جـــامـعـة الـــشـرق الأوسـط
MIDDLE EAST UNIVERSITY
Amman - Jordan

The Impact of Just in Time Practices on Operational Performance of Fast Food Restaurants in Jordan

أثر ممارسات الإنتاج الآني على الأداء التشغيلي في مطاعم الوجبات السريعة في الأردن

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Examination Committee's Decision

This thesis of the student Shahad Ghazi Adel Al- Janabi, which study "The Impact of JIT Practices on Operational Performance on Local Fast Food Restaurants in Amman/Jordan" has been defined, accepted and approved on 22/06/2020.

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Shahad Ghazi Adel Al-Janabi

Dedication

I dedicated this thesis to my lovely family, precious mother, my husband Ameen, my children Rama, Mustafa, and Hamza, and my brothers and my lovely friends. Who believed in me, supported me, and helped me to reach this stage.

Really, I thank all of you from the bottom of my heart, for all who advised me, supported me in time I did not believe in myself; I extend my deepest appreciation for them. Finally, I would like to take advantage of the opportunity and thank all fast food restaurants for helping me in my questionnaire.

Shahad Ghazi Adel Al-Janabi

Table of Contents

List of Tables

List of Model

List of Figure

List of Appendices

The Impact of Just in Time Practices on Operational Performance On Local Fast Food Restaurants in Jordan

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Abstract

The purpose of this study is to investigate the impact of JIT practices on Operational Performance in Fast Food Local Restaurants in Jordan. The study covered 43 companies working in this field. Data collected by questionnaire from participation in this study were chosen randomly to form a sample size of 101 out 120 mangers, workers and supervisors. After confirming normality, validity, reliability and relationships between variables, multiple regressions conducted to test hypothesis.

The most important results that were reached in this study: The JIT practices impact operational performance in local fast food restaurants. JIT selling has rated the highest, followed by JIT operation and finally, JIT purchasing. Operational performance dimensions are also highly implemented, where delivery the highest, then cost and last quality. Moreover, there are strong relationships among JIT practices sub-variables, and the relationships among operational performance dimensions are also strong. At last, the relationship between all JIT practices and all operational performance are very strong. The study recommends the managers to be more attention to quality and try to improve it. In addition, managers of local fast food restaurants should provide training courses to increase the benefits of JIT and to optimize the operational performance.

Keywords: JIT practices, Operational Performance, Local Fast Food Companies in Jordan.

أثر ممارسات الإنتاج الآني على الأداء التشغيلي على مطاعم الوجبات السريعة المحلية في الاردن

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الملخص

الهدف من هذه الدراسة هو التحقق من أثر ممارسات الإنتاج الآني على الأداء التشغيلي في مطاعم الوجبات السريعة المحلية في الأردن. شملت الدراسة 43 شركة عاملة في هذا المجال.

تم جمع البيانات باستخدام الاستبانة بشكل عشوائي لتكوين حجم عينة 101 من 120 مدير وعامل ومشرف. بعد التأكد من الدقة والموثوقية والعلاقات بين المتغيرات، والانحدارات المتعددة التي اجريت لاختبار الفرضيات.

قد توصلت الدراسة الى عدد من النتائج أبرزها: أن ممارسات الإنتاج الآني تؤثر على الأداء التشغيلي في مطاعم الوجبات السريعة المحلية في الاردن. حيث المتغير الأعلى تأثير هو البيع في الوقت الآني، يليه الإنتاج في الوقت الآني، وأخيرًا الشراء في الوقت الآني. وتظهر النتيجة أيضا إن ابعاد الاداء التشغيلي تنفذ بشكل كبير، في حين ان التسليم لديه اعلى تنفيذ، ثم التكلفة والجودة أخيرا. علاوة على ذلك، هناك علاقات قوية بين المتغيرات الفرعية لممارسات لإنتاج الآني، كما أن العلاقات بين أبعاد الأداء التشغيلي قوية أيضًا. أخيرًا، العلاقة بين جميع ممارسات الإنتاج الآني وجميع عناصر الأداء التشغيلي قوية جدًا.

توصي الدراسة المديرين بمزيد من الاهتمام بالجودة ومحاولة تحسينها. بالإضافة إلى ذلك، يجب على مديري مطاعم الوجبات السريعة المحلية تقديم دورات تدريبية لزيادة فوائد الإنتاج الآني لتحسين الأداء التشغيلي.

الكلمات المفتاحية: ممارسات الإنتاج الآني، الأداء التشغيلي، شركات مطاعم الوجبات السريعة المحلية في الاردن.

Chapter one: Introduction

In a world of rapid changes and enormous technological developments in the face of intense competition, all manufacturing and service companies are moving towards the struggle to survive and maintain their competitive advantage by seeking best practices that lead to better performance. Therefore, all companies are looking for the best practices to compete with; this led Toyota Company to develop a strategy that led for the best performance through reducing the waste, this strategy is Just in Time (JIT), its work through reduction the cost and many firms see implementation of JIT will help the firms for better performance. Recently, diversity in the field of restaurants has made the implementation of JIT a task that needs to be scrutinized in the course of its practices in order to get the quality of performance, reduce the time, and be able to satisfy the customer, which leads to the high performance required to excel in this field. In this study we have to ask do JIT practices have a positive impact on operational performance.

Dalci and Tanis (2006) said that JIT is a production system that improve the relationship with supplier, reduce inventories, and reduce time. Salehi, et. al (2010) stated that because of rapid changes and increased in competition, the companies started to apply JIT aims to minimize inventory level and improve delivery of goods to customer. Sing and Ahuja (2014) said that JIT an approach searches for perfection in production process and elimination of waste. Kinyua (2015) mentioned that JIT making what customer needs with right quantity using the minimum resources and people.

Phan, et. al. (2019) stated that the idea behind JIT is to constantly pursue to find ways that make performance procedures more productive. The eventual goal of JIT is to provide a good or a service without waste. Prajapati and Deshpande (2015) explained that if the step does not add value, then, it is considered closely to check potential alternatives. In this way, each process gradually and continually improves.

Applying JIT means improve in efficiency and productivity by producing in a set up time, with the right quantity. Bartezzaghi and Turco (1989) stated that Just in time purpose is to scope the quality objective through group of traditional practices and new practices. Dean and Snell (1996) found that the relationship failed and JIT practices don't have any effect on operational performance. However, some finding that not all JIT

practices have the same impact on performance, Germain and Droge (1994) reached that the use of performance by JIT sellers will improve the long-term relationship with the customers, Shah and Ward (2003) found if the firms want to have a high performance then they should apply JIT practices to stay in the competitive environment and produce the high-quality products and that will lead to customer satisfaction. Moreover, Ketokivi and Schroeder (2004) reached that some practices of JIT may improve specific dimensions of operational performance. Nevertheless, Khaireddin, et. al. (2015) the researcher concluded that JIT depends on numbers of practices in order to obtain optimal performance and JIT not relies solely on workers' efforts but also on other environmental factors.

Santa, et. al. (2014) add that operational performance boost can be the key for the sustainability of the accomplishment of financial performance, sales performance, customer satisfaction, and internal processes that accumulate in organizational performance. Sutrisno (2019) found that operational performance features significantly influence the results of the running process, such as enhancement of product quality, service quality, development in productivity, devaluation in defective costs, reduction in delivering time, efficiency of product delivery, and inventory performance.

This study aims to study the importance of JIT practices: JIT purchasing, JIT selling and JIT operation on operational performance: quality, cost, and delivery. Moreover, this study is investigated the impact of JIT practices on operational performance.

Study Purpose and Objectives:

The purpose of this study is to investigate the impact of JIT practices on operational performance quality, cost, and delivery on local fast food restaurants in Amman/Jordan.

In addition, will show the implementation of JIT practices and the operational performance in fast food restaurants, and show how the services sector will implement JIT.

Moreover, it can provide a set of recommendations to the studied industries and how to improve performance through implement JIT practices. This study will lead the mangers to know which practices of JIT will improve the productivity and to give the better performance.

Study Significance and Importance:

This study is considered as one of the few local studies in Amman/Jordan and/or Arab world. There are few studies that conduct the impact of Just in Time practices: JIT purchasing, JIT operation, and JIT selling on operational performance quality, cost, and delivery in Amman/Jordan. The results of this study may be appropriate to other service sector and it can be helpful for future studies. This study will seek the services sector how to gain success and compete through using JIT practices to improve quality, minimize cost, and improve delivery. In addition, the recommendations of this study will help the managers in other sectors to optimize the use of JIT practices to help them to have the efficiency in performance and to be the best in their field that will lead to have the fulfill of operational performance. Finally, this study may be a useful reference for other researchers for perusal in the libraries as another data.

Study Problem Statement:

The researcher observed the competition in local fast food restaurants felid especially with the international restaurants in Jordanian market having difficulty satisfying the customer. In addition, provide the meals in high quality, acceptable price, and at the right time. Through my observation the implementation of JIT production may be the primary focus of customer satisfaction in light of this competition in fast food industry. Many researchers recommend such as Brox and Fader (2002) emphasized that the implementation of JIT will reduce the cost. Bartolotti, et. al (2013) stated that JIT practices have direct impact on operational performance. Manzanai (2010) indicated that the use of JIT inventory will help to improve quality and increased flexibility. phan and Matsui (2019) recommended JIT should be focused on maximize the benefits of JIT implementation. Therefore, the researcher interviewed number of managers of fast food restaurants in Amman, some of the problems that have been experienced in the implementation of JIT which may weaken the operational performance, including the lack of good relationship with distributors, which leads to delay in the provision of resources, sometimes the cost is high for the owner of the restaurant, which leads to increased cost to the customers. For that reason, this study culminated in the search for the impact of JIT practices on operational performance. Many studies confirmed on use of JIT practices will improve quality of services, cost, and delivery, such as: Meybodi (2010) mentioned the

successful implement of JIT practices will improve operational performance. Salehi, et. al. (2010) companies that apply JIT operation aim to minimize the inventory, and produce with zero defects that will lead for better cost performance. Singh and Ahuja (2014) reveal that JIT led to low cost, faster output, better quality, and shorter lead time in purchasing. Bortolotti, et. al. (2013) found JIT practices have a positive impact on efficiency and responsive performance. Dixit, et. al. (2018) stated that JIT is the key for eliminate waste and minimize the led time of the process that means a better performance.

Therefore, this study is going to investigate the impact of Just in Time on achieving operational performance on fast food restaurants in Amman/Jordan by answering the following main questions:

1. Do JIT practices JIT purchasing, JIT operation and JIT selling have impact on operational performance at Local fast food restaurants in Amman/Jordan?

Based on JIT practices, the main question can be divided into the following three sub-questions:

1.1. Does JIT Purchasing impact operational performance of fast food restaurants?

1.2. Does JIT Operation impact operational performance of fast food restaurants?

1.3. Does JIT Selling impact operational performance of fast food restaurants?

Study Hypothesis:

The mentioned above questions will be answered by testing the following hypothesis:

H_{01}: The JIT practices (JIT purchasing, JIT operation and JIT selling) have no impact on operational performance of fast food restaurants, at $\alpha \leq 0.05$.

Based on JIT practices, will split the main hypothesis into the following sub-hypothesis:

$H_{01.1}$: JIT Purchasing has no impact on Operational Performance of fast food restaurants, at $\alpha \leq 0.05$.

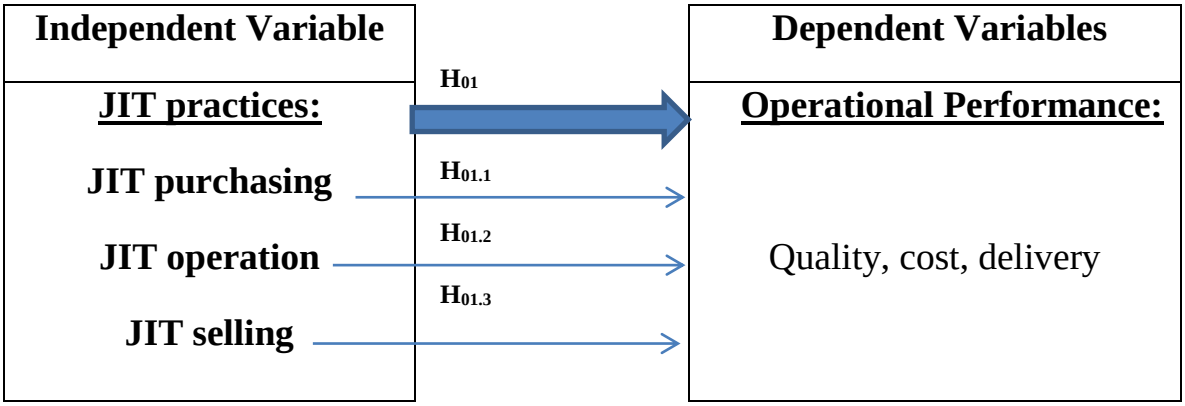
$H_{01.2}$: JIT Operation has no impact on Operational Performance of fast food restaurants, at $\alpha \leq 0.05$.

$H_{01.3}$ JIT Selling has no impact on Operational Performance of fast food restaurants, at $\alpha \leq 0.05$.

Study Model:

Based on previous models, previous studies, problem statement, and research hypothesis the model has been developed to study the implementation of independent variables of JIT practices: JIT purchasing, JIT operation, and JIT selling, and dependent variables of operational performance: quality, cost, and delivery. As shown in model (1):

Model 1: Study Model



Source: This model has developed based on previous studies: Independent variables (Claycomb, et. al. 1999; Cua, et. al. 2001; Bortolotti, et.al. 2013; Wakchaure, et.al. 2014). Dependent variables (Huson and Nanda, 1995; Huo 2012; Chen 2015).

Conceptual Definitions of Terms:

Just in Time (JIT): is system that stands on producing stable items with a salable quantity with good quality through pull system aims to create an operational performance with minimum defect and minimal waste.

JIT Purchasing: is a practice of improving in quality by incoming high quality of materials, limited number of suppliers with high delivery performance, along with reducing inventory and cost of materials.

JIT Operation: is a practice of managing production for materials and services that aims to reduce setup time, controlling the materials, synchronizing quantity with demands among with specific number of suppliers.

JIT Selling: is a practice to satisfy customers' needs by delivering his required services quickly with zero defects.

Operational Performance: a set of goals and foundations that all companies aim to achieve it with minimum cost.

Quality: degree that meets the customer demands according to their expectations with zero defects.

Cost: the ability to produce with minimal effort, materials and time with zero defects.

Delivery: process helps to speedier the production process only when customers order on time and receiving goods only as needed.

Study Limitations and Delimitations:

Limitations:

Human Limitation: The study will execute on managers, employees, and supervisor working at Fast Food Restaurants.

Place Limitation: The study will execute on Local Fast Food Restaurants in Amman/ Jordan.

Time limitation: This study will execute during second semester of 2019 /2020.

Study Delimitations: This study is proceeding on Local fast food industry in Amman /Jordan. Generalizing results of this study to other industries and/or countries is questionable. The study tried to cover many Local fast food restaurants dimension, but there are so many that not covered

Chapter Two: Theoretical and Conceptual Framework and Literature Review

Theoretical and conceptual framework:

This chapter discussed the variables definition, previous models, previous studies, the impact between them, and differentiate this study from the previous.

