



Operations strategy and business strategy alignment model (case of Iranian industries)

Sohrab Khalili Shavarini, Hossain Salimian,
Jamshid Nazemi and Mahmood Alborzi
*Department of Management, Islamic Azad University,
Science and Research Branch, Tehran, Iran*

Abstract

Purpose – The purpose of this paper here is to present an operational model that establishes the necessary relationship between business strategy and operations strategy. Accordingly, managers are enabled to define strategic business elements in the operations unit and align it with the business strategies.

Design/methodology/approach – Data were collected from 160 companies using a combination of structured interviews and closed questionnaire. In developing the alignment model, descriptive-survey and correlation methods were used. For selecting the codes and types of alignments, a heuristic data analysis method was developed and applied.

Findings – This paper concludes that alignment is significantly different in successful and unsuccessful companies. Considering their performance, 25 alignment types have been identified out of which seven types have been found appropriate for the case.

Practical implications – The recommended model here is easy to use and helps managers to improve the performance of their companies by aligning their operation strategy with business strategy.

Originality/value – This paper presents a model that includes the content and process of operations strategy, using top-down and resource-based approaches. This model associates alignment with organizations performance, a subject that has been considered as one of the major and challenging issues in the strategic management efforts. Overall, a new and innovative model has been proposed here for building a vertical alignment between the strategies of the firm. The proposed alignment comes in two different levels.

Keywords Business strategy, Aligning, Competitive priorities, Operations strategy

Paper type Research paper

1. Introduction

Strategy is a comprehensive master plan for achieving the objectives and missions of a corporation (Wheelen and Hunger, 2000). It is defined at corporate, business and functional levels. In order to succeed, organizations usually develop strategies for these three levels. However, the relations between the levels and the required coordination among these strategies are not straightforward. Apart from strength, knowledge and capability of individual units, the success of an organization entirely depends on creation and existence of coordination among these units (Kaplan and Norton, 2006). Lack of a suitable structure for transferring strategies developed at corporate levels to the functional levels, results in innumerable difficulties.

The operations unit as a function is usually the central core of the organization. Operations unit often consumes most of the capital and human assets of the company.



Hence, a great deal of the production cost is usually spent on operations. Therefore, the operations strategy has been known as a competitive weapon and is of the utmost value.

Hence, what is the relation between business strategy and operations strategy? In other words, how can the strategic elements of operations be arranged to have the best fit with business strategies?

In answering the above research question, here a conceptual model and an operational model are discussed. The proposed operational model of this study aligns functional strategy with business strategy of the firm. The developed model here comprised of business strategy, competitive priorities, operational strategic decision-making and the resulted operational strategies.

2. Background

In developing the alignment model, approaches to business strategy, competitive priorities and operational decision-making areas have been studied. Following this review and based on its logic, philosophy and practical results, significance of alignment and its relation to performance of the firm were justified.

2.1 Business strategies

Business strategy is the way in which companies achieve competitive advantage. Business strategy, according to Ohmae (1982), is an instrument of competition in a competitive market. What distinguishes this from other types of planning is merely competitive advantage.

There are various viewpoints regarding types of business strategy including Miles and Snow (1978), Porter (1980), Treacy and Wiersema (1993) and Bowman and Faulkner (1997). Studying small and big companies in this respect, companies have been divided into four types (Miles and Snow, 1978). Their theory presents a framework in which a company forms its approach within the limits of product-market and creates its structures and processes within that domain (Slater and Olson, 2001). These categories are: defender, prospector, analyzer and reactor. The first three are successful and the fourth leads to strategic failure (Rhee and Mehra, 2006).

Porter's (1980) main idea is that competitive advantage in a company can be created by low cost or differentiation. These instances can become meaningful in a broad or limited market. Therefore, his strategy is presented through a two by two matrix. The first dimension represents competitive strategies in terms of market range (broad or limited) and the second dimension represents the resource of competitive advantage (cost or differentiation). Porter (1985) believes that companies in major cases adopt one of these strategies. However, if a company chooses to apply more than one strategy it defeats the object. This is because the cost leadership and differentiation strategies are incompatible, differentiation usually increases the cost.

Porter's categorization has been criticized by several researchers (Wright *et al.*, 1991; Murray, 1988; Jones and Butler, 1988). The majority of these criticisms include two main objections. First, differentiation can achieve a low-cost position for the company. Accordingly, cost leadership and differentiation are not necessarily incompatible. Second, there are many conditions in industries that the unique position of low cost does not exist. Therefore, creating competitive advantage requires having both cost leadership and differentiation strategies simultaneously. Treacy and Wiersema (1993)

introduced three paths for market leadership. Instead of generic strategies, they apply the concept of value principles. In order to develop a strategy, they propose, three value principles must be used: operational excellence, customer intimacy and product leadership.

Operational excellence describes a distinct strategic approach to production and providing services and products. The aim of this strategy is to hold price leadership in the industry. Companies which seek operational excellence search for ways to reduce overload costs and optimize business processes at the functional and organizational levels. They seek to offer products and services at a competitive price. Companies which are after customer intimacy use a constant strategy of intimacy with the customers. They coordinate and form products and customer services. This process is costly but companies which use this strategy are willing to pay the costs so as to gain customer loyalty in the long run. Companies that follow the third principle try to offer state of the art products and services.

Bowman and Faulkner (1997) with a different view has presented Porter's competitive strategy in eight options of low price and low added value; low price; hybrid; differentiation; focused differentiation; increased price/standard value; increased price/low value; low value/standard price, all in the form of a clock. These options are obtained through combining the price and the added value perceived by the customer.

According to Table I, it could be concluded that the focus of all these approaches is either cost leadership or differentiation. Therefore, in spite of several criticisms, Michael Porter's general theory of competitive strategy is without a doubt one of the most enduring and effective viewpoints ever proposed regarding the strategic behavior of the companies. After several years, this theory is still considered the dominant paradigm in the competitive strategy.

2.2 Operations strategies

The main task of the operations is to produce goods and provide services. In other words, "The profit generating engine of any company is its operations" (Schroeder *et al.*, 2011). Accordingly, in developing strategies, companies should pay a great deal of attention to operations and grant it a suitable strategic role.

