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The Impact of Total Just In Time on Services Quality of Private Hospitals

أثر التزويد الاني في جودة خدمات المستشفيات الخاصة

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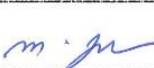
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Examination Committee's Decision

This thesis of the student GHASSAN YAHIA ALHAMARNEH, which study "The Impact of Total JIT on Service Quality of Private Hospitals" has defined, accepted and approved on 12/06/2019.

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First, I would like to thank ALLAH. This work could not finish without his help. I ask him to bless all the people who supported me to complete this work.

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Finally, thanks for the examination committee for devoting much of their valuable time reviewing and discussing the material of the study.

Dedication

Dedicated to…. My sister`s pure soul Malak, May she rest in peace To Dearest Mother, my joy in life, whom I owe my success and best luck in life To Dad, my high virtue and mentor who encouraged me to get where I am To the one and only Brother Mohammed and good sisters who stood with me To my loyal friends and brothers I never had… Thank you from the deepest place in my heart to my Masters who gave me knowledge and guidance to complete the thesis to everyone who gave me support and love.

Table of content

List of Table

List of Models

List of Figure

The Impact of Total JIT on Services Quality of Private Hospitals.

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Abstract

The purpose of the current study is to investigate the effect of Total JIT on service quality of private hospitals in Jordan. The study covered 10 hospital working in this field. Data collected by questionnaire from 120 out of 150 managers. After confirming normality, validity, reliability and relationships between variables, multiple regressions conducted to test hypothesis.

Results show that the Total Just in Time sub-variables are highly implemented, JIT customer has rated the highest, followed by JIT operation and finally, JIT supplier. Service quality dimensions are also highly implemented, while tangibility has highest implementation, followed by assurance, then empathy, responsiveness and reliability, respectively. Moreover, there is relationships among total JIT sub-variables are strong, and the relationships among service quality dimensions are strong. The relationships between total JIT sub-variables and service quality dimensions are strong. Finally, the relationship between total JIT and total service quality is very strong. Results show that all Total JIT sub-variables have an effect on service quality of private hospitals in Jordan. The JIT customer was holding the highest effect, followed by JIT Operation variable, then JIT supplier. The study recommends adopting Total JIT in all service industries because it affects service quality.

Keywords: Total JIT, service quality, private hospitals in Jordan.

أثر التزويد الاني في جوده خدمات المستشفيات الخاصة

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الملخص

الهدف من الدراسة الحالية هو قياس أثر التزويد الكلي الآني على خدمه الجودة في المستشفيات الخاصة في الاردن، شملت هذه الدراسة عشرة مستشفى من أصل اثنتي عشر.

تم جمع البيانات باستخدام الاستبانة من 120 من أصل 150 مدير، بعد التأكد من الدقة والموثوقية والعلاقات بين المتغيرات، والانحدارات المتعددة التي اجريت لاختبار الفرضيات.

اظهرت النتائج ان متغيرات التزويد الكلي الآني يتم تنفيذها بشكل كبير، حيث ان المتغير الاعلى هو الانتاج الكلي الآني للزبون، تليها الانتاج الكلي الآني التشغيلي، واخيراً الانتاج الكلي الآني للمورد. وتظهر النتيجة ايضاً ان أبعاد جوده الخدمة تنفذ بشكل كبير، في حين ان الملموسيه لديها اعلى التنفيذ' تليها الثقة، ثم سرعه الاستجابة والتعاطف والميثاقية، على التوالي. وتظهر النتائج ان العلاقات بين المتغيرات الفرعية للتزويد الكلي الآني قوية، والعلاقات بين المتغيرات الفرعية لجوده الخدمة قوية. كما اظهرت النتائج ان العلاقة بين مجموع المتغيرات الفرعية للتزويد الكلي الآني وعناصر جوده الخدمة قوية. واخيراً، فان العلاقة بين مجموع متغيرات التزويد الكلي الآني ومجموع عناصر جوده الخدمة قوية. اظهرت النتائج ان جميع المتغيرات الفرعية للتزويد الكلي الآني تؤثر على جميع عناصر جوده الخدمة في المستشفيات الخاصة في الاردن. وكان التزويد الآني للزبون الاعلى تأثير، تليها الانتاج الآني التشغيل، ثم الانتاج الآني للمورد.

اوصت الدراسة باعتماد تطبيق التزويد الكلي الآني في جميع شركات الخدمة، لأنه يؤثر على الميزة التنافسية.

الكلمات المفتاحية: التزويد الكلي الآني، جوده الخدمة، المستشفيات الخاصة في الاردن.

Chapter One: Background

Introduction:

The discussion of Just in time has focused on manufacturing industry, simply because it developed there, the importance of just in time in services industry was a place of argument because it is more difficult to achieve. Nevertheless, just in time services can gain many benefits from just in time concepts and implications because as same as manufacturing time and inventory are curtail in service business development. Suppliers' management is critical in just in time operations. In the last 20-year, the competition and higher customer demand for the quality start to appear on the surface then the need for proper utilization of hospital resources start to be particularly imperative.

The evolving patterns of "Quality" as a management science growing fast through back last decades. After the Second World War, when the Quality takes the direction towards being customer focuses, enhance the effectiveness and the efficiencies of the operation, the revolutionary "Toyota Production" System (TPS)" emerged the lean concept as a way of thinking (Gupta, et. al. 2016). High expectations from the customer make strong pressure on organizations to enhance the quality of products also competitors make pressure in the challenge of high quality – cutting the cost in other words companies trying to decrease the cost without scarifying the quality (Čiarnienė & Vienažindienė, 2015). Therefore, companies have to reconsider their strategies and continuously improve the operation to satisfy the customer (Isa and Keong, 2008; Green, et. al. 2008) and use their resources efficiently (Gautam, et. al. 2012). Globalization increases the tense of the competition which leads to the basic JIT in service likewise manufacturing which can be utilized to produce both low cost and high-

quality products (Gupta, 2012). Almost all nations face new changes while trying to deal with it. JIT supply chain is regarding the cost reduction as costs increase as the product moves along the supply chain (Ayu Bidiawati and Mohd Lair, 2008). Just in time manufacturing is an integrated process considered a multi-dimensional management practice including just in time, quality systems, teamwork, cellular manufacturing, and management of supplier (Čiarnienė and Vienažindienė, 2015).

Womack, et. al. (1990) published a book titled "The Machine that Changed the World", was mentioned the word of "lean" because Toyota plant used it and they were using half of everything, less of everything. Suarez Barraza, et. al. (2009). Despite the JIT process it is not difficult to implement but the implementation stage is not easy to face at all (Gupta, 2015). The ultimate just in time goal is to eliminate the source of waste by obtainment the correct quantities of raw material and produce the correct quantities in the correct time (Zaferullah and Kumar, 2013). JIT improves return on investment by reducing inventory, removing all other deficiencies (Moric Milovanovic, et. al. 2011). Minimizing all type of inventory and delivering the services in time for customers are become a competitive advantage, therefore applying just in time have to start in most companies (Aksoy and Ozturk, 2011). The (JIT) framework provide two-way backward to supplier and forward to customer information sharing in the means of waste elimination in order to support all improve all interrelated activity in companies (Khorshidi, et. al. 2014). Figuring out JIT production system as the harmonies of supply, production and distribution processes in manufacturing approach to fulfill particular delivery flexibility and delivery reliability at minimum costs (Guus de vries, et. al. 1999). Brox and Fader (2002) mentioned that JIT firms do appear to be different from the non-JIT group, not only that but also will lead to reduce its cost, quality and grant

them competitive advantage. Furthermore, it obvious that the applicability of JIT on service as manufacturing even though the differences between both of them (Gupta, 2012).

From the discussion above, it seems that the Total JIT components: JIT supplier, JIT operation, JIT customer have impact on service quality. Therefore, this study will be dedicated to investigating total JIT on service quality offered by private hospitals in Amman, Jordan.

Study Purpose and Objectives:

This study aims to explore the Total just in time variables and dimension effect on service quality in private hospitals. The main objectives of this study are:

1. extended for previous studies were they recommend to study Total JIT in Jordan.

2. Provide a theoretical framework about the impact of Just in time effect on the service quality with the support of academics and researches.

3. Provide a framework to apply just in time in Jordanian private hospitals.

4. Raise the awareness of just in time benefits.

5. Shed light on the importance of the supplier's relationship with private hospitals.

Study Significance and Importance:

This paper differs from previous studies, as it may be one of the few studies, which examine the Total just in time effect on the quality service in the healthcare industry, this study is important for stockholders for the hospitals as all, practitioners who work in healthcare; also. It will help managers to apply the Just in time in their daily operations and decision-making. Furthermore, it is important for customers to rise overall quality of

life in society. it may contribute to the literature; it could open a discussion on how to implement Total JIT in different industries.

Problem Statement:

Based on researcher work experience in hospitals in Amman, Jordan, many managers and customers complained about the quality of the services offered by Jordanian private hospitals such as medicines either out of stock or some quantities become expired, providing patients with cold food. Only very limited studies were conducted on the service industry, which indicates there is a gap about the practical effect of JIT of quality of services, such as in-service environments there is a lack of emphasis in the research literature (Duclos, et. al 1995). In the other hand, the literature provides huge journals reviewing JIT manufacturing but not that much emphasis on JIT services (Gupta, et. al. 20016). Furthermore, there is needs to spotlight in (duplicate point) in health care production process (Gupta, 2012). In addition, in the Jordanian context (Amaani, 2016) recommend in his paper for further efforts to increase the knowledge and importance of JIT at the top management of Jordan companies. Yang and Pan (2004) indicated that JIT philosophy could improve the operational performance of organizations.

There is no clear evidence on the impact of Total Just in time on the quality of services. Therefore, there is a need to develop empirical evidence and contribute to the body of knowledge in the area.

Therefore, this study is going to investigate the impact of Total Just in Time on service quality for private hospitals in Jordan by answering the following main question:

1.   Do Total JIT components (JIT supplier, JIT operations, and JIT customer) affect service quality of private hospitals, in Amman, Jordan?

Based on the components of JIT the first main hypothesis is divided into the following sub-questions:

1.1.   Does JIT supplier affect service quality of private hospitals, in Amman, Jordan?

1.2.   Does JIT operations affect service quality of private hospitals, in Amman, Jordan?

1.3.   Does JIT customer affect service quality of private hospitals, in Amman, Jordan?

Based on the components of service quality the second main hypothesis is divided into the following sub-questions:

Study Hypothesis:

Based on the above questions, the following hypothesis can be developed:

H_{01}: Total JIT components (JIT supplier, JIT operations, and JIT customer) do not affect service quality of private hospitals, in Amman, Jordan, at $\alpha \leq 0.05$.

$H_{01.1}$: JIT supplier does not affect service quality of private hospitals, in Amman, Jordan, at $\alpha \leq 0.05$.

$H_{01.2}$: JIT operation does not affect service quality of private hospitals, in Amman, Jordan, at $\alpha \leq 0.05$.

$H_{01.3}$: JIT customer does not affect service quality of private hospitals, in Amman, Jordan, at $\alpha \leq 0.05$.

Study model:

This model was developed for implementing independent variables Total JIT (JIT supplier, JIT operation, and JIT customer) and dependent variables service quality (tangibility, assurance, reliability, responsiveness, and empathy) according to the previous models, previous studies, problem statement, and research hypothesis.

Model (1.1): Study Model

Independent Variables   **Dependent Variables**

Total Just in Time:

H_{01}

Service Quality

- **JIT Supplier**

$H_{01.1}$

(Tangibles, Reliability,
Assurance, Empathy,
Responsiveness)

- **JIT Internal Operations**

$H_{01.2}$

- **JIT Customer**

$H_{01.3}$
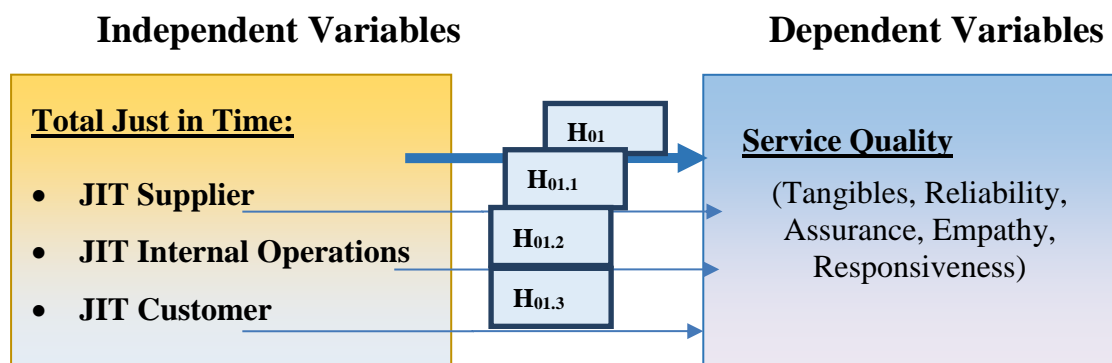
Source: for independent variables (Claycomb, et. al.1999; Green, et. al. 2014). For the
dependent variable (Babakus and Mangold, 1992; Burgess and Radnor, 2013).

Operational Definitions:

Total JIT: a holistic approach to creating a harmonic input and
output in the supply chain from supplier end to the customer in order to
provide better services, eliminate the waste and increase the service value in
terms of tangibility, assurance, reliability, responsiveness, empathy.

JIT Supplier: develop a long partnership with the supplier in which
leads to eliminating the variance of shipping the goods at the right time in
the right place, at the right quantity.

JIT Operation: improving the overall efficiency of operation by
removing all nonvalue-added activities which lead to simplified and
facilitate production process of service.

JIT Customer: match the customer with service provided and ease
of access to it with zero complaints.

Service Quality: multidimensional measurement aims to reduce the
gap between patient expectations and perception of service.

Tangibles: all physical object that locates in the place where the
service is providing "facilities, equipment, the appearance of personnel who
give this service".

Reliability: ability to perform the promised service time over time, avoid fluctuation in the level of service.

Responsiveness: Being able to respond quickly to customer and having the desire to help customers and provide prompt services.

Assurance: knowledge and courtesy of employees and their ability to inspire trust and confidence.

Empathy: attention to patient emotions and individualize the care.

Limitations and Delimitations:

Human Limitation:

This study carried out on managers who are working at Jordanian private hospitals.

Place Limitation:

This study conducted on Jordanian private hospital located in Amman - Jordan.

Time Limitation:

This study carried out during the second spring, 2019.

Study Delimitation: The use of health care services limits its generalizability to other service industry. The study was carried out in Jordan; therefore, generalizing results of one industry and/or Jordanian setting to other industries and/or countries may be questionable, and including other service industries will help reduce the gap of generalizing conclusions on another service. Moreover, further empirical researches involving data collection over diverse countries especially Arab countries are needed.

Limitations to getting data refer to the fact that hospitals usually are conservative about their actual performance data and annual reports is controlled to the period of these questionnaires, which may reduce the

quality of the data collected. In addition, the lack of corresponding of studies in Jordan and other Arab countries.

Chapter Two: Conceptual and Theoretical Framework

Introduction:

About this chapter content it covers the theoretical and conceptual framework, which includes total JIT detentions, the relationship between Just in time components and the quality service elements. Moreover, it includes previous models and previous studies. Finally, it mentions what differentiate this study from past studies.

Theoretical and Conceptual Framework:

Definitions of Study Variables:

The following section includes different definitions for the independent variable and each sub-variable, as well as different definitions of the dependent variable and each dimension.

It seems that there is an agreement about Total JIT definitions, and there is consensus about its components: JIT supplier, JIT operation, and JIT customer.

Total JIT: Green, et. al. (2014) defined it as integrates the four supply chain components JIT-purchasing, JIT-operation, JIT-selling, and JIT-information. Kannan, et. al. (2005) stated that the JIT philosophy stands for the elimination of waste by simplifying production processes, Reductions in setup times, controlling material, and emphasizing preventive maintenance show up as excess inventories can be over plus or eliminated, and inefficiently in use of the resources. Kumar and Panneerselvam (2007) stated that Many researchers have defined it as a way to simplify the manufacturing system in order to quickly detect the problems and force readily solutions. Schonberger (1982) stated JIT as produce and deliver orders in time, manufacture just in time to be gathered into finished goods

just in time, and purchased materials just in time to be transformed into new parts. Gupta (2012) stated that JIT could be summarized as a system to eliminate waste and achieve excellence in an entire organization.

In summary, **Total JIT:** a holistic approach to creating a harmonic input and output in the supply chain from supplier end to the customer in order to provide better services, eliminate the waste and increase the service value in terms of tangibility, assurance, reliability, responsiveness, empathy.

JIT Supplier: Chopra and Meindl (2013) stated that procurement as the process of purchasing of material or service from suppliers. Bala (2012) stated that reducing inventory, enhancing productivity will lead to increased market share and profitability. Singh and Singh (2015) stated that JIT procurement considers small amount quantity essential to control the level of inventory. In addition, arrival of material to company in exact time will eliminates inventory costs. Othman, et. al. (2016) stated that applying JIT purchasing and JIT manufacturing could have a powerful effect on supply chain logistics performance. Kinyua (2015) stated that increases employee's cooperation improves quality and time delivery will reduces carrying a cost and improves returns on investments. Prasetyaningsih, et. al. (2014) stated that JIT supplier incorporates supply, operation, and delivery to reduce inventory-holding costs and reduces the number of batches.

In summary, **JIT Supplier:** develop a long partnership with the supplier in which leads to eliminating the variance of shipping the goods at the right time in the right place, at the right quantity.

