness issue has been regularly facing ERP software users. Meanwhile, inSoh, et al. [153], misfits of ERP implementation are classable into data, functional, and output types. Specifically, data misfits are caused by mismatches between organizational requirements and ERP package particularly in regards to data format, or the links among entities as denoted in the supporting data model. Meanwhile, output misfits are caused by mismatches between organizational requirements and the ERP package particularly in regards to the presentation format and output information content. As for functional misfits, they are caused by mismatches between organizational requirements and ERP packages in regards to the required processing procedures.

Accordingly, Goodhue and Thompson [59] indicated that TTF theory makes prediction that the use of IT affects the performance of individual, and that the performance benefits will be better if there is fit between IT and the task. Accordingly, TTF theory is adopted in this study for the following reasons:

I. As also mentioned in Gorretti, et al. [154], task technology fit (TTF) theory has been the most popular theory among scholars, in usage as well as in discussions.

II. TTF greatly impacts the performance of individuals in the utilization of information systems/information technology [155].

III. TTF theory is usable in the evaluation and analysis of existing works on alignment, as demonstrated in Gorretti, et al. [154] and O'Connor, et al. [156].

IV. TTF model has been extensively used and developed to be useful theory in studying the introduction of IT in the healthcare setting [87, 156-158].

As can be observed in literature on alignment/fit, performance appears to be the most frequently scrutinized dependent variable [159]. Of the overall 184 articles reviewed in this study, 124 were examining the link between fit and firm performance [160]. It was found from the review that different strategies were pursued by firms, and therefore, the studies were focusing on different output variables (e.g., customer benefit, productivity, financial performance, etc.) [161, 162]. Chan, et al. [123] indicated that firms that utilize a Defender business strategy appear to be more cost-driven, focusing on operational excellence and economies of scale, that is, productivity. Chan, et al. [123], and Porter [162] indicated the possibility of firms to focus on only one performance dimension over another. Hence, the scrutiny of the different dimensions of firm performance could be attributed to the fit paradox.

For firm performance, fit has been regarded as a crucial determinant because it enhances the capabilities of firm in generating competitive advantages and long-term growth. In general, these capabilities denote performance improvement [163-165]. Moreover, firms that 'fit' with their operating environment show superior performance, while those that do not, appear to struggle [165, 166]. As indicated in Goodhue and Thompson [59], the quality of fit is dictated by the characteristics of the objects, which will be discussed next.

A. Technology Characteristics Perspective

In the attainment of open innovation in products of high technology, Choi [167], and Tidd and Bessant [168] highlighted the need to employ new strategy of management is necessary for managing the development of new and complicated characteristics of technology. As can be referred in Goodhue and Thompson (1995), technology characteristics encompass technology features including the afforded mobility that define its nature and performance.

Relevant to the context of this study, technology entails IT that accesses a programs for the purpose of safeguarding the records, accelerating communication, allowing real-time and accurate information, and enabling electronic storage, all of which are to assure efficient management of business. Equally, the used hardware must have the ability in fulfilling the task through the provision of access to information on medicines to employees at all times and places. In general, employees of pharmaceutical companies would opt for technology that allows them to effectively meet requirements, increase product quality and make better decision.

B. Task Characteristics Perspective

Task has significant impact on performance [169]. It was indicated in Wulandari, et al. [170] that task characteristics signify the character and kinds of tasks that need support in the form of technology. Valaei, et al. [171] in their study found the link between task accomplishment and performance of users. Schrier, et al. [172] added that task increase can lead to better effectiveness and efficiency. In performing their job, employees will increase the use of IT in order to obtain the most recent data. Furthermore, task characteristics that are harmonious with the principals can result in proper task completion. Wulandari, et al. [170] stated that it will have a positive effect on Task Technology Fit.

Employees are those that carry out the tasks, and thus, employees possess the actual knowledge concerning the characteristics of tasks. Abraham [173] accordingly presented three dimensions of task characteristics in the context of pharmaceutical companies, namely task objective drivers, task informational needs, and task physicality concerns, as discussed below:

I. Task Objective Drivers

Task Objective Drivers are associated to task goals. Relevantly, the key drivers to the task goals include the following:

- Drive to Increase Safety

Drive to increase safety relates to the impetus to safeguard the employees from harm at work place.

- Drive to Learn Information about the medicines

Drive to learn information about the medicines refers to the desire to gather information, inspect the environment, make observations, and maintain a constant internal and external exchange of ideas on explanatory thoughts and theories that related to the medicines to facilitate the decision making on the intervention of healthcare professionals.

- Drive to Defend from Liabilities

Drive to defend from liabilities is associated with the wish to preserve oneself and reputation from coercions caused by negligent accountability.

II. Task Informational Needs:

Task information needs entail a code of higher order and this task is utilized for grouping that is associated with the task prerequisites. This Driver deliberates the task' needs, for example, the need for ubiquitous IS access as well as the need for all-inclusive records, all of which are part of task characteristics.

- Needs for Ubiquitous IS access

Needs for ubiquitous IS access relates to the required recovery of applicable data during and at the place of the execution of the task.

- Need for Comprehensive Documentation

Need for comprehensive documentation is about the need to have thorough information in order to allow efficient and effective task performance.

III.Task Physicality Concerns

Task physicality concerns are about physical constraints that impact the execution of the task.

C. Individual Characteristics Perspective

Individual characteristics are associated with user's instinctive drives. As highlighted in Abraham [173], these drives, which contribute to perceived relative TTF, represent the person's inclinations for the applied mechanisms in task performance and the internal motivators that determine the manner in which the person views the fit of the technology for the tasks they execute. In this regard, the main individual characteristic is the drive for bonding with the customers to form trust and reduce anxiety.

In describing IS/IT adoption, TTF model has been used in combination with other models including DeLone and McLean IS success model. Both TTF model and DeLone and McLean IS success model when used together can effectively provide understanding of IS/ IT use practice in numerous domains including mobile banking [174], E-learning [175], in addition to ERP [176].

6.2 The Success of Information Systems Model (IS Success Model)

Information system (IS) success concept has been generally recognized for IS evaluation. In this regard, the DeLone and McLean's model of IS success is a product of from comprehensive literature review. More than one hundred measures were identified and these measures were classed into six interrelated success aspects. As can be viewed in Figure 2, the aspects are as follows: System quality, information quality, system use, user satisfaction, individual impact and organizational impact. As proposed by the model, system quality and information quality are the two key determinants of IS use and user satisfaction, and both are direct antecedents of individual impact which positively affects organizational impact [150]. Researchers of IS have been expressing their interest towards IS success model. In fact, some have replicated or expanded the IS success model in examining various applications [177, 178]. ERP system can thus be viewed as a form of IS, providing the application of IS success model to ERP systems.

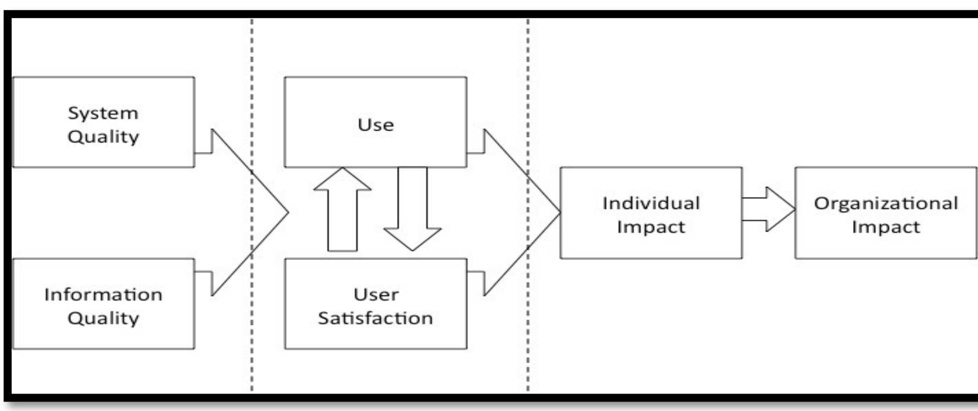

Figure 2: Delone And Mclean IS Success Model

The success model of IT systems by DeLone and McLean [150] shows a dependence relation between independent variables or independent variables alongside the success dimensions as the dependent variable. The success dimension is measurable using various aspects. Accordingly, in new measurement model development, there are six major categories of aspects with different perspective and dimension[179-181]. Further, a new variable namely service quality was included into the model. The inclusion was to capture the significance of service to be part of IS success (refer Figure 3). Lastly, the construct "use" was broken down into intention to use (attitude) and actual use (resultant behavior) [182]. Also, the nature, level, quality, and aptness of the system need to be taken into account as well. In this regard, the use nature of the system is determined by its functionality, that is, if the system is used for its intended purpose [181, 183].