It could be concluded that production and operations activities have not been initially deemed to create competitive advantage. Intensity of competition drew more attention to decisions relating to operations. Skinner (1969) introduced production and operations as a corporate strategic issue. He considered the production unit as a competitive weapon. That is when companies cannot establish an appropriate relation between operations strategy and business strategy; they will face a non-competitive production system which will be very costly and time-consuming.

Operations strategies, recently, has attracted the attention of many researchers. Hayes and Wheelwright's product-process matrix is the one to be mentioned. Product-process matrix delineates operations decisions in terms of two priorities of process structure and product structure. The range of process structure is defined to include job shop to continuous production. The range of product structure is defined to cover products with low design standardization (highly customized products) to similar highly standardized products. Based on the fact that most industries try to align their process and product structures, a two-dimensional matrix is formed from these dimensions. The combination of the product and the process creates coordination

between product requirements and process capabilities. Product-process matrix was gradually modified and FMS and JIT were added later.

In 1985, Wheelwright and Hayes proposed a four stage model in order to explain the potential strategic role of the operations. At the first stage, organization has a reactive approach and operations is not considered a competitive advantage. The second stage is external neutrality in which the company tries to gain parity with its competitors. The third stage is internally supportive. At this stage, operation strategy is led by and linked to business strategy. The fourth stage is externally supportive in which operation strategy is used as a basis for developing the business strategy (operation-based strategy). This stage places the organization higher than the best practice within the industry.

Leong *et al.* (1990) differentiated operations strategies in terms of content and process. The content presents the strategic issues that management must resolve. The methods and procedures used in making such decisions reflect the process of developing operational strategies. According to Slack and Lewis (2002), content strategy is comprised of specific decisions and measures which determine the role, aim and activities of the operations. Therefore, the operations process strategy is a method for making content decisions. The model presented here deals with both process and content of strategic operational decisions.

According to Slack and Lewis (2011), operations strategy emerges from four different perspectives:

- (1) Operations strategy is a top-down reflection of what the whole group in business want to do.
- (2) Operations strategy is a bottom-up activity where operations improvements cumulatively build strategy.
- (3) Operations strategy involves translating market requirements into operations decisions.
- (4) Operations strategy involves exploiting the capabilities or operations resources in a chosen markets.

2.3 Competitive priorities

Porter (1980) considers organizational activities as the basis for competitive advantage. He believes that organizations must select a distinct strategic position. Strategic positioning in this context refers to performing activities different from competitors or performing similar activities in a different way. While, in the operations, differentiation is based on a different competitive priorities.

Competitive priorities are expressed as dimensions of manufacturing strategy (Swamidass and Newell, 1987), goals for manufacturing (Leong *et al.*, 1990) and manufacturing tasks (Skinner, 1969). In a different approach, others like Ferdows and De Meyer (1990) and Cleveland *et al.* (1989) have used the terms competitive capabilities and production competences. The latter approach is pretty close to resource-based and capabilities views. The resource-based view is originally based on Wernerfelt (1984) approach. Wernerfelt believes that high performance is explained by the strength of firm's resources not by its market position. Prahalad and Hamel (1990) extended this view, by focusing on core competency and its relation to competitiveness. Capability approach for strategy formulation uses the distinctive competences of an organization.

According to Barney (1991), resources include assets, capabilities, processes, attributes, information, knowledge, etc. controlled by a firm. Capability, according to Makadok (2001), is a type of resource owned by the company which improves the productivity of the other resources. This aptitude could neither be transferred nor copied easily. The resource-based view assumes that fundamental resources and drivers of the firm's competitive advantage and superior performance are mainly associated with the resources and capabilities that are valuable and costly-to-copy. In other words, capabilities are developed through firm's experience, focus, and efforts over time. As firms learn, they tune their capabilities, giving them a competitive advantage that is difficult to replicate without going through the same long-term learning process (Beckman and Rosenfield, 2008). Hayes and Upton (1998) have proposed three dimensions along which capabilities might be framed: process-based, coordination-based and organization-based. Process-based capabilities are anchored in the activities a firm undertakes to transform material or information into products and/or services. Coordination-based capabilities derive from a firm's skill in seamlessly executing multiple elements of its internal product or services delivery, high-quality customer experiences, short lead times, a broad range of products or services, customization on demand, or rapid product introduction. Firms described as learning organizations or good at knowledge management are said to have organization based-capabilities (Beckman and Rosenfield, 2008). Therefore, operations as the major part of realizing all of the above mentioned capabilities, plays a fundamental role in achieving competitive advantage for the organizations.

In 1969, Skinner determined priorities in the form of cost, quality and delivery. In 1978, Wheelwright added flexibility as the fourth element. In 1988, Hayes *et al.* divided the dimensions of delivery into: speed of delivery, and reliability of delivery. They also added innovation to the aforementioned priorities.

There are two main approaches in developing competitive priorities. Skinner believes that operations strategy must focus on a single competitive priority. Ferdows and De Meyer's (1990) in their Sand-cone model recommend that for the operations to be effective, quality, delivery (fast delivery, and reliable delivery), flexibility and finally cost effectiveness must be, respectively, fulfilled. Meanwhile, efforts in this respect must be accumulative in all its aspects. Skinner advises managers to select a competitive priority for their companies before designing their production and operations systems accordingly. Since priorities of cost, flexibility, quality and delivery require different operational structures and substructures at any given time the company should focus on a single competitive priority. Hayes and Wheelwright (1984) have put more emphasis on the factory. Considering all these viewpoints, attempts were made to develop a trade off approach and apply it to the competitive priorities framework.

2.4 Strategic operational decisions

In order to develop operations strategies, it is necessary to identify areas which require operational strategic decision-making. The examined areas in this study are presented in Table II.

As Table II demonstrates the most prevailing areas have been applied in the proposed model of this study: vertical integration, capacity, facilities, product technology and process technology.

2.4.1 Vertical integration strategy. Vertical integration is related to the value chain. It is considered one of the most fundamental and vital operational decisions.