JIT Operation: Aghazadeh (2003) stated that JIT is the elimination of waste including all type of inventory including scrap, work in process, rework, indirect labor, non-value adding activities, non-productive machines furthermore, improving quality of materials, labor and cost

controls. Rahman, et. al. (2010) stated that JIT attack waste and simplify the flow of material will increase operational performance. Zhu and Sarkis (2004) stated that if JIT concentrates more on internal operations, the organization could enhance its environmental/financial performance. Fullerton and McWatters (2001) stated that JIT is a vital manufacturing strategy to build and sustain a competitive advantage. Khan and Gwee (2011) stated that JIT manufacturing improves material, process flow, and reduces lead times throughout plant production flow and helps to reduce waste related to inventories, space, and lead-time. Green, et. al. (2008) stated that JIT is used to match the organization with customers who are able to add value throughout the selling process and deliver organization's products to end consumer with minimal total waste and total cost. Matsui (2007) defined JIT Operation is producing the exact quantity in the required time at the right place, and remove all type of waste in operation.

In summary, **JIT Operation:** improving the overall efficiency of operation by removing all nonvalue-added activities which lead to simplified and facilitate production process of service.

JIT Customer: Germain, et. al. (1994) define JIT selling as the "time-based approach based on pull strategy lead to total process minimization", JIT-sellers increase sales by building value in the eyes of customers. Green, et. al. (2011) stated that the selling organization's existing abilities to deliver quality products in the quantities and at the times demanded by their customers. Germain, et. al. (1994) stated that JIT-selling impacts on performance, expect integration. Chapman and Carter, (1990) stated that JIT will increase or maintain customer service level by reducing of inventory and other forms of waste because it identifies and suggests changing those circumstances that cause waste to operation. Claycomb, et.al. (1999) stated that JIT is a time-based strategy, initiative that implies

fundamental changes in the way business is conducted both internally and across firms' boundaries, it promotes conditions necessary to manufacture high-quality products to meet market demand with relatively small levels of inventory and high levels of productivity. Green, et. al. (2008) JIT selling is used to match the organization with customers who are able to add value throughout the selling process and deliver organization's products to end consumer with minimal total waste and total cost.

In summary, **JIT Customer:** match the customer with service provided and ease of access to it with zero complaints.

Definitions of dependent variable:

Service Quality: Lewis and booms (1983) stated that service quality is a measure by to what extent the level of service delivered matches with customers' expectations. Mosadeghrad (2013) stated that high-quality services as accessible, equitable and satisfactory to both customers and providers: providing the exact service at the right time with the lowest possibility of wastage lead to satisfies both service provider and receiver. Hu, et. al. (2009) stated that quality service includes five dimensions: reliability, tangibility, responsiveness, assurance, and empathy. Alexandris, et al. (2004) stated that the service quality was a significant predictor of respondents' loyalty adds to an existing body of evidence demonstrating the importance of quality service for maintaining loyal consumers. Kumowal, et. al. (2016) defines service quality as how far the difference between reality and expectations of customers for the services they have.

In summary, **Service Quality**: multidimensional measurement aims to reduce the gap of patient expectations and perception.

 Responsiveness: The development of the domains of responsiveness and the methodology for their measurement drew on a broad literature

review of the areas of quality of services. Gunasekaran, et. al. (2008) defined as, that is capability of companies to satisfy stakeholders and react agile, and respond fast to market requirements in order to achieve competitive advantage. Chopra and Meindl (2013) stated that the responsiveness as the core of supply chain supply toward Competitive Advantages through two main domains; the first one is the company's flexibilities to fulfillment market needs. The second scope is delivering the order to customer quickly. Valentine, et. al. (2003) define aspects related to the way individuals are treated and the environment in which they are treated as responsiveness. Matson and McFarlane (1999) stated that responsiveness might be one of the most important capabilities needed for firms to achieve competitive advantage. Bernardes and Hanna (2009) define customer responsiveness as a firm's tendency to use market knowledge to anticipate customer demands, and address modifications in customer's expectations. Parasuraman, et. al. (2005) define responsiveness as the fast response and the ability to get assistance if there is a challenge.

In summary, **Responsiveness**: Being able to respond quickly to customer and having the desire to help customers and provide prompt services.

Reliability: After revising the studies and researches, it has been noticed that there is an agreement by researchers about the definition of reliability. Slack, et. al. (2010) stated that the reliability is reducing of unpredictably to produce quality product and guarantee delivery time to customer. Thomas (2002) defined reliability as the ability of the supply chain to accomplish mission requirements and supply along the value chain. Georgise, et. al. (2012) stated that the reliability as the capability to achieve tasks based on expectations and that required high predictability of process outputs to achieve the metrics of the right time, quantity and quality.

Parasuraman, et.al. (1985) stated that reliability can be where the quality level of service is consistent. Parasuraman, et. al. (2005) define it as correct technical functioning of the place where service provided and the accuracy of service promises. Adhitama, et. al., (2017) stated that service must meet customer expectations, exactly with zero errors. Malik, et. al., (2011) stated that the ability to fulfillment the promised accurately.

In summary, **Reliability:** ability to perform the promised service time over time, avoid fluctuation in the level of service.

Assurance: Parasuraman, et. al (1988) stated that assurance refers to the ability of employees to create trusted environment and confidence by sharing knowledge. Grönroos (1990) stated that perception of assurance occupies the highest influence overall service quality factors. Orava and Tuominen (2002) stated that the assurance perception by patients plays an important role in promoting an interpersonal relationship with health providers. Parasuraman, et. al. (2005) define it as how much customer is Confidante in dealing with the service provider, as well as clear and truthful information presented.). Adhitama, et. al., (2017) stated that the ability of company to deserve customer confidence and employee who enjoy the qualities of knowledge and courtesy to help. Malik, et. al., (2011) stated that assurance is the ability of employee to gain customer trust.

In summary, **Assurance:** knowledge and courtesy of employees and their ability to inspire trust and confidence.

Tangibility: it seems that most of researchers agrees on tangibility definition the tangibility. Parasuraman, et. al. (1985) stated that the tangibility has a considerable influence on the advertisement of the services. Du Plooy, et. al. (2007) stated that Physical evidence refers to the environment in which the service is provided, place of interaction between company and costumer and any tangible objects that assist performance or

communication of the service. Santos (2002) stated that tangibility is one of the elements of a service quality. Razi-ur-Rahim (2012) stated that tangibility is the general shape and appearance of facility and people. Adhitama, et. al., (2017) stated that tangibility is any physical appearance surrounds the service area. Malik, et. al., (2011) stated that tangibility is physical instrument, equipment, service provider appearance.

In summary, **Tangibles:** all physical object that locates in the place where the service is providing "facilities, equipment, the appearance of personnel who give this service".

Empathy: Misch and Peloquin (2005) define empathy as a key component of effective interactions between treatment provider and patients. Decety and Jackson (2004) stated that Empathy necessitates ability to regulate emotions in order to manage and optimize transactions between humans. Decety and Jackson (2004) stated that empathy implies at least three different processes: the ability to feel others feelings, knowing what another person is feeling, and having the intention to respond compassionately to another person's distress. Arslan, et. al. (2014) stated that there is a significant relationship between customer satisfaction and service quality factors of empathy and reliability. Escalas and Stern (2003) stated that empathy directly enhancing positive attitudes to company's advertisement. Razi-ur-Rahim (2012) defined empathy is caring, ability to provide individualize attention to customer.

In summary, **Empathy:** it basically is attention to patient emotions and individualize the care.

Previous Models:

Yasin, et. al. (1996) model: in this model researcher tried to investigate the nature of interacting operation subunits and success factor of JIT. In other words, they want to find out the impact of (forecast, quality, automation, management of subunits) of the success of JIT.

Model (2.1): Yasin, et. al. (1996) Model
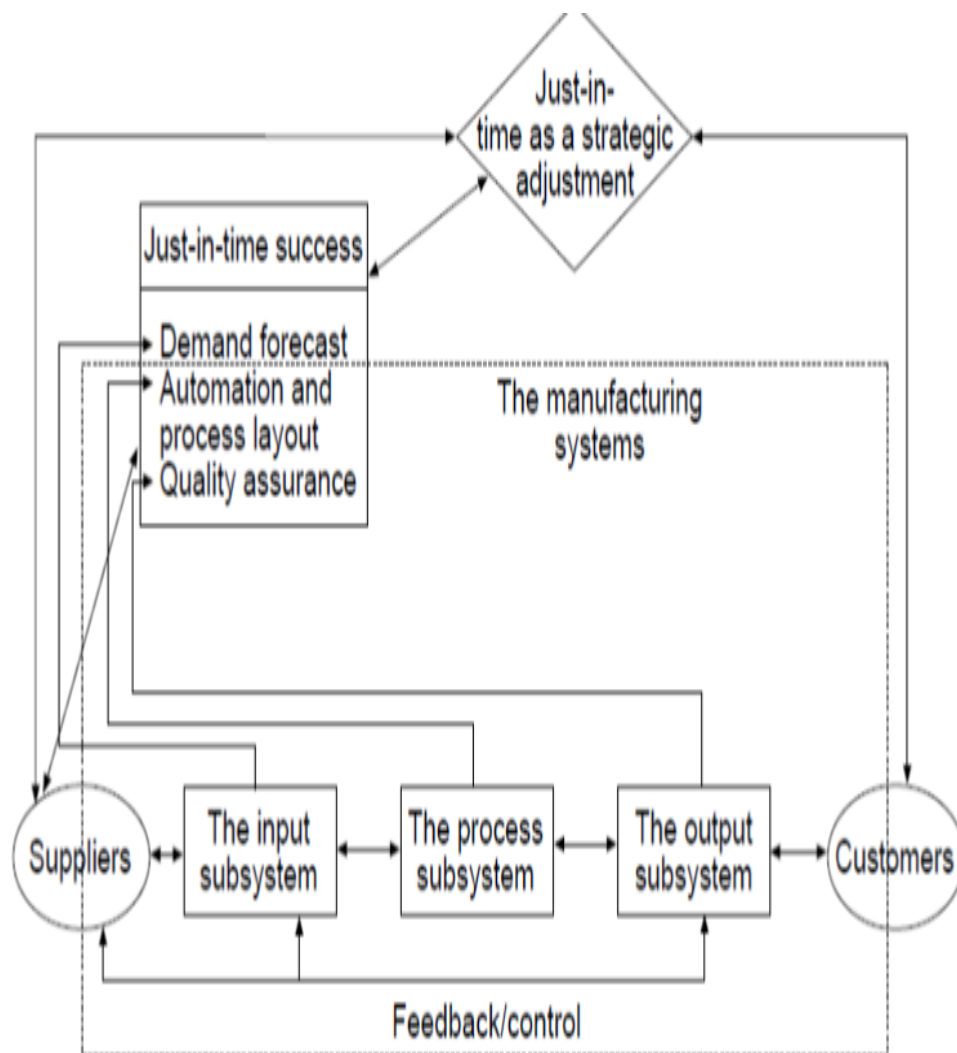
Claycomb, et. al. (1999) Model: aimed to explore the relationship between JIT and different performance output, they argue that JIT is backward combined to inventory, and having a positive effect on total financial performance and control of management. In addition, they argue

that the company size has an effect on its performance, so should be stripped when testing the JIT performance relationships.

Model (2.2): Claycomb, et. al. (1999) Model
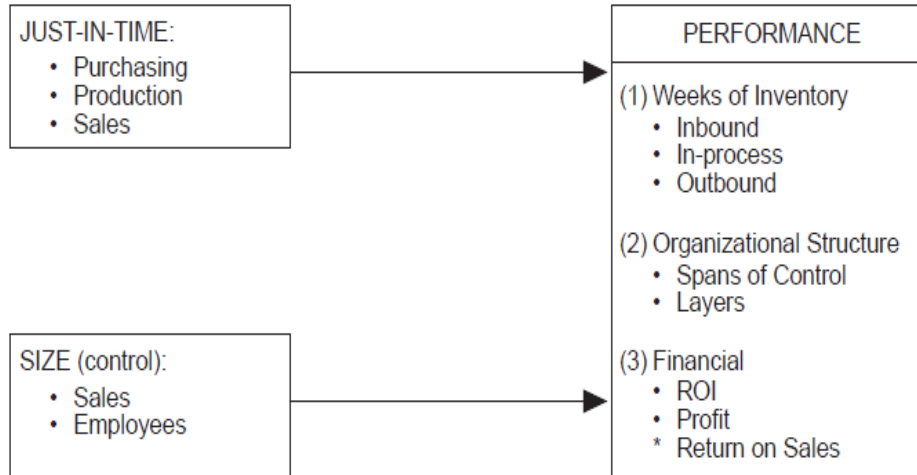
Gunasekaran (1999) model: aimed to examine the relationship between the supplier and customer under concurrent angering and the JIT was a moderator then what are the JIT factors should be considered in order to achieve maximum efficiencies also, it aims to determine the level of JIT should be integrated with other operations units.

Model (2.3): Gunasekaran (1999) Model
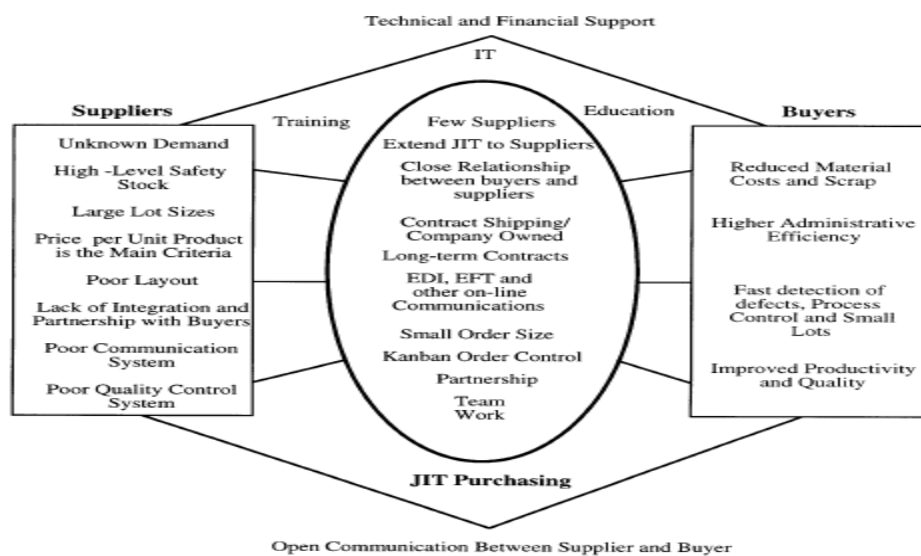
Mastui (2007) model: in this research model, trying to find the real value of JIT through four blocks: human resources, information system and

competitive performance and explore the relationship between JIT with other blocks in the model.

Model (2.4): Mastui (2007) Model
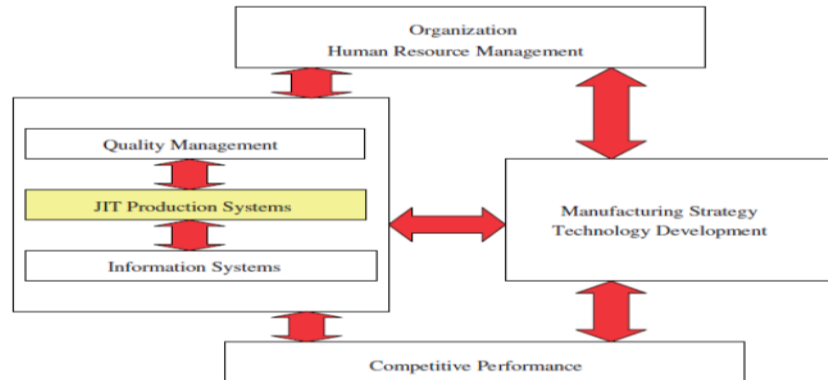
Green, et. al. (2014) model: In this model, he tried to explain how JIT influence supply chain, develop a scale for measurement. In addition, recognize the JIT as a moderator.

Model (2.5): Green, et. al. (2014) Model
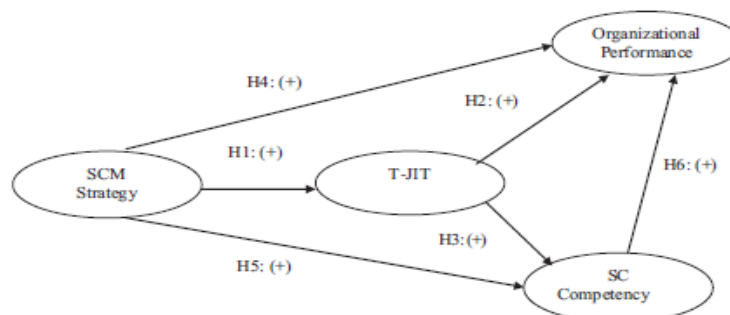
Khorshidi, et. al. (2014) model: this model tried to understand the 5 gaps in perception of customer. First gap: between customer expectation and management perception. Second gap: management perception and service quality specifications. Third gap: service quality instructions and implementation plan. Fourth gap: variance between service provided and external communication. fifth gap: it depends on design.

