



# Benchmarking leagility in mass services

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## The case of a fast food restaurant chains in Iran

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### Abstract

**Purpose** – The purpose of this paper is to investigate and highlight that the application of leagility can be possible in mass services as one type of services.

**Design/methodology/approach** – This paper describes a case study and considers the concept of the leagility in a mass service organization. By highlighting some of the characteristics of mass services, it examines whether or not this concept can be applicable in the context of mass services.

**Findings** – Despite the low customization in mass services, fast food restaurants have faced changing needs of the customers. To respond to these demands, the case study organization can adopt new strategies so that it could be able to serve the customer with short lead times, low costs and high variety.

**Research limitations/implications** – This paper considers leagility in a single mass service. Hence, in order to provide robust results in this type of services, more cases should be studied. It is also necessary to study leagility in other types of services that is, professional services and service shops.

**Originality/value** – Despite the importance of mass services in today's life, research have focused on the application of operations management's concepts in manufacturing sector. This paper has proposed the possibility of applying the leagility concept in a case study organization to show that mass services can benefit from the advantages of both lean and agile paradigms.

**Keywords** Agile production, Lean production, Mass production, Middle East

**Paper type** Case study

### 1. Introduction

The present business world characterized by volatile and changing demand progressively influences everything around business companies. In this situation supply chains are not an exception. Since industrial revolution in eighteenth century,

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businesses have faced many changes in their supply chains but these changes though evolutionary, has a recurring feature. The craft shop was the first supply chain that made what the customer exactly wanted but at a high price. Then, mass production emerged as a new supply chain and cut the high prices of craft shops so that everybody could buy the products at low prices. To achieve this low price, the variety was sacrificed and the customer had no option to choose. In recent decades, firms using new approaches such as mass customization, flexible manufacturing, lean production and agile manufacturing are again in an attempt to produce the customized products for each single customer, but this time at low prices.

Two of these strategies, lean production and agile manufacturing, had been studied by many researchers and academicians for many years (Womack *et al.*, 1990; Womack and Jones, 1996; Robertson and Jones, 1999; Christopher and Towill, 2000; Aikten *et al.*, 2002; Goldsby *et al.*, 2006; Ramesh and Devadasan, 2007). In 1980, lean thinking attracted a great deal of interest in business environment and after that, in 1990, agile manufacturing emerged as a new strategy to companies. The former was a reaction to old production strategies, which included full of wastes and unsatisfactory quality, while the latter was a response to changing customer demand. Some authors have suggested that agility is the next step after leanness, that is when lean principles are implemented in a system, then agility is the best to be achieved (Hormozi, 2001; Mason-Jones *et al.*, 2000b) and although lean and agile paradigms have different goals, can be successfully combined within a total supply chain (Mason-Jones *et al.*, 2000a). This idea has led to the emergence of the hybrid strategy, “leagility,” which separates these two paradigms in a total supply chain using a strategic stocking point called “decoupling point.”

These strategies and all other strategies in operations management (OM) have been first and mostly discussed in manufacturing field. In fact the service sector has been treated as a “rival wife” in business world. It is argued that service benchmarking is made more difficult than benchmarking in manufacturing (Motwani and Sower, 2006). It may be due to intangibility and non-physical aspect of services, which makes it more difficult to examine these new concepts within service context. However, it seems there are some areas in service sector where embrace the manufacturing-based concepts much easier than other areas. These are mass services which are product focus, namely the emphasis is on what the customer buys.

In recent years the service sector has played an important role in the economy of countries. Therefore, it is required to academically re-evaluate the operations logic in services (Piercy and Rich, 2009). Accordingly, considering the possibility of adopting new ideas (which are discussed and implemented in manufacturing firms) in services seems necessary. In this context, different authors such as Akkermans and Vos (2003), Blanchard *et al.* (2008), Kumar *et al.* (2008), Piercy and Rich (2009), Prajogo (2006) and Sigala (2006) have argued on the subject of the benchmarking of OM's concepts from manufacturing to services.

The focus of this paper is on the applicability of leagility in mass services. To this end, this paper first deals with the literature about lean, agile, and leagile paradigms. Then, it dedicates some paragraphs to service sector, especially mass services. This is followed by the application of leagility in mass services. A case study method is conducted in Section 2. This paper concludes with discussion, limitations of the findings and suggestions for future research.

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## 2. Leanness, agility, and leagility

To establish the right supply chain strategy, the type of product produced should be identified. There are two types of products, functional and innovative (Fisher, 1997). Functional products are staples that satisfy basic needs of customers, have long life cycles and also stable and predictable demands. One example is toothpaste. Conversely, innovative products such as personal computers and fashion apparel are products with short life cycles, unpredictable demand and high variety.

