

# The Research on the Logistics Service Design Based on the Theory of Brand Image: A Case for FEELER

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**Abstract.** The problems in the domestic logistics industry currently require logistics equipment suppliers to help customers to do the service design which is an effective means to enhance corporate brand image on based of the brand image theory by the case of service design through the whole process of logistics equipment manufacturers: FEELER.

**Keywords:** Logistics industry, Service design, Brand image.

## 1 Introduction

The modern logistics industry is an important service industry to promote economic globalization. Logistics is consisted by six links: object transportation, distribution, warehousing, packaging, handling, distribution processing and related logistics information, which integrates of the basic function of transportation, storage, loading and unloading, handling, packaging, distribution processing, distribution, information processing etc.. And it's a controlling system from raw materials, manufactured goods, to finished goods and information. However, there are three main problems in Chinese logistics industry:

- The enterprise and the customer only pay attention to the quality and selection of a single device, but not make the system reach optimization.
- The enterprise and the customer still keep the price as the primary factors in selecting logistics equipment, but ignore the study on internal quality and safety index.
- The enterprise and the customer ignored the effect of the function of the equipment with the blindness in system planning, design, causing inconvenience to use or waste of resources.

These problems require logistics equipment suppliers not only to provide the hardware for the customer, but also to help customers to do some service work, such as customer service, demand forecasting, order processing, distribution, inventory control, transportation, warehouse management, factory and warehouse layout and location, transportation and handling, procurement, packaging, collecting information

and so on. The logistics equipment suppliers will more effectively convey the corporate brand image, enhance the brand value, to attract high-quality customers through them. And we will study the logistics equipment service design based on the theory of brand image by the brand case: FEELER.

## **2 Analysis of the Brand Image Theory**

### **2.1 Brand Image Theory Is the Basis of User Experience**

The brand originated is the identity function. After the brand symbol theory, brand cognitive theory and brand relationship theory, Professor Livy proposed that brand was a cluster existed in human mind image or concept. It's the sum of knowledge or attitude about brand and more depended on the mind of consumers in the explanation than the product itself. There was a transfer of sovereignty from producers to consumers in Professor Livy's research. Then America scholar Kevin Ryan Keller also expressed the same idea:" Brand was the reflection from consumers. Because the differences reflected were the result of consumer understanding of the brand. If no these differences, product with brand name was still the general product in essence.

A company may provide the stimulus through its marketing plans or other behaviours from its brand, but something still in the consumers' minds. So the brand was a sense of presence rooted in the reality, but reflected the personal habits. Obviously the brand is the consumer awareness of the product. Brand ultimately depends on the consumers' understanding of the product characteristics related with the subjective factors such as consumer tastes or personality. There are some complex mental activity, for example, paying close attention to a brand, distinguishing, thinking and understanding a brand, in the process of consumer brand awareness. Although a existence of objective features in a product is important, the consumers only recognize and accept the characteristics they feel.

Therefore, the brand is not only a kind of visual recognition, but also a consumer's psychological activity in essence. So a brand relationship model is formed from the brand recognition to the brand image as fig.1. Figure 1 shows the whole brand relationship process from enterprise to consumer. The brand recognition is used by enterprises for brand communication in which the consumers get the brand experience and brand association and eventually forming the brand image. But there are some noises along with this process, including objective factors of external social environment and subjective factors of consumer. These factors ultimately influence the enterprise brand image. If the objective social environmental factors can not be changed, all we can do is change the consumer's own subjective factors by reducing noise to a minimum.

The consumer's subjective factors can be attributed to the existence of "mental model" based on cognitive psychology. That means people's general ideas (views) are often produced by "Leaping inference" for they just make the specific matter to simple concept instead of the details in facts. This "mental model" caused the

"cognition divisions" which is often due to a poor user experience between enterprises and consumers and made the brand recognition of enterprise a uncorrect and invalid brand image in consumers' minds, thus affecting the enterprise's brand value promotion. Therefore we must enhance brand user experience to reduce the "cognitive differences" so that to establish a brand image conforming to the standard of the enterprise.