Model (2.6): Khorshidi, et. al. (2014) Model
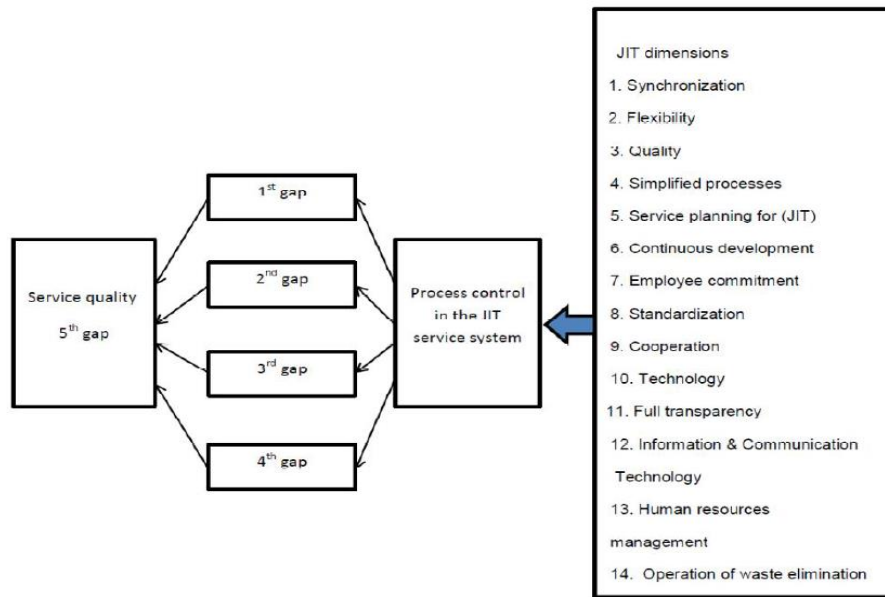
Bala (2012) Model: aimed to examine Just in Time impact comprehensively on six variables (top management commitment, training, employee relation, supplier management, transportation, quantities delivered) as direct relation.

Model (2.7): Bala (2012) Model
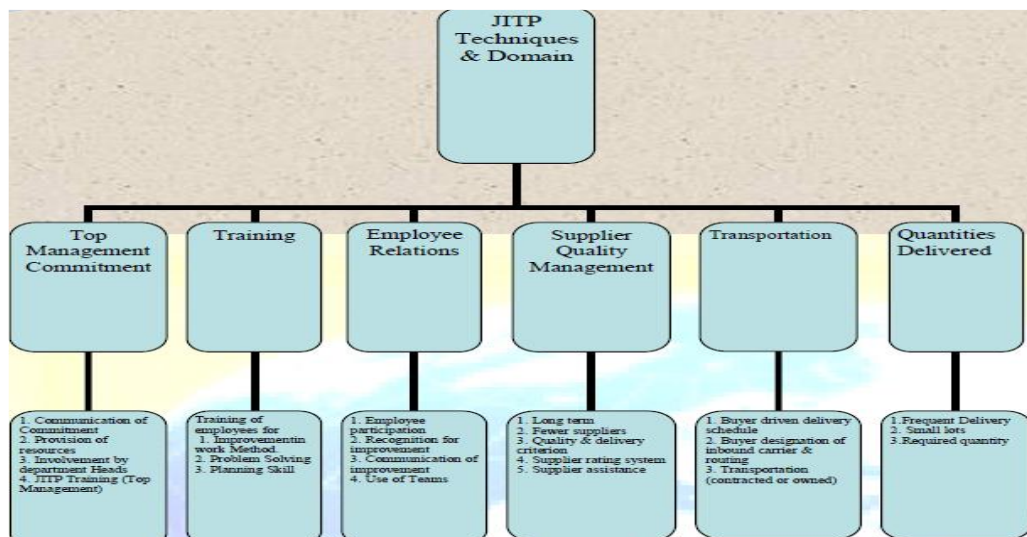
Singh and Ahuja (2012) Model: Singh and Ahuja (2012) showed that independent variables mentioned in their model that were examined, which influence the dependent variables dimensions: manufacturing

performance as showed in model (Cost, Quality, Delivery, Flexibility, and Weighted Performance).

Model (2.8): Singh and Ahuja (2012) Model
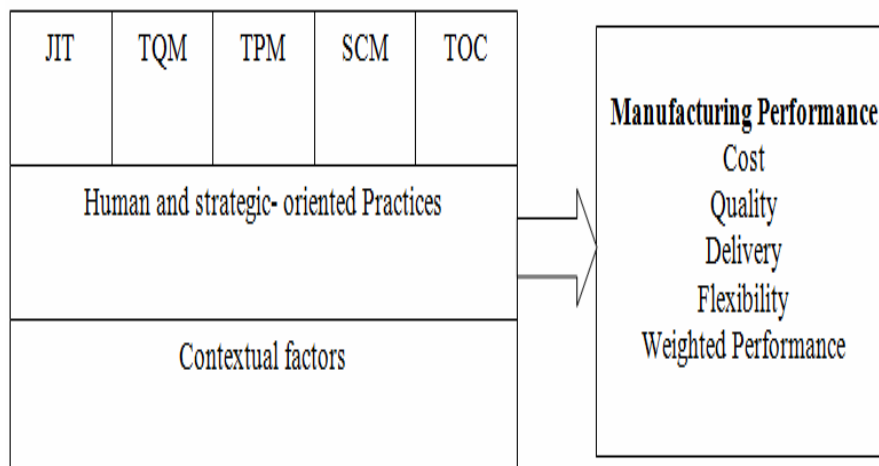
Bortolotti, et. al. (2013) Model: This study aimed to examine the impact of JIT on two lineaments, efficiency and responsiveness; under the influence of the product customization and demand variability can affect JIT implementation on performance of operation negatively.

Model (2.9): Bortolotti, et. al. (2013) Model
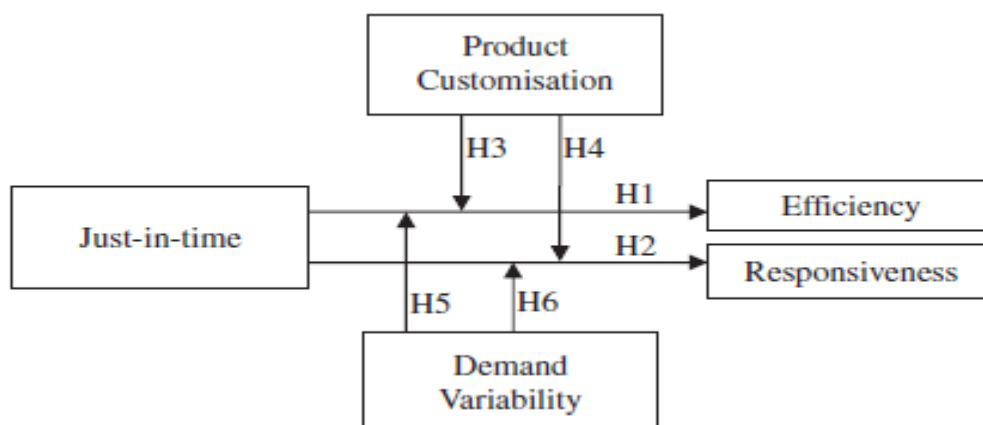
Christiansen, et. al. (2003) Model: in their study model, they tried to examine three basic relationships. First, in arrow (1) show the relationship between strategic groups and the level of practice of group of manufacturing systems. Second, in arrow (2) show relationships between strategic groups

and performance of operations. Third, in arrow (3) shows Companies need to practice all types of manufacturing practices in order to achieve better level of operational performance.

Model (2.10): Christiansen, et. al. (2003) Model
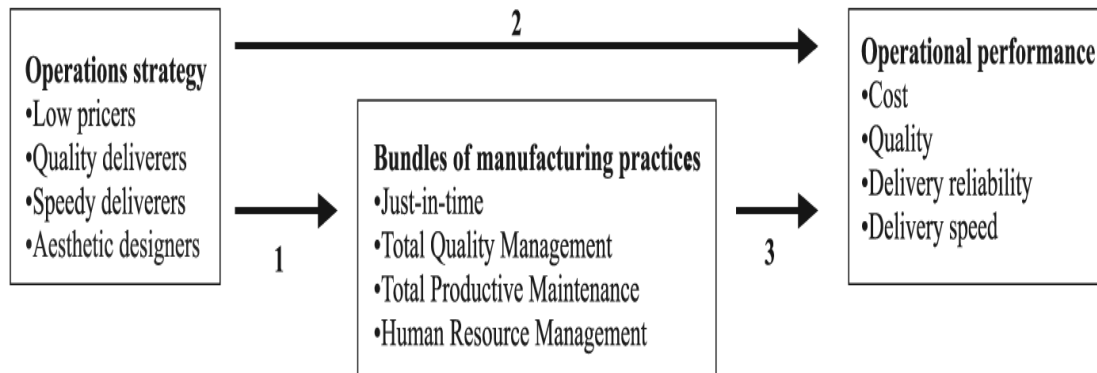
Previous Studies:

Mehra, et. al. (1990) study title: **"JIT implementation within a service industry: case study"** this paper investigates the JIT implementation in ajax company and expose the problems that face the company before and during the implementation plan of JIT: the first one was resistance of change, slow response time of goods shipments, dynamic demands. Revealed the critical success factor in order to JIT implementation: quality, teamwork, education, communication. Furthermore, this article put a recommendation for future research in the services industry focusing on the impacted area during JIT implementation.

O'Connor, et, al. (1991) study title: "**A Model of Service Quality Perceptions and Health Care Consumer Behavior"** aimed to investigate the customer perception of service quality and his intention to come back to the same organization. Data collected from 575 inpatients and outpatient. The results showed in the last model there is a direct influence of SERVICE

QUALITY and customer satisfaction and indirect influence on intention to return.

Youssef (1994) study titled: **"Measuring the intensity level of just-in-time activities and its impact on quality"** this study examined the differences in quality between companies with different JIT intensity level activation. There are four levels of intensity: the existence technology of JIT; the spin to which JIT is utilized; the length of time uses of JIT and the extend of integrating JIT with other technologies. The questioner mailed to 560 three different industry group. The highest quality score was associated with the highest JIT intensity firms, overall results showed significant differences between firms.

Yasin, et. al. (1996) study title: "**An empirical examination of factors influencing JIT success"** the objective of this study was to investigate the interactions between operation subunits and the factors affecting to the gaining success of JIT, interview has been started with 15 biggest USA company targeted sample was managers, after that questioner collected from 700 respondent. The results showed just in time actually works, improving the relationship backward to supplier and toward the customers also the operation itself.

Claycomb, et. al. (1999): study title **"Total system JIT outcomes: inventory, organization and financial effect"** Examined total system JIT's empirical relationships with performance elements outcomes. A survey conducted by mail to 200 logistics executives. The found that total JIT are positively related and have a direct influence on three different indicators of financial performance (better return on investment, profitability, and return on sales)

Canel, et. al. (2000) study titled: "**Benchmarking performance measures in traditional and just-in-time companies**", this study investigated if there is variance between traditional and JIT firms in selecting standard performance criterion at a different level of the company. The methodology of this research is a questionnaire sent via email to explore (5) questions on the variances between conventional and JIT firms. The target population for the research was manufacturing companies in the USA. The sample includes firms in different industries (communication, automotive, toots, chemicals, fabricated metal, rubber, electronics, and paper products. 84 surveys were used from 91. Outputs of this study find that JIT firms are more harmonious in selecting a standard performance criterion that is involved with firm strategy.

Dong, et. al. (2001) study titled: **"JIT purchasing and performance: an exploratory analysis of buyer and supplier perspectives"**, aimed to study the relationship of JIT purchasing with performance. if suppliers implement JIT manufacturing parallel with a JIT purchasing program. Results showed that integrating operations between buyers and suppliers was positively associated with JIT purchasing for both buyers and suppliers. However, backward and forwards integration of supply chain leads to cost reduction in either of the models. Results also indicated that supply chain integration is best implemented as part of a bigger plan, such as JIT purchasing, in order to produce significant logistics cost reductions. Concluded that buyers can directly benefit from JIT purchasing while suppliers may need to manipulate their manufacturing practices to benefit as well.

Stank, et. al. (2001): "**SUPPLY CHAIN COLLABORATION AND LOGISTICAL SERVICE PERFORMANCE**" cooperation of external structure of the supply chain will increase internal cooperation, which can

lead to improve service performance. Data collected from almost 3,700 respondents in North America, Europe, and the Pacific Rim. in-depth interviews with 111 top logistics firms. The recommendation for future research explored the role of managers in influencing behaviors.

Ahmad, et. al. (2004) study title: **"the perceived impact of JIT implementation on firms' financial/growth performance"**, investigated the effect of JIT on performance measurement. Three pathways were used (JIT elements, financial growth, operating performance), three-part questioner filled by 500 managers in the United States of America the results are a positive perception for JIT practices and performance, but he realized that it is a fake relation between JIT practices and financial/growth performance.

Dreyfus, et. al. (2004) study titled**:" The Impact of Just-In-Time Implementation and ISO 9000 Certification on Total Quality Management"** In this study examined the impact of just-in-time implementation and International Standards Organization certification on quality management efforts of manufacturing firms. The respondents are sorts into four groups: JIT-ISO firms, not JIT but ISO firms, not ISO but JIT firms and the last one not ISO-JIT firms, data collected from almost 20000 respondents. The result showed that all three types of firms (ISO, JIT, and ISO-JIT) have better performance than traditional firms on product quality, price control, and customer satisfaction dimensions.

Kannan, et. al. (2005) study title: **"Just in time, total quality management, and supply chain management: understanding their linkages and impact on business performance"**, investigated the extent to which JIT, supply chain management, and quality management are correlated together, and how they impact business performance. Data collected from 556 respondents conducted in Europe and North America to

senior managers, results are a commitment to quality and an understanding of supply chain dynamics have the greatest effect on performance.

Salahuddin (2005) study title: **"JIT implementation in Egyptian manufacturing firms: some empirical evidence"** This study aimed to explore the human preparation prior applying just in time, the benefits of just in time and the barrier of just in time implementing. The data was collected from a mail questionnaire sent to 200 manufacturing firms in Egypt. The findings of this research showed that just in time success is significantly associated with human resources modification efforts undertaken prior JIT implementation.

Kros, et. al. (2006) study title:**" Impact of just in time inventory systems on OEM suppliers"** this study examines the impact of JIT on the inventory accounts of their suppliers. Five financial measures used to examine inventory. Data collected from 316 company for over 10 years. Three different industry have been inducted, showed mixed result about inventory profiles, the automotive industry used to push inventory back to suppliers and modification of JIT has been made in three different industry to achieve greater efficiencies.

Mastui (2007) study title: **"An empirical analysis of just-in-time production in Japanese manufacturing companies"** this study provided nine valid scales are required to JIT success. Data collected from 46 Japanese company through cross-level and departments. The data collected from 46 Japanese manufacturing plants. 32 plants are subjectively judged to generalize the finding and the rest are randomly sampled. The results showed that: JIT production systems play important role in enhancing competitive performance, the strength of the direct relationship with competitive performance, results show a clear difference between JIT

practices among companies and JIT system is interrelated to all companies' departments.

Esker and Pala (2008) study titled**: "The Effect of Competition, JIT and TQM",** aimed to examine the impact of Total quality management, and Just in Time manufacturing of many Performance measurements. Data collected from 122 manufacturing companies from 500 top Turkish companies in 2005. The results of the study showed that there is a strong relationship between using JIT performance and to be at the top market position.

Gupta (2011) study title: **"a Conceptual JIT Model of Service Quality can be utilized to provide JIT implementation support and architectural support for service organizations"**, suggested a framework to improve the quality of services based on JIT practices that used to be beneficial in manufacturing organizations. Empirically tested the model using actual data from service organizations to examine statistically effect of JIT on service firms, JIT data collected using sample questionnaire and service quality data can be collected using the SERVQUAL model. This study showed that there is no empirical evidence for the impact of JIT approach on service quality.

Gupta (2012) study title: **"JIT in Healthcare: An Integrated Approach"** explored the adoption of JIT benefits in health care organizations (cost, customer satisfaction, quality of services). Through extensive review for relevant research. The results were the integration between JIT and cost accounting methods can help organizations in control the cost without sacrifice the quality of services.

Bala (2012) study titled: **"Analytical Model for Just-in-Time Purchasing"** this study proposed a framework for Just-in-Time purchasing

strategy can increase firms' performance. Just-in-Time including benefits of less inventory, better quality, and productivity. This strategy drives to cost minimization. Lower prices will lead to increased market share and profit. This paper is based on a model of Just-in-Time purchasing factors like: top management commitment, employee relations, training, supplier quality management, transportation, and quantities. The end results for this study showed that JIT has direct and indirect benefits: direct benefits like increase both of inventory turnover and meet customer demand as promised. The indirect benefits were achievement in encouraging suppliers to meet quality requirements.

Masani (2012) study titled:**" Impact of just-in-time (JIT) inventory system on efficiency, quality, and flexibility among manufacturing sector, small and medium enterprise (SMEs) in South Africa"** this study aimed to investigate the impact and the applicability of JIT in SMEs companies the motivation behind this study was the inappropriate use of inventory resources. The questioner was distributed to 82 SMEs. The majorities of result revealed that most of these firms are not applying JIT system.

Malik, et. al. (2012) study titled **"Impact of Brand Image, Service Quality and price on customer satisfaction in Pakistan Telecommunication sector"** investigated the impact of brand image service quality and price on customer satisfaction. The data were randomly collected. It used 165 questionnaires; the results showed that brand image has a positive effect on customer satisfaction.

Singh and Singh (2013) study titled: **"Working with JIT requires a Flexible Approach"**, this study aimed to figure how operational and organizational flexibilities are critical for JIT, and the extent of the effect its practices. Results of this study: JIT is a flexibility-based method to stay

always connected with customer. It guides people on how to solve the problem, take advantage of the opportunity, and can do the impossible as it can help the company to be in a better place in the market. JIT can make great outcomes if executed accurately and rightly.

Qureshi, et. al. (2013) study title: **"Critical elements in implementations of just-in-time management: an empirical study of cement industry in Pakistan"** investigated the impact of factors (product design, total quality control, inventory management, supply chain integration, production plan) on JIT implementation. The study used survey responses from 400 operations' managers in Pakistan result in previous factors have a positive relation with JIT implementation.

