Barriers for Implementing advanced logistic system in retail

Comparison between Wal-Mart and a Chinese company

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Abstract

With the rapid growth of China economy, more and more companies search a way to raise their local business to an international level. Wal-Mart is the best representative of advanced supply chain management. With decades of developing, Wal-Mart establishes an enviable supply chain management with nearly zero inventory and advanced information technology system. Hualian is the biggest supermarket chain in China, who tries to gain competitive advantage from Wal-Mart supply chain pattern. Meanwhile, beside Hualian, Wal-Mart's supply chain pattern is also meaningful to other companies. Hence, trying to figure out how Wal-Mart manages its supply chain is useful. The main purpose is to find out requirement and barriers for implementing Wal-Mart’s advanced logistics system in a Chinese retail company. By comparing Wal-Mart supply chain management with Hualian, this illustration will perfectly make a demonstration for Chinese companies. Since Hualian is the biggest supermarket chain company in China, this comparison is resourceful. This paper will finally illustrate how Wal-Mart does its supply chain management, and what barriers and benefits Chinese companies will meet while implementing. Primary data and secondary data have been used in the comparison. Additionally, qualitative method will be applied for purchasing, and quantitative method will be used for distribution analysis. Although Hualian is the biggest supermarket chain company in China, it still has a distance from Wal-Mart whatever on information system or on scales. Implementing advanced logistic supply chain management eventually will benefit Hualian a lot; however, barriers prior to benefits are huge obstacles for Hualian and its suppliers.

Key word: supply chain, Wal-Mart, Hualian, supply chain pattern, supermarket
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List of abbreviation

SCM---Supply chain management
UPC----Universal Product Code
EDI----Electronic Data Interchange
GPS---Global Positioning System
RFID--Radio Frequency Identification
CDL---Cross-Docking Logistics
VMI---Vendor-manage Inventory
POS--- Point of Sale
GMDC--- General Merchandise Distribution Center
1. Introduction

This part provides the overview for the research problem and case company. The purpose and outline of this paper are also mentioned in the introduction part.

1.1 Background

With the development of global economic integration, the competition between the enterprises is more and more fierce, many enterprises are faced with changeable market requirements of reducing cost, improving quality, shorten delivery time and enhancing service. Wal-Mart is the biggest supermarket chain company in US, and Hualian is the largest supermarket chain company in China. Wal-Mart style supply chain management could be an example for some Chinese companies who want to implement advanced logistics. Meanwhile Hualian also could be an example for Chinese companies, because culture and business environment are almost same. Comparing Wal-Mart SCM with Hulian’s, the result would be more useful. As the change of the business environment, they must establish a strategic partner relationship with other enterprises, and realize the complementary advantages, so that each enterprise can play the core ability and achieve unified coordinate (Green & Shaw, 2010). Then, the thought of supply chain management is produced in such competitive market environment

Supply chain management (SCM) has been widely researched in numerous application domains during the last decade (Habit, 2010). SCM has gradually been embraced as a proven managerial approach to achieving sustainable profits and growth (Habit, 2010). As Christopher (2011) said, supply chain is not only a concept, is also a kind of practice. Hence, there is the need for managers view more than one organization boundaries and associate all the products and services entities, from plan, purchase, manufactory, allocation and return to carry out effective cooperation. Supply chain management usually has five parts which are planning, purchasing, manufacturing, distribution, and service (Jonsson, 2008). As two companies are supermarket company, so this paper will illustrate and analyze the case company’s planning, purchasing, and distribution; however, this paper mainly aim at purchase and distribution parts. After making a fully review studies for Wal-Mart’s supermarket SCM
and Hualian’s supermarket SCM, this paper will demonstrate the barriers and requirement for implementing Wal-Mart style supply chain in Hualian supermarket.

1.2 Wal-Mart

In 1962, Mr. Sam Walton set up the Wal-Mart company in Arkansas of the United States. After 50 years of development, Wal-Mart has become the world's largest retail chain enterprise and the largest private employer in the United States. It has been set up more than 10000 stores in 27 countries around the world, and own 69 brands. There are 2.3 million employees working in Wal-Mart. 200 million customers will visit Wal-Mart supermarket every week (Wal-Mart story, 2012).

The advanced SCM is the great advantage for Wal-Mart. Wal-Mart aiming at reducing costs in logistic process operations as much as possible, so that can leave more interest for customers. Besides, with the existing distribution center as the starting point, Wal-Mart set new stores around distribution center to save cost. Meanwhile, ahead of 10 years cutting-edge technology use in SCM provide Wal-Mart the efficient operation plan into the supply chain management and the seamless supply chain system makes the supplier can directly understand the latest demand and sales. In addition, Wal-Mart also has been committed to advocate the concept of green supply chain, so as to realize the sustainable development of the whole market (Chandran, 2003).

1.3 Hualian

Hualian Company is one of the first supermarket chain companies in China; its predecessor was founded in 1993 of Shanghai Hualian supermarket. Today, Hualian has nearly 2000 chain stores, which are located in Beijing, Shanghai 20 cities. Companies with low cost, low investment, high benefit, high output for the principle, regard information management and modern logistics as the core technology; it becomes Chinese largest supermarket Chain Company (Hualian website).

Hualian mainly adopts the combination method of internal and external SCM. On the one hand, the internal supply chain system dedicated to solving headquarters and branch business management; on the other hand, the external SCM focuses on solving...
problems with suppliers and customers. Distribution is the main hub for Hualian chain operation. The logistics not only ensure the normal operation of the supermarket, reduces the logistics cost and the loss of goods, also accelerated the rate of freight turnover(Juntao, 2010)

1.4 Purpose
The main purpose is to find out requirement and barriers for implementing Wal-Mart’s advanced logistics system in a Chinese retail company. This paper will make a review on two parts of Wal-Mart supply chain management system which are purchasing and distribution, also do case study on Hualian supermarket supply chain, and then comparing two companies’ difference in order to find out requirements and barriers.

1.4.1 Research question
What barriers and requirement can be distinguished for implementing Wal-Mart’s advanced supply chain in Hualian?

1.5 Outline
This thesis is mainly including 6 parts. The first section is the general introduction for SCM, Wal-Mart Company and the case company of Hualian Company. The second section focuses on what methods are used for achieving purpose in this thesis. The third section is collecting the basic theory for company SCM discussion; they are mainly from books, journals and university articles. The fourth section shows the findings of Wal-Mart and Hualian supply chain management. Fifth section presents the discussion for the thesis’s finding part, barriers and requirement for implementing Wal-Mart supply chain in Hualiansupermarket. Finally, draw the conclusion for the thesis purpose from the research result.
2. Methodology

This paper will compare Wal-Mart and Hualian SCM to find whether the Wal-Mart SCM framework can apply in Hualian.

2.1 Data collection

2.1.1 Primary data

As Walliman (2005) pointed, the primary data is the data observed, experienced or recorded closest to the event, are the nearest to the truth, this data provides the wealth of information for researchers. The primary data from questionnaires, interview, empirical testing and recorded observations. Therefore its validity is greater than the secondary data. The primary data in this work is from the case study, and is based on the interview of a inventory manager who working in case company’s distribution center. Primary data is only collected from Hualian by an interview and data will use for comparison later. The primary data collects from an inventory manager via e-mail who works in Hualian’s distribution center. The interview question has two parts, one is purchasing part which has two questions, and another is distribution part which has eleven questions. Those questions are open question, the criteria regarding what question need to be asked is based on Wal-Mart’s supply chain management. What Wal-Mart has done in its supply chain, what question will ask for Hualian, in order to make them comparable. The interview questions will attach in appendix 4.

