



## The Relationship between Manufacturing and Service Provision in Operations Management

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### Abstract

Operations management is a large segment which is concerned with the existence of any organization. Every organization has an operations function to produce some type of products and/or services. It is well-known that manufacturing differs from service provision in many aspects. The main difference between products and services would be tangibility. While the outputs of manufacturing are tangible, the outputs of service provision are intangible. Some industries are the mixture of both manufacturing and service provision, which provide both products and services. Likewise, the operations managements which different industries apply are also very different. This article is concerning these differences in different areas, providing some industries and some companies for the analysis.

**Keywords:** Tangible, Intangible, Customer contact, Product oriented, People oriented, Technology development, Quality control, Integrated, Value chain, Supply chain, NPD, JIT

### Introduction

*Operations management is about the way organizations produce goods and services.*

*(N. Slack et al., 1998, p.3)*

Operations management is a large segment which is concerned with the existence of any organization. Every organization has an operations function to produce some type of products and/or services.

It is well-known that manufacturing differs from service provision in many aspects. The main difference between products and services might be the tangibility. While the outputs of manufacturing are tangible, the outputs of service provision are intangible. Some industries are the mixture of both manufacturing and service provision, which provide both products and services. Likewise, the operations managements which different industries apply are also very different. This essay is concerning these differences in different areas.

All operations are concerned with input-transformation-output process. Such process in different sorts of areas might be significantly different.

### 1. Products and services

#### 1.1 Pure products

Manufacturing inputs materials to produce products during the process of transformation. As for the process of manufacturing itself, there's nearly no services involved, but just producing the goods.

For example, the car manufacturing, for such particular field, the manufacturer only produces cars with slight services included. In other words, it is the industry which produces pure product. The whole process of manufacturing cars is concerning the transformation of the materials and a little service. Moreover, production doesn't occur at the same time with consumption. Manufacturers produce cars and then sell the cars to the customers. Most of the entire process is producing the cars. There's low customer contact during the process. The output, namely the car can be evaluated easily by its appearance and inside parts because it is tangible. Consequently, the quality of the car is evident and can be judged relative objectively. As far as the service in the car industry is concerned, it is obvious that such manufacturing industry embraces just a little bit services, such as bring the cars which can be transported to the market and sell them. Thus, the chances of contacting with the customers are very rare. Furthermore, if the cars didn't be sold out, they can be stored.

#### 1.2 Mixture of products and services

There are many different sorts of industries all over the world. Some industry is the mixture of providing products as well as providing services, which is in the middle of the class. Accordingly, such kind of industry must contain both

product and service.

Take restaurant for example, restaurant which we are fairly familiar with is a typical mixed industry. The restaurant not only provides the food which can be considered as product, but also the service. In such industry, customer contact is relatively higher than manufacturing industry which is above mentioned. In the restaurant, customers can enjoy food as well as service at the same time. In other words, production and consumption emerge simultaneously. As far as the main difference tangibility is concerned, while it is easy for evaluating the quality of the food in the restaurant, it is hard for appraising the quality of the service restaurant provides. The reason why it is hard for appraising the quality of the service provided by the restaurant is the nature of the service, which is intangible. So, no specific criteria for the evaluation of the service exist. Thus, the evaluation of the service could be very subjective. As for the overall transformation process of such kind of industry, the ratio of the food and the service is nearly 1:1. Therefore, more customer contact is involved in this kind of industries. The food of the restaurant can be stored and transported. Conversely, the service can not be stored and transported because the service is intangible.

## 2. Pure services

In some of the industries, there is only service provision, such as the clinic or hospital.

Clinic which provides the pure service to the patients has its own characteristics which are totally different from the two above mentioned industries. The input of the clinic is the customer. As such, the output is the customer as well. In the whole process of the transformation, customers enjoy the service only, nothing else. In such process, production and consumption are simultaneous. When doctors provide pure service, customers can enjoy it at one time. However, as above mentioned, the pure service which doctor provide is like the service restaurants provide and it can not be stored or transported. Due to the intangibility, the quality of the service provided in the clinic is difficult to judge the same as all kinds of services. Moreover, the entire process is high customer contact.