Definition and components of independent variable (JIT practices):

Many researchers have defined JIT, but each according to a different perspective, such as Bartezzaghi and Turco (1989) identified JIT from two considers the first as a global and second as a set of techniques that aimed to continuous improvement to improve the output. Clarke and Mia (1993) defined JIT as a philosophy that aimed to produce the product with quality and with high customer services through reduce inventory in manufactures. However, Bandyopadhyay (1995) explained the effective way to implement JIT is to understand the strategies that needed and it's a mission lies in the hand of the top management to employee's involvement. Yasin and Wafa (1998) has considered Just-in-Time (JIT) a methodology or an approach for production and management used by the Japanese in the 1960s. Canel, et. al. (2000) mentioned that JIT is a philosophy that use in manufacturing and services to produce the product and to serve with high quality and efficiency. In this context, Chan, et. al. (2010) defined JIT "is a production philosophy that is expected to achieve the lowest inventory level". According to Kootanaee, et. al. (2013) sees that JIT is a concept of production that tends to minimize inventories through creating a pull system in which each component of these systems pulls the other to deliver with high level possible of quality. The definition has emerged based on Toyota's experience in building cars that meet somehow the nearest-term orders to its clients with similar quality to what they expect Green, et. al. (2014) stated that implementation of JIT needs the fully integrated with supply chain and identified the important elements (JIT purchasing, JIT operation and JIT selling) for the fulfill performance. Zhao, et. al. (2014) stated that Toyota Corporation was the first that integrated such an approach in use in order to increase productivity by eliminating waste and quicken manufacturing processes. JIT practices stand on bringing the raw materials just in time to be delivered just in time to costumers. Accordingly, Phan, et. al. (2019) explained that JIT practices facilitate communication and increase the quality of processes implementation and execution, customers' service and

products. From a Jordanian context, Al-Haraisa (2017) sees that JIT is a strategy or a system that stands on planned activities that aim to achieve a competitive advantage and decline waste in production.

Many researchers have asserted JIT practices are efficient in different working environments and industries, such as the food industry, manufacturing and automotive. For instance, Mazanai (2012) sees that JIT inventory and purchasing increase the volume flexibility, which decreases the inventory costs and increases volume, and mix flexibility. Iqbal, et. al. (2018) have found that JIT scheduling and lot size reduction lead to increase the agility of production through building common infrastructures with customers and suppliers, especially in the automotive industry. Another interesting point brought by Gurahoo and Salisbury (2018) that indicates JIT selling and purchasing can increase the efficacy of the supply chain and flexibility of the workforce, eventually, this increases the operational performance and level up the product quality.

Some other researchers focused their efforts on the Food industry, in which He and Hayya (2002) asserted that JIT practices positively influence food quality and production. Dora, et. al. (2014) has focused on JIT practices and lean production on fast food performance.

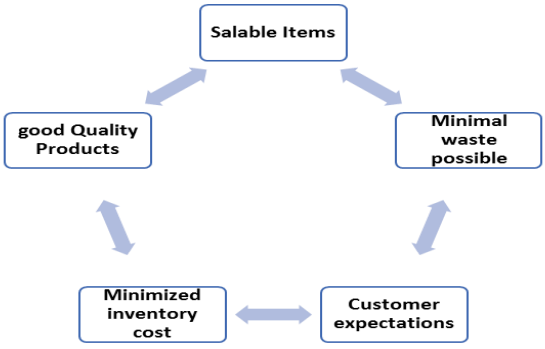


Figure 1: JIT Definition as seen by (Mazanai 2012, Iqbal,et. Al. 2018, Gurahoo and Salisbury 2018)

The study has revealed that JIT can be efficient in reducing the cost of inventory. Meanwhile, they assure that such efficiency is associated with the accuracy of implementation and quality of performance in all parts of the supply chain. Bhushan, et. al. (2017) see that JIT as an approach brings the suppliers and manufacturers together and make the bond stronger as both interests can be maximized as long as the bond is stronger.

Based on the above definitions we can draw an overall image what JIT in which the fast-food company adapt that are associated with is an approach that stands on producing stables items with a salable quantity with good quality through a pulling system aims to create an operational performance with zero defect or minimal waste possible. Important to mention that, such approach can be applied in purchasing, operation, and selling.

Just-in-Time Practices:

Many researchers have provided that JIT practices can be effective if it's accurately being used. For instance, Germain, et. al. (1994) have mentioned JIT can be applied on selling, purchasing, and operations but when it is customized in a way fits the target business environment. Green, et. al. (2011) assures that following JIT selling can lead to enhancement in performance only when integrated control has been provided to the whole process. Another point stated by Chanda (2017) that assures that JIT practices can facilitate the production operation to bring the operational performance to better or desirable level by the manager. Lastly, Pérez and Torres (2019) see that in order to apply JIT, it is important to consider the quality level. In which it is mostly be improved by the times especially in JIT purchasing.

JIT Purchasing:

According to Singh and Ahuja (2014) JIT purchasing is a system that stands on purchasing materials based on the actual and urgent needs to fulfill the urgent demands of the clients with zero waste and minimum inventory cost. Based on this, we can say that implementing such system leads to reducing the amount of cost needed to buy materials and to be paid to storing.

Mazanai (2012) stated that such practices help to establish long term arrangements and contracts in the colocation of facilities. Phogat and Gupta (2018) see that JIT purchasing are practices meant to be used in order to reduce inventory, increasing the confidence between the buyers and the suppliers in order to bring the production levels up and reducing the waste of production. Interestingly, Pérez and Torres (2019) define JIT Purchasing as a method that develops trust-based coordination between the buyer and the suppliers for a long a term through improved quality and flexibility. In other words,

suppliers and buyers will come to be dependent on each other's businesses through making logistics frequents within smaller and easier deliveries.

In summary, JIT purchasing is a practice of improving in quality by incoming high quality of materials, limited number of suppliers with high delivery performance, along with reducing inventory and cost of materials.

In this context, such researchers have mentioned that JIT purchasing is effective due to the following advantages:

A. Smaller number of suppliers: eliminating the number of suppliers will lead to establish a long-term relationship between the buyers and the suppliers. This can reflex on providing a consistent quality as it is easier to involve the suppliers in each stage of delivery. Moreover, this approach leads to save resources and concentrates the efforts and money on developing quality through few qualified sources.

B. Best-in-class Performance: applying such approach requires suppliers that are highly qualified that able to deliver on time and to provide the best goods available to meet the performance and the standards of the restaurant. Therefore, such method ensures the buyers to evaluate frequently the performance of their suppliers making sure they meet all the aspects that ensure a zero waste in resources and production.

Figure 2: The impact of JIT Purchasing (Mazanai 2012, Singh and Ahuja 2014, Pérez and Torres 2019)

Nevertheless, one shortcoming that might challenge applying such approach, according to Garcia-Alcaraz and Maldonada-Macia (2016) JIT purchasing can lead to stock outs which in turn affect businesses and lead to make it be in short and long-term lost. Thus, restaurants must manage the processes quite wisely to avoid stock outs.

Based on the above, the researcher sees that JIT Purchasing can be effective in fast-food restaurants as it saves costs and minimize the inventory cost. When it comes towards gaining the customers' loyalty, it is necessary to assure providing a service that is a fresh product that meets their expectations.

JIT Operation:

There is no agreed definition by researchers; Chanda (2017) stated that the core of JIT operation and management is to remove waste during implementing business processes in order to bring up an efficient system. Such system stands on high quality products that fit the demands and needs of customers with lowest cost possible. Creating such results requires operations based on correct implementation of JIT. In this context, Ganiyu, et. al. (2019) mentioned that there are three key elements that play a massive role in making this concept works, which are correct attitude, continue improvement and employee involvement. These elements together target the company's performance towards being more efficient which in turn affects the company's change culture.

Operationally, Bortolotti, et. al. (2013) mentioned that Just in Time methods smooth the production operations and help companies to prevent excessive inventory. In this context, Toyota has struggled in middle of 20th century in order to minimize the inventory costs, as it was quite high by that time. Dora, et. al. (2014) stated that Toyota has built an operation system based on JIT and Lean manufacturing. Moreover, Phogat and Gupta (2018) pronounced that JIT operation it allows the restaurant too see and examine if a certain task takes longer than expected or to acknowledged the defective parts in the system.

When it comes to fast-food restaurants, Ho (1995) stated that McDonald's is the one main chain that uses JIT operations to serve daily their customers. Molashkhia (2014) preannounced that McDonald's, tends to follow a system of operations that ensures the all the needed materials and procedures to be taken into consideration and to be on the time are needed. For instance, Patel, et. al. (2016) said that they start to assemble their burgers in a standardized process in cooperation with their suppliers to guarantee that their customer receives the same order every time with the same fresh ingredients with similar Levels of quality.

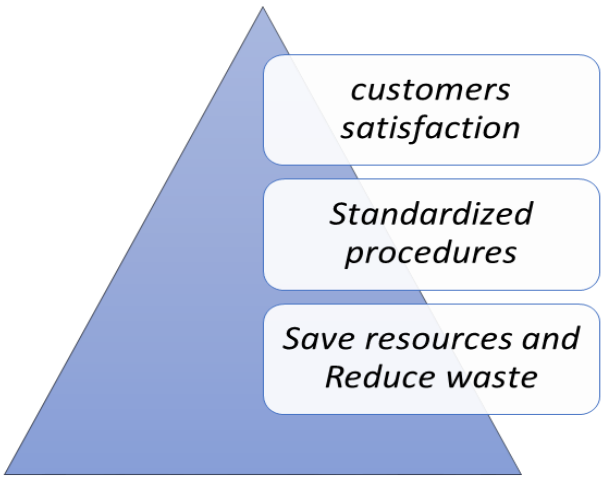


Figure 3: The impact of JIT operations, the case of McDonald's.

Nandini (2014) explained McDonald's as successful example, JIT operations influence positively:

- Standardized procedures: following JIT operations helps the restaurant to bring standard procedures that guarantee high level of quality and materials as well a reduced inventory time.

- Customers satisfaction: following such approach gains customers loyalty. Customers know what exactly will get when they order, fresh items, good taste and all of that items are made more freshly. This eventually makes the customers satisfied to order again.

- Save resources and Reduce waste: As JIT operations help restaurant to serve their clients with products in shorter time with decreasing inventory stock. In other words, the restaurant needs only to bring the materials that just needed on time. This helps the owners to minimize the quantities in turn to save the storing cost.

The researcher sees that JIT operations stand on the real integration and involvement of employees and procedures in the production process. In this context, fast food companies that apply JIT operations must keep the employees satisfied with their work environment and conditions to guarantee they have the correct behaviors needed to apply such an approach.

In summary, JIT operation is a practice of managing production for materials and services that aims to reduce setup time, controlling the materials, synchronizing quantity with demands among with specific number of suppliers.

JIT Selling

According to Germain, et. al. (1994) defined JIT selling is "ultimate time-based pull marketing strategy married to total process minimization". Meanwhile Green, et. al. (2008) mentioned that JIT selling as exhibiting the ability to create value during the selling process relying on capabilities in the organization in order to deliver products in precise time with minimal or almost zero waste and minimal extra cost through the marketing process.

According to Green, et. al. (2011) sees that JIT selling can be a strategy that enhances the performance and delivery with zero-defect products through speeding up the levels of integration and performance control. In this context, restaurants managers can use such strategy to assess the operational performance and the changes that happen in the organizational structure later.

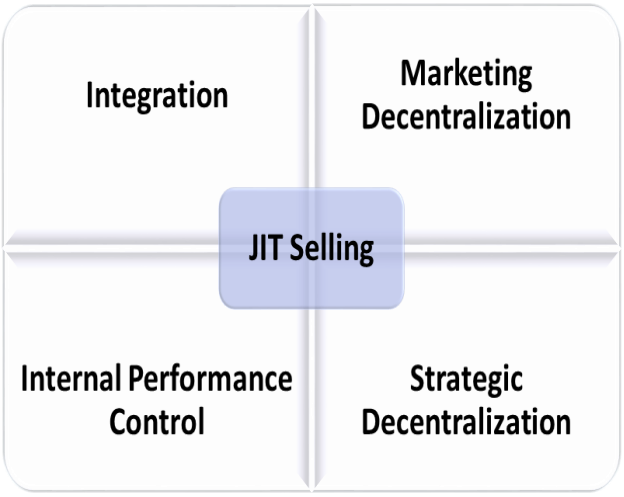


Figure 4: The elements of JIT Selling (Naor, et. al. 2008)

According to Naor, et. al. (2008) Just-in-time selling adaption by the restaurant can influence a various elements as the graph below illustrates:

1. **Integration**: JIT selling can increase the integration of units starting from the providers of the good ending with the delivery process of Goods. JIT selling stands on

providing the needed exact materials needed for each phase and guaranteeing the delivery. This can happen when all the processes are integrated together and each takes the role of assuring the quality of service from its side as a defect can be detected then can be solved.

2. **Internal Performance control**: JIT Selling contributes positively in distributing the tasks and roles in a way that is easier to control. Eventually, it increases supply chain levels and increases efficiency.

3. **Strategic Decentralization**: JIT selling makes the process of decision making easier and less centralized. In other words, such method spread the management and authority level to involve the Selecting suppliers and deciding the location of field warehouses and management level has the authority to make decisions the production volume

4. **Marketing Decentralization**: JIT selling decentralizes the decision-making concerning the Marketing strategy, advertising, pricing, and distribution to involve individuals below the managers.

Based on the above, JIT selling at fast-food restaurants shall have the ability to create or develop a control system for the inventory in an effective based in order to success in managing customers' needs and demands. In summary, JIT selling is a practice to satisfy customers' needs by delivering his required services quickly with zero defects.

Effectiveness of JIT Practices:

Due to the progressive implementation of Just-in-time practices, many researchers have tackled the effectiveness of JIT practices in their research such as, Bhushan, et. al. (2017), and Singh, and Ahuja (2014), the results of research have revealed that four key elements influence the effectiveness of JIT practices; quality, education, communication and teamwork:

1. **Quality**: In order to improve and assure quality, the restaurant must work with suppliers directly to assure zero defect and waste in the resources. JIT makes the restaurant able to evaluate the quality of the performance as each process depends on one on another. This enables managers to see the weak parts and work on improvement.

2. **Teamwork:** Working together was heavily emphasized by top management as it gives the chance to participate in decision making and problems solving. **Kaizn** management relies on Teamwork spirit. Chanda (2017) sees that such element leads to continues improvement in functions all the employees can be engaged in the decision-making process.

3. **Education:** facilitates the entry of both vendors and employees. Consequently, it improves the agility of JIT practices. Cross training is provided to enhance employees' skills to take a wide range of tasks and to improve their work flexibility.

4. **Communication:** is very important to assure the minimum defect. In other words. Proper and faster communication between the vendor and buyer substantially reduced defect and enhance incoming materials. Another point, JIT practices assure that each employee knows what exactly has to do and what kind of tasks them responsible about. This, in turn, Bhushan, et. al. (2017) said that will reflexes positively on the communication within the employees and their managers as claimed.

