Testing the Just-In-Time Inventory Model Effect on Organizational Effectiveness for Egyptian Manufacturing Industries

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Abstract

Inventories are playing vital role in every business, so organization needs to have proper control and management of inventories as it may lead to increase in manufacturing cost. A correctly managed inventory can significantly affect organizational effectiveness. Just in Time (JIT) has been treated as one of the best manufacturing methods to address issues related to all types of inventories and wastes. Thus, this research broadens the geographical range by measuring the relationship between inventory level and organizational effectiveness through JIT in the Egyptian context, using questionnaires with a final sample 517 respondents, at Egyptian industrially certified ISO standard businesses operating in a variety of areas for measuring inventory levels. The findings demonstrated that inventory level significantly affects organisational effectiveness via the mediating function of JIT inventory. This research recommended to decision makers to manage and reduce their inventory level as it is proved that inventories represent a poor method for managing an organization because it increases the cost of manufacturing. Also, to work on enhancing the organizational effectiveness (Aligning, Exploiting, and Mobilizing) by always working on solving any problem that could face the organization as well as developing the whole operation and make it more advanced. As well, apply the most advanced technologies and machines that support the process of JIT.

Keywords: *Organizational Effectiveness, Inventory Level, Just in Time, Manufacturing Industries, Egypt.*

Introduction

Manufacturing companies have seen extraordinary difficulties on a global scale over the past three decades. Significant adjustments have been made as a result, which have affected the management strategy, the production and process methods used, customer satisfaction, the relationships with suppliers, and competitive behaviour (Antony et al., 2019). Global manufacturing companies have compelled by these difficulties to raise their performance levels to withstand internal and external demands (Panigrahi et al., 2019). This has been accomplished by implementing cutting-edge manufacturing procedures, enhancing product quality, lowering production costs quickly, and minimizing surplus capacity and inventory. Organizational management employed cutting-edge lean manufacturing methods, like just-in-time (JIT) to attain this goal (Kubiak and Yavuz, 2008; Laureani and Antony, 2012; Singh and Ahuja, 2014; Vinodh and Joy, 2012). Consequently, JIT techniques have become one of the essential research topics inside the operations management field. JIT was intended to be a "manufacturing method centred on reducing wastes and swift customer responsiveness" (Mullarkey et al., 1995).

According to various studies (Cobb, 1993; Mullarkey et al., 1995; Claycomb et al., 1999; Mia, 2000; Cua et al., 2001; Fullerton and McWatters, 2001; White & Prybutok, 2001; Aghazadeh, 2003; Fullerton et al., 2003; Boute, et al., 2004; Salaheldin, 2005; Kubiak & Yavuz, 2008; Chen & Tan, 2011, 2013; Singh & Ahuja, 2014; Meybodi, 2015; Sabry, 2019; Jenkins, 2020) the primary goal of JIT is to concentrate on streamlining the manufacturing cycle and removing all waste while adopting continuous improvement to produce a process free of errors (Jenkins, 2020). Additionally, JIT techniques improves the timely receipts of materials from various suppliers; purchase functions; preventive maintenance; increase worker participation; improve timing of received material and its quality; improve effective employment of people, equipment, materials, and parts; increase space utilization, boost competition, and simultaneously cut back on paperwork (Petersen, 2002; Aghazadeh, 2003). Mullarkey et al. (1995) described JIT as a manufacturing "pull" system, since it only produces when there are specific needs from external consumers and demands from downstream operations.

Cobb (1993) stated that manufacturing companies all across the world had considerably profited from the just-in-time inventory strategy. Because it makes it easier to use contemporary lean manufacturing practises, improves the utilisation of assets and customer happiness, fosters organisational growth, and increases profitability and market share (Ahn et al., 2008; Waller et al., 2008; Womack & Jones, 2003; Singh & Ahuja, 2014). Unfortunately, despite the success of organizations who implemented JIT approaches, many of these businesses have been unable to collaborate their inventory management processes to achieve improvement in their performance (Fawcett et al., 2007; Yao & Dresner, 2008, Fawcett et al., 2010). Production processes have significantly improved over the past 50 years as a result of firms' efforts to attain Zero Inventory manufacturing. However, it is still non-value-adding even after automating operating activities (Lyu et al., 2020; Sirisha et al., 2022). In truth, this failure stems from the fact that only a small number of businesses have been able to implement the profound philosophical and operational changes necessary to manage inventories cooperatively (Frankel et al., 2002; Ngubane et al., 2015). Companies have also made significant investments to acquire the technology and establish the organizational frameworks required to synchronize data in systems and enable coordinated and planned inventory flows (Fawcett et al., 2006). High-quality tracking tools, frequent, clear communication, fast coordination efforts, and open disclosure of private strategic goals are necessary. As a result, many organizations do not implement such initiatives (Fawcett et al., 2010).