It has been suggested that lean supply chain best suits functional products. Lean production systems (Womack *et al.*, 1990; Womack and Jones, 1996) have long been adopted in manufacturing sector and now it is moving towards service industries (Robertson and Jones, 1999). Although lean production has its roots in Toyota production systems (Ohno, 1988), it has been said that leanness has been first utilized in Spitfire production in UK during World War II (Aikten *et al.*, 2002). Leanness is about doing more with less and as Naylor *et al.* (1999, p. 108) have argued “Leanness means developing a value stream to eliminate all waste, including time, and to ensure a level schedule.” It also relates to concepts such as total quality management, equipment management and preventive maintenance, pull system and just-in-time (JIT). In fact, it is a collection of practices working together synergistically to create a streamlined and high-quality system that produces finished products at the pace of customer demand with little or no waste (Narasimhan *et al.*, 2006).

In order to serve the customer with short lead time, the lean system produces the inventory in advance, similar to mass production, but what distinguishes lean production from mass production lies on the forecast horizon, i.e. if the horizon in mass production is months or years, but in lean system it is two weeks or less (Goldsby *et al.*, 2006). To afford such an accurate forecast, great attention should be focused on the customer.

Despite the foregoing benefits, lean still has its own limitations. The ever-changing market conditions are the barriers that lean may not be robust enough to cope with (Banomyong *et al.*, 2008). It is in these circumstances that agility arises. The Origin of agile manufacturing principles goes back to Agility Forum by a group of researches at Iacocca Institute, Lehigh university in 1991 (Ramesh and Devadason, 2007). Agility is “using market knowledge and a virtual corporation to exploit profitable opportunities in volatile marketplace” (Naylor *et al.*, 1999, p. 108). The attributes of agility noted in literature highly suit to those of innovative products, so it can be said that the suitable supply chain for innovative products is an agile supply chain. Agility is a holistic and strategic idea (Power, 2005) and a “business-wide capability” (Christopher and Towill, 2000) shed light on all aspects of a supply chain including internal structure and trade partners, but the most important prerequisite to achieve agility is the culture compatible with agile enterprise, that is the people side of the supply chain (Aikten *et al.*, 2002). The application of agility into the strategy of an enterprise ensures that it can compete effectively with competitors against order requirements (Bennett and O’Kane, 2006). The key to be agile is service level, comprising flexibility and responsiveness, which is called the market winner of an agile supply chain against the cost, which is the market winner of leanness. On the other hand, the market qualifiers for the former are quality, cost, and lead time while quality, lead time and service level are the market qualifiers of the latter (Mason-Jones *et al.*, 2000a). It has been also stated that innovative or agile supply chains, when compared to functional or lean supply

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chains, require a far greater degree of volume flexibility and slightly more mix flexibility. However, it has the same degree of delivery flexibility to lean supply chains (Naim *et al.*, 2006).

Although leanness is a prerequisite for agility (van Hoek, 2000), it looks that the stability required for low cost and the flexibility required for agility makes visible contradiction (Robertson and Jones, 1999). So, despite the contradiction, the key question is that “can these two paradigms co-exist in a total supply chain?” In their paper, Naylor *et al.* (1999) give their positive answer to this question and argue that although different, but these two paradigms can be applied in a total supply chain using a strategic inventory point called “decoupling point” which upstream of that the supply chain can exploit lean characteristics and downstream from the decoupling point agility can be utilized. This hybrid supply chain is named “leagility.” Therefore, leagility is the combination of leanness and agility within a total supply chain strategy using a decoupling point so as to best suit the need for responding to the downstream volatile demand while providing level scheduling upstream from the market place (van Hoek *et al.*, 2001). The decoupling point is also defined as:

[...] the point in the product axis to which the customer’s order penetrates. It is where order driven and forecast driven activities meet. As a rule, the decoupling point coincides with an important stock point – in control terms a main stock point – from which the customer has to be supplied (Mason-Jones and Towill, 1999, p. 16).

At this point, a buffer is hold to respond to fluctuating customer demand downstream from the point. Upstream from the decoupling point the demand is predictable and the products are produced in a standard and modular way, so the benefit of cost minimization can be achieved. Related to the concept of decoupling point is postponement. In postponement final customization is delayed until customer orders are received (van Hoek, 1999). The application of postponement in business dates back to 1920, which was used by companies such as Benetton and Hewlett Packard (Boone *et al.*, 2007).

