

## ONE STOP SERVICE: THE CASE OF SENAO INTERNATIONAL CO., LTD.

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### ABSTRACT

This paper reports the case of Senao International Co., Ltd. [15] (hereinafter referred to as “Senao International”). It investigates how Senao International adjusts its business process to accommodate the changes of the competitive market. This paper firstly introduces the background and supply chain structure of the mobile phone distribution channel, the current business circumstances of the industry, and the problems Senao International has encountered. In order to compete with other rivals in the market, Senao International has implemented a program, which centralizes “One Stop Service” as its focus. This program improves both the depth and width of customer service. By implementing the IMEI information system, which is composed of the four modules of Intelligent, Maintenance, Experience, and Inventory, Senao International has made significant improvements in terms of its finished products replenishment, maintenance service quality, relationship management of customers and dealers, and the forecast and purchase management of spare parts. The as-is/was and to-be processes of these operations are illustrated in this paper. The key performance indicators (KPIs) before and after the program are reported in the last part of this paper. The result indicates that the benefit of this “One Stop Service” program lies in the forecast accuracy of spare parts, inventory turnover days, customer satisfaction rate, and the establishment of a consumer database.

**Keywords:** e-Business, Supply Chain Management, Business Process Management

### 1. INTRODUCTION

The research of Market Intelligence & Consulting Institute (MIC, [9]) shows that the growth of the Taiwanese mobile phone market has been affected by multiple factors in the past years, such as the decreasing demands of consumers, the global financial crisis, and the longer cycle of mobile phone changeover. A result of this is a sales decline of mobile phones in the Taiwan market since 2002. In 2008, the total sales quantity of mobile phones in the Taiwan market was 7,044 thousand, which was 1% less than in 2007. The sales quantity is further projected to have a loss of 9.3% in 2009, due to the anticipation of constantly low economic growth. Although the mobile phone market seems to be in a negative growth, the annual market value of mobile

phones in Taiwan is reported to remain over NTD\$500 million [7]. In light of this, the mobile phone market remains an important source of profit for mobile phone distributors.

The mobile phone supply chain in Taiwan can be illustrated as Figure 1 below. This chain is mainly composed of five sectors: branded mobile phone manufacturers, distributors, sales partners, telecom operators, and end consumers. The major mobile phone distributors in the Taiwan domestic market include Senao International, Synnex [18], Arcoa [1], and AURORA [2]. With the mobile phone distributors in the center, the upstream partners are those branded handset manufacturers, e.g. Nokia [12], Motorola [10], and Sony Ericsson [17]. Via the distributors, mobile phones are distributed to the downstream sales partners, such as the retailers, franchises, dealers, and counters of telecom operators, before they are delivered to the end consumers. One thing worth mentioning is, in the

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Taiwan market, most mobile phone distributors cooperate with one sole telecom operator. Examples are Senao International with Chunghwa Telecom [3], and Synnex with TaiwanMobile [20]. Mobile phones are distributed through each specific channel once they enter the Taiwan market through the telecom operators. The telecom operators then provide products and service to end consumers together with their cooperating distributors.

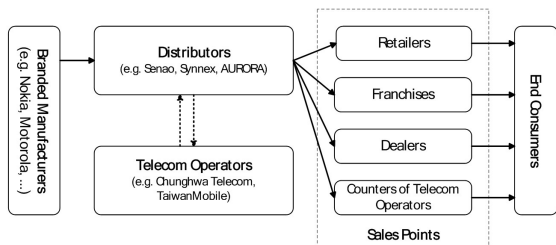


Figure 1: The mobile phone supply chain

**1.1 The Close Collaboration between Mobile Phone Distributors and Telecom Operators**

The three major telecom operators in the Taiwan market are Chunghwa Telecom, TaiwanMobile, and FETnet [5]. Since 2004, the market shares of these operators remain in a constant level as illustrated in Table 1 below. It can be seen from the table that from 2004 to 2008, Chunghwa Telecom had the largest market share, followed by TaiwanMobile and FETnet.

Table 1: The market shares of the three major telecom operators from 2004 to 2008

(%)Year	2004	2005	2006	2007	2008
Chunghwa Telecom	38.0	39.6	40.9	40.3	41.4
TaiwanMobile	31.8	30.0	29.9	30.5	31.0
FETnet	30.2	30.4	29.2	29.2	27.6

Data Source: [15]

The competition in the mobile phone market is getting fiercer due to the shorter life cycle of mobile phones and the greater variety of newly designed features. In order to get contact with end consumers, there has been a trend in which telecom operators cooperate with certain mobile phone distributors. This sort of cooperation started in 2005 when FETnet invested in Arcoa and was one of the major shareholders. At that time, Chunghwa Telecom used to retail its mobile phones through the two distributors of Senao International and Synnex. However, after Chunghwa Telecom purchased more than 30% of Senao International’s shares in the end of 2006, Senao International obtained the exclusive right to sell and maintain mobile phones using the Chunghwa network. Synnex has been forced to quit Chunghwa Telecom’s distribution channel since then.

**1.2 The Threat of the “Direct Retailing” Model**

In the past, branded mobile phone manufacturers used to combine telecom service offered by telecom operators with their mobile phones before they delivered the whole product sets to distributors (e.g. Senao International and Synnex). The distributors then delivered those product sets (mobile phones and service) to end consumers. However, this model has been adjusted due to low profit margins.

The “direct retailing” model refers to a new distribution model between branded mobile phone manufacturers and telecom operators. Rather than relying on distributors to deliver product sets to the counters of telecom operators, with the “direct retailing” model branded mobile phone manufacturers outsource their product delivery operations and after-sales service to third-party logistics and maintenance companies. For example, Nokia cooperates with HCT Transportation [6] for logistics and outsources after-sales maintenance service to Sequel [16]. Motorola outsources its logistics to T-Join Transportation [19], and offers the maintenance service on its own. This model has a direct impact on distributors since the logistics and maintenance service used to be distributors’ major business areas. Although there is a common realization that the logistics service is easy to be outsourced but the after-sales service is not, thinking of the long-run role of distributors will need to be re-defined.

**1.3 The Losing Bargaining Power of Branded Mobile Phone Manufacturers**

In 2008 the five mobile phone brands with the largest market share in the Taiwan market were, in order, Nokia, Sony Ericsson, Samsung [14], Motorola, and LG [8], with a total of more than 90%. The market shares of each of these five brand companies are shown in Table 2 below. These branded manufacturers used to have high bargaining power to distributors because their brand adds much value to their products, i.e. mobile phones. Nonetheless, since the market of mobile phone is getting saturated, nowadays the brand does not play such an important role with consumers. Consumers now have higher demands in purchasing a mobile phone to replace the old one, rather than purchasing a firstly-owned mobile phone. Their decision on the brand is highly affected by their loyalty to the original brand, which is closely relevant to the satisfaction of after-sales service.