Table II.
Decision areas in
developing operational
strategies

Decision areas	Viewpoints						
	Beckman and Rosenfield (2008)	Miltenburg (2005)	Heizer and Render (1993)	HP (Miltenburg, 2005)	Fine and Hax (1985)	Buffa (1984)	Hayes and Wheelwright (1984)
Vertical integration	✓	✓	-	✓	-	✓	✓
Capacity	✓	-	-	✓	✓	✓	✓
Facilities	✓	✓	-	-	✓	-	✓
Product technology	-	-	✓	-	✓	✓	✓
Process technology	✓	✓	✓	✓	✓	✓	✓

This decision, deals with questions about ownership rate in the value chain and direction of ownership (towards customers or suppliers) (Beckman and Rosenfiled, 2008).

There are several points of view regarding the relations between vertical integration and competitive priorities. Economides (1999) has shown that lack of vertical integration leads to quality reduction and less market coverage. If the company is competing based on flexibility advantage, it may decide not to have vertical integration to prevent the company from having assets which cannot be used or changed when required. If the company is competing on cost advantage, it can choose not to have vertical integration and allow its suppliers to make scale savings which in turn contributes to cost reduction (Beckman and Rosenfiled, 2008). Vertical integration accelerates and coordinates the value chain of delivery (Grant, 2008).

2.4.2 Capacity strategy. Capacity, according to Beckman and Rosenfiled (2008), is the volume of products or services a company or one of its units can produce during a specific period of time. In order to develop capacity strategy companies must consider the amount of capacity they require to fulfill demands. Hayes *et al.* (2005) have presented a model for developing capacity strategy in the form of a business strategy. Accordingly, capacity strategy can be developed in three ways. First, lead-strategy: in which capacity is based on prediction of future demands. Second, lag-strategy: in this method the average demand is not quite fulfilled and the company supplies lower than the required capacity. This method is very conservative and does not have any excess capacity. Third, stay-even: in this method the average demand is fulfilled. However, 50 percent of the times the company has excess capacity and 50 percent of the times it has an insufficient capacity to respond to the demands.

2.4.3 Facilities strategy. Facilities strategy generally deals with the two main subjects, size of facilities and location of facilities (Stevenson, 2009). With regard to the size of facilities, small facilities and large facilities are the strategic options. The study conducted by Motwani *et al.* (1998) examines the relation between the size of facilities and corporate capacity for implementing key operations strategies. It concludes that larger companies are more advanced in using strategies related to delivery deadline, quality, cost, customer services and technology. Hayes *et al.* (2005) state that large facilities have economies of scale and small facilities according to Skinner, have a more convenient management focus and higher flexibility and speed in responding

to market demands. It can also adapt itself faster to new approaches and technologies. It is generally believed that smaller organizations are more innovative and show faster reactions to market needs than large organizations (Brown and Blackmon, 2005; Davis and Vokurka, 2005; Porter, 1980). Looking at trends of technological change, it could be inferred that new technologies, faster computers and better communications have reduced the optimal size of many organizations.

In location of facilities, as a general rule, products whose weight and size decrease during the production process tend to be close to raw materials whereas, products whose weight and size increase during production process tend to approximate to the customers (Davis *et al.*, 2003). Hayes *et al.* (2005) believe that in selecting the location of the facilities organizations are faced with the alternatives of proximity to raw materials, customers or work force.

Therefore, in this study, facilities strategies have been considered under two main types of size-based (including small or large facilities) and location-based (including source-based and market-based facilities).

2.4.4 Product technology strategy. In selecting, defining and designing products management is faced with different options. Management decisions in this regard would greatly affect other sections of operations. As such, product strategy means selecting and designing a product (Heizer and Render, 1993). Stevenson (2009) has recommended four options for changing the existing products, developing a new product line, developing product applications and offering a new product. In recent years, due to intense competition and technological advances, companies are under extreme pressure for developing new products and services. The combination of an increasing competition and access to information has led to the emergence of educated consumers who expect new products. Studying the relationship between operations strategy and product innovation, have shown that product innovation has a high relationship with quality and flexibility and less innovative companies put much emphasis on delivery (Alegre-Vidal *et al.*, 2004).

Taking into account the above discussions, new product development and modifying the existing products have been considered as the product strategies in the proposed model of this study.

2.4.5 Process technology strategy. This strategy is used for manufacturing products or providing services. Process technology is the main part in transformation of company inputs into outputs and enables the company to distinguish its products and services from those of competitors and often requires considerable investment.

Slack and Lewis (2011) define technology process as the application of science in operations and processes. They believe that process strategy is a technology that joins and assembles various parts. Heizer and Render (1993) consider process strategy as an approach that an organization adopts in order to transform resources into goods and services.

Quite a few classifications have been made in the area of production process. Hayes and Wheelwright's classification within the product-process matrix which classifies production processes into project, batch, assembly and continuous forms. Konijnendijk's (1993) classification in defines three types of processes as: make-to-order, make-to-stock and engineer-to-order. Make-to-order systems require higher flexibility than make-to-stock systems. Therefore, they have lower efficiency and higher cost. In addition make-to-stock has less variety than make-to-order (Davis *et al.*, 2003).

Meticulous study of product-process matrix as well as Konijnendijk's (1993) classification present variety-based (producing various products based on customers' demands) and standard-based (producing similar products to be stored in the stock) approaches. FMS and JIT are good examples of these processes providing variety and standard simultaneously.

Accordingly, four types of process strategies were identified and used in the proposed model of this study. Variety-based strategy generally tends to make-to-order production based on customer demands. Its main feature is manufacturing various products at a low production rate. Standard-based process tends to manufacture similar products at a high rate. Its main feature is mass production. Automation-based strategy uses advanced technology and automation for mass production. Mass customization strategy applies advanced technology for simultaneous mass production and customization.

2.5 Developing a framework for operations strategy

Approaches, aspects and classifications in respect of operations strategy are shown in Figure 1. This framework comprises of two parts: areas of operations decision-making and possible strategies in each area.