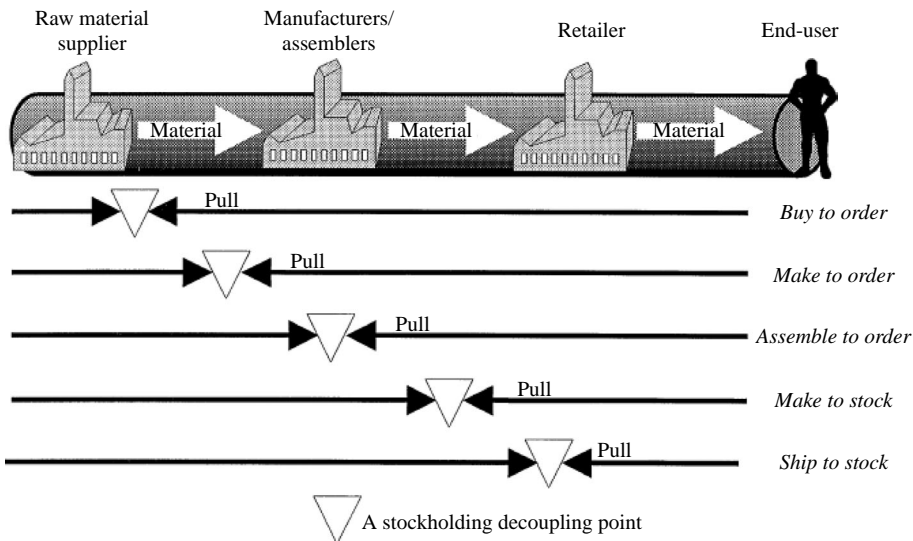
In order to determine which of the paradigms (lean, agile, and leagile) can be utilized in a total supply chain, different types of strategies in which the decoupling point is located in different locations of the total supply chain is proposed in literature. These strategies are shown in Figure 1.

In a leagile supply chain in which the demand can be forecasted, an “assemble to order” is the appropriate strategy (Huang *et al.*, 2002).

#### *Leanness and agility in services*

While service supply chain is an interesting research area, only few service industries have been investigated in this context (Vandaele and Gemmel, 2007). The effective benchmarking in delivering lean supply chain has been demonstrated in other industries (Manning *et al.*, 2008), but in service sector it has been limited. One of those in services is Emiliani (2004), which discussed lean practices in higher education and identified outsourcing, technology initiatives and collaboration as the three key methods to reduce cost and improve efficiency in this sector. Also, Piercy and Rich (2009) propose the suitability of basic lean methodologies like value understanding in the pure service context.

Owing to the special characteristics of services (simultaneous production and consumption), agility is an important factor in this context. Agility in services has been



**Figure 1.**  
Different supply chain  
strategies

Source: Naylor *et al.* (1999)

the focus of some researches. Davies and Drake (2007) contend that to achieve significant improvement in quality, home care service providers must increase agility. Oloruntoba and Gray (2006) also develop a model of an agile supply chain for humanitarian aid agencies.

While leanness and agility have been paid attention in the supply chain literature, it seems that no research has studied the application of leagility in services, especially mass services. As argued, the key challenge in leagile supply chain is to determine the location of DP.

### 3. The service sector

The role of services has changed so as to they are not no longer seen solely as a complementary part of core technological know-how in innovation (Smedlund, 2008). Services, by their growing importance in a nation's economy have attracted a great fame and popularity (Johnson, 1994). However, the new initiatives in OM are first studied and implemented in manufacturing sector. It may be because of the tangibility and visibility of manufacturing products, which make the consideration easier. Totally, manufacturing tends to be the *locus* of OM's innovations much more than service (Bowen and Youngdahl, 1998).

Services should be industrialized by applying techniques found from manufacturing (Hyötyläinen and Möller, 2007). The literature on service shows the application of manufacturing-based concepts in a service environment (Voss, 1992). In fact, service delivery systems are supposed to be as a type of economic systems similar to manufacturing systems. Both goods in manufacturing and activities in services render certain kinds of services or benefits. Accordingly, services are assumed to be revealed by the use of goods (Jiao *et al.*, 2003).

The intangibility of outputs in services makes some difficulties in matching demand and supply since such output cannot be inventoried. This is, however, not meant that

lack of inventory is a characteristic of services and as exemplified by a restaurant, managing inventory of supplies can be very critical to the success of a service organization (Apte *et al.*, 2006).

The strong seasonality of demand in services presents problems in this sector. The presence of customer when the service is being offered is also another important issue in services (Adenso-Diaz *et al.*, 2002). This causes the service firms to have the lowest lead times to respond to the customer requirements. This makes services to be agile. The results of a recent study showed that 70 percent of respondents found buying services more difficult than buying goods (Ellram *et al.*, 2004). It should be also noted that services cannot be make-to-stock, but are by definition make-to-order.

While service sector has become a dominant driver of economic wellbeing (Dabholkar *et al.*, 1996), it seems that mass services have a high potential for growth and profit (Ng *et al.*, 2007). Therefore, paying attention to this type of services is necessary.

