

## **A Study on The Characteristics of Logistics System of Taiwan's Cosmeceutical Industry**

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**ABSTRACT:** *The purpose of this study is to explore the characteristics of the logistics system in Taiwan's cosmeceutical industry. The logistics system of the cosmeceutical industry includes the logistics information system, the external logistics system, and the internal logistics system. The case study was conducted for two representative cosmeceutical companies in Taiwan. Through questionnaire surveys and in-depth interviews, the data collected was comprehensively discussed and benchmarked to arrive at the conclusions.*

**KEYWORDS:** *Logistics system characteristics, Cosmeceuticals, Logistics information system, Chain drugstore*

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Date of Submission: 25-08-2018

Date of acceptance: 08-09-2018

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### **I. INTRODUCTION**

The cosmeceutical industry was estimated to be worth over \$30bn in 2011 based on recent global market reports, which had increased significantly from \$24 bn back in 2004; as a result, it is acknowledged as the fastest growing segment of cosmetics and personal care industry. From 2012 to 2016, a Compound Annual Growth Rate (CAGR) of 7.7% was predicted, which grew at a rate of 4.7% in the last growth period (1998-2008)<sup>2</sup>. Currently, the top market for cosmeceutical industries is the USA while the UK, Germany, France, Italy and Spain are the leading European markets followed by Japan. The combined global market share of the five European countries is 65% (\$20bn). With that said, the Asian-Pacific market is anticipated to have the greatest growth potential<sup>3</sup>.

In the age of information technology and digital technology, the cosmeceutical industry in 21st century faces increasingly fierce competition. In recent years, several studies on logistics management that aim to make information flow and logistics more effective and costless were conducted. Due to globalization, logistics management became an important factor to consider in the cosmeceutical industry.

The logistics management system that employs information technology and strategic alliance with third-party logistics service providers will be the future logistics system strategy. According to statistics from I.M.F, the logistics costs of general companies often account for 5% to 35% of the company's sales, which is one of the major operating costs. The purpose of material management is to deliver materials in a timely and appropriate manner. Therefore, the logistics management system plays an important role in the cosmeceuticals industry. Since the cosmeceutical industry supplies a wide variety of commodity to its customers, its logistics activities will be more complicated. The cost of logistics activities depends mainly on the logistics system strategy.

In order to analyze the logistics system of the domestic cosmeceutical industry, a good understanding of the cosmeceutical industry's logistics management system was developed, followed by an examination of delivery of commodity. Finally, a comparative analysis on the internal logistics system and logistics performance evaluation of major retailers was completed. The purpose of this study is as follows:

1. To explore the logistics information system of the cosmeceutical industry.
2. To explore the cosmeceutical delivery industry transport methods.
3. To explore the internal logistics system in the cosmeceuticals industry.
4. To compare the logistics performance of the cosmeceutical industry.

### **II. LITERATURE SURVEY**

Many studies on various cosmeceutical industries have been conducted, including the construct of critical success factors in pharmacy strategic alliance (Wang, 2012) and the discussion on the development of Taiwan's chain pharmacy (Jiang, 2016, Chi et al., 2010). Huang (2007) utilized the Analytic Hierarchy Process (AHP) and statistical software tools to investigate key success factors in the cosmeceutical chain store industry.

Interviews and questionnaires were conducted through representative cosmeceutical chain store managers. Analysis of the factors that affect operating conditions of the chain store system was performed, along with in-depth interviews with representatives of the cosmeceutical industries in major cities of Taiwan. The hierarchical analysis was used to discuss the importance of key success factors. However, only a few studies on characteristics of the logistics system for the cosmeceutical industry were conducted.

The results of the case study of Wen et al. (2015) show that there is a sound logistics information system between vendors and suppliers, which can improve operational efficiency and in turn increase the competitive advantages of logistics quality, speed, service, and flexibility. In the aspect of external logistics system, logistics center can improve the efficiency of logistics operations. Cooperation with logistics centers can enhance inventory management and reduce overall logistics costs. The design and efficiency of logistics are becoming more crucial and all the logistics processes need to be linked together. Therefore, the characteristics of the drugstore logistics system requires exploration and in depth analysis.