The cooperation between telecom operators and distributors also changes. Telecom operators used to give the right of purchase to multiple distributors in the past to diminish the risk of being restrained by a single distributor. However, telecom operators now strategically ally with and give their exclusive right of purchase to a single distributor (e.g. Chunghwa

Telecom with Senao International, TaiwanMobile with Synnex, and so on) for the reason of economies of scale. Distributors thus now play a more critical role in the market because they have stronger bargaining power with the branded manufacturers. Take Chunghwa Telecom and Senao International for example. After Chunghwa Telecom invested in Senao International and became one of the major shareholders, Senao International has been the exclusive purchaser of mobile phones for Chunghwa Telecom. Branded manufacturers would no longer be able to contain Senao International by taking the advantage of multiple distribution channels of Chunghwa Telecom. On the contrary, because Chunghwa Telecom is currently the largest telecom operator in the Taiwan market, it in turn brings Senao International more business resources. Senao International constantly obtains stronger bargaining power with branded manufacturers.

Table 2: The market shares of mobile phone at the Taiwan market

Year/Quarter (%)	2007				2008			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Nokia	28.2	29.1	30.0	31.6	31.8	32.7	33.9	34.0
Sony Ericsson	18.5	16.8	17.3	20.2	24.0	24.1	26.2	26.4
Samsung	10.2	13.5	13.9	14.1	15.3	16.0	16.1	17.1
Motorola	21.7	18.6	15.1	14.6	10.8	8.5	6.7	7.2
LG	1.1	1.9	3.8	3.4	3.3	4.6	5.3	7.1
Local Brands	7.4	3.8	5.0	5.0	4.2	4.6	3.3	2.4
Others	12.9	16.2	14.9	11.1	10.6	9.5	8.5	5.8

Data Source: [9]

#### 1.4 The Growing Bargaining Power of Customers

There are two major types of customers for mobile phone distributors: dealers and end consumers. With regard to dealers, once the transaction finishes, their contact with distributors finishes. Distributors do not have strong controlling power with these dealers. Additionally, because some branded manufacturers subsidize or retail products to these dealers directly, dealers are not the main source of profit to distributors.

With regard to end consumers, they purchase mobile phones via other sales points besides dealers, i.e. retailers, franchises, and counters of telecom operators. Because the price of mobile phones is transparent in the market, end consumers could easily compare products and prices through various ways, such as the Internet. Furthermore, because the service of mobile phones is getting standardized, distributors have to offer deals with a low price to maintain the market share and retain competitiveness. As a result of this the profit margins to distributors are low.

#### 1.5 The Threat of New Entrants

Because distributors need to purchase a large quantity of mobile phones from branded

manufacturers for retail, sufficient capital is critical to new entrants to the distributor sector. In addition, new entrants also need to have good logistics capabilities and enough sales points to get contact with end consumers. Because of these high entry barriers, the mobile phone distribution market in Taiwan is oligopolistic and shared by just a few companies.

However, rather than new entrants there are some existing channels to potentially retail mobile phones in the future. Since the mobile phone market in Taiwan is now getting mature, mobile phones are considered as a functional product rather than an innovative product. The existing channels for 3C products are likely to retail mobile phones because they have existing sales points and capable logistics ability. Examples are TKEC [21], eLifeMall [4], and TV shopping.

## 2. BUSINESS PROBLEMS ANALYSIS

### 2.1 Current Business Circumstances

Senao International was founded in May 1979 and listed in May 2001. The capitalization is registered as TWD\$2.23 billion. Its business operations can be divided into two main areas: wireless communication and mobile communication. In terms of the wireless communication area, Senao International exports the products manufactured by itself, e.g. PLAM (Private Local Area Mobile phone), WPABX (Wireless Private Automatic Branch Exchange), and WLAN (Wireless Local Area Network). In terms of the mobile communication area, Senao International acts as a purchase agent to numerous worldwide branded mobile phone manufacturers, e.g. Nokia, Motorola, and Sony Ericsson. It is also an agent for the mobile numbers of Chunghwa Telecom.

Moreover, Senao International is authorized by the branded manufacturers to provide consumers professional maintenance service. Senao International has established a number of customer service centers in Taiwan. At these customer service centers Senao International provides maintenance, warranty, and consultancy services to consumers. It also cooperates with third-party logistics partners to respond to consumers' needs quickly and improves its service efficiency. Additionally, Senao International shares its successful experience in business operations with its downstream partners, e.g. retailers and franchises. By providing consultancy to its partners Senao generates competitive advantages for both parties.

Senao International cooperates with Chunghwa Telecom. It has acted as the purchasing agent of mobile pager numbers of Chunghwa Telecom since November 1997. With this cooperation Senao International serves its consumers with the "one stop shopping" of both mobile phones and mobile

numbers at its own chain shops and the counters of Chunghwa Telecom all over Taiwan. It also cooperates with Chunghwa Telecom on the mobile roaming network in the North America and Japan areas. After the long (8-year) cooperation between both parties, in the year-end of 2006 Chunghwa Telecom purchased 32.5% of Senao International's shares with NT\$1.1 billion. Chunghwa was then one of the major shareholders of Senao International. This investment has further enhanced the connection between both parties.

Before Chunghwa Telecom invested in Senao International, there were two distributors acting as the purchase agent of mobile phones for Chunghwa Telecom: Senao International and Synnex. Senao International thus was not able to gain strong bargaining power with the branded manufacturers because of the limited economies of scale. A result of this was that Senao International could only purchase mobile phones in a small variety with higher cost. Furthermore, because Senao International did not collect consumer information from the frontend sales points, it was not capable to do beforehand analysis for new products or new promotions. In other words, Senao International was taking the "push" strategy to sell products to end consumers, rather than provide what consumers actually need, referred to as the "pull" strategy.

After the investment of Chunghwa Telecom in Senao International, Senao International obtained the exclusive rights to purchase mobile phones for Chunghwa Telecom and to sell the products of Chunghwa Telecom. With this change Senao International attempts to be a distributor offering a comprehensive set of communication services such as mobile phones, mobile numbers, ADSL, and MOD. This is anticipated to bring significant growth in the sales and profit to Senao International.

The exclusive cooperation between Senao International and Chunghwa Telecom further facilitates Senao International to collect sufficient consumer information from the frontend counters. This in turn gives Senao International the capability of designing marketing activities attractive to consumers in alliance with the promotions of both branded manufacturers and telecom operators. Consumers will be able to choose the mobile phone products which suit them best in terms of features and price from a great variety.

## **2.2 SWOT Analysis**

### **2.2.1 Strengths**

- The exclusive agent to purchase mobile phones for Chunghwa Telecom, the largest telecom operator in the Taiwan market

Since Chunghwa Telecom has been one of the major shareholders of Senao International since 2006, Senao International acts as the exclusive agent of

mobile phones for Chunghwa Telecom. It shares business resources, e.g. sales points, with Chunghwa Telecom. In the end of 2008, Senao International managed approximately 700 sales points in total. Among these sales points, 215 are retailers, 311 are the counters of Chunghwa Telecom, and 150 are franchises. Compared with other rivals in the distribution sector, in light of the great number of sales point Senao International is able to collect information of end consumers more efficiently and provide more comprehensive services to consumers.