Although literature on services is extensive, just few authors have concentrated on mass services (Ng *et al.*, 2007; Olorunniwo and Hsu, 2006). As mentioned before, mass services have many customer transactions, little customization; the value is mostly added in the back office and they are also product focus. The last characteristic, namely "product focus," is the main focus in this paper, because according to leagile production the inventory should be positioned for the material decoupling point, but this time it is considered in the context of mass services which are product focus. In a product focus organization the emphasis is on what the customer buys (Silvestro *et al.*, 1992).

Too much can be discussed about mass services, however, since the purpose of this paper is not to detail this topic, a short summary was presented in this section. For more details the readers are referred to James and Clark (2002), Ng *et al.* (2007), Olorunniwo and Hsu (2006), and Schmenner (1986).

#### 4. Leagility in mass services

The application of leagility in services can be examinable from various dimensions. Services deal rather with customer-supplier dyadic relationships than with the unidirectional movement of physical goods (Vandaele and Gemmel, 2007). The presence of customer at the time the service is produced results in service uncertainty. It is uncertainty that makes managing a supply chain difficult (Ellram *et al.*, 2004). In service industries where the direct role of customer is more considerable (than manufacturing sector), firms should be aware of the increasingly sophisticated customer base (Parkinson, 1999). This issue leads to special problems in services. This problem may be even more rigorous in mass services where the service is offered to a large number of customers and where there are no highly customized orders which require long lead times. Thus, the customers in mass services expect low prices and at the same time, very short lead times. Expected lead time is very important because by using this dimension customer decides about whether or not to patronize a particular service firm (Goodale *et al.*, 2003). The lead time reduction requires the service provider to improve the capacity management in order to afford the demand in an efficient and effective way. The strategic use of capacity facilitates operational agility in a service organization (Sengupta *et al.*, 2006).

The intangibility of outputs in services makes some difficulties in matching demand and supply since output cannot be inventoried. This is, however, not meant that the lack of inventory is a characteristic of services and as exemplified by a restaurant, managing

inventory of supplies can be very critical to the success of a service organization (Apte *et al.*, 2006). Moreover, because mass services like fast food restaurants usually offer product-driven services, so they will not have usually the problems associated with pure or professional services in determining the inventory stocking point or decoupling point. Therefore, the combined benefits of lean and agile paradigms will help to reduce overall lead time and cost of the offering services. But the concern is about variety. In the literature it has been argued that mass services are characterized by low variety and low customization. Although the managerial objective in mass services is the maximization of the profit (Goodale *et al.*, 2003), in today's competitive environment variety is another thing and as it will be discussed, the case has faced some problems about variety. Sengupta *et al.* (2006) highlight that in comparison to manufacturing, the level of service customization and variety improve service sector performance. In their view, this is comparable to the concept of order qualifiers and order winners in manufacturing strategy, but for manufacturing organizations the application of product customization may have transitioned from order winners to order qualifiers. Thus, agility seems necessary from the two aspects of variety and lead time.

#### *Research questions*

The main objective of this research is to investigate and understand that leagility can be performed and operationalized in mass services. The major challenge for an organization is to be able to have the best of both worlds, to achieve the advantages of both lean and agile strategies. The literature shows that there are three general positions with respect to lean and agile: those who believe that they are distinct concepts that cannot co-exist, those who believe that they are mutually supportive strategies, and those who believe that leanness must be a precursor to agility (Krishnamurthy and Yauch, 2007).

The context of mass service is selected because it is product-oriented. This attribute makes us able to determine the strategic positioning of the material decoupling point. By applying leagility in mass services context, the combined benefits of lean and agile paradigms will help to reduce overall lead time and cost of the offering services. Other types of services like pure services are suggested for future research.

Although it may be criticized that there is no need to apply leagility to mass services because they have little customization which make them to adopt lean principles, it seems that the environmental uncertainty that is extended to all industries and organizations forces mass services to be able to respond quickly to different needs of customers, as is said by Ng *et al.* (2007, p. 477):

While mass services generally have lower levels of customization than professional services and service shops, managers must strive to semi-customize and personalize their service offerings.

In order to examine the aim of this paper, the following research questions are established:

*RQ1.* Can the leagility concept be applied to a mass service organization?

*RQ2.* If leagility can be applied to a mass service organization, then is it possible to distinguish between the lean and agile parts of the system using a decoupling point?

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## 5. Methodology

In order to study leagility in mass services, a case study research was conducted in fast food restaurants. Case study enables the researcher to gain a holistic view of a certain phenomenon or series of events and can provide a round picture since many sources of evidence were used (Mohd Noor, 2008; Yin, 2003). Therefore, a case study research methodology is employed to consider the leagility concept in fast food restaurants by examining one that shows both lean and agile characteristics.

The case study organization was selected because the authors found it one of the few fast food restaurants with multiple branches that have attributes of lean and agile paradigms. In preliminary discussions about the organization's combination of lean and agile, we began to wonder about how these two concepts could co-exist within a fast food restaurant chains and whether a decoupling point would be apparent. We formulated the research questions outlined above and initiated an in-depth investigation of the case study organization.