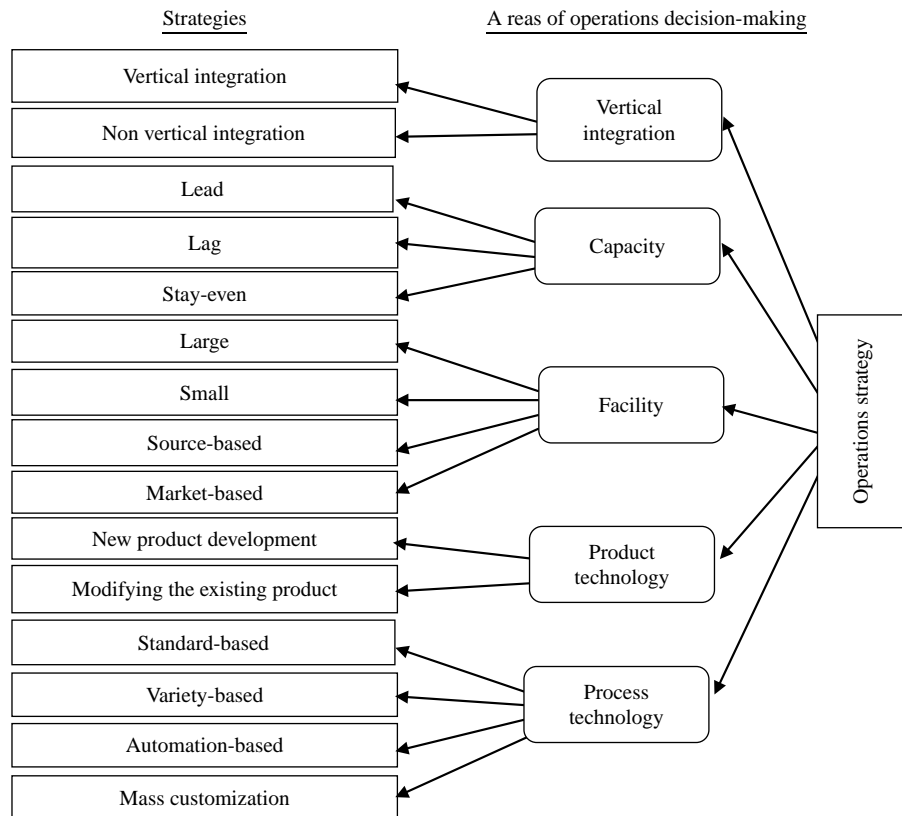


Figure 1. Operations strategy framework

2.6 Alignment

Majority of the researchers consider alignment between strategies as the major factor in the success of organizations (Hayes and Wheelwright, 1984; Hill, 1995; Voss, 1995). Porter (1996) considers alignment as creation of coordination among responsibilities of a company. He refers to three types of coordination: coordination between activities and overall strategy of the company; coordination among activities to support each other; and coordination through optimization of activities.

Boyer and McDermott (1999) state that strategic alignment is a situation in which individuals at various organizational levels agree on subjects that are crucial to the success of the organizations, i.e. cost, quality and flexibility. Rhee and Mehra (2006) have studied alignment among operations, marketing and competitive strategy. Kim and Arnold (1996) have linked business strategy with production strategy and have proposed a model for their alignment. Hayes *et al.* (2005) have used the term consistency to describe the concept of alignment and have defined three types of consistency: consistency between operations strategy and business strategy, consistency between operations strategy and other functional strategies, and consistency between various areas of decision-making within operations strategy. Venkatraman (1989) identified six types of alignment, i.e. moderation, mediation, matching, profile, gestalt and covariance.

Brown and Blackmon (2005) have also studied the alignment of operations strategy and business strategy and have emphasized its importance. Ward *et al.* (2007) have studied different ways of establishing links and alignment between business strategy and structural and infrastructural decisions regarding production. Their findings suggest that business strategy (cost leadership, differentiation and concentration) affect structural and infrastructural decisions of production. Williams *et al.* (1995) studied 85 companies in the spare part manufacturing industry and showed that there is a distinct relationship between business strategy and operations strategy. Kotha and Orne (1989) have proposed a strategic alignment model by using Hayes and Wheelwright's product-process matrix and Porter's generic strategy model.

There are two distinct approaches in developing and or aligning strategies vertically. The first one is top-down, in which business strategy determines operations strategy. Competitive advantage in this approach is derived from market and industry analysis. Therefore, operations here has a supportive role. This type of alignment apparently corresponds to the third stage of Wheelwrights and Hayes model (internally supportive), and top-down approach of Slack and Lewis (2011). The second approach is a resource-based-approach, in which capabilities and resources of the operations are used in developing the business strategy. Here operations should develop capabilities that will lead to competitive advantage. The fourth stage of Wheelwright and Hayes model (externally supportive) and the bottom-up approach of Slack and Lewis (2011) are examples of this type of alignment.

None of these approaches in their solitary present a full picture of the operations strategies. In practice, the process of developing strategies is not and could not be a one directional and a linear process. Therefore, in majority of cases companies apply an integrated approach. Beckman and Rosenfield (2008) suggested that despite the acrimonious debate between the competitive strategy and resource-based views, strategy comes about through an iterative process that employs both perspectives. Firms may choose a position in the marketplace and then develop the capabilities they

need to maintain that position. At the same time, they may examine their capabilities and choose to leverage them in identifying new businesses or market segments in which to compete. This approach is a bilateral integrative one in which marketing rules operations and operation leads strategy (Gagnon, 1999).

In this paper, a combination of top-down and operations capabilities (priorities) have been applied. Operations strategies in this sense should interpret business level strategy and should also build up capabilities to design such strategy in its pursuit. As such, the approach taken in this research was a bilateral model that is much more practical and realistic.