2.1.2 Secondary data

Secondary data means the data is collected from already published source, mostly from internet, libraries and archives, government departments etc. (Walliman, 2005). Secondary data is often readily available. Using company official website makes the introduction for case company. Data of Wal-Mart are mainly collected from official website, economic website, annual report and some online newspaper.

2.2 Data analysis

In order to explain and compare, data analysis is necessary after data collection (Walliman, 2005). Data analysis is a practice which raw data is collected and extracted
for useful information. Quantitative analysis will use data information from financial report (2012) compare and calculate relevant key indicators for logistics performance and efficiency. Hualian’s primary data will compare to Wal-Mart’s secondary data in order to get difference of two companies at purchasing and distribution part, consequence of comparison as a result of benefits and barriers. In order to find out what are barriers, method will based on literature review to make sure those barriers are actual.

2.3 Case approach
Wal-Mart is the biggest supermarket chain in the world, and its excellent supply chain management is famous around the world. Through compare two big chain supermarket companies, the thesis is trying to find the requirement and obstacle for implementing Wal-Mart supply chain into Hualian. Combination with Chinese supply chain situation, it not only helps Hualian make the great improvement for SCM, but also it is the interesting SCM comparison topic for readers.

2.4 Research method

2.4.1 Quantitative method
Quantitative method is a research method that focuses on the collection and analysis of numerical data. For instance, statistics, tables and diagrams are often used in the articles (Williman, 2005). In this thesis, the quantitative method is applied in finding and discussion part, quantitative method try to figure out distributions differences between two supermarkets. With comparing and calculating figures get appropriate analysis for differences in distribution for two companies.

2.4.2 Qualitative method
Qualitative method aim at analysis attributes, qualities and make distinctions. Interview is one of the most useful qualitative techniques (Amaratunga et al., 2002). In this paper, qualitative method is interviewing which making to Hualian. And qualitative method will use purchasing part, since how to selecting suppliers is subjective other than objective.
2.5 Limitation

There are some limitations in the work:

Due to culture difference, Hualian supermarket may not totally disclosure its supply chain management method, because that information is business secret in China. Secondly, due to location distance, e-mail is mainly communication tool. Finally, the information regarding to Wal-Mart is secondary data, and it will compare with Hualian primary data.

2.6 Validity and Reliability

2.6.1 Validity

Validity is the quality research that makes it scientific and trustworthy (Sharan, 1995). Validity can be distinguished into internal and external. Internal validity means what degree that researchers are able to agree and come to same conclusions (Yin, 2008). Internal validity is usually a perceived strength within qualitative research since the researchers tend to observe the phenomenon over a long time. External validity refers to findings can be applicable in other case, but qualitative researchers generally use small samples and case studies (Yin, 2008). In this thesis, data of Hualian supermarket is primary data, which data has been check with interviewer two times after collected. Data from Wal-Mart is mainly from its official website. Wal-Mart’s data from other website will be checked that there is at least three other websites have same information.

2.6.2 Reliability

Reliability is concerned same result will be the same even different made by different researchers (Sharan, 1995). Reliability is the certainty that the research is enough to be trusted. Since the company is in China, there are two ways to collect data, which are via telephone and e-mail. Meanwhile, only secondary data of Wal-Mart has been collected in this paper, which data must compare to Hualian’s primary. Although Wal-Mart has been established for several decades and its information is transparency, it would be more accurate when primary data compare with primary data. Additionally, both
companies are profit organization; they will disclosure more good information rather than bad information.
3. Theoretical Framework

A supply chain is a set of three or more organizations involved in upstream and downstream flow of products, service from a source to customers. A direct supply chain include suppliers, a company, and customers involved in upstream and downstream flow of products and services (Mentzer et al, 2001)

3.1 Planning

3.1.1 Demand Chain management

In order to make the efficiency SCM, every company need to focus on what’s the customer really demand in the whole chain. The demand chain management aim at the market and supply chain common advantages to respond customer needs by value creation (Christopher et al., 2007). First, it emphasis to regard demand as the starting point, make every last link has demand for the next link in supply chain according to market demand. Second, through recreate the demand and supply together the best way of using information system to set up demand chain management (Heikkilä, 2002).

3.2 Purchasing

The purpose of purchasing is the procurement activity refers to selecting supplier and drawing up a purchase agreement. Procurement is the resource shift from market provider to the user. Establish efficient procurement management system requires enterprises make procurement from experience management, to science purchase management, eventually develop to culture purchasing management. Because the procurement risk is not depending on complexity of the process, the key is lying in the effective monitoring system. (Jonsson, 2008)

3.2.1 Delivery monitoring, notification and reception

A good procurement process need company check the deliveries take place at agreed times, so that give the guarantee for company daily sale operation. Follow up and checking should take place before and after the agreed delivery time. Hence, the company can make use of tracking and tracing systems for delivery checking. In order
to keep the long term relationship between suppliers and company, the supplier may need the delivery notification to tell company its delivery is on the way. After company receive the goods, the delivery reception can ensure the goods have been received and checked. (Jonsson, 2008)

3.2.2 Financial consideration
Purchasing cost is the biggest part of the enterprise operation cost, generally accounts for forty percent to seventy percent of whole operation cost. If the purchasing costs decrease by one percent, corporate profits will increase by ten percent. Hence, control the purchase cost has the great significance for company sustainable development (Ambe & Badenhorst-Weiss, 2012). Minimizing total purchase cost means decreasing no value activities as much as possible (Ambe & Badenhorst-Weiss, 2012). For preventing high cost, the company can use target costing to achieve a certain target value for total cost (Jonsson, 2008).

3.2.3 Supplier selection and management
For the choice of supplier, the most important is to see the supplier's comprehensive quality—quality, delivery and service. Company could base on credibility and market competitiveness performance to select suppliers. Sometimes, with the constant change of the market demand, the enterprise should also timely exchange the choice with supplier, weed out unqualified supplier, and choose the supplier whose service is more accord with current products. After choose the suitable suppliers, the most important is the effective management to supplier. TQM is regarded as a good management way (Bergman & Klefsjö, 2003). This not only needs the enterprise to set up a good monitor and audit system for supplier, the communication between enterprise and supplier is also an indispensable thing. Communication and information sharing are helpful for find problems, which can do further improvement for quality. For supplier management, setting incentive mechanism for supplier, such as increase order quantity. If choose the multiply and different suppliers, it is better having classification and planning for suppliers and meantime, establish audits system, checking and counting regularly on supplier performance (Christopher, 2011).
3.3 Distribution

3.3.1 Centralized system

Centralized distribution refers to organizing the product which received from suppliers and its onward delivery to the individual store (Simchi-levi et al., 2008). Deliveries from suppliers are transported to a central location, always in full load quantities, rather than to each branch. In the practical distribution plan, the centralized distribution can improve transportation efficiency, so that increase the economic benefit and reduce transportation cost (Simchi-levi et al., 2008). Nowadays, the time is the core issue for every enterprise’s distribution plan. In order to achieve the best centralized distribution system, the company must focus on service performance improvement and time-based distribution.