### **III. RESEARCH METHODS**

This study begins with the analysis of supply chain management system of the domestic cosmeceutical industry. The supply chain characteristics of the cosmeceutical industry are analyzed. The logistics information system of the cosmeceutical industry logistics center, including the information system architecture of the logistics center and the information flow of the cosmeceutical retail industry are discussed. Then, the delivery plan between the cosmeceutical industry and the logistics center are discussed. Finally, the internal logistics system and logistics performance evaluation of the main domestic cosmeceutical industry are comprehensively compared.

This study mainly explores the logistics operation system of the domestic cosmeceutical industry through questionnaire surveys on the transportation methods of major domestic cosmeceutical store. Furthermore, the analysis of the information systems and internal logistics system strategies of major cosmeceutical store in Taiwan is conducted by conducting in-depth interviews to explore the practices based on the above-mentioned research framework. The interview questions are divided into two parts. The first part is the core issue, including the cosmeceutical industry logistics information system, internal logistics system and external logistics system. The second part is related basic information including the basic information of the company. The face-to-face interview of the case companies is conducted according to the pre-designed interview questionnaire.

Two most representative cosmeceutical stores, Tin-Tin drugstore and COSMED (2017) are selected as the subject of this study. The logistics systems of two cosmeceutical store are compared to analyze the drugstore industry logistics system and its characteristics.

The data analysis of this study is divided into two parts:

1. Analysis of commodity delivery plan: a questionnaire survey is applied to explore how commodities are purchased and distributed by the logistics center to each branch.
2. Case analysis of major domestic logistics system strategies: Open questionnaires is used in this study. Objective and in-depth interviews are conducted to obtain the required information. Data is systematically collated and analyzed. The topics such as the logistics information system, external logistics system, internal logistics system, etc., were collated, classified, summarized, and identified. Finally, the best logistics operation system is deduced for domestic drugstore retailers.

### **IV. CASE STUDY**

#### **4.1 Case company I: Tin-Tin Drugstore**

##### **4.1.1 Company Profile**

The Tin-Tin drugstore system (2017) is divided into three major parts: the management center, the logistics center, and the store. The management center and the logistics center are located in the head office of Kaohsiung City, Taiwan. The management center has three departments responsible for handling the operations, namely the purchasing department, the personnel department and the logistics department, and the accounting department responsible for processing the bills. The purchasing department is responsible for contacting the orders and monitoring the inventory of each store. If the inventory is insufficient, the computer system will be used to arrange shipping. The personnel department manages the attendance of all employees and the settlement of the employees' salaries. The computer center is responsible for the normal operation of the entire system. Any errors or updates will be handled by the computer center. The logistics center is responsible for storing and delivering the commodity.

##### **4.1.2 Logistics Information System**

###### **1. System architecture**

According to the information flow between the company and the respective cosmeceutical suppliers, the current logistics information system and functions are as follows: Tin-Tin Drugstore conducts commodity

management, membership management and cash register work using the BSMS (2017) POS system. The ERP procurement management system is used to process the order. The supplier delivers the required materials or commodities to Kerry TJ Logistics. Kerry TJ Logistics delivers the commodity on time through warehousing and distribution management.

## **2. Order Information System**

Tin-Tin Drugstore applied the GS1 DataBar (2017) management system designed by the BCC soft Company.

- (1) Purchase batch number and validity period management: The commodity can be input into the commodity batch number and validity period through GS1 DataBar barcode or manual input. The validity period and quantity of each batch of commodity can be checked on the screen. The validity period and batch number can be effectively controlled.
- (2) Sales batch number and validity period management: When the commodities are sold, the batch number and validity period of the commodity already exist, and the system will follow the FIFO principle.
- (3) Inventory batch number and validity period management: Due to the validity period and batch number of commodity data, the promotion of dead stocks can be effectively processed. Defective commodities can be effectively eliminated. Both service quality and customer satisfaction can be improved.
- (4) The sales point batch number and validity period management: the final check-up work can be done at the point of sale to avoid the loss of the company's goodwill due to overdue sales or defective commodities.

From the above illustration, it can be seen that the GS1DataBar is used to indicate the relevant information of the commodity, such as the validity period and the batch number, whenever the commodity is manufactured. In the whole logistics management, the principle of first-in-first-out (FIFO) of the commodity can be implemented, and the loss caused by overdue commodity can be eliminated. In the meantime, batch management will make it easier for the commodity to be tracked and traced. It makes the recycling of the commodities easier.