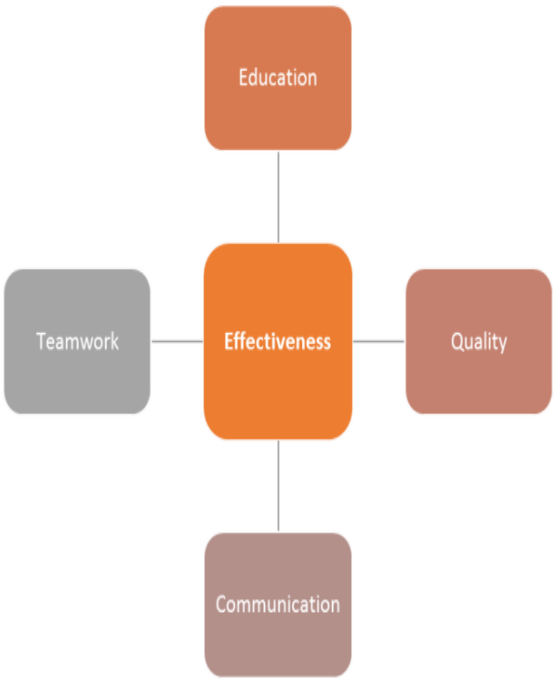


Figure 5: Effectiveness of JIT Practices (Bhushan, et. al. 2017, and Singh, and Ahuja 2014)

Some researchers such Meybodi (2015) suggest that JIT effectiveness can be measured through the impact it has on performance and organizational core competences. Moreover, provides evidence that support external environmental factors and Just-in-Time practices affects the delivery and the production cycle operational performance.

Based on the above, it is clear that JIT effectiveness is a variable that can be affected by many factors. Therefore, Fast-food restaurants managers must consider such variable as either it can reflex positively on quality by applying continuous improvement practices in the restaurant, or negatively when it is applied without control. Important to mention that the only way to see that aspect is by evaluating the performance and see the extent in which the quality of the performance matches the continues improvement expectations the restaurant has in order to reach minimum defects level.

Challenges of JIT implementation

Implementing JIT Practices can be difficult for many companies. Such implementation is always surrounded by many obstacles that differ from a work environment to another. When it comes to Fast-food chain restaurants, the following challenges might be faced during applying JIT:

A. **High cost of implementation:**

According to Dalci and Tanis (2006) sees that implementing JIT practices can be characterized as expensive to many companies. Important to mention that any defective raw material provided can cause a huge problem in the whole production process and later leads to lose customer trust to repeat the purchasing. Another point Singh, et. al. (2014) mentioned that the restaurant must provide a high quality of management in order to avoid any poor quality in processes.

B. **Lack of top management commitment:**

Tzempelikos (2015) stated that top management has a key role in shaping the organization and defining the characteristics, benefits, and interests of top managers. Therefore, JIT requires strong managers who are able to stand for the demands of such an approach to success. Jadhav, et. al. (2015) applying top management requires managers to face their fears and leave their comfort zone.

C. **Lack of communication:**

Singh, et. al. (2014) explained that JIT approach requires a high level of communication where each knows exactly what must be done and when. Sometimes misunderstands can happen which leads to poor performance and eventually to poor quality of service and to conflict. Therefore, other researcher has seen there are ways to improve communication such as, Jadhav, et. al. (2015) stated that it is needed to work on improving both internally and externally the communication. Another way to bring the communication further is working together under collaborative efforts through following communication policies that are clear to all.

D. **Lack of awareness:**

Customer awareness is needed in this approach as it can help the service provided to evaluate the service and improve it. Sometimes, the company or the fast-food restaurant can face some obstacles in this matter especially when it comes to lack of knowledge about the quality of the products from the customers can be challenging for the company (Singh, et. al., 2014).

E. **Lack of understanding of JIT techniques:**

JIT in concept might seem simple, but to how this concept, techniques, practice work and implemented might difficult. Understanding means to be able to bring all the elements together to reach a level where no stock out and zero-defect (Ezzahra, et. al., 2018).

F. **Poor quality control:**

Managers must keep in mind that any decline in quality can lead to a major problem in the whole system causing a breakdown. Therefore, it is necessary to keep updates with last methods of quality control to keep the level up (Singh, et. al., 2014).

Based on the above, it is clear that applying such approach can be hindered by many obstacles and challenges in which can be internal or external ones. Accordingly, the Fast-food restaurant must keep in mind what kind of manager and managerial practices they have in order to see if such approach would bring their performance further or not.

Definitions and Components of Dependent Variable (Operational Performance):

The intense competition in the various business sectors has forced the organizations to adopt modern and effective management methods and tools that enable them to increase their market share, give them a competitive advantage and retain them, and assist in the selection, application and evaluation of the strategies they adopt (Belekoukias, et. al., 2014).

According to, Tawalbeh (2016) measuring operational performance is a technique that helps the organization to understand and manage its business and activities that are performed. Kukanja (2017) mentioned that restaurants are always keen to measure performance and obtain information that is important to the products and services they provide, and to the processes and activities, they perform. These organizations realize that if they can make activities go in the right direction, their ability to achieve their goals, fulfill customer needs and desires, and provide information that helps management make decisions will rise unprecedentedly (Tzeng and Chang, 2011).

Operational Performance definition:

According to Camarotto, et. al. (2007) performance as a set of administrative behaviors prepared when the worker does his work. It includes the quality of the work; good execution process, technical expertise and skills required in the job. Abazeed (2017) defines performance as the set of specific outcomes for behavior, and therefore negative performance represents the undesirable outcomes identified for behavior. On the other hand, positive performance determines the desired results for behavior. Performance is defined as carrying out job burdens with duties and responsibilities according to the rate required at work (Bagher, 2018).

Hwang, et. al. (2014) emphasized that, the concept of operational performance included standards or criteria for measuring the organization's operating performance through market share or supply and demand for the organization's products or services. It is also a process of linking strategic goals and objectives with operational goals (Kukanja, 2017). The operational performance described the stages, functions and mechanism of success and harmony with the strategic plan of the organization; it also added that it is a

comprehensive plan detailing the financial and human resources needed to carry out the specific tasks and activities; and setting budgets, production quantities and work schedules for them (Taticchi, et. al., 2010).

Researchers differ in defining operational performance according to the approaches through which they look at. Some of whom see it as a set of goals and foundations, and some of them viewed according to the financial entry. At the same context, some of Researchers see it as a set of foundations and policies that seek to reach a distinguished performance at the lowest costs (Santa, et. al., 2014).

In summary, operational performance is a set of goals and foundations that all companies aim to achieve it with minimum cost.

Operational performance Objective

Operating performance goals are the areas of performance that the company tries to improve, in an effort to achieve the company's strategy (Kaviani and Abbasi, 2014). Sengul, et. al. (2015) said that, after defining the company's strategy, the company will define the relevant operational performance goals to measure and configure the environment, to enable the goals to be achieved.

Gabčanová (2012) stated that, to ensure proper allocation of resources in operations, it is necessary to record, monitor and review aspects of operational performance. The main task in this process is to identify appropriate performance measures related to internal and external factors related to organizational competitiveness (Gustafsson and Frost, 2018).

Reliance on conventional financial indicators only has become insufficient, because performance measurement and evaluation are necessary, and they are one of the main elements of the success of the institution (Şengül, et. al., 2015). In light of rapid development and according to Gabčanová (2012) key performance indicators include:

1. **Customer Satisfaction**: customer satisfaction is one key performance indicator for success as it provides business owners with metrics that can be used to improve their businesses. It is also what ensures business's continuity.

2. **New Product Development**: the process of developing a new product includes generating an idea, drafting the concept, creating the design, developing the product or service, and finally defining the marketing.

3. **Quality**: it is a major factor that affects consumers' satisfaction as they focus on the specification quality of a product, or how it compares to competitors in the marketplace. It is used within a company to track its goals and maintain competitive advantage.

At the same context, Pekuri, et. al. (2011) stated that, there are three operational measurements: Productivity, profitability, efficiency.

- **Productivity**: is the ratio of a measure of total outputs to a measure of inputs used in the production of goods and services. Productivity indicators include labor productivity, which is concerned with the amount of output that is obtained from each employee at each hour. Moreover, it is an important factor in wages fixing.
- **Profitability**: Another factor used in performance measurement is profitability, which refers to the ability of business to earn profit from its operation, and it is a financial indicator that assesses the financial performance of a company.
- **Efficiency**: it requires the minimization of costs and the maximization of profits. It is a measure of the difference between the minimum amount of cost that can be spent and the actual cost.

Dimensions of Operational Performance

The dimensions of operational performance have a set of competitive priorities such as quality, speed in delivery, flexibility and low cost, which enable organizations to measure their operating performance (Bagher, 2018). Operational performance refers to the desired results that an organization seeks to achieve. These dimensions also measure the organization's ability to define its goals through the efficient and effective use of its available resources. It is also a reflection of how the organization uses its material and human resources and how it is used in a way that makes it able to achieve its goals (Şengül, et. al., 2015). The operating performance of organizations can be evaluated using a set of competitive priorities such as low cost, quality, speed of delivery.

Quality

Quality is a competitive tool in the labor market and is considered one of the primary competitive priorities and one of the dimensions of competitive advantage (Truong, et. al., 2014). Quality is defined by excellence, value, conformity to specifications, and meeting and exceeding customer expectations (Moses, 2014).

Silva and Ferreira (2017) see that it is known for producing products that meet or exceed the needs, desires and expectations of products. There are multiple definitions of quality through being the best to use from the perspective of the customer who determines and defines quality and who decides what goods and services that meet his needs and desires.

In terms of quality, it means the organization's focus on every component related to product quality, such as high-performance design, durability, safety, ease of use, or the ability to use the raw materials that make up the product effectively. In addition, the organization seeks to increase its performance and its conformity with specifications and standards and to perform the business in the correct way to provide goods that correspond to the expectations of customers (Franceschini, et. al., 2008). Moreover, quality means maintaining constant levels of quality that the customer can count on (Truong, et, al., 2014). The quality has been divided into product quality that varies with the target market and the primary goal is to establish the required level of product quality by focusing on customer requirements. As for the quality of operations, it is extremely important and aims to be able to produce according to the specifications and standards set in advance without errors (Beah, 2015).

Silva and Ferreira (2017) states that the quality of products or services is considered one of the most important factors that contribute to the success or failure of companies and therefore it seeks to provide high quality products and services through which it can achieve a competitive advantage that achieves customer satisfaction and obtain the largest possible market share. For the purpose of clarifying what quality is, several concepts of quality have been proposed, including those appropriate to use, the degree to which the product or service is satisfied with the needs of the consumer, the

degree of conformity of the product to the technical and engineering design specifications (Moses, 2014).

Accordingly, quality can be divided into (Song, et. al., 2004):

- Design quality: It is how the specifications of a product or service meet the needs and desires of the consumer, and it is the quality from the consumer's point of view.
- Conformity Quality: This includes manufacturing the product according to the technical and engineering design specifications, which is the quality from the company's point of view.

Realizing the importance of quality as a strategic weapon for occupying a position has led to the adoption of the philosophy of Total Quality Management (Franceschini, et. al.,2008). It is a philosophy based on a set of ideas for viewing quality as the process of integrating unit operations and related functions to reach a distinct level of quality. Accordingly, the comprehensive approach to quality management is based on a broad and comprehensive concept. The modern view of quality management expands to include the quality of performance of various administrative functions, human resources and quality of information (Lee, 2015).

Cost

As for the low cost, it is interested in providing products at lower prices than competitors provide, which leads to an increase in the organization's market share. This requires attention to all the elements that lead to a reduction in costs, such as labor and material costs, the percentage of damage, and control of the processes that take place within the organization (Beah, 2015). This contributes to reducing production costs for goods and services. Kindie (2017) states that cost is one of the primary competitive priorities, although it can only be achieved through the adoption of one or more of the following strategies:

- Cost leadership that can be implemented at a low cost for competitors in a coherent and unified way for cost-effective products based on volume, where the cost leadership strategy requires oversight of work, strict cost control, frequent reporting, and ability to respond

- Variation: described by product uniqueness, market focus, research, and flexible structures
- Focus: is based on a narrow strategic goal such as a production line, a geographical market, or group selling, and considers that the lowest cost is considered a competitive priority when the profit margin is low.

According to Şengül, el. at. (2015), any company must focus on the cost dimension in order to make production and marketing costs of its products lower than competitors. As it is, the companies that seek to obtain a greater market share as a basis for achieving their success and superiority that are providing their products at a lower cost than their competitors (Santa, et. al., 2010). The lowest cost is the primary objective of companies competing with the cost. Moreover, this comes through lowering the price of the products that contribute to increasing demand for them; in addition to that, it may reduce the profit margin if the company does not produce its products at low costs (Beah, 2015).

Santa, et. al. (2010) explained that, this does not always guarantee profitability and success for it, so companies resort to developing a pre-plan that can bypass the challenges they face. However, Şengül, et. al. (2015) see that operations management seeks to reduce production costs compared to competitors, and reach competitive prices that enhance the competitive advantage of products in the market.

In summary, is cost the ability to produce with minimal effort, materials and time with zero defects.

Delivery

Researchers have different opinions about the definition of delivery such as; Rao, et. al (2011) stated that delivery performance means the level of successful supply chain when they provide the services to the customers. Kinyua (2015) mentioned that any company that offer a shorter delivery time that's offer a large market share and will increase the services. Kong, et. al. (2018) stated that delivery is the process of linking between in-site manufacturing and off-site installation.

Rasi, et. al. (2015) explained that creativity and innovation of new products: responsibility towards society, modern technological technologies. There are many non-financial measures that are usually used in different performance appraisal models,

including the percentage of sales of new products, delivery time, customer satisfaction and quality retention (Osei and Kagnicioglu, 2018). In addition, there are other non-financial measures such as employee-specific standards (training, qualification, rewards) loyalty (rates of return on work) relate to the organization's ability to provide goods and services permanently, and its ability to provide goods and services at the time the customer needs to deliver the product on time (Paul, et. al., 2017).

The delivery dimension is the primary rule for the competition between companies in the markets by focusing on presenting the products to customers with the lowest possible time (Santos, et, al., 2019). As there are three precedents for post-handover that deal with time (Osei and Kagnicioglu, 2018):

- Delivery speed: This speed is measured by the time it takes between receiving the customer request and fulfilling the request, which is called the waiting time and it is possible to increase the processing speed by reducing the waiting time.
- Delivery on time: This means the delivery of customer orders on time to them by the company.
- Speed of development: It is the speed of introducing a new product. Speed of development is measured by the time between idea generation until the final design of the product and submitting it to the market.

The timely delivery reflects the company's ability to deliver its services according to a schedule that its customers have promised. Companies competing for priority delivery may not provide services at the lowest cost or with a high-quality product, but they compete based on reliable and timely delivery only (Rasi, et. al., 2015). Fast service delivery may also provide a stable competitive advantage over its competitors (Paul, et. al., 2017).

Rasi, et. al. (2015) mentioned that companies that choose priority have to focus on reducing time in implementation activities, and it may also be necessary to limit processes such as product planning and product design and development as well as limiting the production process to achieve reliable and speedy delivery.