Cross-docking Logistic (CDL)

A simple definition of cross-docking is as follows: receiving product from a supplier or manufacturer for several end destinations and consolidating this product with other suppliers’ product for common final delivery destinations. The key to the process is transshipping, not holding stock. Equally important is the process of turning expensive delivery consignments into economic loads through consolidation and resource sharing. For many businesses it is essential to keep track of product consignments as they progress along the supply chain. An increasingly topical theme for many businesses is manipulating product into a user-friendly form for the end user. (Kinnear, 1997) If the incoming load and the outgoing load are imbalance, cross-docking will not work well. Hence, the goods demanding rates are more or less stable, which is suitable for cross-docking. First of all, successful CDL need company establish corresponding cooperative relations with supply chain members, and communicate with them in a timely manner. Besides, because CDL greatly reduces the storage and sorting, products receiving and shipping requirements will relatively increase, so the company needs to invest enough staff and facilities to make a comprehensive coordination for the whole operation. Compared with the traditional warehousing strategy, CDL is regard zero inventory as the ultimate goal, thus maximum limit to reduce the distribution costs, speed up distribution good turnover (Belle et al., 2012).
3.3.2 Transportation

A good transportation planning requires the company to make the comprehensive strategy for route planning, transportation cost, and tracking. As Jonsson (2008) pointed out, the aim of route planning is to decide which routes will provide the highest vehicle capacity utilization, as the largest amount of goods delivered as possible and as smallest of delivery time as possible. Hence, in order to reach the purpose, the company should analyze the right traffics and number of routes, sometimes, it is better to use the combination models to minimize transportation cost. Meanwhile, by using advanced technology for goods tracking and tracing, measuring goods delivery condition timely (Li, 2013).

Hub-and-spoke system

In order to make transportation more efficient, the hub and spoke system is used in many companies. It is like a chariot wheel, which all traffic moves along spokes connected to hub at the center. Under the system, goods are centrally ordered and assembled at a huge warehouse, from where they are allocated to the individual stores. Hence, hub-and-spoke system can help companies achieve significant cost advantages by the centralized goods purchase with huge quantities (Wei Song & Yanji Ma, 2006).

Figure 2: Hub-and-Spoke system (Sina, 2010)
3.3.3 Calculate inventory efficiency
The inventory turnover rate often refers to how many times per year average stock are turned over. Inventory turnover rate can measure how efficient does a company change its inventory to cash. How many days do a company to hold its inventory on hand could be calculated by use days of inventory on hand formula (Jonsson, 2008).

3.3.4 Vendor-managed inventory
Vendor-managed inventory allow a vendor to access its retailer sales data and manage retailer’s inventory. Because the vendor manage inventory without information distortion, and also manage the product for multiple retailers. Such coordinate allow all the suppliers to reduce inventory level and cost significantly (Jonsson, 2008). Choosing retailers is fundamental decision process for the vendor VMI system. This is essentially for manufacturers with limited production capacity. Because production capacity has limit, choosing enough trailers stable with capacity is the best solution. Otherwise would add more cost (Yu et al, 2013)

3.3.5 Kanban system
Kanban is a system for lean and just-in-time (JIT) production. It is not an inventory control system, but more focus on logistical chain controlling from a production point of view. There is two main type of Kanban method. One is based on some form of physical and visual initiation of new order, which based on administrative initiation. Another is electronic kanban which carried out through a computerized planning system (Jonsson, 2008).

3.3.6 Information system
In general, IT is a necessary infrastructure for both the company itself and its supply chain partners. However, whether the choice of a particular IT type differentially affects a company’s performance as desired is not clear (Festus, O& Li, X 2010). The best use of high technology is also a key point for the company to do a good supply chain management. There are some technologies which big company used in its supply chain management. For example, use Universal Product Code (UPC) technology to make computer system analysis and give company a good purchase advice; utilize the
combination of UPC and satellite system to set up long-term commodity information sharing with supplier; and also can built automatic replenishment system by EDI technology to understand customers and suppliers’ purchasing modules; Install GPS in trucks for making convenient about headquarters master the delivery condition (Christopher, 2011).

RFID makes operational processes such as tracking, shipping, checkout and counting processes speed up and more reliable, providing efficiency inventory flow and accurate information. With RFID, company can achieve better supply chain with accurate data (Chen, Cheng & Huang, 2013). This results in, for example, a roll cage loaded with products being read at one pass by the reader. Most tags are resistant to environmental temperature and other external factors, and can be read and reprogrammed at least 300,000 times before replacement (Kärkkäinen, 2003). See Figure 3 shows some advantages conclusion for these high technologies.

<table>
<thead>
<tr>
<th>Technology</th>
<th>Advantage</th>
</tr>
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| UPC (Universal Product Code)| 1. Low cost  
2. Reliability  
3. Write simply  
4. Easy to use  
5. Reliability                  |
| Explain: The Universal Product Code (UPC) is a barcode symbology |                                 |
| RFID (Radio Frequency Identification) | 1. Effective  
2. Enhance transparency  
3. Reduce cost, get more profit  
4. Strengthen inventory control  
5. Help to implement seamless supply chain |
| Explain: RFID is the wireless non-contact use of radio-frequency electromagnetic fields to transfer data, for the purposes of automatically identifying and tracking tags attached to objects. |                                 |
| EDI (Electronic Data Interchange) | 1. Improve work efficiency and avoid the repeated labor  
2. Make information communications between supermarket headquarters, |
| Explain: EDI is a method for transferring |                                 |
data between different computer systems or computer networks  

| distribution centers, warehouse and suppliers more flexible and quickly  
| Improve competitiveness  
| Reduce cost  

GPS (Global Positioning System)  

Explain: GPS is a space-based satellite navigation system that provides location.  

| 1. High precision  
| 2. Have the convenient communication between transportation and headquarters. Improve transport efficiency, reduce transit accident  

Figure 3 Advantages for high technologies (Christopher, 2011)

3.4 Barriers for implement supply chain management

3.4.1 Suppliers Resistance to change

Since supply chain involves suppliers, manufacturers and customers, every party in the chain can be barriers to change. Supplier may resist changing due to perceived difficulties and high cost. Difficulties on change may upset supplier’s internal structure, which may lead to lost resources. High cost would reduce supplier’s revenue significantly in short-term (Frohlich, 2002).

3.4.2 Internal resistance to change

One of characteristics of human nature is resistance to change. Organization are form with human, so organization also resistance to change. As long as change happen, only few persons are advocate, rest of others either neutral or hostile. Even though organization could foresee benefit from change, it nevertheless resists changing (Frohlich, 2002).

3.4.3 Lack of motivation and in less developing industry

When company face to dramatic change in either technology or structure, they may need appropriate motivation to encourage them. Those motivations could either benefit
or reputation also could be market situation. Good motivation incentive either organization itself or suppliers to change (Harland, C.M. et al., 2007).