## **3. Payment Information System**

According to the first part of the questionnaire, the payment information system used between the company and the drug manufacturers is described as follows:

- (1) Bar code application model for receiving commodity, stocking, collecting commodity, and distribution process.
- (2) Automatic warehouse process bar code application model.
- (3) Mechanism combining POS sales and inventory management.
- (4) Sales price and promotion of commodity can be set by the BRMS@ERP headquarters. The POS can achieve the correct cash register mechanism, and even VIP members can have different discount settings.
- (5) Each POS store will immediately input the stock information of purchase, return, transfer, scrap, inventory, adjustment. The auditing capabilities of headquarter on each store is improved by using the one-way/two-way confirmation model.
- (6) The use of automatic replenishment and distribution methods prevents shortage of sale items; it is also able to arrange the delivery route more effectively.
- (7) The mechanism of invoice management, which can manage POS invoices, numbers, invalid invoices, and invoice records.
- (8) Announcements and inter-bank performance can be transmitted to allow the head office and the store to obtain the information.
- (9) Commodity can be assembled and disassembled by the store itself. The head office can also change the inventory.

### **4.1.3 External Logistics System**

According to information on the transportation plan of cosmeceutical commodities collected by the questionnaire, the external logistics system of Tin-Tin Drugstore is mainly for transportation of commodity. This study explores the transportation methods of different brands of cosmeceuticals. The statistics and analysis results are as follows:

1. Self-delivery by supplier accounted for 28%.
2. Delivered by logistics companies accounting for 38%.
3. Delivered from master depot accounting for 34%.

### **4.1.4 Internal Logistics System**

1. Commodity replenishment
- (1) Commodity supply and supply operations

According to the third part of the questionnaire, the results of the material replenishment operation of the internal logistics system are as follows: general commodities are delivered to the stores by the central warehouse while commodities of specific manufacturers are delivered by the President Transnet Corp. The head

office purchases commodities from major pharmaceutical companies. In the inventory system, after each branch stores the commodity, it can be put on the shelves after confirmation. If there is any error, the company will correct the inventory quantity. In addition to the company's self-delivery through the computer inventory system, once purchase is successful, the information will automatically be sent to the computer system in the head office.

Chemicals are divided into instruments, medical commodities and general medical supplies. Most instruments and medical commodities are shipped by manufacturers. Some commodities are shipped from the master depot. All medical supplies are shipped from the master depot.

- A. Manufacturers purchase: When the computer detects the inventory is getting low, it will place an order with the manufacturer. After receiving the order, the manufacturer will ship the item with the lowest shipping amount and ask Kerry TJ Logistics to deliver the commodity to the branch. After the store receives the commodity, the acceptance check operations are carried out. The commodities can be put on the shelf for sale once it is confirmed that the quantity is in line with the purchase order.
- B. The internal logistics system's incoming operation process is as follows: the arrival commodity will be first recorded in the computer inventory, and then distributed by the logistics driver to each branch. The commodities are put on the shelves after the store receives the commodity. More information will be sent to the company if the actual number does not match.

(2) Procurement process:

There are two ways in a replenishment supply operation:

#### **A. Sales from the Computer**

The computer system of the head office automatically orders from the manufacturers for the minimum inventory quantity that each store should have to ensure proper quantity of commodity in each store. The inventory is lower than the minimum inventory set by the system. When the manufacturer collects the order and confirms that the order amount is higher than the shipment amount, the commodity will be delivered. After the commodities are sent to the store, they are accepted by the branches and recorded. After the inventory system is available, it will be ready to put on the shelves for sale. Purchasing is divided into two types as described above. The time for purchasing large quantities usually occurs at the end of the month when new activities are held. Every manufacturer will send the discounted commodity and new items to each branch.

#### **B. Customer order**

The pick-up order is transmitted to the computer system in the head office. The purchaser performs the purchase through the computer system. After receiving the order, the supplier delivers the commodity to the branch. Once the branch receives the commodity, customers will be informed to pick up the commodity. For urgent pick-up commodity or special commodity, you need to ask the purchasing personnel to process the order first, and speed up the supplier's shipping time to avoid customer complaints.