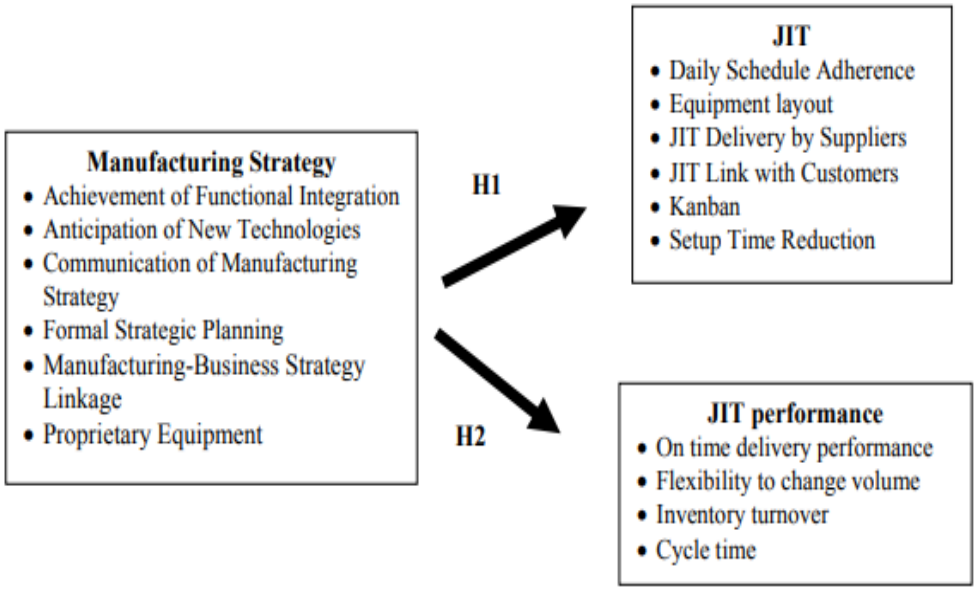
In summary, delivery is process helps to speedier the production process only when customers order on time and receiving goods only as needed.

Previous Models:

After reviewing related literature, scholars and practitioners have used various models and methods to assess JIT and operational performance. The following part will concisely discuss the most widely used models and methods to measure Total JIT and operational performance.

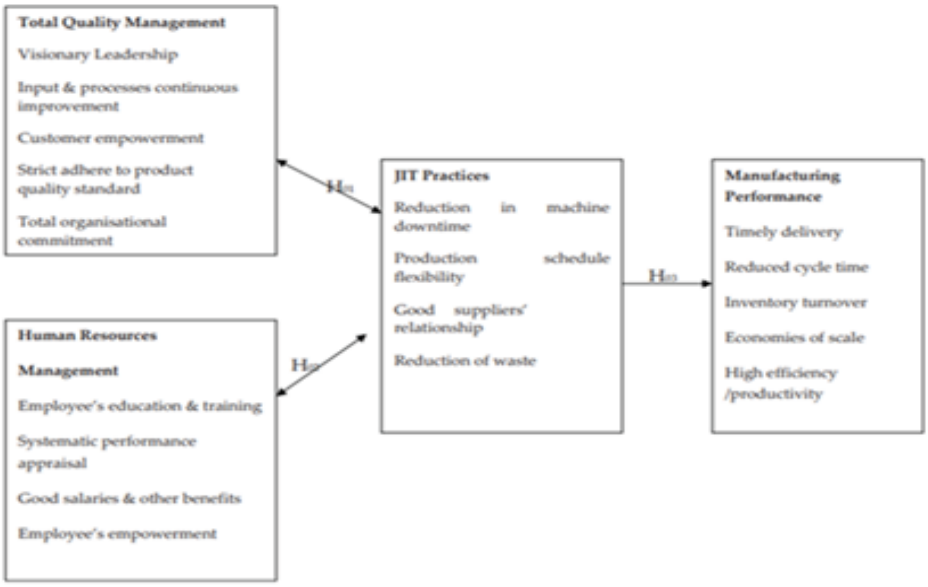
Abdallah and Matsui (2007) Model: This study analyses the relationship between JIT production and Manufacturing strategy and their impact on JIT performance. They tested the impact of country and industry alone on the level of JIT implementation and development. The model reveals that country and industry significantly contribute to the level of JIT implementation.

Model 2: Abdallah and Matsui (2007) Model



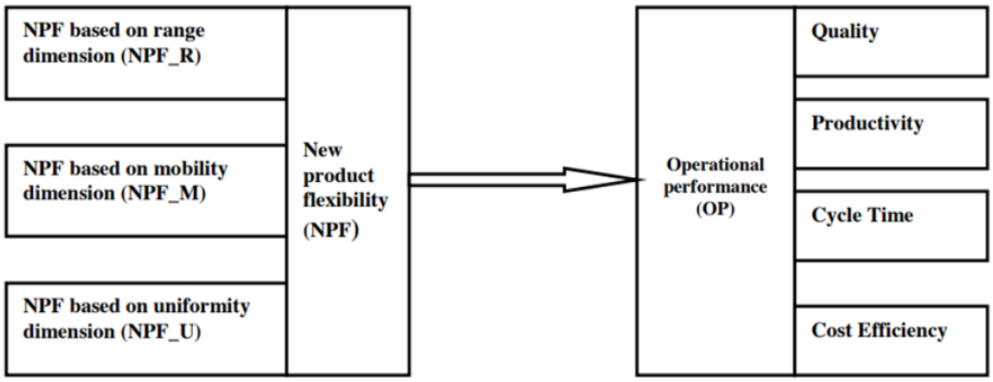
Obamiro (2009) Model: This study concentrates to explore the relationships between just-in-time technique and manufacturing performance. The model to guide the research is an outcome of our discussion in key JIT practices, supporting infrastructure practices and manufacturing performance.

Model 3: Obamiro (2009) Model



Alamro (2014) Model: Aimed at the impact of new product flexibility (NPF) on operational performance: evidence from Jordanian manufacturing companies. Structural equation modeling (SEM) was utilized to test the relationships between NPF (independent variable) and operational performance (dependent variable). This study used EQS 6.1 for data analysis.

Model 4: Alamro (2014) Model



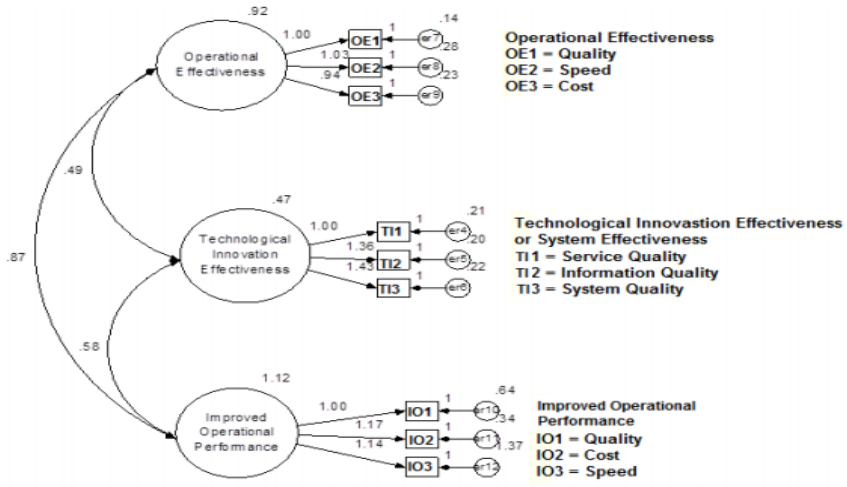
Kaviani and Abbasi (2014) Model: in their research model, they tried to analyze the operations strategies of manufacturing firms using a hybrid Grey DEA approach. This

model was added to the study because it examines the effect and dimensions of operation performance.

Model 5: Kaviani and Abbasi (2014) Model

Santa, et. al. (2014) Model: to examine the alignment between technological innovation effectiveness and operational effectiveness and their influence in the improvement in operational performance. This can be done by examining perform a confirmatory factor analysis.

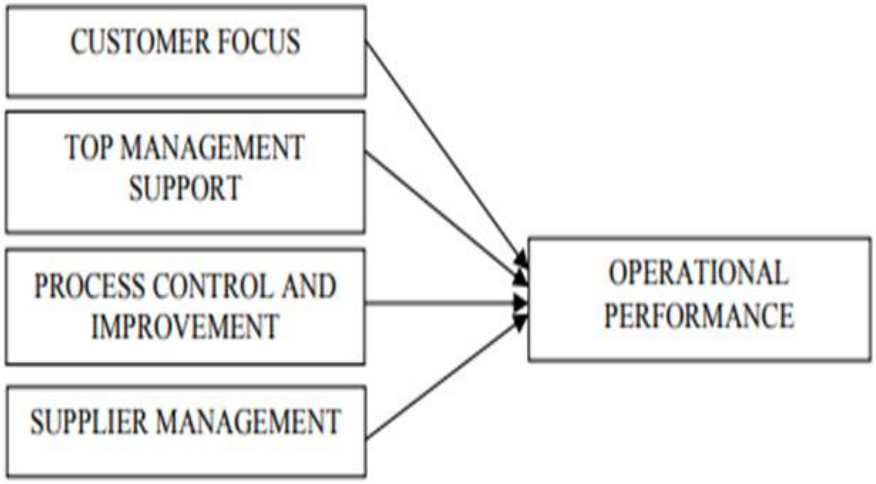
Model 6: Santa, et. al. (2014) Model



Hadli (2017) Model: This paper has fulfilled the gap in the literature by developing and testing a firms' operational performance model that included by customer focus, top management support, process focus and improvement, and supplier management. The

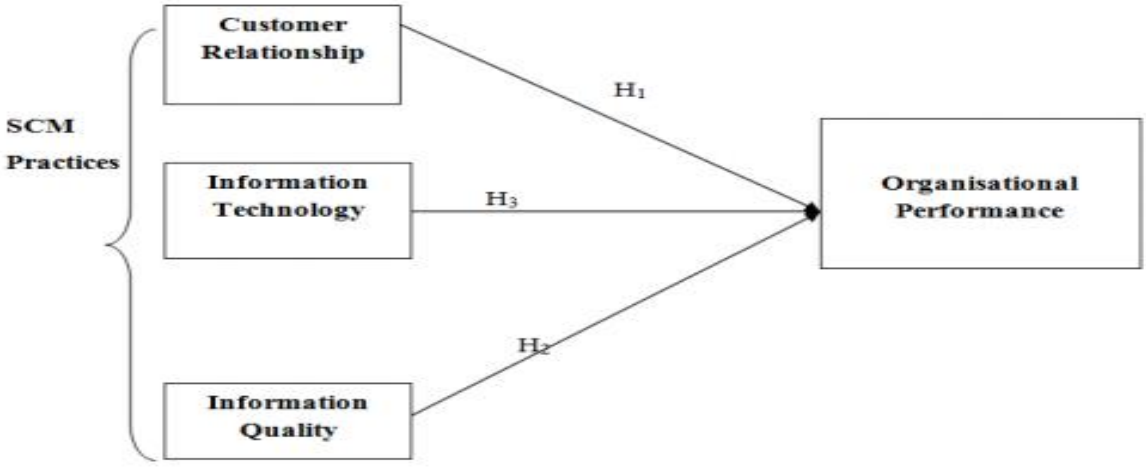
results of this research showed that firms' operational performance is influenced by customer focus, top management support, process focus and improvement, and supplier management.

Model 7: Hadli (2017) Model



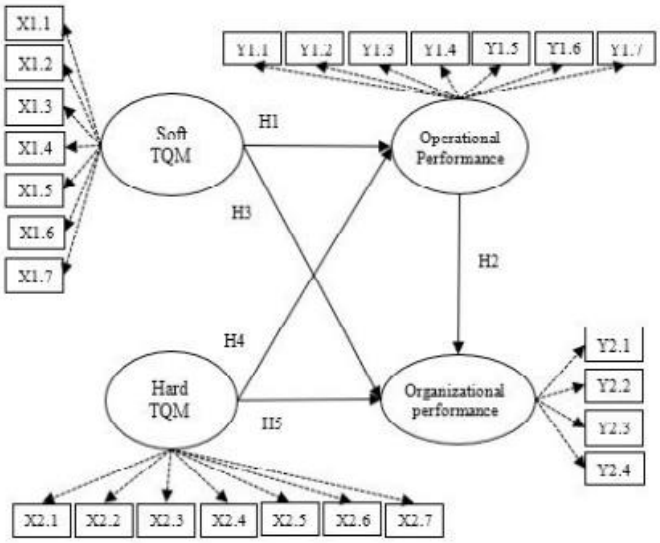
Kumar and Kushwaha (2018) Model: In this paper, Kumar and Kushwaha have investigated supply chain management practices and operational performance of fair price shops in India. They tried to test and measure the Operational performance empirically, using data collected from respondents using a survey questionnaire. PLS structured equation modeling is used to test the hypothesized relationships**.**

Model 8: Kumar and Kushwaha (2018) Model



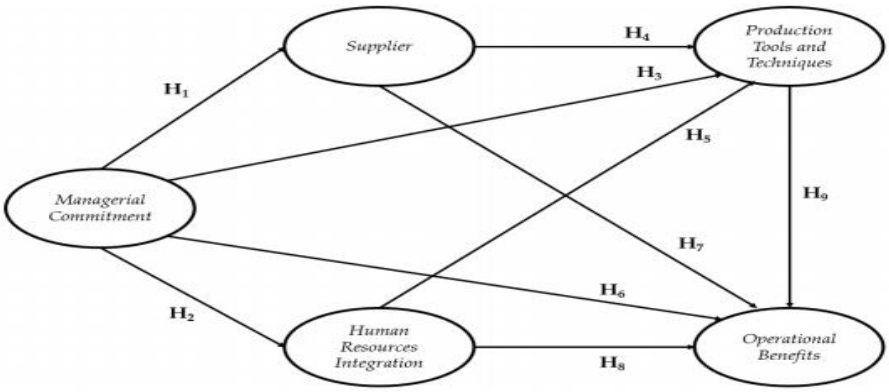
Sutrisno (2019) Model: aimed at analyzing the relationship between total quality management element, operational performance and organizational performance, they argue that there is a correlation between TQM and operational performance, while operational performance directly affects the performance of the organization as a whole.

Model 9: Sutrisno (2019) Model



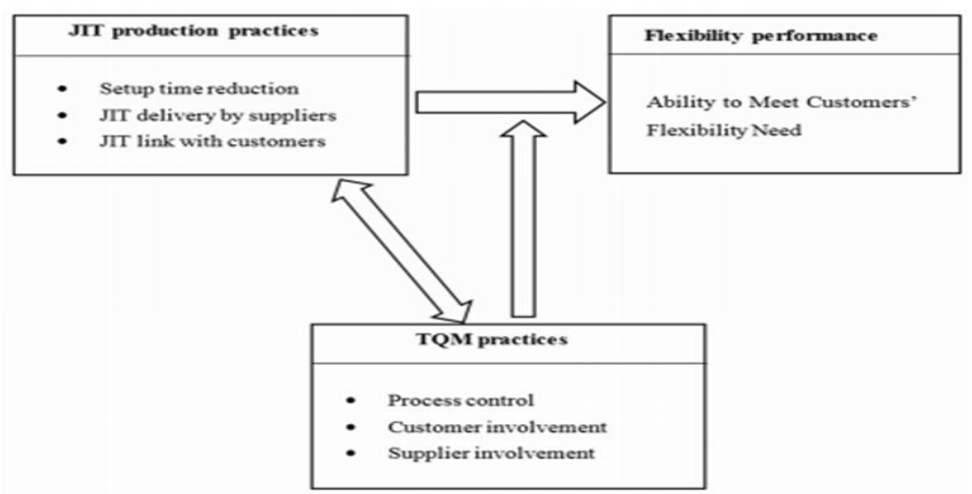
García-Alcaraz, et. al. (2019) Model: This paper reports a structural equation model that integrates variables associated with JIT implementation: management commitment, human resources integration, suppliers and production tools and technique, which affect the benefits, gained, and are integrated into nine hypotheses or relationships among then.