Small companies less likely reach and use new technology than larger companies. Company adopts new technology when there is perceived benefit or external pressure. The type of relationship between customers and suppliers do great influence on how quick suppliers will adopt new technology. More companies use new technology, more mature and developed industry it is (Harland, C.M. et al., 2007).

3.5 Benefits
With information sharing and collaboration, both parties would gain benefit, especially on responsiveness to market, supply chain cost reduction, process cost reduction, inventory cost reduction and product cost reduction (McLaren et al, 2002)

3.6 Summaries
There are three components in theoretical framework. Theory of planning is going to review that do two companies focus on the core demand of customers. Based on what customer needs to design what kind of strategy is the most appropriate for company. Purchasing part review that how two companies select their supplier, and what standard and requirements they use. This part based on suppliers’ financial situation, supplier’s performance, in order to select the best supplier. Finally, theories of distribution review and analyze two companies’ performance on their distribution. This part has three sub parts. First is distribution center part. Advanced logistic system need distribution centers for supermarket, which will reduce inventory and transportation cost. Second is inventory management part. Kanban system and VMI system help company to achieve high efficiency inventory management. Final one is information system; it is also strong support for supermarket company to reduce both time and money cost, such as RFID, GPS.
4. Finding

4.1 SCM of Wal-Mart

Wal-Mart focused on improving their sales, constantly reduce costs, and practice efficient distribution, logistics management systems and the application of innovative information technology tools (Batten, 2008). Wal-Mart spend large portion of revenue on its supply chain management annually.

4.1.1 Planning

The key thing to notice is how a company’s choice of competitive strategy (plan) drives other decisions. If company decides to compete on cost, such as Wal-Mart, and then the supply chain must be geared to drive down cost at each opportunity the most important thing to notice is how company chooses a competitive strategy (plan) in order to drives other decisions. As Wal-Mart decides to compete on cost, then the whole supply chain should geared to drive down cost. In order to minimize unit cost, Wal-Mart also uses low cost truck and rail logistics. (Prater, 2009)

The main plan of Wal-Mart’s SCM is providing good quality product to customers with lower price. In addition, Wal-Mart also plans to minimize it inventory quantities (University of San Francisco, 2010). In order to achieve those plans, Wal-Mart integrates manufacturing, suppliers, and warehousing together. By this strategy, not only save cost and time which spent on transportation, but also reduce the average lead time from manufacturing to warehouse.

4.1.2 Purchasing

Wal-Mart is carefully or even strictly on selecting its suppliers. It screen supplier step by step. Once a supplier becomes a partner with Wal-Mart, supplier could have more information, which Wal-Mart share with them, regarding to market. And also gain benefit for partnership.

Wal-Mart select suppliers base on standard requirements and additional requirements. Standard requirement ask suppliers have responsible for society, such as compliance with laws, fair treatment labors, protecting environment, anti-corruption and financial
On the additional requirement, require suppliers must provide products and service with quality and implementing advanced information system (Wal-Mart, 2013).

Standards requirements and additional requirements are in appendix 1.

4.1.3 Distribution

Distribution Center

Wal-Mart have many distribution centers are hubs of activity for it business. Wal-Mart distribution operation is one of the largest in the world. Meanwhile, there are 9 disaster distribution center, strategically located across the country in order to response natural disaster. All distribution centers have more than 92903 in size and more than 8 km conveyor belts keep product moving 24 hours a day. Every distribution center supports 75 to 100 stores in a 400 km radius (Wal-Mart). Wal-Mart also use a remixing concept in it network strategy which refers to fast/slow distribution strategy whereby the fastest movement products are positioned closer to the retail stores and slower moving products are stocked at fewer distribution point that far away from demand points. Wal-Mart has an accelerated delivery system by which stores located within a geographical center can receive replenishment within 24 hours (Wal-Mart, 2013).

Wal-Mart has five kind of different function distribution center which are General Merchandise Distribution Center (GMDC), Grocery and Perishables Distribution Center, Fashion Distribution Center, Import Distribution Center and Sam’s Club Distribution Center. Each distribution center has its own shape and functions.

At the beginning of 2013, Wal-Mart operates 42 regional general merchandise distribution centers (see figure 4) in United State with totaling 4645251 square meters. These massive facilities usually have 92903 square meters and 35’ clear stacking height. There may have a conveyor up to 19 km in a regional distribution center, which could move hundreds of thousands of cases each day. Not all merchandise is conveyable; there also has a conventional split case and full case section of the facility. (MWPVL International Inc., 2013)
At the beginning of 2013, Wal-Mart operates 42 Grocery and Perishables distribution centers in United State totaling 3158703 square meters. Wal-Mart’s Full-Line Grocery distribution centers are generally L-shaped facilities with a square-shaped Dry Grocery building forming one side of the L-shaped complex, and a long rectangular Perishables building forming the other side of the complex, the Perishables building having receiving and shipping docks on the opposite of the complex. Wal-Mart implemented automated material handling system in several of their Perishables distribution centers. That system automatically store incoming pallets. (MWPVL International Inc., 2013)

At the beginning of 2013, Wal-Mart has 7 Fashion distribution center and 1 smaller Footwear distribution center in the US totaling 706063 square meters. Those distribution centers are within 59457 to 148644 square meters and employ more than 700 warehouse associates. The entire Fashion distribution centers are conventional rectangular-shaped facilities and they are service more than 1,000 stores. (MWPVL International Inc., 2013)

At the beginning of 2013, Wal-Mart owned 10 Import distribution center building in 5 locations around the US totaling 1384255 square meters. These massive facilities are positioned close to major U.S. ports located in Long Beach, Houston, Savannah, Norfolk
and Chicago. Each import center receives containers of merchandise and then redistributes this merchandise to GMDC. (MWPVL International Inc., 2013)

At the beginning of 2013, Sam’s Club operates 25 distribution centers with exceeding 213677 square meters. (MWPVL International Inc., 2013)

**Information system**

With one of the world’s largest non-governmental databases, Wal-Mart IT division is made up of more than 3,500 people in the U.S., and more than 2,000 overseas. Larger than most U.S. businesses, it growing Technology division drives innovation through state-of-the-art technology and collaboration, with a passion for and connection to our mission of improving customers’ and Members’ lives across the globe (Wal-Mart).

**External**

Wal-Mart develops an information system with its suppliers, in order to reducing inventory and maximizes sales, meanwhile focus on customer demand. The supply chain between Wal-Mart and its suppliers has adopted a much better customer focus through the channel partnership which is mutual benefit.

Usually, the inter-organization information system is effectively to reduce transaction cost, but values have been created in Wal-Mart supply chain partnership. The partnerships initially just want to improve business relationships, but gradually it has been enhanced by sharing information and knowledge about each respective market. The sharing makes supply chain more efficiency in process coordination (see figure 5), continuous replenishment and management aspect.
With Electronic Data Interchange (EDI), suppliers get information from point-of-sales (POS) which is record sale data to maintain inventory, about customer preference of their products and Wal-Mart get information about replenishment and saving cost for storage. These information systems which nearly replace conventional orders also allow manufacture supplier produce in advance before their product run out (Grean&Shaw, 2010).

By using cross docking, products are delivered directly from supplier to Wal-Mart warehouse, and then the products will be sent to store. The product will stay in warehouse in very short time. This strategy reduces cost significantly, and gives Wal-Mart highly competitive on pricing (University of San Francisco).