#### **2. Inventory Management System**

The ERP system of ARKTECH is employed in the company. The commodity barcode can be used to search the in-store inventory. The commodity details include the manufacturer and the latest sales date. It can be used to place an order by the store staff. The inventory management system uses the POS system and the acceptance system. The POS system monitors the inventory quantity. The acceptance system is responsible for integration of the quantity on each purchase order. Incoming Commodity Management (INV) can check whether if the acceptance is completed. When the inspection record is uploaded onto the computer, the data will be stored in this computer system. If the quantity on the purchase order does not match the quantity of the manufacturer's, you can check whether there is an acceptance error through this action. POS is used to manage sales details; the daily sales details and the average sales items per month are all queried here. The sales details can be used to find out the gross profit and total turnover of the day. It can also be used to confirm if there is a cash register error.

### **4.2 Case Company II: COSMED**

#### **4.2.1 Company Profile**

COSMED's main commodities are non-prescription drugs, cosmetics, and daily necessities. It adopts the business model of Japanese drug stores; business scope includes the pharmaceutical and cosmetics retail. COSMED has sound organization and talent training, and is committed to the development of a unique drugstore retail talent cultivation system. It has high-quality commodities and selects the best quality and most reliable commodities for customers. The number of COSMED stores has grown to over 364 stores in Taiwan as of April 2017. In response to the high demand for cosmeceuticals in Taiwan and the world, the number of COSMED's store in Taiwan will continue to increase at a fast rate.

#### **4.2.2 Logistics Information System**

##### **1. System Architecture**

The information flow between the company and its suppliers is as follows: Although the previously

established SCMs have improved the workflow between the suppliers and Retail Support International, there is still room for improvement in the supply operation. The most obvious one is the great variability in the number of orders for the upstream of traditional commerce channel. The bullwhip effect that causes high inventory also appears in the existing logistics of COSMED. Therefore, COSMED takes "market demand management" as the core thinking point and uses the VMI model to integrate the five roles: marketing activities, commodity procurement, logistics and distribution, suppliers and store managers. The partnership among head office, store, logistics center and suppliers is enhanced. An innovative VMI model has been developed.

The biggest change in COSMED's operation process is to build the VMI Hub on the existing SCM platform. By using the "sales forecasting model" that can automatically learn and set parameters, the forecasted sales volume of the commodities is adjusted quarterly to increase the forecast accuracy of future sales. A unique "automatic replenishment suggestion mechanism" is established in COSMED stores.

The COSMED (2018) procurement process takes about 20 days from contract signing to store delivery. Each manufacturer will first negotiate with the company's marketing department (MDR) for bargaining. There is no time limit for bargaining negotiation. Whoever has higher bargaining power can obtain higher gross profit in the transaction. Generally, one with urgent time has relatively lower profit in the process of bargaining. Therefore, the MDR will be delayed so that the gross profit will be higher. However, the time for commodity to be put on shelves will be later than that of the same industry. In the bargaining process, the company will also hold a merchandise procurement meeting to determine the appropriate merchandise to avoid affecting the overall judgment ability due to the subjective awareness of the purchaser or personal preference. When the contract with the manufacturer is determined, the company will start to file the data and send it to the logistics. The order will be placed to the supplier after receiving the notice.

The store uses data provided by the PDA and the factor like estimated sales date to analyze the changes in inventory. The top 30 best sell items are selected by applying ABC analysis method. Selecting potential commodities and continuous improvement of ordering skills can avoid shortages.

The way to place an order is as follows: In general, Retail Support International will place orders with suppliers on Monday. The suppliers do the shipping on Wednesday. At this point, the company will place an order with Retail Support International on Thursday. Once Retail Support International received the order, it began to tally and deliver the commodity to the store on Friday or Saturday. The order is delivered directly by MDR and the commodities are delivered to the store at the first time. The store can then place orders according to its sales situation.

## 2. Drug Payment Information System

What kind of payment information system is used between the company and the cosmeceutical supplier?

The commercial automation model of 7-11 system was adopted by COSMED in the early days. But drug stores and convenience stores differ slightly in system analysis. Therefore, the POS system of the Japanese drug store is adapted to cope with the intelligence analysis of the drug store system as shown in Table 4-1.