2.7 Alignment and business performance

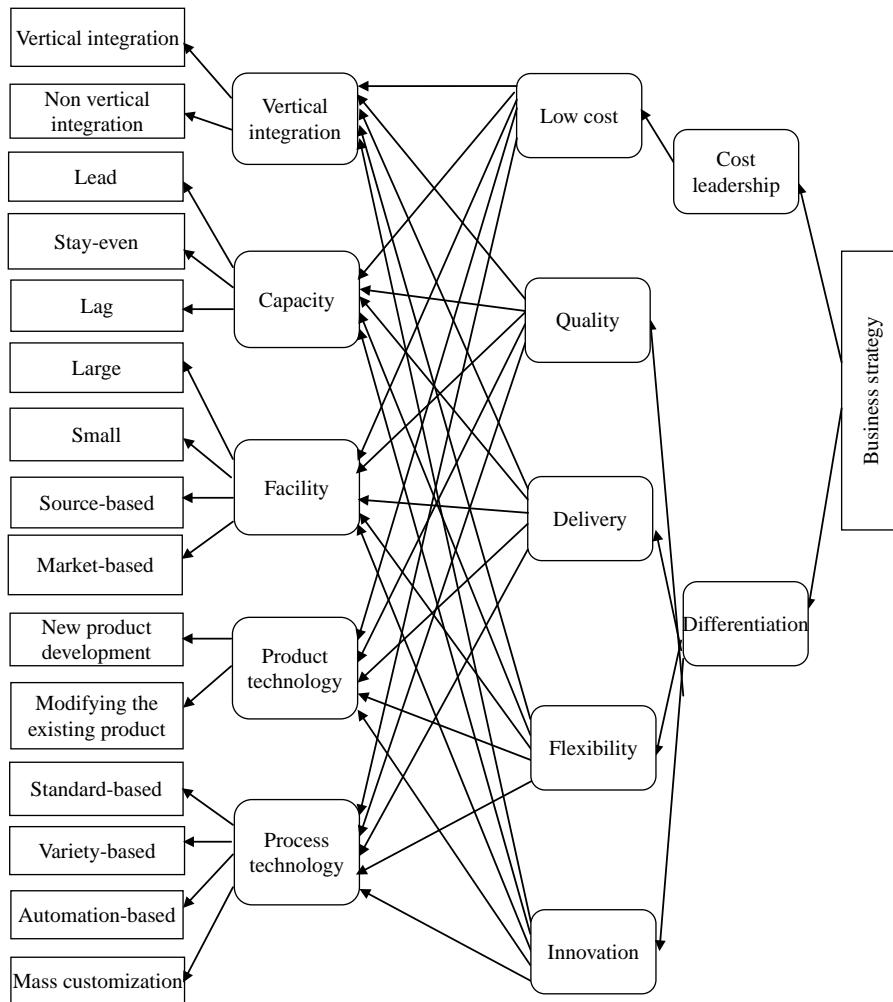
The alignment of business strategy and operations strategy and its effect on organizational performance is quite a significant issue. The importance of consistency between operations strategy and competitive strategy in order to achieve organizational goals has been emphasized by many researchers (Miller and Roth, 1994; Swamidass and Newell, 1987). Rhee and Mehra (2006) examined the relationship between this alignment of and its effect on organizational performance in banking industry. Joshi *et al.* (2003) also inspired by Boyer and McDermott's (1999) work. They have studied the effect of strategic unanimity among operations managers and general managers on organizational performance and concluded that this strategic unanimity indirectly affects organizational performance.

It is expected that a competitive strategy that is well supported by operations strategy should lead to a better performance. This is because operations decisions are made in a way that competitive goals would be materialized. Inconsistency between competitive and operations strategy will lead to inefficiency of the production system which practically hinders fulfillment of strategic goals. Ward *et al.* (1996) have concluded that the significant result of creating alignment is enhancement of organizational performance. According to Hayes and Wheelwright (1984), alignment between business strategy and functional strategies have a positive impact on performance. Venkatraman and Ramanujam (1986) have proposed to evaluate organizational performance within the framework of financial and operational (non-financial) criteria. Financial performance includes sales growth, profitability (returns on investment, returns on sales and returns on assets), earnings per share, etc. Operational criteria include market share, new products, product quality, effective marketing, production added value and the like.

To develop the model presented in this paper, profit from financial criteria, and market share from operational criteria have been selected.

3. Conceptual model

Based on the mentioned studies, a conceptual model has been developed, Figure 2. This framework is comprised of business strategy, competitive priorities (capabilities), areas of operational decisions and their respective strategies. The relation between competitive priorities of business strategy and operational decision-making areas is the center bolt of alignment between business strategy and operations strategy. This model is a bilateral type in which business strategy on one hand determines operations strategy, and operational capabilities on the other hand determine business strategy. The existing literature discussed earlier in this paper support this framework.



Note: As indicated, this model could be viewed from left to right as well

Figure 2.
Strategic alignment
structure (research model)

This framework considers process and content. The process starts with determining business strategy and ends in operations strategy; while content includes areas in which operational strategic decision-making occurs.

In order to assess the performance of the proposed model on Iranian manufacturing environment, the following two research questions are to be answered in this study:

RQ1. How do successful Iranian companies align their competitive priorities with their business strategies?

RQ2. How do they align their competitive priorities to the operations strategy?

4. Methodology

This is an applied research and has been sought to present useful information and practical guidelines for aligning business strategy to the operations strategies and vice versa. The types of business strategy, competitive priorities and operations strategy of each company in the statistical sample have been examined by a descriptive-survey. Afterwards the relation between the levels of strategies has been by a descriptive-correlation method. As such, the required information for developing the proposed model for the subject industries has been obtained.

4.1 Statistical population

Due to governmental interventions and/or monopoly, there is not much competition in some of the Iranian industries. While strategy is only possible in a competitive environment, efforts have been made to select sample industries that are relatively competitive. Therefore, food industry and chemical industry (detergents) have been selected for this study. Out of the 750 viable companies in the selected industries 160 were randomly selected.

4.2 Data collection

For data collection, a combination of structured interviews and closed questionnaire has been used. The questionnaire consisted of 49 questions addressing business strategy, competitive priorities, operations strategy and company performance. Managing directors answered the business strategy questions while operations managers provided data on operations questions. Performance questions were asked from managing directors and then modified by experts' opinion. Cronbach's α for the entire questionnaire was 0.94, that suggested the adequate validity of the data instrument.

4.3 Data analysis

Figure 3 shows the steps followed for data analysis.

A coding system was developed to measure and determine the eight variables as shown in Figure 4. As Figure 2 shows these variables are the connecting bolts of the strategic alignment in each individual company.

Companies with similar alignment codes had the same types of strategies. *RQ1* was how do successful Iranian companies align their competitive priorities with their business strategies?

To answer this question, data analysis method (Figure 3) has been applied to define strategic alignment codes and types with their respective frequencies.