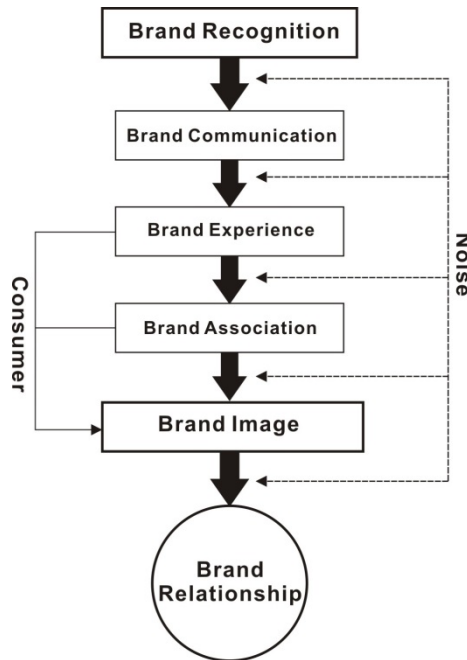


Fig. 1. Brand relationship model

## 2.2 Service Design Is an Effective Way to Enhance the User Experience

User experience generally refers to people's cognitive impression and feedback of product, system or service which they used or desire to use. And it's the all feelings including emotions, beliefs, preferences, cognitive impression, reaction of physiology and psychology, behavior and achievement etc. before or after using a product or system. Service design can effectively plan or organize people, infrastructure, communication, materials and supplies and make people be with them on people-centered concept to improve the user experience and service quality.

So it is an effective way to narrow our "cognition divisions" between brand identity and brand image. This will greatly help to enhance the user experience and the value of brand. Next, we will carry on the service design research based on the brand of logistics equipment suppliers FEELER as an example.

### 3 Analysis of the Brand FEELER

We take the customer brand experience as the object of study to do a investigation with sampling in FEELER customer group by depth interviews, field observation and so on. Then the brand image is decomposed into eight brand elements: the brand name, the brand logo, the brand slogan, the brand personality, the brand emotion, the number of users, the products appearance and the ideal price based on the results of the investigation. After that, we conduct psychological evaluation of customer brand experience based on eight elements and establish the service design system in pre-sale, sale and after sale including logistics planning, equipment R&D and sales, based on which we provide a set of handling service design as Fig.2.