- The outstanding maintenance ability recognized by branded mobile phone manufacturers

The maintenance of mobile phones can be divided into four levels: Level 0, 1, 2, and 3. Level 0 maintenance concerns the testing, instruction, software upgrading, and parts replacement. It does not involve any disassembly operations with the mobile phone. Level 1 maintenance relates to the fixing of appearance and functional parts, such as testing and replacing new cells, key pads, battery, antenna, and vibrators. Level 2 maintenance is about replacing PCB boards. A malfunctioning PCB board would be disassembled, tested, and re-assembled or replaced. The highest level, Level 3, maintenance, concerns the repair of electronic components on the PCB board. Engineers need to remove those electronic components from the PCB board, test and fix the problems, and re-assemble the components back on the board. For the Level 3 maintenance, branded mobile phone manufacturers have different policies. For example, Motorola set up three service centers specialized on the Level 3 maintenance in the north, middle, and south of Taiwan; Nokia and Sony Ericsson outsource this level of maintenance to their third party partner, Sequel Technology.

Senao International has been recognized and authorized by branded manufacturers as being capable of providing Level 3 maintenance service to consumers. This extended service makes Senao International's business areas more comprehensive when compared to other distributors. Furthermore, it also saves Senao International's cost in terms of logistics, which is derived from the transportation to and from branded manufacturers. The inventory turnover rate is also expected to be increased since the economies of scale of maintenance are larger.

- The leading position in the mobile phone distribution market

In recent years Senao International has had significant growth in its business. Senao International has been competing with Synnex for years. In 2003, the sales amount of Synnex was 6.7 times that of Senao International. The market share of Synnex was significantly larger than Senao International. However, the situation changed. After Chunghwa Telecom invested in Senao International in 2006 and expanded Senao International's economies of scale,

Senao International has been the largest distributor in the mobile phone market. In 2007, the market share of Senao International was 36%, and increased to 50% in 2008. Senao International now is the leading company in the mobile phone distribution sector.

### 2.2.2 Weaknesses

- The out-of-date information system

The characteristics of mobile phones include short lifecycle, high innovation, and rapid technology development. With this regard, the implementation of electronic systems is expected to benefit distributors in terms of the purchase management, inventory management, logistics management, and customer relationship management. Before Senao International implemented the "One Stop Service" program, Senao International had been using the old information system for more than three years. That old system had difficulties in supporting Senao International's new business model and reflecting the rapid changes in the market.

The as-was system supplied discontinued logistics information to Senao International. Senao International currently cooperates with three logistics companies. The on-time delivery is managed within 20 minutes. Before the "One Stop Service" program was implemented, Senao International used the barcode system to track the product delivery status. However, the barcode system could not provide sufficient information in terms of the in-transit status between warehouses and sales points. The logistics information is thus considered to be incomplete and needing to be improved.

- The excess of spare parts inventory

For mobile phones Senao International provides consumers two-year warranty. In order to provide real-time and complete after-sales maintenance service, Senao International has to store enough spare parts for the two-year usage. However, because the variety of mobile phone items is great, it is not easy to collect the exact sales information of mobile phones and predict the required quantity of spare parts. Additionally, the life cycle of mobile phones is now shortened to approximately six to nine months. The time to market of new mobile phone models is shorter. It further results in the high excess rate of spare parts inventory. The forced markdown (the price change at the end of season) also makes Senao International suffer from the profit lost of inventory.

- The shortage of management experience in the global market

Senao International uses different strategies from its major competitor, Synnex, in the overseas market. Synnex self-manages its business in the Asia-Pacific region and expands the business to the European and American markets by investment. Rather than expanding business to the overseas

market, Senao International takes the Taiwan market as its focus. Although Senao International is now the leading distributor of mobile phones in the Taiwan market, the lack of management experience in the global market has limited Senao International's expansion overseas.

- The shortage of people in the professional areas of branding and marketing

Senao International used to focus on its mobile phone maintenance and distribution services. Marketing is not its major business concerns. After Chunghwa Telecom invested in Senao International, there seems to be a trend that Senao International's customers are mainly the elderly. In order to change this image, Senao International spends extra efforts in fulfilling the needs of the younger generation. Senao International emphasizes on regenerating its brand image, which aims to bring a new image of Senao International to consumers. However, Senao International does not have many people in the professional area of marketing. Furthermore, because of the specialties of the mobile phone distribution sector, the help that the outside marketing consultants can offer is limited.

### 2.2.3 Opportunities

With the development of new technology there are numerous functions now integrated with mobile phones. Examples are high-specification cameras, high-quality music players, and high-speed Internet access. This has been an important force driving the growth of the mobile phone market. Additionally, with the maturity of the mobile phone market, consumers now have high intentions of requiring the services which can add value to mobile phones. For example, consumers have high demands in the maintenance quality and expect shorter time to market of new products. By offering and developing those value-added services, distributors satisfy consumers which in turn bring benefits to themselves. Consumers are more loyal to the service providers, i.e. the distributors, since they have long contact with the distributors and realize what and how their needs can be fulfilled. This loyalty determines whether consumers will come back to the same service provider next time when they have to re-purchase or change their mobile phones. In light of this, loyalty plays a critical role as the indicator of future market shares.

- The bright future of the Internet shopping

According to Nielsen Global Online Survey [11], more than 85% of Internet users use the Internet as one of the major means of shopping. The Internet shopping of the Taiwan market reached NTD\$93.5 billion in 2008. The analysis shows that 3C products account for approximately 23% of that total amount. This analysis reveals that the future development of the Internet shopping in Taiwan is optimistic for 3C

products. However, before the “One Stop Service” program was implemented, Senao International did not offer any online shopping service to consumers.

- The future development of WiMax, DVB-H, and VoIP

The development of Internet-based applications is optimistic in the Taiwan market. For example, in the Taiwan market Intel spends much capital in developing the WiMAX technology. One of the telecom operators, FETnet, integrates its resources to promote the 3.5G mobile Internet service, Wi-Fi, and 3.5G broadband business. It further invests in Q-ware [13], who is one of the major service providers of wireless Internet access in Taipei City. In other words, the higher acceptance of new technology such as WiMAX, DVB-H, VoIP, and GPS, leads to the faster growth of mobile phone market.

#### **2.2.4 Threats**

The profit in the mobile phone industry is getting compressed. This has retained the development of its future development. According to the Innovative DigiTech-Enabled Applications & Services Institute [7]), the popularity rate of mobile phones in the Taiwan market is approximately 108.8%, indicating that the usage of mobile phone is moving into the maturity age. Under the expectation that the increase of new users is limited and their contributions to the profit are low, telecom operators now maintain profitability by cutting down their promotion costs and subsidies of mobile phones to retailers.

Moreover, because the services of mobile phones are not easily differentiated among providers, the competition of mobile phone sales is often on the price basis. Gaining more market share often refers to the loss of profit.

In order to offer speedy maintenance service, distributors often take high inventory of spare parts in their warehouses. However, this approach has caused the loss of forced markdown and the risk of high capital investment because the price of electronic components always changes rapidly.