Green, et. al. (2014) study title: **"Total JIT (T-JIT) and its impact on supply chain competency and organizational performance"**, examined the impact of a total JIT strategy within a supply chain situation. Data gathered from managers and the model examined by a structural equation modeling methodology, 142 surveys conducted for managers, the result was a success at the supply chain level requires supply chain management strategy and competency as well as organizational management.

Khurshid, et. al. (2014) study title: **"The application of the JIT model in the service organizations"**, aimed to predict the impact of JIT on organization performance by proposing a framework, in Iran context. He used a literature review to develop (JIT) framework to reduce the gaps in service quality; First gap: between customer expectation and management perception. Second gap: management perception and service quality specifications. Third gap: service quality instructions and implementation plan. Fourth gap: variance between service provided and external communication. fifth gap: it depends on design.

Al-Reface and Thabit (2015) study titled: "**Effect of just-in-time selling strategy on firms' performance in Jordan",** this study aimed to examine the effects of just-in-time selling strategy on firms' performance. The questioner spared over 117 company. Results showed that effective just in time selling implementation leads to significant improvement in firms' performance measured by both marketing and financial. The implications are they should continually exploit more on improving firms' capabilities, including the production of zero-defect products and on-time delivery of accurate quantities, and building long-term relationships with customers.

Al Maani (2016) study titled: "**JIT in the Jordanian Industrial Companies",** aimed to understand the implementation of JIT in the Jordanian public industrial companies. The descriptive-analytical approach was used. The questionnaire was distributed to a sample of 55 out of 76 industrial companies. The result of the study shows Jordanian public industrial companies don't implement JIT production system, in addition to some barriers that prevent the applying of JIT production system in these companies resulted with lack of experience and awareness of top management. The study recommended furthermore efforts to increase the knowledge and importance of JIT at the top management of Jordan companies, also gain the experiences, training courses.

Patel, et. al. (2016) study titled: **"Implementation of Just-In-Time in an Enterprise"**, aimed to research the objective of JIT System, which is, customer satisfaction, enhance the quality, decrease all wastes. These operations speed the services, improve quality, avoidance of overproduction, defect products, inventory, waiting time. Furthermore, they reduce waste and cost. The result showed that JIT could be useful for enhancing the efficiency of these newly developed industries.

Rasit, et. al. (2018) study title: **"Effect of JIT on Organizational Performance: Influence of Performance Measurement System",** this study aimed to examine the relationship among JIT and performance practices in order to determine the influence of JIT on PMS. Data collected by a questioner from 200 large Malaysian companies, coded against Spss. The results showed that organizations which implemented JIT with more advance performance measurement have higher performance.

From the literature reviews above, from the previously revised literature, it is clear that there is a significant impact by total JIT, as Claycomb, et. al. (1999) showed that extend implementation of JIT will impact from financial wise indifferent industries and different countries outside Arab region. In addition, Al-Reface and Thabit (2015) investigated the impact of performance in Jordan. while this study will explore the effect of Total JIT on service quality in Jordanian private hospitals. Salahuddin (2005), Qureshi, et. al. (2013) in their studies showed the relationship between JIT manufacturing practices and performance outcomes while he studied JIT separately. however, this study investigates the whole concept of total JIT impact on service quality. Al Maani (2016) examined if Jordanian public industries companies implement JIT or not, which didn't study the effect of JIT on the performance of the operation. However, this study investigates the effect of Total JIT on competitive advantage, which take the whole JIT agreed variable in the literature. Finally, the significance of this study is coming from its dedication to explore the impact of implementing the Total Just in Time on service quality.

Therefore, the current study will explore the effect of Total JIT on service quality in Jordanian private hospitals.

What Differentiate the Current Study from Previous Studies?

This study might be considered as the first study to research the effect of total Just in Time (JIT) on achieving service quality of private hospitals in Jordan.

1. **Total JIT concept:** It obvious that the current study is one of the few studies which considers the Total JIT elements. The current study expects that it will raise consciousness and awareness about the role function of total JIT on service quality in Jordanian private hospitals.

2. **Purpose**: Most of the previous studies were implemented to examine total JIT in manufacturing companies, while most other studies in service have been investigated JIT separately. Few studies were executed to study the effect of total JIT dimensions (JIT purchasing, JIT operation, and JIT selling) on service quality (Tangibility, Assurance, Reliability, Empathy, and Responsiveness).

3. **Environment:** Most past studies have been implemented in different countries outside the middle east. The current study will be executed in Jordan, as one of the middle eastern countries.

4. **Industry:** It seems that not many studies have been established in hospitals. This study is dedicated to Jordanian private hospitals.

5. **Methodology:** The current one is based on perception. Most previous researches were built on actual data and reports.

6. **Variables:** Most of past studies and researchers does not take the whole concept of Total JIT, but in this research consider the integrated concept of total JIT; (JIT purchasing, JIT operation, and JIT customer).

7- **Population:** Most previous researches were targeted the public sector; the current study has been made in private managerial sector.

8- **Comparison**: This research will show the dissimilarity of outcomes with the findings of previous researches mentioned before to focus on similarities and differences that might be found.

Chapter Three: Study Methodology:

Study Design:

This study uses analytical methodology as well as cause/effect. Its purpose is to investigate how can total JIT improve quality of service in Jordanian hospitals. The study begins by reviewing previous studies to select the model, and build the questionnaire, which arbitrated through a panel of judges. Then data gathered from all managers and supervisors working at these hospitals via the questionnaire. After checking the clarity, suitability and completeness of the collected questionnaires, the data coded against SPSS 20. After assuring the data normality, validity, reliability, and correlation, multiple regressions have used to determine the effect of the independent variable on the dependent variable.

Study Population, Sample, and Unit of Analysis:

The study population for this study was all hospitals in Amman, which, apply quality standards, also got accreditations (JCI, Iso 90001, Hcac). in addition, have more than 50 beds. After this characteristic for population, the targeted population was (10) hospitals in Amman. Managers and (at all levels) working at these Jordanian hospitals will be targeted. The unit of analysis is composed of 150 managers who are working in these hospitals.

Data Collection Methods (Tools):

The data that used for fulfilling the purposes of the study can be divided into two sources: secondary and primary data as follows: Secondary Data: Data will be collected from past data such as working papers, articles, journals, researches, thesis, and Websites and published data from Jordanian hospitals. Primary Data: primary data collected by questionnaire.

The Questionnaire:

The questionnaire expresses the objective of which the research was made for, then validated through expert opinions and referees committee (panel of the judge), as shown in the appendix (1).

Questionnaire Variables:

The questionnaire includes three parts as follows:

Demographic Dimensions: Company, gender, age, education, position, department, experience.

Independent Variable (Total JIT): Independent variable total JIT includes three sub-variables: JIT purchasing, JIT operation, and JIT customer. Each sub-variable measured by eight questions.

Dependent Variable (Service Quality): Dependent variables service quality, which includes five dimensions: tangibility, assurance, reliability, responsiveness and empathy, every dimension measured by five questions.

Five-point Likert-type scale used to measure all variables items ranging from value 1 (strongly disagree) to value 5 (strongly agree) to rate the perceptions of the respondent on implementation of each question. Respondent is questioned to evaluate by giving it a quantitative value.

Data Collection and Analysis:

Data collected from (10) companies out of (12) companies registered at quality certifications and own quality accreditations (JCI, Iso 90001, Hcac). To implement this study, a total of (120) questionnaires collected out of (150) questionnaires distributed to supervisors and managers in different departments. only (30) question returned, during the period of April to May

2019. All collected questionnaires were complete and suitable and coded against SPSS 20.

Validity Test:

Three methods were used to confirm the validity: content, face, and construct. The content validity confirmed through gathering the information from different type of resources such as researches, books, articles, journals, and Websites as scholar. While, the face validity confirmed through the expert's opinions, which referee the questionnaire. Finally, Principal Component Factor Analysis with Kaiser Meyer Olkin (KMO) were used to confirm construct validity.

Construct Validity (Factor Analysis):

Principal Component Factor Analysis and Kaiser Meyer Olkin (KMO) were used to confirm the construct validity. Principal Factor Analysis used to examine explanatory and conformity. Factor loading exceed than 0.50 is good and accepted if it is exceeding 0.40 (Hair, et. al. 2014). while, Kaiser Meyer Olkin (KMO) used to measure sampling adequacy, inter-correlations, and harmony, KMO values between 0.8 and 1 indicate that a high sampling is adequacy, and accepted if it is exceeding 0.6. Additional instrument is used to determine suitability: Bartlett's of Sphericity, in which less than 0.05 at 95% confidence level value considered significant, that are indicated for useful factor analysis. Power of explanation of factor expressed by Variance percentage (Cerny & Kaiser, 1977).

JIT Purchasing:

Table (3.1) shows that the loading factor of JIT purchasing items score between 0.678 and 0.864, which indicates items are suitable with each other. KMO has rated 86.7%, which indicates good adequacy, and the Chi^2 is

467.204, which indicates the fitness of the model. Moreover, the variance percentage is 56.048, so it can explain 56.04% of the variation. Finally, the significance of Bartlett's Sphericity (BST) is less than 0.05, which indicates the factor analysis is useful. Therefore, the construct validity assumed.

Table (3.1): Principal Component Factor Analysis for Just in Time Purchasing:

Item	F1	KMO	Chi^2	B.S.T	Var%	Sig.
JITS1	0.726					
JITS2	0.864					
JITS3	0.735					
JITS4	0.798	0.867	467.204	28	56.048	0.000
JITS5	0.678					
JITS6	0.721					
JITS7	0.729					
JITS8	0.724					

JIT Operation:

Table (3.2) shows that loading factor of JIT operation items score between 0.616 and 0.815, which indicates items are suitable with each other. KMO has rated 85.4%, which indicates good adequacy, and the Chi^2 is 389.550, which indicates the fitness of model. Moreover, variance percentage is 52.430, so it can explain 52.43% of variation. Finally, the significance of Bartlett's Sphericity is less than 0.05, which indicates the factor analysis is useful. Therefore, the construct validity assumed.

Table (3.2): Principal Component Factor Analysis for Just in Time Operations:

Item	F1	KMO	Chi^2	B.S.T	Var%	Sig.
JITO1	0.771					
JITO2	0.815					
JITO3	0.728					
JITO4	0.666	0.854	389.550	28	52.430	0.000
JITO5	0.616					
JITO6	0.690					
JITO7	0.748					
JITO8	0.739					

JIT Customer:

Table (3.3) shows that loading factor of JIT customer items score between 0.555 and 0.794. which indicates items are suitable with each other. which indicates items are suitable with each other. KMO has rated 85.3%, which indicates good adequacy, and the Chi^2 is 391.080, which indicates the fitness of model. Moreover, variance percentage is 51.797, so it can explain 51.79% of variation. Finally, the significance of Bartlett's Sphericity is less than 0.05, which indicates the factor analysis is useful. Which indicates items are suitable with each other. Therefore, the construct validity assumed.

Table (3.3): Principal Component Factor Analysis for Just in Time Customer:

Item	F1	KMO	Chi²	B.S.T	Var%	Sig.
JITC1	0.626					
JITC2	0.794					
JITC3	0.773					
JITC4	0.780	0.853	391.080	28	51.797	0.000
JITC5	0.555					
JITC6	0.655					
JITC7	0.752					
JITC8	0.784					

Total JIT:

Table (3.4) shows that the loading factor of Total JIT items score between 0.814 and 0.883, which indicates items are suitable with each other. KMO has rated 70.1%, which indicates good adequacy, and the Chi^2 is 129.543, which indicates the fitness of model. Moreover, variance percentage is 73.533, so it can explain 73.53% of variation. Finally, the significance of Bartlett's Sphericity is less than 0.05, which indicates the factor analysis is useful. Therefore, the construct validity assumed.

Table (3.4): Principal Component Factor Analysis for Total Just in Time:

Item	F1	KMO	Chi²	B.S.T	Var%	Sig.
JIT Supplier	0.814					
JIT Operation	0.883	0.701	129.543	3	73.533	0.000
JIT Customer	0.874					

Tangibility:

Table (3.5) shows that factor loading of each item within tangibility group scored between 0.786 and 0.865, which indicates items are suitable with each other. KMO has rated 84.4%, which indicates good adequacy, and the Chi^2 is 350.030, which indicates the fitness of model, rated more than 40%, therefore the construct validity assumed.

Table (3.5): Principal Component Factor Analysis for tangibility:

Item	F1	KMO	Chi^2	B.S.T	Var%	Sig.
Tan1	0.851					
Tan2	0.849					
Tan3	0.786	0.844	350.030	10	70.833	0.000
Tan4	0.855					
Tan5	0.865					

Assurance:

Table (3.6) shows that loading factor of assurance items score between 0.759 and 0.869, which indicates items are suitable with each other. KMO has rated 83.1%, which indicates good adequacy, and the Chi^2 is 326.263, which indicates the fitness of model. Moreover, variance percentage is 68.417, so it can explain 68.41% of variation. Finally, the significance of Bartlett's Sphericity is less than 0.05, which indicates the factor analysis is useful. Therefore, the construct validity assumed.

Table (3.6): Principal Component Factor Analysis for assurance:

Item	F1	KMO	Chi^2	B.S.T	Var%	Sig.
Ass1	0.869					
Ass2	0.868					
Ass3	0.759	0.831	326.263	10	68.417	0.000
Ass4	0.838					
Ass5	0.796					

Reliability:

Table (3.7) shows that loading factor of reliability items score between 0.0.778 and 0.874, which indicates items are suitable with each other. KMO has rated 78.6%, which indicates good adequacy, and the Chi^2

is 333.123, which indicates the fitness of model. Moreover, variance percentage is 67.342, so it can explain 67.34% of variation. Finally, the significance of Bartlett's Sphericity is less than 0.05, which indicates the factor analysis is useful. Therefore, the construct validity assumed.

Table (3.7): Principal Component Factor Analysis for Reliability:

Item	F1	KMO	Chi^2	B.S.T	Var%	Sig.
Rel1	0.836					
Rel2	0.874					
Rel3	0.778	0.786	333.123	10	67.342	0.000
Rel4	0.804					
Rel5	0.808					

Empathy:

Table (3.8) shows that loading factor of empathy items score between 0.798 and 0.844, which indicates items are suitable with each other. KMO has rated 84.6%, which indicates good adequacy, and the Chi^2 is 441.956, which indicates the fitness of model. Moreover, variance percentage is 66.550, so it can explain 66.55% of variation. Finally, the significance of Bartlett's Sphericity is less than 0.05, which indicates the factor analysis is useful. Therefore, the construct validity assumed.

Table (3.8): Principal Component Factor Analysis for Empathy:

Item	F1	KMO	Chi^2	B.S.T	Var%	Sig.
Emp1	0.798					
Emp2	0.844					
Emp3	0.769	0.846	441.956	15	66.550	0.000
Emp4	0.803					
Emp5	0.839					
Emp6	0.839					

Responsiveness:

Table (3.9) shows that loading factor of responsiveness items score between 0.745 and 0.881. which indicates items are suitable with each other. KMO has rated 78.8%, which indicates good adequacy, and the Chi^2 is

364.575, which indicates the fitness of model. Moreover, variance percentage is 69.081, so it can explain 69.08% of variation. Finally, the significance of Bartlett's Sphericity is less than 0.05, which indicates the factor analysis is useful. Therefore, the construct validity assumed.

Table (3.9): Principal Component Factor Analysis for Responsiveness:

Item	F1	KMO	Chi²	B.S.T	Var%	Sig.
Res1	0.837					
Res2	0.864					
Res3	0.881	0.788	364.575	10	69.081	0.000
Res4	0.823					
Res5	0.745					

Service Quality:

Table (3.10) shows that loading factor of service quality items score between 0.804 and 0.922, which indicates items are suitable with each other. KMO has rated 90.1%, which indicates good adequacy, and the Chi² is 495.621, which indicates the fitness of model. Moreover, variance percentage is 79.074, so it can explain 79.07% of variation. Finally, the significance of Bartlett's Sphericity is less than 0.05, which indicates the factor analysis is useful. Therefore, the construct validity assumed. Therefore, the construct validity assumed.

Table (3.10): Principal Component Factor Analysis for service quality:

Item	F1	KMO	Chi²	B.S.T	Var%	Sig.
TAN	0.804					
ASS	0.906					
REL	0.922	0.901	495.621	10	79.074	0.000
RES	0.916					
EMP	0.893					

Reliability Test:

(Cronbach's Alpha): Reliability test (Cronbach's Alpha coefficients of internal consistency) used to test the consistency and suitability of the measure.

Table (3.11) shows that value of Cronbach's Alpha coefficient for independent sub-variables are ranging between 0.862 and 0.885, and for

dependent dimensions ranges between 0.876 and 0.896. According to Serkan (2003) if the value of Cronbach's Alpha coefficient is more than 70%, then the reliability is accepted.

Table (3.11): Reliability Test (Cronbach's Alpha) for all Variables.

No.	Item	No. of Items	Cronbach's Alpha
1	JIT Supplier	8	0.885
2	JIT Operations	8	0.868
3	JIT Customer	8	0.862
4	**Total JIT**	**3 Sub-variables**	**0.816**
5	Tangibility	5	0.896
6	Assurance	5	0.882
7	Reliability	5	0.876
8	Responsiveness	5	0.887
9	Empathy	5	0.899
10	**Service quality**	**5 Dimensions**	**0.933**

Demographic Analysis:

To understand the dimensions of the study sample, respondent's characteristic showed in the following tables: includes hospital names, gender, age, education, experience, and department.