Review of pertinent literature demonstrates that for the JIT philosophy to be successfully applied, various modification attempts must be made before the implementation phase (Salaheldin, 2005). Before a manufacturing organisation can benefit from JIT, it must adopt JIT and gradually integrate JIT activities throughout the entire organisation over a long period (Cua et al., 2001; Salaheldin, 2005). In addition, a review of related literature reveals that there is not much research come up with solutions on JIT deployment in developing countries (Sleuwaegen & Goedhuys, 2002; Salaheldin, 2005). Like many developing nations, Egypt struggles to recognize and address the significant issues impeding the expansion and development of its industrial sectors. High amounts of inventory, according to Salaheldin (2005), are one of these issues. Although, JIT is a cutting-edge method for managing large amounts of inventory, Egypt's empirical research is thought to be quite limited (Salaheldin, 2005; Hashim, 2010). Nevertheless, handling substantial amounts of inventory is essential in today's business dynamic and competitive environment-not just in Egypt, but everywhere. Managing high level of inventories is very important for many reasons. To begin with, holding of high level of inventories is a sign of poor management, because inventories lead to increase in manufacturing cost (Boute et al., 2004). Additionally, almost one-third of all logistical expenditures go toward the cost of keeping inventories (Johnston, 2014). Inventory managers in industrial sector are under increasing pressure, to reduce inventory costs, enhance the movement of goods through the supply chain, and promptly satisfy consumer demand (Beheshti, 2010). Finally, according to Ravi (2008), a correctly managed inventory system can significantly increase the firm's performance and productivity by cutting expenses associated with intra- and inter-firm inventory management operations (Beheshti, 2010). Moreover, Aghazadeh (2003) indicated that JIT has been treated as one of the best

manufacturing methods to address issues related to all types of inventories and wastes. Despite this, practices of JIT have not received considerable attention in the field of manufacturing strategy research (Grant, 2013). Sabry (2019) also confirmed that this gap in the literature is more pro-found in Egypt. Hence, the current study purposes to close this knowledge gap by providing an understanding of the common just-in-time inventory strategies used in Egyptian manufacturing sectors to improve organizational effectiveness.

According to the above introduction, a review of literature is presented in the following section. The third section displays the research methodology. The fourth section introduces the findings and results of data collected and analysed for the current research. The fifth section discusses the results obtained and derive the conclusion for the current research.

Literature Review

Boute et al. (2004) stated that holding of inventories is realized as a poor method for managing an organization, because these inventories increase the manufacturing costs. Therefore, every business must effectively manage its inventory because a weak inventory system results in a loss of clients and, subsequently, a reduction in sales. Increased sales for the company can be a result of effective inventory management, and this directly affects how well the business operates (Sheakh, 2018). JIT has deemed the greatest manufacturing technique for concentrating on issues related to all types of inventory and wastes. The majority of literature views inventory as a crucial operational performance indicator of JIT implementation because JIT is supposed to minimize work-in-progress (WIP) and finished product inventories (Mackelprang & Nair, 2010; Chen & Tan, 2011). Aghazadeh (2003) claims that the Japanese auto industries viewed JIT as a development of inventory management theory. According to Song et al. (2020), planning and managing the supply of balancing supply and demand is what capacity and inventory management are concerned with. Therefore, the effective flow of goods and raw materials, as well as their storage, are necessary for the supply chain to succeed (Perera et al., 2020).

Review of pertinent literature pertaining to this topic reveals that the majority of research in the industrial sector concentrate on western enterprises since the understanding of systematic inventory management predominates mostly in the west. One of the few studies, Elsayed and Wahba (2016), examines the relationships between maintaining inventories and organisational performance in the setting of Egypt from the viewpoint of an organisational life cycle. He advised more study to gather more information on the topic. To get insight into the just-in-time inventory methods that are frequently used in Egyptian industrial sectors, it is necessary to assess the advantages of just-in-time inventory deployment as well as the common challenges Egyptian businesses encounter. To provide a thorough and accurate summary of the literature evidence, a review is conducted using a systematic literature review.