### **2.3 Problems Analysis**

Based on the analysis above, Senao International aims to offer consumers the “one stop service” by implementing the program of “One Stop Service”. In order to maximize the value of this program, some problems are identified and need to be resolved. These problems include:

#### **2.3.1 The Depth of Service**

Although Senao International is the leading company in the mobile phone distribution sector, it does not focus on developing its own brand. Because consumers now have higher anticipations in service, Senao International is forced to improve itself in

terms of innovation and service quality. This is more crucial after Senao International was invested in by Chunghwa Telecom. A high percentage of Chunghwa Telecom’s customers are the elder generation. After the investment, currently more than 34% of Senao International’s consumers are those 44 years of age or older. This is the highest percentage among its competitors. Further, the decoration at the sales points of Senao International used to be old fashioned. In other words, if Senao International does not like being considered as an “old” company, it needs to attract the younger generation to be its customers.

Moreover, since 2003, there has been a booming growth in e-commerce in the Taiwan market. Many other distributors have devoted themselves into this market to make profit. However, Senao International did not, even though it owns numerous resources of mobile phone products. The service Senao International offers to consumers is limited to the physical shops.

#### **2.3.2 The Width of Service**

Customers now expect to purchase more items in addition to mobile phones at the sales points of Senao International. Examples are LCD TVs, XBOX, and Eee PC. After the investment of Chunghwa Telecom in Senao International, consumers rely on Senao International’s counters for the enquiry of Chunghwa Telecom’s business, e.g. MOD and ADSL. Providing only mobile phones is no longer sufficient for customers.

If we compare the development of Senao International and Synnex, we can find that Synnex grows in a very stable path. Although Senao International has obtained the most market shares since 2008, its number of retailers remains close to Synnex. Senao International realizes that if it cannot make significant growth in terms of the number of retailers and thus create larger economies of scale, its leading position will be easily replaced by its major competitor, Synnex. It would not be able to catch up to consumers’ needs at the first moment either.

#### **2.3.3 The Quality of Maintenance Service**

Consumers have two different ways to request maintenance service from Senao International. They can choose either send the mobile phones directly to the local service centers at each area, or send them to Senao International’s sales points. Mobile phones sent to each sale point will then be delivered to the maintenance center by Senao International’s logistics. After the defective mobile phones are delivered, consumers can only wait for notifications from dealers or customer centers for the maintenance progress.

PCB boards are another important factor affecting the quality of maintenance service.

Defective PCB boards need to be sent back to the corresponding branded manufacturers or certain suppliers specified by the branded manufacturers for maintenance. This procedure increases the maintenance cost and possible delay of the maintenance.

Senao International provides a two-year warranty to consumers. This warranty is one year longer than the one provided by branded manufacturers. Senao International thus has to stock spare parts for the two-year usage. The production of these spare parts is sometimes discontinued by branded manufactures if the mobile phone model is at its end-of-life (EOL). During the first year of warranty, Senao International does not need to worry about the EOL situation because branded manufacturers are still in charge of this maintenance. However, in the second year of warranty Senao International takes the full responsibility of the maintenance. It thus has to give a forecast for spare parts and PCB boards for the second year. Nevertheless, Senao International's order system does not integrate with the requirements from the maintenance center and customer centers. The quantity required for maintenance can not be predicted accurately.

The number of spare parts and PCB boards required is based on the failure rate of finished products. Since the life cycle of mobile phones is getting shorter, the failure rate during the second year is getting more difficult to be measured. If the projection is significantly greater than the actual demand, Senao International suffers the loss of inventory obsolescence and forced markdown. On the contrary, the spare parts and PCB boards required might be out of stock. This shortage in turn delays the maintenance progress. (In this case another purchase needs to be issued to the corresponding branded manufacturers.) Either one of the situations is harmful to the customer satisfaction on the maintenance quality. Before the "One Stop Service" program is implemented, only 84.3% of maintenance cases could be finished within three days, as Senao International promised to consumers.

### 3. THE IMEI SYSTEM

With the "One Stop Service" program, Senao International implemented a new information structure. This structure is depicted as Figure 2 below. One of the major systems regarding this program is the IMEI system, which is composed of four modules: Intelligent, Maintenance, Experience, and Inventory.

#### 1. The intelligent module

Senao International headquarters is the integration center of all information, including product sales, finished goods inventory, maintenance

information, spare parts consumption, and forecast of spare parts. Based on the projection of finished goods and spare parts, the headquarters determines the quantity to order. The Intelligent module consists of the management systems of information and promotion, and the decision support systems of maintenance, customer service, and inventory/purchase. With these functions, managers are able to make the forecast for both finished goods and spare parts, monitor the delivery status of branded manufacturers, and take appropriate strategies for the inventory.

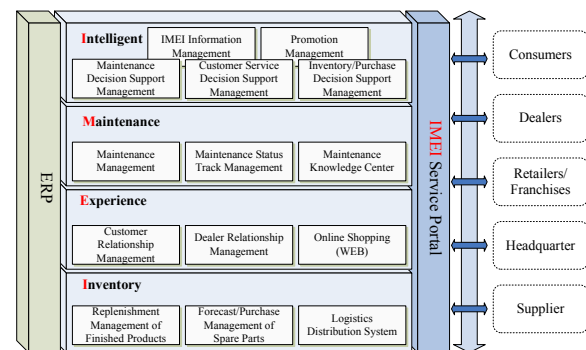


Figure 2: The IMEI system

#### 2. The maintenance module

The Maintenance module offers the maintenance management, progress tracking, and maintenance knowledge center. By integrating these functions, engineers are able to give feedback on the maintenance information, progress, and the consumption of spare parts to the headquarters. The information helps to enhance the quality of maintenance service.

#### 3. The experience module

Senao International collects information about consumers and the market via the frontend sales point. It then shares the information with its dealers and provides suggestions to dealers about the design of promotion activities. As such it enhances its relationship with its dealers. The Experience module concerns the customer and dealer relationship management of Senao International. Via this module, Senao International manages customers' requirements and manages the transaction information with dealers. It bridges customers' activities at the frontend to dealers' transactions at the backend.

#### 4. The inventory module

The Inventory module is composed of the replenishment management of finished goods, the forecast/purchase management of spare parts, and the logistics distribution management. It integrates the sales and inventory information, and provides accurate order forecasts to avoid the shortage and obsolescence of inventory.

### 3.1 Business Process Management

#### 3.1.1 The Replenishment of Finished Goods

In addition to distributor, Senao International plays the role of wholesaler to its dealer customers. It wholesales mobile phones of Nokia, Motorola, Sony Ericsson, and so on. For each branded manufacturer Senao International uses different strategies in purchase. Take Nokia for example. Senao International provides Nokia with the forecast of mobile phones for the future two months. The forecast has to be at least 80% accurate when the forecast is one month away. In the prior week of new product launches, Senao International needs to confirm the quantity required. As such, Nokia is able to distribute appropriate quantities of products to Senao International. The purchase lead time varies with branded manufacturers. Generally it ranges from 14 to 60 days.