Company: Table (3.12) shows that the respondents from Alesraa 15 (12.5%), Jordan 15 (12.5%), then Gardens 14 (11.6%), Estiqlal 14 (11.6%), Estishari 13 (10.8%),

Table (3.12): Hospital Name.

		Frequency	Percent
	Alesraa	15	12.5
	Jordan	15	12.5
	Gardens	14	11.6
	Estiqlal	14	11.6
	Estishari	13	10.8
Hospital	Dar Alsalam	11	9.1
	Specialty	10	8.3
	Royal	10	8.3
	Amman Surgical	9	7.5
	Ibn Haitham	9	7.5
	Khaldi	7	5.8
	Total	**120**	**100.0**

Dar alsalam 11 (9.1%), Specialty 10 (8.3%), Royal 10 (8.3%), Amman Surgical 9 (7.5%), Ibn Hiathm 9 (7.5%), Khaldi 7 (5.8%).

Gender: Table (3.13) shows that most respondents are male 64 (55.3%) and female only 56 (46.7%), Males and females represent the relative proportion because work environment is suitable for both genders.

Table (3. 13): Gender Description.

		Frequency	Percent
	Male	64	55.3
Gender	Female	56	46.7
	Total	**120**	**100.0**

Age: Table (3.14) shows that the majority respondents age is between 25-35 years 65 (54.2%), followed by less than 25 years 27 (22.5%), then that between 36-45 years 22 (18.3%), and finally above 45 years only 6 (5.0%). Working in restaurants attracts the younger age group of less than 25 years old.

Table (3.14): Age Distribution.

		Frequency	Percent
	Less than 25	27	22.5
	Bet. 25-35	65	54.2
Age	Bet. 36-45	22	18.3
	Above 45	6	5.0
	Total	**120**	**100.0**

Education: Table (3.15) shows that most respondents are Bachelor holders 63 (33.9%), followed by High school graduates 59 (31.7%), then Diploma holders 51 (27.4%), finally Master holders only 13 (7.0%).

Table (3.15): Respondents Education.

		Frequency	Percent
	Diploma	8	6.7
	Bachelor	89	74.2
Education	Mater	19	15.8
	PhD	4	3.3
	Total	**120**	**100.0**

Department: Table (3.16) shows that the majority respondents are from operation department 42 (35.0%), followed by from marketing department 26 (21.7%), then from supply chain department 25 (20.8%), finally from quality department 27 (22.5%). Operation represents the highest among others because this function is the main pillar that the hospital relies on in restaurant management.

Table (3.16): Respondents Department.

		Frequency	Percent
	Operation	42	35.0
	Quality	27	22.5
Department	Marketing	26	21.7
	Supply chain	25	20.8
	Total	**120**	**100.0**

Experience: Table (3.17) shows that most respondents are less than 5 years' experience 44 (36.7%), followed by between 5-10 years' experience 53 (44.2%), then between 11-15 years' experience 15 (12.5%), and finally above 15 years' experience only 8 (6.7%).

Table (3.17): Respondent Experience.

		Frequency	Percent
	Less than 5	44	36.7
	Bet. 5-10	53	44.2
Experience	Bet. 11-15	15	12.5
	Above 15	8	6.7
	Total	**120**	**100.0**

Chapter Four: Data analysis

Introduction:

This chapter contains descriptive statistical analysis of responses, Pearson correlation matrix to show the relationships among Total JIT variables with each other, among service quality dimensions with each other, and correlation between the Total JIT variable and service quality dimensions. Finally, it includes hypothesis testing, which tests the effect of Total JIT on service quality.

Descriptive Statistical Analysis:

Descriptive statistical analysis includes the means, standard deviations, and t-values, ranking and importance of each variable and item. Significance indicated based on the following equation:

5-1/3 = 1.33

Low importance: 1-2.33

 Medium importance: 2.34-3.66.

High importance: 3.67-5.

Independent Variable (Total Just in Time):

Table (4.1) shows that the means of total just in time sub-variables ranges between 3.81 to 3.97 and the standard deviation ranges between 0.659 and 0.682. This indicates that the respondents agree on high importance of total JIT sub-variables. Average mean for all total JIT sub-variables is 3.89 with standard deviation of 0.594. This means that the total JIT is very important for service quality of hospitals, where t=16.462>1.960. The JIT customer rated highest, followed by JIT operation and finally, JIT supplier.

Table (4.1): Mean, Standard Deviation, t-Value, Ranking and Importance for Total JIT.

No.	Sub-Variable	Mean	S.D.	t-Value	Sig	Rank	Imp.
1	JIT Supplier	3.81	0.739	12.053	0.000	3	High
2	JIT Operations	3.89	0.682	14.307	0.000	2	High
3	JIT Customer	3.97	0.659	16.166	0.000	1	High
	Total JIT	**3.89**	**0.594**	**16.462**	**0.000**		**High**

T-tabulated=1.960

The average mean for total JIT is 3.89 with standard deviation of 0.594. This means that the service quality of hospitals considers JIT customer of high importance, where t-value=16.462>1.960. The JIT customer rated higher than JIT operation and finally, JIT supplier.

JIT Supplier:

Table (4.2) shows that Table the means of JIT supplier items range between 3.53 to 4.11 with standard deviation ranges from .989 to 1.045.

(4.2): Mean, Standard Deviation, t-Value, Ranking and Importance for JIT Supplier

No.	Item	Mean	S.D.	t-Value	Sig	Rank	Imp.
1	The hospital develops full data base about suppliers.	3.53	1.045	5.504	0.000	8	Medium
2	The hospital sets supplier selection criteria.	3.78	.912	9.311	0.000	4	High
3	The hospital receives the right quantity	3.93	0.976	10.470	0.000	2	High
4	The hospital receives the order at right time.	3.84	1.045	8.822	0.000	5	High
5	The hospital receives the order in the right place.	4.11	0..951	12.769	0.000	1	High
6	The hospital shares forecasting with suppliers.	3.68	1.101	6.714	0.000	7	High
7	The hospital focuses in small lot size.	3.73	0.907	8.755	0.000	6	High
8	The hospital builds strong relationships with selected suppliers.	3.93	.989	10.053	0.000	3	High
	JIT Supplier	**3.81**	**0.739**	**12.053**	**0.000**		**High**

T-tabulated value=1.960

This indicates that the respondent's high agrees on the high importance of JIT supplier items. The average mean of JIT supplier items is 3.81, with a standard deviation 0.739, this indicates that the respondents agree on the high implementation of JIT supplier, where t-value 12.053 more than T-tabulated = 1.960.

JIT Operation:

Table (4.3) shows that the means of JIT operations items ranges between 3.73 to 4.15 with standard deviation ranges from 0. 845 to 1.026. This indicates that the respondents agree on the high importance of JIT operations items. The average mean for JIT operation is 3.98 with a standard deviation of .682. This means that the service quality of the hospital considers JIT operations of very high importance, where noticed that the t-value=14.307>1.960.

Table (4. 3): Mean, Standard Deviation, t-Value, Ranking, and Importance for JIT Operations

No.	Item	Mean	S.D.	t-Value	Sig	Rank	Imp.
1	The hospital provides enough space for operations.	3.89	0.858	11.385	0.000	2	High
2	The hospital layout facilitates operations.	3.81	0.946	9.365	0.000	6	High
3	The hospital provides cross training to all employees.	3.83	1.026	8.806	0.000	7	High
4	The hospital schedules patient according to demand.	3.97	0.970	10.922	0.000	4	High
5	The hospital responds fast to patients.	3.93	0.890	11.381	0.000	3	High
6	The hospital empowers the employee to solve problems	3.73	1.035	7.762	0.000	8	High
7	The hospital uses updated programs to reduce operation time.	3.83	0.973	9.382	0.000	5	High
8	The company selects appropriate staff to serve patients.	4.15	0.866	14.542	0.000	1	High
	JIT Operations	**3.89**	**.682**	**14.307**	**0.000**		**High**

T-tabulated value=1.960

JIT Customer:

Table (4.4) shows that the means of JIT customer items ranges between 3.82 to 4.06 with standard deviation ranges from 0. 814 to 0.979. This indicates that the all respondents agree on high importance of JIT customer items. The average mean for JIT customer is 3.97 with standard deviation of 0.659. This means that the service quality of hospital considers JIT customer of high importance, where t-value=16.166>1.960.

Table (4. 4): Mean, Standard Deviation, t-Value, Ranking and Importance for JIT Customer

No.	Item	Mean	S.D.	t-Value	Sig	Rank	Imp.
1	The hospital develops accurate database about patients.	4.05	.977	11.767	0.000	4	High
2	The hospital provides comfortable waiting area to patient.	4.03	0.849	13.326	0.000	1	High
3	The hospital sorts the patient according to priority.	4.06	0.955	12.136	0.000	3	High
4	The hospital reduces the waiting time of patients.	3.92	0.949	10.581	0.000	7	High
5	The hospital provides enough parking space for patient cares.	3.82	0.979	9.142	0.000	8	High
6	The hospital reacts fast to treat patients.	3.98	0.814	13.115	0.000	2	High
7	The hospital responds to patients' complaints in time.	3.92	0.904	11.113	0.000	5	High
8	The hospital speeds operation time of services.	4.02	0.953	11.113	0.000	6	High
	JIT Customer	**3.97**	**0.659**	**16.166**	**0.000**		**High**

T-tabulated value=1.960

Dependent Variable (Service Quality):

Table (4.5) shows that the means of Service Quality dimensions ranges between 3.83 to 4.09 and the standard deviation ranges between 0.767 and 0.826. This indicates that the respondents agree on high importance of service quality. Average mean for all service quality dimensions is 3.93 with standard deviation of 0.710. This means that the service quality is very important hospitals, where t=14.358>1.960. Table

also shows that tangibility has highest mean, followed by assurance, then empathy, responsiveness and reliability, respectively.

Table (4.5): Mean, Standard Deviation, t-Value, Ranking and Importance for Service Quality

No.	Dimension	Mean	S.D.	t-Value	Sig	Rank	Imp.
1	Tangibility	4.09	0.767	15.669	0.000	1	High
2	Assurance	3.92	0.778	12.963	0.000	2	High
3	Reliability	3.83	0.826	11.110	0.000	5	High
4	Empathy	3.91	0.796	12.607	0.000	3	High
5	Responsiveness	3.88	0.823	11.795	0.000	4	High
	SERVICE QUALITY	**3.93**	**0.710**	**14.358**	**0.000**		**High**

T-tabulated value=1.960

Tangibility:

Table (4.6) shows that the means of tangibility items ranges between 3.94 to 4.23 with standard deviation ranges from 0.860 to 0.974 This surely indicates that the all respondents agree on high importance of tangibility items. The average mean for the tangibility items is 4.09 with standard deviation of 0.767. This means that the service quality of hospitals considers tangibility of very high importance, where the t-value=15.669>1.960.

Table (4.6): Mean, Standard Deviation, t-Value, Ranking and Importance for TANGIBILITY

No.	Item	Mean	S.D.	t-Value	Sig	Rank	Imp.
1	The hospital uses new devices in providing treatment for patients	3.94	0.938	11.003	0.000	5	High
2	The hospital employees are neat.	4.03	0.974	11.526	0.000	4	High
3	The hospital maintains the hygiene of place.	4.13	0.916	13.552	0.000	3	High
4	The hospital cares for clinics and rooms appearance.	4.16	0.860	14.756	0.000	2	High
5	The hospital design reflects the quality of services.	4.23	0.877	15.410	0.000	1	High
	Tangibility	**4.09**	**0.767**	**15.669**	**0.000**		**High**

T-tabulated value=1.960

Assurance: Table (4.7) shows that the means of assurance items ranges between 3.88 to 4.01 with standard deviation ranges from 0.847 to

1.041 This indicates that the respondents agree on high importance of assurance items. The average mean for assurance items is 3.92 with standard deviation of 0.778. This means that the service quality of hospital considers assurance of high importance, where t-value=12.963>1.960.

Table (4.7): Mean, Standard Deviation, t-Value, Ranking and Importance for ASSURANCE

No.	Item	Mean	S.D.	t-Value	Sig	Rank	Imp.
1	The hospital staff able to get the patients confidence.	3.85	0.847	10.998	0.000	2	High
2	The hospital staff answers patient questions directly.	3.88	0.972	9.958	0.000	5	High
3	The hospital staff treat patients politely.	3.94	0.882	11.694	0.000	1	High
4	The hospital staff responds to patients' problems accurately.	3.93	0.972	10.430	0.000	4	High
5	The hospital climate reflects professionality.	4.01	1.041	10.609	0.000	3	High
	Assurance	**3.92**	**0.778**	**12.963**	**0.000**		**High**

T-tabulated value=1.960

Reliability:

Table (4.8) shows that the means of reliability items ranges between 3.73 to 3.93 with standard deviation ranges from 0.927 to 1.098.

Table (4.8): Mean, Standard Deviation, t-Value, Ranking and Importance for Reliability

No.	Item	Mean	S.D.	t-Value	Sig	Rank	Imp.
1	The hospital provides promised services.	3.88	0.927	1.433	0.000	5	High
2	The hospital provides consistence level of services.	3.79	0.961	9.026	0.000	3	High
3	The hospital records are free of errors.	3.73	1.061	7.486	0.000	5	High
4	The hospital tries to solve patient problem continually.	3.93	1.098	9.312	0.000	4	High
5	The hospital staff provides same level of services in emergency cases.	3.86	0.998	9.419	0.000	1	High
	Reliability	**3.84**	**0.827**	**11.110**	**0.000**		**High**

T-tabulated value=1.960

This indicates that the respondents agree on high importance of reliability items. The average mean for reliability items is 3.84 with standard deviation of 0.827. means and indicates that the respondent aware and concern about the reliability. Also, means that service quality of hospital

considers reliability of high importance, where is the score t-value=11.110>1.960.

Responsiveness:

Table (4.9) shows that the means of responsiveness items ranges between 3.88 to 3.98 with standard deviation ranges from 0.935 to 1.062. This indicates that the all respondents agree on high importance of the responsiveness items. The average mean for responsiveness items is 3.88 with standard deviation of 0.823.

Table (4.9): Mean, Standard deviation, t-Value, Ranking and Importance for RESPONSIVENESS

No.	Item	Mean	S.D.	t-Value	Sig	Rank	Imp.
1	The hospital staff responds quickly to patients' demand.	3.88	0.936	10.333	0.000	3	High
2	The hospital staff is willing to assist patients.	3.89	1.002	9.744	0.000	4	High
3	The hospital responds quickly to market changes.	3.93	0.963	10.524	0.000	2	High
4	The hospital keeps inventory according to demand.	3.93	1.062	9.537	0.000	5	High
5	The hospital minimizes the treatment cycle plan.	3.98	0.935	11.524	0.000	1	High
	Responsiveness	**3.88**	**0.823**	**11.795**	**0.000**	**0.000**	**High**

T-tabulated value=1.960

This means and indicates that the respondent aware and concern about the responsiveness. This means that the service quality of hospitals considers of the responsiveness (all items rated high) high importance, where the t-value=11.795>1.960.

Empathy:

Table (4.10) shows that the means of empathy items ranges between 3.79 to 4.00 with standard deviation ranges from 0.902 to 1.069. This indicates that the respondents agree on high importance of empathy items. The average mean for empathy items is 3.91 with standard deviation of

0.796. This means and indicates that the respondent aware and concern about the empathy. service quality of hospitals considers empathy of high importance, where t-value=12.607>1.960.

Table (4.10): Mean, Standard Deviation, t-Value, Ranking and Importance for EMPATHY

No.	Item	Mean	S.D.	t-Value	Sig	Rank	Imp.
1	The hospital staff gives individual attention for each patient.	3.89	0.933	10.469	0.000	2	High
2	The hospital stuff gives enough time for each patient.	3.88	0.936	10.333	0.000	3	High
3	The hospital staff understands specific needs for each patient.	4.00	0.961	11.394	0.000	1	High
4	The hospital gives attention to patients' interest.	3.82	1.069	8.369	0.000	6	High
5	The hospital staff concerns about each patient.	3.79	1.003	8.644	0.000	5	High
6	The hospital staff responds to patients' special needs.	3.94	1.007	10.247	0.000	4	High
	Empathy	**3.91**	**0.796**	**12.607**	**0.000**		**High**

T-tabulated value=1.960

Relationships between Variables:

Table (4.11) shows that the relationships between total JIT sub-variables are strong, where r ranging between 0.568 and 0.861. The table also shows that the relationships between service quality dimensions are strong, since r ranging between 0.613 and 0.795. The relationships between total JIT sub-variables and service quality dimensions are strong, since r ranging from 0.486 to 0.764. The relationships between each total JIT sub-variables with total service quality are strong, since r ranging from 0.595 to 0.749. Finally, the relationship between total JIT (JIT supplier, JIT operation, JIT customer) and total service quality (tangibility, assurance, reliability, responsiveness, empathy) is strong, where r equal 0.812. This indicates that the correlation between the total JIT and total service quality is very strong and can affect each other and there is an impact between the Total JIT and total service quality.

Table (4.11): Bivariate Pearson Correlation (r) Matrix between Independent and Dependent Variables.