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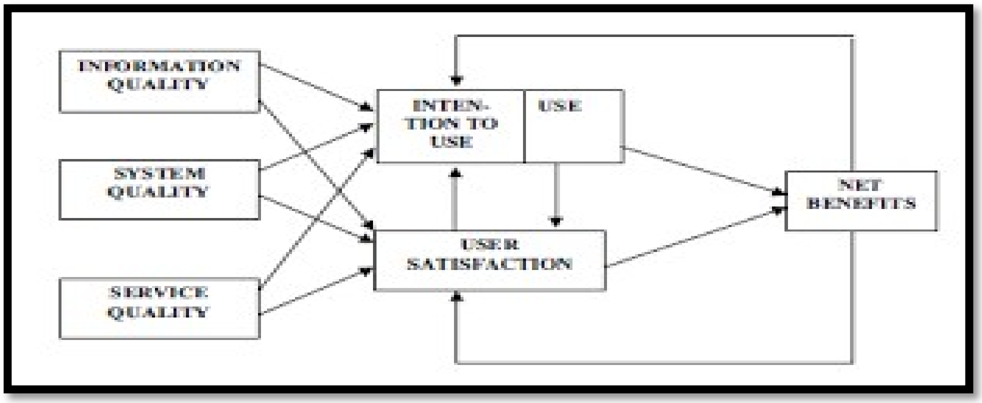

Figure 3: Updated Delone And Mclean IS Success Model

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In the model, information, system and service quality are the independent constructs which are also called the quality antecedents. These constructs measure the quality of the examined software or application. Functionality, ease-of-use, flexibility, reliability, data quality, integration, portability, and importance of the system are among the aspects measured by system quality [184]. Meanwhile, timeliness, accuracy, relevance, completeness, and consistency of the system's information output are the elements measured by information quality. The elements measured by service quality include assurance, tangibility, responsiveness, reliability, and empathy of the service that the system provides. These variables of information, system and service quality are exogenous variables hypothesized to impact intention to use and user satisfaction towards the system. Meanwhile, the whole effect of the system on the system users was captured by the construct of net benefits, and Delone and McLean [183] highlighted this construct as a very crucial success factor. In this regard, positive net benefits of the system use will increase the possibility of system use while also improving user satisfaction.

Needs of business swiftly change, and new requirements, whether following market analysis or empirical speculation, generally would impact decision making, considering the desire of companies to continuously preserve their position with market leaders and straightaway achieve a competitive advantage [181, 185]. Somehow, it is often that the adopted solution from ERP project is of low-quality owing to the dearth of analysis and definition in the project commission and user specifications. For improving the efficiency of business processes and the benefits of ERP, ERP systems have been globally implemented. Somehow, it appears that in developing countries, organizations are late in adopting and copiously implementing ERP systems – the situation is the opposite among organizations in developed countries. In other words, there has been imbalance of ERP systems implementation between developed and developing countries, and such imbalance has been linked to restricted capacities and resources, weak management and the lack of IT experts in the systems implementation among organizations in developing countries [9]. Also, within the context of Arab nations, usage of ERP System has not been adequately explored empirically [186].

7. INTEGRATED MODEL OF D&M AND TTF

Both the original and updated version of D&M IS Success model [183, 184] and the TTF model [59] comprise different aspects/dimensions as well as outlooks on the impact of use and individual performance. In each model, certain perspective is presented, and therefore, the perspective cannot be fully embraced and each model can only describe select situations [174, 187]. Also, as the models have strengths and weaknesses, they are combined in order that these strengths and weaknesses could be offset. In this regard, the D&M and TTF models complement one another that their utilization together generates understanding of the impact of individual performance and IS discipline. Also, connecting both models can offset the weaknesses of each. As an example, the D&M model's does not take into account how well technology characteristics fit the task characteristics. Meanwhile, the model of TTF does not include the constructs of account system quality, information quality, or service quality toward business-IT alignment/fit. Hence, using both models in combination is effective in explaining the use of m-banking and individual performance. In describing the IS/IT adoption theoretically, TTF model has been utilized and merged with other models, and among the popular ones is the DeLone and McLean IS success model, whereby both in combination provide valuable insight into the IS/ IT use practice in numerous fields including mobile banking [174], E-learning [175], in addition to ERP [176]. In view of that, the present study proposed a research model that combines TTF model with IS success model, in investigating the factors impacting business-IT alignment among pharmaceutical companies in Jordan specifically, and in developing countries generally.

8. RESEARCH HYPOTHESES

In this section, the conversion of theoretical findings into formal research hypotheses is elaborated. Accordingly, the research hypotheses of this study which were formed based on the findings of past works were broken down into two categories of hypotheses grounded upon task-technology fit model and hypotheses of quality dimensions grounded upon IS success model as shown in Figure 4.

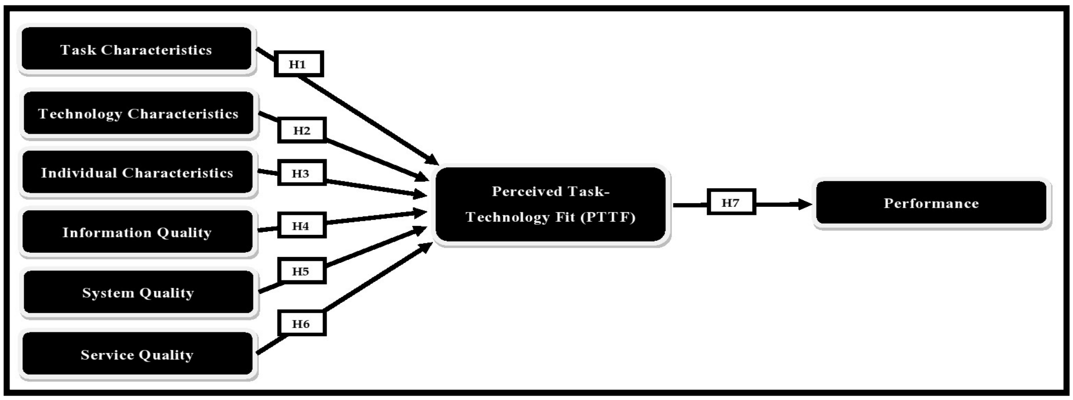

Figure4: The Proposed Research Model

8.1 Task Characteristics

Information Technologies (ITs) are now part of work practices. Consequently, task construct particularly task characteristics is increasingly being examined by TTF researchers especially within the context of technology usage. The characteristics of the task may cause users of tool or system to heavily rely on some aspects of the utilized technology in task performance [188]. Theory of task-technology fit describes tasks as activities that individuals carry out in converting inputs into outputs to fulfill their information needs [189]. Task characteristics entail task attributes executable with the application of technologies of information communication. Goodhue [189] and Goodhue [190] indicated that tasks can differ based on dimensions for instance, task non-routineness, task interdependence, and time criticality. In past related studies, the focus was on the task characteristics which may cause heavy reliance of user towards some aspects of information technology [59, 97].

With the situation of healthcare, care-givers such as nurses are obliged to mutually share medical data with others as a way to resolve undecided medical issues and increase the interdependence of task of their work [191]. Furthermore, Gatara [188], and Liang and Wei [192] reported that in providing support to emergency services, task performers could be necessary. As such, time is of the essence to the tasks being carried out. Furthermore, task mobility of community health workers is high if it is necessary to gather health data from patients in far-flung locations while these workers regularly visit households for the provision of patient care[188, 193].

Pertinently, it was indicated in Junglas, et al. [194] that during the execution of their tasks, the data used by mobile workers are specific to their service locations. The task information dependency of community health workers is high if data on household locations are needed for monitoring when disease surveillance is being carried out [188]. Likewise, Mpekoa and Bere [195] concluded a positive link between task characteristics and TTF.

The achievement of fit requires the ability of information technology in performing the required task. As such, failure of a technology in executing certain task based on the non-existent technology will mean failure in fulfilling the task characteristics [196]. Meanwhile, task compatibility or task-technology fit can be achieved when the task required functionality matches with the fitting device [34, 196]. It was mentioned in Wu, et al. [197] that users of enterprise information systems (e.g., ERP) have concern regarding the ability of ERP in assisting them in their complex task completion. ERP can assist users in dealing with task with high complexity and in meeting their needs, and also in improving the level of task technical fit [198]. Therefore, task characteristics in this study refer to the required attributes in task completion with the ERP systems, it can help pharmaceutical organizations to accomplish tasks more easily. The hypothesis below is hence presented:

H1: Task characteristics (Task_C) have a positive impact on Task-Technology Fit in pharmaceutical companies in Jordan.

8.2 Technology Characteristics

In Goodhue and Thompson [59], technology was described as the tool, hardware or software, that people utilize in their task execution. There is a possible impact of the aspects of technology tools on the use of technology and perceptions of users [59, 190]. Accordingly, the model of task-technology fit takes into account the significance of matching the functionality and attributes of utilized technology to the demands from individual needs. In the improvement of organizational performance through the utilization of information technology, organizational support is crucial. Furthermore, in order to meet the challenges imposed by the external environment and globalization, organization must undergo changes, including in information technology[170].

Users are equally impacted by the integration level between solutions since there are various solutions of mobile Health [199, 200]. Providers of health care and health authorities must therefore have the ability in integrating new technological competences to the present situations as this will allow them to leverage their capabilities and quality of services[201]. In this regard, among the characteristics of information technology which can be fittingly applied include user friendly and ability to quickly furnish information. Equally, TTF can be improved through the presence of steady technology with speedy innovation. In this regard, high technology characteristics means high Task Technology Fit[170, 202].

