BUSINESS PROCESS IMPROVEMENT OF CUSTOMER SERVICE
FOR EBAY BUSINESS JEWELRY COMPANY

By
WORAPHOL AUMMONTHA

Submitted in Partial Fulfillment of the Requirements for the Degree of

MASTER OF SCIENCE IN SUPPLY CHAIN MANAGEMENT

Martin de Tours School of Management
Assumption University
Bangkok, Thailand

July, 2017

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Approved for Graduation on: July 27, 2017

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July, 2017

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Assumption University
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Declaration of Authorship Form

I, **Mr. Woraphol Aummontha** declare that this project and the work presented in it are my own and have been generated by me as the result of my own original research.

BUSINESS PROCESS IMPROVEMENT OF CUSTOMER SERVICE FOR EBAY BUSINESS JEWELRY COMPANY

I confirm that:

1. This work was done wholly or mainly while in candidature for the M.Sc. degree at this University;

2. Where any part of this project has previously been submitted for a degree or any other qualification at this University or any other institution, this has been clearly stated;

3. Where I have consulted the published work of others, this is always clearly attributed;

4. Where I have quoted from the work of others, the source is always given. With the exception of such quotations, this project is entirely my own work;

5. I have acknowledged all main sources of help;

6. Where the project is based on work done by myself jointly with others, I have made clear exactly what was done by others and what I have contributed myself;

7. None of this work has been published before submission.

Signed _____

Date _____

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ADVISOR'S STATEMENT

I confirm that this project has been carried out under my supervision and it represents the original work of the candidate.

Signed _____

        (Dr. Srobol Smutkupt)

Date   _____

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The Master degree process was an amazing experience. This project would hardly have been completed without the wonderful people. Therefore, I would like to take this opportunity to take a deepest gratitude to persons who have contributed their efforts and supported me all the time.

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Second, I would like to thank all the committee members who sacrificed their valuable time to guide and correct my various documents with attention. They had given me a lot of guidelines which were useful to my research.

Last but not least, I would like to thank my family who always supports me unconditionally and plays a significant part in my life. Their moral support has made me successful.

Woraphol Aummontha

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July, 2017

ABSTRACT

Nowadays, most people purchase product online instead of going to the retail shop. Reliability is the key success factor for online seller. E-Bay is the world's biggest online market. The product selling on eBay as the Top Rated Seller is the most reliable in providing high service level to customer. ABC Company, the eBay seller, has faced the downgrading from the Top Rated rank to standard seller, due to the change of the Top Rate Seller requirement in 2016. Every online purchasers expect to receive their product as fast as possible. However, the current process of ABC Company is inefficient to achieve the dispatch time. Therefore, the purpose of this research is to improve the ABC customer service process to reduce late delivery rate.

All relevant data of ABC Company such as historical shipment volume, the average arrival time of product, the current situation and problems were collected. The mapping process was used to clarify the whole process to see where the inefficient process is. Then, the fishbone diagram and Pareto analysis were applied together to find out the root cause of late delivery rate. As a result, the author found two major causes of the increasing late delivery rate which were the lack of invoice management and the less shipment date.

Business process improvement (BPI) was selected in improving the customer service process. The new working procedures have been developed by adding the invoice classification and more shipment date in the process. The lead time process of ABC Company has reduced from 15 to 2 days. After the implementation of the new process, ABC Company could reduce its late delivery rate from 70.37% in April to 40.61% in June 2017, and ABC has the high possibility to get back to its status as Top Rated Seller in the near future.

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CHAPTER I

GENERALITIES OF THE STUDY

Nowadays the e-marketplace is very interesting where the origin of products could face directly to the customers. Internet can help firms to save a lot of costs; for example, fixed costs from opening the store, labor costs from manpower in warehouse. Therefore, the number of small and medium enterprise (SME) has raised continuously every year, because now the internet has made the world smaller.

E-Bay is a bidding website which people visit for buying-selling the products from around the world. Currently, there are more over 400 million SKUs for over 200 million bidders with buy-sell of more than 140,000 million baht per year. Therefore, eBay is considered to be the most popular bidding website in the world. A large number of people and enterprises can use eBay as the primary channel to sell products, whether they are small businesses or large manufacturing plants.

In conclusion, eBay is the interesting tool for SMEs that want to sell the products online without any variable costs and fixed costs.

1.1 Background of the Research

ABC Company is a small and medium enterprise (SME) that creates and develops jewelry and accessories. It also customizes designs and provides high quality natural diamonds and gemstones of more than 50 items. Furthermore, it provides two main product lines which are diamond and natural gemstone. First, the diamond product that the company provides is a customize- designed jewelry and modified with high quality diamond cut, such as diamond ring, diamond pendant, and diamond necklace. Second, the natural gemstone that the company sells, making it as the gemstone wholesaler on eBay website. The target markets of ABC are mainly the people from the United States of America. There are 10 more categories of gemstone such as

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Sapphire, Emerald, Ruby, Topaz, Alexandrite etc. Figure 1.1 shows the sample of ABC products sold on eBay website.

Figure 1.1 Sample of ABC Natural Loose Gemstone

Source: ABC Company

The key to be successful in selling online is getting the trust of the customers. In order to be the reliable seller in eBay, one must provide the right quality of product, right quantity, fast, good packaging and after sales services. In eBay, there are three levels of upgraded status for eBay seller.

1. **Power Sellers:** These members have to maintain certain monthly levels of gross merchandise sales and they must get there by providing excellent customer service.
2. **Top Rated Sellers:** This rank is the most reliable, which eBay sellers must follow stricter customer service requirements in order to get the Top Rated seal.
3. **Top Rated Seller Plus:** The special option for Top Rated Seller, which provides services in advance, such as providing expedite shipping and longer return policy period.

The easiest way to be a reliable seller is to have an upgraded common account as the Top Rated Seller because there are additional benefits when the Top Rated seal is displayed prominently, and there is a 20% discount on final value fees.

For the standard sellers that would like to upgrade position and receive all the benefits mentioned above, they must acquire all requirements following Table 1.1 strictly.

Table 1.1: Top Rate Seller Requirements

Requirement	Minimum standard for all Seller	eBay Top-rated seller
Defect rate		
Maximum percentage of transactions with defects	2.00%	0.05%
Minimum number of unique buyers affected before seller status is impacted	5	4
Late delivery rate		
Maximum percentage of transactions dispatch late	n/a	4.00%
Closed cases without seller resolution		
Maximum percentage of eBay Money Back Guarantee or Paypal Buyer Protection cases closed by eBay without seller resolution	0.3% or no more than 2	0.3% or no more than 2
Transactions and sales		
Minimum number of sales transactions	n/a	100
Minimum amount of total sales	n/a	$1,000
Other criteria		
Account registered as a business seller	-	Yes
Active eBay member for a minimum 90 days	-	Yes

Source: www.ebay.com

Remark: n/a in the table stands for "Not Available." It means there is no minimum requirement.

The eBay will evaluate the seller performance every 20th of the month. For seller who has monthly average over 400 transactions, eBay evaluates three previous month

performance. For seller who has monthly average of less than 400 transactions, eBay evaluates twelve months performance.

1.1.1 ABC Supply Chain Process

ABC Company mainly plays the role of a manufacturer in the supply chain and is involved in the upstream to downstream processes. Beginning with when the inventory level reaches the reorder point, the production manager plans the schedule and the trendy demand in that period and sends to the procurement department to order the loose natural gemstone from suppliers. The production process starts when the production manager provides the daily operation planning, such as assigning the quantity of gemstone, selecting the category of gemstone and colour as well. After the production process has been completed, all natural gemstones will be available on the eBay site and be ready for the customer. Finally, after each SKU period has ended, the operators will check the invoices and prepare to deliver the goods to the customers. Figure 1.2 illustrates this total system concept.

Figure 1.2: ABC Supply Chain Management Process
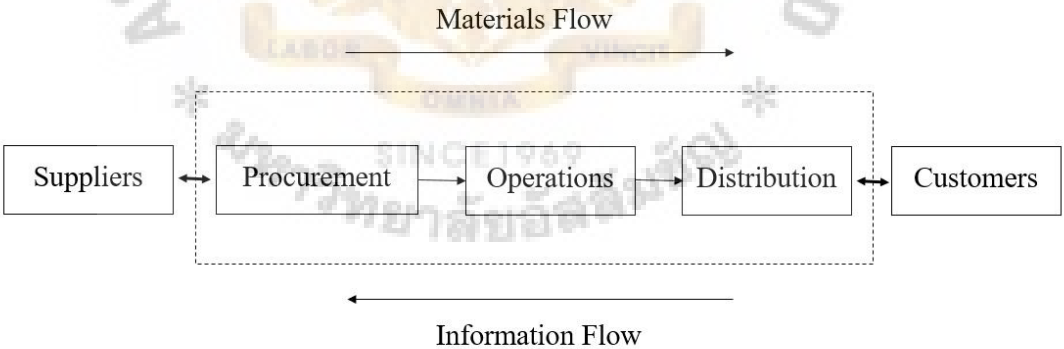
Source: Author

This study focuses on the downstream which is in the phase from Distribution to Customers because ABC has no retails to provide the service to customers. The company is only an online shop on the eBay website which customers are not able to touch and try the products before making the buying decision. So, building reliability and online trust is the key to be successful in the E-Commerce business.

Figure 1.3 shows how the downstream of ABC Company works. After the materials are filled in the stock, the production starts the eBay listing by creating and taking pictures of each gemstone in eBay listing tool, called Inkfrog.com. Firstly, the operation will receive the natural loose gemstones from the production manager. There are mainly five ABC online shops on eBay, the operation must list 20 SKUs/shops a day. Then at the ended of bidding date, when the operation finishes checking the sold-out products, they will submit the invoices immediately to all bidders who won. For the unpaid items, the operation will stock them and wait for the completed payment. Those unpaid items can be stocked for three months, if there is no payment, those items will be resold. Then, when the orders are completely paid, the operation will pick the orders and print out the invoices. All invoices will be transferred to the production manager for the payment approval. After the payment is approved, the packing staff will pack the orders and deliver goods to the customers. Finally, the operation will receive the tracking number from the postage and update it on the eBay website.

Figure 1.3: Overview of Downstream Supply Chain Process
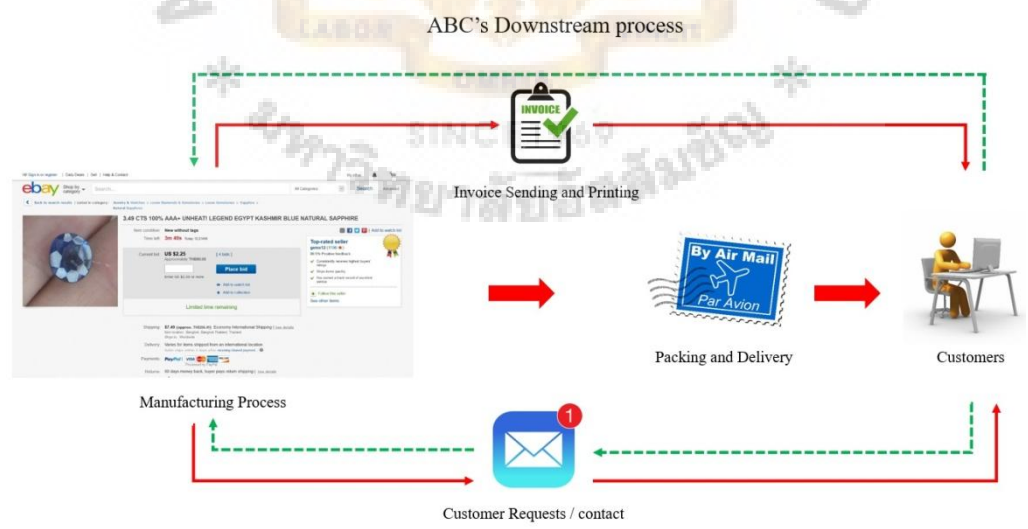
Source: Author

1.1.2 ABC Customer Service Process

The current customer service of ABC Company starts when the payment has been paid correctly and completely. Normally, the payment approval takes at least seven days to check the reliability of customers. After everything is in place, the operation will prepare for the packing stage. The completed payment orders will be packed in the fully covered quality envelope, although some products are packed based on customer requests and deliver via air mail registration to the destination. The shipment schedule of ABC is twice a month: 16th and 30th of the month. The lead time takes around 25-30 days to US customers from the delivery date. After the operation receives the tracking number, they will record the information in the system and update status on the eBay website of each of the SKUs.