To gather data from this case study organization, interview was used as a tool for data collection. As the fast food company has seven branches, seven interviews were conducted with the sales representatives of each branch. The provisions manager and the chief executive manager were also interviewed. To ensure the accuracy and authenticity of the collected data, participant observation technique, as a part of a case study (Pålsson, 2007), was utilized. It is a means of collecting evidence in which a researcher seeks to become a member of a group, organization or events under study and requires skill, knowledge and understanding (Vinten, 1994). At this stage, data was collected through written notes and informal interviews.

The information collected from interviews and observations helped to create process maps for the case supply chain. Process mapping is a graphical tool depicts the steps that make up a process (Bashford *et al.*, 2002). It is commonly used for process improvement purposes. It simplifies work processes and gives a clear picture of the processes so that the analyzers will be able to readily see problems and improvement alternatives (Ungan, 2006). In this regard, the section below provides a general review of the studied case and then, in the next sections it offers some suggestions for improvement.

## 6. The case study

The case study organization includes fast food restaurants which are located in Iran. The fast food restaurants, as a mass service organization, are selected because they are product focus, i.e. the emphasis is on what the customer buys. They are equipment focus where the provision of certain equipment is the core element in the service delivery. In addition, in mass services the value is added in the back office, therefore it is expected that leagility can be examinable in the back office processes of mass services and the notion of Chase (1996) that the back office parts of service operations operate very much like a factory, can be supportive of our reasoning. These similarities of the fast food restaurants as a mass service with manufacturing sector make possible the examinability of leanness, agility and leagility in this kind. In sum, this kind of service provider has much of the characteristics associated to manufacturing.

Although service companies like fast food restaurants may not have the great invested properties and also numerous personnel like manufacturing companies, they have a great income and turnover. They also include a high portion of spending as



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people are tending to serve meals out in fast food restaurants because of the engagement that all members of families are involved in and also because of the increasing amounts that people are expending for hedonic activities and services. The selected case has seven branches and a central production unit. It has about 100 personnel which 30 of them work in the central production unit and the remainders are distributed in branches. The chain branches offer kinds of pizzas and sandwiches as well as desserts and appetizers. Because the main revenue of the case is gained from pizzas, we focus on the supply chain of this kind of product, that is, from now on when we say product(s), it means pizza(s).

*The past and present of the case organization*

The central department of the case organization procures the required raw materials from limited number of suppliers and has a long relationship with them. To decrease the storage costs, it has adopted JIT approach with its suppliers so that raw materials are replenished on a weekly base. The next goal is to achieve the daily replenishment to considerably reduce the storage costs. About ten years ago the case study organization had only one branch and the production unit was located beside this branch. Over time the case organization spread to seven branches throughout the region and each branch had its own production unit. To benefit from economies of scale, the management located a central production unit, which is relatively close to all branches. In the new case all processes engaged in producing the fast food's products are fulfilled in this central production unit. It is just the last step (i.e. cooking the pizza) which is performed within each branch. The production unit itself parts in two sections. The first section is where the subassembly of product is accomplished and the second section is where the final assembly is achieved. We use the terms "sub-assembly" and "final assembly" the same as for manufacturing because the processes pass a trend similar to manufacturing assembly lines. As the result of these actions a great amount of money which was allocated to production unit's space was saved. In the first status, when each branch had its own production unit, it was possible for the branch to customize the orders according to each customer's requirements. But in this way, the customer might wait a long time to receive its special order, especially in peak times when lots of customers are waiting in the queue. This meant high variety and high lead times for the customized products. In services expected lead time is an important issue that the customer uses to make decision about whether or not to patronize a particular service firm (Goodale *et al.*, 2003). In mass services especially fast food restaurants, where there is little customization, the service provider, therefore, should concentrate on lead time reduction more than variety. To this end, the management has shifted the production units to one central production unit, which supplies the products for all branches. Because of the particular circumstances of fast foods like perishability, the products are replenished on a daily basis for each branch.

According to the interviews, the demand for the products is to some extent predictable. The time horizon for this predictability is about one week. About 70 percent of the daily sales of the products belong to one kind of them. The remainders 30 percent of the daily sales belong to other kinds of the products. The products, also, have a long life cycle more than one year.

Another matter is about the production costs. The fierce competition in this industry has caused the case to focus on cost minimization. Implementing JIT and

shifting the branches' facilities to a central production unit are developed in alignment with these cost minimization efforts.