As mentioned in Al-Gharbawi [97], task-technology fit of management information systems (MIS) is positively and significantly affected by technology characteristics. Meanwhile, in Vai [203], technology characteristics construct was found to be significantly linked to TTF particularly within the domain of mobile technology. As further indicated in Wu, et al. [197], task-technology fit is significantly affected by the characteristics of Enterprise Information Systems. As such, the implemented ERP that can support and facilitate users in task completion will increase the ability of organizations in accomplishing their tasks. Several past related studies[81, 195, 204] also reported similar finding. As such, the hypothesis below is presented:

H2: Technology characteristics (Tech_C) have a positive impact on Task-Technology Fit in pharmaceutical companies in Jordan.

8.3 Individual Characteristics

User characteristics including the demographic details of user, technology-related skills, and culture impart significant impact on both technology implementation and acceptance [200]. Across various dimensions, individuals display distinct characteristics, and in order to decide on the best approach, paradigms and heuristics that link individual characteristics to accessible technologies need to be developed. This will facilitate assistive technology practitioners in the incorporation of user information which in turn will allow them to refine their efforts, and also, these users may refer other targeted groups that specialize in the most fitting technology[205].

Notably, having adequate level of technological competencies is important for medical practitioners as this allows effective utilization of mobile Health applications among them [206]. Still, the standardization of the obligatory technology-related proficiencies is not so simple. For this reason, to certain degree, the progression of mobile Health is impeded by the lack of expertise in bridging the gap between health and technology [199, 200].

In order to assure successful implementation of ERP systems, serious training and education from top management are necessary [207]. In addition, Tripathi and Jigeesh [208] mentioned the importance of user earlier experience and sufficient technology knowledge in evaluating the fit of an ERP. As further mentioned in Panicker and Sabu [209], age and computer knowledge of health care professionals (clinicians and lab technicians) can affect the usage of computerized medical diagnosing system. The link between certain individual characteristics of information system users and different levels of IS usage has been empirically examined and proven [210]. The following hypothesis is presented:

H3: Individual characteristics (Ind_C) have a positive impact on Task-Technology Fit in pharmaceutical companies in Jordan.

8.4 Information Quality

For information quality, the success dimension comprises the favored characteristics of an IS output. This can be exemplified by the information that can be produced by an employee through the utilization of the IS of the company, for instance, current prices for quotes and up-to-date sales statistics. The dimension therefore includes measures on the quality of the information generated by the system in addition to the value it imparts to the user[182]. In task completion, system user requires some information, and lack of information will render the system useless, and there will be no fit between the task and the system. As such, the assessment of fit between a task and a system requires high quality information whereby information of high quality assures good fit [93].

At present time, organizations can access colossal amount of data, and the data are stored in various places such as libraries, cabinets, databases and the Internet. Notably, such amount of data available today has led to the problem of information quality, and the problem is exacerbated by the challenges and hurdles faced by some organizations in improving their knowledge management systems and organizational memory. Accordingly, information mismanagement, or inaccurate data can be very costly to businesses [211].

It was reported in Cheng [212] that in the setting of hospital, the ability of IS/IT in furnishing users with high-quality information will lead to the feeling (among users) that the information has relevance to practical affairs [213]. As such, the IS/IT that is viewed as providing higher quality information is more likely to be viewed as more fitting to the tasks of user [174, 214].

As reported in Park and Raven [215], aside from encompassing what is generated by the system, information quality also shows vital contents that a given system stores and manages. Markedly, the role of information quality has been extended for modern systems, expanding the role that has to be manifested in the TTF. It was concluded in Shin, et al. [216] that ERP system performance is positively affected by information quality. Within the environment of Information Systems, Koo and Shin [217], and Wang and Tang [88] indicated the positive impact of information quality on task-technology fitness. Additionally, within the context of public procurement plan information system, Diar, et al. [103] came to a deduction of a positive impact of Information quality on task technology fit (TTF). Such finding was also reported in several extant works[107, 215, 218-220]. The proposed hypothesis is therefore as follows:

H4: Information quality (Inf_C) have a positive impact on Task-Technology Fit among pharmaceutical companies in Jordan.

8.5 System Quality

For system quality, the success dimension comprises the appropriate characteristics of an IS. As such, the dimension subsumes the IS measures. As indicated in [182], the measures generally revolve around the aspects of usability and a given system's performance characteristics. Within the context of healthcare institution, system quality in information system is linked to the accessible features within the system and these include user interface and the system performance. Among the factors that can be evaluated in system quality include availability, flexibility, ease of use, ease to be learned, usefulness, response time, and security [221]. It was stated in Cheng [212] that within the setting of hospital; when an IS/IT is found to be reliable and its system quality level is good just like other comparable systems, the IS/IT will be perceived as highly appropriate for user's tasks [222]. Furthermore, when an IS/IT is found to be easy and seamless to access, retrieve, and even upload/download files to/from the corresponding system through mobile devices, user will feel a great fit between the IS/IT and their tasks [174].

In a related study, Smith and Mentzer [223] reported that the construct of system quality and system access denote the FTTF construct factors of higher order. Furthermore, many studies have affirmed the impact of system quality on task-technology fit including Isaac, et al. [220] who examined the Internet and net benefit among Yemeni government organization employees and affirmed that system quality generally affects task-technology fit. It was concluded in Shin, et al. [216] that ERP system performance is positively affected by information quality. Within the environment of Information Systems, Koo and Shin [217], and Wang and Tang [88] indicated the positive impact of system quality on task-technology fitness. Relevantly, in public procurement plan information system, Diar, et al. [103] concluded a positive impact of System quality on task technology fit (TTF), which is in line with the finding reported in several past studies [107, 218, 220]. The following hypothesis is therefore proposed:

H5: System quality (Sys_C) have a positive impact on Task-Technology Fit among pharmaceutical companies in Jordan.

8.6 Service Quality

For the construct of service quality, the success dimension denotes the quality of support provided by the IS department and IT support personnel to users, for instance, helpdesk, training, and hotline[182]. In this regard, considering that quality is embeddable into manufacturing processes through statistical quality control processes, there has been a dramatic progress in manufacturing quality control [224, 225]. However, measuring quality in service delivery is no simple task. Services are generally performance oriented, and for this reason, it is difficult to implement the specific universal measure for services [225, 226].

Among hospitals, Cheng [212], the view that the quality of technical support services for the IS/IT provided by the IS department and IT support personnel is high will lead to the view that the given IS/IT has high fit to the tasks at hand, and for this reason, higher service quality is likely to increase TTF [174]. In Tam and Oliveira [174], service quality was reported as a commonly used instrument in IS function measurement. Further, the IS effectiveness measures are mostly concentrating on the products, not on the services. Indeed, the exclusion of ERP service quality will lead to incorrect estimation of ERP effectiveness. Further, it was highlighted in Hsu, et al. [227] that in conjunction with system quality and information quality, service quality significantly impacts the post implementation success of ERP. Notably, it was reported that service quality has significant interaction with information quality and system quality in promoting ERP system's post implementation success through the increase in extended use by employees. Further, it was concluded in Cheng [212] that in the cloud-based hospital information system (HIS), there was a positive impact imparted by General technical support service quality on TTF. Such finding was also reported in past relevant studies [107, 218]. Hence, this study proposed the following hypothesis:

H6: Service quality (Ser_C) have a positive impact on Task-Technology Fit among pharmaceutical companies in Jordan.

8.7 Task-Technology Fit

As mentioned in Goodhue and Thompson [59], the interactions that occur between "individuals' and an information system are often interlinked with their task-technology and individual-adoption behaviours. Accordingly, task technology fit entails the degree to which information systems or system environments facilitate the user task performance of individuals amidst the compatibility between task and technology functionality [228]. It was additionally reported that task-technology fit has linkage to the personal performance condition that is applicable in the bigger context of the effect of information technology on individual performance[104, 190, 195].

In TTF analysis, user perceived weaknesses are positioned in clinical IT systems. This can lead to system improvements which can lead to the increase in usability. For health care institutions, such information may increase the effective engagement of vendors in improving their future product releases. Furthermore, the obtained data could present information on clinician usability priorities for clinical IT systems. Also, the data may allow the priorities of different types of clinicians (e.g. physicians and nurses) to be distinguished. Upcoming serial TTF surveys may offer insights on the transformation of clinician priorities and challenges of usability during the next more challenging phases of health care IT adoption, for instance, order entry of direct provider [157].

In the fulfilment of the contextual demands and critical nature of healthcare work, there has to be a match between technology (mobile Health) solutions and the tasks structures, and in order to prove their sustainability potential, the technology solutions must have the ability to optimize performance [87]. Within the domain of healthcare, Hsiao and Chen [191] mobile IS provides nursing staff with real-time and accurate information while also increasing their efficiency and effectiveness in their duties of patient-care, leading to the increase in nursing performance. It was additionally mentioned in Park [106] that task-technology fit and perceived performance impacts were positively linked. Similar finding was also noted in some past works [103, 104].

Relevantly, Gatara [188] reported significant positive co-variations of TTF as the internal consistency of co-aligned community health workers task and mobile Health tool technology characteristics on user performance. In this regard, information technology that is more aligned with the prerequisites of the employees in pharmaceutical companies will have higher potentials of information technology success, which can increase performance. It was reported in Huy, et al. [229] that task-technology fit affects job performance of employee in ERP environment positively. As such, if the ERP as information technology offers features that fit the task requirements of employees, in this context, the employees of pharmaceutical companies, the ERP is likely to be adopted [230]. The hypothesis below is therefore presented:

H7: Task-Technology Fit (PTTF) has a positive impact on the performance of pharmaceutical companies in Jordan.