1.2 Statement of the Problems

The eBay seller account is very valuable for the eBay business. Although the Top Rate Seller rank is not much complicated to get, but it is really hard to maintain. Currently, ABC cannot maintain the Top Rated Seller rank to all five accounts. Actually, all accounts used to be in the Top Rate Seller rank which made ABC generate more sales. However, there were changes in the new requirements policy for the Top Rated rank in Q1/2016 based on three criteria following Table 1.1 above. Therefore, the lack of studying deeply the requirements and continuously operating in the original way without adaptation to the changes, ABC Company had incurred higher percentage of late delivery rate than the required percentage which caused the downgrade through all ABC users.

Table 1.2 shows the seller dash board which provides the monthly performance reports for the eBay seller. This information presents the performance of each ABC user in the previous three and twelve months. Therefore, seller dash board is very

useful for the seller in order to spot where the weakness points are and prepare for a better performance for the next evaluation.

Table 1.2: The Seller Dash Board of ABC

	Required	USER 1	USER 2	USER 3	USER 4	USER 5
Defect Rate	0.5%	0%	0.03%	0%	0%	0.02%
Late Shipment Rate	4%	70.37%	42.62%	84.28%	77.27%	65.67%
Close Case Rate	0.3%	0%	0%	0%	0%	0%

Source: ABC Company Data

The seller dash board shows the current performance of ABC that is exceeding 4% of late shipment rate requirement in all ABC accounts, wherein user no.1 is 70.37%; user no.2 is 42.62%; user no.3 is 84.28%; user no.4 is 77.27%; and user no.5 is 65.67%.

As a result of losing the Top Rated positions, ABC's Top Rated seals were removed which reduced the company's reliability. Consequently, ABC's total sales volume in 2016 decreased significantly compared to the same period in 2015 as shown in Table 1.3. The total shipment data were from worldwide shipments

Table 1.3: The Total Sales Volume Comparison of ABC in 2015 and 2016

Month/in Packs	**In 2015**	**In 2016**
July	378	249
August	482	305
September	686	398
October	1,107	764
November	905	549
December	727	498
Total	4,285 shipments	2,763 shipments

Source: ABC Company Data

There are three considerations which eBay evaluation will be counted for on-time delivery. The delivery rate is considered on time as long as it meets at least one of the three criteria as shown on Figure 1.4.

Figure 1.4: On-time Delivery Rate Consideration

Source: ABC Company Data

Figure 1.4 shows the controllable and uncontrollable criteria. The controllable is the item tracking status that shows accepted by the carrier within the dispatch time. It is the only criterion that ABC Company can deliver the products within the dispatch time. The other two are uncontrollable criteria. The estimated on-time delivery depends on the postage agency performance, which ABC Company cannot control the arrival time of the products. Also, the confirmation of customer cannot be controlled because ABC Company cannot expect all its customers to give feedback, even the products arrive to the customer on time.

In conclusion, the researcher observed that when all invoices have been approved by the operation manager for at least seven days, the products are packed in the packing station. However, the shipment is scheduled every 16th and 30th of the month. Also, in the packing station, the author found out that there were several invoices which had been printed out for two weeks or more. Therefore, there was lack of customer attention and inefficient management within the process.

In this research, the researcher used Business Process Improvement (BPI), the supply chain management theory, which is a strategic planning methodology aimed to identify the operations that could be improved to encourage smoother procedures, more efficient in the working process. Therefore, this research has attempted to answer the question, "How to improve customer service process by using Business Process Improvement (BPI)?"

1.3 Research Objectives

This research has the main objective to improve the customer service process of ABC Company by applying BPI strategy. Specifically, the research objectives are as follows:

1.3.1   To study the current customer service process and find out where to improve the process;

1.3.2   To identify the root causes of the key problems and find alternative to improve the process in order to meet the Top Rate Seller standard requirement for every month and receive customer retention and loyalty; and

1.3.3   To propose a proper customer service process and smoother workflow across functions.

1.4 Scope of the Research

This research has mainly focused on studying the current customer service process of ABC Company. Clearly, understanding the process is necessary to find the ineffective processes which cause the late delivery rate, such as payment approval process, shipment combination requirement, and poor invoices management. As shown in Table 1.1, this research has focused on bringing back all ABC eBay accounts to be the Top Rate Seller covered by all five requirements. The late delivery rate was the major problem because ABC Company has faced with higher percentage of late delivery rate compared to the required percentage. Also, the defect rate and the returned order cases were emphasized, because quick response to the customer requests is important to deliver the orders on time and satisfy the customers.

The collection of data in this project was focused on the US customers who purchased ABC Company products from July to December 2016. The key Business Process Improvement (BPI) tool could improve the ABC current customer service process to be more effective which was developed as "To-Be process" to reduce all the problems and bring back ABC account users to be in the Top Rate Seller rank.

This research has expected favorable results, such as reducing late delivery volume, getting the Top Rate Seller position, generating more revenue from being Top Rate Seller rank, and achieving customer retention.

1.5 Limitation of the Research

The external aspects such as uncompleted payment from customer, the delay from customs clearance, bad environment in transportation process that impact the late delivery are uncontrollable factors; therefore, they were not included in this study. In addition, all information and data in this study were concerned only the US customers; hence, customers from other countries were not include in this project. Finally, this research might not have been appropriate for the other businesses or even other eBay business firms because each firm has different customer service process and different type of products.

1.6 Significance of the Research

After applying the Business Process Improvement (BPI) tool to the customer service process of ABC Company, the author expects to find the root causes of the problems in customer service process and to redesign a more efficient work process, especially on the process which impacts the late delivery. As a result, all of the ABC eBay accounts are expected to be ranked as Top Rate Seller, ABC shops would be more reliable and the company would gain the trust of the customers. An increasing number in customer retention and loyalty would effect in the higher sale volume every month.

1.7 Definition of Terms

E-commerce   The process of selling and buying products, services and information through electronic devices including internet (Turban, King, Lee & Chung, 2000).

Online Purchasing   Purchasing procedure which customers make purchasing decision through the internet (Koo, Kim, & Lee, 2008)

Online Trust   The willingness of a consumer to be vulnerable to the actions of an online store based on the expectation of the online store performance. Trust is the key successful factor for online transaction, and for retaining long-term relationship with consumers (Mayer & Davis, 1995).

1.8 Chapter Summary

This chapter introduces ABC Company, the gemstones wholesaler on eBay. Moreover, it presents the current problems of ABC Company which the sale volume in 2016 dropped because it was not able to maintain its status as the Top Rate Seller for its users. The late delivery rate was the major problem which ABC could not reach the Top Rate Seller requirements. As a result, all ABC account users were downgraded from the Top Rate Seller rank to the common users which decreased the reliability of the ABC online shops. Therefore, this research was conducted to find out the proper solutions for ABC, in order to improve the current customer service processes to reduce the late delivery rate.

CHAPTER II

REVIEW OF RELATED LITERATURE

This chapter presents the review of the literatures related to this project. There are five relevant topics discussed in this chapter: (1) customer service; (2) customer retention; (3) business process improvement (BPI); (4) the cause and effect diagram; and (5) Pareto analysis.

2.1 Customer Service

Customer service is the activities provided by the operation level that increase the customer's ability to realize the full potential value of the products or services before and after the sale has taken place, so the high level of service leads to the satisfaction and repurchase of the products (Timm, 2001). This process cannot measure the value through the customer's eyes. The service relies on the interactions between the provider and the customers (Vargo & Lusch, 2008). There are three levels of customer service. The first level is reliable, which means the company should perform well in basic activities, such as on-time delivery, order cycle time consistency, and ease of order entry. The second level is entail, in which it is necessary for the company to be responsive to customer's special needs and requests. The last level is referred to sustain and grow market share, which means developing value-added programs for the customers, such as applying VMI, CPFR, supply chain visibility of inventory, and so on (Coyle, Bardi, & Langley, 2003).

Based on studies about customer service, it has been found that providing high levels of customer service can easily become a strategy to differentiate the company itself from the competitors (Livingstone, 1992). Steven (1990) stated that improving customer service should be one of the fundamental goals in every company to create company's competitive advantage. While many companies have spent millions of dollars attracting new customers to generate their profitability, even companies can acquire new customer, but all of them might not generate more revenue as expected. In fact, customer service improvement can be seen as a cheaper investment for companies which can maintain the existing customers and customer acquisition at the same time (Zemke & Connellan, 2001). Supported by Brandt and Reffett (1989), they mentioned that service quality could be improved by focusing on customer problems. The customer service problems must be concerned by monitoring customer complaints and definitely effective complaint handling could lead to business success. The important thing is staying close to the customer, communicating with them, and listening to customers to ensure that the service quality is in place. Especially, for the e-commerce, service quality must be the concern. For example, when you treat online customers badly even just once, not only they do not come back, but some of them also tell others about your careless attitude (Zemke & Connellan, 2001).

2.2 Customer Retention

Customer retention is the ability of a business to maintain existing customers. It is both a measure of customer loyalty and the capacity of the business to keep customers satisfied by good service and quality of the product sold (Kotler, 2000). Actually, successful customer retention comes from the collaboration among the functions in firms. Organization should assign all departments to see how important it is to keep the existing customers, make them value the customers, and develop new culture in the organization (Pegler, 2004). Her [Pegler] study defined seven steps to create customer retention as follows: (1) Define your customer retention goals and strategy; (2) Segment your customer base; (3) Identify key needs and performance gaps; (4) Develop programs to improve performance; (5) Monitor changes in customer

behavior; (6) Make it hard for your customers to leave; and (7) Measure progress toward improvement. These are the seven steps to keep the most valuable customers, which lead to positive word-of-mouth and customer recommendation that help the company maintain revenues and profitability.

Based on studies about customer retention, many studies mentioned that keeping the existing customer to come back is cheaper than finding new customer. Ausilio and Anton (2003) supported that the spending cost of acquiring new customer is higher by four times as compared to keeping the existing customer. Furthermore, Reichheld and Sasser (2000) studied the internet clothing market and found out that the spending cost of acquiring a new customer is higher by 20 to 40 percent than keeping the existing customer in the traditional retailing marketplace.

Figure 2.1: Sample of e-Commerce Marketing Dollars
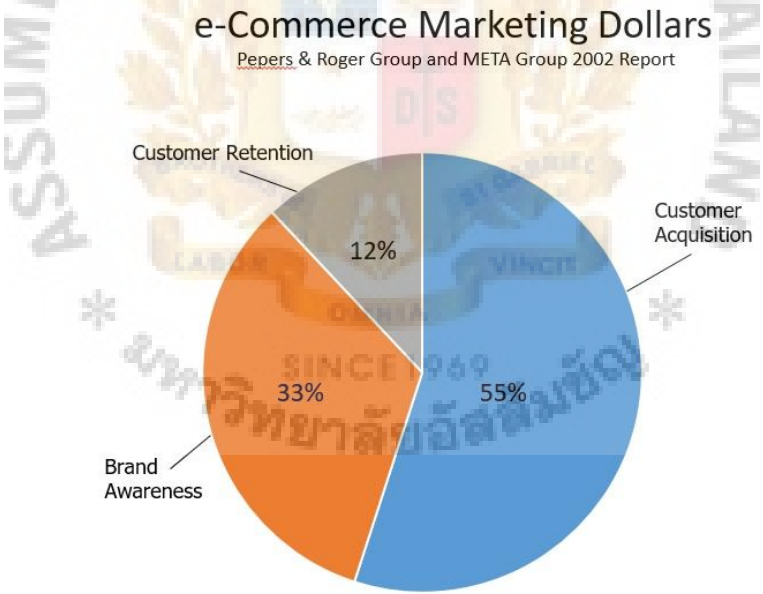
Source: Ausilio & Anton (2003)

Not only customer retention can save the costs, but also it generates more revenue to the company. Johnston (2001) studied four relationship variables: complaint, process, employee, and customer that would affect financial performance. He found that to gain financial benefits, the company should use information from complaints to improve the internal operation process by satisfying and retaining employees because

those employees are mainly driven in the organization and quality employees are affected in the operation process. Also, the information from customer complaints could reduce the weakness of the operation process. As a result, the company could provide better services, reduce the complaints, and achieve the financial goals. Lastly, Johnston found that customer satisfaction and retention are not mainly the factors that can impact the financial performance. Therefore, the company should likely focus more on the internal process improvement rather than on customer satisfaction.

