Uncertain Supply Chain Management 11 (2023) 87–94

Contents lists available at GrowingScience

Uncertain Supply Chain Management

homepage: www.GrowingScience.com/uscm

The effect of lean and agile operations strategy on improving order-winners: Empirical evidence from the UAE food service industry

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A B S T R A C T

This research aims to assess the impact of lean and agile operational strategies on improving order winners in the food service industry in the UAE. Research disclosed a few attributes with a dimensional review of lean and agile strategies that enhance strategic alignment in the food service industry of UAE to achieve the maximum benefits that have never been identified in research before. Data from 85 Sharjah-based food service companies were used for the analysis. A quantitative method with descriptive, causal and exploratory research design was used, along with convenient cluster sampling. A valid sample size of 255 respondents was used to assess the model through regression and ANOVA using SPSS. Research findings show a significant direct impact of lean strategies on order winners, and agile strategies significantly positively impact order winners. In contrast, both variables have a significant direct impact on order winners. This research is limited to assessing the impact of lean and agile strategies to achieve maximum order winners. Future research should consider a manufacturing industry to increase generalizability and a comprehensive focus on the lean and agile dimensional impact on competitive advantage. Customer loyalty and satisfaction lead a business toward order winners. An exemplary implementation of lean and agile strategies can translate into high business performance.

Article history:
Received August 25, 2022
Received in revised format October 26, 2022
Accepted November 20 2022
Available online November 20 2022

Keywords:
Lean Strategies
Agile Strategies
Order Winner
Food Service Industry UAE

1. Introduction

Modern supply chain strategies are emerging as the corporate environment becomes virtually global. Companies worldwide have spent money over time to increase the responsiveness, effectiveness, and efficiency of their production processes (AlShurideh et al., 2019). That is because there is a great demand for organizations to meet a set of 21st century challenges which minimize the production cost, responding efficiently to diverse customers' needs and reduced product-life-cycle (Gilaninia et al., 2011). To address this supply chain concept, this research focuses on conducting an empirical review of the food service industry in the UAE. In order to achieve higher customer satisfaction and business competitiveness, this research specifies order winners for the food service industry (Alshurideh, 2014; Shishan et al., 2021). Order winners are standards that distinguish a company's products or services from another company with respect to the fact that lean and agile paradigms should be selected according to marketplace requirements (Martin & Towill, 2000). These differentiating standards can be price, quality, reliability, size, dimension or all. It involves a series of interlinked tasks planned appropriately (Qi et al., 2017). According to Ambe (2009) and (Hallgren, 2007), it's important to investigate the concept of agile supply chain and how to

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doi: 10.5267/j.uscm.2022.11.007

be used to have a competitive advantage in the uncertain business world. Additionally, to have a competitive advantage, it is important to provide comprehensive links between operation strategies, supply chain strategies, supply chain integration and organization performance (Qi et al., 2017).

It has been claimed by Christopher & Towill (2001) that in the last part of the twentieth century, the lean production paradigm has positively influenced different business sectors ranging from construction to automotive. Furthermore, lean strategic system implementation is becoming a key capability for the food service company to sustain. Value-adding processes are required to achieve this excellence through order acquisition, as food services require prompt delivery and timely managed production according to consumer needs (Dingsøyr et al., 2012). Therefore, to achieve greater responsiveness to rapidly changing customer demands, agile manufacturing can be defined as a business-wide mindset characterized by a significant emphasis on often flexible structures and enhanced access to global competencies. Therefore, a vast food service industry of UAE is selected where the topmost successful companies have been selected to administer their strategies implication and their effects on order winning. This research is conducted to determine where food service companies can apply a lean and agile operation model so that their products' prices remain in check compared to other companies in the market.

2. Theoretical framework

2.1 Lean Operation Strategy

The lean operating model focuses on reducing waste and becoming cost-efficient. It helps reduce production costs and hence can be sold at lower prices than competitors and helps to increase customer satisfaction (Al-Dmour et al., 2021; Nuseir et al., 2021), attract new customers and retain existing customers. Lean manufacturing was initially designed to reduce waste and maximize resource usage (Al Kurdi et al., 2021; Kurdi et al., 2020; Sundar et al., 2014). Moreover, lean was developed in response to the competitive and sustainable business environment (Aburayya et al., 2020). However, businesses must contend with problems arising from the rapid improvements and order winning via customer loyalty. Such loyalty usually comes when the company focuses on linking its capabilities (such as speed, cost, productivity and distribution), which are all related to customer service and proactive quality (Morash, 2001). Adding on this, Olhager (2003) claimed that product delivery is essential in planning customer services which need to plan the order winner penetration carefully especially that is related to how to link a particular product to a specific customer order. Any company, manufacturing or service company ultimately relies on its ability to consistently and methodically respond to these changes to increase the output's value to survive (Alolayyan, Al-Qudah, et al., 2022; Altamony et al., 2012; Lyons & Ma'Aram, 2014).