## 3. Operations management

*Operations management is concerned with the design, planning, control and improvement of an organization's resources and processes to produce goods or services for customers.*

*(R. Johnston, S. Chambers, C. Harland, A. Harrison, N. Slack, 1998, p.15)*

Industries of different types are required different patterns of operations. As N. Slack (1998) mentioned, operations management is concerned with activities, decisions and responsibilities of operations managers. Operations managers are the staff of the organization who have particular responsibility for managing some, or all, of the resources.

Again, operations managers can be called different names of different areas as a result of their different duties. For instance, he or she might be called the 'store manager' in a supermarket, the 'fleet manager' in a distribution company or the 'administrative manager' in a hospital.

Operations function is considered as one of the three core function of the organization, concerning satisfying customer requests for products and services.

### 3.1 Operations management in manufacturing

*The principle role of the manufacturing firm is to turn physical raw materials into tangible products. A tangible product is one that can be physically touched, valued in monetary terms, visualized, and described by dimensional terms such as weight, length, height, volume, etc.*

*(D. L. Waller, 1999, p.6)*

According to the example of car industry, it is clear that car industry just produce cars during the entire transformation process. The activities of operations in car industry are to make components to assemble the cars through the product line, namely, to transform raw materials or components into finished goods destined for final consumers. There is less client contact in manufacturing. The clients only make an appearance on delivery of the finished cars or perhaps at the start of the operation if the car is of new design. Car manufacturing is usually a higher proportion of technicians and engineers.

### 3.2 Operations management in mixed industry of manufacturing and service provision

As for mixed industry such as restaurant, it is easily seen that such kind of industry combines the generic characteristics of both the manufacturing and the service.

Restaurants produce food as well as provide service. So, operations managers or manageress are responsible to pay attention to both the products and the services on the running of the services. It is concerned with the production of the food and the services the waiter/waitress provide to the customers.

#### 4. Operations management in services

*A service industry also provides a product but this product is often (but not always) intangible and cannot be described in the same dimensional terms as manufactured goods (D. L. Waller, 1999, p.6).*

As the example of the clinic above given, clinic just provides medical services, namely, the treatment which is the pure service. Compared with manufacturing, there is generally more client contact of the operating environment. Furthermore, as opposed to car manufacturing, clinic is more people oriented.

#### 5. The analysis of manufacturing and service provision in specific industries and companies

##### 5.1 Manufacturing in Korea's automobile industry

According to Koichi and Shimokawa (1999), the global automobile industry was showing an unprecedented scale of change in 1990's and the wave of the globalization had directly affected the international automobile industry. Along with the convergence of the world economy, the automobile industry is developing faster and faster beyond national borders.

Korea's economy is widely known as the "economic miracle" due to the rapid economic growth in less than four decades with poor endowment of natural resources (Unedited Working Paper, 2004). Such a rapid growth has transformed the whole country from poor traditional agricultural society to the modern industrial state within just a very short span of time (Kim and Kang, 2004). Consequently, Korea becomes one of the typical examples for great development in the world scale.

Automobile industry as one of the major industries in South Korea starts in 1940s and developed primarily in 1960s. Hyundai Motor, Daewoo Motor, Kia Motor, and Ssangyong Motor were the four major automotive companies in Korea. (Wang, 2003) According to UK Trade and Investment (2000), it says Korea's automotive industry ranked sixth in the world production, despite the 1997 economic crisis.

As we know, for a long period, Japanese automobile industry has been seen as the benchmark of the world's auto industry. In particular, Toyota was a typical example in such an area. It's so called "secret weapon" in Toyota was a unique manufacturing system and employed worldwide. Moreover, in the new era, successful business models must include new values and new kinds of thinking (Reingold, 1999). That's why Toyota could be successfully highly developed within a very short time span.

Likewise, Korean automobile industry was developing so speedy that shocked both the U.S. and Japan. The trend of its development is likely to exceed the U.S. and Japan's automotive industry in a way. As the report by J. D. Power (Chen and Hao, 2004) shown, the customers' satisfactory rate of Hyundai automobiles has already exceeded American and European brands. Korean automobile industry was regarded as the 'vane' in the international automotive market.