Senao International has one central warehouse and numerous local warehouses around Taiwan. Suppliers and branded manufacturers distribute spare parts and finished goods to the central warehouse, which is located at Linko, in the north of Taiwan. Senao International then distributes those items to its local warehouses after considering the information provided by each local warehouse, e.g. the daily consumption of spare parts, the delivery frequency, the safety stock level, inventory in house, and inventory in transit. The local warehouses then distribute those items to the local offices based on the historical replenishment data. The local offices will make adjustments to the quantity required by dealers, Chunghwa Telecom counters, and franchises if they have any special needs. The distribution chain of Senao International is depicted as Figure 3 below.

Before the “One Stop Service” program was implemented, there were some problems identified in Senao International’s replenishment of finished goods.

- The replenishment was in a “push” model. The headquarters determined the quantity to replenish based on the historical data. The quantity was often different from the actual demand. This approach had resulted in the shortage or obsolescence of inventory in the frontend sales point.
- Product managers placed the orders of finished goods to the branded manufactures based on the historical data. The quantity was often different from the actual demand.
- The information required for the replenishment planning was dispersed in multiple data sources. Integrating the information was very time-consuming. The scattered information made the decision process more difficult.
- The management of the frontend sales point was not easy. The number of Senao International’s points is great. These great numbers caused the sales forecast to be inaccurate and made the

quantity distributed improper. It happened that at some sales points there was a shortage of product while it was stocked as inventory in some other close sales point. Since consumers have high intentions of obtaining a popular mobile phone at the earliest possible moment, they are not willing for the waiting of transfer. The inappropriate distribution of products results in loss of revenue for Senao International.

- The inventory information at each sales point was not transparent. The “as-was” replenishment system did not offer the function of tracking the days that inventory had been stocked in one particular sales point. The headquarters consequently had difficulty in adjusting those inventories with low turnover rates to the sales points that required it. The replenishment plan was not optimum and the incomplete inventory information caused the loss of sales.
- The non-integrated information of logistics caused confusion and the waste of resources. Senao International outsourced its logistics to numerous logistics companies, and could only wait for those logistics companies providing information for analysis, e.g. the distribution details, quantity, time, and frequency, at the end of each month. The information could only be used for afterwards planning. Senao International was not able to do the cost analysis and route planning beforehand.

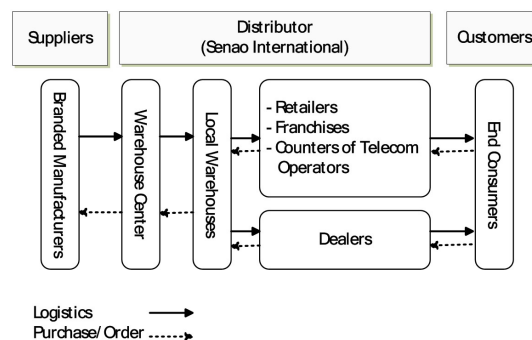


Figure 3: The distribution chain of Senao International

After the “One Stop Service” program was implemented, the replenishment process of finished goods is shown as Figure 4 below.

- The “push” and “pull” models are utilized in parallel in the replenishment process. For the “push” model, it follows the “as-was” process wherein the headquarters determines the quantity distributed to each dealer based on the past sales record. Each dealer can then request an adjustment based on their forecast of future demand. This is referred as the “pull” model.
- More information is provided for the replenishment planning, such as the recommendation from the system, the inventory turnover days and the order quantity of each



sales point, and the predicted increase on demand due to special promotions. A consequence of this is that the replenishment quantity is closer to the actual need.

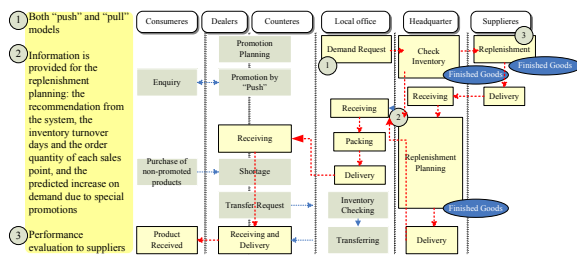


Figure 4: The replenishment process after the program implemented

In terms of the transfer of finished goods among the frontend sales points, the process after the program was implemented is depicted as Figure 5 below.

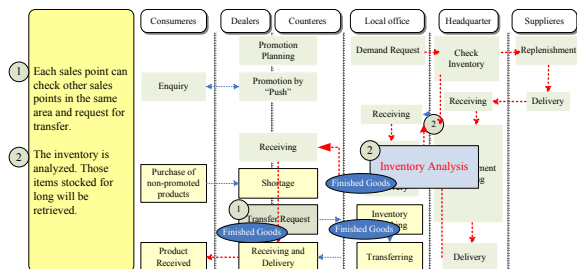


Figure 5: The transfer process of finished products after the program implemented

- Each sales point can check other sales points in the same area and request for a transfer. The sales points can ask the local distribution center to assist transferring the finished goods needed. The local distribution center will check the inventory at each sales point and transfer the products. As such the efficiency improves and the time required for waiting is reduced.
- The headquarters analyzes the inventory data at each sales point and retrieves those items stocked for long periods. Thus the inventory turnover rate is expected to be improved at each frontend sales point. It also stimulates the sales of new products at the frontend sales points.

### 3.1.2 Maintenance Service Management

Senao International has 34 customer service centers around Taiwan. Consumers have two different ways to ask for maintenance for their defective products. They can either send the mobile phones requiring maintenance directly to the local service centers, or request for delivery arrangement from any of Senao International’s sales points.

To manage the delivery cost, Senao International applies different management mechanisms to different groups of dealers. In Northern Taiwan, for those dealers whose sales are

over NTD\$150 thousand per month, Senao International offers the logistics service for free. This sales boundary is adjusted to NTD\$70 thousand per month in Southern Taiwan. In terms of the delivery frequency, it is three times per day in Northern Taiwan and is two times per day in Southern Taiwan. For those dealers not meeting the sales amount specified, they will need to delivery those maintenance items back to Senao International’s sales points at their own cost.

The items for maintenance will then be transferred to Senao International’s maintenance centers. The maintenance centers test these defective items and determine whether these items need to be sent back to the branded manufacturers for further repairs. In order to reduce customers’ waiting time, the maintenance centers used to have PCB boards in stock for replacement. The defective PCB boards will be sent back to the corresponding branded manufacturers after reaching a certain quantity.

The as-was system uses records of the consumption of spare parts. As such, the inventory of spare parts is under managed. During the maintenance, dealers and other sales points can check the progress from the system, or call for enquiries. Once the maintenance is finished the items will be delivered back to the sales points. The sales points will then notify end consumers to pick their items up. During the whole process, consumers can only ask for the maintenance status via Senao International’s dealers or sales points. The process is shown as Figure 6 and Figure 7 below.

Before the “One Stop Service” program was implemented, there were some problems identified in the maintenance process.