Table 4-1 Commercial Automation

Information flow standardization	1. Commodity barcode 2. Electronic Data Exchange Standard 3. Print and reply to the store's return message
Commodity sales automation	Point-of-sale management system
Commodity matching automation	1. Electronic ordering system 2. Inventory Management System 3. Value-added network system 4. Return Management system
Commodity circulation automation	1. Commodity ordering automation 2. Suggested order quantity system 3. Average weekly sales volume of commodity
Accounting automation	1. Commodity ordering automation 2. Standard financial and accounting system

### 4.2.3 External logistics System

The transportation model adopted by the company is as follows:

1. Supplier self-delivered by cosmeceutical supplier accounts for 0%.
2. The commodity of cosmeceutical supplier is 100% transported by the logistics company.
3. Cosmeceutical suppliers jointly find logistics company carriers accounts for 0%.
4. The shipment from the COSMED master depot accounts for 0%.

The results show that COSMED drugstore completely outsources all commodities to Retail Support International. The logistics risk may be greater than that of Tin-Tin Pharmacy. Therefore, COSMED store must pay attention to the delivery status of Retail Support International. Otherwise, any problem in the delivery process might cause the disruption in the supply chain of COSMED.

### 4.2.4 Internal Logistics System

1. Material replenishment supply operation

The purchase operation process is described as: COSMED's logistics operations are outsourced to Retail Support International (2017) so that COSMED can focus on the cosmeceutical field. COSMED can get more professional logistics services to meet the needs of consumers because the Retail Support International is a good professional logistics company.

(1) Supply operations

The drug supply operations are as follows: Most COSMED's commodities are patent medicine. Each supplier delivers the patent medicine to the logistics center and then delivers them to each store. The head office will pass the order to Retail Support International, and Retail Support International will purchase the medicines from major pharmaceutical companies and deliver them to the logistics center. Then, the logistics center will deliver the commodity to each store; if there is any problem, the head office will be informed to modify the inventory quantity.

(2) Chemical commodity purchase supply process

The medical supplies and instrument commodities will be shipped to the logistics center and then to the stores.

A. Supplier purchase:

Whenever inventory of commodities is insufficient, the electronic ordering system will be used to transfer the required commodity data to the head office. The head office will order the commodity from the supplier. After receiving the commodity, the supplier will ship the commodity to the logistics center and finally deliver them to the store. After the commodities are received by the store, inspection and acceptance operations will be carried out. Finally, the commodities will be put on the shelves for sale.

B. Logistics purchase

The planning process of the supply route is as follows: Once commodities from the logistics center arrive, the data will be first input in the computer inventory then it will be distributed to each store. After the commodity is received by the store, the commodities are put on the shelves for sale.

(3) COSMED procurement process:

The store uses the electronic ordering system to transfer the data to the head office. The head office will transfer the order to the Retail Support International using the EDI. The received order will be filed. Finally, the Retail Support International will distribute them to each store.

In addition to conducting market research, the company also held procurement meetings to decide new commodities without personal preferences or subjective consciousness. After confirming the imported commodities, the marketing department starts to negotiate with the suppliers. The party with more bargaining power will have higher gross profit. Then, the order of the commodity is passed to the Retail Support International Company. The first delivered commodity is delivered by the marketing department; each store decides the order quantity based on the sales situation of the commodity.

COSMED analyses the sales performance to watch the status of various merchandise sales. COSMED control orders to reduce slow sales and increase hot items. By collecting customer consumption and commodity information, we can understand the commodities that customers need. A POS system is used to streamline store operations and to reduce labor costs. Once the stock is lower than the minimum inventory, the system will automatically place an order. In addition, COSMED introduces the supply chain management system to form a three-way digital link with suppliers and logistics centers through the Web mechanism to reduce inventory, delivery time, and the cost of operations. COSMED's logistics center accurately knows the inventory of each branch using the SCM system. The commodities are delivered to the store in time to improve the efficiency.

**4.3 Comparison of Logistics Information Systems**

In addition to the POS system in the payment information system, the two cosmeceutical store use totally different systems such as order information system, external logistics system, internal logistics system, procurement process and inventory management system (as shown in Table 4-2).