Model 10: Garcia-Alcaraz, et. al. (2019)



Phan, et. al., (2019) Model: this study has been aimed to investigate the effect of total quality management practices and JIT production practices on flexibility performance: Empirical evidence from international manufacturing plants. They tried to study the moderating effect of TQM on the relationship between JIT production and flexibility, the authors focus on TQM practices that have been highlighted in the cited literature as process control, customer involvement, and supplier involvement.

Model 11: Phan, et. al. (2019)



Previous Studies:

In this section, the previous studies will be presented from oldest to newest.

White, et. al. (1999) study titled "**JIT Manufacturing: A survey of Implementation in Small and Large U.S. Manufacturers"** the purpose of this study to investigate the implementation of JIT practices and its effect on large and small firms. Data collected based on cross sectional design, the questionnaire used one two groups the large and small firms to test the hypothesis. The research found that the large firms have more control in JIT implementation than the small firms. However, both will improve the firm's performance. The study recommended investigating more practices such as volume, types of products, and age of firms.

Yasin, et. al. (2001) study titled**" Just in Time Implementation in the Public Sector an Empirical Examination"** aimed to study how important to implement JIT in public sector. The study methodology depends on 500 questionnaires sent by mail to public

sector. The results showed the implementation of JIT in public sector improved the efficiency and service quality. The study recommended investigating in the benefits of JIT in public sector.

Barlow (2002) study **titled "Just in time: Implementation within the Hotel Industry"** aimed to investigate the value of JIT purchasing and inventory on hotel sector. Data collected based on case study of three different types of hotels. The result showed that implement of JIT purchasing and inventory has a positive impact on hotel sector. The author recommended studying the benefits of JIT in short term such as return on capital employed.

Green, et. al. (2007) study titled **"The Impact of JIT -11- Selling on Organizational Performance"** aimed to study the influence of JIT selling on organizational performance depends on production and marketing function. Data collect from 166 directors of large companies, and data analyzed based on structural equation approach. The study concluded that there is an effective impact of JIT selling on performance. The study recommended to seeking for suppliers to achieve long-term relationship and effective implement of JIT selling.

Furlan, et. al. (2011) study titled **"On the complementarity between internal and external just-in-time bundles to build and sustain high performance manufacturing"** aimed to study the complementarity of internal JIT upstream (suppliers) and external downstream (customer). The authors used questionnaire on 266 manufacturing in nine countries, by send questions to 10 of random managers, 2 supervisors, and 100 employees, to test the hypothesis based on third round of the high-performance manufacturing. The study found that is so important to have correlation between upstream and downstream to achieve maximum operation performance. The recommended is extended to other internal and external JIT bundles like (TQM, and human resource management).

Green, et. al. (2014) study titled "**Total Just in Time Impact on Supply Chain Competency and Organizational Performance**" aimed to study the relationship between supply chain and total JIT on organizational performance that depends on number of elements (JIT purchasing, JIT selling, JIT operation and JIT information). Data collected from number of experts (managers, and plant) based on traditional mailing by use the

covariance-based structural. Results shows that there is a positive impact between total JIT and supply chain and organizational performance, but the success of supply chain needs a supply chain strategy. Study recommended the future researcher to investigate the impact of each element on performance.

Hwang, et. al. (2014) study titled: **"Operational Performance Metrics In Manufacturing Process: Based On Scor Model And Rfid Technology"** aimed to develop a process for tracking the metrics of the operational level with the ERP systems. Analytical approach was used. Researches designed the procedure of measuring performance and extracting the possible metrics of RFID on the operational level when RFID is implemented to a SCOR model-based ERP system. The results reveal that this procedure links different measures of operating performance: RFID, SCOR, Production, ERP system. Performance measurement will be executed automatically with effectively and high accuracy, if this procedure works well.

Belekoukias, et. al. (2014) study titled: **"The impact of lean methods and tools on the operational performance of manufacturing organizations"** aimed to analyze the impact of five essential lean methods, i.e., JIT, automation, kaizen, TPM, and VSM on contemporary measures of operational performance such as cost, speed, dependability, quality, and flexibility. Descriptive approach was used. The sample consisted of 140 manufacturing organizations around the world to test the impact of these lean practices on their operational performance. The results indicate that JIT and automation have the strongest significance on operational performance while there was no impact of TPM on it. On the other hand, VSM had a negative impact on the performance of organizations. It is claimed that the organizations studied may have not been able to obtain the benefits of these lean methods due to their implementation, management and/or sustainment problems.

Chien and Lin (2015) study titled: **"The Effects of the Service Environment on Perceived Waiting Time and Emotions"** aimed to test customer's mood and define which environmental factor may supply the most support in decreasing the sense waiting time and the passionate response. Descriptive approach was used. The sample of the study consisted of (410) customers who favored burger restaurants during traffic hour and who were suspense for their meal or were in the operation of dispatching their order. The result

of this study revealed that the impact of understood traffic on the understood waiting time path seems to be stronger than emotional path. For that the strategy to minimize the perception of rush is to inspire the customers feel that their understood waiting time is decreased.

Khaireddin, et. al. (2015) study titled "**Just in Time Manufacturing Practices and Strategic Performance**" this study investigates the effect of JIT practices (just in time delivery, setup time reduction, equipment layout, preventive maintenance commitment, daily schedule, and supplier's quality), on pharmaceutical performance. The study based on questionnaire (140) director and supervisors but only (92) completed the answers. The study has reached that there is a direct effect of JIT practices on strategic performance, however there is no effect between preventive maintenance and supply quality on strategic performance. The study has revealed only three components of strategic performance (time-based, cost-based, and flexibility-based performance), thus the study recommended the future researchers to study the quality-based performance.

Chen (2015) study titled "**The Relationships among JIT, TQM and Production Operation Performance**". The purpose of this study is to understand the relationship between JIT and TQM and on the other hand production operation performance (POP). Questionnaire was collected from 137 Chinese companies to test three hypotheses. The study found that a positive influence between JIT and TQM but the relationship with POP has no significant level. The author has used only the independent elements, he recommended to study the common elements between JIT and TQM.

Al Maani (2016) study titled **"JIT in the Jordanian Industrial Companies"** aimed to identify the implementation of JIT in the Jordanian public industrial companies. Descriptive-analytical approach was used. The sample of the study consisted of (55) employees in (76) industrial companies that represent the population. The result of study revealed that Jordanian public industrial companies do not apply JIT production system effectively. Furthermore, some barriers prohibit that the applying of JIT production system in these companies performed by lack of experience, and awareness of top management. The study recommended exert more efforts to maximize the knowledge and importance of

JIT at top management of Jordan companies, in additional to gain the experiences, training courses.

Haq, et.al (2016) study titled **"Impact of JIT, Waste Minimization, and Flow Management on Operational Performance of Manufacturing Companies"** this study strives the impact of JIT and other lean practices on operational performance and how the manufacturing will improve operational performance through implement JIT and other practices. The research utilized through qualitative approach and correlation design, the answer consisted of 380 participants and data analyzed base on regression. The study found that the insight into effectiveness of JIT will improve operational performance. The research recommended adopting JIT to overcome the challenge of operational performance.

Abu Zaid, et.al (2016) study titled "**An empirical examination of total just-in-time impact on operational performance: insights from a developing country"** aimed to examine the impact of total JIT practices (JIT operation, JIT selling, and JIT purchasing) along supply chain management on operational performance. Data collected from 166 industrial companies used structural equation model. The study found that JIT selling have a direct impact on operational performance, while JIT operation has indirectly affected operational performance through JIT selling. The research recommended going deeply into relationship between JIT operation, selling and production and performance through different methodologies and approaches.

Patel, et. al. (2016) study titled **"Implementation of Just-In-Time in an Enterprise"** aimed to investigate the objectives of JIT System which is produce what the customer need, produce in good quality, decrease waste of materials, and improved quality , hence this applied the customer will be satisfied of speed of service, high quality, good fair price. Analytical approach was used. The result revealed that JIT lead to the production of the required elements, in the required quality and quantity required within a limited time. Furthermore, JIT production contributes to effective waste disposal and reduces defective products, waiting time.

Hadli (2017) study titled: "**The Determinants of Firm Operational Performance"** aimed to identify the determinants of firm operational performance.

Descriptive approach was used. The sample consisted ofsenior executives and managers in the purchasing and supply chain practices from manufacturing firms in Malaysia totaling (100) senior executives and managers. The results indicate that companies are effectively leveraging their supply chain management practices to improve their operational performance. Furthermore, the most important variables in the improvement of the supply chain are supplier management, customer focus, process control, improvement, and senior management support. There is a correlation between operational performance, supplier management and customer focus.

Gunarathne and Kumarasiri (2017) study titled: **"Impact Of Lean Utilization On Operational Performance: A Study Of Sri Lankan Textile And Apparel Industry"** aimed to explore the relationship between Lean and Operational Performance and the impact Lean utilization creates on the OP levels in textile and apparel factories, which have adopted Lean as their standard of operation. Descriptive approach was used. The sample consisted of thirty mediums to large scale factories registered in the Board of Investments in Sri Lanka. Three Lean Constructs were adopted for this study based on Rahman, Laosirihongthong and Sohal's (2010) model: JIT (Just –in time production), WE (Waste Elimination Measures) and FM (Flow Management). The results reveal that Waste Elimination practices facilitate Operational Performance of a firm. It also concludes that flow management practices such as selecting one supplier does the least contribution towards Operational Performance.

Al Haraisa (2017) study titled **"Just-In-Time System and Its Impact on Operational Excellence: An Empirical Study on Jordanian Industrial Companies"** aimed to define the impact of just in time system on operational excellence from the perspective of managers of companies in Al-Karak Governorate. Descriptive approach was used. The population consisted of (14) industrial companies operating at Al –Hussein bin Abdullah II qualified industrial zone (QIZ) in Al-Karak Governorate. The sample of the study (respondents) included (168) manager and head of divisions at the target companies. The results reveal that the just in time system included (Equipment layout, Suppliers quality, set up time reduction and Pull production) have a positive impact on the operational excellence in Jordanian industrial companies.

Barkhordari and Denavi (2017) study titled**: "Just-In-Time (JIT) Manufacturing and its Effect on the Competence of Supply Chain and Organizational Performance in the Tile and Ceramic Industry in Yazd Province"** aimed to identify the relation between the strategy of the Company for supply chain and its performance. A descriptive approach was used. The sample of the study consisted of (219) managers, and the one who has extensive experience in tile and ceramic industry, however technical and non-technical has been taken into consideration. The results of the study showed that the successful of supply chain needs supply chain capabilities, and supply chain strategies. Moreover, it was established that total JIT is a suitable strategy for supply chain management. As a result, it is advised to supply chain action to be just in time and brilliant producers, sellers, and purchasers that a total just in time planning can support them to make also.

Panwar, et. al. (2018) study titled: **"The impact of lean practices on operational performance–an empirical investigation of Indian process industries"** aimed to analyze the impact of lean practices on operational performance–an empirical investigation of Indian process industries, Empirical approach was used. The sample consisted of production managers in Indian process industries totalling (500) managers. The results revealed that the results show that lean practices are closely linked to timely delivery, productivity, first return, waste disposal, stock reduction, cost reduction, defect reduction and improved demand management. Furthermore, lean practices have a marginal impact on improving operational performance. Moreover, operational performance and quality improvement can be improved by adopting lean practices.

Kumar and Kushwaha (2018) study titled: "**Supply Chain Management Practices And Operational Performance of Fair Price Shops In India: An Empirical Study"** aimed to explore the relationship between different supply chain management practices and operational performance of the fair price shops in India. Furthermore, the study has examined the impact of SCM practices on operational performance to evaluate the fair price shop performance. Descriptive approach was used. The sample consisted of (200) Fair price shops selected randomly from a list available on the government website. It was identified the key persons from each shop as the respondent to get their questionnaire filled. The results of this study showed that supply chain management practices positively and significantly associated with the performance of fair price shops in which information

quality is positively related to supply chain performance. In addition, the study results reveal Information technology is having a positive impact on operational performance. The findings of this study are well supported by the previous literature.

Abdul Rasit, et. al. (2018) study titled "**Effect of JIT on Organizational Performance: Influence of Performance Measurement System**" this study strives to investigate the implementation of JIT system on performance. Data collected based on self-administrated survey questionnaire on numbers of Malaysian companies. The study achieved that the companies use JIT system will be ranked in performance especially if the company use advanced performance measurement. The study advised the future researchers to investigate the effect of JIT on service industries.

Kamarudin and Abdul Mahid (2018) study titled **"The moderating Effect of JIT on the Relationship between SCOR Models on Supply Chain Performance in Malaysia Manufacturing Industry"** aimed to discover the correlation between supply chain operation reference models by moderating JIT and supply chain performance depends on plan, source, deliver, make, and return. The methodology is questionnaire on (1100) companies but only (265) companies have analyzed to test the hypothesis. The study finds that JIT and SCOR models have positive effect on supply chain performance. The following researcher has to study aggregate model in supply chain on business performance. The study recommended the future researcher to expand the segmentation of supply chain role.

Santos, et. al. (2019) study titled: **"Integrating Green Practices into Operational Performance: Evidence from Brazilian Manufacturers"** aimed to integrate Green Practices into Operational Performance. Empirical approach was used. The sample consisted of Brazilian manufacturers working at Green Supply Chain Management (GSCM) totalling (117) manufacturers. The results revealed that the dependence of green supply chain management on suppliers and / or customers has a positive impact on operational performance. Which appear by collaborating with suppliers in the early stages of environmentally responsible production technology and sharing environmental information with them. As well as considering the views of green customers and consumers in their production processes.

Phoosawad, et. al. (2019) study titled: **"Impacts of collaboration networks, operational performance and reverse logistics determinants on the performance outcomes of the auto parts industry"** aimed to identify the impacts of collaboration networks, operational performance and reverse logistics determinants on the performance outcomes of the auto parts industry. Descriptive approach was used. The sample consisted of the managers in the auto parts industry from 320 companies totalling (30) managers. The results of the study concluded that cooperation networks, operational performance and reverse logistics have a positive impact on performance results. On the other hand, cooperation networks mainly affect enterprise development by causing performance results to continue to grow non-stop, including enhancing sustainable competitiveness and operational results of the auto parts industry.