9. RESEARCH METHODOLOGY

The present empirical study is designed to test the research framework and the above mentioned hypotheses. This section briefly addresses methodological issues related to the subject, instrument development and data collection.

9.1 Subjects

This study investigates the impact between task-technology fit and performance in pharmaceutical companies. The study also aims to investigate the impact between task-technology fit and its antecedents (task-characteristics, technology-characteristics, individual characteristics and quality characteristics). Jordanian pharmaceutical companies have been chosen in this study for a number of reasons. Firstly, as a developing nation, Jordan is implementing strict measures in IT adoption in the promotion of internet awareness, and according to Al Bakri [231], such implementation has led to the birth of a number IT and IS businesses, as highlighted in a report by the Ministry of Information and Communication Technologies (MICT). Another reason for choosing pharmaceutical companies in Jordan is the economic problems that Jordan has faced. These problems have caused reduction to productivity and exports to the country. The problem has been further intensified by large public and private spending on consumer and capital goods purchases. All of these have led to the reduction of financial resources to Jordan. As reported in Al-Refai [232], the problems faced by Jordan have caused serious and constant deficit in the trade balance, resulting in increased reliance on external funds, such as grants and loans. Alqatan [24] further added that there are limited natural resources in Jordan, and therefore, it is challenging for the country to boost its economic development. As such, alternative resources have to be sought.

The local pharmaceutical manufacturing sector Jordan is considered as well-established and a key sector in the country and the Middle East region, and it caters to up to 25% of the needs of Jordan [233]. Pharmaceutical sector in Jordan has seen significant growth and it represents the second largest export industry to the country, it greatly contributes in the economy of the country, contributing to GDP by 20%, providing employment to 8000 people, and with roughly 70-80% of output sold in the export markets, and the drug is distributed to roughly 60 Arab and foreign countries [13].

Research and Development (R&D) is integral in Jordanian pharmaceuticals, and such worth of R&D comes from the ability of R&D in fostering the economic growth of a company, as it drives innovation and application of new technologies. Meanwhile, innovation and new technology application can increase the competitive advantage of the company, prolong the company's life and improve the position of the company within the market[234]. The pharmaceutical sector is obliged to utilize modern technologies to assure consistent execution of its pharmaceutical role to survive and consistently contribute to GDP, and this has led to the need to examine the impact of ERP systems in enhancing the performance of Jordanian pharmaceutical companies [13].

Business-ERP operational alignment is regarded as the core principle in the realization of business value from ERP [56]. In this regard, as discussed in Hwang [235] and Venkatraman and Fahd [236], increased usage of ERP, ERP effectiveness and efficiency, more flexible business and ERP, and better business performance are among the major positive outcomes of Business-ERP alignment.

Somehow, there are still insufficient empirical data and subsequent analysis on this subject (business-ERP operational alignment) particularly within the domains of Arab nations including Jordan as highlighted in Klischewski and Elragal [47], also in pharmaceutical companies as argued in Robleto [50]. Hence, a comprehensive model is presented in this study. This model provides the description on the factors affecting business-ERP operational alignment by pharmaceutical companies in developing countries, especially in Jordan.

9.2 Instrument Development

Operationalization defines variables into quantifiable factors and this is accomplished through the linking of theory language to empirical measurements. In comparison, a theory comprises abstract concepts, assumptions, relationships, definitions, and causality, while empirical measures usually comprise description of how specific variables are measured. Equally, empirical measures comprise certain operations used in showing the actual presence of construct. In operationalization, the concept presents the dimension, aspects or properties of behaviour which are next construed into actual aspects, resulting in the measurement index of the concept.

The present study primarily aims to examine the conjectured relationships in the same model. For the purpose, the main instrument used is the questionnaire. Further, the variables are defined and measured. Notably, the questionnaire used must have the following characteristics: the questionnaire contains items that are valid and reliable, the measurement operations variables are in line with the research questions, and the items are clear, logical, and have good flow so that the respondent is motivated to complete it. Accordingly in Sekaran [237], it was stressed that a well-developed instrument is used. In this study, the scales used are adopted from reliable and valid instruments; these instruments were previously defined, accepted and tested. However, in order to assure the aptness of the instruments with the study objectives and environment, some modifications need to be made. The following sub-sections present the operational definitions of variables used in this study.

A. Measurement items for Task-Technology Fit and Performance

In this study, the used measures in the operationalization of the variables were adapted from business- ERP software alignment studies. The items used in the measurement of variables (task-technology fit and performance) were obtained from measures used in past studies [60, 238, 239]. Table 3 accordingly presents the measurement items for task-technology fit and performance in summary form.

Table 3: The Summary Of The Measures Of Items For TTF Model

Variable Name	Adapted from	Item. No	Items
Performance	[60, 238, 239]	PER1	Using ERP software can improve the message exchanges between Pharmaceutical professionals.
		PER2	Using ERP software can improve the quality of manufactured Pharmaceutical products.
		PER3	Using ERP software can increase the professional image of Pharmaceutical personnel.
		PER4	Using ERP software can improve the overall performance in Pharmaceutical practices.
		PER5	Using ERP software can facilitate communication with team work between pharmaceutical companies.
Task-Technology Fit (PTTF)	[59, 176]	TTF1	Using ERP software fits well with my work goals and needs.
	[176, 240]	TTF2	Using ERP software fits well with the way I like to enhance the efficiency of my work.
	[176, 241]	TTF3	Using ERP software fits well with the way I like to strengthen my professional skills.
	[176, 210]	TTF4	The ERP software that gives me access to data are convenient and easy to use.
	[242]	TTF5	The ERP software would be a good way to share and exchange information between pharmaceutical organizations.

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B. Measures of TTF Factors Influencing Task-Technology Fit

Task-technology-fit factor has been found to affect performance in a number of domains, pharmaceutical companies included. Additionally, this factor is considerably impacted by the characteristics of individual, task and technology. Accordingly, the items that cover task characteristics, technology characteristics and individual characteristics used in this study were adapted from past related works [151, 191, 238, 243-246]. These items are in agreement with the objectives of the study. The measurement items for individual characteristics, task characteristics and technology characteristics are displayed in Table 4 in summary form.

Table 4: The Summary Of The Measured Items For TTF Antecedents

Variable Name	Adapted from	Item. No.	Items
Individual characteristics	[238, 243]	Ind_C1	Others come to me for advice on ERP software.
	[244, 245, 247]	Ind_C2	People who are important to me believe that I should use ERP software when providing pharmaceutical services.
		Ind_C3	The use of ERP software is my preferred way of performing tasks.
		Ind_C4	Presidents, managers and those who influence my behaviour think that I should use ERP software.
Technology characteristics	[151, 238]	Tech_C1	There is sufficient amount of ERP software for me to use in my department.
	[151, 238]	Tech_C2	ERP software in use is quite convenient.
		Tech_C3	ERP software can provide services anywhere in the company.
	[238, 246]	Tech_C4	The function of ERP software is enough for me to complete routine tasks.
Task characteristics	[60, 151, 191, 238]	Task_C1	I often need to use ERP software to send various information to other Pharmaceutical personnel.
		Task_C2	I use ERP software to help me make Pharmaceutical decisions in urgent situations.
		Task_C3	I often need to use ERP software to immediately control the medicine in critical condition with other Pharmaceutical professionals.
		Task_C4	I need to use ERP software to work with professionals to solve the Pharmaceutical problems of the medicine.

C. Measures of Quality Factors Influencing Task-Technology Fit

Within the context of pharmaceutical companies, task-technology fit is measured through the use of quality characteristics (information quality, system quality and service quality). Accordingly, the utilized operational measurement approaches for the constructs are discussed in this section. As mentioned, the scales of measurement were adopted from past relevant works. Table 6 presents the measurement items of the factors impacting task-technology fit in pharmaceutical companies in summary form.

Table 6: The Summary Of The Measurement Items Of Quality Factors Influencing Task-Technology Fit

Variable Name	Adapted from	Item. No	Items
Information Quality	[248-250]	Inf_Q1	The ERP software provides accurate pharmaceutical information.
		Inf_Q2	The ERP software provides up-to-date pharmaceutical information.
		Inf_Q3	The ERP software provides relevant pharmaceutical information.
	[251-253]	Inf_Q4	The pharmaceutical information provided by the ERP software is readable, clear and well formatted.
System quality	[251, 253, 254]	Syst_Q1	The ERP software requires only the minimum number of fields and screens to achieve a task.

		Sys_Q2	The data provided by the ERP software is fully integrated and consistent.
		Sys_Q3	The ERP software meets the staff work requirements.
		Sys_Q4	The ERP software is reliable (always up-and-running, powerful in all cases).
Service Quality	[255-257]	Ser_Q1	The ERP software makes it easy to find what I need.
		Ser_Q2	Service that available in the ERP software is fully accessible and functioning well.
		Ser_Q3	The ERP software is always available for service.
		Ser_Q4	The ERP software enables me to get service quickly.