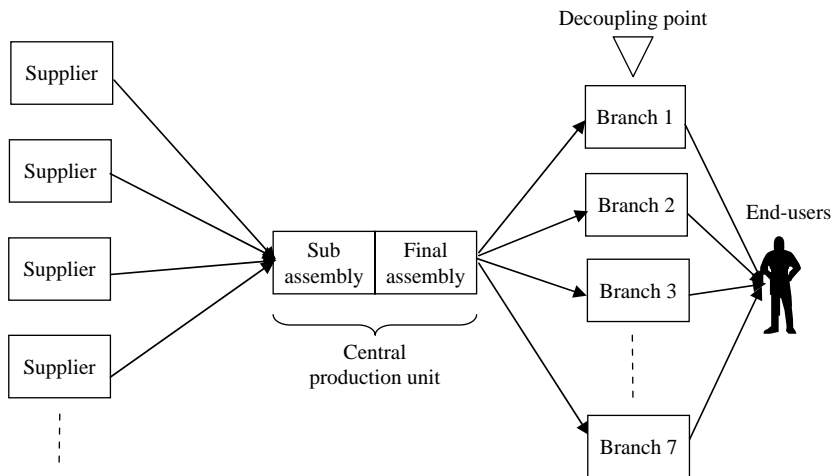
The main conclusion, we draw from the current fast food products is that they have many of the characteristics associated with Fisher's description about functional products. Totally, the principles of lean production are adopted for the total supply chain of these small and local fast food restaurants. It is said that the size of a production system affects the application of lean production. A small- or medium-sized production system with fewer processes makes easier the implementation of a lean system in terms of lower inventory both for work in process as well as finished goods (Krishnamurthy and Yauch, 2007).

*The location of DP in the present supply chain*

As mentioned, lead time has an important role in fast foods services. The current situation in which only the last step (i.e. cooking) is accomplished in each branch has resulted in a considerable reduction in lead time and has led to the improvement of service level. Figure 2 is the illustration of the existing supply chain for the fast food restaurants.

As shown in Figure 2, the decoupling point, in this case, is located at the branches. At this point, the customers' demand is just differentiated in terms of volume. In this case, a central production unit produces the products until the end of the final stage of assembly. The location of the central production unit is strategically close to all branches. The current strategy has resulted in cost reduction because the products traverse a standard trend. There is also a large saving in space costs. The lead time has also reduced to ten minutes which is an acceptable time for the customers.

One problem that the fast food restaurants have faced is about variety of offered products. This is because the final assembly is done at the central production unit. So the branch is not able to offer the products according to the customized orders.



**Figure 2.**  
The current supply chain  
of the fast food restaurants

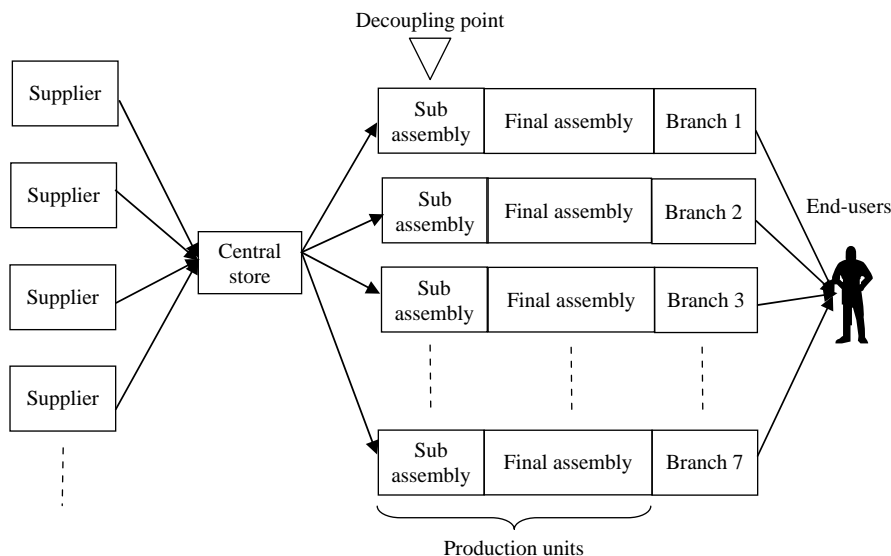
**Note:** Lean supply chain

In the next section, a leagile design will be proposed to show how case organization should act if it wants to benefit from both lean and agile characteristics of the supply chain. It also will be discussed that the case should adopt a twofold approach. For that portion of products with stable demand it should take a lean view (which is currently applied for the whole supply chain) and for products with changing demand it should adopt a leagile strategy.