Inventory management

In many businesses, excellent inventory management is the cornerstone of efficient operations, where failure to manage inventory could result in an increase in stock losses, failed deliveries of items, the suspension of production, and other negative effects on the functioning of the business (Hançerlioğulları et al., 2016; Abd Karim et al., 2018). Management of inventory is a series of processes and continuous tasks that depend on many factors. Consequently, there are various factors that affect the firm inventory levels, these factors are: Firm size (Rumyantsev & Netessine, 2007; Johnston, 2014); JIT and lean systems (Demeter & Matyusz, 2011); IT investments (Mishra et al., 2013); profit margin (Blazenko & Vandezande, 2003); uncertainties related to customers' demands (Hasani et al., 2019). This is why management of inventory is considered to be one of the most complex processes of a business. Since bad inventory management puts the life of the company at risk by taking up space, straining resources, and increasing the danger of damage, spoilage, and loss; so inventory management is a crucial aspect of any organisation (Lwiki, et al., 2013; Karim & Nakade, 2019; Friday et al., 2021). Inventory management poses several difficulties for many supply chains,

according to (Sbai et al., 2022), as they get more complicated and have more phases. Additionally, Barker et al. (2022) offered evidence that supplier inventory leanness interacts with the business's own inventory leanness to indirectly affect the financial performance of the focus firm.

Additionally, a corporation should be able to gain the maximum profit at the lowest expense in order to perform well (Mohamad et al., 2016). As a result, Li et al. (2021) investigated how to decrease both the mean and variation of lead time by making a straightforward switch from a serial to a parallel supply chain structure. Additionally, Sadeghi and Mahmoodi (2022) developed a strategy that improves customer service while at the same time reduces the estimated total cost. Jacob et al. (2021) examines the examination of self-service inventory in a self-service setting with a general lead time and a positive service time. Hence, lower inventory and better performance are positively connected, according to certain studies on the subject (Deloof, 2003; Chen et al., 2005; Koumanakos, 2008; Ramachandran and Jankriaman, 2009; Pong and Mitchell, 2012).

Some scholars contend that this method can still be enhanced by altering the raw metrics for specific macroeconomic variables, e.g. the interest rate, the GDP, etc. (Chen et al., 2005, 2007). Other researchers concurred that key inventory factors, including as gross margin, increasing sales, etc., can alter this strategy (Kolias et al., 2011; Eroglu & Hofer, 2011; Chan et al., 2017; Breivik, 2019). A significant portion of research has demonstrated a link between relative inventory levels and a firm's long-term value (Chen et al., 2005, 2007; Alan et al., 2014). However, it should be noted that the application of a particular approach to inventory management should be determined by the strategy of the company and the resulting strategy of inventory management (Ravi, 2021).

Just in Time

According to earlier research, defining a company as a "JIT firm" might range from adopting an inventory control system to fully integrating JIT concepts throughout the entire manufacturing system. Even though the precise definition of JIT is still unknown (Mia, 2000), top manufacturing firms continue to appreciate its advantages over rivals in terms of "higher quality, efficient material flow, and increased employment involvement." JIT is still the most "often used term to describe this extensive manufacturing method" (White & Prybutok, 2001: 113). Without identifying themselves as JIT enterprises, many companies may use most JIT approaches as they were outlined in this research. In addition, Fullerton et al. (2003) discussed the connection between inventory and performance in a JIT situation and concluded that inventory turnover and organizational performance are positively correlated. Hence, JIT has been chosen as the mediating variable in this research.

Organizational Effectiveness

According to Upadhaya et al. (2014) and Lucianetti et al. (2019), the idea of organizational effectiveness has been used to performance measurement systems (PMSs) to research the degree of efficacy related to the implementation of the JIT (as shown in Table 1). As well, Augustine and Agu (2013) stated that inventory management is vital to the success and growth of organizations and indicated that there is significant relationship between good inventory management and organizational effectiveness.

Table 1: Organization Effectiveness Dimensions

Dimension	Description
Aligning Shows how the company adjusts its operations to its planned strategy.	- Making the connections between short and long-term goals more obvious. - Converting strategies into practical goals. - Matching organisations and tactics. - Making using the strategies a daily task for everyone. - Increasing employee awareness of their evaluation processes.
Exploiting As the company works to realize its strategic goal and develops a greater understanding of it.	- Explains the cause-and-effect links. - Investing more time and energy in conflicts that are connected to strategy. - Using new performance metrics. - Increasing senior management engagement in a formalization of a strategy. - Connecting performance measurements to corporate strategy.
Mobilizing Better communication/ motivation	- Building consensus around the firm's mission and goals. - Improving stuff communication inside the company. - Motivating human resources to comprehend their responsibilities within the company.

Source: Adapted from Lucianetti et al. (2019)

Results from Fullerton and McWatters (2001) demonstrated that inventory reduction improves organizational performance in a JIT environment. And many previous researchers have shown that company's performance can be improved as a result of better and more efficient inventory management (Claycomb et al., 1999; Koumanakos, 2008; Cheung et al., 2004; Shin et al., 2015; Mittal et al., 2014; Çelebi, 2015; Fu et al., 2015; Abd Karim et al., 2018; Ravi, 2021).

Therefore, the research aims to broaden the geographical range by promoting a measurement model for just-in-time inventory implementation - as a performance indicator of JIT - in the Egyptian manufacturing industries to enhance the organizational effectiveness.