In this study, A five-point Likert scale is used in measuring each construct item. The Likert scale facilitates response and generates suitable value for each scaling position. Not only that, the scale allows computation of average or mean scores for each question or for all questions in general. Alqatan [24] accordingly proposed the use of odd numbered Likert scale of 5 or 7 so that there is a central point to allow statistics based on normality for data analysis. The five-point Likert scale has been favoured among countless of studies, while a scale comprising more than 5 points may be confusing to respondents in regards to the distinction between points [258]. This study employed a five-point Likert scale for the questionnaire items because the questionnaire contains a significant number of items, and therefore, the use of five-point Likert scale is suitable [259]. Furthermore, the pre-test shows that the five-point Likert scale is less complex.

In their study, Malhotra and Birks [260] successfully employed the Likert scales in measuring customer opinions, and the authors proved that the use of the scales allows easy construction, administration, and understanding. The use of Likert scale can be observed in many studies that determine behavioural attitudes. For instance, Kelley, et al. [261] utilized the Likert scale in getting the respondents to rate the statements based on how favourable or unfavourable the statements appear to them. Notably, a five-point Likert scale has been favoured because one with seven points Likert scale may cause confusions to the respondents. As mentioned in Peng, et al. [262], the use of a five-point Likert scale would reasonably diminish the variation in the model. In business-IT alignment, Moorty, et al. [263] mentioned the use of a five-point Likert scale in questionnaire development.

The items of variables in this study namely those covering task characteristics, technology characteristics, individual characteristics, quality characteristics (information quality, system quality and service quality), task-technology fit and performance items are equipped with an interval scale of a five-point Likert scale as measurement. For respondents' profiles, they are measured using ordinal scales. This study used Likert scale in examining the degree of agreement of respondents towards the questionnaire items, and the details of the scale are as follows: (1) strongly agree, (2) agree, (3) neutral, (4) disagree, and (5) strongly disagree. Shahibi and Fakeh [264] accordingly indicated that the factors with a mean value of less than 3 are regarded as important.

9.3 DATA COLLECTION

Data collection, as described in Kothari [265], involves the collection of empirical evidence for the purpose of gaining fresh insights on a given situation and finding answer(s) to the questions that guide the research. Questionnaire in this context was of value as it allows respondents to respond anonymously; anonymity allows respondents to confidently and fearlessly provide truthful and accurate information to the researcher. In this study, truthful and accurate information can assure the attainment of reliable and instrumental data on business-ERP operational alignment among pharmaceutical companies.

Pertinently, primary data are raw data that are obtained for the purpose of dealing with the research problem [266]. The instruments used in obtaining such data include observations, questionnaire, interviews, and telephone or personal surveys [267]. The primary data in this study were obtained using questionnaires which were distributed to employees of selected Jordanian pharmaceutical companies. The list of pharmaceutical companies can be viewed in Appendix E (to measure the impact of the factors influencing the task-technology fit to improve the performance of pharmaceutical companies).

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Sampling entails the activity, process, or technique of picking a fraction of a population to have the population's characteristics determined [268]. In sampling, diverse parts of the population are included and this includes an individual element or a group of elements that are chosen from the population in question [269]. Meanwhile, strategy is a devised plan in order that the chosen sample surely represents its respective population [270]. Accordingly, the next sub-sections will provide the details of the method used for sampling and the target population.

A. Defining the Target Population

The target population refers to a group of individuals (or group of organisations) that possesses certain identifiable shared crucial characteristic [271]. In business studies, the targeted population is usually defined during the process of sample selection, and this process is considered as vital [272]. Accordingly, ERP users of pharmaceutical companies are this study's target population, and data are to be gathered from early November (1 Nov 2020) to the middle of December (15 Dec 2020).

B. Determination of the Sampling Frame

The sample frame comprises a list containing target population members that is usable in sample formation [259], and participants are randomly chosen from the sample frame. Accordingly, there are various sources of sample frame such as the yellow pages or a telephone directory. It should be noted that cost and quality of the questionnaire can be affected by the determination of the sample frame [273].

The impact of business-information technology and its antecedents on the performance of pharmaceutical companies in Jordan are examined in the present study. Accordingly, the research carried out involved 16 pharmaceutical companies as reported in the Jordanian Association of Pharmaceutical Manufacturers (2016). In sum, there were 174 ERP users employed by these companies, because it is thought that they have sufficient knowledge about how the company employ ERP software and connected it with modern technologies in business field [9, 43]. Hence, all these individuals make up the study population.

C. Selecting the Sampling Method

Sampling is a method used in the identification of the unit of analysis and in determining how the information is attained from the target sample [274]. It can also be applied in decreasing any potential errors in the sampling process [275]. Hair, et al. [276] indicated that the selection of method of sampling is factored by the following the study nature, available time, sample obtainability, and financial resources. Probability sampling was the chosen method in this study to allow the generalization of the findings from a sample representing the population.

Probability sampling is appropriate for this study as it generates better accurateness and generalizability, as opposed to non-probability sampling. Another reason for choosing this method is the availability of all samples in participating in the survey, supported by the Jordanian Association of Pharmaceutical Manufacturers (JAPM) in data collection. Time and budget constraints also factored the choice of the probability sampling method [277].

Regarding the method used, the respondents were obtained through simple random sampling method. With random sampling, each unit of the population had a similar probability of inclusion in the sample, which was intended when deciding the population size [278]. Using the method, the Pharmaceutical companies were randomly chosen from Jordanian Association of Pharmaceutical Manufacturers (JAPM). This method was used because was easy to use and in order to avoid biasness [279], as well as assures a representative sample [280].

D. Determining the Sample Size

In empirical studies, size of sample can affect the quality of research, and therefore, it has to be appropriate [281]. Sample size refers to the required number of units to be surveyed to generate findings that are both accurate and dependable [282]. In determining sample size, statistical tools are used and the choice of statistical tools will affect sample size as well. For some, it is advisable to employ large sample size because the achieved results can have greater generalizability. Furthermore, the data from large sample size are more likely to have normal distribution [271]. In this study, the sample size was determined using the criterion of the study and the desired accuracy.

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Part of the sampling processes is the examination of the characteristics of the group of individuals chosen from the target population [283]. Accordingly, sample sizes fall into the following categorizations: 100 as poor, 200 as fair, 300 as good, 500 as very good, and 1000 and more as excellent [284]. Notably, the inclusion of multiple response data analyses in multivariate studies requires the use of large sample size [285]. For the purpose of the present study, the Pharmaceutical companies were selected based on the information provided by JAPM. As mentioned earlier, there were 174 users employed by the chosen companies (in total), and following the recommendation in Sekaran (2003), the appropriate sample size is 118. However, the researcher decided to collect 174 data. The reasons behind the collection of extra 56 data lie in the preference to achieve high of response rate. The response rate report is discussed in Table 7. Secondly, the researcher follows the central limit theorem which states that the large sample size, the more probable the sample mean is close to normal distribution. The achievement of larger sample size indicates closer to normal distribution. If just target exactly 118 sample sizes, it is risky facing insufficient sample size in data collection process.

The study field consists of (16) pharmaceutical companies registered in the Jordanian association of pharmaceutical manufacturers in Jordan according to (JAPM). The sample unit consisted of all employees who occupy the position of managers, supervisors, heads of department and employees of IT departments in the pharmaceutical companies.

In this research, questionnaires were distributed to 200 ERP users in pharmaceutical companies in Jordan. As mentioned earlier in chapter Three, targeted sample size was 164 respondents as representatives of the population. According Sekaran (2005), the biggest number of sample size or response rate in research is better for the achievement of good result and to avoid the barriers in data collection process and hence, the researcher needs to distribute more than target number of sample size. Most researchers faced difficulty in getting back to the relevant respondents who refuse to answer the questionnaire. Therefore, the final responses consisted of 164 questionnaires, which represented 82% ((164/200) *100) of the total number of questionnaires distributed as shown on Table 7 which was obtained within the two months of the data collection period.

Table 7: Summary Of Response Rates

Details	Rate
Questionnaires distributed	200
Returned Questionnaires	180
Incomplete	16
Questionnaire completed	164
Response rates	82%

As stated in chapter Three, sample size for this research was 118. But to avoid no response risks from respondents, the researcher decided make extra 56 questionnaires and as a consequence, achieved the retrieval of 164 data. This is considered satisfactory and good enough because the researcher received 164 which is higher than the target sample size which is 118. As shown in Table 7, out of 200 questionnaires distributed to pharmaceutical companies, 180 questionnaires were returned. Out of these 180 questionnaires, 16 were returned incomplete. Thus, 164 questionnaires or 82% percent were coded in data key in process and used for further analyses.

10. DATA ANALYSIS

This study employed the quantitative data analysis. Quantitative reports by way of tabulations, percentages, and measure of central tendency were accordingly presented. Furthermore, the use of SPSS Version 22 in statistical analysis in this study allowed the alignment of the proposed program with the prerequisites of the quantitative method (questionnaire). Also, the use of SPSS allows researcher to concentrate on a number of statistics for questionnaire element. It also shows causal relationships between the questionnaire elements.