**Table 4-2** Comparison of system used

Item	Tin-Tin Drugstore	COSMED
Order information system	BCC Soft GS1 DataBar Management System	1. Negotiation between suppliers and company marketing department (MDR) 2. Using the Back-End ABC analysis
Payment information system	1. Bar code application model 2. POS sales and inventory management mechanism	POS
External logistics system	Mainly commodity transportation	Adopting an outsourcing strategy
Internal logistics system	Material replenishment supply operation	1. POS system 2. Electronic ordering system
Purchasing Process	1. Computer Invoicing management system 2. Order by Customer	Electronic Data Interchange (EDI)

Inventory management system	ARKTECHERP system	1. Point of Sales 2. SCM system
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1. Comparison of order information systems

A comparison of the Tin-Tin Drugstore and COSMED order information systems is shown in Table 4-3. Tin-Tin Drugstore's order information system can be quite accurate, but it will become difficult to handle whenever the number of commodities is large. The order information system used by COSMED can prevent the stock shortage, but the secondary commodities might be out of stock if not monitored closely. Due to the wide variety of commodities in the cosmeceutical industry, Tin-Tin Drugstore's information system would have a difficult time handling this situation. By using COSMED's information system, there is no shortage if all commodities are managed properly.

**Table 4-3 Comparison of Order Information System**

Item	Tin-Tin Drugstore	COSMED
Production schedule	When the product is manufactured, the GS1DataBar is used to indicate the information of the product such as the validity period and batch number. It can implement the FIFO principle and reduce the loss due to overdue.	Retail Support International placed an order on Monday. The supplier shipped on Wednesday. The company placed an order with Retail Support International on Thursday. Retail Support International delivers to the store on Friday or Saturday.
Order issuing system	The GS1 DataBar management system designed by BCC Soft Company.	1. Negotiation between suppliers and the company's marketing department (MDR). 2. ABC analysis.
Order delivery method	Electronic Data Interchange (EDI) is used as a delivery method.	Electronic Data Interchange (EDI) is used as a delivery method.

2. Comparison of drug payment information systems

Table 4-4 shows the differences in the drug payment information system between Tin-Tin Drugstore and COSMED. Tin-Tin Drugstore divides the payment system into: distribution process barcode application model, automatic warehouse process barcode application model and sales and inventory management mechanism combined with POS. Although they are all POS systems, Tin-Tin's POS is similar to the POS system used in the general service industry; COSMED adopt the POS of Japanese cosmeceutical stores, which are inherently used by and targeted for cosmeceutical stores. Therefore, COSMED's payment information system is better.

**Table 4-4 Payment Information System Comparison**

Payment System	Tin-Tin Drugstore	COSMED
Information	1. Distribution process barcode application model 2. Automatic warehouse process barcode application model 3. Combine POS sales and inventory management mechanism	1. Using Japanese drug store's POS system. 2. The adoption of electronic invoicing 3. Information analysis automation.

3. Comparison of external logistics systems

According to answers regarding transport method information obtained from the questionnaires, the statistical analysis is conducted to identify the delivery method. Among 60 suppliers, those who belong to their own suppliers shipping accounted for 28%, shipping by Logistics Company accounted for 38%, joint shipping 0%, the master depot shipments accounted for 34%, and there are no strategic alliances shipping. The COSMED are outsourced to Retail Support International, as shown in Table 4-5.

**Table 4-5 Comparison of external logistics systems**

	Tin-Tin Drugstore	COSMED
Self-delivered by the cosmeceutical supplier	28%	0%
Shipped by a logistics company assigned by each cosmeceutical supplier.	38%	100%
Shipped by a logistics company Co-assigned by cosmeceutical suppliers.	0%	0%
The master depot of Tin-Tin Drugstore takes over all the shipment issues.	34%	0%

COSMED uses only its own logistics. In the event of an emergency, the Tin-Tin Drugstore has many

options of shipping. Therefore, Tin-Tin Drugstore's external logistics system is better than that of COSMED.

#### 4. Comparison of internal logistics systems

Table 4-6 compares the material replenishment process and procurement process between Tin-Tin Drugstore and COSMED store. Tin-Tin Drugstore's commodities include Baby, Kids & Maternity in addition to pharmaceuticals and chemical commodities. On the other hand, COSMED store does not supply those items. For general medicine, in addition to the specific supplier's delivery by President Transnet Corp., the other is distributed from the master depot. COSMED commodities are only divided into general drugs and chemical commodities. COSMED is mainly OTC (over the counter) drugs. Each supplier delivers the OTC medicine to the logistics center, and then delivers to each store. The delivery of chemical commodities is divided into suppliers' purchase and logistics purchases. In the procurement process, Tin-Tin's system is divided into Computer Invoicing management system and Customer order; For COSMED's procurement process, the order is passed to the head office using the electronic ordering system and then passed to Retail Support International. Finally, the commodities are delivered to each store. Tin-Tin's Computer Invoicing management system does not allow shortage of commodities to occur. Customer ordering suppliers can place their own orders; COSMED's material replenishment supply can save delivery time and reduce errors. Although Tin-Tin's material replenishment operations are near perfection, the commodity information is more and more reproducible. Therefore, COSMED's material replenishment supply operation will be better.