Bendickson and Chandler (2019) study titled: **"Operational performance: The mediator between human capital developmental programs and financial performance"** aimed to examine the positive outcomes of Human Capital Development Programs (HCDP). These are training programs of multiple levels and they are aligned with the organizational levels as an employee's performance improves and progresses up the corporate ladder. Empirical approach was used. The sample consisted of 30 organizations from Major League Baseball as well as their subsidiaries. The researchers analyzed the data from 2003 to 2011 and they used regression models to examine how Human Capital Development Programs affect the financial performance of these organizations through the operational performance. The result reveals that better HCDP will lead to greater performance, and that will affect the operational performance positively, which will also have a greater impact on revenue and sales.

Yadav, et al. (2019) study titled: "**The Impact of Lean Practices on the Operational Performance SMEs in India"** aimed to understand the perception of lean practices in SMEs in 15 Indian states and to establish the relationship between lean adoption and operational performance. Descriptive approach was used. The sample consisted of 425 SMEs in India and data was collected and analyzed using structural equation modeling (SEM). The results indicate that the operational performance of these SMEs was positively related to the implementation of lean practices even with limited

finances, resources, training, and skills. This relationship has been proved through a second-order structural model.

What differentiate the current study from previous studies?

This study might be considered as the first study, which research The Impact of Just in Time Practices on Operational Performance on Fast Food Restaurants in Jordan. This study will clarify the role of JIT (JIT Selling, JIT operation, JIT Purchasing) in differentiate restaurant who implement this Strategy among their competitors. Most of Previous studies has been carried out and implemented in many countries. The current study implemented in Amman-Jordan. The current study implemented in Amman-Jordan. Most of previous studies were based on dimension of JIT, and the operational performance. It also measured the relationship of JIT in other variables. At the same context, they measured the relationship of operational performance with other variables.

- Purpose: Most of the previous studies were conducted to measure the impact of JIT from the financial point of view, the extent of application of the dimensions of JIT in companies and organizations. A few studies were conducted to study the effect of JIT's overall dimensions on achieving competitive advantages.

- Environment: Most previous studies have been implemented in various countries outside the Arab region. The current study will be executed in Jordan, as one of the Arab region countries.

- Industry: most of the studies carried out in Industrial companies. The current study is dedicated in restaurant only.

- Methodology: Most previous researches used a descriptive approach. While in this research will use the descriptive correlative approach.

- Variables: Most of previous studies and research looked at JIT and operational performance from one perspective and element, while in this study will used three elements in JIT and three elements in operational performance.

- Population: Most all previous studies toke samples from senior executives and managers and employees while the current study will take a sample from managers working in Jordanian fast food restaurants.

Chapter Three: Study Methodology (Methods and Procedures):

Study Design:

The current study is considered as descriptive and cause/effect study. It aims to study the impact of Just in Time practices: JIT purchasing, JIT selling, and JIT operation on operational performance (quality, cost, and delivery) at Jordanian fast food restaurants. This study begins with literature review, expert's interviews to develop a questionnaire, which will be used to collect the data. The collected data will be checked and coded on SPSS. Then normality, validity and reliability were tested, then the correlation between variables was checked and multiples regressions used to test the hypothesis.

Study Population, Sample and Unit of Analysis:

Population and Sample: the population of the study consists of 43 Jordanian fast food restaurants in Amman/Jordan from approximately 143 fast food restaurants in Amman, according to the Amman Chamber of Commerce. However, the samples were chosen randomly, and within a certain number of regions of Amman (Al-Rabiah, Al-Gardens, Al-Madeenh, and Abdullah Abo Ghosh streets).

Unit of Analysis:

The survey unit of analysis is managers, supervisor, and employees who work in these companies in Jordan.

Data collection methods (Tools):

For the purpose of this study, data that collected from two sources: secondary and primary data. Secondary data collected from Local Fast Food Restaurants in Jordan, articles, thesis, journals and researchers. Primary data collected though questionnaire, which developed based on previous literature and expert.

The Questionnaire:

The questionnaire developed based on hypothesis and research model, then validated through expert interviews and panel of judge, as shown in appendix (1).

Questionnaire Variables:

The questionnaire includes three parts as follows:

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

Independent Variable (JIT Practices): Independent variable JIT practices include three sub- variables: JIT purchasing, JIT operation, JIT selling. Each sub-variable measured by six questions.

Dependent variable (Operational Performance): Dependent variables operational performance includes three dimensions: quality, cost and delivery by six 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.

Data Analysis Method:

To actualize this study, 43 companies of Local Fast Food Restaurants were targeted; these achieve the need for sampling. The mangers (42), supervisor (7), and employees (52) working in these restaurants were targeted, and 120 questionnaires were distributed, and only 110 questionnaires were returned. Thereafter, checking all questionnaires, there were ten questionnaires were excluded due to incompleteness. The remaining 101 questionnaire were coded against SPSS for further analysis.

Validity Test:

Three methods used in this study for validity confirms: content face and construct validity. For content validity, multiple sources of literatures have been used: journals, articles, thesis, and worldwide website. While, for face of validity the panel of judge used Appendix 1, and took all notes into consideration, then adjusted the questionnaires.

Construct Validity (Factor Analysis):

Principle Component Factor Analysis was used to test construct validity, if factor loading for each item within its group is more than 40%, the construct validity is assumed. While, Kaiser-Meyer-Olkin (KMO) used to measure sampling adequacy and Bartlett's Test of Sphericity of samples used as indicator for samples items harmony, explained variance is also added to verify explanation value of each sub-variable.

Table 1 shows that factor loading of each item within JIT Purchasing group rated more than 40%, therefore the construct validity was assumed. KMO has rated 80.8%, and the test produced explanatory value of 55.456, that explains 55.46% of the variance.

Table 1: Principal Component Factor Analysis for Just in Time Purchasing:

Item	Factor1	KMO	Chi^2	B.T.	Variance	Sig.
JITP1	0.769	0.808	244.673	15	55.456	0.00
JITP2	0.654					
JITP3	0.806					
JITP4	0.778					
JITP5	0.886					
JITP6	0.518					

Table 2 shows that factor loading of each JIT Operation sub-variable items within its group rated more than 40%, moreover, the construct validity is assumed. Therefore, KMO has rated 85.8%, and the test produced explanatory value of 59.745, which all JIT Operation items explain 59.75% of the variance.

Table 2: Principal Component Factor Analysis for Just in Time Operations:

Item	Factor1	KMO	Chi^2	B.T.	Variance	Sig.
JITO1	0.813	0.858	269.450	15	59.745	0.00
JITO2	0.876					
JITO3	0.832					
JITO4	0.702					
JITO5	0.741					
JITO6	0.649					

Table 3 shows that factor loading of each JIT Selling sub-variable items within its group rated more than 40%, therefore the construct validity is assumed. Moreover, KMO has rated 89%, and the test produced explanatory value of 72.910, that all JIT selling items explains 72.91% of the variance.

Table 3: Principal Component Factor Analysis for Just in Time Selling:

Item	Factor1	KMO	Chi^2	B. T	Variance	Sig.
JITS1	0.873	0.890	446.596	15	72.910	0.00
JITS2	0.812					
JITS3	0.931					
JITS4	0.811					
JITS5	0.840					
JITS6	0.850					

Table 4 shows that factor loading of Total JIT group rated more than 40%, therefore the construct validity was assumed. KMO has rated 88.5%, and the test produced explanatory value of 46.696, which explains 47% of the variance.

Table 4: Principal Component Factor Analysis for Just in Time Practices:

Item	Factor1	KMO	Chi^2	B. T	Variance	Sig.
JIT Purchasing	0.736	0.885	1253.024	153	46.696	0.00
JIT Operation	0.919					
JIT selling	0.902					

Table 5 shows that factor loading of each item within Quality group rated more than 40%, therefore the construct validity was assumed. KMO has rated 85.2%, and the test produced explanatory value of 63.083, which explains 63.08% of the variance.

Table 5: Principal Component Factor Analysis for Quality:

Item	Factor1	KMO	Chi^2	B. T	Variance	Sig.
Qu1	0.829	0.852	319.586	15	63.083	0.00
Qu2	0.705					
Qu3	0.682					
Qu4	0.773					
Qu5	0.892					
Qu6	0.861					

Table 6 shows that factor loading of each item within Cost group rated more than 40%, therefore the construct validity was assumed. KMO has rated 86.4%, and the test produced explanatory value of 67.138, which explains 67.13% of the variance.

Table 6: Principal Component Factor Analysis for Cost:

Item	Factor1	KMO	Chi^2	B. T	Variance	Sig.
Co1	0.669	0.864	374.501	15	67.138	0.00
Co2	0.759					
Co3	0.815					
Co4	0.898					
Co5	0.873					
Co6	0.878					

Table 7 shows that factor loading of each item within Delivery group rated more than 40%, therefore the construct validity was assumed. KMO has rated 87.6%, and the test produced explanatory value of 61.338, which explains 61.33% of the variance.

Table 7: Principal Component Factor Analysis for Delivery:

Item	Factor1	KMO	Chi^2	B. T	Variance	Sig.
De1	0.834	0.876	313.624	15	61.338	0.00
De2	0.852					
De3	0.859					
De4	0.899					
De5	0.814					
De6	0.823					

Table 8 shows that factor loading of Operational Performance group rated more than 40%, therefore the construct validity was assumed. KMO has rated 70.7%, and the test produced explanatory value of 71.046, which explains 71.04% of the variance.

Table 8: Principal Component Factor Analysis for Operational Performance:

Item	Factor1	KMO	Chi^2	B. T	Variance	Sig.
Cost	0.943	0.707	777.427	153	71.046	0.00
Quality	0.944					
Delivery	0.929					

Reliability Test: (Cronbach's Alpha): After the confirmation of validity of study tool, to determinate the reliability of study tool the Cronbach's Alpha test used to test consistency and suitability of tools.

Table 9: Reliability Test (Cronbach's Alpha) for all Variables:

Item	No. of Items	Cronbach's Alpha
JIT Purchasing	6	0.824
JIT Operation	6	0.857
JIT Selling	6	0.920
Total JIT	3 Sub-variables	0.925
Quality	6	0.876
Cost	6	0.892
Delivery	6	0.859
Total	3 Sub-variables	0.950

Table 9 shows that value of Cronbach's Alpha coefficient for independent sub-variables are ranging between 0.824 and 0.857, and for dependent dimensions ranges between0.876 to 0.892. According to Sekran (2003) if the value of Cronbach's Alpha coefficient is more than 70%, then the reliability is accepted.

Demographic Analysis: The following section describes the respondents' characteristics i.e. frequency and percentage of participants related to company, gender, age, education, department, and experience.

Gender: Table 10 shows that most respondents are male 94 (93.1%) and female only 7 (6.9%), Males represent the highest proportion of females because of our eastern society, and females prefer to work in other fields.

Table 10: Gender Description

Gender		Frequency	Percent
Gender	Male	94	93.1
	Female	7	6.9
	Total	101	100.0

Age: Table 11 shows that the majority respondents age is between 20-35 years 66 (65.3%), followed by less than 20 years 9 (8.9%), then that between 36-45 years 24 (23.8%), and finally above 45 years only 2 (2.0%). Working in restaurants attracts the younger age group of less than 20 years old, because working as crewmember does not require a high school certificate or a university degree.

Table 11: Age Distribution.

Age		Frequency	Percent
Age	Less than 20	9	8.9
	20-35	66	65.3
	36-45	24	23.8
	Above 45	2	2.0
	Total	101	100.0

Education: Table 12 shows that most respondents are Bachelor holders 37 (36.6%), followed by High school graduates 33 (32.7%), then Diploma holders 28 (27.7%), finally Master holders only 3 (3.0%).

Table 12: Education Distribution

Education		Frequency	Percent
Edu.	High school	33	32.7
	Diploma	28	27.7
	Bachelor	37	36.6
	Master	3	3.0
	Total	101	100.0

Position: Table 13 shows that the majority respondents are from crew member 52 (51.5%), followed by manager 42 (41.6%), then from supervisor 7 (6.9%). Crew member represents the highest among others because this function is the main pillar that the company relies on in the restaurants.

Table 13: Respondents Position.

Position		Frequency	Percent
P.	Crew Member	52	51.5
	Supervisor	7	6.9
	Manager	42	41.6
	Total	101	100.0

Experience: Table 14 shows that most respondents are between 3-5 years' experience 45 (44.6%), followed by between 5-10 years' experience 36 (35.6%), then above 10 years' experience 11 (10.9%), and finally less than 3 years' experience only 9 (8.9%).

Table 14: Respondent Experience

Experience		Frequency	Percent
Exp.	Less than 3	9	8.9
	3-5	45	44.6
	5-10	36	35.6
	Above 10	11	10.9
	Total	101	100.0

Chapter Four: Data Analysis

Introduction

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

Descriptive Statistical Analysis

For describing the respondents' perception about the implementations of each variable, dimension and items, means, standard deviations, t-values, ranking and importance. Importance will be assigned according to 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 15 shows that the means of total just in time sub-variables ranges between 3.91 to 4.02 and the standard deviation ranges between 0.61 and 0.76. This indicates that the respondents agree on high importance of total JIT sub-variables. Average mean for all total JIT sub-variables is 4.06 with standard deviation of 0.58.

This means that the total JIT is very important for fast food local restaurant companies, where t-value=70.801>1.980. The JIT selling rated highest mean, followed by JIT selling and finally, JIT purchasing.

Table 15: Mean, Standard Deviation, t-Value, Ranking and Importance for Total JIT

No.	Sub-Variable	M.	S.D.	t-Value	Sig	Rank	Imp
1	JIT Purchasing	3.91	0.61	64.131	0.00	3	High
2	JIT operation	4.02	0.76	53.500	0.00	2	High
3	JIT selling	4.26	0.65	65.998	0.00	1	High
Total JIT		4.06	0.58	70.801	0.00		High

T-tabulated value=1.980

JIT Purchasing

Table 16 shows that the mean of JIT purchasing items ranges between 3.78 to 4.05 standard deviation ranges from 0.65 to 0.99. This indicates that the respondents agree to

high importance of JIT purchasing items. The average mean for total JIT is 3.91 with standard deviation of 0.61. This means that the fast food local restaurant companies consider JIT purchasing of high importance, where t-value=64.131>1.980. The JIT selling rated higher than JIT operation and finally, JIT purchasing.

Table 16: Mean, Standard Deviation, t-Value, Ranking and Importance for JIT Purchasing

No.	Item	M	S.D.	t-Value	Sig	Rank	Imp
1	The company updates full information about suppliers	3.81	0.80	48.102	0.00	5	High
2	The company selects the right suppliers	3.82	0.65	58.714	0.00	4	High
3	The company shares forecasting with suppliers.	4.05	0.80	50.575	0.00	1	High
4	The company deals with specific suppliers	3.99	0.99	40.304	0.00	3	High
5	The company exchanges flow of information with suppliers	4.00	0.79	51.053	0.00	2	High
6	The company receives the right material with right quality	3.78	0.96	39.800	0.00	6	High
JIT Purchasing		3.91	0.61	64.131	0.00		High

T-tabulated value=1.980

JIT Operation

Table 17 shows that the means of JIT operations items ranges between 3.89 to 4.16 with standard deviation ranges from 0.89 to 1.17.