Research Methodology

The research employs the concept of a systematic literature review to locate articles, survey reports, paradigmatic books, and master and doctoral theses about JIT, inventory, and organizational effectiveness using management data sources like Emerald Insight and Direct Science (Tranfield et al., 2003). Additionally, the aim of this study is to broaden the geographical range by promoting a measurement model for just-in-time inventory implementation - as a performance indicator of JIT - in the Egyptian manufacturing industries to enhance the organizational effectiveness, it could be classed as exploratory and deductive. The sample was chosen based on a census of total population of manufacturing companies that have Quality System (ISO 9001 certificates), according to the Industrial Modernisation Centre (IMC) database; as many researchers are believing that TQM and JIT have similar fundamental goals of continuous improvement and waste reduction to form a comprehensive and consistent set of manufacturing practices directed towards improved performance (Nakajima, 1988; Ohno, 1988; Powell, 1995; Schonberger, 1996). Therefore, manufacturing plants that have Quality System, are likely to implement JIT-Inventory system (Cua et al., 2001). Moreover, many firms may practice most JIT practices, as defined in this study, without identifying themselves as JIT firms.

The research unit of analysis is the companies' quality managers, supply managers, production managers in the Egyptian manufacturing industries, as they are considered the major source of information to achieve the research purpose. Survey research was selected for analytical validation out of the explanatory nature of this research. The information was collected with a structured questionnaire collected through one-to-one meeting with the managers in the Egyptian manufacturing industries. Multiple informants from each company have been used enhancing the validity of the research findings.

First, pilot study was carried out to test the reliability and validity of questionnaire using a number of 70 questionnaires, by using SPSS version 25.0. The pilot study shows that the questionnaire is reliable and valid. Accordingly, the questionnaire was distributed to the rest of companies till a total 517 responses were collected. This number was reached by contacting a number of 900 companies, while only 517 responded, yielding a response ratio of 57.4%.

Table 2: Research Variables Operationalization

Variables	Measures	References
Independent Variable Inventory level	- IL1: Determination of lead time material order. - IL2: Determination of quantity reorder points. - IL3: Determination of safety stock.	Sebayang et al., (2021)
Dependent Variable Organizational effectiveness	- Aligning - Exploiting - Mobilizing - (as illustrated in Table 1)	Lucianetti et al., (2019)
Mediating Variable Just in Time	- JIT 1: Organizational Culture, Managers Commitment, Employee Involvement & Work Place Firms - JIT 2: JIT Purchasing - JIT 3: Product/Manufacturing Flexibility, Facility Layout - JIT 4: Production System/Process Control, Kanban and Pull Production, Set Up Time, and Quality - JIT 5: Daily Schedule Adherence, Maintenance Management, Distribution & Transportation System	Pheng et al., (2011); Chen & Tan (2013); Meybodi (2015); Singh & Ahuja (2014)
Control Variables	- Size of company, Age, Experience, Industry Type, Challenges	

The questionnaire consists of three parts: The first part seeks demographic data including participant name (optional), gender, age, and the type of organization. The second part uses the following scale to assess respondents' perceptions of the research
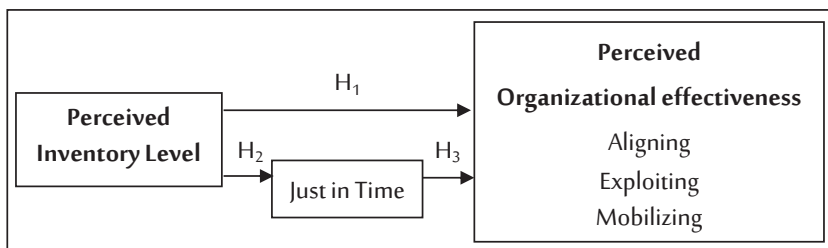

Figure 1: Research Framework

variables operationalization (as shown in Table 2 & Figure 1): Perceived Inventory Level, JIT performance, and Perceived organizational effectiveness. "strongly disagree" (1) and "strongly agree" (5).

Therefore, the previously discussed points lead to the following research hypothesis:

H1: There is a significant relationship between Inventory level and Organizational effectiveness

- H1.1: There is a significant relationship between Inventory level and Aligning
- H1.2: There is a significant relationship between Inventory level and Exploiting
- H1.3: There is a significant relationship between Inventory level and Mobilizing

H2: There is a significant relationship between Inventory level and Just in time

H3: There is a significant relationship between Just in time and Organizational effectiveness

H4: Just in time mediates the relationship between Inventory level and Organizational effectiveness

- H4.1: Just in time mediates the relationship between Inventory level and Aligning
- H4.2: Just in time mediates the relationship between Inventory level and Exploiting
- H4.3: Just in time mediate the relationship between Inventory level and Mobilizing

Findings and Results

Validity and Reliability Analysis

According to Sekaran (2013), the closer the reliability coefficient gets to 1.0, the reliability is better. In general, reliability coefficients less than 0.60 are considered as poor, those in the range of 0.70 are acceptable and those above 0.80 are considered as good. Table (3) shows the results of validity and reliability test of the research data.