Mostly, when a company has an inefficient process or some weakness point, the voice of customers is directly shown as the result from customer complaints. Companies that are able to capture customer complaints and handle all of them well can get two benefits. First, when they are better in resolving the particular complaint, they will get customer retention (Terentis, Sander, Madden, Stone & Cox, 2002). Second, companies that understand their customers more from the complaints data are able to identify the repetitive and additional problems; hence, they could develop solutions to those problems (Ang & Buttle, 2006).

However, there are no researches affirming that all satisfied customers come back to repurchase. From the study of Hansemark and Albinsson (2004), they mentioned that satisfied customers are divided into two groups. One, it is believed that the satisfied customers are retained because when they are satisfied with the services, they might have no reason to leave. However, some do not believe that the satisfied customer could be retained. For example, the bank, a satisfied customer who had built a strong relationship with the bank would not want to change banks at all. However, if another bank offers better promotions and conditions, even a satisfied customer might change his or her mind.

2.3 Business Process Improvement

Business Process Improvement (BPI) is a systematic approach for the improvement in the operational, administrative and support processes, using approaches such as fast process benchmarking, process redesign, and process re-engineering (Harrington, Esseling & Nimwegen, 1997). Effective BPI helps to generate results in operational efficiency and customer focus. This tool also helps companies to reduce their operational costs and cycle time, enhance customer service and improve the quality of their products or services. There are many benefits of applying BPI to organization such as improving customer satisfaction, achieving customer loyalty, reducing cycle time, cost and error, and increasing profitability (Cook, 1995; Flanigan & Scott, 1995; Harrington et al., 1997) Designing and implementing a new process require careful attention, analysis, investigation, and consideration. A new process might be difficult to implement because most people normally do not accept changes, so top management needs to buy into these changes, provides a clear vision and also communicates the benefits of change (Cendrowski, 2009; King & Cushman, 1997). For example, Islam and Ahmed (2012) studied the credit card process of the multinational bank. They found out that the existing process takes an average of eight to nine days to deliver the credit card to the customers, which made the customers dissatisfied, so this motivates them to switch to another bank. After they have implemented BPI to improve the process, they were able to reduce the time by 50 percent of the existing process.

2.3.1 Business Process Improvement Methodology

There are seven generic steps which guide the actions and decision for improving business process as follows (Adesola & Baines, 2005).

Step 1: Understand business needs; evaluating current practices by gathering the data to identify the current problems by observation or interview with the involved worker. This step aims to realize the core activities which can be the major effects on the company's objectives or customer's needs. The data and information affirm that the activities might be inefficient so that they need to be improved.

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Step 2: Understand the process; identify the current business process architecture. This step aims to realize the current process flow and find the weakness process which will be selected. You will clearly understand the processes from the origin until the end and know the position where the selected process is.

Step 3: Model and analyze the process; measure the existing process performance which is finding the root cause of the problem by using root cause analysis tool, such as ABC, Cause and Effect Analysis, Pareto, and so on. As a result, you can identify all possible causes of the problems which are going to be solved.

Step 4: Redesign process; validation new process model which can get rid of the weakness activity in the process. The to-be process mapping will show the upgraded processes and the additional areas.

Step 5: Implement new process; there is going to be a change in the process, planning to implement the new process is required. The meeting of the related functions will be conducted to assign the responsibilities and point the benefits of the new process. Training the staff and roll-out change are required.

Step 6: Assess new process and methodology; evaluation of the new process whether it has achieved the goals or not, such as evaluation measurement report, customer measurement survey.

Step 7: Review new process; review new process targets and performances with the related staff and develop a strategic view of the business and a plan to meet the targets.

Figure 2.2: A Generic Model for Business Process Improvement

Source: Adesola & Baines (2005), p.48.

2.4 Process Mapping

Process mapping is a detailed map that identifies the specific activities that make up the information, physical, or monetary flow of a process. Since the process flowchart requires the level of details, and the level of complexity of each process is different;

hence, there are some steps for creating the process flowchart: (1) identifying the entity that serves as the focal point; (2) identify clear boundaries where there are starting and ending points; and (3) creating the process mapping as simple as possible (Bozarth & Handfield, 2011). Figure 2.3 shows some of the most common symbols used.

Figure 2.3: Common Process Mapping Symbols
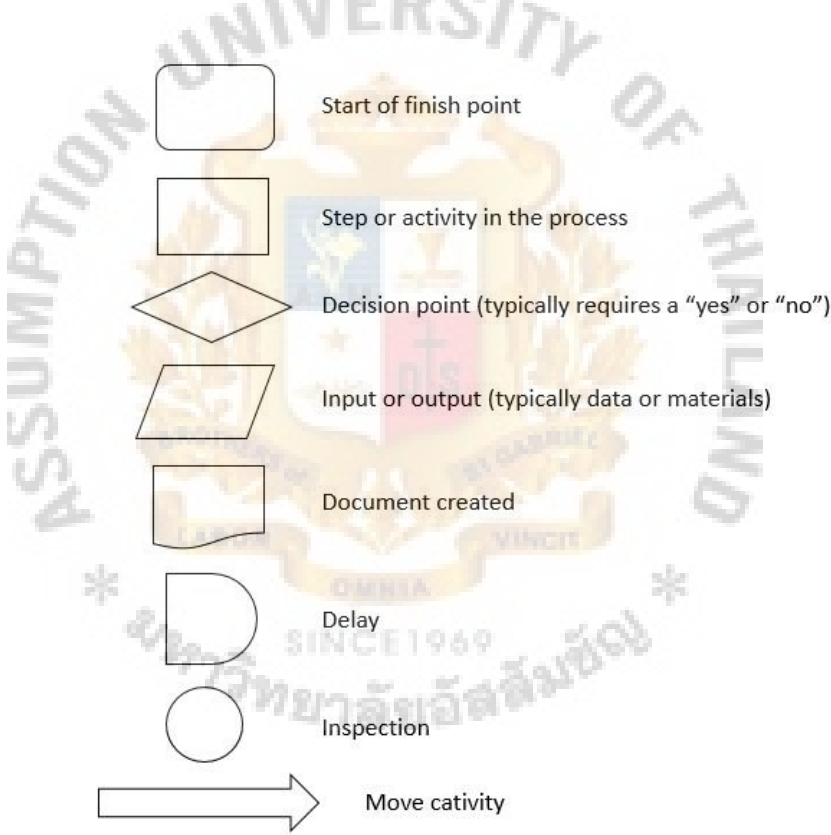
Source: Bozarth & Handfield (2011)

Flowcharts are the heart of business process mapping. Flowcharts consist of shapes that represent different elements of a workflow identifying the roles of each process through cross-functional (Bozarth & Handfield, 2011). They provide a clear view of the interrelationships inside and outside the company. The enterprise map shows both customer's needs and business processes, and there are interrelationships which help

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align business strategy to process strategy (McCormack & Rauseo, 2005). Microsoft Visio 2000 is a popular software that is use to create the process visual flowchart. Kumar and Phrommathed (2006) used this software to create the process flowchart to show all entries' steps of activities in paper sheets production from the origin to the end. The flowchart helps to scope the interesting point that focuses on the machine setup, which is directly associated with the sheet cutting process. They found that an integrated approach process: mapping, data analysis, and simulation in computer can successfully reduce the risk of ineffectiveness of the redesigned operation in the real world. Another study is by applying business process simulation to evaluate the implications of introducing IT systems instead of the traditional paper work systems. Not only the cycle time but also costs and administration workload could be reduced, while the number of processed orders could increase (Leyer & Hollmann, 2014).

2.5 Cause-and-Effect Diagrams

Root cause analysis (RCA) is a process which the team brainstorms about the possible causes of the problems. A cause-and-effect diagram is one of the RCA, a graphical description of the elements of a specific quality problem and the relationship between those elements (Bozarth & Handfield, 2011). This approach is used to identify the causes of the problems, and it is also called "fishbone" or Ishikawa diagram by using it in the part of brainstorming to help the teams identify the causes of the problems (Bozarth & Handfield, 2011). Figure 2.4 illustrates the form of a cause-and-effect diagram. Russell and Taylor (2009) stated that the "effect" position at the end of the diagram is the quality problem that needs to be improved. And, the center lines which are connected to the effect line are the major categories of the possible causes of the problems, displayed as branches off of the center line. The cause category is described at the end of each branch (Russell & Taylor, 2009). These branches are often organized into five categories known as the Five Ms. Firstly, Manpower refers to people who do not have the right skills, authority, or responsibility. Secondly, Methods refer to poor business practices, such as poor process, product, or service designs. Thirdly, Materials refer to poor quality inputs and inefficient existing system.

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Fourthly, Machines refer to equipment that are not capable of doing the job. Lastly, Measurements refer to performance measurements that are not suited in eliminating the problem (Bozarth & Handfield, 2011).

Figure 2.4: Cause-and-Effect Diagram
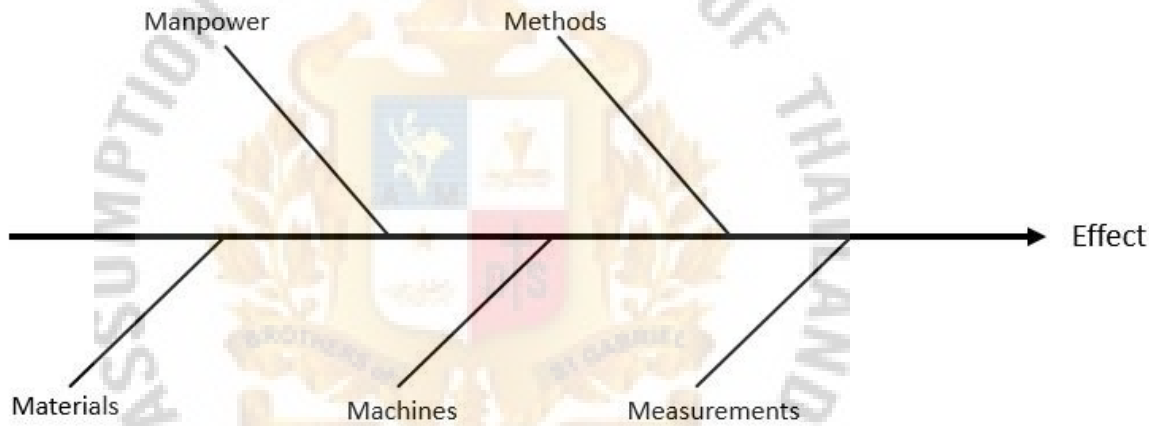
Source: Bozarth & Handfield (2011)

For example, using Ishikawa model analysis to find electrical discontinuity problem in Multilayer Boards (MLB) fabricated and supplied. The diagram is segmented into four primary causes (PTH knee/barrel crack, copper track discontinuity, PTH process, and Assembly) and eight secondary causes. This model and the results can help identify the non-uniform separation of inner-layer copper from PTH barrel copper in defective board which is the main cause for electrical discontinuity (Jayaprasad, Dhanlakshmi & Hemachandran, 2016).

2.6 Pareto Analysis

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The principle of Pareto Law by Vilfredo Pareto, an Italian economist and sociologist, demonstrates that 20 percent of the population are distributed to 80 percent of the wealth of the nation (La Rooy, 1999). It means that 20 percent of the known variables will account 80 percent of the results. Then, Pareto's theory has become well- known as the "80/20" rule (Basile, 1996). The Pareto principle is commonly used in many fields of study, e.g. marketing and sales contexts, customer complaints, quality control and manufacturing, and in other business settings (Craft & Leake, 2002). In order to create a Pareto chart, the team must rank the causes from the most frequent to the least frequent and graph the result data in the bar graph as shown in Figure 2.5 (Bozarth & Handfield, 2011).

Based on studies about Pareto analysis, the researcher found that most of the researches use this tool to classify the prioritized problems based on 80/20 rule. Figure 2.6 is the example that Knights (2001) studied by using Pareto graph to determine maintenance priorities by ranking equipment failure codes according to their relative cost or downtime contribution. He found that there are nine failure codes that the observation team should focus: 1, 2, 11, 3, 10, 7, 12, 8 and 5.