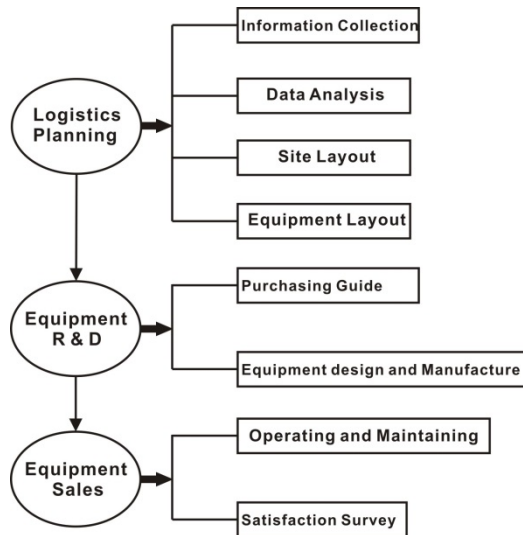


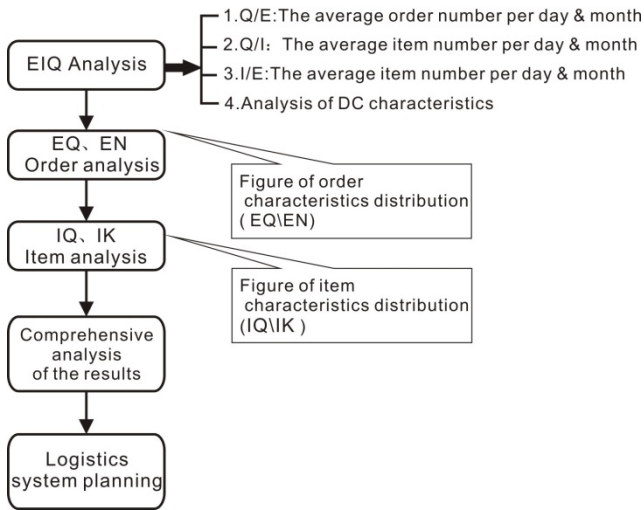
Fig. 2. The whole process of the service design by logistics equipment manufacturers FEELER

#### 3.1 Logistics Planning

**Information Collection.** The purpose of information collection is to collect a comprehensive understanding of the project. There are outline of the project, project status, project objectives and project requirements. Outline of the project is mainly the overall presentation of the project, including the background of this project; new projects or renovation project; land use; the sponsor and project time requirements. The project Status is the present business and logistics situation description, including the business scope, business type, warehouse, process, existing problems and so on. The project objectives is to meet the needs of business development, so the planning must be clear requirements to support sales. This is the most basic requirement of the distribution center planning and design. The calculation method to support sales:  $Sales = inventory * inventory\ turnover * single\ box\ value$ . The project needs is the

customer's request which mainly manifests in six aspects: the planning objectives; business; warehouse area; the relevant requirements of logistics equipment and facilities; office area ; other requirements.

**Data Analysis (EIQ Analysis).** The technological process of EIQ analysis as shown below.



**Fig. 3.** The technological process of EIQ analysis

EIQ analysis is to master the important customers' demand characteristics. E—Order Entry, I—Item, Q—Quantity. We can use the three key elements of logistics E, I, Q to shipping characteristics, study the needs characteristics of distribution center, provide planning basis for distribution center.

Analysis of EIQ project includes: analysis of EN - item number analysis per order (N for Japanese "Nnai (species)"'s initials); analysis of EQ - quantity analysis per order; analysis of IQ - quantity analysis for each single product; analysis of IK - ordering number for each single product(K for Japanese "Kasanatsut (repeat)"'s initials).

EIQ analysis contents as shown below:

*knowing the quantity of customer orders and order mode( the whole bracket, box or single) and providing the data of customers' products and sales area.*

*Determining the item demand characteristics and picking method.* IQ analysis and IK analysis, by which we can understand the distribution of each kind of products, is a reference of product storage, picking, classification and provides product sales trends.

*Calculation of inventory and related operating space requirements.* Total IQ shipped average number \* the number of items=the overall demand; total IQ shipped average number \* the number of items \* the number of inventory days=the stock total

demand; the average EQ \* the number of orders= the distribution vehicle demand or space of platform region.

*Assessment of resource requirements.* We can calculate the quantity of equipment and manpower demand to picking whole bracket, box or single piece according to shipments and standard working hours.

*The storage planning and management.* We can design the warehouse from the EIQ data analysis to obtain the most economical benefit on the operation efficiency and space utilization rate for products storage.

*Offering the data of operation efficiency.* We can compare the efficiency in the each stage of logistics operation and find the problems in the logistics system to avoid that the external environment changed, but the managers still felt good with the EIQ analysis. So EIQ can be used as a tool for analysis and diagnosis of the logistics center and is a magic weapon of logistics procedure optimization.

*Providing sales or shipments forecast data.* Historical EIQ data not only can be used to a sales forecasting as an important reference, but also predict future logistics flow and make us do operation plan better to improve the inventory turnover rate, work efficiency and reduce the lead time to distribute.

*An important reason for the selection of logistics equipment.* We can determine the equipment category or the degree of automation in logistics center to avoid the financial resources waste by the analysis of the EIQ data.