The statistical hypotheses were formulated as follows:

H0. Different strategic alignments would not lead to different performance results.

H1. Different strategic alignments lead to different performance results.

To test these hypotheses, ANOVA single factor was used. It was concluded that the performance of different alignment types were significantly different (Table III).

Applying Tukey test, types of alignments were categorized in accordance with their differences. Types of strategic alignments with confidence of 95 percent

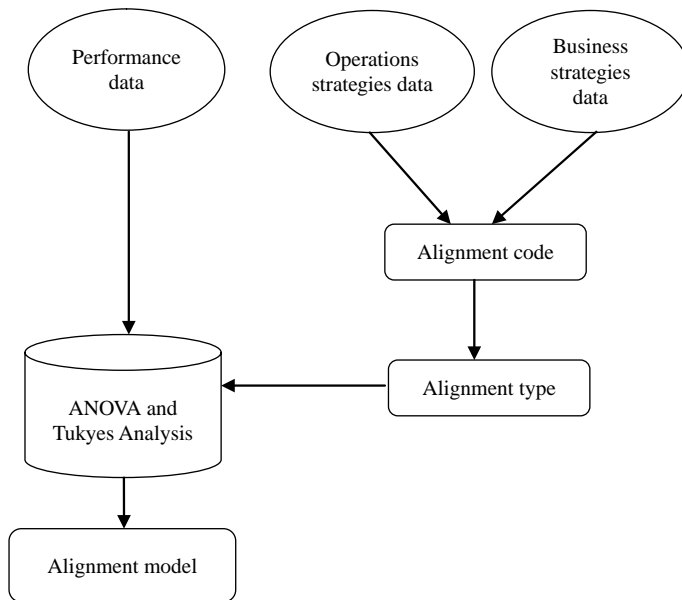


Figure 3.
Data analysis phases

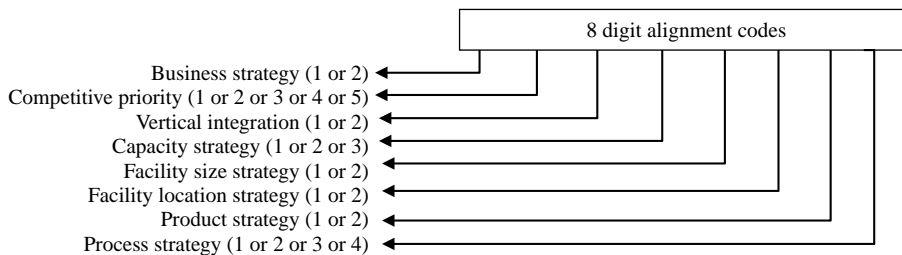


Figure 4.
Strategic alignment
indicator

Difference	Sum of squares	Df	Mean square	F	Sig.
Between groups	290.533	24	12.106	39.649	0.000
Within groups	41.218	135	0.305		
Total		331.751	159		

Table III.
Variance analysis of
alignment types and their
relation to performance

were classified into four groups ranging from the lowest to the highest performance. Types 14, 7, 8, 9, 11, 12, 13 were in the fourth group of Tukey test, and held the highest performance of all (Table IV).

The classifications obtained from Tukey test, and their respective characteristics are shown in Table V. These characteristics are related to business strategies, competitive priorities and operations strategies. The characters of “Best performance alignment” were then used for developing the proposed model of.

Alignment code	Alignment type	n	Subset for $\alpha = 0.05$			
			1	2	3	4
11212221	3	5	1.9400			
14111211	15	5	1.9400			
11222221	6	6	2.2167			
22232123	24	7	2.2286			
21221222	17	11	2.2455			
11222111	5	6	2.2500			
23131123	25	8	2.3875			
25131123	19	7	2.4286			
21121123	16	8	2.4875			
11122121	1	9	2.7111			
21111222	20	7	2.7714	2.7714		
11131221	2	11	2.7818	2.7818		
23222221	10	7	2.8714	2.8714	2.8714	
22231121	18	5	2.9200	2.9200	2.9200	
23222222	23	5		3.9600	3.9600	
23132223	22	7			4.0143	
11221221	4	6			4.0333	
21122113	21	5			4.0600	
11231121	7	8				5.3875
22111114	9	5				5.4600
25112212	12	3				5.5667
23111224	13	6				5.7500
24212114	11	5				5.8400
23111221	14	4				5.8750
11231123	8	4				6.1250
	Sig.		0.306	0.060	0.060	0.835

Table IV.
Classifying alignments
by Tukey test

5. Discussion and conclusion

This research reconfirms Porter’s (1985) view about incongruous nature of cost leadership and differentiation strategies. It is worth mentioning that companies whose business strategy had been cost leadership but their competitive priorities were differentiation have not had a considerable performance.

Successful relation between business strategy, competitive priorities and operations strategies found in the sample companies were transferred into the conceptual model to devise an applied and practical model for the Iranian industries Figure 5.

The derived rules from the model are as follows (Figures 6-10):

- IF business strategy is cost leadership; the operations strategy comprises of non vertical integration, lag capacity, large facilities, source-based location, standard (or automation-based) process, and modifying existing products. Since the model is bilateral, the alignment could be read from the other way around, i.e. if a company is in a position to sustain, non vertical integration, lag capacity, large facilities, source-based location, standard (or automation-based) process, and modifying existing products in its operations, it is recommended to practice cost leadership as its competitive strategy. This would maximize its performance.
- IF business strategy is quality-based differentiation; the operations strategy comprises of vertical integration, lead capacity, large facilities, source-based

Process technology	Product technology	Facility location	Facility size	Capacity	Vertical integration	Competitive dimension	Business strategy	Alignment code
Mass customization	New product	Source-based	Small	Lead	Non-vertical integration	Flexibility	Differentiation	24212114
Mass customization	Modifying existing product	Market-based	Large	Lead	Vertical integration	Delivery	Differentiation	23111224
Standard-based	Modifying existing product	Source-based	Large	Lag	Non-vertical integration	Cost	Cost leadership	11231121
Automation-based	Modifying existing product	Source-based	Large	Lag	Non-vertical integration	Cost	Cost leadership	11231123
Variety-based	New product	Market-based	Small	Lead	Vertical integration	Innovation	Differentiation	25112212
Standard-based	Modifying existing product	Market-based	Large	Lead	Vertical integration	Delivery	Differentiation	23111221
Mass customization	New product	Source-based	Large	Lead	Vertical integration	Quality	Differentiation	22111114