No.		1	2	3	4	5	6	7	8	9	10
1	**JIT Purchasing**										
2	**JIT Operations**	.568**									
		.000									
3	**JIT customer**	.548**	.689**								
		.000	.000								
4	**Total JIT**	.835**	.874**	.861**							
		.000	**.000**	**.000**							
5	**Tangibility**	.486**	.733**	.659**	.726**						
		.000	.000	.000	.000						
6	**Assurance**	.539**	.659**	.694**	.733**	.659**					
		.000	.000	.000	.000	.000					
7	**Reliability**	.540**	.734**	.699**	.764**	.662**	.795**				
		.000	.000	.000	.000	.000	.000				
8	**Responsiveness**	.520**	.628**	.660**	.700**	.676**	.780**	.833**			
		.000	.000	.000	.000	.000	.000	.000			
9	**Empathy**	.562**	.609**	.621**	.696**	.613**	.782**	.794**	.771**		
		.000	.000	.000	.000	.000	.000	.000	.000		
10	**Service Quality**	.595**	.754**	.749**	**.812****	**.806****	.901**	.921**	.921**	.892**	
		.000	**.000**	**.000**	**.000**	**.000**	**.000**	**.000**	**.000**	**.000**	

**. Correlation is significant at the 0.01 level (2-tailed).

Hypothesis Testing:

Multiple regressions used to test the effect of Total JIT on achieving service quality at hospitals.

After confirming validity, reliability, and relationships between variables, the following tests carried out to be able to use multiple regressions: normality, linearity, and independence of errors, multi-collinearity (Sekaran, 2003; Hair, et. al., 2010).

Normal Distribution (Histogram):

The histogram in the figure (4.1) shows tht the data are normaly distributed, so the residuls does not affect the normal distribution.

Figure (4.1): Normality Test

Histogram

Dependent Variable: Sercive Quality

Mean = -2.61E-15
Std. Dev. = 0.987
N = 120
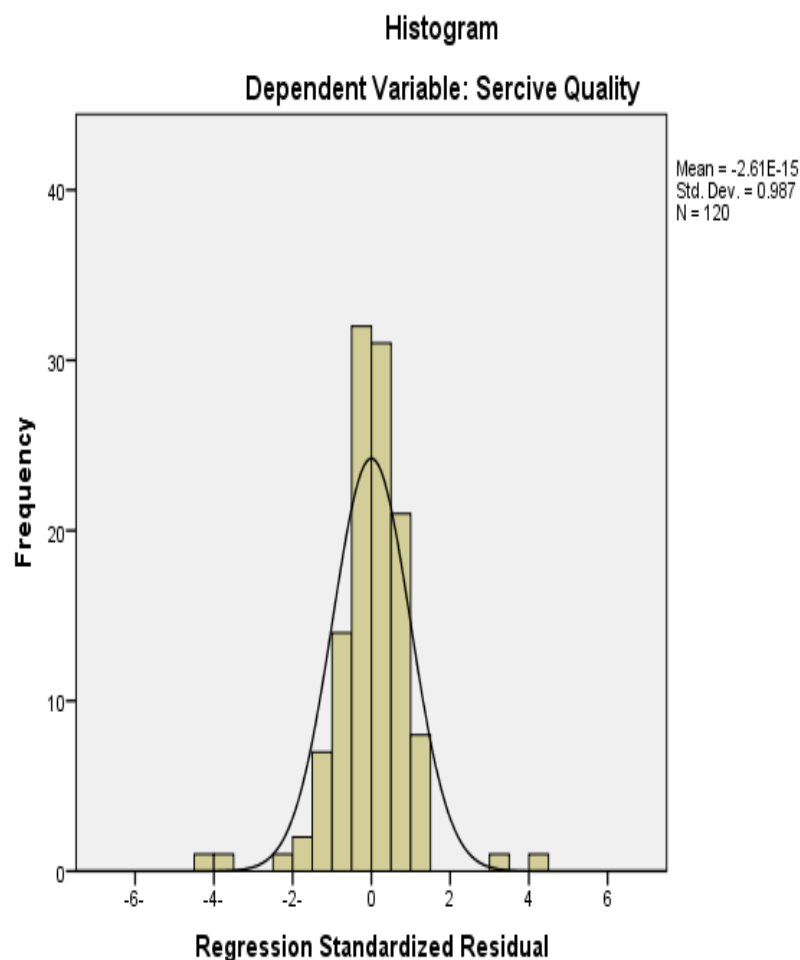
Linearity Test:

Figure (4.2) shows that the relationship between independent and dependent variables is linear.

Figure (4.2): Linearity Test

Normal P-P Plot of Regression Standardized Residual

Dependent Variable: Sercive Quality
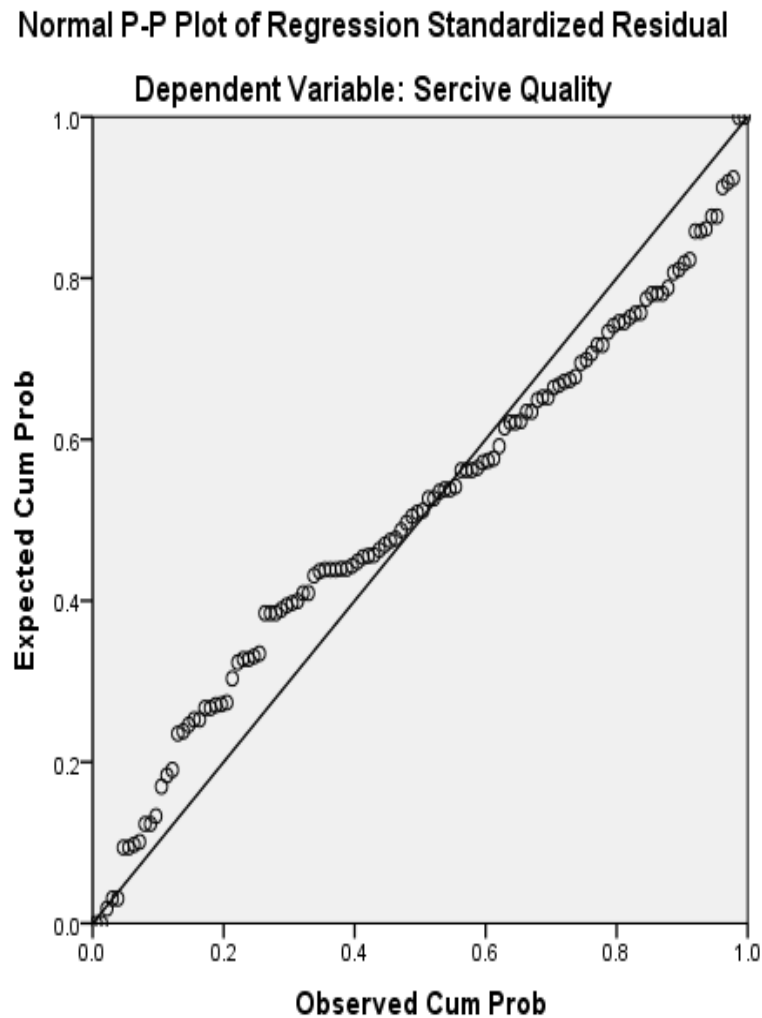
Independence of Errors:

Figure (4.3) shows that the errors are independence from each other. Durbin-Watson used to ensure the independence of errors, If Durbin-Watson test value is about two, and the model does not violate this assumption. Table (4.12) shows that Durbin Watson value is (d=2.199), which is about two and this shows that the residuals are not correlated to each other; therefore, the independence of errors is not violated.

Figure (4.3): Scatter Plot

Scatterplot
Dependent Variable: Sercive Quality
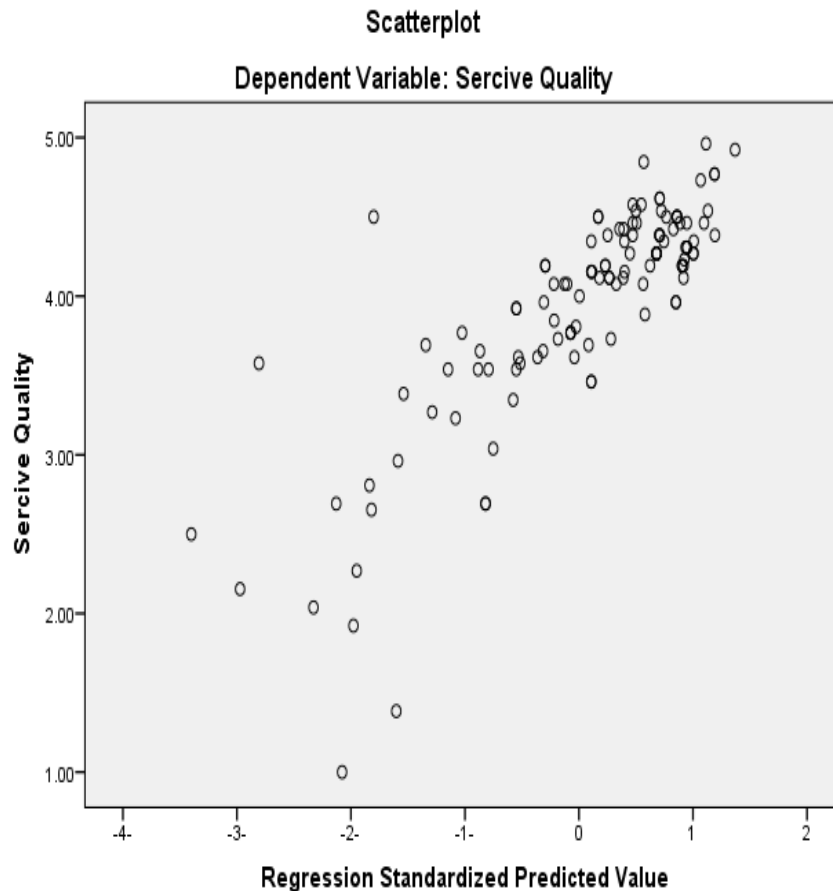
Multi-Collinearity:

Variance Inflation Factor (VIF) and tolerance used to test multi collinearity. If VIF is less than 10 and tolerance is more than 10%, the model does not violate the multi-collinearity assumption. Table (4.12) shows also that the VIF values are less than 10 and the tolerance values are more than 10%. This indicates that there is no multi-collinearity within the independent variables of the study.

Table (4. 12): Multi-collinearity and Durbin-Watson Tests.

Sub-Variables	Collinearity Statistics		Durbin-Watson
	Tolerance	VIF	
JIT Supplier	0.630	1.586	
JIT Operations	0.473	2.112	2.199
JIT Customer	0.489	2.046	

Main Hypothesis:

H₀₁: Total JIT components (JIT supplier, JIT operations, and JIT customer) do not affect service quality of private hospitals, in Amman, Jordan, at α≤0.05.

Table (4.13) shows that when regressing the three independent variables of Total JIT together against dependent variable (service quality) the model is fit for further analysis, where R^2 is 68.3% shows the fitness of the model for multiple regressions and explains the variance of independent variable on dependent variable, since R^2 is 68.3%. Then the independent variable can explain 0.683 of variance on the dependent variable, where (R^2=0.683, F=83.398, Sig.=0.000). Therefore, the null hypothesis is rejected and the alternative hypothesis is accepted, which states that the total Just in Time elements (JIT Purchasing, JIT Operation, and JIT Customer) affect service quality of hospitals, at α≤0.05.

Table (4.13): Results of Multiple Regressions Analysis (ANOVA[a]): Regressing Total JIT Sub-Variables against Service Quality.

Model	r	R^2	Adjusted R^2	f	Sig.
1	0.827[a]	0.683	0.675	83.398	0.000[b]

a. Predictors: (Constant), JIT Supplier, JIT Operation, JIT Customer
b. Dependent Variable: Service Quality

Table (4.14) shows the effect of each total JIT sub-variable on service of quality.

Table (4.14): Results of Multiple Regressions for the Effect of each Total JIT sub-variable on Dependent Variable.

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	0.084	0.248		0.339	0.735
	JIT Supplier	0.150	0.063	0.156	2.374	0.019
	JIT Operations	0.412	0.079	0.396	5.215	0.000
	JIT Customer	0.420	0.081	0.390	5.215	0.000

T-tabulated value=1.960

H₀₁.₁: JIT supplier does not affect service quality of private hospitals, in Amman, Jordan, at α≤0.05.

Table (4.14) shows that there is significant effect of JIT supplier on service quality, since (Beta=0.156, t=2.374, sig.=0.019, p<0.05). Therefore, the null hypothesis is rejected and the alternative hypothesis is accepted which states that JIT Supplier affects service quality of hospitals, at α≤0.05.

H$_{01.2}$: JIT operation does not affect service quality of private hospitals, in Amman, Jordan, at α≤0.05.

Table (4.14) shows that there is significant effect of JIT operations on service quality, since (Beta=0.396, t=5.215, sig.=0.000, p<0.05). Therefore, the null hypothesis is rejected and the alternative hypothesis is accepted which states that the JIT Operation affects service quality of hospitals, at α≤0.05.

H$_{01.3}$: JIT customer does not affect service quality of private hospitals, in Amman, Jordan, at α≤0.05.

Table (4.14) shows that there is significant effect of JIT selling on competitive advantage, since (Beta=0.390, t=5.215, sig.=0.000, p<0.05). Therefore, the null hypothesis is rejected and the alternative hypothesis is accepted which states that the JIT Customer service quality of hospitals, at α≤0.05.

In summary, descriptive table (4.15) show that the respondents agree on the high importance of total JIT sub-variables, where the JIT customer-rated the highest mean, followed by JIT operation and finally, JIT supplier. In other hand, tables (4.16) show that the respondents agree on the high importance of service quality dimensions, this means that the service quality is very important for hospitals, where the tangibility has highest mean, followed by assurance, then empathy, responsiveness, and reliability, respectively.

Correlation table shows that the relationships among total JIT sub-variables are strong, and the relationships among service quality dimensions are strong. The relationships between total JIT sub-variables and service quality dimensions are strong, and the relationships between each total JIT sub-variables with total service quality are strong. Finally, the relationship between total JIT and total service quality is strong,

The multiple regressions analysis shows that the total JIT sub-variables together affect the service quality, where JIT Operation is having the highest effect, followed by JIT Customer, then JIT supplier.

Chapter Five: Results' Discussion, Conclusion, and Recommendations
Results' Discussion:

Results show that the Total Just in Time sub-variables is highly implemented in Jordanian private hospitals. The JIT customer has rated the highest, followed by JIT operation and finally, JIT supplier. This is meaning the Jordanian manager realizes the importance of the Total JIT practical implications; JIT customer is occupying with no wonder the first place because this study deals with providing service to the customer in hospitals. This result can help the manager to direct their effort more toward JIT customer in order to improve overall service quality; this result was supported by the following studies that mentioned the importance of total JIT and its sub-variables. Claycomb, et. al. (1999) study paper was agree of the high importance of Total JIT but differ in the importance which is JIT purchasing comes in the first place, followed by JIT selling, and operation, respectively. This study results also found compatible with Eker and Pala (2008) study in which they found that JIT scored high with companies that have the best market position and have high-performance measure. Also, Compatible with Green, et. al. (2014) as mentioned in their study that Total JIT sub-variable are strongly related and structured.

The second results also show that the Service Quality dimensions are highly implemented, while Tangibility has the highest implementation, followed by Assurance, then Empathy, Responsiveness, and Reliability, respectively. This is mean that the mangers of Jordanian private hospitals realize the importance of service quality. This result can help managers to direct their effort more toward Tangibility because it scores the highest implementation between service quality dimensions. This result is highly compatible with Du Plooy, et. al. (2007) this study showed that the same

significant of implementation of service quality dimensions, Tangibility is occupying the first place. Moreover, Parasuraman, et. al. (1988) showed in his study the highest importance for Tangibility, followed by Reliability, Responsiveness, assurance, finally end with Empathy. However, O'connor (1992) in his study he excluded Tangibility variable from his study because its score low in importance and strongly agree with other dimensions of service quality on condition of implanting all variables together. Pitt, et. al. (1995) showed that the five dimensions of service quality are appropriate and enough for service quality measurement.

The relationships between total JIT sub-variables and service quality dimensions are strong, which is mean, this result is supported previous studies in which the service quality can lead to increase service quality and overall performance. Such as, supported by the previous studies, Canel, et. al. (2000) stated that JIT can achieve huge advantages for service quality Also, mentioned that JIT achieves numerous potential improvements in service. Green, et. al. (2014) stated that the integration of total JIT will help to serve the ultimate customer in the right quantities and exact time. Ahmad, et. al. (2004) stated that JIT elements positively related to organizational performance. However, Bortolotti, (2013) revealed another finding, that highly customization and non-repetitive environment influence negatively JIT impacts on company performance.

Finally, results show that the Total JIT have an impact on service quality in Amman, Jordan. Therefore, the main null hypothesis is rejected and the alternative is accepted which state that Total JIT impact on service quality in Amman, Jordan, at $\alpha \leq 0.05$.

The multiple regressions analysis shows that the total JIT sub-variables together affect the service quality, where JIT Operation is having the highest effect, followed by JIT Customer, then JIT supplier. This

indicates that the correlation between the total JIT and total service quality is strong and can affect each other in all study dimensions; therefore, it advised to work on the three of them together because they affect each other. Green, et. al. (2014) find that the correlation is significant between Total JIT and Total service quality.

Conclusion:

This study is dedicated to answer the study main question: Do Total JIT sub-variables (JIT supplier, JIT operation, JIT customer) impact service quality of hospital in Jordan? Data collated via questionnaire, which tested for its validity and reliability. Then correlation and multiple regressions used to test the hypothesis.

The study results show that Jordanian private hospitals highly implement all items, sub-variables, and dimension, which mean that managers working at a private hospital in Amman, Jordan realize the significant of Total JIT and concern about offering better service quality to their customers.

The results of Total JIT variables are strongly associated (r= 0.861) with each other, (JIT supplier, JIT operation, JIT customer). Moreover, results show that all service quality sub-variables are strongly associated with each other (r=0.806). Jordanian managers should consider all sub-variables together because they are strongly associated with each other.

Finally, results indicate that there is a significant impact of the total JIT on service quality of Jordanian private hospitals. Moreover, JIT operation has rated the highest impact on service quality, then JIT customer, followed by JIT supplier.