**Site Layout.** Sit layout refers to the distribution of internal office, sorting center, special warehouse, goods storage area, the platform, operation site in in the sorting center, and the arranged position of each function area . This work needs four aspects: the operation process, the needs of proposal, data analysis, GSP.

There are six site layout steps. The first step is that the logistics technology, processes and systems should be chosen. The logistics headquarters will determine the single plane graph with construction headquarters after demonstration by board of directors according to the business scale and the strategic objectives of the group proposal. The second step is to determine the in storage area and out storage area. The delivery cart cannot block the passage of the park and the receipt and storage spaces should be considered. The third step is to determine the first floor office area and the specific location of the warehouse. The first floor, such as cold storage warehouse, and office should be preferably designed. And the cold storage warehouse is in relatively independent region in order to facilitate the management. The receipt and acceptance management office should meet the requirements of 50 square meters. The office area not need to enter the warehouse operation should be isolated from the warehouse (glass isolation). The fourth Step is to determine the equipment layout. The fifth Step is to determine the storage area layout. The sixth step is to determine the warehouse management office and special warehouse on the other floors. The Special warehouse mainly is the gifts library, return library or unqualified Library. The warehouse management office is also the operating sites, so as close as possible to the elevator. The gifts library should be designed in a reasonable size. The return library and unqualified library should be adjacent.

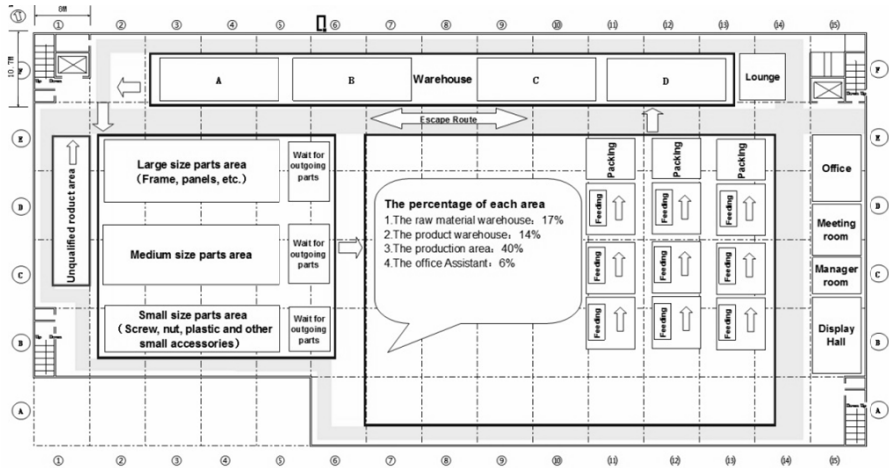


Fig. 4. A layout diagram for FEELER's customers

**Equipment Layout.** There are six principles of logistics equipment layout: ensuring the delivery line not to blocked channel and flow smoothly; ensuring the delivery line to occupy less area of the warehouse; a conveyor line can be multi-used to streamline the delivery line number in the premise of unification, efficiency; avoiding the transmission line to interference; conveying line must be maximum load to satisfy the operation requirement; transmission line operation should meet the principle of delivery goods, personnel safety and construction safety.

### 3.2 Equipment R & D

**Purchasing Guide.** Purchasing Guide is mainly to help customers to do a series of products procurement, equipment operation and maintenance training based on customer logistics planning.

Because forklift is the most widely used handling equipment in a distribution center, we use forklift which is a kind of mainly equipment manufactured by FEELER as an example to illustrate the the factors of purchasing forklift as fig.5.