Figure 2.5: Pareto Histogram of Unplanned Shovel Electrical Downtime
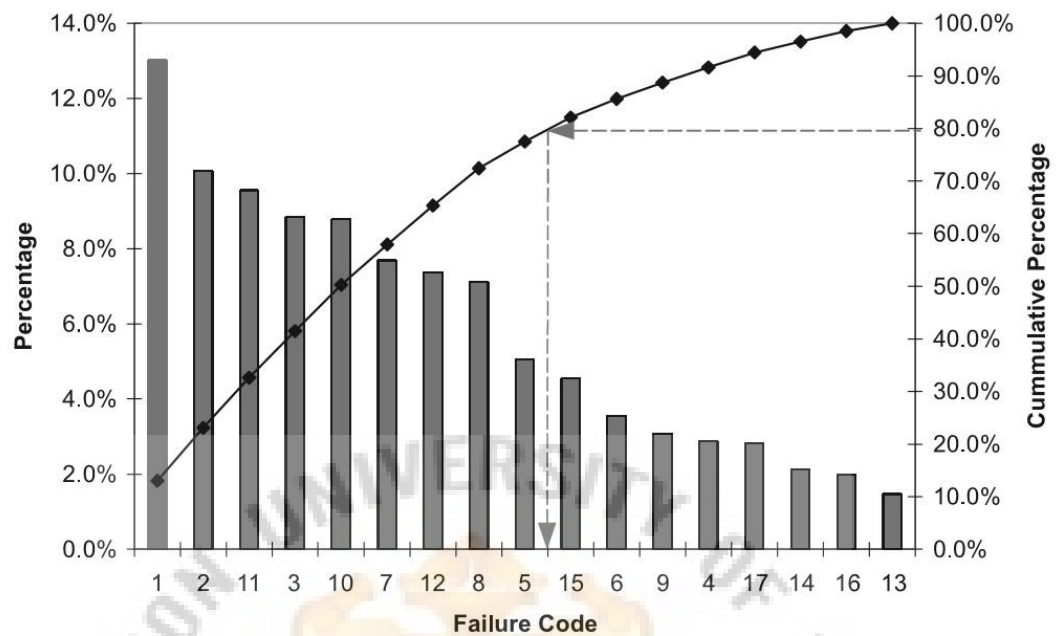
Source: Knights (2001)

Pareto can be applied in many different industries, such as manufacturing, hospitality, research and development and so on. For example, Ike and Chwen (2005) studied on improving gear-cutting operation of axle manufacturing company. They tried to find out what the major cause of machine downtime on the cutting machines. They used Pareto to scope the cause of the problems which helped the team discover the major cause that is the cutter grinder process. For the hospitality industry, Mehmet, Bulent and Kamal (2012) tried to find the causes of failure in the medical imaging department of a private Turkish hospital. Pareto analysis was used to classify the root cause of repeated radiological examination. So, they found that the malfunction of RIS/PACS system, improper positioning of patient, and unnecessary movement of patient, were   creating the failure in the medical imaging.

2.7 Chapter Summary

This chapter contains the review of the literatures related to this project. The researcher emphasized on the definition of the concepts and included other related

researches to be more reliable. The related literatures are customer service, customer retention, business process improvement (BPI), cause and effect diagram, and Pareto analysis.

CHAPTER III

RESEARCH METHODOLOGY

The conceptual framework of this research is to define the cause that affects the late delivery of products and improve the customer service process of ABC Company by applying the Business Process Improvement (BPI) methodology. This chapter presents the six steps of BPI as follows: (1) Data collection to show all of the possible problems in the customer service process; (2) Mapping AS-IS Process to see and understand clearly the overall processes how each activity works and where does the bottleneck occur; (3) Analyzing "As-Is Process" to identify the root causes of the problems by using Ishikawa model and Pareto analysis; (4) Identify "To-Be Process" to propose the improved process for solving the problems; (5) Develop an implementation plan to prepare for the changing in the process and doing the following the plan to make new process successfully; (6) Assess new process and methodology to evaluate the results from the new process, and to compare to the goal that needs to be achieved. Figure 3.1 shows the simple research methodology of BPI as the following steps:

Figure 3.1: Research Methodology

1. Data Collection

2. Mapping AS-IS Process

3. Analyzing AS-IS Process

4. Identify TO-BE Process

5. Develop an implementation plan

6. Assess new process and methodology
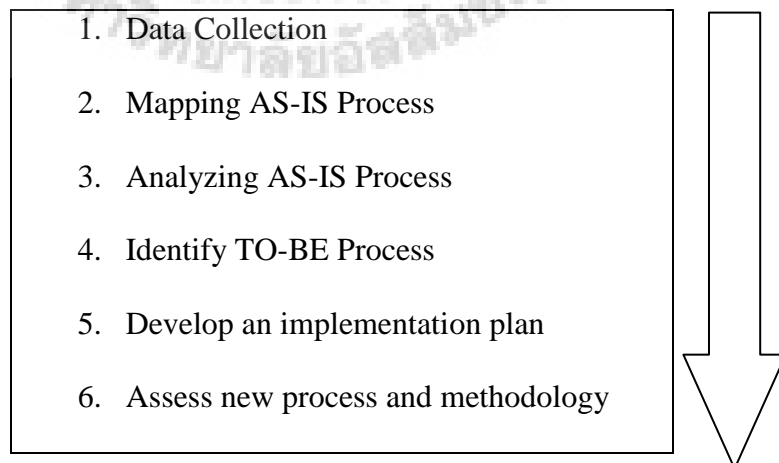
Source: Author

3.1 Data Collection

Data collection is the process of gathering and measuring information on targeted variables and displaying in the appropriate format for analysis. Focusing on the customer service process, the data collection aims to collect related information for achieving the purpose of the project. There are two types of data selected for this research which are primary and secondary data.

The primary data were collected by using observation and interview methods in the customer service process including the customer service process in details and the related influenced factors which might affect late delivery problem. Information in the customer service process was obtained by observing the working process and interview from the five related workers: two operations, two packing staff, and an operation manager. The results of observation on each activity helped to understand the processes more by displaying in the process mapping. In addition, getting deep information from the related workers also helped in identifying the root causes of the problems and the possible improvement areas.

The secondary data used in this research were the ABC company historical data including the number of US shipment delivery, the average lead time of product arrival to random different 60 states in the US, and the shipment process lead time during July to December 2016. The reason why this research used the data from July to December 2016 is all of the data in this periods were the most suitable, because the new Top Rated Seller requirement has been updated on the Q1 of 2016, so in the Q1 and Q2/2016 are the downgrading period. Therefore, the sale results in Q3 and Q4/2016 are the most suitable period for comparing Q3 and Q4/2015 when all users are fully used to be in the Top Rated rank.

Figure 3.2 shows the previous six months sales volume from July to December 2016. The researcher emphasized only on the US shipment and found that US customers have an estimated value of 50-60 percent from the entire shipment. Users A and B

represent the Top Rate Seller, and users C, D, and E represent the common account. Users C, D, E used to be in the Top Rate rank in 2015, but they were downgraded because they were not able to reach the performance standard. Therefore, the sales volume totally dropped by 4-5 times compared to the Top Rate rank.

Figure 3.2: Six Months US Sales Volume of ABC in 2016

	Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16
User A	55	35	102	140	64	58
User B	54	49	57	164	103	106
User C	10	22	21	49	47	29
User D	11	26	17	48	40	28
User E	15	19	10	37	43	43
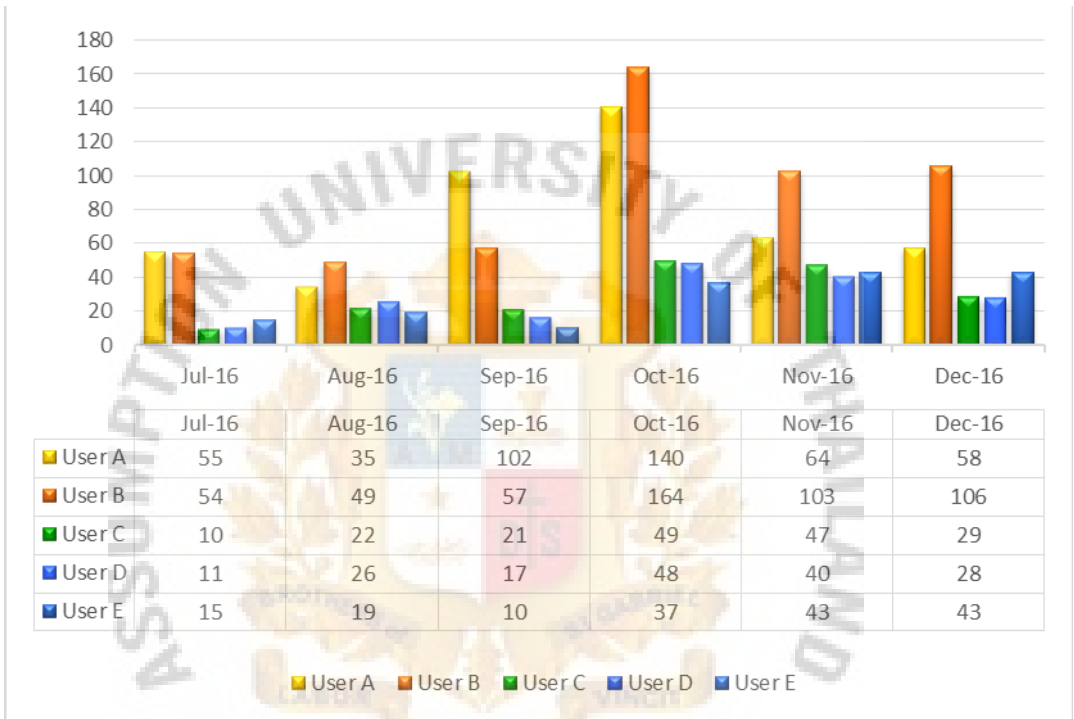
Source : ABC Company

Table 3.1 shows the lead time of shipment from Thailand to US customers. The data explain the tracking number of the 60 states in the United States of America. The researcher found that the average time from the shipping date until the customer receives the product is 18.7 days. Moreover, the time is divided into two sections. First, the average time spent for shipping from Thailand to arrival in the US port is 12.8 days. Second, the average time spent from the US distribution centre hub to the customer receiving date is 5.9 days. However, there are external factors that impact the delivery time which can increase the lead time of US customer receiving the product, such as festival holidays, US customs clearance, and the destination distance.

Table 3.1: Lead time of Shipment Arrival to Different 60 States in US

Shipment	Average days
Thailand – US Port	12.8
US Hub – Customer	5.9
Thailand - Customer	18.7

Source : ABC Company

Tables 3.2-3.6 show the ABC current shipment performance, starting from the completed payment date until the shipping date in July to December 2016. The operation lead time is divided into five phases. First phase, less than seven days is the best shipment performance of ABC. Second phase, 8-14 days is common performance (not good and not bad). Third to fifth phase are poor performance which the process is spending more than 15 days.

The current ABC shipping performance takes most likely in the average of 8-14 days. Moreover, there are some orders that are missed more than three weeks that means the customers have to wait for their products longer than 40 days. According to shipment formula, the operation impacts on the lead time of shipment. If ABC can improve the performance to be more effective, the customer will receive the product faster.