Table 17: Mean, Standard Deviation, t-Value, Ranking and Importance for JIT Operations

No.	Item	M	S.D.	t-Value	Sig	Rank	Imp
1	The company selects appropriate workers	4.16	0.89	46.881	0.00	1	High
2	The company provides specialist training programs	4.14	0.89	46.485	0.00	2	High
3	The company analyzes the customers demand	3.89	1.17	33.312	0.00	6	High
4	The company produces according to customers' orders	3.90	0.90	43.558	0.00	5	High
5	The company reduces unnecessary transportation	3.93	0.93	42.470	0.00	4	High
6	The company devotes time of machines maintenance	4.12	1.11	37.388	0.00	3	High
JIT operations		4.02	0.76	53.500	0.00		High

T-tabulated value= 1.980

This indicates that the respondents agree on high importance of JIT operations items. The average mean for total JIT is 4.02 with standard deviation of 0.76. This means that the fast food local restaurant companies consider JIT operations of high importance, where t-value=53.500>1.980

JIT Selling

Table 18 shows that the means of JIT selling items ranges between 4.09 to 4.43 with standard deviation ranges from 0.60 to 0.93. This indicates that the respondents agree to high importance of JIT selling items.

Table 18: Mean, Standard Deviation, t-Value, Ranking and Importance for JIT Selling

No.	Item	M	S.D.	t-Value	Sig	Rank	Imp
1	The company updates database about the customers	4.16	0.80	52.459	0.00	4	High
2	The company builds strong trust with customers	4.09	0.93	44.263	0.00	5	High
3	The company provides promotion to loyal customers	4.43	0.73	61.273	0.00	1	High
4	The company responds to customers complaints	4.27	0.73	58.479	0.00	3	High
5	The company provides a suitable seat to customers	4.34	0.60	72.085	0.00	2	High
6	The company provides a suitable seat to customers	4.27	0.77	55.466	0.00	3	High
JIT selling		4.26	0.65	65.998	0.00		High

T-tabulated value=1.980

The average mean for total JIT is 4.26 with standard deviation of 0.65. This means that the fast food international restaurant companies consider JIT selling of high importance, where t-value=65.998>1.980.

Dependent Variable (Operational Performance):

Table 19 shows that the Operational Performance dimensions ranges between 4.068 to 4.158 and the standard deviation ranges between 0.542 to 4.732. This indicates that respondents agree to high importance of Operational Performance.

Average mean for all Operational Performance dimensions is 4.115with standard deviation of 0.625. This mean that the Operational Performance is very significant for local fast food restaurant companies, where t-value=66.214>1.980. Table also shows that delivery has the highest mean, followed by cost, at last the quality.

Table 19: Mean, Standard Deviation, t-Value, Ranking and Importance for Operational Performance

No.	Sub-Variable	M	S.D.	t-Value	Sig	Rank	Imp
1	Quality	4.068	0.720	56.775	0.00	3	High
2	Cost	4.119	0.732	56.524	0.00	2	High
3	Delivery	4.158	0.542	77.135	0.00	1	High
Operational Performance		4.115	0.625	66.214	0.00		High

T-tabulated value= 1.980

Quality

Table 20 shows that the mean of quality items ranges between 3.782 to 4.238 standard deviation ranges from 0.727 to 1.179. This indicates that defend agree on high importance of quality items.

The average mean for quality items is 4.068 and standard deviation is 0.720. Quality is considered of high importance to local fast food restaurant companies, where t-value=56.775>1.980.

Table 20 Mean, Standard Deviation, t-Value, Ranking and Importance for Quality

No.	Item	M	S.D.	t-Value	Sig	Rank	Imp
1	The company meets customers' expectations	4.238	0.777	54.845	0.00	1	High
2	The company adheres to implement quality standards	4.178	0.727	57.792	0.00	2	High
3	The company understands customers feedback	3.782	0.955	39.800	0.00	6	High
4	The company cares about packaging method	4.168	0.895	46.795	0.00	3	High
5	The company orders high quality materials	4.139	0.895	46.485	0.00	4	High
6	The company committees to Food and Drug Administration	3.901	1.179	33.252	0.00	5	High
Quality		4.068	0.720	56.775	0.00		High

T-tabulated value= 1.980

Cost

Table 21 shows that the mean of cost items ranges between 3.901 to 4.436 and standard deviation ranges between 0.727 and 1.114. This indicates defend agree on high importance of cost items. The average mean for cost items is 4.119 and standard deviation is 0.732. Cost is considered of high importance to local fast food restaurant companies, where t-value= 56.524>1.980.

Table 21: Mean, Standard Deviation, t-Value, Ranking and Importance for Reliability

No.	Item	M	S.D.	t-Value	Sig	Rank	Imp
1	The company produces based on orders	3.901	0.900	43.558	0.00	6	High
2	The company reduces process time	3.960	0.937	42.467	0.00	5	High
3	The company builds long term relationship with suppliers	4.139	1.114	37.342	0.00	3	High
4	The company selects closer location suppliers	4.168	0.801	52.307	0.00	2	High
5	The company produces small lots of finished products	4.109	0.926	44.58	0.00	4	High
6	The company receives specific materials at the right time	4.436	0.727	61.33	0.00	1	High
Cost		4.119	0.732	56.524	0.00		High

T-tabulated value= 1.980

Delivery

Table 22 shows that the mean of delivery items ranges between 3.60 to 4.36 and standard deviation ranges from 0.58 to 0.78. This means that delivery items have respondents between medium to high importance of delivery items. The average mean for delivery items is 4.16 and standard deviation is 0.54. Cost considered of high importance for local fast food restaurant companies, where t-value= 77.135> 1.980.

Table 22: Mean, Standard Deviation, t-Value, Ranking and Importance for Reliability

No.	Item	M	S.D.	t-Value	Sig	Rank	Imp
1	The company deals with trusted delivery companies	4.28	0.74	58.368	0.00	2	High
2	The company delivers food with suitable condition and time	4.36	0.61	71.813	0.00	1	High
3	The company provides different wide variety of meals	4.28	0.78	55.385	0.00	2	High
4	The company provides drive thru ordering service	4.25	0.78	54.740	0.00	3	High
5	The company arranges places to serve the customers	4.19	0.73	57.584	0.00	4	High
6	The company serves customers quickly	3.60	0.58	61.971	0.00	5	Medium
Delivery		4.16	0.54	77.135	0.00		High

T-tabulated value= 1.980

Relationships between Variables:

Table 23 shows that the relationships between JIT practices sub-variables are strong, where r ranging between 0.462 and 0.834. The table also shows the relationships between Operational Performance variables are also strong, where r ranging between 0.818 and 0.826. Finally, the relationship between independent and dependent variables is very strong, where r equal 0.949. Further, this indicates that the correlation between JIT practices and operational performance is very strong and can impact on each other.

Table 23: Bivariate Pearson Correlation (r) Matrix between Independent and Dependent Variables

Variable	JIT Purchasing	JIT Operation	JIT Selling	Independent	Quality	Cost	Delivery	Dependent
JIT Purchasing								
JIT Operation	0.479**							
JIT Selling	0.462**	0.834**						
Independent	0.736**	0.919**	0.902**					
Quality	0.547**	0.940**	0.817**	0.910**				
Cost	0.449**	0.907**	0.920**	0.900**	0.818**			
Delivery	0.492**	0.773**	0.913**	0.854**	0.826**	0.826**		
Dependent	0.528**	0.939**	0.938**	0.949**	0.943**	0.944**	0.929**	

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

Hypothesis Analysis:

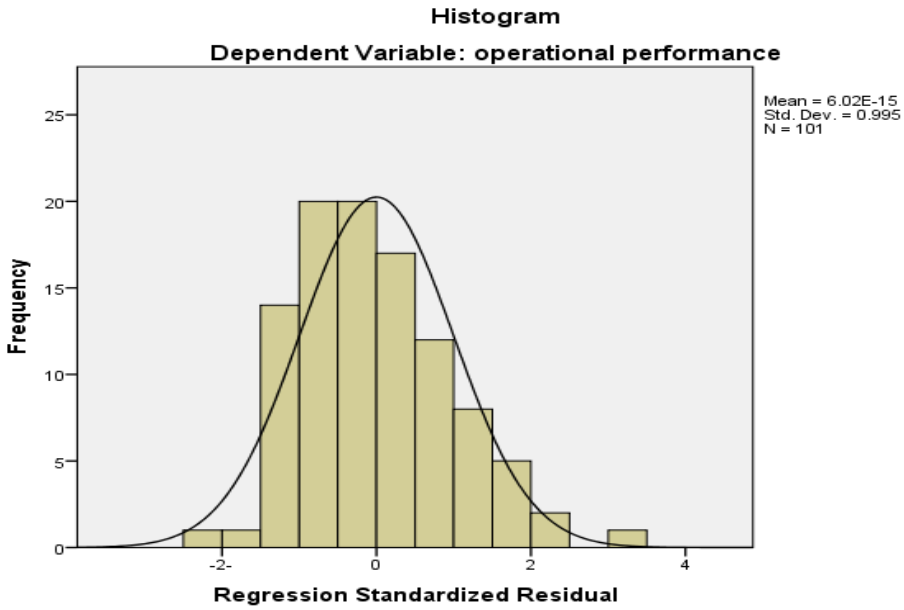
Multiple regressions are used to test the impact of JIT practices on achieving operational performance at fast food local restaurant companies.

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

Normal Distribution (Histogram):

The histogram in the figure 6 shows that the data are normality distributed, so the residual do not affect the normal distribution.

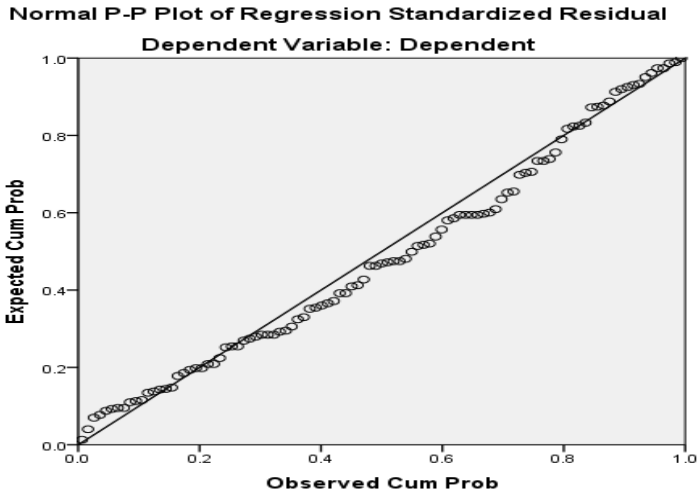
Figure 6: Normality Test



Linearity Test:

Figure 7 shows the relationship between independent and dependent variables are linear.

Figure 7: linearity Test

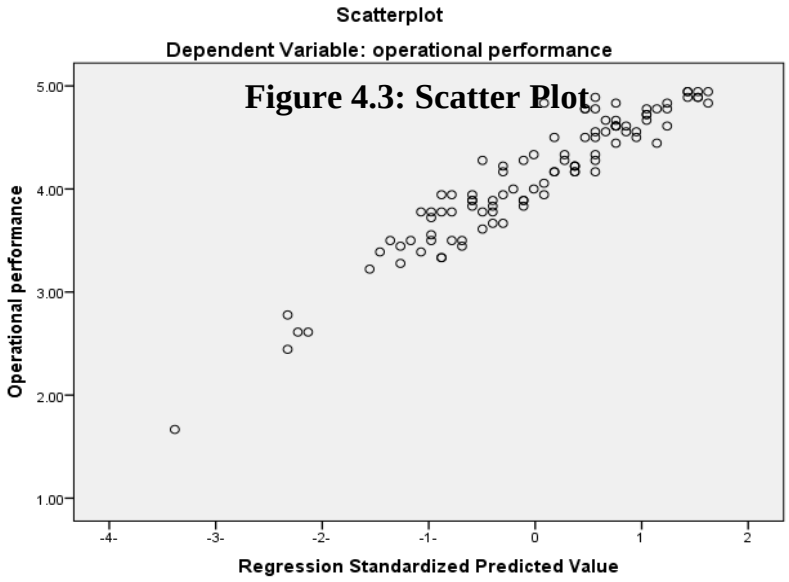


Independence of Errors:

Figure 8 show that the errors are independence from each other. Durbin-Watson test used to ensure independence of errors, if the value is about two, and the model does not violate this assumption. Table 24 shows that Durbin-Watson value is (d=1.659), this

value about two, and this shows that the residual is not correlated to each other, which mean the independence of errors are not violated.

Figure 8: Scatter Plot



Multi-Collinearity:

While, VIF (Variance Inflation Factor) and tolerance are 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 24 shows 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 24: Multi-collinearity and Durbin-Watson Tests

Sub-Variables	Collinearity Statistics		Durbin-Watson
	Tolerance	VIF	
JIT Purchasing	0.758	1.320	1.659
JIT Operations	0.294	3.402	
JIT Selling	0.300	3.335	

Main Hypothesis:

H_{01}: The JIT practices (JIT purchasing, JIT operation and JIT selling) have impact on operational performance of fast food restaurants, at $\alpha \leq 0.05$. Table 25 shows that when regressing the three independent variables of JIT practices together against dependent variable operational performance the model is fit for further analysis, where R2 is 96.3% shows the fitness of the model for multiple regressions, and explains the variance of

independent variable on dependent variable, since R2 is 96.3%. Then the independent variable can explain 0.963% of variance on dependent variable, where (R2=0.963, F=852.53, Sig.=0.000).Therefore, the null hypothesis is rejected and the alternative hypothesis is accepted, which states that the total Just in Time practices (JIT Purchasing, JIT Operation and JIT Selling) have impact on operational performance of fast food restaurants, at $\alpha \leq 0.05$.

Table 25: Results of Multiple Regressions for the Impact of each JIT Practices sub-variable on Operational performance

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	F	Sig.
1	0.982[a]	0.963	0.962	.12122	852.53	0.00

a. Dependent Variable: Operational Performance, t-Tabulated=1.980

Table 26 shows the impact of each JIT practices sub-variable on operational performance.

Table 26: Results of Multiple Regressions Analysis (ANOVA*): Regressing JIT Practices Sub-Variables against Operational Performance

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.010	.344		5.838	.000
	JIT Purchasing	.539	.087	.528	6.190	.000
	JIT Operation	.776	.029	.939	27.233	.000
	JIT Selling	.903	.034	.938	26.835	.000

a. Predictors: (Constant) JIT Selling, JIT Purchasing, JIT Operations
b. Dependent Variable: Operational Performance

$H_{01.1}$: JIT purchasing has no impact on operational performance of fast food restaurants, at $\alpha \leq 0.05$.

Table 26 shows that there are significant impacts of JIT purchasing on operational performance, since (Beta=0.528, t=6.190, sig.=0.000, $p<0.05$). Therefore, the null hypothesis is rejected and the alternative hypothesis is accepted which states that JIT Purchasing impacts Operational Performance of fast food restaurants, at $\alpha \leq 0.05$.

$H_{01.2}$: JIT operation has no impact on operational performance of fast food restaurants, at $\alpha \leq 0.05$.