All values of Keiser-Meyer-Olkin (KMO) are > 0.5. All Average Variance Extracted (AVE) values are > 50% and all factor loadings are > 0.400. The results imply that variables under study satisfy the validity levels required. All Cronbach's Alpha are > 0.7, implying that statements are consistent, and they are considered reliable.

Confirmatory Factor Analysis

Using AMOS 24 program for the analysis, the measurement model is conducted to test the extent to

Table 3: Validity and Reliability

Variables	KMO	AVE %	Cronbach's Alpha	Items	Factor Loadings
Inventory Level	.718	73.536	.820	IL1	.756
				IL2	.718
				IL3	.732
Aligning	.899	78.703	.932	AG1	.803
				AG2	.835
				AG3	.793
				AG4	.716
				AG5	.787
Exploiting	.823	57.034	.810	EX1	.601
				EX2	.521
				EX3	.578
				EX4	.612
				EX5	.539
Mobilizing	.683	70.011	.785	MO1	.768
				MO2	.640
				MO3	.693
Just in time	.899	78.780	.931	JIT1	.814
				JIT2	.877
				JIT3	.802
				JIT4	.601
				JIT5	.844

which the model is fitting using the constructs under study. The model fit indices show an acceptable level of model fitting. Such model fit indices are chi-square divided by the degrees of freedom (CMIN/DF) which was found to be 2.131 (good); P-value was 0.000 (< 0.05); the goodness of fit (GFI) was 0.935 (> 0.80); the adjusted goodness of fit index (AGFI) was 0.917 (> 0.80). The Bentler-Bonett normed fit index (NFI) was 0.953 (> 0.80) and the Tucker-Lewis index (TLI) was 0.970 (> 0.85). Additionally, the comparative fit index (CFI) was 0.975 (> 0.80). The root mean square residual (RMR) was 0.016 (< 0.09) and the root mean square of approximation (RMSEA) was 0.047 (< 0.10).

After checking the model fit indices, the factor loadings of the statements were computed. Table 4 shows that factor loadings (FL) are ≥ 0.40, which means that the constructs have adequate validity. Also, P-values are < 0.05, which reflects the statements significance.

Descriptive Analysis of Research Variables

Table 5 shows the mean and standard deviation values, as well as the frequencies for the research variables. It was found that the mean value of perceived inventory level is 3.9381, which means that average responses are in the agreement zone. Similarly, the mean value of Aligning is 3.7853, Exploiting is 3.7737, Mobilizing is 4.1954, and just in time is 4.2979. All values show that the average responses are in the agreement zone. This could be interpreted that even though respondents perceive inventory level, JIT and organization effectiveness as satisfactory, yet they did not claim they strongly agree. This indicates that there might be a zone for improving the research variables.

Testing Research Hypotheses

The structural equation modeling's correlation and path analysis are utilized to put the research hypotheses to test. To test the strength and direction of the link between two ranked variables are assessed using the non-parametric test of Spearman rank correlation; it shows how well a relationship between two variables could be described, namely whether one variable tends to rise or decrease when another increases (Weaver et al., 2017). Table (6) shows the correlation matrix for the relationship between all variables of the study. It shows a significant direct

Table 4: Item Loading after Confirmatory Factor Analysis

			Estimate	S.E.	C.R.	P
AG5	←	Aligning	.982	.037	26.642	.000
AG4	←	Aligning	.898	.039	23.241	.000
AG3	←	Aligning	.997	.038	26.489	.000
AG2	←	Aligning	.998	.034	29.225	.000
AG1	←	Aligning	1.000			
EX5	←	Exploiting	.864	.064	13.532	.000
EX4	←	Exploiting	1.000			
EX3	←	Exploiting	.978	.068	14.415	.000
EX2	←	Exploiting	.942	.069	13.665	.000
EX1	←	Exploiting	.876	.062	14.058	.000
MO3	←	Mobilizing	.872	.048	18.221	.000
MO2	←	Mobilizing	.787	.051	15.572	.000
MO1	←	Mobilizing	1.000			
JIT1	←	Just in time	.893	.027	32.857	.000
JIT2	←	Just in time	1.000			
JIT3	←	Just in time	.789	.025	31.521	.000
JIT4	←	Just in time	.644	.031	20.574	.000
JIT5	←	Just in time	.834	.024	35.329	.000
IL1	←	Inventory level	1.000			
IL2	←	Inventory level	.995	.053	18.613	.000
IL3	←	Inventory level	.976	.052	18.907	.000