This study analysed the gathered data using descriptive analysis, and the use of descriptive statistical tool assists the data description and their extent of usage [286]. The findings are generally displayed through the use of tables and charts. The mean score and standard deviation are determined using Likert scale, and in this study, it facilitates the determination of the degree of different challenges faced by pharmaceutical companies in its ERP operational alignment to business strategy. The classification for the rating scale is used to investigate the level of mean score for each item in the variables. Refer to Table 8 below:

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Table 8: The Rating Score

Rating score	Mean Score
Low	1.0 ≤ Mean score ≥ 2.33
Moderate	2.34 ≤ Mean score ≥ 3.67
High	3.68 ≤ Mean Score ≥ 5.00

Majid and McCaffer [287]

Cronbach's alpha coefficient was used in this study in the determination of reliability or internal consistency of the study variables. Statistical Package for Social Sciences (SPSS) software was used in the study's data analysis, while responses for further analysis and comparison were presented in tables. Quantitative reports by way of tabulations, percentages, and measure of central tendency were accordingly presented. Furthermore, the use of SPSS Version 22 in statistical analysis in this study allowed the alignment of the proposed program with the prerequisites of the quantitative method (questionnaire). Also, the use of SPSS allows researcher to concentrate on a number of statistics for questionnaire element. It also shows causal relationships between the questionnaire elements.

During the multicollinearity and reliability were also evaluated. Relevantly, among the methods of analysis carried out in this study include factor analysis, descriptive statistics, reliability, correlations, and simple regressions. These methods were performed to accomplish the research objectives.

A. Demographic and Organizational Profile

The data collection process was carried out in pharmaceutical companies of Jordan, a developing country. The background aspects of respondents obtained in this study include working experience of the respondents, gender, education level, years of experience in using computers and position level of the respondents in the organization. The data was collected to provide an insight into the subjects and assist in interpreting results of the analysis. Table 9 summarize the description of the demographic characteristics for the participants in this study.

Table 9: Characteristics Of Respondents (N = 164)

Measure	Items	Frequency	Percentage (%)
working experiences	<= 20 Years	102	62.2
	21- 29 Years	43	26.2
	30-39 Years	15	9.1
	Over 40 Years	4	2.4
Gender	Male	104	63.4
	Female	60	36.6
Educational Level	Doctorate	18	11.0
	Master	37	22.6
	Bachelor	101	61.6
	other	8	4.9
Computer Experiences	less than 5 Years	5	3.0
	5-9 Years	30	18.3
	more than 10 Years	129	78.7
Position Level	Manager	2	1.2
	Head of department	14	8.5
	supervisor	9	5.5
	employee	139	84.8

Based on Table 9, the frequency and percentage of experienced shows that most of respondents had less than 20 years of working experience (Frequency = 102, Percentage = 62.2%). This also table 9 shows that from the total number of respondents (164), approximately 63.4% of them were male and 36.6% were female. Most of respondents were bachelor holders constituting 101 or 61.6% of the total respondents. In addition, 139 (84.8%) out of the total respondents are employees and majority of them were more than 10 years of computer experiences, constituted 129 respondents (78.7%) of the total respondents.

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B. Factor Analysis (Validity Assessment)

Factor analysis method confirms the items or dimensions used accurate in each variable as measurements. Basically, factor analysis is a multivariate analysis procedure that attempts to identify any underlying "factors" that are responsible for the covariant among a group independent variable. The goals of a factor analysis are typically to reduce the number of variables used to explain a relationship or to determine which variables show a relationship. According to Cunningham [288], the factor analysis method is utilized to determine the nature of the construct influencing a set of responses and to achieve the validity of questionnaires purposes.

For validity assessment, the researcher used factor analysis and, in this analysis, the Kaiser Meyer Olkin (KMO) and Bartlett's test are often used to explore the items measuring the same construct, and this holds true in this study. According to Ramani [289], the simplest method to explore the constructs for examining the validity is through several guidelines established:

1) Correlation matrix – most pairs between constructs are significance.

2) The Kaiser-Meyer- Olkin Measure should be equal or more than 0.50. values of KMO above or equal to 0.90 are considered values, those of 0.80 are considered meritorious, those of 0.70 are considered middling, those of 0.60 are considered mediocre, and those of 0.50 are considered acceptable but miserable. Finally, KMO values below 0.50 are considered unacceptable.

3) Bartlett test of Sphericity (Approximate Chi-Square) – Large and Sig. (p-value) – should be less than 0.05.

The results of factor analysis (factor loading, the Kaiser Meyer Olkin (KMO) and Bartlett's test) are shown in Table 10:

Table 10: Factor Analysis Result

Construct	Factor loading	KMO	Approx. Chi-Square	DF	Sig.
Task-Technology Fit		0.833	508.464	10	0.001
TTF1	.844				
TTF2	.859				
TTF3	.825				
TTF4	.842				
TTF5	.866				
Performance		0.853	340.491	10	0.001
Perf1	.868				
Perf2	.771				
Perf3	.705				
Perf4	.855				
Perf5	.762				
Information Quality		0.765	227.063	6	0.001
Inf_Q1	.840				
Inf_Q2	.745				
Inf_Q3	.780				
Inf_Q4	.844				
System Quality		0.838	379.943	6	0.001
Sys_Q1	.875				
Sys_Q2	.878				
Sys_Q3	.863				
Sys_Q4	.877				
Service Quality		0.797	273.137	6	0.001
Ser_Q1	.866				
Ser_Q2	.804				
Ser_Q3	.948				

Ser_Q4	.797				
Task Characteristics		0.777	276.805	6	0.001
Task_C1	.894				
Task_C2	.782				
Task_C3	.846				
Task_C4	.770				
Technology Characteristics		0.768	170.941	6	0.001
Tech_Q1	.775				
Tech_Q2	.797				
Tech_Q3	.750				
Tech_Q4	.785				
Individual Characteristics		0.776	210.791	6	0.001
Ind_C1	.780				
Ind_C1	.852				
Ind_C1	.786				
Ind_C1	.775				

The KMO values are presented in Table 10, and it is evident from the Table 10 that all items in the factors have meritorious adequacy with the exception of the following items; service quality (0. 797), information quality (0.765), technology characteristics (0.768), task characteristics (0.777), individual characteristics (0.776),– these items were middling but all were considered suitable for factor analysis as recommended by Hair [290]. With regards to the Bartlett sphericity results, they are large, with associated significance level that is 0.001 for the entire factors. In sum, the KMO measure and Bartlett's sphericity results indicate that the items in the entire factors satisfied the factor analysis criteria and this shows that factor analysis is appropriate to be employed.

Moreover, factor loading refers to the correlation between an item and a specific factor as mentioned and on the basis of the table 10, it is evident that all the items in the factors have factor loadings greater than 0.50. This indicates that the items significantly correlate to the factors – factor loadings differ from 0.705 to 0.948 – indicating that every set of items measured a single thing.

C. Reliability Test

As stated in the research methodology chapter, the reliability test is done to test the goodness of the data. Reliability tests for data used in the questionnaire as instrument for data collection. It determines the consistency of respondents' answers to all the questions in the study, tests the degree of the questions independent measurement of the same concept in their correlation with one another. The Cronbach's alpha is used to measure the reliability of questions for each variable. The Cronbach's alpha value above or equal to 0.70 was considered reliable as suggested by Nunnally (1978) and to measure the strength of reliability, the researcher followed Hair et al.'s (2007) The Rule of Thumb for Cronbach's Alpha guidelines as listed in Table 11 below:

Table 11: The Cronbach's Alpha Value

Alpha	Strength
<0.6	Weak (Not Acceptable)
0.6 - <0.7	Moderate
0.7 - <0.8	Good
0.8 - <0.9	Very Good
0.9	Excellent

Hair et al. (2007)

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Table 11: Cronbach's alpha (α) reliability coefficients for the main constructs

Variable	No.of item	Cronbach's Alpha	Strength
Task-Technology Fit	5	0.902	Excellent
Performance	5	0.834	Very Good
Information Quality	4	0.814	Very Good
System Quality	4	0.896	Very Good
Service Quality	4	0.847	Very Good
Task Characteristics	4	0.835	Very Good
Technology Characteristics	4	0.780	Good
Individual Characteristics	4	0.811	Very Good

In Table 11, the results indicate acceptable reliability coefficient for variables without any deleted items. All variables are acceptable because they are more than 0.70 [291]. In addition, in terms of strength of reliability, one variable (Task-Technology Fit) obtained an excellent level. performance (0.834), information quality (0.814), system quality (0.896), service quality (0.847), task characteristics (0.835) and individual characteristics (0.811) obtained a very good level of strength. Moreover, technology characteristics (0.780) obtained a good level of reliability. No item required deletion. In terms of strength of reliability, all variables are at acceptable strengths of reliability. Therefore, the results show that all of the variable constructs achieved reliable assumption.