Table 3.2: Shipment Performance of Account No. 1

Period	<7days	8-14 days	15-21 days	22-28 days	>29days	Total
No. of Shipments	145	187	76	10	6	424
Percentage	34.20%	44.10%	17.92%	2.36%	1.42%	100%
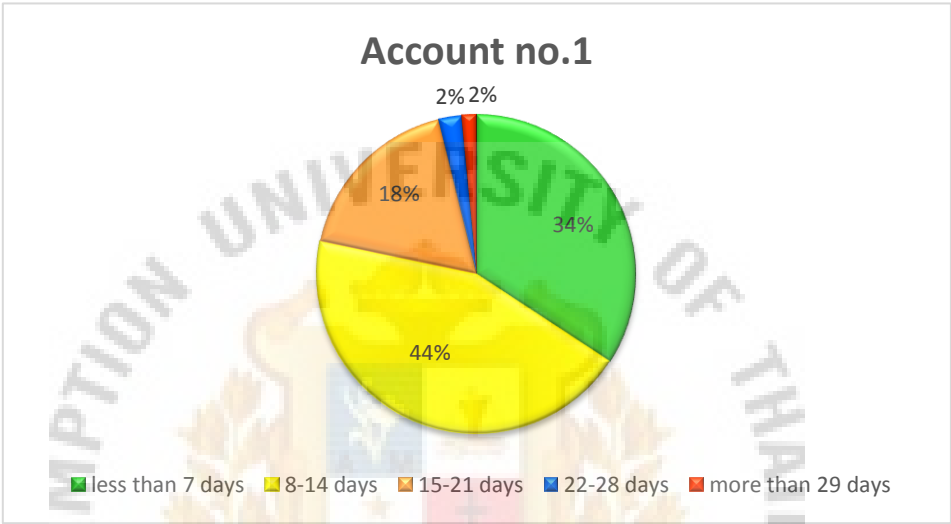
Table 3.3: Shipment Performance of Account No. 2

Period	<7days	8-14 days	15-21 days	22-28 days	>29days	Total
No. of Shipments	148	301	81	4	1	535
Percentage	27.66%	56.26%	15.14%	0.75%	0.19%	100%
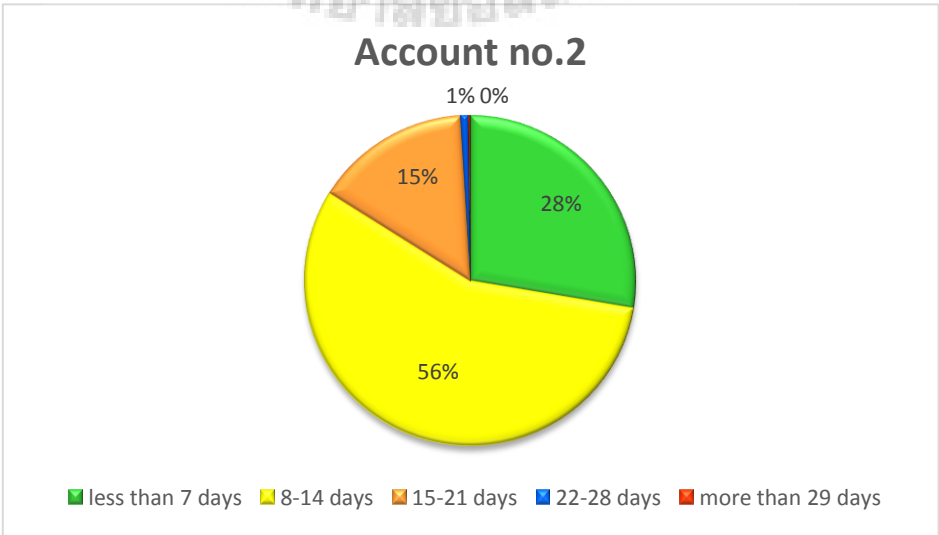
Table 3.4: Shipment Performance of Account No. 3

Period	<7days	8-14 days	15-21 days	22-28 days	>29days	Total
No. of Shipments	82	83	16	0	0	181
Percentage	45.30%	45.86%	8.84%	0%	0%	100%
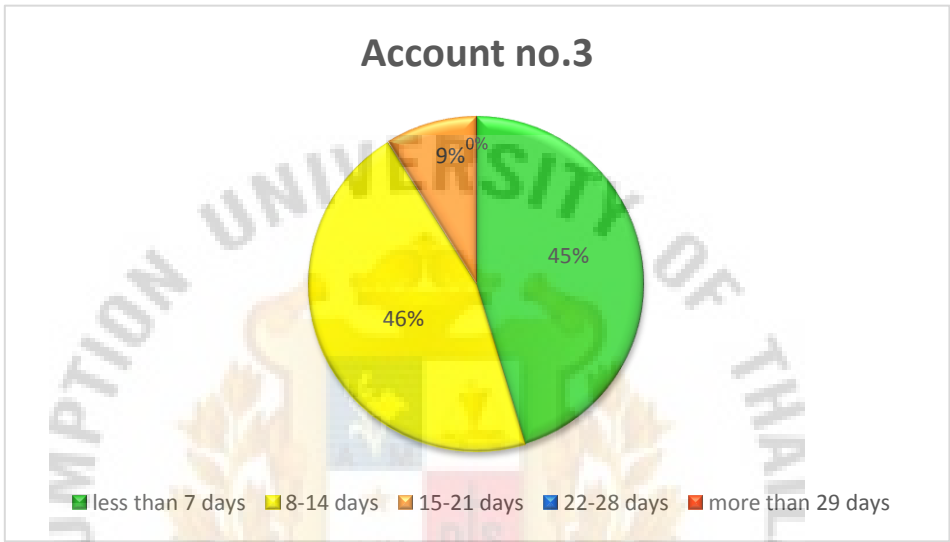
Table 3.5: Shipment Performance of Account No. 4

Period	<7days	8-14 days	15-21 days	22-28 days	>29days	Total
No. of Shipments	52	99	26	1	1	179
Percentage	29.05%	55.31%	14.53%	0.56%	0.56%	100%
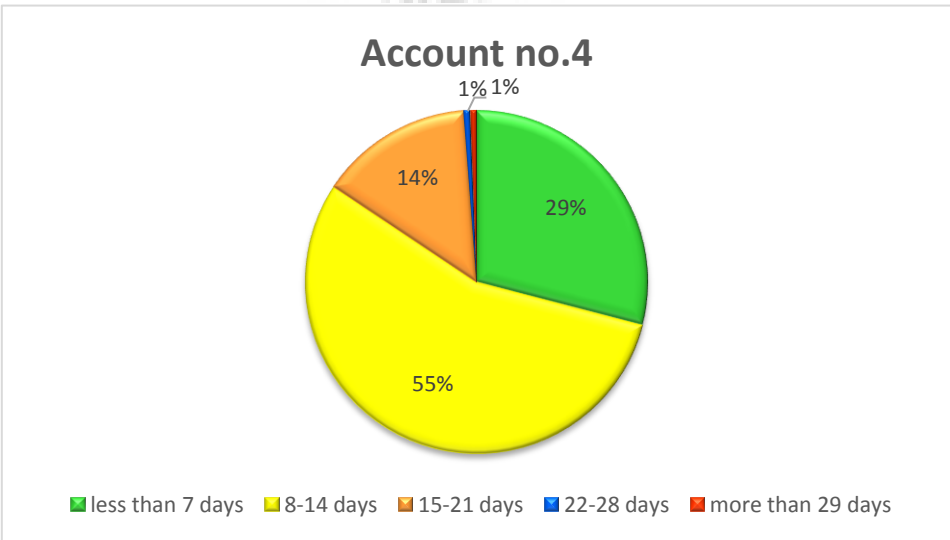
Table 3.6: Shipment Performance of Account No. 5

Period	<7days	8-14 days	15-21 days	22-28 days	>29days	Total
No. of Shipments	36	125	15	0	2	178
Percentage	20.22%	70.22%	8.43%	0%	1.12%	100%
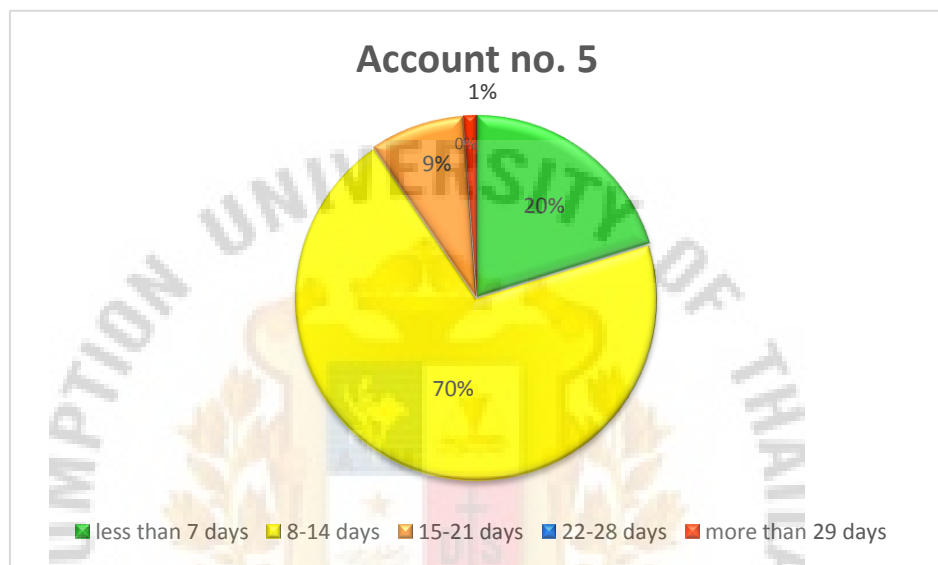
Source : ABC Company

In conclusion, the shipment performance describes how well the operation is working on the products since it had been paid in full amount. However, the current performance is still not dispatched completely on time, which ABC normally promises to deliver the purchased items within two business days. Therefore, the best results of shipment period should not be over two days according to the dispatch time setting.

3.2 Mapping AS-IS Process

This step displays the overall current customer service process map and understands the related activities in each process, which illustrate the process flow chart of both internal and external department activities. The process mapping provides a better

understanding of both information and customer service process from the beginning of the process, which is the checking of the product sold until the final process, which is the delivery of the products to the customers.

The beginning of the customer service process is when the bidding of the product ends. The operation will check the product sold out on the e-Bay site and the existing products sold out. Then, the completed payment orders will be printed out with the invoices attached to those gemstones. For the uncompleted payment orders, the operation will send invoices to the customers via email. Next, the operation will co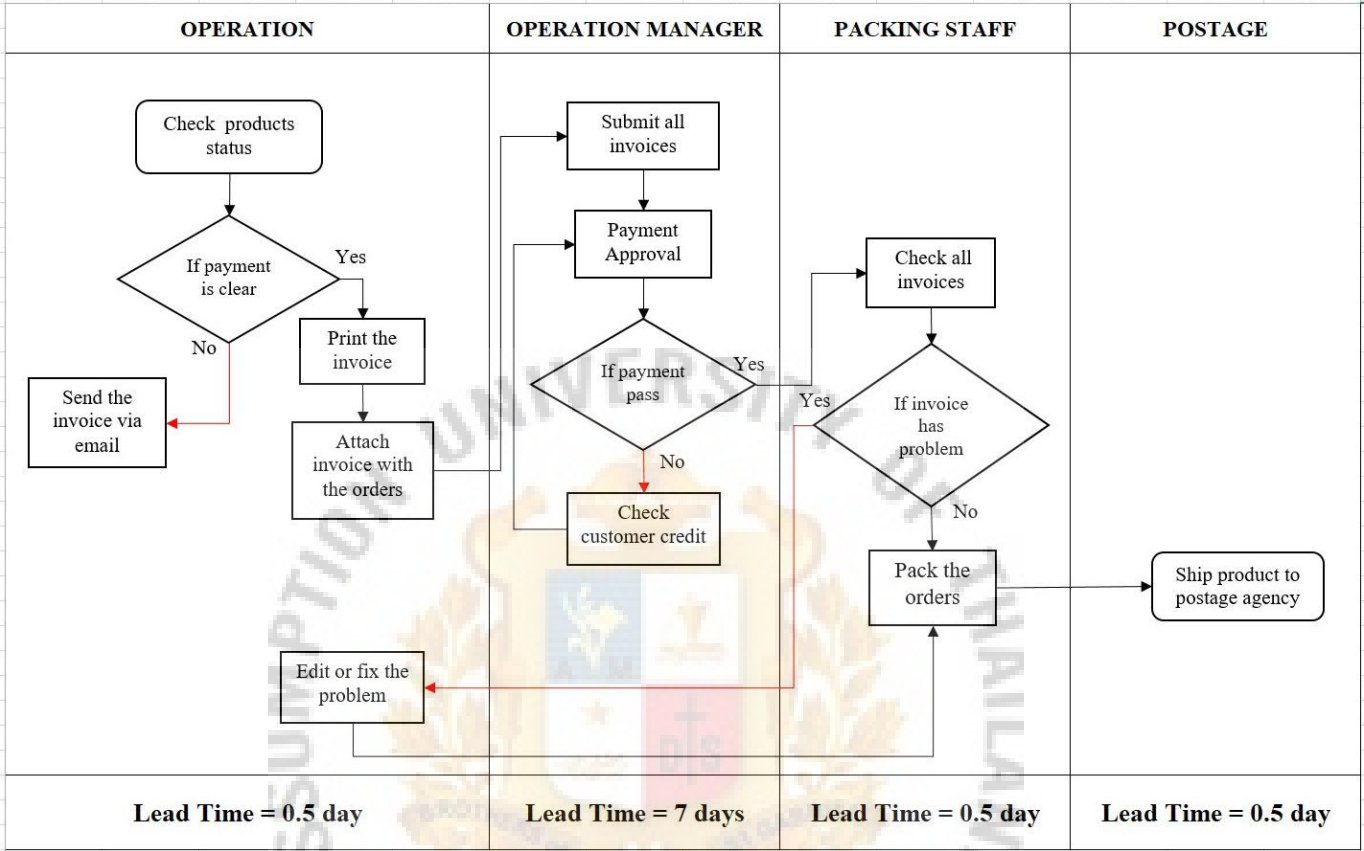llect all printed invoices and deliver to the production manager for the payment approval process. The payment approval process takes at least seven days. After all payments are approved, the products will be transferred to the packing stage for the shipment preparation. However, for the unapproved orders, they will stay in the recheck process until the order-cancelled process is needed. Next, the packing staff will pack all the orders following the customer requests, such as order combination in one ship, special packaging for the gemstone. If there are some invoice mistakes or errors, the invoice will be transferred to the operation to solve the problem. When the operation has finished solving the problem, the completed invoice will be returned to the packing station. Finally, all orders will be shipped to the shipping agency to deliver to US customers in an average of 18.7 days. The process mapping displays the overall process to provide clearly and easy understanding of both information and customer service process as shown in Figure 3.3.