## 7. Findings and discussion

### *The restrictions of lean and agile strategies*

Figure 3 shows the previous total supply chain strategy adopted by the fast food restaurants. In this agile strategy, each branch has a separate local production unit. These production units are located beside the branches. Similar to the central production unit in the lean supply chain, here the local production units part in two sections, the sub assembly stage and the final assembly stage. In this case, the decoupling point is located at the subassembly part of the local production unit in which the products can be customized from the early stages, thus each customer has his/her own respective order. To reach such a customization, the customer should tolerate a long lead time and as it was said, in services especially fast foods, long lead times are not acceptable for the customer. In addition to long lead times, the space and equipments allocated for each local production unit will increase the costs of production. The long lead time also increases the likelihood of leaving the service by the customer and if the service provider wants to add the capacity (e.g. by increasing the number of personnel), the costs of production would be again increased. In this case, the customer usually leaves the service, thus maximizing the profit is not practical. Generally speaking, although variety can be achieved but the long lead time which is unacceptable in fast foods, makes agile as an incompatible strategy in this case study.

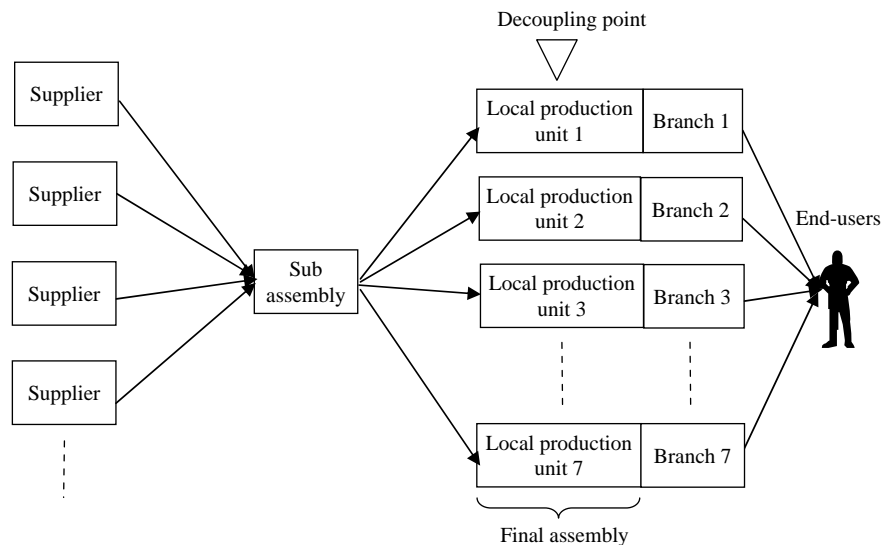


**Figure 3.**  
Agile supply chain of the  
fast food restaurants

Although the fast food services have had stable demand for their products but during the recent years the taste of the customers has changed and they expect the fast food restaurants to offer their respective customized orders. Hence, it seems that variety is a new factor for success in the competitive market of this kind. Despite the advantages of the current situation, that is lean strategy, there is no way for the customer to have his/her customized order. According to the findings, about 70 percent of the total sale is gained from one kind of the products which is the most popular one. For this portion of the orders lean strategy can be the right one, but the remainder 30 percent is not a dispensable percentage to be left aside. For instance, there are customers who are on special diets and need to eat their special foods or customers who have their special tastes. Therefore, lean production would not be an appropriate strategy for this part of supply chain of the fast food and if case organization wants not to lose the 30 percent customers who order customized products, it should revise its current supply chain strategy.

*Is leagility the best?*

To gain such a potential profitability from this part of customers, a leagile strategy is proposed. A leagile strategy is proposed because it seems that the case organization will have both moderate costs and variety in comparison to merely lean or agile strategies, respectively, which have been implemented previously by the fast food restaurants. In Figure 4, this proposed hybrid strategy has been shown. In this case, the first stages will be accomplished in the central production unit but the final assembly will be fulfilled in the branches, according to the customer's requirements. Therefore, the customization will be postponed until the final assembly stage. To utilize leagile strategy some space should be allocated for the final assembly. In this strategy, the required space is much less than that of the agile system, so there will be large saving in the space costs. Lead times will be also reduced and variety can be



**Figure 4.**  
The proposed leagile supply chain of the fast food restaurants

utilized. It should be noted that the case organization uses another concept called “transshipment.” Transshipment is the transference of stock between two or more locations at the same echelon level which provides each location with an additional source of replenishment. It facilitates the implementation of leagility by reducing costs of stock keeping and improving service level through lead time reduction (Herer *et al.*, 2002). Although leagile can be a good strategy, it cannot be the best for the total supply chain. The lead times are not yet acceptable for the customers. The customers who order the popular kind, which is produced in a standard way, expect shorter lead times than the lead times in the hybrid strategy, although this lead time is acceptable for the customers with customized orders.

*The proposed twofold approach*

This problem can be solved for these fast food restaurants by adopting a twofold approach. It means that it should utilize lean production for the customers who order the popular kind (70 percent of the total sale), as was discussed, and a leagile strategy for the customers who want customized products (the remainder 30 percent). In this case, the fast food restaurants will lose no customer with any kind of order. Although in this situation some space would be allocated for the final assembly both in the central production unit and in each branch, however this space could be even less than that of the leagile strategy and the benefits gained from adopting this strategy will cover the costs of space because there will be no customer left.