##### 5.1.1 Technology development and quality control in Korea's automobiles

Compared with rival countries, Korean automobile industry was developing speedily and won the market share largely based on its advanced technology and high quality in only 10 years. "Korean Speed" was shocking the world and was worth being learnt. (Chen and Hao, 2004)

Change is in the air (Reingold, 1999). In today's knowledge-based world, technology as an essential part in automobile industry is ever changing. The reasons why Korean automobile industry developed so quickly and successfully were they were highly concerned about the automotive technology development as well as automotive quality improvement. There are many associations and institutes here in Korea and assist its domestic auto industry to gain much more new technology in the field of automobiles, for instance, Korea Automotive Technology Institute (KATECH), Korea Automobile Testing and Research Institute (KATRI), and Korea Industrial Technology Association (KITA). (UK Trade and Investment, 2000) According to Schnapp (1979), different automotive companies from different regions would differ in many aspects, such as natural resources, technology, strategies, and management. Due to the cooperation, Korean automobile industry learnt advanced technology as well as excellent management from other countries. Based on abundant knowledge, Korean auto industry improved its own domestic brands by highly increasing the quality. As a consequence, the auto industry in Korea won huge global market share as due to the high quality in the field of operations management.

##### 5.2 Operations in digital camera industry

Likewise, a few big players dominate the digital camera industry. Most of the operators in this industry are Japanese companies. The current markets in the scope of the world can be divided into two main parts: developing market (e.g. China and Southeast Asia) and mature market (e.g. Japan, US and Europe). Competition in this industry is based on price, resolution and new product development. The key to success in this industry is technological innovations. Due to the speedy technology development, the rate of obsolescence in the industry is very high. Besides, branding can affect the total consumptions as well. (Group Analysis, 2005)

### 5.2.1 Competition concerning operations in digital camera industry

The competition in this industry depends on prices and technology. In order to clearly understand the actual circumstances on competitive rivalry, the following part would be considered as relative information to help gain the results of the overall competitive rivalry at present. (Group Analysis, 2005)

#### **SONY**

Sony is recognized worldwide and possesses a renowned reputation in high-tech industries. The market share of Sony in west EU accounts for 14% (IDC, 2005). Sony applies differentiation with price premium and product leadership as its current strategies. The competitive advantages of Sony are product excellence and the strong branding. The pricing of Sony is at somewhere between Canon and Nikon. (Group Analysis, 2005)

#### **NIKON**

Nikon is good at producing professional digital cameras and the firm focus on the high-end market only. The market share of Nikon in west EU accounts for 10.4% (IDC, 2005). Nikon's current strategy is focused differentiation. The company has the competitive advantages of technology innovation and brand reputation in the high-end digital camera market, enjoying the high price as well. (Group Analysis, 2005)

#### **CANON**

Canon enjoys high reputation in the world scope in camera industry. Canon aims at both high-end market and low-end market. In terms of high-end market, Canon and Nikon are the two main competitors, who have similar capabilities in technology innovation and have the similar price in high-end market. What is more, Canon was ranked the first highest in NPD (New Product Development) and was considered as the leading brand for digital cameras in America in 2004 (News Release, Feb 1, 2005). The market share of Canon in west EU accounts for 16.8% (IDC, 2005). Canon adopts differentiation as well as new product development as its current strategies and has the competitive advantage of innovative capability. (Group Analysis, 2005) Moreover, Canon is expected to become the leader of digital camera industry.

Canon is now facilitating operation processes. In digital camera industry, Canon has consistently turned in strong performances, thus enabling the company to expand its market share greatly. Apart from the high performance, Canon designs, develops and manufactures its own lenses, image processors and color rendering software. Hence, Canon continues to stay ahead of the digital camera market in terms of its advanced technologies. (News Release, Feb 1, 2005) Additionally, Canon also conducting the new production reform in the form of a strategic alliance with Toshiba to gain better performance. (Canon Collection, 2005)

Through the effectiveness in operation, Canon achieved excellent performance and produced high quality products with beautiful designs, which added value to marketing activities and the finished products are more likely to well respond to the present market and customers' needs. (Group Analysis, 2005)

Service is an important part to add the extra value to the final products. Better service will definitely brings a better financial performance in the end. As one of the biggest players in digital camera industry, Canon is more focusing on business-to-business services and the firm has a Canon Service Centre. (Group Analysis, 2005)

As concluded of the whole value chain inside Canon Corporation, it is very efficient and effective, the value chain are integrated well and running smoothly. The entire processes of Canon's value chain are unique and based on economics of scale, thus hard to copy. (Group Analysis, 2005)