From the current process mapping, there is a bottleneck for all the orders which is the payment approval process. There is only one manager who takes the responsibility to all invoices, so the overload work occurs which is the cause of slow responsiveness to customers and missing customer requests. Thus, when the delivery time from Thailand to US customer (18.7 days), the approval process (7 days), and the other process (1 day) are combined, the total lead time of the process is 26.7 days. Therefore, the time of the customers to receive their products will be delayed because it is affected by the time spent for the approval.

Figure 3.3: AS-IS Customer Service Process of ABC Company

OPERATION	OPERATION MANAGER	PACKING STAFF	POSTAGE

Lead Time = 0.5 day	Lead Time = 7 days	Lead Time = 0.5 day	Lead Time = 0.5 day

Source: Author

3.3 Analyze AS-IS Process

The purpose of this step is to analyze the current process and identify root causes of the problems that impact the late delivery, and which the weakness process needs to be improved. The Ishikawa model was chosen in order to find out the root causes of the problems and the Pareto analysis which was used in classifying the problems.

The Four Ms indicators were used as the interview topics to collect deep information from the related workers. However, the fifth indicator, measurement, was not included in the interview because there was no the evaluation or investigation in the process.

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The interviewees were the gemologist operation team of ABC Company who work closely in the customer service process. The effect was set as late delivery problems, and the discussion started by using brainstorming tactics. After the brainstorming with the members of the gemologist operation team, they gave some interesting points as shown in Figure 3.4.

Figure 3.4: Summary of the Possible Cause and Effect of Late Delivery
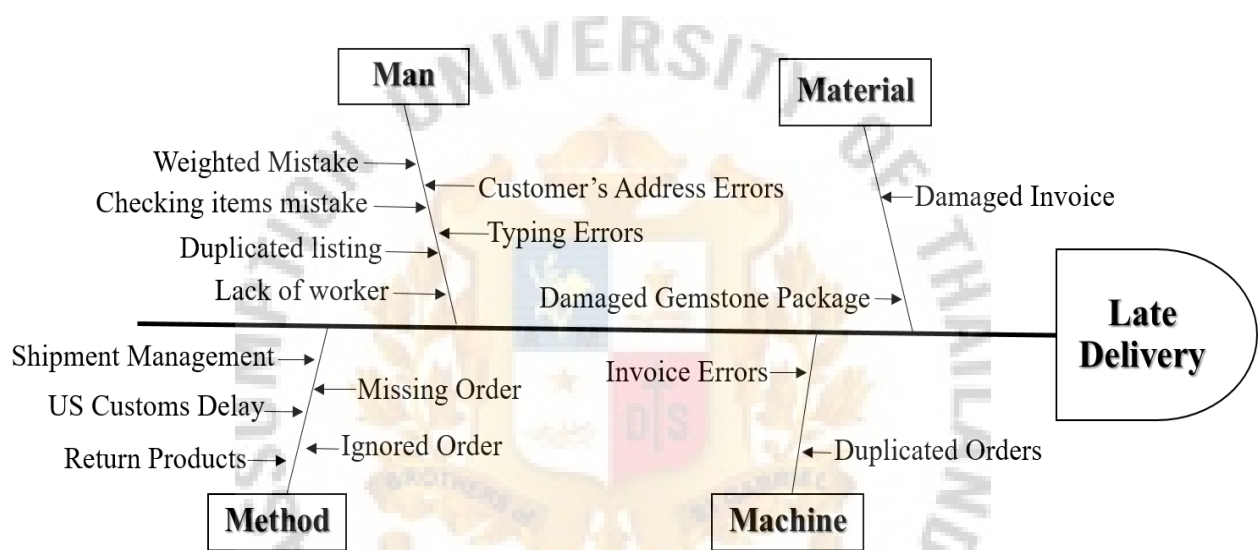
Source: Gemologist operation team of ABC Company

All causes may impact delay in delivery, but actually there were few of them which have caused the longest time of late delivery. Table 3.7 shows the results in details from the fishbone diagram. As a result from the interview, the researcher found that there are eight processes that impacted the delivery process delay: (1) weighted mistake; (2) duplicated orders; (3) missing order; (4) omitting order; (5) shipment management; (6) US customs delay; (7) damaged gemstone package; and (8) invoices error.

Table 3.7: Analyzing the Information in Details

4M Indicators	Causes	Results
1. Manpower	1. Typing errors, e.g. weighted mistake, 1.02 carat to be 10.02 carat	1. Cancel the order and return the money to customer.
	2. Switching address information of customer, occurs mostly in the packing stage	2. Customer gets the wrong order and wastes time in the return process.
	3. Weighted mistake, 1.12 carat to be 7.12 carat	3. Time is wasted in finding the right order which causes delay in delivery.
	4. Duplicated listing, the operation put the wrong label number when relisting	4. Time is wasted in finding the replacement which causes delay in delivery.
	5. Wrong checking of sold out products, e.g. sk00099 to be sk00909	5. Cancel the order and return the money to customer.
	6. Lack of workers, in case of responsiveness to customer requests.	6. Slow responsiveness and miss the customer requests.

4M Indicators	Causes	Results
2. Method	1. Missing order, on approval stage, there are invoices stack on each other	1. Time is wasted in finding the right order which causes delay in delivery.
	2. Omitting some orders, on approval stage, there are no prioritized orders, so some are missed out and lack of manpower.	2. Delay delivery.
	3. Shipment management, shipment is done twice per month, every 16th and 30th.	3. Delay delivery.
	4. US Customs delay or check.	4. Delay delivery.
	5. Return product from the delivery agency in the case of no rec ipient address.	5. Return money to customer.
4M Indicators	**Causes**	**Results**
3. Materials	1. Damaged invoices, the operation found some invoices getting wet which the information is missing/erased.	1. Time is wasted to re-print a new one.
	2. Gemstone package is damaged, some packages are old and easily broken.	2. Time is wasted in finding the right order which causes delay in delivery.
4. Machines	1. Duplicated orders, sometimes an error occurs due to the poor internet signal at launching time	1. Time is wasted in finding the right order or replacement which causes delay in delivery.
	2. Invoices error, when there is a combination of shipment request, oftentimes, software does not show it completely.	2. Delay delivery.

Source: Gemologist operation team of ABC Company

Table 3.8 shows the causes of delay delivery. The factor used to evaluate was the average lead time of each solved problems, which occurred during the operation in July to December 2016. After the evaluation, prioritization was done by using 80/20 rules to classify the lead time spent in each process. There were three main causes of delay delivery. Firstly, missing orders that occurred during the approval. Some invoices were missing. The average lead time when missing the orders was 66 days. Secondly, US customs delay that occurred on the festival days, such as Christmas Eve 2016 and New Year 2017 with an average delay of 32 days. Thirdly, shipment management because ABC shipment is done twice a month every after 15 days. There were other causes, such as weighted mistake, ignored order, invoice error, duplicated order, and damaged gemstone package which took a total of 24 days.

Table 3.8: The Causes of Delay Delivery

Description	Duration (days)	Time %	Cum. %
Ignored orders	66	48.17	48.17
US Customs delay	32	23.36	71.53
Shipment management	15	10.95	82.48
Weighted mistake	7	5.11	87.59
Missing order	5	3.65	91.24
Invoice error	5	3.65	94.89
Duplicated order	5	3.65	98.54
Damaged gemstone package	2	1.46	100
	137	100	

Source: ABC Company

Figure 3.5 shows the Pareto analysis. The graph helps to easily classify the causes of delay delivery. According to 80/20 rule, the results show that there were three main processes which caused the longest lead time in the delivery process. It can be divided into two sections: internal and external processes. The internal process was made up of missing orders and shipment schedule which are able to be improved and controlled. The external process was the US customs delay which is not able to be controlled.

Figure 3.5: Pareto Chart of Cause of Delay Delivery

Cause of Delay Delivery
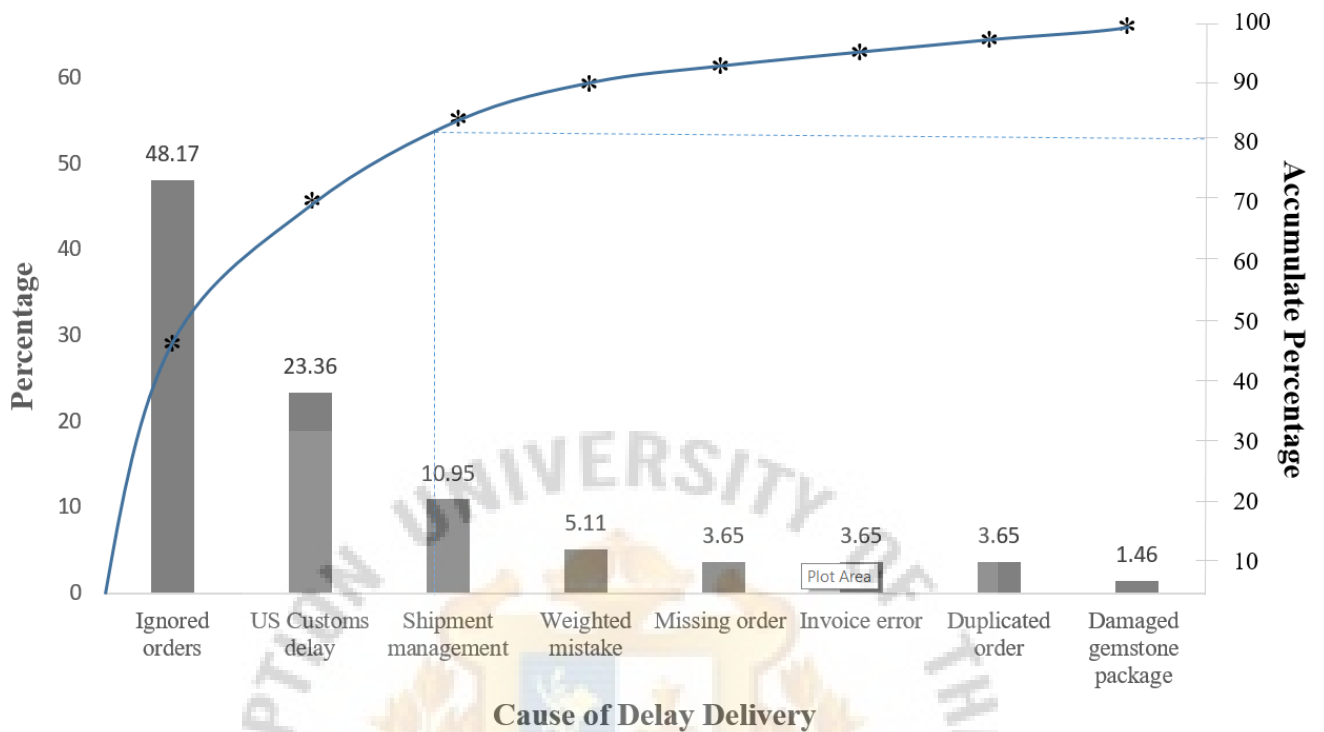
Source: Author

3.4 Identify TO-BE Process

The objective of this step is to propose a more effective process in improving the current customer service process. The focus is on the processes which have the most opportunity to have created the problems. The new working procedures are developed to promote more effective work flows across functional. Based on the current process analysis, the critical areas that impact the delivery are selected, identified and analyzed for improvement.

The expected results emphasize on two activities. First is providing an efficient invoices management in the approval process and reducing the time spent on the payment approval. Second is improving shipment management by adding more shipment schedule. Moreover, the fast responsiveness to the customers to make them more satisfied through emails and live chat, adding the capability to handle the situation with the customers is recommended.