Table 5: Descriptive Analysis for the Research Variables

Research Variable	N	Mean	Std. Deviation	Frequency				
				1	2	3	4	5
Inventory Level	517	3.9381	.65001	0	24	54	369	70
Aligning	517	3.7853	.71956	0	15	156	271	75
Exploiting	517	3.7737	.65076	0	18	127	326	46
Mobilizing	517	4.1954	.69504	0	0	84	248	185
Just in time	517	4.2979	.81665	0	29	31	214	243

Table 6: Correlation Matrix for the Research Variables

			1.	2.	3.	4.	5.
Spearman's rho	1. Inventory level	R	1.000				
		P-Value	.				
		N	517				
	2. Just in Time	R	.671**	1.000			
		P-Value	.000	.			
		N	517	517			
	3. Aligning	R	.748**	.756**	1.000		
		P-Value	.000	.000	.		
		N	517	517	517		
	4. Exploiting	R	.629**	.709**	.518**	1.000	
		P-Value	.000	.000	.000	.	
		N	517	517	517	517	
	5. Mobilizing	R	.737**	.840**	.689**	.695**	1.000
		P-Value	.000	.000	.000	.000	.
		N	517	517	517	517	517

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

moderate correlation between all inventory level and JIT, as the corresponding correlation coefficient is greater than 0.3 and statistically significant at 0.01. Also, there is a significant direct moderate correlation between Inventory level and organization effectiveness dimensions; Aligning, Exploiting and Mobilizing, as all the corresponding correlation coefficients are greater than 0.3, and statistically significant at 0.01. Moreover, there is a significant direct correlation between JIT and organization effectiveness, as the corresponding correlation coefficients are greater than 0.6, and statistically significant at 0.01.

The model fit indices are all in acceptable levels; CMIN/DF = 1.940, GFI = 0.931, CFI = 0.970, AGFI= 0.908, and RMSEA = 0.043. The SEM model is identified in Figure 2.

As shown in Table (7) and Figure (2), it could be observed that; the first hypothesis is partially supported: For the first sub hypothesis, it is supported, as Inventory Level has a significant positive impact on Aligning, as P-value < 0.05, and the estimate is > 0. The second sub hypothesis of the first hypothesis is not supported, where there is an insignificant effect of Inventory Level on Exploiting, as the P-value is more than 0.05. For the third sub hypothesis, it is supported, as Inventory Level has a significant positive impact on Mobilizing, as P-value < 0.05, and the estimate is > 0. These results are positively connected to many studies on the subject (Claycomb et al., 1999; Deloof, 2003; Chen et al., 2005; Koumanakos, 2008; Ramachandran & Jankriaman, 2009; Pong & Mitchell, 2012, Augustine & Agu, 2013; Panigrahi et al., 2019; Lyu et al., 2020; Sirisha et al., 2022). Therefore, when business managers have a fundamental understanding of inventory management techniques as well as the skills and abilities to apply the strategies, their ability to manage their inventory will be improved (Orobia et al., 2013). The results indicate that inventory level partially affect Aligning, where it reflects how the organization adapts its life to its intended strategy by aligning employee capabilities, activities and performance with the organizational strategic goals (De Leeuw and Van Den Berg, 2011). Also, the results suggest that organization should consider mobilizing people via better communication and motivation, culminating into building consensus. Specifically, building consensus around the firm's mission and goals, improving stuff communication inside the company, motivating human resources to comprehend their responsibilities within the company.

The second hypothesis is supported, as Inventory level has significant positive effect on JIT, as the P-value < 0.05, and estimates > 0. The result obtained is consistent with that obtained in previous studies (Fullerton et al., 2003; Demeter and Matyusz, 2011; Lwiki, et al., 2013; Bhushan et al., 2017; Karim & Nakade, 2019; Friday et al., 2021), since the purpose of JIT is to produce a unit in such a way that there is only one unit of work in process and a minimum stock of finished goods in inventories. Hence. decreased stocks and waiting times for inventory will improve quality and technical support, increased production, and decreased waste.

The third hypothesis is partially supported as JIT affects Aligning and Mobilizing in a significant positive way (P-value < 0.05; Estimate > 0), these results are positively connected to many studies on the subject (Claycomb et al., 1999; Upadhaya et al., 2014; Lucianetti et al., 2019; Fullerton & McWatters, 2001). Because, the success of the JIT implementation is influenced by the support from the organization that promotes use of the JIT practices, as well, companies are unable to raise selling prices above a certain threshold

Table 7 The SEM Analysis for the Influence of the Research Variables.