**Table 4-6 Comparison of Material Supplement Logistics Operations**

	Tin-Tin Drugstore	COSMED
General medicine	1. Delivered by master depot 2. Delivered by President Transnet Corp.	Logistics center distribution
Chemical Commodities	1. Delivered by Supplier 2. Delivered by Logistics company	1. Delivered by Supplier 2. Delivered by Logistics company
Baby commodity	1. Delivered by Supplier 2. Delivered by Logistics company	
Purchasing Process	1. Computer Invoicing management system 2. Customer order	Electronic ordering system

#### 5. Comparison of inventory management systems

Table 4-7 shows the differences between Tin-Tin and COSMED inventory management systems. The Tin-Tin's inventory query, monitoring and acceptance use ERP, POS, and INV respectively; while COSMED only uses POS system. The difference between COSMED and Tin-Tin Drugstore is that the POS used by COSMED combines CRM to monitor sales. Tin-Tin Drugstore uses a variety of systems to manage inventory, while COSMED can do all the functions with just one system. Therefore, if there is a problem happen in the process, Tin-Tin Drugstore will be easier to solve than COSMED. Thus, Tin-Tin Drugstore's inventory management system is better.

**Table 4-7 Comparison of inventory management**

	Tin-Tin Drugstore	COSMED
Inventory inquiry	Adopt ARKTECH ERP system to search for in-store inventory by input commodity barcode or in-store code using basic data maintenance (BAS) commodity data enquiry system.	1. For inventory management, the company adopts the third-generation POS system developed in cooperation with Taiwan NEC.
Surveillance system	Monitoring inventory quantity with POS system	2. The POS system combines customer relationship system (CRM) to monitor sales status, inventory, and control order.
Acceptance system	1. Adopt the acceptance system to upload the inspection data of each branch including the purchase quantity and summarize it into the inventory of each branch. 2. The inventory management system (INV) can check whether the purchase order acceptance is completed.	

## V. CONCLUSIONS AND SUGGESTIONS

### 5.1 Conclusion

This study compared the logistics characteristics of Tin-Tin Drugstore and COSMED cosmeceuticals. In the distribution process, both Tin-Tin Drugstore and COSMED have logistics centers that can quickly pick up commodity. In the logistics information systems, COSMED's POS system combined with SCM is able to understand customer needs. However, Tin-Tin Drugstore does not have such a system. In the procurement process, the speed of order taking and shipping by suppliers is extremely important. Tin-Tin sells more variety of commodities than COSMED, thus making the procurement process more complicated compared to the latter. If COSMED uses the Web mechanism to connect with the head office and suppliers, it is better than Tin-Tin in



terms of speed and efficiency of purchase. The variety of commodities sold in the cosmeceutical industry is technologically complicated and has great variability; thus, the time spent in the intermediate process must be reduced. This can be achieved by using the logistics information system. Therefore, the integrity and stability of the COSMED's logistics information system is generally better than of Tin Tin's.

## 5.2 Suggestions

1. For Tin-Tin Drugstore: The customer relationship management system needs to be established to obtain the customer's needs. The logistics center's order picking process can be simplified and the shipping speed can be increased.
2. For COSMED: In addition to Retail Support International logistics, third-party logistics centers can be used to reduce risk. In addition, by outsourcing to Retail Support International logistics, the commodity must be shipped from the total warehouse to Retail Support International and then sent to the store, which can be directly delivered from the third-party logistics center to the store to save the transportation time.

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Yuchun Yao, Yuan-Feng Wen, Grace Wen, "A Study on The Characteristics of Logistics System of Taiwan's Cosmeceutical Industry "International Journal of Pharmaceutical Science Invention(IJPSI), vol. 07, no. 06, 2018, pp. 28-36