3.5 Develop an Implementation Plan

This step helps develop an implementation plan following the ABC customer process improvement. The objectives are to prepare for the change in the process for the employees and to improve the effective process cross-functional. The new objectives and goals are set to clarify the benefits of the change for the related employees and for the organization. The related employees meeting was scheduled last 21st April, 2017 to prepare for the application of "To-Be process" which is the new process. This process was implemented in May to July 2017 by conducting the pilot project to see the progress of the new process. The data collection started along with the application of the new process. The researcher collected the new results from the shipment in May to July 2017. Therefore, the implementation plan can help the team to be well-prepared.

3.6 Assess New Process and Methodology

The objective of this step is to evaluate the new processes after the implementation by collecting and comparing the data between "As-Is process" and "To-Be process". Thus, the pilot project can fully help the team to easily collect and measure the data. The evaluation of the new process is required in order to compare with the existing performance and results. Therefore, if the new processes results can achieve the company's expectation, the new process will be applied to all user accounts. The monitoring and control will be tracked regularly to stabilize the new process. But, if the results cannot achieve the new objectives and goals, revision and redesigning the process will be needed to correct the weakness point of the new process.

3.7 Chapter Summary

This chapter presents the systematic steps of the research methodology. Firstly, the data collection and identification of the problems were performed by using two types of data: primary and secondary data. The primary data came from the observation and interview method in the processes, and the secondary data came from the historical shipment record in 2016. Secondly, the current AS-IS process mapping was used to show the processes flows and see where the critical areas of the problems are. Thirdly, fishbone diagram was also used to list all possible causes that have impacted the late delivery, and Pareto analysis tool was also used to scope down the problems. After knowing the root causes of the problems, the researcher developed new process to improve the inefficient process. The implementation plan for the new process was done to see how long it takes for the new data to be collected. Finally, the new results evaluation was conducted to compare the implementation of the new process with the company's expectation.
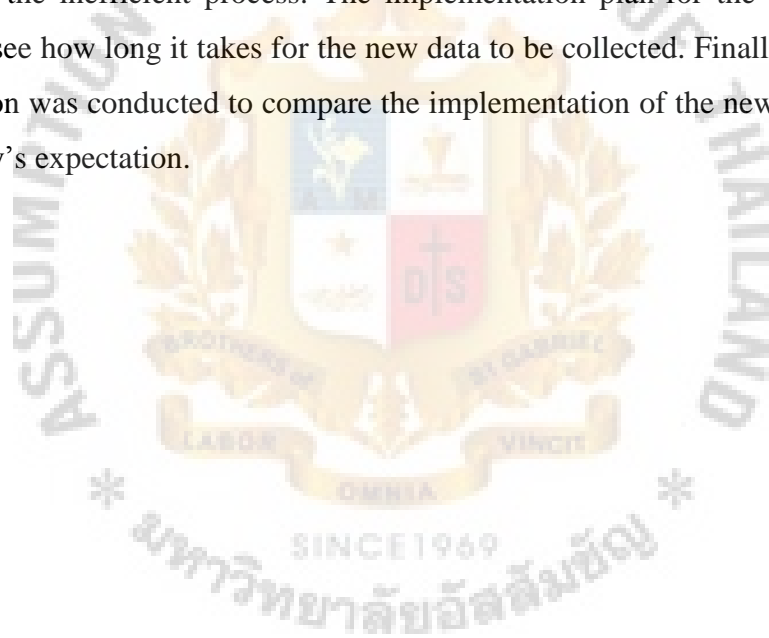
CHAPTER IV

PRESENTATION AND CRITICAL DISCUSSION OF RESULTS

Based on the analysis on the ABC Company current situation, from the data collected, two major factors which caused the delay of shipment have been confirmed. Firstly, the shipment management is not aligned with the dispatch time which ABC shipment is scheduled only twice a month. Secondly, there is lack of invoice management in the approval process, a bunch of invoices is stacked one another, and some of them are missed or damaged, causing the delay in the approval process. Therefore, this chapter proposes the TO-BE process to improve the payment approval process and shipment management procedures. Then, the comparison on the before and after results is also shown in this chapter.

4.1 Identify TO-BE Process

From the study of AS-IS process, the current payment approval is the critical process of late delivery. It can be classified into two problems. One is mismatch of dispatch time and current shipment management and the other is lack of invoice management.

Firstly, the current dispatch time of each ABC user is less than the actual shipment performance. For example, all ABC dispatch time is necessarily set within two business days. If a customer paid the item completely on 10th Wednesday, the shipment date should be within 12th Friday. While, the current shipment schedule is every 15th and 30th, so ABC could not deliver the products to the customer on time.

Secondly, it has lack of invoice management in the payment approval process. Normally, the operation delivers the invoices to the operation manager's desk after invoices are printed with the purchased items attached to each invoice. Those invoices are stacked on each other over and over which have caused the invoices or items

missing during the payment approval process. Furthermore, such situation has affected the dispatch time which hinders the delivery of the products on time.

The performance can be improved by establishing new working procedures for the operation department to create a formal working pattern, and an internal meeting is also needed to better understand how important is the dispatch time and how to address the late delivery rate problem as shown in Figure 4.1.

Figure 4.1: TO-BE Customer Service Process of ABC Company
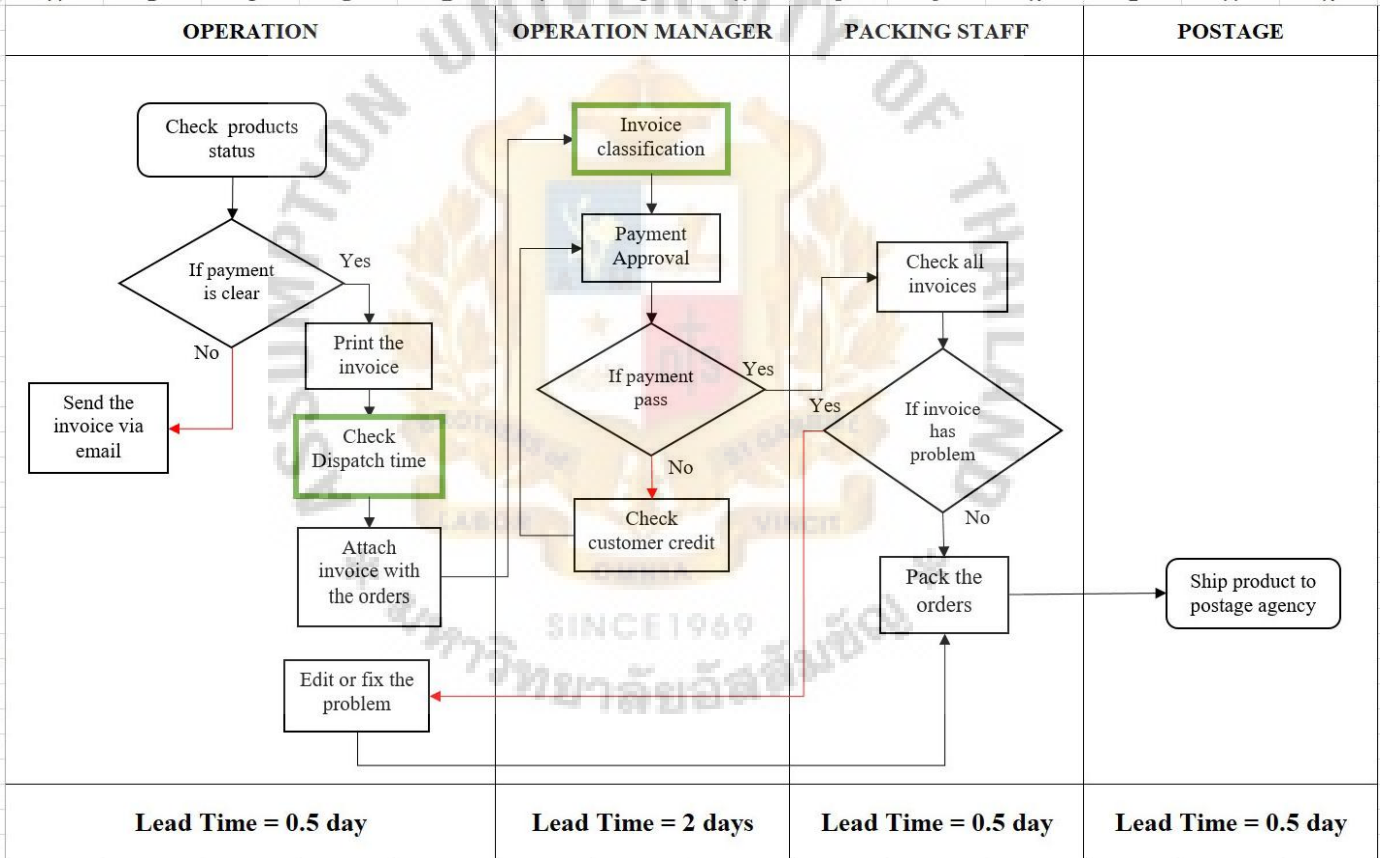
Source: Author

Figure 4.1 shows the new working procedures. The green boxes in TO-BE mapping process are the improved process added in the part of operation department. The operation has to check the dispatch times to match with the orders in the earlier stage. The dispatch schedule serves as the guide or basis for the operation to categorize the invoices by following the shipping date. Then, the operation groups and prioritizes the

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invoices before sending to the manager to approve the payment as the timeline agreement. This process could help the manager to efficiently manage the approval payment time and to minimize the situation of losing the invoices.

The dispatch time is agreed to set within two business days. So, the new shipment schedule is separated into three shipments per week: Monday (afternoon), Wednesday and Friday as shown in Figure 4.2.

Figure 4.2 How to TO-BE Customer Service Process Working
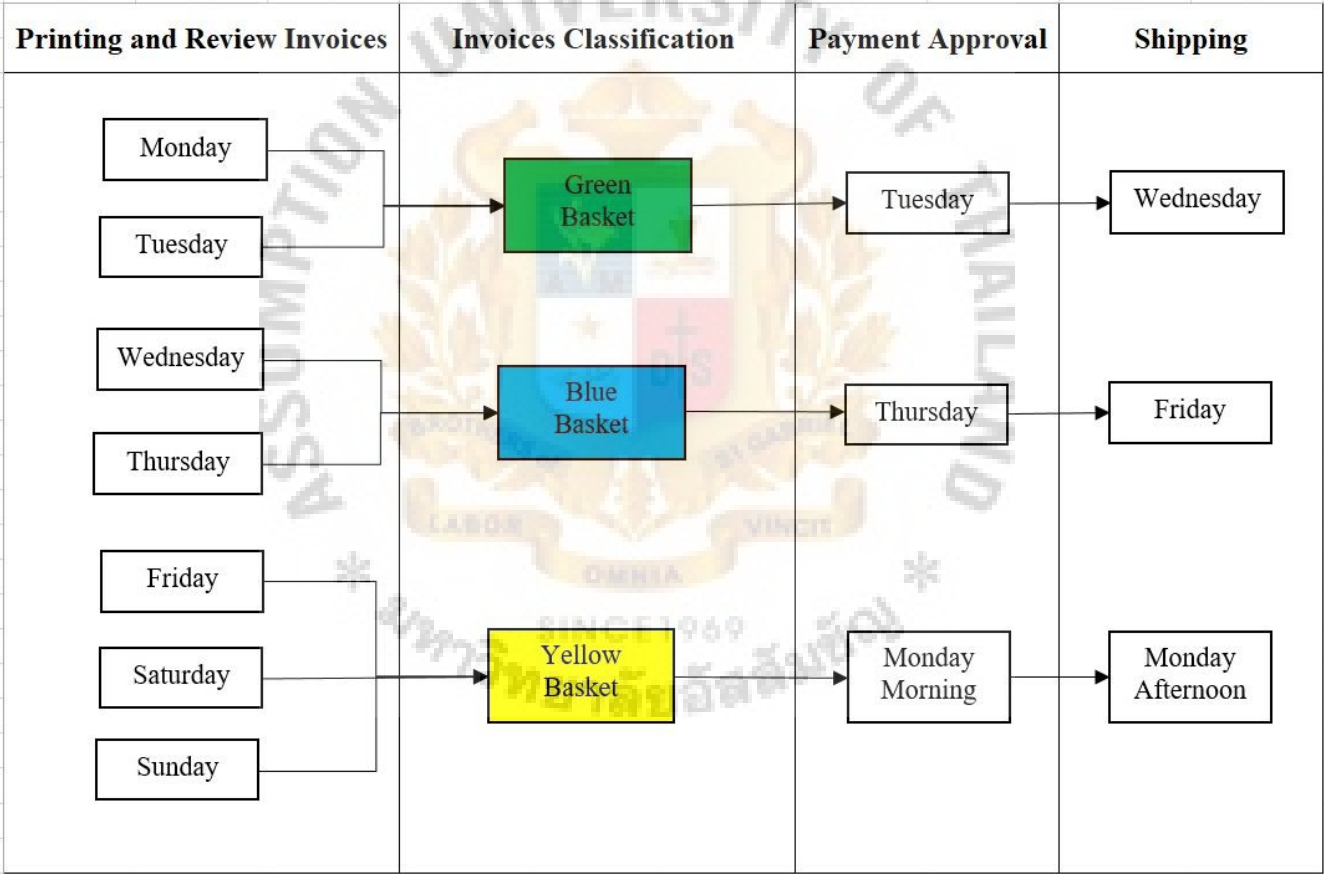
Source: Author

Figure 4.2 shows the preparation stage which is added before the invoices are submitted to the operation manager. In this stage, there are three different color of big baskets: yellow (Monday), green (Wednesday), and blue (Friday) in which each basket represents the day of shipment. Every day, the operation prints the invoices and reviews the payment cleared date. The printed invoices are put in the baskets that

correspond to the day of shipment. For example, the printed invoices on Monday are put in the yellow basket. Then, the operation submits the colored basket to the manager. Next, the manager approves all invoices on the approval schedule. In conclusion, classification can help ABC to improve the invoices management by reducing invoices or items missing. Moreover, it also improves the shipment management to be more efficient and accurate.