Table I compares data from the previous strategy of the case organization (agile strategy), the current supply chain strategy (lean supply chain), and data calculated based on previously implemented agile and lean strategies for the both proposed approaches (one approach is the application of leagile strategy for the whole supply chain and the other is the application of lean paradigm for the 70 percent of the products with stable demand and leagile strategy for the remainder 30 percent of products with varied demand). At the first strategy (lean), the allocated space is about 270 square meter. For more clarification, the required space for the central production unit is about 130 square meter and the required space for the cooking area is about 20 square meter for each branch (totally it is 140 for all seven branches). Therefore, the total production space for all branches is about 270 square meter. In the agile strategy, in which each branch has its own production unit, the total production space for all branches is about 700 square meter. According to the estimated data gained from the case study, this amount would be about 310 square meter for the proposed leagile strategy and also 282 square meter for the proposed twofold approach. This required space, for the twofold approach, is less than that of the leagile strategy, because 70 percent of the total production is fulfilled in a lean trend and just 30 percent of the total production is done through leagile strategy. This issue makes a little difference between the required space for these two proposed approaches (leagile and

Performance measures	Different strategies			
	Lean	Agile	Leagile	The twofold approach lean/leagile
Required space (square meter)	270	700	310	282
Lead times (minute)	10	40	20	10/20
Average costs of each product (rials)	3,500	5,500	4,000	3,500/4,000

**Table I.**  
Comparison between data  
from different strategies

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lean/leagile). The lead times for lean, agile, leagile and the twofold approach (lean/leagile) are 10, 40, 20, and 10/20, and the average costs of each product are 3,500, 5,500, 4,000, and 3,500/4,000, respectively. It should be also noted that the calculated data for the proposed leagile and twofold strategies are gained from experiences in implementing agile and lean strategies previously by the case organization.

The above evaluation of the strategies shows that the ideal situation would be the twofold approach (both lean and leagile strategies, simultaneously). In this particular case, the applicability of leagile part of this twofold supply chain is not possible due to some limitations. According to the interviews, the recent governmental regulations in Iran force the fast food restaurants to keep the production units completely apart from the distribution centers. This is because of the intense emphasis of the government on the health concerns. For solving this problem, a whole separate location can be established for the final assembly at each distribution center, but as mentioned before it would considerably increase the total cost of the product for the case study organization.

## 8. Conclusion

Leanness and agility have their particular advantages and each one can be applied in different situations. During the last decade, there have been some efforts to benefit from both strategies. Leagility is a concept aimed at combining lean and agile supply chains. This combination makes the total supply chain to afford the problems associated with both cost and service level. This concept has been studied in different industries of the manufacturing sector such as electronics (Mistry, 2005), food (van der Vorst *et al.*, 2001), lighting (Aikten *et al.*, 2005) and also shipbuilding (Sanderson and Cox, 2008). Because of the importance of services in gross national product and employment rates, much more attention should be focused on services and it is necessary to investigate manufacturing concepts in various parts of this sector. This paper contributes to the body of knowledge by considering the concept of leagility in mass services. It seems that no research has investigated leagility in the context of mass services. At the first glance it appears that leagility cannot be applied in services, especially mass services, but it was demonstrated that mass services have much of the characteristics associated with manufacturing sector, like product-focused dimension. This attribute helped us to determine the strategic positioning of the material decoupling point. The case of the fast food restaurants was proposed in this paper as an example of mass services. Although it may be criticized that they have low customization and that leagility cannot be applicable to this area, in recent years mass services like fast food restaurants have faced problems about variety, therefore it is necessary to change the attitudes and views about this type of services. Considering the possibility of applying leagility in a fast food restaurant chains, it was shown that the case organization as a mass service provider can benefit from both lean and agile strategies in its supply chain so that the costs can be reduced and at the same time the fluctuating demand of the customers can be responded. Despite the usefulness of leagility concept in supply chains, it seems that the application of this strategy is restricted in fast food supply chains because of the health regulations in Iran.

This study is limited since it focuses on a fast food restaurant chains. It does not consider fast food restaurants with one branch, which may not have the problems associated with restaurant chains. It is also limited in that it studies one area of mass

service organizations. It is expected that future research would seek to include other areas in mass services. In addition, it just examines the possibility of applying leagility in mass services, which are product driven, so it seems that there is no difficulty in determining the location of decoupling point in this kind of services. As it is argued in the previous research, there are three levels of services, namely professional services, service shops and mass services. The study of other two types of services is an effort out of the scope of this paper. Therefore, it is suggested for future research. It looks that the use of leagility in professional services such as management consultancy and hospital will face some problems, because they are pure services that are characterized by attributes like intangibility and each customer would be also served in a specific way, from the first steps of providing service.

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