#### **OLYMPUS**

Olympus was well operated in the last few years, however, the current situation is becoming unsatisfying and its ranking among the whole industry fell rapidly nowadays. The main market of Olympus is at the low-end. According to IDC (2005), Olympus market share in west EU accounts for 12.5%. Olympus also applies differentiation as its current strategy. The competitive advantages of Olympus involves friendliness and easy for entry-level consumers. The price of Olympus digital camera is lower than Sony, Canon and Nikon. (Group Analysis, 2005)

#### **KODAK**

Kodak is not among the top 5 in the world digital camera industry. Kodak possesses the main market in the US and is ranked top in North America. The company adopts low cost as its current strategy, therefore, the price of Kodak digital camera is the lowest among the five players. The competitive advantage of Kodak is easy to use. (Group Analysis, 2005)

### 5.3 Manufacturing and service provision in Starbucks

Starbucks was established in 1971. Presently, there have been 6,132 stores in the United States and 2,437 international stores. They are planning to open at least 1,500 company operated stores on a global basis, and intend to expand their

locations to neighborhoods, off highways and in rural areas. In addition, they have increased their ultimate projected growth from 25,000 to at least 30,000 stores worldwide, with at least 15,000 locations outside the United States (Starbucks Annual Report, 2004).

#### 5.3.1 Starbucks' value chain

Both support and primary activities inside Starbucks' value chain are integrated to create the value. quality control, flat organizational structure, human resource management and technology development are defined as support activities. (Johnson & Scholes, 2002) Regarding primary activities, there are five main areas; amongst these activities, operation and marketing are the most essential parts. (Coursework, 2005)

##### 5.3.1.1 Support activities

Starbucks applied total quality management throughout the whole supply, transportation, manufacturing and operations processes. This created value by ensuring consistency in superior coffee served and services provided. The existence of a flat organizational structure in turn contributes to flexibility in policies and changes implementation with respect to current market conditions. Most importantly, it allows effective and efficient decision making. (Coursework, 2005)

As far as human resource management is concerned, Starbucks recruited managers with diverse backgrounds to provide valuable experience and insights. (Kachra, 2002) Starbucks ensure all staffs were trained for at least 24 hours before they are ready to serve customers. In a sign of great respect, they were known as Baristas instead of shop assistants or waiters. This goes only to show that Starbucks treats the staffs as an asset. It also acknowledges the importance of knowledge transfers and strongly encourages it through baristas mentorship and training. One of the ways that Starbucks implemented to ensure consistency of the "Starbucks experience" throughout the cafe was achieved through rewards like stock options and higher salary. (Kachra, 2002) It aims to motivate the employees and to increase the morale and shape a loyal employee. Hence, it lowered turnover rates and decreased the costs dramatically. Moreover, satisfied employee will normally provide better customer services. (Davies, 2003)

The last element under support activities is technology integrated. In order to be a leader in this industry, Starbucks actively seeks to introduce new features, for instances, being the first to introduce wireless internet services in the café. Starbucks foresees the wide usage and adoption of technology in customer's everyday life. The most crucial aspect will have to be the usage of supply chain operations to forecast and schedule the primary activities. It ensures JIT (Just-In-Time) is achieved while decreasing costs incurred in storage and transportation of the goods. (Coursework, 2005)

##### 5.3.1.2 Primary activities

Inbound logistics includes sourcing, receiving and storing the coffee beans from suppliers. Due to Starbucks' close relationship with their coffee exporters, the company is able to get the finest coffee beans. In addition, such a good relationship was maintained by working directly with exporters and suppliers as well as training them (Kachra, 2002).

Operation is the process of making the coffee in the store and packaging products. Starbucks had its unique specialty coffee produced through an innovative process, involving roasting, blending and packaging. In particular, roasting was considered not only a complete science, but more of a technological art (Kachra, 2002). Through the usage of technology in the process ensures coffee's quality and its freshness.

Outbound logistics is collection, storage and distribution of coffee (Coursework, 2004). For instance, Starbucks utilizes worldwide express courier such as UPS for reliable and efficient transportation (Kachra, 2002).

Starbucks integrated the value chain through the supply chain management allows it to respond to changes in orders, timing and scheduling of the deliveries to its maximum efficiency. The timely communications between each of the value chain variables allow prompt and updated actions, which in turn ensure its ability to reduce costs and increase efficiency. (Coursework, 2005)

Marketing and sales is the most important part of the value chain and it is about how consumers become aware of Starbucks coffee and purchase it and marketing strategies has pushed effective expansion and fast development of Starbucks. (Coursework, 2005)

Firstly, location strategy was used to reach high brand awareness. The company used lobbying to change city regulations to get the best place in town, locating its stores in affluent areas only, which is beneficial for revenue growth (Sheth, 2000).