Table V.
Best performance
strategic alignments

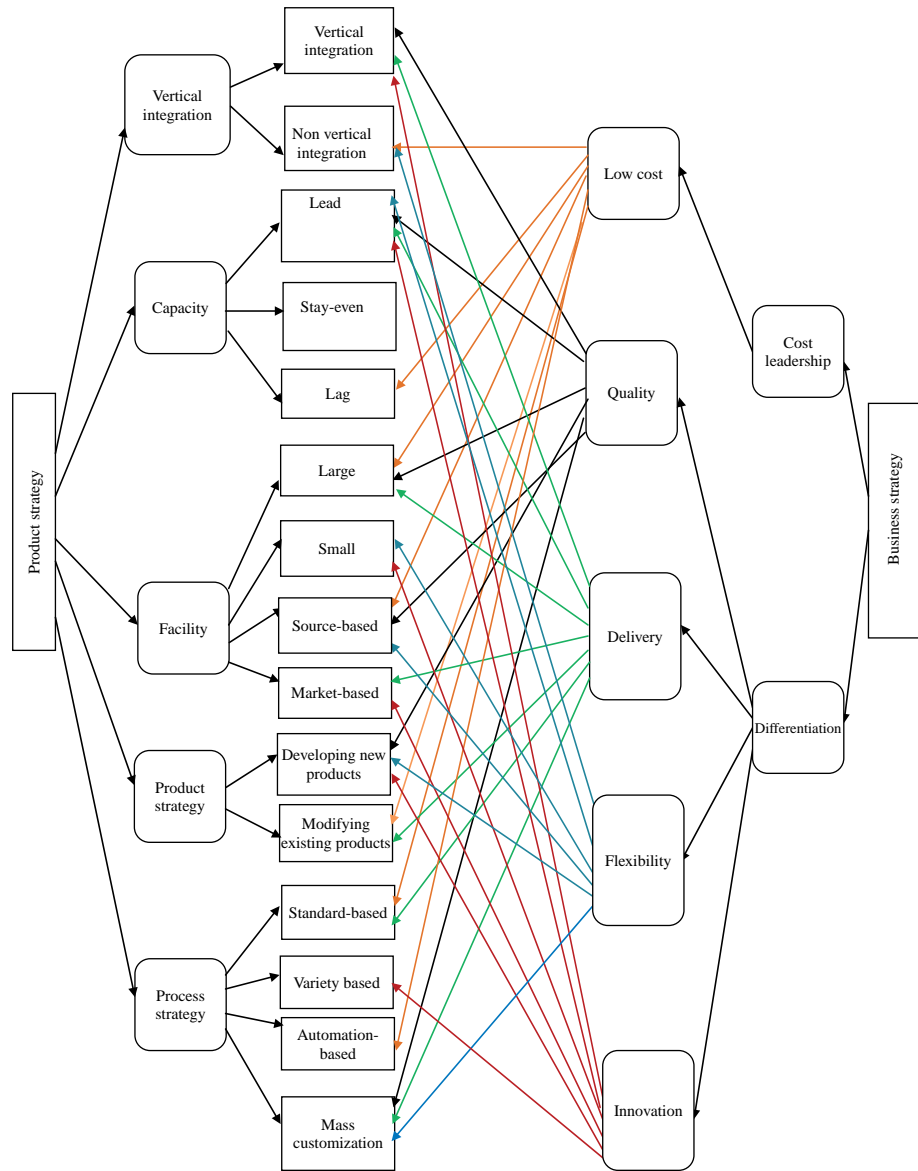


Figure 5.
Alignment model for
Iranian industries

Notes: Food and chemical

location, developing new products, and mass customization. If the company is in a position to sustain, vertical integration, lead capacity, large facilities, source-based location, developing new products, and mass customization in its operations, it is recommended to practice quality-based differentiation as its competitive strategy. This would maximize its performance.