With the information sharing among the manufacturer and the retailer, manufacture could use that information to manage the frequency and quantities of shipment. This information system so called Vendor Managed Inventory (VMI). This system help manufacturer manage inventory more efficiency and also help them to save cost. With VMI system manufacturer replenish inventory by two piece of information which are actual warehouse on-hand quantity and actual warehouse on-order quantity. (Grean&Shaw, 2010).

Wal-Mart is aiming sell its good more quickly, which sold products quicker than Wal-Mart must pay its suppliers. VMI is contributing to make what Wal-Mart want to real.
For example, most of item will spend less than 8 hours in Wal-Mart warehouse; meanwhile it will be sold within 24 hours (Grean & Shaw, 2010).

**Internal**
Comparing RFID and barcodes, considerable strengths of RFID are that it does not require line of sight between tags and a reader in order to be read, tags can be read through nonmetallic materials and approximately sixty tags can be read simultaneously. Although RFID is an unproven system may still with many defects, but Wal-Mart still encourage its suppliers to use it. Because RFID not only help suppliers manage their inventory more efficiency, but it also could help retailer save more than $8 billion per year (Khade & Lovaas, 2009). Wal-Mart recently put RFID tags on clothes.

Through using GPS, company more incentive more shipment. GPS provide information about where their drivers and material are, and also possible for drivers change to another alternative routes in order to improving efficiency. Addition unique aspect is the company keep track of inventory through computers. Item are scanned before being load on trucks. Managers know what is on each truck, allow them to dispatch item to different store if it is necessary.

### 4.2 SCM ofHualian

Hualian is the biggest supermarket chain in China, which initially established in Shanghai in 1993. Until now, Hualian owned nearly 2000 supermarket chain, which covers most of cities in China. Hualian grow fast by constantly implement advanced supply chain management (Hualian, 2013)

#### 4.2.1 Planning

The main plan of Hualian SCM is providing good quality product to customers with lower price. China differ from western countries, China has massive population. Meanwhile, nearly half of Chinese do not have a car, so set up supermarket which must easy for people to approach on foot is necessary. Hualian achieve it plan base on Chinese characteristics. Hualian not only open supermarket in the city, but also set up lots of Convenience Stores around supermarket.
4.2.2 Purchasing

There are nearly 90% products around world are made in China. So, Hualian is surrounding by huge number of supplier. Hualian strictly screen on anyone who wants to become supplier. Carefully on selecting suppliers bring benefit for everyone in this partnership, otherwise both worse (Hualian, 2013).

Hualian also has standard requirements and additional requirements on selecting supplier. In standard requirement, Hualian ask suppliers compliance with laws, fair treatment to labor, anti-corruption and financial integrity. On the additional requirements part, Hualian require that suppliers provide quality goods with the lowest price, meanwhile also support for promotion and sponsor.

Standards requirements and additional requirements are in appendix 2.

4.2.3 Distribution

Distribution Center

Having Centralized distribution system is a trend for whole business in the world. If Wal-Mart is the leader of it, then Hualian is the follower. Hualian expand its business as Wal-Mart done before. In order to achieve more market share and reduce cost, Hualian place it distribution center in ten major cities in China.

At the beginning of 2013, Hualian operates ten distribution centers in China with totaling 240000 square meters. These distribution centers keep product moving 24 hours a day. Every distribution center supports 200 to 350 stores which include 30-50 supermarkets and 150-200 convenience stores in a 200 kilometer radius. The north and south sides of the distribution center, built a 4-meter-wide loading platform. The platform is one meter higher than the outdoor road. The compartment holding plate with suppliers countertops basically in the same plane when the van rear of a truck stopped near the platform. The loading and unloading of job is a horizontal movement, greatly reducing the labor intensity of the loading and unloading link. The site operating line length of 270 meters, capable of accommodating more than 80 trucks operating at the
same time. Forklift is main tools in Hualian distribution center. Any store covers by distribution center will be replenished within 48 hours.

Figure 6 Location of Hualian distribution center (Hualian)

**Information system**
Hualian also use EDI system, it has not focus on sharing information with suppliers. EDI system in Hualian is focus on data exchange frequency within company. But Hualian put much effort on RFID system, and also manage transportation with GPS.

**RFID**
It is necessary to point out only 2 of 10Hualian distribution center have RFID function. Rests are still use barcode system.


Warehouse
Stock-in: the use of RFID technology, to update the information of goods, automatic sorting of goods processing;

Stock-out: marked goods by the reader on the shelves, by the computer information processing and manual labeling of goods and a certain degree of processing, packaging, final confirmation of shipping tasks;

Inventory: use of RFID characteristics with multiple data read, so that each data acquisition can clear all of the quantities of goods, shelf life, and cargo space to save a lot of time and manpower.

Store
Shopping: Customer checkout goods in the supermarket, as long as the customer push the cart over the specified channel, the total amount of spending is immediately appear on the cashier's computer. And then the amount is automatically charged from the customer's consumer card. In this case, the labeled goods will scan again after charging, update supermarket inventory.

Replenishment: The stock reached a certain level, the system can alarm to alert the person who charges of the stores need to send orders to the headquarters of shortage goods list. Supermarket management system is also based on the customer registration information to understand that how frequency does a customer patronage supermarket, and their preferences, to classify the customer. In order to adjusted the type and quantity of the goods.

GPS
GPS has been implemented in Hualian within a fewer years. The main target for GPS system service is to track position of trucks and dispatch an efficiency routes. Hualian also try to extend function of using of GPS, like track the specific inventory, but still have not practice.
5 Analysis

5.1 Planning (Wal-Mart and Hualian)
When comparing of Wal-Mart and Hualian’s logistics strategy, it can be observed they all have same objective target which is low cost. It is easily to understand why they have the same target, because a products sale in supermarket does not vary from one to another. In other words, the supermarket field usually is perfect competition, which means products are same from one supermarket to another. To reduce products cost not only save the money for supermarket, but also attract customers. A good supply chain plan highly responds customers’ need by value creation (Christopher et al., 2007). Wal-Mart and Hualian manage every supply chain process with low cost plan, such as purchasing and distribution.

5.2 Purchasing

5.2.1 Wal-Mart
The flow chart (see figure 7) below illustrates how Wal-Mart selects its suppliers. On the left column of flow chart, there are the standards for selecting suppliers by Wal-Mart point of view. On the right of flow chart, which are extra requirement for selectingsuppliers. As the standards requirement, many companies in U.S. have the same requirement for their supplier. On the addition require, there is highly consistency with its supply chain plan—low cost. Suppliers should not only provide goods with the lowest price in the market, but also with high quality. In addition, supplier also must submit their financial status, in order to prevent supplements shortage due to economic issue.

There is a really strict requirement in Wal-Mart addition requirement for suppliers, which is if the supplier cannot meet Wal-Mart orders within three times, the relation will be canceled. Meanwhile, all suppliers must applied EDI system to reduce costs. Those additional requirements show that Wal-Mart purchasing step is highly regarding to its supply chain plan.
Figure 7 Flow chart of how Wal-Mart selecting suppliers (made by author), based on Wal-Mart supplier manual, see appendix 1
5.2.2  **Hualian**

The flow chart (see figure 8) below illustrates how Hualian choose their suppliers. According to the chart, either Wal-Mart or Hualian is nearly the same on selecting supplier’s standards requirement. Due to Chinese characteristic, Hualian lack of labor hours, hiring and employment practice and environment part. Unlike the U.S., there is no any labor union in China, so labor hours and employment practice have no account into Hualian supplier’s standard requirement.