D. Test of Multicollinearity

According to Hair, et al. [276], the multicollinearity is the degree to which other variables can explicate a variable in the analysis. Tabachnick and Fidell [292] stated that the appearance of multicollinearity occurs when a high degree of correlation is found between the variables. There are several ways to measure collinerity existing between the independent variables and they include, Bivariate Pearson Correlation, Tolerance Value and Variance Inflation Factors (VIF).For the examination of the multicollinerity among the study variables, Bivariate Pearson Correlation, VIF and tolerance tests were conducted. In Bivariate Pearson Correlation test, the rule is that the correlation coefficient between the latent constructs should not be greater than 80% [269]. Otherwise, the two constructs must be combined to form a single construct. The summarized results for Pearson correlation analysis between constructs for this research are as follows in Table 12:

Table 12: Summary Of Pearson Correlations Results

	Task_C	Tech_C	Per	TTF	Ind_c	Sys_Q	Ser_Q	Info_Q
Task_C	1							
Tech_C	.344**	1						
Per	.241**	.329**	1					
TTF	.307**	.378**	.334**	1				
Ind_C	.353**	.536**	.525**	.532**	1			
Sys_Q	.244**	.400**	.312**	.670**	.437**	1		
Ser_Q	.200*	.447**	.478**	.467**	.604**	.483**	1	
Info_Q	.271**	.495**	.454**	.535**	.504**	.528**	.610**	1

Tes_C: Task Characteristics, Tec_C: Technology Characteristics, Ind_C: Individual Characteristics, Info_Q: Information Quality, Sys_Q: System Quality, Ser_Q: Service Quality, TTF: Task-Technology Fit, Perf: Performance

As can be seen in Table 12, the correlation analysis of the constructs exposed to Bivariate Pearson Correlation analysis indicated that all correlation between each pairs of constructs were less than 0.80 indicating no multicollinearity problem.

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To confirm the previous results, the tolerance and variance inflation factors (VIF) test was conducted in this study. This test pinpoints the multicollinearity issues that may not be discernible in the correlation matrix. In this regard the tolerance values should range between 0 and 1, while the Variance Inflation Factor (VIF) should be lower than 10[293].

Table 13: Tolerance Value And The Variance Infation Factor (VIF) Test

Constructs	Tolerance	VIF
Task Characteristics	.820	1.220
Technology Characteristics	.616	1.622
Individual Characteristics	.483	2.072
System Quality	.494	2.026
Service Quality	.492	2.032
Information Quality	.500	2.002
Task-Technology Fit	.459	2.178

The result in Table 13 shows that the values of tolerance ranged from 0.459 to 0.820 and the VIF values ranged from 1.220 to 2.178. Tolerance result for each independent variable was below 1.0 and VIF value was below the threshold point which is 10 [294]. The multicollinearity test above indicates that all the variables in this research were correlated and no multicollinearity problem appeared.

E. Hypothesis Testing

In this section, there are seven (7) hypotheses to be tested. Simple regression analysis was conducted to investigate the significance influences of direct effects of independent variables towards dependent variables. The explanation of hypotheses results is divided according to the following sub-titles:

H1: Task-Technology Fit (TTF) has a positive impact on the performance of pharmaceutical companies in Jordan

Table 14: Simple Regression Analysis For H1

Dependent Variable	Model Summary		ANOVA Analysis		Coefficient				
	R	R2	F	Sig F*	Independent Variable	B	Std. Error	T	Sig t*
Performance	0.334	0.111	20.315	0.001	Task-Technology Fit	0.184	0.041	4.507	0.001

Table 14 shows that F Value is equal to 20.315 which is significant at level (p≤0.05). This indicates that there is impact for task-technology fit on performance. The Beta value (0.184) indicates that the impact of task-technology fit on performance is positive and significant (p≤0.05), thus this hypothesis (H1) is accepted. In addition, based on the value of adjusted R2, the task-technology fit explains only (11.1%) of the variance in performance.

H2: Task characteristics (Task_C) have a positive impact on Task-Technology Fit in pharmaceutical companies in Jordan.

Table 15: Simple Regression Analysis For H2

Dependent Variable	Model Summary		ANOVA Analysis		Coefficient				
	R	R2	F	Sig F*	Independent Variable	B	Std. Error	T	Sig t*
Task-Technology Fit	0.307	0.094	16.835	0.001	Task Characteristics	0.464	0.113	4.103	0.001

Table 15 shows that F Value is equal to 16.835 which is significant at level (p≤0.05). This indicates that there is impact for task characteristics on task-technology fit. The Beta value (0.464) indicates that the impact of task characteristics on task-technology fit is positive and significant (p≤0.05), thus this hypothesis (H2) is accepted. In addition, based on the value of adjusted R2, the task characteristics explains only (9.4%) of the variance in task-technology fit.

H3: Technology characteristics (Tech_C) have a positive impact on Task-Technology Fit in pharmaceutical companies in Jordan.

Table 16: Simple Regression Analysis For H3

Dependent Variable	Model Summary		ANOVA Analysis		Coefficient				
	R	R2	F	Sig F*	Independent Variable	B	Std. Error	T	Sig t*
Task-Technology Fit	0.378	0.143	27.053	0.001	Technology Characteristics	0.543	0.104	5.201	0.001

Table 16 shows that F Value is equal to 27.053 which is significant at level (p≤0.05). This indicates that there is impact for technology characteristics on task-technology fit. The Beta value (0.543) indicates that the impact of technology characteristics on task-technology fit is positive and significant (p≤0.05), thus this hypothesis (H3) is accepted. In addition, based on the value of adjusted R2, the technology characteristics explains only (14.3%) of the variance in task-technology fit.

H4: Individual characteristics (Ind_C) have a positive impact on Task-Technology Fit in pharmaceutical companies in Jordan.

Table 17: Simple Regression Analysis for H4

Dependent Variable	Model Summary		ANOVA Analysis		Coefficient				
	R	R2	F	Sig F*	Independent Variable	B	Std. Error	T	Sig t*
Task-Technology Fit	0.532	0.283	63.816	0.001	Individual Characteristics	0.684	0.086	7.988	0.001

Table 17 shows that F Value is equal to 7.988 which is significant at level (p≤0.05). This indicates that there is impact for individual characteristics on task-technology fit. The Beta value (0.684) indicates that the impact of individual characteristics on task-technology fit is positive and significant (p≤0.05), thus this hypothesis (H4) is accepted. In addition, based on the value of adjusted R2, the individua; characteristics explains only (28.3%) of the variance in task-technology fit.

H5: Information quality (Inf_C) have a positive impact on Task-Technology Fit among pharmaceutical companies in Jordan.

Table 18: Simple Regression Analysis For H5

Dependent Variable	Model Summary		ANOVA Analysis		Coefficient				
	R	R2	F	Sig F*	Independent Variable	B	Std. Error	T	Sig t*
Task-Technology Fit	0.535	0.286	64.827	0.001	Information Quality	0.710	0.088	8.052	0.001

Table 18 shows that F Value is equal to 64.827 which is significant at level (p≤0.05). This indicates that there is impact for information quality on task-technology fit. The Beta value (0.710) indicates that the impact of information quality on task-technology fit is positive and significant (p≤0.05), thus this hypothesis (H5) is accepted. In addition, based on the value of adjusted R2, the information quality explains only (28.6%) of the variance in task-technology fit.

H6: System quality (Sys_C) have a positive impact on Task-Technology Fit among pharmaceutical companies in Jordan.

Table 19: Simple Regression Analysis For H6

Dependent Variable	Model Summary		ANOVA Analysis		Coefficient				
	R	R2	F	Sig F*	Independent Variable	B	Std. Error	T	Sig t*
Task-Technology Fit	0.670	0.448	131.662	0.001	System Quality	0.640	0.056	11.474	0.001

Table 19 shows that F Value is equal to 131.662 which is significant at level (p≤0.05). This indicates that there is impact for system quality on task-technology fit. The Beta value (0.640) indicates that the impact of system quality on task-technology fit is positive and significant (p≤0.05), thus this hypothesis (H6) is accepted. In addition, based on the value of adjusted R2, the system quality explains only (44.8%) of the variance in task-technology fit.

H7: Service quality (Ser_C) have a positive impact on Task-Technology Fit among pharmaceutical companies in Jordan.

Table 20: Simple Regression Analysis For H7

Dependent Variable	Model Summary		ANOVA Analysis		Coefficient				
	R	R2	F	Sig F*	Independent Variable	B	Std. Error	T	Sig t*
Task-Technology Fit	0.467	0.219	45.300	0.001	Service Quality	0.589	0.088	6.730	0.001

Table 20 shows that F Value is equal to 45.300 which is significant at level (p≤0.05). This indicates that there is impact for service quality on task-technology fit. The Beta value (0.589) indicates that the impact of service quality on task-technology fit is positive and significant (p≤0.05), thus this hypothesis (H7) is accepted. In addition, based on the value of adjusted R2, the service quality explains only (21.9%) of the variance in task-technology fit. Refer Table 21 for summary of hypothesis testing result.

Table 21: Summary of Hypothesis Testing Result

Hypothesis No.	Hypothesis	Supported/ Not Supported
H1	Task-Technology Fit (TTF) has a positive impact on the performance of pharmaceutical companies in Jordan.	Supported
H2	Task characteristics (Task_C) have a positive impact on Task-Technology Fit in pharmaceutical companies in Jordan.	Supported
H3	Technology characteristics (Tech_C) have a positive impact on Task-Technology Fit in pharmaceutical companies in Jordan.	Supported

H4	Individual characteristics (Ind_C) have a positive impact on Task-Technology Fit in pharmaceutical companies in Jordan.	Supported
H5	Information quality (Inf_C) have a positive impact on Task-Technology Fit among pharmaceutical companies in Jordan.	Supported
H6	System quality (Sys_C) have a positive impact on Task-Technology Fit among pharmaceutical companies in Jordan.	Supported
H7	Service quality (Ser_C) have a positive impact on Task-Technology Fit among pharmaceutical companies in Jordan.	Supported

11. EVALUATING THE MODEL

When evaluating whether the model, in which all constructs were added, is successful in predicting procrastination, the model summary has been assessed. The R square is an important measure which indicates how much of the variance in the dependent variable is accounted for by the different predictors in the model [295]. Falk and Miller [296] criterion posits that R square value that is equivalent or higher than 0.10 are regarded as substantial. Based on these criteria, the coefficient of determination (value of R2) for predictive accuracy for the structural model's predictive relevance were obtained. Refer Figure 5 for R-squared result.