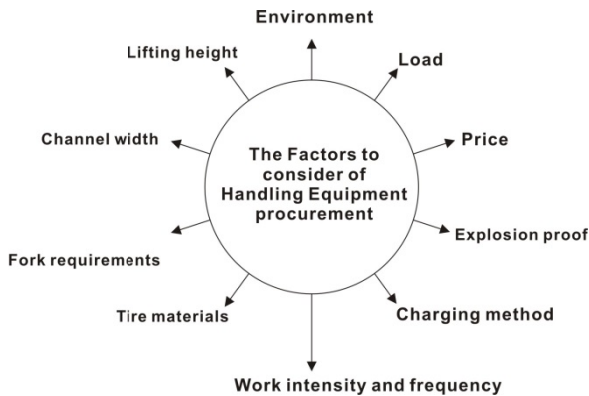


Fig. 5. The factors of purchasing forklift

*Environment.* If we are in outdoor work or distribution center of harsh environment, the combustion forklifts can be used, Otherwise the battery forklift.

*Load.* The weight of goods determines the load. Generally, load of battery forklift truck is no more than 3T, otherwise the internal combustion forklifts.

*Channel width.* The balance forklift requires the most wide channel for its fastest speed and the electric powered reach truck needs less.

*Lifting height.* The applications of pallet forklift, stacker, reach forklift, balance forklift are different selected generally according to lifting height and transport distance. The pallet forklift usually be used for plane carrying; the balance forklift usually be used below lifting height of 6M; otherwise the reach forklift.

*Fork requirements.* We should to determine whether the side shift fork be needed whether a special fixture be needed, whether special fork length be needed.

*Tire.* A different kind of tyre, general rubber tire or polyurethane tire, is chosen according to the ground and cleaning requirements. The rubber tire's coefficient of friction is big, but easy to leave the tire marks; polyurethane tire does not leave the tire marks, but easy to slip in the smooth hard ground.

*Explosion proof requirements.* Whether the explosion-proof is required according to the operation.

*Charging requirements.* Some forklift's charging voltage is 220V, some 380V. The vehicle charging or battery charging should be considered. The concentrated charging or distributed to several regional charging should be considered when the forklift number of distribution center is large.

*Work intensity and frequency.* Battery forklift is equipped with battery usually according to the 8 hour operation. If the work intensity, as two or three class manufacturing, the spare battery must be needed.

*Price.* Generally a battery forklift is more expensive than a internal combustion forklift and a VNA forklift is more expensive than a reach forklift which more expensive than balance weight forklift.

We can carry on the equipment design and manufacture based on the above factors.

**Equipment Design and Manufacture.** Next we can develop and design the corresponding logistics equipment based on the study above. For example, small tonnage balance electric forklift trucks for the small indoor warehouse loading and handling, ordinary 3~10 tons balance weight internal combustion forklift for the general outdoor logistics sites, such as wharf, the open space of a factory, the square, etc., more than 10 tons of large tonnage forklift for the site, mining area, forest, etc..

There are the old logistics equipment by FEELER(Fig.6) and the new we designed below.(Fig. 7)