2.2 Agile Operation Strategy

An agile strategy takes a "wait and see" approach toward demand, delaying product commitments until demand is known to make a customized product based on the customer demands (Stratton & Warburton, 2003). The agile strategy strives to assist businesses in becoming more competitive and successful under challenging conditions where change is continuous and unpredictable (Inman et al., 2011; Shakhour et al., 2021). To achieve a higher-level order winner, the companies maintain their production and delivery promptly, which can help to attain customer satisfaction (Alshurideh et al., 2012; Alwan & Alshurideh, 2022).

2.3 Order Winners

Order winning is a competitive advantage influencing customers to choose a company's goods or services, including quality, delivery speed, reliability, product design, flexibility, and image (Alzoubi et al., 2022). It is the primary factor driving consumer purchases of a company's goods (Alwan & Alshurideh, 2022; Hörte & Ylinenpää, 1997). For instance, the product's reliability and quality enhance the interaction to winning orders resulting in customer loyalty and business development. Order winning is fundamental to the competitiveness of organizational performance. Therefore, the food service companies require lean and agile operational strategies to gain more competitive advantage/order winners. The following shows the operation variables and their definitions.

Variables	Definition	Reference
Order Winners	*It is defined as the standards that differentiate a company's products or services from another company.*	*(Christopher & Towill, 2001)*
Lean Operating Model	*It is a quality production management technique that focuses on reducing waste and helping an organization become cost-efficient.*	*(Lyons & Ma'Aram, 2014)*
Agile Management Model	*It is a quality production management technique that enables the management to use a trial-error approach where the management implements a process and makes the necessary changes along the way, reassessing the process and making necessary changes again.*	*(Gunasekaran et al., 2019)*

In the UAE, the consumer food service industry has seen an increase in quick and casual services, with an average order value of 18 dollars in the first quarter of 2021. For instance, Talabat held more than 70 per cent of the nation's market share for food delivery services. Based on Euromonitor, the packaged food market in the UAE generated US$5.9 billion in retail sales in 2020. Compared to 2016, that is an increase of 20.9 per cent and just over $1 billion. Additionally, they predict that

by 2025, packaged food sales in the UAE will increase by US$1.3 billion, or 21.6 per cent, to approximately US$7.5 billion. This research assesses the extent of order winning in the food service industry when implementing lean and agile strategies.

3. Literature review

3.1 Relationship and impact of lean strategy on order winning

To increase market competitiveness, the successful implementation of the lean management process is about maximizing the customer's value proposition for a product by minimizing waste in the manufacturing process for management (Krishnamurthy & Yauch, 2007). The same concept of lean management applies to the service sector as well. Toyota's production system, known as TPS, was one of the few first companies to introduce the lean production process in their manufacturing unit. The TPS combines several methods and tools to become cost-effective by reducing waste and cutting costs. This system became its order winner in the 1970s (Christopher & Towill, 2001).

H_1: *Lean Operations Strategy has a significant impact on order winners.*

3.2 Relationship and impact of agile operational strategy on order winners

Feasibly, the key elements of an agile supply chain are demand-driven inventory, excess buffer capacity, market visibility, quick customer response, dynamic partnerships, supplier flexibility, and reduced lead times that enhance sales volume by attaining customer satisfaction (Alolayyan, Al-Rwaidan, et al., 2022; Krishnamurthy & Yauch, 2007). The agile operational strategy aims to quickly respond to market developments that alter a business development capacity to enhance business competitiveness, resulting in more buyer loyalty and, to a greater extent, winning orders (Abuanzeh et al., 2022; Lyons & Ma'Aram, 2014).

H_2: *Agile Operations Strategy has a significant impact on order winners.*

3.3 Relationship and impact of lean and agile strategy on order winners

The crucial organizational objective is to implement the lean production management model to eliminate all activities that do not add value to the final product. This helps to become cost-effective by minimizing waste and saving time. According to Calderon, there are five essential principles for the lean production model which is valuable to the product; value stream, such as raw material, processes, equipment, and the flow of the production; pull, which is just-in-time product manufacturing to eliminate waste; and perfection which is achieved when all four of the above principles are met. The agile supply chain management approach focuses on responding more quickly to changes in markets and customer requirements (Qrunfleh & Tarafdar, 2013). Several studies have investigated the lean and agile supply chain's positive relationship with supply chain performance when the processes are correctly followed (Alshurideh et al., 2022). The agile models at the organizational level are increasing flexibility and customer satisfaction which is much desired in the current times and improves the order winners (Carvalho et al., 2011; Joghee et al., 2021; Lee et al., 2022).