			Estimate	P	
Just in time	←	Inventory level	1.195	.000	.705
Aligning	←	Inventory level	.971	.000	
Aligning	←	Size of company	.069	.008	
Aligning	←	Age	.086	.000	
Aligning	←	Experience	-.044	.159	.782
Aligning	←	Industry Type	-.004	.646	
Aligning	←	Challenges	.062	.011	
Aligning	←	Just in time	.012	.827	
Exploiting	←	Inventory level	.126	.149	
Exploiting	←	Size of company	.041	.164	
Exploiting	←	Age	.019	.516	
Exploiting	←	Experience	.037	.307	.584
Exploiting	←	Industry Type	.010	.384	
Exploiting	←	Challenges	-.021	.448	
Exploiting	←	Just in time	.440	.000	
Mobilizing	←	Inventory level	.521	.000	
Mobilizing	←	Size of company	.056	.038	
Mobilizing	←	Age	.068	.010	
Mobilizing	←	Experience	.009	.791	.802
Mobilizing	←	Industry Type	-.011	.268	
Mobilizing	←	Challenges	-.027	.286	
Mobilizing	←	Just in time	.334	.000	

in the current market environment. Therefore, the emphasis will be on looking inward to eliminate any costs that do not add to the final value. Thus, one of the most effective and tried-and-true business concepts is JIT. While, JIT has an insignificant effect on Exploiting as the P-value > 0.05, are different from previous studies as JIT strategy has an effect on the company strategic goal (Claycomb et al., 1999; Upadhaya et al., 2014; Lucianetti et al., 2019; Fullerton and McWatters, 2001). The results suggest that organization should appreciate the strategic intent and try to make it a reality by spending more time and effort on strategic-related issues, adopting new performance measures, explicating cause-and effect relationships, increasing the participation of top management in the formalization of the strategy and connecting performance measures to corporate strategy.
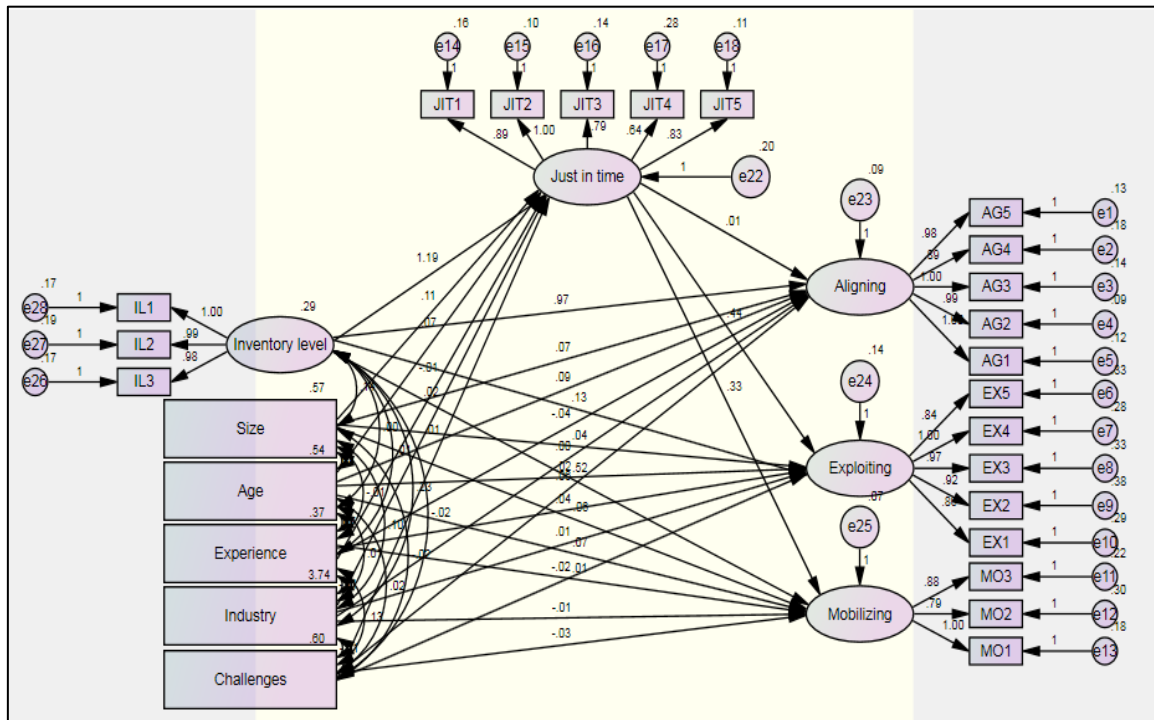

Figure 2: SEM for the Research Variables

The fourth hypothesis is partially supported, where, the first sub hypothesis "JIT mediates the relationship between Inventory level and Aligning" is partially supported. The second sub hypothesis "JIT mediates the relationship between Inventory level and Exploiting" is not supported. The third sub hypothesis "JIT mediate the relationship between Inventory level and Mobilizing" is partially supported. Despite that JIT is significantly important, yet, it is not always showing a mediation effect. These results are negatively connected to many studies on the subject (Salaheldin, 2005; Sim & Rogers 2008, Talib et al., 2011).