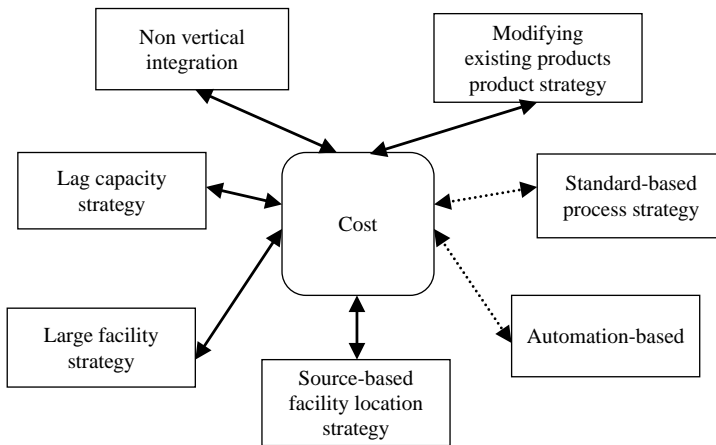


Figure 6.
Operations strategies
suitable for the cost
leadership

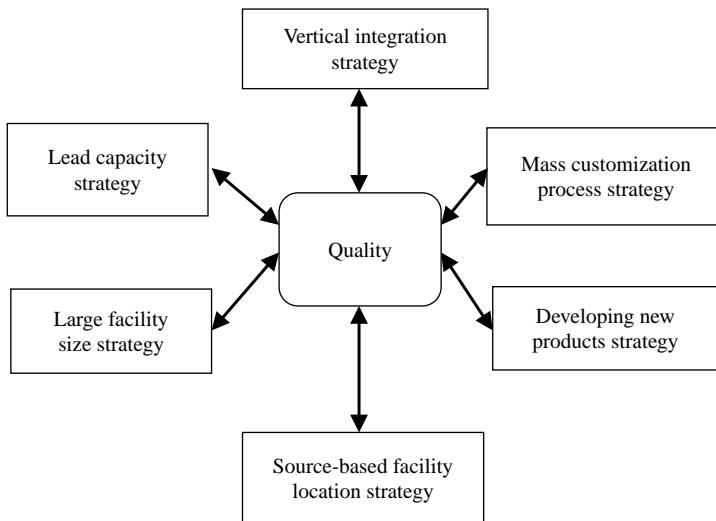


Figure 7.
Operations strategies
suitable for the
quality-based
differentiation

- IF business strategy is delivery-based differentiation then the operations strategy should consist of vertical integration, lead capacity, large facilities, market-based location, modifying existing product, and mass customization (or standard-based) process. If the company is in a position to sustain, vertical integration, lead capacity, large facilities, market-based location, modifying the existing product, and mass customization (or standard-based) process in its operations, it is recommended to practice delivery-based differentiation as its competitive strategy. This would maximize its performance.
- IF business strategy is flexibility-based differentiation the operations strategy should be non vertical integration, lead capacity, small facilities, source-based facilities location, developing new product, and mass customization. If the company is in a position to sustain, non vertical integration, lead capacity, small

Figure 8.
Operations strategies
suitable for the
delivery-based
differentiation

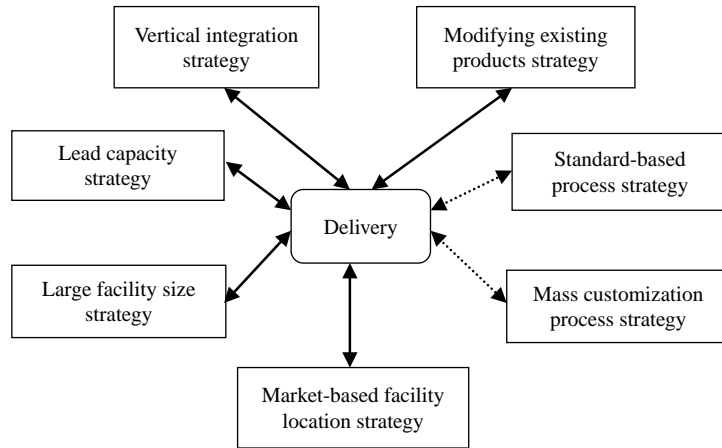


Figure 9.
Operations strategies
suitable for the
flexibility-based
differentiation

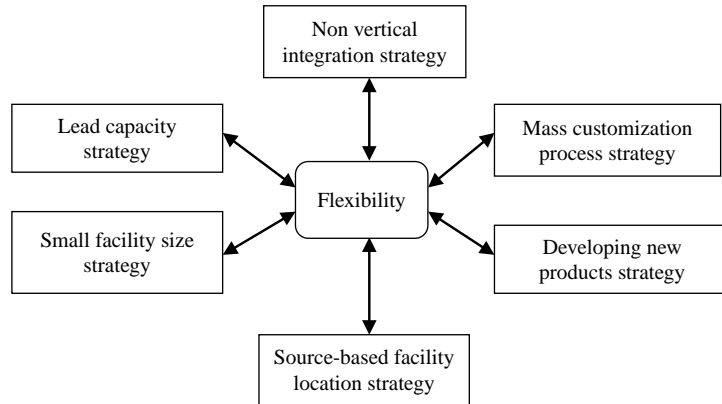
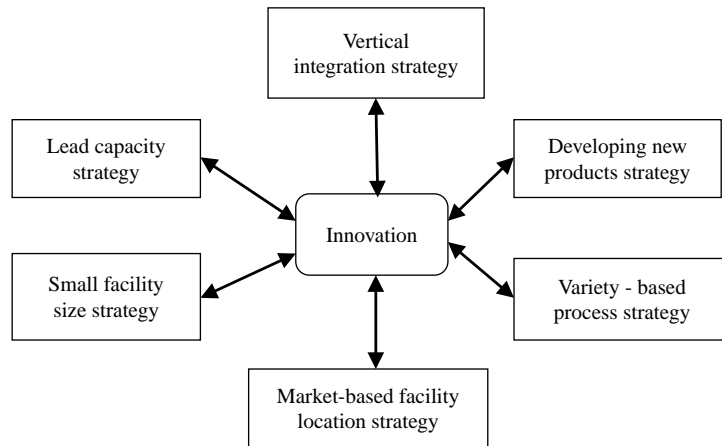


Figure 10.
Operations strategies
suitable for the
innovation-based
differentiation



facilities, source-based facilities location, developing new product, and mass customization in its operations, it is recommended to practice flexibility-based differentiation as its competitive strategy. This would maximize its performance.

- IF business strategy is innovation-based differentiation the operations strategy should be vertical integration, lead capacity, small facilities, market-based facilities location, developing new products, and variety-based process. If the company is in a position to sustain vertical integration, lead capacity, small facilities, market-based facilities location, developing new products, and variety-based process in its operations, it is recommended to practice innovation-based differentiation as its competitive strategy. This would maximize its performance.

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About the authors

Dr Sohrab Khalili Shavarini is a Professor at Islamic Azad University, Science and Research Branch, Tehran, Iran and also Head of Department of Management at University of Petroleum Industry and is a well-known figure in the field of strategy in Iran. Most of the authentic management textbooks in Iran have been translated into Persian by him. He has 30 years of experience in consulting and research in the field of oil industry and automobile industry. Sohrab Khalili Shavarini is the corresponding author and can be contacted at: sohrabkhalili@yahoo.com

Hossain Salimian has a PhD in industrial management. He has 20 years of experience mostly in operation management and strategic planning. At the moment, he is an Industrial Consultant and also the Head of the MA program at Malayer University.

Dr Jamshid Nazemi has a PhD in industrial engineering from Science and Research Branch of Islamic Azad University, Tehran, Iran and is the Head of the Department of Graduate Studies at Islamic Azad University, Science and Research Branch, Tehran. He has over 20 years of experience in consulting in automobile industry and is the Head of the Center for Research and Strategic Planning of Saipa Automobile Manufacturing Group. His field of specialty is decision-making systems and operation research.

Dr Mahmood Alborzi has a PhD in Artificial Nervous Networks from Brunel University, UK. His field of specialty is quantitative methods in management and at the moment, he is a Professor at Islamic Azad University, Science and Research Branch, Tehran, Iran.