- The days required for maintenance was not clear to consumers. (As claimed by Senao International, the maintenance should be finished within three days.)
- After sending the defective items to Senao International’s dealers or sales points, consumers could only wait for notifications regarding the maintenance status.
- The maintenance fee needed to be confirmed by consumers. It took time and the handling cost increased.
- Consumers were not updated immediately if the maintenance was delayed.
- The jobs of maintenance and customer centers were not clearly distinguished. In addition to the maintenance operations, maintenance personnel also needed to take care of customers’ complaints. This affected the efficiency of maintenance.
- The contact records between maintenance centers and consumers could not be tracked.
- Maintenance centers were not clear about the items’ most updated status, e.g. shortage of spare parts, transferring back to branded manufacturers,

waiting for the confirmation of maintenance fee, and schedule delays. To check this information is very time consuming.

- The deputy was not able to continue the jobs if the maintenance personnel take leaves.
- The maintenance information was not integrated. Maintenance personnel needed to check the systems of dealers or sales points for maintenance records.

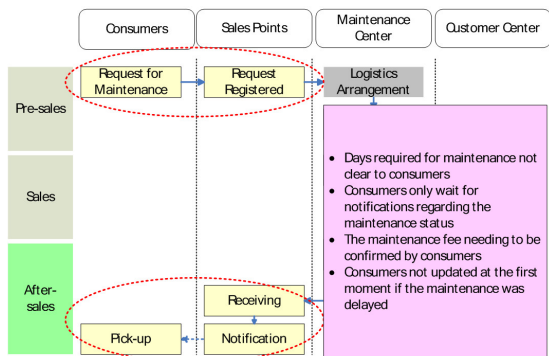


Figure 6: The maintenance process before the program implemented (1)

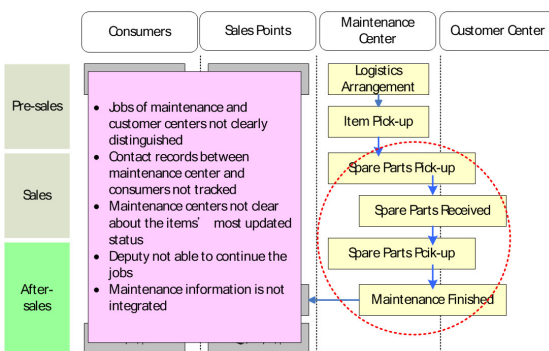


Figure 7: The maintenance process before the program implemented (2)

After the program is implemented the maintenance process is depicted as Figure 8 below.

- The maintenance system is established on the Internet and integrates data from dealers, Chunghwa Telecom counters, and other sales points. This integration of data significantly reduces the time of enquiry.
- The maintenance is divided into different levels. Maintenance personnel are assigned to each level based on the actual needs. The clear job specification further increases the maintenance efficiency.
- The maintenance record for each mobile phone is created in the IMEI system. This information is utilized for future products development and for the preparation of spare parts. It further minimizes the possibility of maintenance delay due to the shortage of spare parts stock.
- The maintenance system is integrated with customer centers. The personnel of customer centers notify consumers of the scheduled

pick-up time and delayed information if any. When consumers call for enquiry, customer center personnel will be able to check the information from the maintenance system directly and respond. Feedback from end consumers will also be recorded into the maintenance system by customer center personnel for maintenance personnel's understanding.

- The jobs of maintenance and customer centers are now clearly re-defined and distinguished. Customer centers are in charge of customers' feedback and complaints, rather than maintenance centers. Each center has its own jobs. This redefinition of jobs increases the maintenance efficiency and improves the service quality.

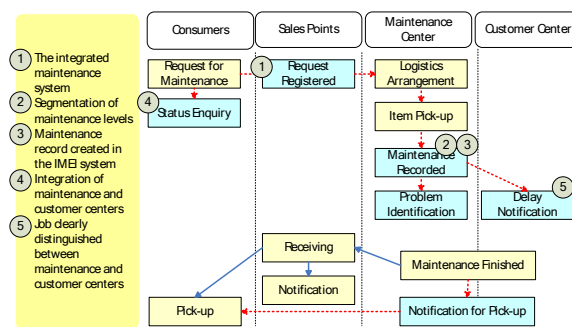


Figure 8: The maintenance process after the program implemented

### 3.1.3 Consumer Relationship Management

The improvement of consumer relationship management focuses on the depth of customer service. Details of the program include the following:

#### 1. The establishment of the brand image of Senao International

- A dedicated department to market the brand of “Senao International” is set up. Under this department are eight operational units regarding customer relationship management.
- Senao International develops numerous Internet-based activities to attract the younger generation. One of the activities is promoting a role-playing game. With the game, consumers are able to create their own roles and create their own greetings to friends. This activity is highly recognized by younger consumers and is widely discussed by Internet communities.
- The sales points are re-decorated with the newly designed identification system of Senao International. This newly designed identification system includes a new logo, a new theme, and a new representative color of Senao International.
- In response to the claim of “brand regeneration”, Senao International builds a series of commercial videos which targets the younger generation. Those videos are widely discussed and distributed among the younger generation.

Through the implementation of these activities,

according to the Nielsen survey report [11], there is a significant improvement in the brand-awareness of Senao International. Given the brand name the awareness rate is improved from 32% to 68%; without the brand name given the awareness rate is improved from 7% to 16%. With these numbers it is believed that the effect of the investment in these activities is significant.

## 2. The recruitment of members and the planning of promotion activities

- Senao International creates a procedure for recruiting and managing members. In order to facilitate the recruitment of members, Senao International assigns one manager to each sales point.
- Senao International builds up the membership database for its customers. It can then filter members in the database by their personal information, such as area, gender, age, income, and historical transaction records. With this filtered information, Senao International would design various promotions to satisfy these customers.
- With the membership database, Senao International can conduct surveys to obtain further information from a specified group of members. The information can be why they choose Senao International, their preferences on mobile phones, distributor preferences, and suggestions for Senao International.

## 3. The build up of on-line shopping website

Senao International builds up a new website for online shopping. This website introduces and displays new products. It also links with the official websites of Chunghwa Telecom and Senao International. By doing so, it attracts customers visiting for various purposes. Customers who purchase on this website also enjoy extra service, e.g. payment in installments and maintenance service outside of the warranty. After consumers shop on the website site, Senao International offers bonus points to attract consumers to re-visit the website, or attract consumers to visit its physical shops.

The figure below (Figure 9) depicts the consumer relationship management process after the “One Stop Service” program is implemented. The beginning of this process is that staff at the sales points invite consumers and introduce to them the benefits of becoming a member. If interested, consumers can fill out the application form and become a member immediately. Once the membership application is issued, the form will be collected and sent back to the customer center on a weekly basis. The customer centers will enter the membership information into the database within three days upon receipt.

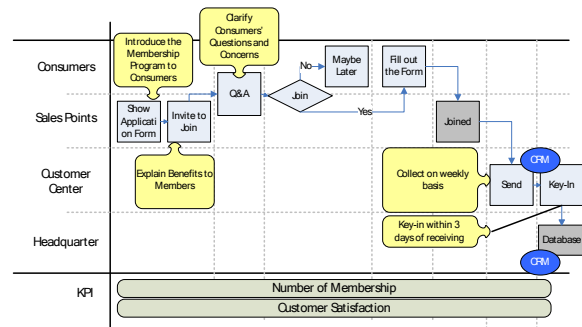


Figure 9: The customer relationship management model after the program was implemented

By utilizing this newly established membership system, marketing personnel are able to design promotion activities based on the membership and survey information collected. The marketing personnel can further analyze the performance of each promotion activity. The results could be an important reference to the design of future promotions.