Due to the changing lifestyle, there is an increasing number of people who pay more attention on the quality of life. With the objective of capturing Starbucks target market which is made up of the educated and young adults with average income, selling memorable coffee experience with a cup of high quality coffee in a place of comfortable ambience. This contextual business idea was so successful that consumers were willing to pay premium price for this Starbucks experience, service and quality. (Coursework, 2005)

Apart from in-store consumption, Starbucks expands sales to home, work and travelers. The company also diversifies its products, like selling pastries, cakes and CDs. Starbucks expansion was evident both horizontally and vertically, using licensing and partnerships. Furthermore, Starbucks licensed its name to other coffee house, penetrating various regions. Starbucks reached agreements with other providers like Barnes and Noble bookstores to United Airlines to sell Starbucks coffee in their establishments. (Sheth, 2000) However, Starbucks need to consider the possibility of brand dilution with the increasingly number of partnerships. The crucial issue of how Starbucks can ensure and maintain universally high quality of coffee and service levels throughout the partnerships remains.

Besides national expansion in the US which is now reaching saturation, Starbucks is already present in Japan, Europe, South East Asia and Middle East by joint venture, wholly owned subsidiaries and licensee (Subhadra, 2003).

Services include all the activities that enhance or maintain the value of the product (Coursework, 2004). Starbucks ensure "customer experience" in the cafes through friendly and well trained staff. Every café have at least one coffee masters wearing the black apron who is assigned to give trainings and mentorship to fellow barristers Furthermore, Starbucks created a website to educate, inform and seeks to convince customers to drink their coffee. Customers treat the store as a meeting place whereby they can relax, chat, read and enjoy the ambience. This experience is further enhanced by a wide selection of high quality coffee, relaxing music while surfing through the wireless Internet in a chic environment with a homely layout. (Coursework, 2005)

Starbucks' capabilities were derived from the process of combining all the resources and capabilities inside Starbucks. Through a complex integrated value chain, effective marketing strategies, and services from talented people, Starbucks was able to sustain its competitive advantages and distinctly differentiate itself from other coffee retailers and established its leadership position in the specialty coffee industry. (Coursework, 2005)

### 5.3.2 Sustaining competitive advantage

Looking back to Starbucks current situation, it is apparent that tactics are used to build the 'Starbucks' experience culture', which employees are feeling proud to work for, and that customer are feeling enjoyable and relaxed to stay with. (Coursework, 2005)

Starbucks is a world-famous company that is successful in specialty coffee industry. However, to further push its global development forward requires continual improvement. Starbucks should stick on product and service excellence to maintain the stable relationships with quality suppliers and ensuring healthy two-way communication with employees. Furthermore, Starbucks should keep adding new value to products and services, as the new demand for products and services are continually evolving. And cost control would be an essential issue for its effective growth as well. In particular, the extremely high costs spending on transforming an inherent consumption idea in educating its global customers to accept a new service. Therefore, the company needs to balance the expenditures and earnings. To pursuit the prosperous future development, Starbucks may need to think over and re-evaluate its overall strategy, especially its global expansion more carefully for sustaining the healthy operation and continuous growth. (Coursework, 2005)

## 6. Conclusions

Manufacturing is different from the service provision in many aspects. While manufacturing provides tangible products, service provision provides intangible services. The core difference between products and services might be the tangibility. Furthermore, manufacturing is low customer contact. Conversely, service provision is high customer contact.

Likewise, the responsibility of the operation managers/manageress in manufacturing is totally different from the operation managers/manageress in service provision. On the running of the business, operations management in manufacturing is more product oriented, however, operations management in service provision is more people oriented.

In conclusion, all the organizations need to make proper operation and strategies for achieving its overall objectives for a long-term development. 'Fit' is considered to be a key to make the operation perfect, and it is necessary for an organization to notice the main differences between manufacturing and service provision, which can lead the organization to the success. As a manager who is responsible for running the business globally, he must adopt strategic thinking, perfect operation and keep the changeable environment in mind. 'Think out of the box' is expected in operating world businesses (Coursework, 2005).

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