H_3: *Lean and agile operational strategies significantly impact order winners.*

3.4 Problem statement and research gap

The research aims to identify various companies' outcomes by successfully implementing lean and agile operation management. Purposively this research will focus on how the lean and agile operation management model can bring positive order winners to the food service industry in the UAE. The most significant objective of the research is to determine the customer needs and accomplishment of the order based on their demand. Cost reduction, waste reduction, customer satisfaction and increased staff motivation refer to lean strategy. In contrast, flexibility improvement, quality improvement and reduction in lead time consist of an agile strategy that will allow this research to analyse the procedure to manufacture packs and deliver goods to its end user efficiently. Fig. 1 demonstrates the structure of the proposed method.

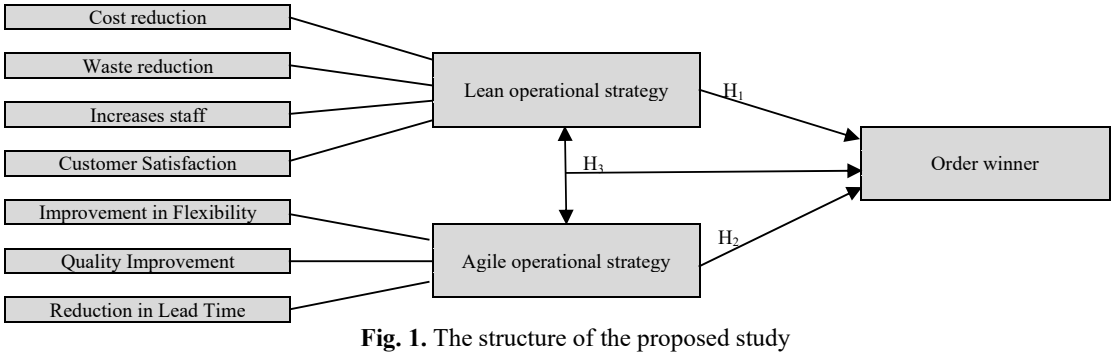

Fig. 1. The structure of the proposed study

3.5 Research Methodology and Design

The research aims to gather information from the food manufacturing industry in UAE to evaluate the empirical analysis of agile & lean operational strategies' impact on order winners. A descriptive, explanatory, causal and analytical research design utilized a survey questionnaire to evaluate the variables. Due to the huge industry size, a cluster sampling technique was used for Sharjah city in UAE. The primary data came from an online survey. The SPSS was used to analyze the demographic, reliability, descriptive, correlation, multiple regression and hypothesis testing.

3.6 Population, Sample & Unit of Analysis

The targeted population of the research is the food service industry of UAE, where the top 102 food service companies like; Al Douri Group and Delta Food industry FZC were used as a sample of the research. Nine hundred emails were sent to the correspondents (Managers, Line Managers, SC Managers and Delivery & packaging staff) 255 responses were received with valid data for further analysis. A 35 items research questionnaire designed to collect the responses (12 items to measure Lean Strategy) including dimensions; waste reduction, customer satisfaction, cost reduction and Increased staff motivation (10 items for agile operational strategies) with dimensions: improvement in flexibility, quality improvement and improvement in lead time, and (13 items used to measure order winning) using Five-point Likert scale from 1 strongly disagree to 5 strongly agree.

4. The results

4.1 Demographic analysis

Table 1 shows the summary of the results of the personal characteristics of the participants in this survey. As we can observe from the results, most participants were male and aged at least 35 years. In our survey, most participants hold a management position.

Table 1
Demographic Data

Item	Description	*f*	%
Gender	Male	184	72.2
	Female	71	27.8
Age	18-25	14	5.5
	26-35	64	25.1
	36-45	123	48.2
	45 and above	53	28.2
Designation	Manager	117	45.9
	Senior Manager	76	29.8
	SC Manager	33	12.9
	Delivery and Packaging Staff	29	11.4

N=255, Male=72.2%, Female=27.8%

4.2 Reliability, Descriptive & Correlation

To test the data reliability, Cronbach's Alpha was used, which showed a good reliability value to perform further tests. LS=.90, AS=.89 & OW=.74 revealed that the data is reliable enough to execute. Descriptive analysis shows the agreeableness of the questionnaire items with a value of (M=3.8 SD=85%) for LS. (M=3.4, SD=67%) for AS shows a good extent to agree. (M=4.2, SD=73%) indicates the majority strongly agree. Correlation results revealed the strong relationship of LS with OW by .716 and significant at level **P<0.05. AS indicates a positive relationship with OW by .656 and a significance level at **P<0.05. The value for LS and AS also showed a significant positive relationship with .855 and a significance value at level **P<0.05.