Recommendations:

Recommendations for Jordanian Private Hospitals:

- Since this study is carried out on managers who are working at private hospitals which is mean it's from their perception for the work environment, this study recommends starting research in future to know the relation from a customer point of view.

- This study recommends that the hospital must work for all sub-variables together because it is strongly associated.

- The results show how JIT implementations affect service quality and may help owners to promote the organization`s market position.

- Make the Total JIT integrated and align with organization strategy leads to reduce the overall cost, not just operational cost.

- This study recommends that all organizations in Jordan rethink about managing inventory and its relative costs should be in considerations.

- The JIT system can use by marketing management as a tool to promote marketing campaign.

- This study recommends that training for JIT should be established to all employee in the organization.

- This study recommends the hospital focus more on JIT customer because hospitals deal with patients in the first place.

Recommendations for Academics and Future Research:

- This study was targeted many managers in different hospitals. Therefore, this study recommends going more depth by starting Case Study and Qualitative research.

- This study recommends that all hospitals should emphasize on the tangibility because of its influence the perception of the customer in the first place.

- This study carried out within a limited period; therefore, the study advised to repeat it after a suitable time to check organization development.

- This study carried out in hospitals. Therefore, there is a need to implement this study in other service organizations in Jordan to enable us to generalize the results.

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Appendices:
Appendix (1): Panel of Referees Committee.

No.	Name	Qualification	Organization
1	Dr. Ahmed Ali Saleh	Associate Prof.	Middle East University
2	Dr. Abdei-Baset Hassoneh	Associate Prof.	Middle East University
3	Dr. Abdelraheem Qadoumi	Associate Prof.	Middle East University
4	Dr. Amjad Etwaiqat.	Associate Prof.	Middle East University
5	Dr. ABDALLAH ABDALLH	Ph. D. Quality management	German university
6	Dr. Ahmad Al-Saukar	Associate Prof. E-Business	Middle East University
7	Dr. Hussam Ali	Assistant Prof. Marketing	Middle East University
8	Hani abdallat	Manager, Consultant	Projects Manager
9	Husam Ghunaim	Manager In Carrefour	Purchasing Manager

Appendix (2): Letter and Questionnaire of Respondents

MIDDLE EAST UNIVERSITY

Amman - Jordan

Dear Participant:

This questionnaire includes 50 paragraphs which cover all independent and dependent variables, and may take only 10 minutes from you to answer the questions.

I would like to thank you for your participation and support, and if do you have any question or comment,

Thank you for your effort.

Prepared by:

Supervised by:

Questionnaire of a thesis titled:

Part one: Demographic information

Hospital:

Gender: □Male □Female

Age (years): □Less than 30 □ Bet. 30-39 □Bet. 40-50 □Above 50

Experience (years): □Less 10 □Bet.10-20 □Bet.21-30 □More than 30

Education: □Diploma □ Bachelor □Mater □Ph.D.

Position: □Officer □Supervisor □Manager □Director □V. P □G.M

Division: □Operation & Quality □Supply Chain □Sales & Marketing □Finance

Part two: The following 50 questions tests the perception of Jordanian private hospitals employees about the impact of just in time on quality of service. Please, rate each question according to actual implementation and not based on your belief, as follows: 1 = Never Implemented, 2 = Slightly Implemented, 3 = Sometimes, 4 = Almost Implemented, 5 = Frequently Implemented.

No.	Item	Never Implemented	Slightly Implemented	Sometimes	Almost Implemented	Frequently Implemented
	Total Just in Time					
	Just in Time Purchasing					
1.	The hospital develops full data base about suppliers.	1	2	3	4	5
2.	The hospital sets supplier selection criteria.	1	2	3	4	5
3.	The hospital receives the right quantity	1	2	3	4	5
4.	The hospital receives the order at right time.	1	2	3	4	5
5.	The hospital receives the order in the right place.	1	2	3	4	5
6.	The hospital shares forecasting with suppliers.	1	2	3	4	5
7.	The hospital focuses in small lot size.	1	2	3	4	5
8.	The hospital builds strong relationships with selected suppliers.	1	2	3	4	5
	Just in Time Operation					
9.	The hospital provides enough space for operations.	1	2	3	4	5
10.	The hospital layout facilitates operations.	1	2	3	4	5
11.	The hospital provides cross training to all employees.	1	2	3	4	5
12.	The hospital schedules patient according to demand.	1	2	3	4	5
13.	The hospital responds fast to patients.	1	2	3	4	5
14.	The hospital empowers the employee to solve problems	1	2	3	4	5
15.	The hospital uses updated programs to reduce operation time.	1	2	3	4	5
16.	The company selects appropriate staff to serve patients.	1	2	3	4	5
	Just in Time Costumer					
17.	The hospital develops accurate database about patients.	1	2	3	4	5
18.	The hospital provides comfortable waiting area to patient.	1	2	3	4	5
19.	The hospital sorts the patient according to priority.	1	2	3	4	5

20.	The hospital reduces the waiting time of patients.	1	2	3	4	5
21.	The hospital provides enough parking space for patient cares.	1	2	3	4	5
22.	The hospital reacts fast to treat patients.	1	2	3	4	5
23.	The hospital responds to patients' complaints in time.	1	2	3	4	5
24.	The hospital speeds operation time of services.	1	2	3	4	5
	Quality Service					
	Tangibles					
25.	The hospital uses new devices in providing treatment for patients	1	2	3	4	5
26.	The hospital employees are neat.	1	2	3	4	5
27.	The hospital maintains the hygiene of place.	1	2	3	4	5
28.	The hospital cares for clinics and rooms appearance.	1	2	3	4	5
29.	The hospital design reflects the quality of services.	1	2	3	4	5
	Assurance					
30.	The hospital staff able to get the patients confidence.	1	2	3	4	5
31.	The hospital staff answers patient questions directly.	1	2	3	4	5
32.	The hospital staff treat patients politely.	1	2	3	4	5
33.	The hospital staff responds to patients' problems accurately.	1	2	3	4	5
34.	The hospital climate reflects professionality.	1	2	3	4	5
	Reliability					
35.	The hospital provides promised services.	1	2	3	4	5
36.	The hospital provides consistence level of services.	1	2	3	4	5
37.	The hospital records are free of errors	1	2	3	4	5
38.	The hospital tries to solve patient problem continually.	1	2	3	4	5
39.	The hospital staff provides same level of services in emergency cases.	1	2	3	4	5
	Empathy					
40.	The hospital staff gives individual attention for each patient.	1	2	3	4	5
41.	The hospital stuff gives enough time for each patient.	1	2	3	4	5
42.	The hospital staff understands specific needs for each patient.	1	2	3	4	5
43.	The hospital gives attention to patients' interest.	1	2	3	4	5
44.	The hospital staff concerns about each patient.	1	2	3	4	5
45.	The hospital staff responds to patients' special needs.	1	2	3	4	5
	Responsiveness					
46.	The hospital staff responds quickly to patients' demand.	1	2	3	4	5
47.	The hospital staff is willing to assist patients.	1	2	3	4	5
48.	The hospital responds quickly to market changes.	1	2	3	4	5
49.	The hospital keeps inventory according to demand.	1	2	3	4	5
50.	The hospital minimizes the treatment cycle plan.	1	2	3	4	5

Appendix (3): Original Data Analysis Report:

Frequencies

Statistics

		Gender	Age	Experience	Education	Position	Division
N	Valid	120	120	120	120	120	120
	Missing	0	0	0	0	0	0

Frequency Table

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	64	53.3	53.3	53.3
	2	56	46.7	46.7	100.0
	Total	120	100.0	100.0	

Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	27	22.5	22.5	22.5
	2	65	54.2	54.2	76.7
	3	22	18.3	18.3	95.0
	4	6	5.0	5.0	100.0
	Total	120	100.0	100.0	

Experience

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	44	36.7	36.7	36.7
	2	53	44.2	44.2	80.8
	3	15	12.5	12.5	93.3
	4	8	6.7	6.7	100.0
	Total	120	100.0	100.0	

Education

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	8	6.7	6.7	6.7
	2	89	74.2	74.2	80.8
	3	19	15.8	15.8	96.7
	4	4	3.3	3.3	100.0
	Total	120	100.0	100.0	

Position

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	15	12.5	12.5	12.5
	2	24	20.0	20.0	32.5
	3	67	55.8	55.8	88.3
	4	8	6.7	6.7	95.0
	6	6	5.0	5.0	100.0
	Total	120	100.0	100.0	

Division

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	42	35.0	35.0	35.0
	2	27	22.5	22.5	57.5
	3	26	21.7	21.7	79.2
	4	25	20.8	20.8	100.0
	Total	120	100.0	100.0	

```
Factor Analysis:
  /VARIABLES Pur Op Cus
```

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.701
Bartlett's Test of Sphericity	Approx. Chi-Square	129.543
	df	3
	Sig.	.000

Communalities

	Initial	Extraction
Pur	1.000	.662
Op	1.000	.779
Cus	1.000	.765

Extraction Method: Principal

Component Analysis.

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.206	73.533	73.533	2.206	73.533	73.533
2	.484	16.132	89.666			
3	.310	10.334	100.000			

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component
	1
Pur	.814
Op	.883
Cus	.874

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

```
FACTOR
  /VARIABLES Pur1 Pur2 Pur3 Pur4 Pur5 Pur6 Pur7 Pur8
```

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.867
Bartlett's Test of Sphericity	Approx. Chi-Square	467.204
	df	28
	Sig.	.000

Communalities

	Initial	Extraction
Pur1	1.000	.527
Pur2	1.000	.746
Pur3	1.000	.540
Pur4	1.000	.637
Pur5	1.000	.459
Pur6	1.000	.520
Pur7	1.000	.531
Pur8	1.000	.524

Extraction Method: Principal
Component Analysis.

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.484	56.048	56.048	4.484	56.048	56.048
2	.961	12.018	68.066			
3	.634	7.919	75.985			
4	.583	7.291	83.277			
5	.427	5.340	88.616			
6	.390	4.875	93.491			
7	.303	3.787	97.278			
8	.218	2.722	100.000			

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component
	1
Pur1	.726
Pur2	.864
Pur3	.735
Pur4	.798
Pur5	.678
Pur6	.721
Pur7	.729
Pur8	.724

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

```
FACTORVARIABLES Op1 Op2 Op3 Op4 Op5 Op6 Op7 Op8
```

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.854
Bartlett's Test of Sphericity	Approx. Chi-Square	389.550
	df	28
	Sig.	.000

Communalities

	Initial	Extraction
Op1	1.000	.594
Op2	1.000	.664
Op3	1.000	.531
Op4	1.000	.444
Op5	1.000	.379
Op6	1.000	.476
Op7	1.000	.560
Op8	1.000	.546

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.194	52.430	52.430	44.194	52.430	52.430
2	.920	11.497	63.927			
3	.724	9.051	72.987			
4	.609	7.619	80.597			
5	.508	6.354	86.951			
6	.449	5.617	92.568			
7	.311	3.887	96.544			
8	.284	3.545	100.000			

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component
	1
Op1	.771
Op2	.815
Op3	.728
Op4	.666
Op5	.616
Op6	.690
Op7	.748
Op8	.739

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

```
FACTOR VARIABLES Cus1 Cus2 Cus3 Cus4 Cus5 Cus6 Cus7 Cus8
```

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.853
Bartlett's Test of Sphericity	Approx. Chi-Square	391.080
	df	28
	Sig.	.000

Communalities

	Initial	Extraction
Cus1	1.000	.392
Cus2	1.000	.631
Cus3	1.000	.597
Cus4	1.000	.608
Cus5	1.000	.308
Cus6	1.000	.429
Cus7	1.000	.565
Cus8	1.000	.614

Extraction Method: Principal
Component Analysis.

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.144	51.797	51.797	4.144	51.797	51.797
2	.930	11.624	63.422			
3	.731	9.133	72.554			
4	.643	8.041	80.595			
5	.566	7.076	87.671			
6	.427	5.334	93.005			
7	.310	3.877	96.882			
8	.249	3.118	100.000			

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component
	1
Cus1	.626
Cus2	.794
Cus3	.773
Cus4	.780
Cus5	.555
Cus6	.655
Cus7	.752
Cus8	.784

Extraction Method: Principal Component Analysis.
a. 1 components extracted.

FACTOR: VARIABLES Tan Ass Rel Emp Res

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.901
Bartlett's Test of Sphericity	Approx. Chi-Square	495.621
	df	10
	Sig.	.000

Communalities

	Initial	Extraction
Tan	1.000	.646
Ass	1.000	.820
Rel	1.000	.850
Emp	1.000	.839
Res	1.000	.798

Extraction Method: Principal
Component Analysis.

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.954	79.074	79.074	3.954	79.074	79.074
2	.431	8.615	87.689			
3	.237	4.739	92.428			
4	.214	4.289	96.718			
5	.164	3.282	100.000			

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component
	1
Tan	.804
Ass	.906
Rel	.922
Emp	.916
Res	.893

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

```
FACTOR: VARIABLES Tan1 Tan2 Tan3 Tan4 Tan5
```

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.844
Bartlett's Test of Sphericity	Approx. Chi-Square	350.030
	df	10
	Sig.	.000

Communalities

	Initial	Extraction
Tan1	1.000	.725
Tan2	1.000	.720
Tan3	1.000	.617
Tan4	1.000	.731
Tan5	1.000	.748

Extraction Method: Principal
Component Analysis.

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.542	70.833	70.833	3.542	70.833	70.833
2	.490	9.810	80.643			
3	.476	9.516	90.158			
4	.270	5.398	95.556			
5	.222	4.444	100.000			

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component
	1
Tan1	.851
Tan2	.849
Tan3	.786
Tan4	.855
Tan5	.865

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

```
FACTOR: VARIABLES Ass1 Ass2 Ass3 Ass4 Ass5
```

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.831
Bartlett's Test of Sphericity	Approx. Chi-Square	326.263
	df	10
	Sig.	.000

Communalities

	Initial	Extraction
Ass1	1.000	.755
Ass2	1.000	.753
Ass3	1.000	.577
Ass4	1.000	.702
Ass5	1.000	.634

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.421	68.417	68.417	3.421	68.417	68.417
2	.595	11.902	80.320			
3	.466	9.327	89.646			
4	.313	6.268	95.915			
5	.204	4.085	100.000			

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component
	1
Ass1	.869
Ass2	.868
Ass3	.759
Ass4	.838
Ass5	.796

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

```
FACTOR: VARIABLES Rel1 Rel2 Rel3 Rel4 Rel5
```

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.786
Bartlett's Test of Sphericity	Approx. Chi-Square	333.123
	df	10
	Sig.	.000

Communalities

	Initial	Extraction
Rel1	1.000	.698
Rel2	1.000	.764
Rel3	1.000	.605
Rel4	1.000	.647
Rel5	1.000	.653

Extraction Method: Principal

Component Analysis.

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.367	67.342	67.342	3.367	67.342	67.342
2	.643	12.868	80.209			
3	.489	9.775	89.984			
4	.343	6.860	96.844			
5	.158	3.156	100.000			

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component
	1
Rel1	.836
Rel2	.874
Rel3	.778
Rel4	.804
Rel5	.808

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

FACTOR: VARIABLES Res1 Res2 Res3 Res4 Res5

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.788
Bartlett's Test of Sphericity	Approx. Chi-Square	364.575
	df	10
	Sig.	.000

Communalities

	Initial	Extraction
Res1	1.000	.700
Res2	1.000	.746
Res3	1.000	.777
Res4	1.000	.677
Res5	1.000	.555

Extraction Method: Principal
Component Analysis.