In the additional requirement for supplier, Hualian set same requirement as well as Wal-Mart does, which is products with lowest price and high quality. Additionally, Hualian also request suppliers provide service before, during and after delivery. Hualian also ask suppliers give strong support to promotion and sponsor. Last two requirements have its own characteristic, Wal-Mart supermarket in China also ask for suppliers support for promotion and sponsor, but Wal-Mart in America do not have this requirement.
Figure 8 Flow chart of how Hualian selecting suppliers (made by author), based on Hualian supplier manual, see appendix 2
5.2.3 Comparing

Either Wal-Mart or Hualian supplier selection requirement is clear. The standards requirement is strict, which makes sure that supplier who passed general selecting is meeting social and ethical requirement. Based on that, Wal-Mart and Hualian request suppliers to comply with the law, fair treatment of staff etc. To maximize profit, both companies ask their suppliers to provide lowest price, because one percent decrease on cost, increase the profit by ten percent (Ambe&Badenhorst-Weiss, 2012). Wal-Mart additional requirements are tracking and tracing on suppliers performance and delivery (Jonsson, 2008), while Hualian additional requirement is a little bit unfair for supplier. because unlike the price and quality, promotion and sponsor do not have general criteria, how strong support is for promotion and sponsor, which could not be judged. Promotion and sponsor mean that when the supermarket wants sell product with some discount, suppliers must bear the loss from the discount. So, for keeping every requirement, there is a standard to measure, and that is necessary for every company. Otherwise, maybe the best supplier passed all requirements but does not satisfy promotion and sponsor will be eliminated by Hualian.

5.3 Distribution

5.3.1 Distribution center (Wal-Mart & Hualian)

Both Wal-Mart and Hualian established centers in order to deliver goods rather than branch. Through centralized distribution increase economic benefit and reduce cost (Simchi-levi et al., 2008). Comparing distribution center, Hualian is far away from Wal-Mart. Hualian has ten distribution centers location in major cities in China, while only account Wal-Mart general merchandise distribution center is 42 in America, Wal-Mart own distribution center 4.2 times more than Hualian owns. That excludes 42 grocery and perishables distribution center, 7 fashion distribution centers, 10 import distribution centers and 25 Sam’s Club distribution centers. If account all Wal-Mart’s distribution center, it is 12.6 times more than Hualian ten distribution center.

Since Hualian supermarket does not distinguish their distribution center to variety function, the analysis will focus on compare Wal-Mart general merchandise distribution center with Hualian distribution center. Wal-Mart general merchandise distribution center normal has 1.0 million squarefeet which equal to 92,903 square meters, while
Hualian supermarket distribution center is with average 30,000 square meters. Comparing those two distribution center will find Wal-Mart distribution center is 3 times larger than Hualian distribution center, which means Wal-Mart distribution center has more capacity than Hualian distribution center.

Wal-Mart distribution center has 400 km radius, while Hualian distribution center has 250 km radius. Obviously, Wal-Mart with replenishment time 24 hours is quicker than Hualian within 48 hours, which also reflect Wal-Mart manage its inventory more efficiency. Meanwhile, Wal-Mart equip conveyor in its distribution center while Hualian only use forklift mainly.

There is another way to measure how efficient that Wal-Mart and Hualian manage their inventories, which is inventory turnover rate and days of inventory on hand. Inventory turnover rate is cost of goods sold dividend by inventory, low rate indicate overstocking and obsolescence. And days of inventory on hand is 365 dividends by inventory turnover rate, which measures the number of days a company takes to sell its average balance of inventory. It is also an estimate of the number of days for which the average balance of inventory will be sufficient. That information could find in company financial statement. Here is the annual report of Wal-Mart; the calculation will based on 2012 data.

![Figure 9 Wal-Mart's financial statement](image)

From the picture above, either inventories or net sales are in millions, so use the formula mention before, Wal-Mart inventory turnover rate is 8.23 times per year. So the days of inventory on hand equals to 44 days.
Those two figures collect from Hualian 2012 annual report. Hualian 2012 inventory turnover rate is 6.3 times. And days of inventory on hand is 58 days. From analysis above, figures illustrate Wal-Mart more efficient than Hualian on management of inventory. Although supermarket may not have any inventories which is obsolescence, overstocking easier appear in Hualian supermarket, because it needs 58 day to sale it inventory. Additional, food and any perishable goods may directly scrap rather than sale it based on long days of inventory on hand, more details about calculation please see appendix 3.

Wal-Mart constant works on Cross-Docking logistic (CDL), which allow Wal-Mart, has even lower days of inventory on hand (Belle et al., 2012). For some goods, such as daily necessities, CDL help Wal-Mart to achieve less than 24 hours. Although, Hualian also use CDL to imitate what Wal-Mart done, it is not skilled to use it, and for some daily necessities with average 4 days.

5.3.2 Information System (Wal-Mart & Hualian)

In order to achieve high inventory turnover rate, only with distribution center is not enough, also implementing advanced information system is the best way to achieve efficiency.

EDI is the common for both two companies, but with little difference. Hualian use EDI system only in its own company, while Wal-Mart extends it to its suppliers. With the EDI system exchange information with suppliers constantly, which allowing Wal-Mart achieves zero inventories and continues replenishment.

Both companies have adopted RFID system, but none of them have totally implementing it. Wal-Mart always encourage their supplier to implement RFID in order to save more cost, as Wal-Mart announce that RFID will save more than $8 billion per year. For nowadays, Wal-Mart only put RFID tags on clothes, which reflect that
technology still has some defects. Hualian implement RFID in order to gain competition advantage. RFID system is trial in two Hualiansupermarkets, with immediately charging and automatic replenishment alert. Immediate charging allow customer pay for the good without barcode scanning, which means they do not need to take out the goods from cart. Hualian also combine the immediate charging system with automatic payment system, allow customers directly leave supermarket without waiting in queue. Immediate charging system not only helps customers to save time, but also save time and labor for supermarket (Chen, Cheng & Huang, 2013).

Install GPS in trucks for making convenient about headquarters master the delivery condition (Christopher, 2011). Either Wal-Mart or Hualian implement GPS in their supply chain system to improve transportation velocity. They are all using GPS to track the locations of trucks and inventory in order to calculate efficient routes, either low cost or quick. The difference between them is Wal-Mart has its own satellite, while Hualian only rent a public one.

5.4 Requirement

The entire requirement about advanced logistic are list in tables below. They are logistic strategy, purchasing and distribution which are comparing in the table. Any Subcategories which Wal-Mart performed in the table is the requirement.

Both Wal-Mart and Hualian have same plan for their supply chain. Low cost with good quality is target which two companies want to achieve. On the logistics strategy stage, two companies have same strategy.