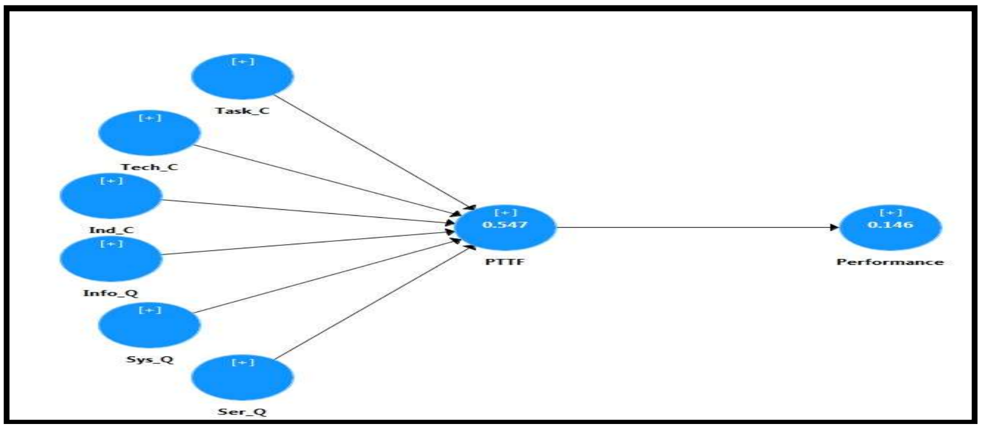

Figure 5: R-Squared Result

Based on Figure 5, the R2 value was 0.547 for perceived task technology fit, indicating that exogenous constructs (task characteristics, technology characteristics, individual characteristics, information quality, system quality and service quality) managed to explain 54.7% of the variance in the perceived task technology fit (moderate impact). In the same way, the performance had an R2 value of 0.146, which means perceived task technology fit explained 14.6% of the performance, which is almost in the weak range, however, it has been seen as satisfactory in the present study due to the endogenous variable only having one exogenous variable. It is concluded that the model has substantial predictive validity.

12. CONTRIBUTIONS

The value of this conceptual model is that it simplifies ERP and reduces ERP systems to manageable and understandable factors in pharmaceutical companies. This simplicity will enable project managers to focus their attention on all seven factors and not just the software component. This is very important because the software component is often perceived as the whole ERP system. This is one of the reasons why ERP projects fail.

Many studies have been conducted to alignment between business and IT; Nevertheless, it may seem unreasonable for pharmaceutical companies to fall back in new technology adoption [42]. Nonetheless, ERP systems application in Jordanian pharmaceutical companies has been highly unsuccessful [297]. In addition, the implementation of ERP is still modest in the pharmaceutical organizations such as Hikma [43]. This study, to the best of the researcher's knowledge, is one of the rare studies to study ERP-business operational alignment in the pharmaceutical organizations in the Jordanian context. It contributes to the body of knowledge about ERP-business operational alignment and its role to improve the competitiveness, productivity and services for the companies.

TTF is considered as an effective model to align between the business and IT , while the IS success model is an extension of it. In each model, certain perspective is presented, and therefore, the perspective cannot be fully embraced and each model can only describe select situations [174, 187]. Also, as the models have strengths and weaknesses, they are combined in order that these strengths and weaknesses could be offset. In this regard, the D&M and TTF models complement one another that their utilization together generates understanding of the impact of individual performance and IS discipline. However, as mentioned in Hsiao and Chen [60], and Tennant, et al. [61], empirical studies that look into the role of TTF in the IT (e.g. ERP) infusion stage are still inadequate in the health care industry. In addition, only a handful of quality factors that have been examined in this context [106]. In other words, only a few quality factors are known in terms of their impact on task-technology fit [298]. Also, the impact of quality characteristics on TTF among pharmaceutical companies is yet to be explored. This study has added valuable insights to the existing literature of the Task-Technology Fit theory (TTF) and information system success model, in terms of empirical evidence that identifies a number of factors influencing the business-ERP alignment in pharmaceutical companies.

The development of a ERP-business operational alignment model is an important contribution for this research. This model reflected the following relationships between:

a) The perceived task-technology fit and performance.
b) The perceived task-technology fit and its antecedents (task characteristics and technology characteristics).
c) The perceivedtask-technology fit and its antecedents by quality perspective (Information quality, system quality and services quality).

For practical contribution, It is important for general and project managers to understand ERP and the impact of ERP systems on the Jordanian pharmaceutical companies. This conceptual model provides management with a basic and high-level model that explains the different components of an ERP model as well as a methodology to implement an ERP system. This model can be applied to any ERP system in pharmaceutical companies and the ERP vendor is irrelevant. Although the seven hypotheses of the conceptual model have not been validated by empirical studies at this point, the qualitative analysis of the hypotheses may offer guidance to managers as well as ERP vendors. If leader's environmental sensitivity indeed facilitate ERP primary adoption, ERP software vendors should pay more attention to the leaders who are more sensitive and choose pharmaceutical companies as their potential clients. This can provide guidance for ERP software vendors to better select their clients and help them decrease sale cost and increase sale success rate.

This research has contributed important ideas to the ERP provider, based on the proposed model. This research provides important recommendation towards designing a ERP software that will help decision makers to: (1) understand the pharmaceutical organizations demands, (2) understand the factors that influence the ERP-business operational alignment in pharmaceutical organizations , especially in developing countries, (3) provide high quality ERP software to increase profit and decrease cost.

The findings of the research have both implications and practical contributions through its proposed general framework. It was clear from the findings that when there are process changes in pharmaceutical companies, the elements of business-IT operational alignment should be taken into account [299]. Furthermore, considering the nonexistence of ERP software theory, the present research can pave the way for its formation. Equally, this is the first research that examines the link between the TTF antecedents (task characteristics, technology characteristics, individual characteristics and quality characteristics) and the performance of pharmaceutical companies, particularly in regards to ERP software's implementation and operation.

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13. LIMITATIONS AND IMPLICATIONS FOR FUTURE RESEARCH

In investigating the study topic, this research employed TTF model as a theoretical lens, while an interpretative case study was the methodology utilized. Data gathering and analysis were rigorously performed. Still, this research found several limitations during its progression. The percentage (82%) of data gathered were from ERP individuals which were IT employees of 16 Jordanian pharmaceutical companies. For this reason, the interpretations of the findings of this study may not be applicable to other contexts. Therefore, future studies should consider other organizations in order that the generalizability of the findings could be ascertained, particularly among other types of organizations that also employ ERP software.

Quantitative methodology was applied in this research in order to understand the phenomenon more deeply. As such, mixed methodology, comprising a mixture of quantitative and qualitative method could be applied in future studies as to expand the breadth of the topic. This will increase the research validity while also increasing the generalizability of the findings.

Lastly, considering the use of TTF model in this study [183], the application of other models, for instance, UTAUT, could generate a new outlook. Further, as this research explored the influence of quality characteristics (information quality, system quality, service quality) on task-technology fit, future studies should include other with similar influence within numerous fields.

14. CONCLUSION

This paper investigated the latest research work concerning the operational alignment between ERP software's and business strategy in light of the influence of factors on alignment between these software's in pharmaceutical companies. This leads to the discovery of the problem statement and understanding of the research gap.

Moreover, the researcher noted that most operational alignment theories between business and ERP have not been extensively tested in developing countries [24, 300]. In Abimbola [145], it was found that the premise underpinning TTF states that the outcome is grounded upon the alignment level. Accordingly, a task-technology fit model was presented in Goodhue and Thompson [59], and the model focuses on the alignment of certain systems with certain tasks. However, as mentioned in [143, 146], empirical studies that look into the role of TTF in the IS infusion stage are still inadequate in the pharmaceutical industry. Furthermore, only a few quality factors are known in terms of their impact on task-technology fit. Also, the impact of quality characteristics on TTF among pharmaceutical companies is yet to be explored. Accordingly, the present study attempts to improve the operational role of ERP in the effectiveness and efficiency of the pharmaceutical business. Based on the review processes, currently there are no studies done on focusing the role of TTF and quality factors in improving the operational alignment level between IT and pharmaceutical business in developing countries. So, there is a need to propose model which integrate between them.

This research presented a total of seven hypotheses, and simple regression analysis was applied in affirming the significance of influences and the direct effects of independent variables on the dependent variable (Hypotheses H1 to H7). From the obtained results, a positive impact was found between TTF antecedents which are: task characteristics, technology characteristics, individual characteristics, quality characteristics, and TTF; the impact improves the performance of Jordanian pharmaceutical companies.

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