Total Variance Explained

Compo nent	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.454	69.081	69.081	3.454	69.081	69.081
2	.676	13.514	82.595			
3	.471	9.425	92.020			
4	.205	4.094	96.114			
5	.194	3.886	100.000			

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component
	1
Res1	.837
Res2	.864
Res3	.881
Res4	.823
Res5	.745

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

```
FACTOR: VARIABLES Emp1 Emp2 Emp3 Emp4 Emp5 Emp6
```

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.846
Bartlett's Test of Sphericity	Approx. Chi-Square	441.956
	df	15
	Sig.	.000

Communalities

	Initial	Extraction
Emp1	1.000	.638
Emp2	1.000	.712
Emp3	1.000	.591
Emp4	1.000	.645
Emp5	1.000	.704
Emp6	1.000	.704

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.993	66.550	66.550	3.993	66.550	66.550
2	.785	13.081	79.631			
3	.435	7.256	86.887			
4	.352	5.864	92.751			
5	.248	4.126	96.876			
6	.187	3.124	100.000			

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component
	1
Emp1	.798
Emp2	.844
Emp3	.769
Emp4	.803
Emp5	.839
Emp6	.839

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Reliability

RELIABILITY: VARIABLES=Pur Op Cus

Reliability Statistics

Cronbach's Alpha	N of Items
.816	3

RELIABILITY: /VARIABLES=Pur1 Pur2 Pur3 Pur4 Pur5 Pur6 Pur7 Pur8

Reliability Statistics

Cronbach's Alpha	N of Items
.885	8

RELIABILITY: /VARIABLES=Op1 Op2 Op3 Op4 Op5 Op6 Op7 Op8

Reliability Statistics

Cronbach's Alpha	N of Items
.868	8

RELIABILITY: /VARIABLES=Cus1 Cus2 Cus3 Cus4 Cus5 Cus6 Cus7 Cus8

Reliability Statistics

Cronbach's Alpha	N of Items
.862	8

RELIABILITY: /VARIABLES=Tan Ass Rel Emp Res

Reliability Statistics

Cronbach's Alpha	N of Items
.933	5

RELIABILITY: /VARIABLES=Tan1 Tan2 Tan3 Tan4 Tan5

Reliability Statistics

Cronbach's Alpha	N of Items
.896	5

RELIABILITY: /VARIABLES=Ass1 Ass2 Ass3 Ass4 Ass5

Reliability Statistics

Cronbach's Alpha	N of Items
.882	5

RELIABILITY:VARIABLES=Rel1 Rel2 Rel3 Rel4 Rel5

Reliability Statistics

Cronbach's Alpha	N of Items
.876	5

RELIABILITY: /VARIABLES=Res1 Res2 Res3 Res4 Res5

Reliability Statistics

Cronbach's Alpha	N of Items
.887	5

RELIABILITY
  /VARIABLES=Emp1 Emp2 Emp3 Emp4 Emp5 Emp6

Reliability Statistics

Cronbach's Alpha	N of Items
.899	6

T-Test

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
JIT Purchasing	120	3.8135	.73942	.06750
JIT Operation	120	3.8917	.68272	.06232
JIT Customer	120	3.9729	.65929	.06018
Just in Time	120	3.8927	.59406	.05423

One-Sample Test

	Test Value = 3					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
JIT Purchasing	12.053	119	.000	.81354	.6799	.9472
JIT Operation	14.307	119	.000	.89167	.7683	1.0151
JIT Customer	16.166	119	.000	.97292	.8537	1.0921
Just in Time	16.462	119	.000	.89271	.7853	1.0001

T-Test

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
Tangibles	120	4.0983	.76784	.07009
Assurance	120	3.9217	.77884	.07110
Reliability	120	3.8383	.82657	.07546
Responsiveness	120	3.9167	.79653	.07271
Empathy	120	3.8867	.82349	.07517
Service Quality	120	3.9317	.71085	.06489

One-Sample Test

	Test Value = 3					
	T	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Tangibles	15.669	119	.000	1.09833	.9595	1.2371
Assurance	12.963	119	.000	.92167	.7809	1.0624
Reliability	11.110	119	.000	.83833	.6889	.9877
Responsiveness	12.607	119	.000	.91667	.7727	1.0606
Empathy	11.795	119	.000	.88667	.7378	1.0355
Service Quality	14.358	119	.000	.93173	.8032	1.0602

```
T-TEST
 TESTVAL=3
  MISSING=ANALYSIS /VARIABLES=Pur1 Pur2 Pur3 Pur4 Pur5 Pur6 Pur7 Pur8
Pur Op1 Op2 Op3 Op4 Op5 Op6 Op7 Op8 Op Cus1 Cus2 Cus3 Cus4 Cus5 Cus6
Cus7 Cus8 Cus JIT Tan1 Tan2 Tan3 Tan4 Tan5 Tan Ass1 Ass2 Ass3 Ass4
Ass5 Ass Rel1 Rel2 Rel3 Rel4 Rel5 Rel Res1 Res2 Res3 Res4 Res5 Res
Emp1 Emp2 Emp3 Emp4 Emp5 Emp6 Emp SQ. /CRITERIA=CI(.95).
```

T-Test

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
The hospital develops full database about suppliers.	120	3.53	1.045	.095
The hospital sets supplier selection criteria.	120	3.78	.912	.083
The hospital receives the right quantity	120	3.93	.976	.089
The hospital receives the order at right time.	120	3.84	1.045	.095
The hospital receives the order in the right place.	120	4.11	.951	.087
The hospital shares forecasting with suppliers.	120	3.68	1.101	.101
The hospital focuses in small lot size.	120	3.73	.907	.083
The hospital builds strong relationships with selected suppliers.	120	3.93	.989	.090
JIT Purchasing	**120**	**3.8135**	**.73942**	**.06750**
The hospital provides enough space for operations.	120	3.89	.858	.078
The hospital layout facilitates operations.	120	3.81	.946	.086
The hospital provides cross training to all employees.	120	3.83	1.026	.094
The hospital schedules patient according to demand.	120	3.97	.970	.089
The hospital responds fast to patients.	120	3.93	.890	.081
The hospital empowers the employee to solve problems	120	3.73	1.035	.094
The hospital uses updated programs to reduce operation time.	120	3.83	.973	.089
The company selects appropriate staff to serve patients.	120	4.15	.866	.079
JIT Operation	**120**	**3.8917**	**.68272**	**.06232**
The hospital develops accurate database about patients.	120	4.05	.977	.089
The hospital provides comfortable waiting area to patient.	120	4.03	.849	.078
The hospital sorts the patient according to priority.	120	4.06	.955	.087
The hospital reduces the waiting time of patients.	120	3.92	.949	.087
The hospital provides enough parking space for patient cares.	120	3.82	.979	.089
The hospital reacts fast to treat patients.	120	3.98	.814	.074
The hospital responds to patients' complaints in time.	120	3.92	.904	.082
The hospital speeds operation time of services.	120	4.02	.953	.087
JIT Customer	**120**	**3.9729**	**.65929**	**.06018**
Just in Time	**120**	**3.8927**	**.59406**	**.05423**
The hospital uses new devices in providing treatment for patients	120	3.94	.938	.086
The hospital employees are neat.	120	4.03	.974	.089
The hospital maintains the hygiene of place.	120	4.13	.916	.084
The hospital cares for clinics and rooms appearance.	120	4.16	.860	.078
The hospital design reflects the quality of services.	120	4.23	.877	.080

Tangibles	**120**	**4.0983**	**.76784**	**.07009**
The hospital staff able to get the patients confidence.	120	3.85	.847	.077
The hospital staff answers patient questions directly.	120	3.88	.972	.089
The hospital staff treat patients politely.	120	3.94	.882	.081
The hospital staff responds to patients' problems accurately.	120	3.93	.972	.089
The hospital climate reflects professionality.	120	4.01	1.041	.095
Assurance	**120**	**3.9217**	**.77884**	**.07110**
The hospital provides promised services.	120	3.88	.927	.085
The hospital provides consistence level of services.	120	3.79	.961	.088
The hospital records are free of errors	120	3.73	1.061	.097
The hospital tries to solve patient problem continually.	120	3.93	1.098	.100
The hospital staff provides same level of services in emergency cases.	120	3.86	.998	.091
Reliability	**120**	**3.8383**	**.82657**	**.07546**
The hospital staff responds quickly to patients' demand.	120	3.88	.936	.085
The hospital staff is willing to assist patients.	120	3.89	1.002	.092
The hospital responds quickly to market changes.	120	3.93	.963	.088
The hospital keeps inventory according to demand.	120	3.93	1.062	.097
The hospital minimizes the treatment cycle plan.	120	3.98	.935	.085
Responsiveness	**120**	**3.8867**	**.82349**	**.07517**
The hospital staff gives individual attention for each patient.	120	3.89	.933	.085
The hospital stuff gives enough time for each patient.	120	3.88	.936	.085
The hospital staff understands specific needs for each patient.	120	4.00	.961	.088
The hospital gives attention to patients' interest.	120	3.82	1.069	.098
The hospital staff concerns about each patient.	120	3.79	1.003	.092
The hospital staff responds to patients' special needs.	120	3.94	1.007	.092
Empathy	**120**	**3.9167**	**.79653**	**.07271**
Service Quality	120	3.9317	.71085	.06489

One-Sample Test

	Test Value = 3					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
The hospital develops full data base about suppliers.	5.504	119	.000	.525	.34	.71
The hospital sets supplier selection criteria.	9.311	119	.000	.775	.61	.94
The hospital receives the right quantity	10.470	119	.000	.933	.76	1.11
The hospital receives the order at right time.	8.822	119	.000	.842	.65	1.03
The hospital receives the order in the right place.	12.769	119	.000	1.108	.94	1.28
The hospital shares forecasting with suppliers.	6.714	119	.000	.675	.48	.87
The hospital focuses in small lot size.	8.755	119	.000	.725	.56	.89

The hospital builds strong relationships with selected suppliers.	10.249	119	.000	.925	.75	1.10
JIT Purchasing	**12.053**	**119**	**.000**	**.81354**	**.6799**	**.9472**
The hospital provides enough space for operations.	11.385	119	.000	.892	.74	1.05
The hospital layout facilitates operations.	9.356	119	.000	.808	.64	.98
The hospital provides cross training to all employees.	8.806	119	.000	.825	.64	1.01
The hospital schedules patient according to demand.	10.922	119	.000	.967	.79	1.14
The hospital responds fast to patients.	11.381	119	.000	.925	.76	1.09
The hospital empowers the employee to solve problems	7.762	119	.000	.733	.55	.92
The hospital uses updated programs to reduce operation time.	9.382	119	.000	.833	.66	1.01
The company selects appropriate staff to serve patients.	14.542	119	.000	1.150	.99	1.31
JIT Operation	**14.307**	119	.000	.89167	.7683	1.0151
The hospital develops accurate database about patients.	11.767	119	.000	1.050	.87	1.23
The hospital provides comfortable waiting area to patient.	13.326	119	.000	1.033	.88	1.19
The hospital sorts the patient according to priority.	12.136	119	.000	1.058	.89	1.23
The hospital reduces the waiting time of patients.	10.581	119	.000	.917	.75	1.09
The hospital provides enough parking space for patient cares.	9.142	119	.000	.817	.64	.99
The hospital reacts fast to treat patients.	13.115	119	.000	.975	.83	1.12
The hospital responds to patients' complaints in time.	11.113	119	.000	.917	.75	1.08
The hospital speeds operation time of services.	11.692	119	.000	1.017	.84	1.19
JIT Custumer	16.166	119	.000	.97292	.8537	1.0921
Just in Time	16.462	119	.000	.89271	.7853	1.0001
The hospital uses new devices in providing treatment for patients	11.003	119	.000	.942	.77	1.11
The hospital employees are neat.	11.526	119	.000	1.025	.85	1.20
The hospital maintains the hygiene of place.	13.552	119	.000	1.133	.97	1.30
The hospital cares for clinics and rooms appearance.	14.756	119	.000	1.158	1.00	1.31
The hospital design reflects the quality of services.	15.410	119	.000	1.233	1.07	1.39
Tangibles	15.669	119	.000	1.09833	.9595	1.2371

The hospital staff able to get the patients confidence.	10.998	119	.000	.850	.70	1.00
The hospital staff answers patient questions directly.	9.958	119	.000	.883	.71	1.06
The hospital staff treat patients politely.	11.694	119	.000	.942	.78	1.10
The hospital staff responds to patients' problems accurately.	10.430	119	.000	.925	.75	1.10
The hospital climate reflects professionality.	10.609	119	.000	1.008	.82	1.20
Assurance	12.963	119	.000	.92167	.7809	1.0624
The hospital provides promised services.	10.433	119	.000	.883	.72	1.05
The hospital provides consistence level of services.	9.029	119	.000	.792	.62	.97
The hospital records are free of errors	7.486	119	.000	.725	.53	.92
The hospital tries to solve patient problem continually.	9.312	119	.000	.933	.73	1.13
The hospital staff provides same level of services in emergency cases.	9.419	119	.000	.858	.68	1.04
Reliability	11.110	119	.000	.83833	.6889	.9877
The hospital staff responds quickly to patients' demand.	10.333	119	.000	.883	.71	1.05
The hospital staff is willing to assist patients.	9.744	119	.000	.892	.71	1.07
The hospital responds quickly to market changes.	10.524	119	.000	.925	.75	1.10
The hospital keeps inventory according to demand.	9.537	119	.000	.925	.73	1.12
The hospital minimizes the treatment cycle plan.	11.524	119	.000	.983	.81	1.15
Empathy	11.795	119	.000	.88667	.7378	1.0355
The hospital staff gives individual attention for each patient.	10.469	119	.000	.892	.72	1.06
The hospital stuff gives enough time for each patient.	10.333	119	.000	.883	.71	1.05
The hospital staff understands specific needs for each patient.	11.394	119	.000	1.000	.83	1.17
The hospital gives attention to patients' interest.	8.369	119	.000	.817	.62	1.01
The hospital staff concerns about each patient.	8.644	119	.000	.792	.61	.97
The hospital staff responds to patients' special needs.	10.247	119	.000	.942	.76	1.12
Responsiveness	12.607	119	.000	.91667	.7727	1.0606
Service Quality	14.358	119	.000	.93173	.8032	1.0602

Correlations

Correlations

		Pur	Op	Cus	JIT	Tan	Ass	Rel	Emp	Res	SQ
Pur	Pearson Correlation	1	.568**	.548**	.835**	.486**	.539**	.540**	.520**	.562**	.595**
	Sig. (2-tailed)		.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	120	120	120	120	120	120	120	120	120	120
Op	Pearson Correlation	.568**	1	.689**	.874**	.733**	.659**	.734**	.628**	.609**	.754**
	Sig. (2-tailed)	.000		.000	.000	.000	.000	.000	.000	.000	.000
	N	120	120	120	120	120	120	120	120	120	120
Cus	Pearson Correlation	.548**	.689**	1	.861**	.659**	.694**	.699**	.660**	.621**	.749**
	Sig. (2-tailed)	.000	.000		.000	.000	.000	.000	.000	.000	.000
	N	120	120	120	120	120	120	120	120	120	120
JIT	Pearson Correlation	.835**	.874**	.861**	1	.726**	.733**	.764**	.700**	.696**	.812**
	Sig. (2-tailed)	.000	.000	.000		.000	.000	.000	.000	.000	.000
	N	120	120	120	120	120	120	120	120	120	120
Tan	Pearson Correlation	.486**	.733**	.659**	.726**	1	.659**	.662**	.676**	.613**	.806**
	Sig. (2-tailed)	.000	.000	.000	.000		.000	.000	.000	.000	.000
	N	120	120	120	120	120	120	120	120	120	120
Ass	Pearson Correlation	.539**	.659**	.694**	.733**	.659**	1	.795**	.780**	.782**	.901**
	Sig. (2-tailed)	.000	.000	.000	.000	.000		.000	.000	.000	.000
	N	120	120	120	120	120	120	120	120	120	120
Rel	Pearson Correlation	.540**	.734**	.699**	.764**	.662**	.795**	1	.833**	.794**	.921**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000		.000	.000	.000
	N	120	120	120	120	120	120	120	120	120	120
Emp	Pearson Correlation	.520**	.628**	.660**	.700**	.676**	.780**	.833**	1	.771**	.921**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000		.000	.000
	N	120	120	120	120	120	120	120	120	120	120
Res	Pearson Correlation	.562**	.609**	.621**	.696**	.613**	.782**	.794**	.771**	1	.892**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000		.000
	N	120	120	120	120	120	120	120	120	120	120
SQ	Pearson Correlation	.595**	.754**	.749**	.812**	.806**	.901**	.921**	.921**	.892**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	
	N	120	120	120	120	120	120	120	120	120	120

**. Correlation is significant at the 0.01 level (2-tailed).

Regression

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.827[a]	.683	.675	.40523	2.199

a. Predictors: (Constant), JIT Custumer, JIT Purchasing, JIT Operation

b. Dependent Variable: Sercive Quality

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	41.083	3	13.694	83.398	.000[b]
	Residual	19.048	116	.164		
	Total	60.132	119			

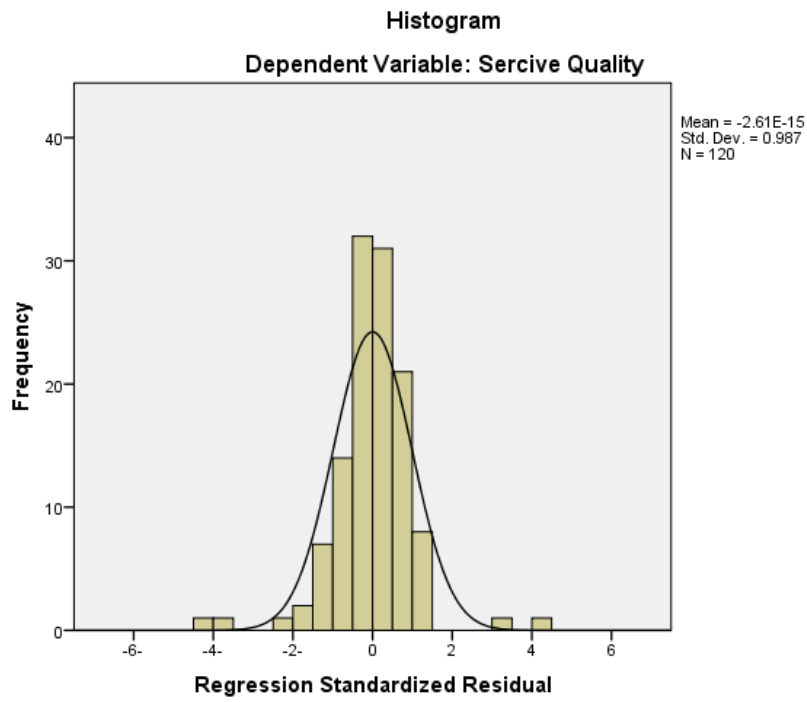a. Dependent Variable: Sercive Quality

b. Predictors: (Constant), JIT Custumer, JIT Purchasing, JIT Operation

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.084	.248		.339	.735		
	JIT Purchasing	.150	.063	.156	2.374	.019	.630	1.586
	JIT Operation	.412	.079	.396	5.215	.000	.473	2.112
	JIT Customer	.420	.081	.390	5.215	.000	.489	2.046

a. Dependent Variable: Service Quality

Charts

Histogram

Dependent Variable: Sercive Quality

Mean = -2.61E-15
Std. Dev. = 0.987
N = 120

(Frequency vs Regression Standardized Residual)

Normal P-P Plot of Regression Standardized Residual

Dependent Variable: Sercive Quality

(Expected Cum Prob vs Observed Cum Prob)

Scatterplot

Dependent Variable: Sercive Quality