Table 2
Validity, Descriptive & Correlation summary

Variables	Cronbach's Alpha	Mean	Std Deviation	LS	AS	OW
Lean Strategy	.90	3.8	0.85	1		
Agile Strategy	.89	3.4	0.67	.855(**)	1	
Order Winners	.74	4.2	0.73	.716(**)	.656(**)	1

LS=Lean Strategy (M=3.8, SD=85%), AS=Agile Strategy (M=3.4, SD=67%), OW=Order Winners (M=4.2, SD=73%)
**P<0.001, **P<0.05*

4.3 Multiple Regression

Table 3
ANOVA analysis to Order Winners in Lean Strategy dimensions

	R	R²	F	Sig	df	Dimensions	β	t-value	Sig*
Order Winners	.736	.542	59.0	.000		Customer Satisfaction	.227	3.10	.000
					4	Increased Staff motivation	.505	7.86	.000
					251	Cost Reduction	.020	1.76	.005
					255	Waste Reduction	.177	3.08	.002

**Level of Significance (α≤0.05)* ***Critical t-value (df/p) = 1.64*

Table 4
ANOVA analysis to Order Winner in Agile Strategy dimensions

	R	R²	F	Sig	df	Dimensions	β	t-value	Sig*
Order Winners	.656	.431	55.8	.000	3	Quality Improvement	.237	3.25	.000
					252	Improvement in Flexibility	.312	4.01	.001
					255	Improvement in Lead time	.184	2.69	.007

**Level of Significance (α≤0.05)* ***Critical t-value (df/p) = 1.64*

4.4 Hypothesis Testing

Table 5 shows the data analysis of hypothesis testing that indicates that lean strategy significantly impacts order winner at P<0.05. Thus, the H1 is supported. Further results indicate agile strategy impact on order winner has a significant impact at level P<0.05; H2 is also supported here. In contrast, both variables lean and agile strategy significantly impact order winners at level P<0.05. The H3 is also supported.

Table 5
Hypothesis testing using regression coefficients

Hypothesis	Regression Weights	β	R²	Adjusted R²	p-value	Hypothesis
H_1	LS→OW	.716	.512	.511	.000	Supported
H_2	AS→OW	.656	.430	.420	.000	Supported
H_3	LS→AS→OW	.721	.520	.516	.000	Supported

**P<0.001, **P<0.05*

5. Discussion

The results of the research model indicate a significant impact of lean strategy on order winners, and agile strategy also has a significant positive impact on order winners. Table 3 shows the multiple regression that indicates lean strategy dimensions waste reduction significantly impacts order winning by β=.17, t= 3.08, indicating a positive impact. Cost reduction significantly impacts with β=.020, t= 1.76 depicts a moderately significant relationship. Customer satisfaction β =.227, t=3.0 critical value shows a good impact of customer satisfaction on order winners at level P<0.05. Increased staff motivation is another factor that gains more order winners. Adopting a lean strategy helps to grow customer demand by implementing a lean strategy that will gain a sustainable competitive advantage (Ahmed & Huma, 2021). Table 4 indicates the significant impact of motivation with order winner β=.505, t= 7.86 high critical value indicates a strong impact. Furthermore, the agile dimensions; quality improvement significantly impacts order winner at β=2.37, t=3.25 indicates a good impact. Flexibility improvement also significantly impacts order winner by β=.312, t=4.01 depicts a strong dependency. Improvement in lean time also significantly impacts order winner β=.184 t-2.69 showed a significant relationship. H3 is supported here. Various

studies investigated the agile strategy as a demand preferred order by customers to gain maximum customer satisfaction, quality improvement and business advantage (Yang et al., 2011).

6. Conclusion

The conclusion reveals that strategic alignment and implication of lean and agile strategies in the food service industry greatly influence maximum benefit. The ultimate advantage for food service companies is cost reduction, waste reduction that recycles the resources and becomes cost-effective, and production flexibility that helps deliver products based on the consumer needs. In contrast, an agile strategy enables businesses to refocus their efforts and resources swiftly, reducing the danger of costly investment by focusing on customized customer demands that could achieve the ultimate order winners. Additionally, markets are becoming less predictable and more volatile, so the need for more agile has increased.

7. Recommendations/Limitations

The researchers contend that adopting lean and agile approaches can significantly aid in developing business development, specifically in the food service industry, where people demand based on their tastes and experiences. This research suggests that food service companies improve their strategic development to retain customer orders. More focus on cost and waste reduction can increase resources and improvement in business performance. There are some limitations addressed for future research. First, future research should focus on manufacturing companies based in the UAE to increase generalizability. Second, future research can focus on the dimensional lean manufacturing approach.

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