These results were not expected because the motivating staff, the role of human resource development, and having communication inside the company are necessary in planning, monitoring, and controlling inventory level. However, staff probably do not want to be responsible for excessive and uncontrollable inventory cost, due to failure of top management to involve employees in inventory management decisions. Also, this might be due to the lack of well-trained employees on inventory management (Guluma, 2019).

Organizational effectiveness is positively associated with size of company. The result is consistent with Buer et al. (2021) who confirmed that organizations with large business volume have higher level of digitalization and competence than those with small or medium business volume. This means that large firms may adopt a more thorough approach to a JIT due to the resources they have, which may have a greater im-

pact on organizational effectiveness. Also, this is consistent with what had been found by previous studies (Canning et al., 2020; Hock-Doepgen et al., 2021; Singh & Misra, 2021).

Older respondents may have a different perspective on how the JIT affects organizational effectiveness than younger respondents due to the years they might spent in the organization, which let them have a better vision of how to manage JIT for better effectiveness of the organization. Meyers et al. (2020) claimed that age is considered as one of the personal strengths characteristics of respondents which give them better chance for having better performance, which positively affects the organizational effectiveness.

Organizational effectiveness is associated with Challenges. This means that organization could be more effective when challenges facing the organization are less severe. Such challenges may be due to the increasingly dynamic environment (Harch & Festing, 2020). Also, other challenges like development and talent management significantly affect the organization effectiveness (Gallardo-Gallardo et al., 2020).

Conclusion

The current study aims to test the effect of inventory level on organizational effectiveness (Aligning, Exploiting, and Mobilizing) through the mediating role of JIT while having control variable (Size of company, Age, Experience, Industry and Challenges). Accordingly, four research hypotheses were developed to reach the research aim. Inventory level is measured through three indicators which consist of Three factors; determination of lead time material order, determination of quantity reorder points, and determination of safety stock. And JIT performance is measured through organizational culture, managers' commitment, employee involvement, and work place firms; JIT purchasing; product/manufacturing flexibility, facility layout; production system/process control, Kanban and pull production, set up time, and quality; daily schedule adherence, maintenance management, distribution and transportation system. then, organizational effectiveness is measured through three indicators which consist of different factors; aligning, exploiting, and mobilizing.

Quantitative data was collected from Egyptian industrially certified ISO standard businesses operating in a variety of areas using a questionnaire, with a final sample of 517 respondents. The study found there is a significant relationship between inventory level and organizational effectiveness. It depicts that the inventory level could be helpful to achieve organizational effectiveness in the Egyptian manufacturing industry. Also, there is a significant relationship between inventory level and JIT. It depicts that the inventory level could be helpful in implementing JIT in the Egyptian manufacturing industry. Moreover, there is a significant relationship between JIT and organizational effectiveness, which recommend manufacturers to perform JIT to achieve organizational effectiveness.

Furthermore, JIT mediates the relationship between inventory level and organizational effectiveness. It illustrates that inventory level is an important factor to consider for implementation of JIT management philosophy. So manufacturer must focus on inventory management systems to implement JIT and achieve organizational effectiveness.

Finally, without the support of senior management and employee participation, the advantages of JIT cannot be realized. Hence, to ensure production consistency for organisational profitability and effectiveness, managers should carefully monitor and adjust their inventory system. However, it is a challenge for manufacturing sector in the current unstable economic situation of Egypt to implement JIT in their production process which leads to zero inventory.

Hence, the current study proposed that organizations with large business volume could focus on older employees to solve challenges they might be facing within a certain industry internally and externally. This will directly help such organizations to implement JIT in their production process leading to zero inventory.

Research Recommendations

This research has some recommendations according to what was found in the results, recommendations are provided to decision makers (managers and owners of companies and government) and to current and future research.

Starting with decision makers, it is recommended to them to manage and reduce their inventory level as it is proved that inventories represent a poor method for managing an organization because it increases the cost of manufacturing.

Second recommendation is to involve employees in planning for achieving the company goals to be able to align operations with the company strategies.

Third recommendation is to keep managers' commitment towards employees to facilitate their operations and make sure that they are well aligned to company strategies.

Fourth recommendation is applying the most advanced technologies and machines that support the process of JIT.

Fifth recommendation is to design an automated system for daily schedule adherence to achieve company mobility with human resources as well as different operation levels in the company.

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