### 3.1.4 Dealer Relationship Management

The dealer relationship management focuses on broadening the width of service to customers. The actions taken include the following:

#### 1. The development of new product lines

The maturity of applications and services via the Internet interface stimulates the growth of digital products, e.g. multi-media videos and audio, IT products, communication networks, and so on. The development of new products is anticipated to bring more sales to Senao International. Examples of these products are game consoles, GPS navigation machines, iPhone, and HTC Touch. In 2008 these new product lines brought NT\$62 thousand in sales to Senao International. The amount is expected to reach NT\$134 thousand in 2009.

Senao International attempts to differentiate itself with its competitors by offering professional services to consumers. These services assist consumers with a “one stop service” in terms of communication and information technology. It also provides different product combinations to different consumers, helps consumers realize the features of each product, and offers consultancy service at each sales point.

#### 2. The expansion of sales channels of retailers and dealers

Senao International’s sales channels can be divided into four types: retailers, franchises, dealers, and counters of Chunghwa Telecom. These channels are expanding. After being invested in by Chunghwa Telecom in 2006, Senao International sells its products via 312 counters of Chunghwa, together with approximately 200 retailers, 200 franchises, and 1,200 contract dealers.

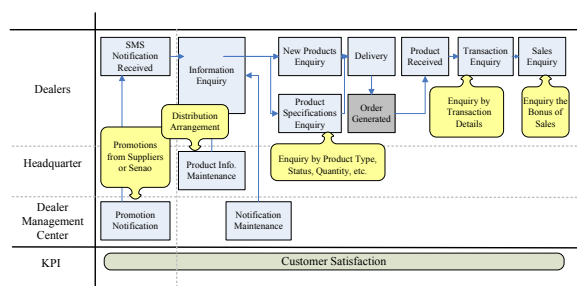


Figure 10: The dealer relationship management after the program was implemented

The figure above (Figure 10) depicts the process of dealer relationship management after the program was implemented. Once the management center notifies dealers of the promotions offered by the branded manufacturers or Senao International via SMS, dealers are able to check the details via the Internet. If dealers are interested in the promotion, they can place orders via the dealer management website. Via this website, dealers can also check their order status, scheduled time to delivery, quantity, and item details.

### 3.1.5 The Forecast Management of Spare Parts

The branded manufactures provide a one-year warranty to Senao International, which is one year shorter than the warranty Senao International offers to consumers. In the first year of the warranty, the branded manufacturers take the responsibility to provide sufficient spare parts to Senao International for maintenance. This is critical to branded manufactures because the shortage of spare parts will negatively influence their reputation and cause customer dissatisfaction. In the first year of the warranty, the branded manufacturers are obligated to cover the maintenance cost, such as material and human costs. Senao International places its orders of spare parts to the branded manufacturers on a weekly basis. The order quantity is based on the consumption data integrated from the local service centers and customer centers.

In the second year of the warranty, however, the branded manufactures might stop producing the spare parts. As a consequence, to maintain the second year warranty Senao International promises to its customers, Senao International has to forecast the demand of spare parts and place orders to branded manufacturers in the end of the first year. After the ordered items are delivered, Senao International will distribute them to the local maintenance centers based on the historical consumption data.

For some uncritical parts, e.g. LCDs, Senao International purchases them from other suppliers rather than the branded manufacturers. For those critical parts, e.g. PCB boards, the branded manufactures will provide some inventory to Senao International. However, due to fluctuating high prices, the quantity is often insufficient. When the maintenance is regarding the PCB boards, Senao

International will replace the defective one with a normal one and send the mobile phones back to consumers. It then sends those defective PCB boards back to the branded manufacturers. The lead time of this replacement is determined by the availability of the PCB board inventory. If available, the lead time is approximately two days. If there is a shortage of the inventory, the lead time can be up to two weeks.

In the forecast management of spare parts, there are three main problems identified.

#### 1. The improvement of forecast accuracy of spare parts

The forecast process is closely relevant to the forecast accuracy. For example, if the calculations and operations are mainly processed manually, it possibly results in more mistakes and longer process time. The longer the forecast process takes, the worse the accuracy would be. Thus the focus of the improvement of forecast process would be reducing the forecast processing time and manual operations.

#### 2. The decrease of the inventory turnover days of spare parts

In order to avoid the shortage of spare parts, one strategy Senao International takes is safety stock. Safety stock is not the actual demand, but a quantity set after considering relevant factors. Consequently an appropriate model of safety stock assures lower inventory turnover days of spare parts.

Before the "One Stop Service" program was implemented, Senao International calculated its safety stock as: the average daily consumption multiplied by safety days. Although this calculation is easy to understand, it is not good at reacting to the changes of demands. It also cannot reflect the risk resulting from the safety stock level. After the program was implemented, the confidence level predefined in the system was utilized to automatically calculate the safety stock required for the expected risk. It avoids the shortcomings of unwanted safety stock currently existing.

#### 3. The improved collaboration mechanism for the forecast management of spare parts

The IMEI system provides the platform for forecast planning. With this platform, personnel regarding the forecast and purchase of spare parts are able to collaborate with each other.

Figure 11 below illustrates the forecast and purchase process of spare parts after the "One Stop Service" program was implemented. Various forecast models are established for various spare parts, which are based on the brand and model of mobile phones. Purchasing personnel can choose the model suitable for them. The system then generates an initial forecast based on the model selected, and a recommended order quantity after integrating other relevant data. The purchasing personnel can make adjustments within a certain specified period. The purchase request will then be submitted to managers for approval.

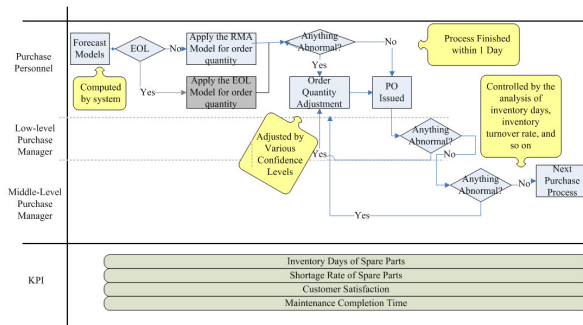


Figure 11: The forecast and purchase process of spare parts after the program was implemented

## 4. BENEFITS OF THE PROGRAM

### 4.1 Key Performance Indicators (KPIs)

The key performance indicators (KPIs) defined for this program are listed in Table 3 below.

Table 3: Key performance indicators (KPIs)

KPI	2006	2007	2008
The availability rate of spare parts	—	88%	90%
Members	0	0	250 thousand
Inventory turnover days (days)	191	146	130
Average sales of retailers (unit: NTDS\$ billion)	—	1.43	1.80
Average sales of Chunghwa Telecom Counters (unit: NTDS\$ billion)	—	2.20	2.38
Customer satisfaction	—	72%	75%
Maintenance within one day	84%	85%	87%

The benefits of this program to Senao International are twofold. One is to its customers and the other one is to itself.