<table>
<thead>
<tr>
<th>Planning</th>
<th>Wal-Mart</th>
<th>Hualian</th>
<th>Comparing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply chain plan</td>
<td>Low cost, good quality</td>
<td>Low cost, good quality</td>
<td>Same</td>
</tr>
</tbody>
</table>

Purchasing part is nearly same for two companies on standard requirement, but with little difference on addition requirement. Wal-Mart focuses on information technology, while Hualian want suppliers provide more benefit.
### Purchasing

<table>
<thead>
<tr>
<th></th>
<th>Wal-Mart</th>
<th>Hualian</th>
<th>Comparing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard requirement</td>
<td>Strict</td>
<td>Less strict</td>
<td>Wal-Mart also focus on Labor rights and environment</td>
</tr>
<tr>
<td>Addition requirement</td>
<td>Require more on information system</td>
<td>Require more on market profit</td>
<td>Wal-Mart constant focus on IT many years</td>
</tr>
</tbody>
</table>

Either distribution scales or information system on managing inventory Wal-Mart is performing better than Hualian, only except RFID. Due to RFID defect, both companies are trying to implement it.

### Distribution

<table>
<thead>
<tr>
<th></th>
<th>Wal-Mart</th>
<th>Hualian</th>
<th>Comparing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of distribution center</td>
<td>126</td>
<td>10</td>
<td>Wal-Mart has large scale of DC</td>
</tr>
<tr>
<td>Size of DC (m$^3$)</td>
<td>92,903</td>
<td>30,000</td>
<td>Wal-Mart has Large size of DC</td>
</tr>
<tr>
<td>DC radius (KM)</td>
<td>400</td>
<td>250</td>
<td>Large area radius</td>
</tr>
<tr>
<td>Inventory turnover rat</td>
<td>8.23</td>
<td>6.3</td>
<td>Inventory efficiency in Wal-Mart</td>
</tr>
<tr>
<td>Days of inventory on hand</td>
<td>44</td>
<td>58</td>
<td>Days of Inventory in warehouse is short in Wal-Mart</td>
</tr>
<tr>
<td>Good sale with CDL</td>
<td>24 hour</td>
<td>4 Days</td>
<td>3 days shorter than Hualian</td>
</tr>
<tr>
<td>EDI</td>
<td>Internal &amp; External</td>
<td>Internal</td>
<td>Information exchange with</td>
</tr>
</tbody>
</table>
In order to achieve what Wal-Mart done, supermarket chain companies should try to imitate Wal-Mart. As supermarket, low price is main strategy for most supermarkets. Due to Chinese characteristic and economic stage, requirement on selecting suppliers may have difference, but shall try to use Wal-Mart standard requirements for supplier. That standards provide a framework on select a qualify supplier, not focus on product. Only suppliers with good ethical could mutual benefit each other.

### 5.5 Barriers
The biggest barrier for Chinese supermarket to imitate is distribution part, because Wal-Mart put much effort on information technology for many decades. Even though, Chinese companies could have such large fiscal power to buy same system, they are still lack of knowledge to use it. The core competitive advantage of Wal-Mart is IT system. That is not to say Wal-Mart pattern could not be duplicated, but mastering on it would take many years for Chinese supermarket to go.

Barrier follow by is even though Hualian implement those advanced systems, but its suppliers do not have enough money to implement, because using advance technology means great difficulties and huge cost, which may cause a dramatic change for suppliers (Frohlich, 2002). Even if suppliers have fiscal power to equip advanced system, they still need motivation. Benefit and external pressure may influence suppliers who have fiscal power but does have motivation (Harland, C.M. et al., 2007).

And the last barrier in this paper is for internal of Hualian. Employees and managers may resisting due to changing impact. Changing impact could be either transfer one
person from one position to another or even maybe lose job from change. If perceived benefit influence less than changing impact, people will not cooperate. If the most of employees and managers resist to change, changing will never be successful (Harland, C.M. et al., 2007).
6 Conclusion

6.1 requirements and barriers

The requirements for implementing Wal-Mart supply chain pattern are obvious, as a supermarket company, supply chain planning should be low cost in order to gain more competition in the market. On supplier choosing stage, Wal-Mart's benchmark is strict on standard requirement which impose suppliers’ response for labor and society. And at the addition requirement, Wal-Mart asks suppliers to cooperate with them by implementing high information technology, which reducing each parties cost significantly. On distribution part, advanced information system help Wal-Mart reach low inventory turnover, which means Wal-Mart manage its inventory efficiency.

Barriers for Hualian are also clear. The biggest the barrier is that Hualian need time and money to reach what Wal-Mart has done on advanced technology. By implementing new supply chain pattern will let Hualian and its suppliers both face to new cooperation environment, which would let both of them resisting to change.

6.2 Practical implication

Company could gain much benefits and profits from advanced logistic, whatever from internal or external. With advanced logistics, company takes advantage on influence upstream, such as suppliers and downstream, such as customers.

Advanced logistic allow company to maximize its production with less cost. Advanced information system reduce cost on time significantly. In logistics aspect, company’s processes will more efficiency with advanced logistic.

External benefits and profits should distinguish. Benefits could be high influence power, good-will and reputation. Great influence power gives company bargaining power with its suppliers. Good-will and reputation bring confidence to customers. And profits refers to revenue, incremental revenue let company grow faster and faster.
6.3 Managerial implication

In order to implement advanced logistics smoothly, company should aware of those barriers. First and foremost is internal barrier, because failed with internal changing will bring negative influence on next changing. Successful internal changing impact on suppliers, internal successful implementing experience also helpful to suppliers, and help them to pass those barriers. Company could do little for less developing industry, these barriers need time for the parties who in industry field to gain enough resource.

6.4 Future studies

There will have future studies after few years developing. At that time, culture in China may have a change, and transparency is basic thing that corporations need to do. Data will more adequate and appropriate by transparency. Or when industry at supermarket field is developed in China, then more suppliers may have ability to access advanced logistics. If there is a opportunity for me or someone else in future to get in touch with Wal-Mart, I will collect primary data from Wal-Mart, and also collect primary data from Hualian in order to make a more accurate comparison.
Reference list:


Bergman, B., Klefsjö, B. (2003). *Quality from customer needs to customer satisfaction*, Poland, Pozkal


Appendix 1: Wal-Mart Standards for Suppliers

**Step 1: Standards**

1. **Compliance with Laws**
   Supplier and their designated manufacturing facilities must fully comply with all applicable national and local laws and regulations, including but not limited to those related to labor, health and safety, and the environment (Wal-Mart).

2. **Voluntary Labor**
   All labor must be voluntary. Child, underage and slave must not be in labor force. Supply also shall certify that they have implemented procedures to manage the materials, including all labor related processes (Wal-Mart).

3. **Labor hours**
   Supplier must ensure that working hours are consistent with the law and not excessive, and also provide workers with rest day (Wal-Mart).

4. **Hiring and Employment Practices**
   All terms and conditions of employment including, but not limited to, hiring pay, training, promotion, termination, and retirement must based on an individual’s ability and willingness to do job. Supplier must verify worker’s age and legal right work in the country prior to employment (Wal-Mart).

5. **Compensation**
   Suppliers must compensate all workers with wage, overtime premiums, and other benefit meet or exceed legal requirement. Suppliers are encouraged to provide wages and benefits sufficient to meet worker’s needs (Wal-Mart).