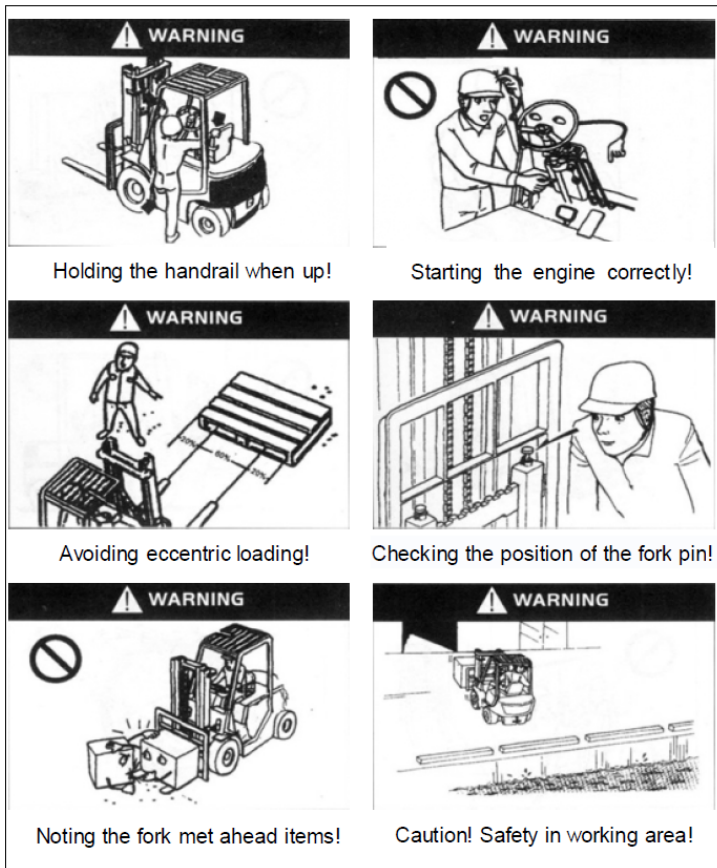


Fig. 6. The old logistics equipment by FEELER



Fig. 7. The re-designed logistics equipment by us

**Equipment Operation and Maintenance Training.** Next we need to maintain the equipment operation training to the customers. The pictures below is part of the forklift operation and maintenance training instructions of FEELER (Fig.8.).



**Fig. 8.** The forklift operation and maintenance training instructions of FEELER

**Customer Satisfaction Survey.** Finally, we need to conduct a customer satisfaction survey. The table below is parts of the customer satisfaction survey by FEELER.

## 4 Summary

The paper put forward the service design is an effective means to enhance corporate brand image on based of the brand image theory and verified the correctness and effectiveness of the proposal by the case of service design through the whole process of logistics equipment manufacturers: FEELER. And this will help us to further research on brand, service design and user experience in future work.

**Table 1.** Forklift satisfaction questionnaire

Forklift	The total number:  —	The number of Brand1 :  —	Performance satisfaction	□5 □4 □3 □2 □1
			Stable quality satisfaction	□5 □4 □3 □2 □1
			Price satisfaction	□5 □4 □3 □2 □1
			After-sale service satisfaction	□5 □4 □3 □2 □1
		The number of Brand2 :  —	Performance satisfaction	□5 □4 □3 □2 □1
			Stable quality satisfaction	□5 □4 □3 □2 □1
			Price satisfaction	□5 □4 □3 □2 □1
			After-sale service satisfaction	□5 □4 □3 □2 □1
		The number of Brand3 :  —	Performance satisfaction	□5 □4 □3 □2 □1
			Stable quality satisfaction	□5 □4 □3 □2 □1
			Price satisfaction	□5 □4 □3 □2 □1
			After-sale service satisfaction	□5 □4 □3 □2 □1

**Table 1.** (continued)

	Planning amount to purchase in 2013  _____	The main brand and purchase amount intention	Brand1: _____ Quantity:_____
			Brand2: _____ Quantity:_____
			Brand3: _____ Quantity:_____
	The main reason to purchase in 2013  _____	<b>1. Company business scale increasing</b>  _____ % in total amount to purchase.	
		<b>2. Replacing</b>  _____ % in total amount to purchase ;  The average time of use out of forklift_____years ;	
		<b>3. New technology needs</b>  _____ % in total amount to purchase ;  The main new technology_____	
		4. Other reasons_____	
	The procurement plan in 2014  _____	expected to increase this year_____%	

**References**

1. Jian, Qiang, Zhu: The recognition of the brand image and communication. Xia Men UP, Xia Men (2010)
2. Knapp, D.E.: The Brand Mindset. Enterprise management publishing house, Beijing (2008)
3. Aaker, D. A.: Building Strong Brand. China Machine Press, Beijing (2012)
4. Thomas, L.: Design Thinking: Integrating Innovation, Customer Experience, and Brand Value. Electronic Industry Press, Beijing (2012)
5. Robert, D.: Service Design Patterns:Fundamental Design Solutions for SOAP/WSDL and RESTful Web Services. China Machine Press, Beijing (2013)