#### 1. To customers

This program helps to improve customer satisfaction with maintenance service by decreasing the shortage rate and the inventory turnover days of spare parts. By separating customers into different groups and offering different marketing strategies to these customer segments, Senao International changes its “push” marketing model focusing on products to the “pull” marketing model focusing on customers’ actual needs. With the improvement in both maintenance and marketing service, the mutual trust between Senao International and its consumers is built up, which is critical for the long-term relationship.

#### 2. To Senao International itself

This program aims to bring a “one stop service” to customers, as well as add more value. By providing customer-oriented service, improving customer satisfaction, and enhancing customer loyalty, this program equips Senao International with

more competitiveness. When customers need to change their mobile phones, Senao International would be the first choice rather than the other rivals. It also assists Senao International with connecting to current customers with greater ease and developing potential customer groups. The ultimate goal of this program is to increase the sales and market share of Senao International in the long run.

The improvement of maintenance service quality is considered as one of the most advantageous weapons to increase customer satisfaction and loyalty. By establishing the forecast mechanism and decreasing the inventory turnover days of spare parts, the forecast accuracy improves and the shortage rate decreases. It directly reduces the customer dissatisfaction resulting from long waits for maintenance because of the shortage of spare parts.

- Sales points

Through the IMEI system, Senao International improves its customer relationship management, customer demand management, customer service decision support analysis, and promotion management. Taking advantage of widely-spread sales points and a great variety of promotions, it provides various products and services to various customer segments, enhances customer loyalty, and expands its market shares. Meanwhile, it builds up its membership system. By interacting with its customers, Senao International attracts potential customers and existing customers to visit and re-visit their shops.

- The maintenance center

Senao International integrates the mobile phone life cycle information through the forecast management of spare parts and maintenance decision support system. It also integrates the forecast models. By doing so it reduces the possibility of spare parts shortages, which in turn results in long waiting time for maintenance.

Through the forecast and purchase management of spare parts, and the maintenance decision support system, Senao International makes its information transparent, e.g. the inventory, product life cycle, and sales record. With these data the forecast accuracy increases, which in turn reduces the storage of excess inventory and improves the inventory turnover days.

### 4.2 Benefits to the Industry

#### 4.2.1 The Stimulation to the Domestic Suppliers

This program offers a reference model to the domestic distributors and domestic spare parts suppliers of mobile phones. The experience of Senao International can be an example to other members in the same industry. With this program, the relationship between suppliers and downstream distributors enhances.

#### 4.2.2 The Increased Sales of Domestic Mobile Phone Manufacturers

The investment of Chunghwa Telecom in Senao

International brought Senao International the exclusive purchasing rights for Chunghwa Telecom. In addition to those global branded mobile phone manufacturers, the enlarged economies of scale of mobile phones benefit the domestic ones. The market share of domestic mobile phone manufactures grew from 9.6% (amounting approximately 1.45 billion) up to 13% (amounting approximately 1.96 billion) from 2006 to 2008.

#### **4.2.3 The Enhanced Collaboration among Supply Chain Members**

The IMEI system provides a platform to the members involved in this program to collaborate on. With better information sharing and integration among the industry chain members, the actual demand of end consumers can be accurately reflected and hence improves the efficiency of the supply chain.

#### **4.2.4 The Improved Interaction with Dealers**

Dealers benefits from this program through the functions of dealer management and customer relationship. With the customer relationship management system, the frontend sales points collect the information regarding consumers and the market. With this information, Senao International designs promotions with dealers and interacts with dealers. As such, the relationship with dealers is enhanced which results in a “win-win” situation for both.

#### **4.2.5 The Quicker Response Time to the Market**

Because of the integrated information sharing among supply chain members, the actual customer demand can be accurately identified without the interruption of inventory shortage and other factors. The integrated information also reflects the current circumstance of the market and speeds up the reaction to the uncertainties in the market. Senao International is thus able to provide more real-time service to consumers in need.

#### **4.2.6. The Experience of “Customer-oriented” Service Implementation**

The mobile phone distribution channel is used to focus on the physical product service of mobile phones. In this program, Senao International implements its service with the focus of customers. It connects the processes before and after sales from the perspective of customers, and thus provides a pioneer reference to the Taiwanese mobile phone distribution channel. It adds additional value to the mobile phone distributors and develops itself towards a comprehensive mobile phone service provider.

#### **4.2.7 The Improved Competitiveness to the Industry**

Being one of the pioneers integrating the

Taiwanese mobile phone distribution channel, Senao International reduces the communication cost among chain members and improves the operations efficiency by implementing the IMEI system. Furthermore, since Senao International is authorized to offer Level 3 maintenance, it provides a complete service from the frontend sales to the backend maintenance. As a consequence, the competitiveness of the distribution channel enhances.

#### **4.2.8 The Enhanced Visibility in the Global Market**

Senao International’s upstream suppliers are those famous branded manufactures worldwide, such as Nokia, Motorola, and Sony Ericsson. With this program, Senao International cooperates with these suppliers. It provides higher visibility of the competitiveness of the Taiwanese domestic industry in the global market.

## **5. CONCLUSION**

Senao International differentiates itself by strengthening the width and the depth of customer service, and enhancing the quality of maintenance service. It integrates its IMEI system with the customer database to achieve higher customer satisfaction. By providing high value-added services, Senao International is successfully transformed from a product-oriented distributor to a customer-oriented service provider.

With regards to customers and dealers, through the relationship management systems, Senao International designs promotions for dealers based on the consumer and market information collected from the frontend sales points. It communicates and enhances the inter-relationship with dealers to achieve a “win-win” situation for both parties. With regards to the upstream suppliers, Senao International assists the branded manufacturers to provide more comprehensive products and service of mobile phones to consumers. Furthermore, it assists the domestic mobile phone manufacturers in gaining larger market shares since Senao International now obtains larger economies of scale of mobile phones and spare parts after being invested in by Chunghwa Telecom.

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## ONE STOP SERVICE—神腦國際案例

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### 摘要

本個案以神腦國際為探討對象，針對手機整體產業的背景、上下游供應鏈關係進行分析，以了解神腦國際的營運現況及所遭遇的問題；透過由Intelligent，Maintenance，Experience，與Inventory等四大模組所組成的IMEI系統，神腦國際在成品補貨規劃管理、維修管理流程、消費者關係管理、經銷商服務管理、備品預測採購管理等營運模式與作業流程上有了顯著的改變，本個案亦針對這些流程的現有（As-Is/Was）及未來（To-Be）流程進行深入探討；本個案的最後一部份提供關鍵績效指標輔證神腦國際在進行流程改善後的具體效益，結果顯示，本計畫的執行對神腦國際的備品料件供應率、庫存周轉天數、服務滿意度、以及會員資料建立等有顯著的幫助。

關鍵詞：企業電子化、供應鏈管理、企業流程管理  
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