6. **Health and Safety**
   A safe and healthy work environment must be provided by suppliers who also have obligation to prevent workplace hazards (Wal-Mart).
7. Environment
Suppliers should ensure that every manufacturing facility complies with environment laws, including waste disposal, discharges, air emissions and toxic substances. Suppliers must validate that all input materials and components with no damage and hazards (Wal-Mart).

8. Anti-Corruption
Suppliers must not tolerate, permit, or engage in any corruption, even any unethical practices (Wal-Mart).

9. Financial Integrity
Suppliers must keep accurate records of all matters related to their business with Wal-Mart in accordance with standard accounting practices (Wal-Mart).

**Step 2: additional requirement**
1. The product which supplier offer must have good quality and it must at least meet the legal requirement (Wal-Mart).

2. Supplier shall offer a product of lowest price in the market (Wal-Mart).

3. Supplier must provide all the information about production. In addition, suppliers also must provide document regarding to supplier itself (Wal-Mart).

4. Suppliers able to meet the demand for high-volume orders when received Wal-Mart orders, if any supply shortages, should be notified immediately. If suppliers cannot meet Wal-Mart orders within three times will be canceled and change supplier relations of cooperation (Wal-Mart).

5. Wal-Mart encourages suppliers to adopt electronic way to contact each other (Wal-Mart).

6. All suppliers are required to participate in Electronic Data Interchange (EDI) (Wal-Mart).
7. Be able to adapt to Wal-Mart lead time requirements. Lead time varies ranging from 60 days to commitments made a year in advance of a selling season (Wal-Mart).
Appendix 2: Wal-Mart Standards for Suppliers

**Step 1: Standards**

1. **Compliance with Laws**
   
   Cooperation with the Hualian suppliers and their designated manufacturers must strictly comply with all applicable national or local laws and regulations.

2. **Voluntary Labor**
   
   The supplier should be able to prove that their staff is completely voluntary employment. Hualian indentured labor, illegal trade, slavery or child labor to take a zero-tolerance policy.

3. **Compensation**
   
   Suppliers meet or exceed the legal requirements must be fair and reasonable to pay standard wages, overtime compensation and benefits to its employees. Hualian encourage our suppliers to pay wages to meet or exceed the local industry standard.

4. **Health and Safety**
   
   A safe and healthy work environment must be provided by suppliers who also have obligation to prevent workplace hazards.

5. **Anti-Corruption**
   
   Providers, payment, request or receive (whether directly or indirectly) any form of bribery as any inducement or reward for Hualian or business transactions involving Hualian is prohibited.

6. **Financial Integrity**
   
   Suppliers must keep accurate records of all matters related to their business with Wal-Mart in accordance with standard accounting practices.

**Step 2: additional requirement**

1. **Price:** Supplier willing to offer the lowest price to Hualian supermarket.
2. Integrity: Not bribery and breach of trust behavior.

3. Quality: Good quality can be guaranteed

4. Service: Close coordination in the ordering, delivery, after-sales service with Hualian

5. Promotion: Willing to give strong support promotional activities

6. Sponsor: Willing to give strong support to a variety of sponsorship
Appendix 3

Inventory Turnover = \( \frac{\text{Cost of Goods Sold}}{\text{Average Inventory}} \)

Average days to sell the inventory = \( \frac{365 \text{ days}}{\text{Inventory Turnover Ratio}} \)

Wal-Mart inventory turnover rate:

\[ \frac{335,127}{40,714} = 8.23 \]

Wal-Mart days of inventory on hand:

\[ \frac{365}{8.23} \approx 44 \]

Hualian inventory turnover rate:

\[ \frac{9,744,122,374}{1,545,595,696} = 6.3 \]

Hualian days of inventory on hand:

\[ \frac{365}{6.3} \approx 58 \]
Appendix 4

Interview question:

Purchasing
Q1. What are the standards for selecting suppliers?
A1. About vendor selection criteria see attachment in e-mail Supplier Management Manual

Q2. What are the standards on selecting specific commodity?
A2. There is a rough standard on selecting commodity is high quality with low price. Meanwhile, standard in Supplier Management Manual ensure commodity quality.

Distribution
Q1. Does Hualian have regional distribution center?
A1. Yes, Hualian owned 10 regional distribution centers, and total area is more than 24,000 square meters. These distribution centers locate in Beijing, Shanghai, Shijiazhuang, Jinan, Zhengzhou, Hefei, Nanjing, Wuhan, Hangzhou and Nanchang.

Q2. How much radius does a distribution center cover?
A2. Each regional distribution center will cover 200-350 stores, including 50 supermarkets, convenience stores 150-200.

Q3. Distribution centers actual distance from each store is roughly equal?
A3. There is no absolute distance is equal from distribution center to store. Based on average distance, every distribution center can cover within 200 km radius.

Q4. How long does goods from suppliers to the distribution center?
A4. On this issue, if it is lead time, the time based on different suppliers have long or short, but Hualian requires suppliers not more than 55 days on lead time. Second, if it is finished goods and is in transit, it is general from supplier to the distribution center does not exceed 48 hours.
Q5. How long does goods from distribution center to stores?
A5. Food, live fresh class of goods, the average time to reach stores in less than 12 hours, the other classes have a longer shelf life of product will be delivered within 48 hours.

Q6. How long does household items and food stay in distribution?
A6. Food will not stay in distribution center for more than 12 hours, while life household items are more than 12 hours.

Q7. How long does a commodity stay in a store?
A7. A variety of goods waiting time for sold is long or short. Food sold time is the shortest usually in a few hours. However, sales of household goods may take up to one week time. Seasonal goods may reach up to several weeks.

Q8. Are trucks fully loaded with goods to stores?
A8. Under normal circumstances, it must be fully loaded with goods on truck; this is an important part of reducing costs. But occasionally in the case of unexpected out of stock, it will happen is not fully loaded truck, but rarely happens.

Q9. From the distribution center to the stores means of transport is optimal, such as minimum time, or the lowest cost?
A9. This means of transport is a calculated, must be optimized. Hualian is basically a combination of cost and time to calculate the path. However, in some extreme cases, Hualian will use the least minimum time to calculate the path, such as a serious shortage.

Q10. Is able to accurately track the exact location of the truck to make sure that stevedores will not wait long?
A10. Hualian Supermarket equipped with GPS system that can accurately know the specific location where the truck is. This ensures that stevedores not wait too long. But even in the absence of GPS system, we also have a schedule to determine the time of discharge.
Q11. Are there advanced IT systems to reduce commodity statistics and storage time, such as RFID?
A11. Hualian Supermarket equipped with EDI systems to ensure the enterprise, distribution centers and stores to internal information flow efficiency. The company equipped RFID system in two trialsupermarket. RFID system allows the customer at checkout time without doing anything to stay directly through the particular channel, the amount will be displayed on the cash register, and then with member’s automatic payment system, the amount will be deducted directly from the membership card. This not only greatly reduces time that customer stay at the cash register, while also reducing the supermarket investment in manpower. While there are several RFID detectors in every corner of store, if a commodity is less than the number of inventory levels, the system will automatically alarm to ensure adequate supply. The system not only can be issued for the first time replenishment alerts, but also staff not checks inventory level frequency