Table 26 shows that there are significant impacts of JIT operation on operational performance, since (Beta=0.939, t=27.233, sig.=0.000, $p<0.05$). Therefore, the null

hypothesis is rejected and the alternative hypothesis is accepted which states that JIT Operation impacts Operational Performance of fast food restaurants, at $\alpha \leq 0.05$.

$H_{01.3}$ JIT selling has no impact on operational performance of fast food restaurants, at $\alpha \leq 0.05$.

Table 26 shows that there are significant impacts of JIT selling on operational performance, since (Beta=0.938, t=26.835, sig=0.000, $p<0.05$).

Therefore, the null hypothesis is rejected and the alternative hypothesis is accepted which states that JIT Selling impacts Operational Performance of fast food restaurants, at $\alpha \leq 0.05$.

Chapter Five: Results' Discussion, Conclusion and Recommendations

Results' Discussion:

The results show the JIT practices are highly implemented in local fast food restaurants. JIT selling has rated the highest, followed by JIT operation, and last JIT purchasing. The results of Operational Performance variables are also highly implemented in local fast food restaurants. Delivery has the highest implementation, followed by cost, and finally, quality. These results are supportive and confirm previous studies, such as He and Hayya (2002), Mazanai (2012), Hwang, et. al. (2014), Meybodi (2015), Chanda (2017), Gurahoo and Salisbury (2018).

The results also show the relationship between JIT practices are strong, this confirm previous studies such as, Bortolotti, et. al. (2013). The results also show the relationship among operational performance dimensions are strong depends on previous studies such as, Beah (2015), and Bagher (2018). The relationship between JIT practices sub-variables and operational performance dimensions are strong, that depends on previous studies such as, Green, et. al. (2011). Finally, there are a strong relationship between JIT practices and operational performance that support previous studies such as, Dixit, et. al. (2018). Therefor this that the correlation between JIT practices and operational performance is strong and can impact on each other, and have to implement the three of JIT practices to have the full advantage.

Results also show that all JIT practices have impact on Operational Performance in Local Fast Food Restaurant Companies in Jordan. The JIT selling has the highest impact, then JIT operation, finally JIT purchasing. This result indicates by previous studies such as, Green, et. al. (2011), Al haraisa (2017), Abdul Rasit (2018).

Conclusion:

This study is conducted to answering the main study question: The JIT practices JIT purchasing, JIT operation and JIT selling have no impact on operational performance (quality, cost, and delivery) in Local Fast Food Restaurants in Jordan. Data were collected through the questionnaire, which tested for its validity, and reliability. Then, the correlation was tested the hypothesis.

The results show that the JIT practices are highly implemented in Jordanian fast food restaurants. The JIT selling has rated the highest, then JIT operation, and finally JIT purchasing. Moreover, the results show the implemented of Operational Performance dimensions also high, where delivery has the highest implementations, followed by cost, and last quality.

Results also show the relationship between JIT practices and operational performance dimensions are strong. The relationship among JIT practices and the relationship among operational performance dimensions are strong. In the last, the relationship between total JIT practices and total operational performance is strong.

Finally, the results show the JIT practices have impact on operational performance in Local Fast Food Restaurants Companies in Jordan. The JIT selling has the highest, followed by JIT operation, finally, JIT purchasing.

Recommendations:

Recommendations for Local Fast Food Restaurants Companies in Amman

The results of study show that the actual use of JIT practices in Jordanian Fast Food Restaurants was average. Therefore, the study recommends the following:

- The study recommends an increase in the implementation of JIT practices to reduce inventory, eliminate waste, right cost, right quality, customer satisfaction, which leads to full use of operational performance.
- The study recommends providing training program in JIT practices and allocate where they can boost JIT and minimize storage.
- The local fast food restaurants companies should pay more attention for quality especially packaging.
- Employee more experienced and trained workforce.
- Throughout the study, I noticed most of the restaurants do not record calls for quality assurance.
- All restaurants should look into sterilizing their shops monthly to avoid toxicity to the consumer.
- Local fast food restaurants that are not using the JIT practices need to expedite adoption in order to improve the operational performance.

Recommendations for Academic and Future Research:

- This study examined the impact of JIT practices on service sector. Further, other studies should study the same variables on manufacturing sectors and compare the results.
- This study is carried out on Local Fast Food Restaurants in Amman. Therefore, it's advised to apply the same variables, and industry in other countries, especially in Arab countries.
- This study carried out with limited period, therefore its advised future researchers to repeat this study in a different time and compare the results based on longer period of survey.
- This study focused on specific dimensions of operational performance. Wherefore, future researcher advised expansion and study of new dimensions.

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Appendixes

Appendix 1: Panel of Referees Committee

NO	Name	Qualification	Organization
1	Dr. Ahmad Ali Saleh	Associate Prof.	Middle East University
2	Dr. Abdullah Batainh	Associate Prof.	Middle East University
3	Dr. Mahmoud Bader Al Obaidi	Associate Prof.	Al Zaytoonah University
4	Dr. Mohammad Al Adayla	Associate Prof	Middle East University
5	Dr. Murad Attiany	Associate Prof	Isra University
6	Dr. Nahla Al Nazer	Associate Prof.	Middle East University
7	Dr. Najem Abood Najem	Associate Prof.	Al Zaytoonah University
8	Dr. Nedal Al Salhi	Associate Prof.	Petra University
9	Dr. Zakaria M. Al-Douri	Associate Prof.	Isra University

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MIDDLE EAST UNIVERSITY
Amman - Jordan

Appendix 2: Letter and Questionnaire of Respondents
Dear Participant:

The purpose of this master thesis is to study "The Impact of Just in Time Practices on Operational Performance: Field Study on Jordanians Fast Food Restaurants".

This research contains 36 questions, which may take 10 minutes to answer it; therefore, we will be thankful to you for devoting your valuable time to answer it.

Your answers will be top confidential and will be used for research purpose only.

Again, we appreciate your participation in this research. Please, if you have any question or comment, please contact me at (shahadaljanabi49@gmail.com).

Thank you for your fruitful cooperation.

Researcher: Shahad Ghazi Al-janabi
Supervisor: Dr. Abdel-Aziz Ahmad Sharabati

Questionnaire

Part one: Demographic information

Company Name:

Gender: □Male □Female

Age (years): □less than 20 □20 – 35 □36 - 45 □above 45

Education: □High School □ Diploma □Bachelor □Master

Position: □Crew-member □Supervisor □Manager

Experience: □Less than 3 □3 – 5 □5 – 10 □Above 10

Part two: The following 36 question tap into your perception about actual impact of Just in Time variables and Operational performance elements.

[**1** = strongly not implemented, **2** = not implemented, **3** = neutral, **4** = implemented, **5** = strongly implemented] based on your knowledge and experience about the statement.

JIT Purchasing

1	The company updates full information about suppliers	1	2	3	4	5
2	The company selects the right suppliers	1	2	3	4	5
3	The company shares forecasting with suppliers.	1	2	3	4	5
4	The company deals with specific suppliers	1	2	3	4	5
5	The company exchanges flow of information with suppliers	1	2	3	4	5
6	The company receives the right material with right quality	1	2	3	4	5

JIT Operation

1	The company selects appropriate workers	1	2	3	4	5
2	The company provides specialist training programs	1	2	3	4	5
3	The company analyzes the customers demand	1	2	3	4	5
4	The company produces according to customers' orders	1	2	3	4	5
5	The company reduces unnecessary transportation	1	2	3	4	5
6	The company devotes time of machines maintenance	1	2	3	4	5

JIT Selling

1	The company updates database about the customers	1	2	3	4	5
2	The company builds strong trust with customers	1	2	3	4	5
3	The company provides promotion to loyal customers	1	2	3	4	5
4	The company serves customers on time	1	2	3	4	5
5	The company responds to customers complaints	1	2	3	4	5
6	The company provides a suitable seat to customers	1	2	3	4	5

0perational Performance

Quality

1	The company meets customers' expectations	1	2	3	4	5
2	The company adheres to implement quality standards	1	2	3	4	5
3	The company understands customers feedback	1	2	3	4	5
4	The company cares about packaging method	1	2	3	4	5
5	The company orders high quality materials	1	2	3	4	5
6	The company committees to Food And Drug Administration	1	2	3	4	5

Cost

1	The company produces based on orders	1	2	3	4	5
2	The company reduces process time	1	2	3	4	5
3	The company builds long term relationship with suppliers	1	2	3	4	5
4	The company selects closer location suppliers	1	2	3	4	5
5	The company produces small lots of finished products	1	2	3	4	5
6	The company receives specific materials at the right time	1	2	3	4	5

Delivery

1	the company deals with trusted delivery companies	1	2	3	4	5
2	The company delivers food with suitable condition and time	1	2	3	4	5
3	The company provides different wide variety of meals	1	2	3	4	5
4	The company provides drive thru ordering service	1	2	3	4	5
5	The company arranges places to serve the customers	1	2	3	4	5
6	The company serves customers quickly	1	2	3	4	5

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Appendix 3: Participants Letter (Arabic Version)

استبانة

عزيزي المشارك:

تهدف رسالة الماجستير هذه إلى دراسة " أثر ممارسات الانتاج الآني على الأداء التشغيلي في مطاعم الوجبات السريعة الاردنية".

يحتوي هذا الاستبيان على 36 سؤالًا، والذي قد يستغرق 10 دقائق للإجابة عليه؛ لذلك، سنكون ممتنين على تخصيص وقتك الثمين للرد عليه.

علماً أن إجاباتك ستكون سرية للغاية وسيتم استخدامها لأغراض البحث فقط.

مرة أخرى، نقدر مشاركتك في هذا البحث. من فضلك، إذا كان لديك أي أسئلة أو تعليقات، يرجى التواصل معي على (shahadaljanabi49@gmail.com).

شكراً جزيلًا لتعاونكم.

الباحثة: شهد غازي الجنابي.

المشرف الأكاديمي: الدكتور عبد العزيز الشرباتي

الاستبانة

الجزء الأول: المعلومات الديموغرافية

اسم الشركة:
الجنس:
□ ذكر □ أنثى
العمر (بالسنوات):
□ أقل من 20 □ 20-35 □ 35-45 □ فوق 45
التعليم:
□ ثانوية □ دبلوم □ بكالوريوس □ ماجستير
الوظيفة:
□ موظف □ مشرف □ مدير
الخبرة:
□ أقل من 3 □ 3-5 □ 5- 10 □ 10 فأكثر

الجزء الثاني: توضح الأسئلة التالية أثر متغيرات الانتاج الآني على عناصر الأداء التشغيلي. يرجى الإجابة على الأسئلة التالية بناءً على معرفتك وخبرتك، اخذاً بعين الاعتبار أن:

[1 = غير مطيق بقوة، 2 = غير مطبق، 3 = محايد، 4 = مطبق، 5 = مطبق بقوة].

الإنتاج الآني (JIT)

الشراء في الوقت الآني (JIT Purchasing)

1	تقوم الشركة بتحديث المعلومات الكاملة عن الموردين.	1	2	3	4	5
2	تختار الشركة الموردين المناسبين.	1	2	3	4	5
3	تشرك الشركة في التنبؤ مع الموردين.	1	2	3	4	5
4	تعامل الشركة مع موردين محددين.	1	2	3	4	5
5	تتبادل الشركة تدفق المعلومات مع الموردين.	1	2	3	4	5
6	تتلقى الشركة المواد المناسبة مع الجودة المناسبة.	1	2	3	4	5

الإنتاج في الوقت الآني (JIT Operation)

1	تختار الشركة العمال المناسبين	1	2	3	4	5
2	توفر الشركة برامج تدريبية متخصصة.	1	2	3	4	5
3	تقوم الشركة بتحليل طلب العملاء.	1	2	3	4	5
4	تنتج الشركة وفقا لطلبات العملاء	1	2	3	4	5
5	تقلل الشركة من النقل غير الضروري.	1	2	3	4	5
6	تكرس الشركة وقت لصيانة الآلات	1	2	3	4	5

البيع في الوقت الآني (JIT Selling)

1	تقوم الشركة بتحديث قاعدة البيانات عن العملاء	1	2	3	4	5
2	تقوم الشركة ببناء ثقة قوية مع العملاء	1	2	3	4	5
3	توفر الشركة الترويج للعملاء المخلصين	1	2	3	4	5
4	تخدم الشركة العملاء في الوقت المحدد	1	2	3	4	5
5	تستجيب الشركة لشكاوى العملاء	1	2	3	4	5
6	توفر الشركة مقاعد مناسبة للعملاء	1	2	3	4	5

الأداء التشغيلي

الجودة (Quality)

1	تلبي الشركة توقعات العملاء.	1	2	3	4	5
2	تلتزم الشركة بتنفيذ معايير الجودة.	1	2	3	4	5
3	تتفهم الشركة ملاحظات العملاء.	1	2	3	4	5
4	تهتم الشركة بطريقة التعبئة والتغليف.	1	2	3	4	5
5	تطلب الشركة مواد ذات جودة عالية.	1	2	3	4	5
6	تخضع الشركة لمؤسسة الغذاء والدواء.	1	2	3	4	5

التكلفة (Cost)

1	تنتج الشركة بناءً على الطلبات	1	2	3	4	5
2	تقلل الشركة من وقت المعالجة.	1	2	3	4	5
3	تقوم الشركة ببناء علاقة طويلة الأمد مع الموردين.	1	2	3	4	5
4	تختار الشركة موردي المواقع الأقرب.	1	2	3	4	5
5	تنتج الشركة عدد محدد من المنتجات النهائية	1	2	3	4	5
6	تتلقى الشركة مواد محددة في الوقت المناسب	1	2	3	4	5

التوصيل (Delivery)

1	تتعامل الشركة مع شركات التوصيل الموثوق بها.	1	2	3	4	5
2	تقوم الشركة بتوصيل الطعام في الوقت المحدد وبحالة جيدة.	1	2	3	4	5
3	ترتب الشركة اماكن لخدمة الزبائن.	1	2	3	4	5
4	توفر الشركة اصناف متعددة من الوجبات.	1	2	3	4	5
5	توفر الشركة خدمة الطلب من المركبة.	1	2	3	4	5
6	تخدم الشركة الزبائن بسرعة.	1	2	3	4	5

Appendix 4: Name of the Fast Food Restaurants

No.	Name of the Restaurant	No.	Name of the Restaurant
1	Kebab express	22	Kendo
2	Avokado	23	Royal
3	Al sarwat	24	Al khal
4	Hamada	25	Restaurant B
5	Al harthia	26	Auckland
6	Al manqal	27	Chilli house
7	Reem	28	Steak and Grill
8	Zayoonh	29	Shawemarz
9	Bedkash	30	Shawerma Saj
10	Lebnani snack	31	Dr. Kushari
11	Laylati	32	Ajeenh Zaman
12	Seveen	33	Armando Snack
13	Abu ghazalh	34	Lathah Istanbul
14	Alaa Abu Awad	35	New face
15	Texas chicken	36	Steakanji
16	Al tazej	37	Chilli ways
17	Shawerma Aldaya’a	38	Abu hajlh
18	Sushito	39	Kiwi Mango
19	Badya al falooja	41	Archees
20	Al mousalli	42	Burger Joint
21	Feren O Ajeen	43	Boston chicken