In the traditional working process, ABC had no working procedures to guide the workers. Everyone did their works from the experiences and gave temporary solutions for the unexpected problems. Table 4.1 shows the comparison of the before and after implementation of the working process.

Table 4.1: The Comparison AS-IS and TO-BE Working Process

Step	Process	Who	AS-IS Description	TO-BE Description
1	Printing the invoices	Operation	Daily products payment clearing	Review of the invoices clearing payment date with dispatch date of 2 days.
2	Sending all invoices to operation manager	Operation	Submitting on the manager's desk.	Classification of the invoices into the colored baskets: - Yellow (Monday) - Green (Wednesday) - Blue (Friday)
3	Payment approval.	Operation Manager	All invoices spend 7 days at least in the payment approval.	Schedule for manager's payment approval -on Monday morning -on Tuesday -on Thursday

Step	Process	Who	AS-IS Description	TO-BE Description
4	Receive the invoices and ship to the postage.	Shipping Staff	Shipping on 16th and 30th of the month	Ship the products following the shipping date: -on Monday afternoon. -on Wednesday. -on Friday.

Source: Author

From the AS-IS working process, there are only two shipments a month, and the payment approval process takes more than seven days. These are the causes why ABC could not achieve the dispatch time as required by eBay. The new working procedures have been changed by providing invoice classification to prevent invoices problems, the approval process lead time has been reduced to two days, and the shipment frequency from twice a month to three times a week. As a result, ABC could deliver the products to the customers in accordance with the eBay requirements.

4.2 Implementation Results

After the meeting on 21st April 2017, one of the five users was selected as the pilot user which has more than 400 transactions. EBay evaluates the seller performance every 20th of the last month of the quarter. Thus, the pilot user performance was evaluated from 21st April to 20th June 2017.

The result from adding two new processes in the operation and payment approval process is more efficient. The operation is already aware of the new eBay policy and well-prepared for the invoices management and invoices classification. The operation manager is able to work more quickly and accurately because the invoices problems have already been reduced. Table 4.2 shows the shipping performance of the pilot user during on 21st April – 20th June 2017.

Table 4.2: The Pilot User Shipment Performance during April to June 2017

Data Collection Period	No. of US Shipments	No. of on-time Shipments	On-time %	No. of late Shipments	Late %
21st Jan – 20th Feb 17	66	25	38%	41	62%
21st Feb – 20th March 17	76	31	41%	45	59%
21st March – 20th April 17	128	24	19%	104	81%
**21st April – 20th May 17	115	93	81%	22	19%
**21st May – 20th June 17	82	76	93%	6	7%

**Pilot user's performance

Source: ABC Company

Table 4.2 shows the number of US shipments from January to June 2017. The percentage of on-time shipments after the implementation has increased rapidly. It has increased from 19% (21st March – 20th April 2017) to 81% (*21st April – 20th May 2017) and from 81% (*21st April – 20th May 2017) to 93% (21st May – 20th June 2017). After the implementation, most of the shipments have been able to achieve the dispatch time although few shipments were late because it was the first implementation of the new process. There were some mistakes from the workers who put some invoices into the incorrect basket. For example, the invoices on the weekend have to be in the yellow basket (Monday). However, the researcher found that some invoices on the weekend were put into the green basket. Therefore, to eliminate the errors permanently, the operation has to use highlight pen on the payment date in the invoices. This method helps to prevent human errors and clarify more details.

Table 4.3 shows the summary of pilot user performance before and after from the seller dash board during April to June 2017. The eBay evaluation are calculated from the previous three-month period performance of the seller.

Table 4.3: The Results of eBay Evaluation on April and June 2017

	April 2017 (Before)	June 2017 (After)
Current seller level	Above standard	Above standard
Late shipment rate	190 of 270	132 of 325
Late shipment rate%	70.37%	40.61%

Source: ABC Company

Table 4.3 shows the before and after results of implementation, the new results from 21st April to 20th June 2017 period compared to the previous performance from 21st Jan-20th April 2017 period (From table 4.2). The total US shipments of before was 270 (66+76 +128; 21st January – 20th April 2017) while the number of late shipments was 190 (41+45+104; 21st January – 20th April 2017). The late shipment rate of before was 70.37%. The total US shipment of after was 325 (128+115+82; 21st April – 20th June 2017) while the number of late shipments was 132 (104+22+6; 21st April – 20th June 2017). The late shipment rate of after was 40.61%. In April 2017, the late shipment rate of this user was 70.37% (190 of 270 shipments). After the new process implementation during May to June 2017, the new process helped ABC to achieve the dispatch time agreement. ABC Company frequently shipped the products on time. As the result, the late shipment rate decreased to 40.61% (132 of 325 shipments).

Even the late delivery rate is still over the eBay requirement which is 4.00%, but there is high possibility that the pilot user can achieve the Top Rated Seller rank in the near future. Table 4.4 shows the expectation of future results if ABC is be able to fully implement the new working processes without human errors.

Table 4.4: The Expectation of the Future Results

	Apr 17	May 17	Jun 17	Jul 17	Aug 17	Sep 17
No. of late shipments	104	22	6	0	0	0
% of late delivery rate of June	40.61%					
% of late delivery rate of July**		8.62%				
% of late delivery rate of August**			1.84%			

**The expectation results in the future

Source: Author

The pilot user is expected to return the Top Rated Seller position in September 2017. Author assumes the next three month number of shipments will be constant at 325 shipments, while the number of late shipment will decrease to zero. From the three month of eBay evaluation, the current late delivery rate is 40.61%, the late delivery rate expects to be 8.62% in July and 1.84% in August. Therefore, the final late delivery rate will below 4.00% in August 2017 but the Top Rated Seller position will be effected in September 2017.

There are three reasons why the current late delivery rate is still above the requirement rate. Firstly, the monthly eBay evaluation has included the results of April 2017, which the new process has not been applied yet. Secondly, the manager has been accustomed to work on the previous process, which sometimes he forgot to follow the new working procedure. He checked the invoices when he was available without considering the agreement timeline. So, some orders had been shipped out of schedule. Lastly, there were a lot of Thai holidays, which also affected the shipping date when it fell on the holiday.

To solve the problem of late approval, the workers have to arrange a monthly meeting with the manager to report the result of the new process and remind the manager to complete the approval invoice on schedule. To address the problem on delay shipment, the workers have to manage the shipment schedule in advance by avoiding the holiday that may affect the shipment date. If the shipment date falls on a holiday, the product must be shipped a day before.

In conclusion, the new processes could reduce the late delivery rate effectively. If the workers will follow the new working procedures strictly and consistently, ABC would have a high possibility to get late delivery rate less than 4.00%. From the results, the researcher expects ABC to get back the Top Rate Seller position in September 2017.

4.3 Chapter Summary

This chapter presents the performance of the pilot user from April to June 2017 as the result of the implementation of TO-BE processes. The TO-BE processes were added in the first phase between invoice management and payment approval process. Also, the new working procedures, step by step, were introduced and implemented that served as guidelines for the related workers. Moreover, the shipment schedule has been rearranged to be three times a week. As a result, the performance of ABC has been getting a lot better, even there were some obstacles during the first implementation of the new process. The new results of late delivery rate reduced continuously. If ABC is able to follow the new work procedures strictly, the pilot user will absolutely be back to Top Rate Seller rank in September, 2017.

CHAPTER V

SUMMARY FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

This part concludes all the previous chapters in this research after studying and finding the old situation in the background of the study, literature review, methodology application, and getting the final conclusion for fulfilling inefficient process from analysis and implementation.

5.1 Summary of the Findings

This research attempted to answer the question **"How to improve customer service process by using Business Process Improvement (BPI)?"** After studying the existing problems of ABC Company, the researcher started finding out the inefficient processes by using the process mapping. It showed up the whole ABC customer service processes starting from the customer payment clearing until the shipping of the products to the customers. There was a bottleneck process between the operation and payment approval process. Then, fishbone analysis was used to find out the root causes of late delivery. Data were collected and the related workers were interviewed. After identifying all causes, the researcher used Pareto Analysis concept to classify the problems with 80/20 rules by using the average time of each problem. It was found that there were two inefficient processes which caused the increase of the late shipment rate. Firstly, the company's dispatch time did not match with the shipment management. The lead time from operation to shipment process was 15 days, while the required dispatch time was only two days. So, most of the shipments were counted as late delivery in the eBay evaluation. Secondly, there were invoice problems, such as missing invoices and products, damaged invoice, and ignored invoices which affected the delayed process. When invoice problems occurred, the process lead time was increased to more than 15 days. Therefore, ABC Company considered to solve these problems by applying Business Process Improvement (BPI).

Business Process Improvement is a systematic approach for the improvement in operation, administration, and support processes (Harrington, Esseling & Nimwegen, 1997). The invoice classification was applied by using three different colored baskets in the preparation stage before submitting all invoices for approval. The classification approach have prevented all invoice problems effectively. Also, the rearranged new shipment schedule was the key to achieve the dispatch time agreement. The shipment schedule was increased from twice a month to three times a week. As a result, the total internal process of ABC Company was reduced from 15 to two days. After two months of implementation of the pilot user, the performance was changed positively. It reduced the late delivery rate from 70.37% in April to 40.61% in June 2017.

5.2 Conclusions

Reliability is the key to a successful eBay seller, especially Top Rated Seller position. So, eBay tries to maximize the satisfaction of online purchasers by improving the seller service level. ABC Company must adapt to the change quickly. In this case, ABC Company has the inefficient processes, which cause the late delivery rate over the standard requirement for the Top Rated Seller rank. The researcher recommends two approaches to improve the existing process by adding more shipment dates and invoice classification to eliminate late shipment factors.

The result from applying the process improvement shows that the number of late shipment has reduced significantly. But, there were few late shipments because of the change in the process. In first month of implementation, the workers were unaccustomed to the new working process, and they needed time to adapt themselves. So, monitoring and control was intensely necessary in the first phase of implementation.

Even if the overview of total rate is still over the requirement, but it has a high opportunity to reach the late delivery rate of 4% in the near future. Therefore, he researcher expects the pilot user to gain late delivery rate lower than 4% in August

2017. After the pilot user is successful in getting back the Top Rated position, ABC Company can apply the new processes to all users to generate revenue and gain the trust from the customers.

5.3 Theoretical Implications

This research applies theories to find out why ABC Company service performance has not reached the eBay standard. EBay has set the high customer service level. The high level of service could lead to the satisfaction and repurchase of the products (Timm, 2001), which is why ABC Company looks forward to improving its inefficient process. The mapping process helps to see the whole process from the beginning to the end. The researcher has identified easily the weakness point in the process. The fishbone diagram helps to identify all possible causes that affect late delivery. But, the fishbone itself cannot identify exactly the problems that need to be solved first. So, the Pareto analysis is used to help prioritize all the causes based on 80/20 rules. The three factors: invoice management, US customs, and shipment management are the top three most influential factors on late delivery problems. Therefore, the researcher develops the improved process, which is the most suitable to the current situation of ABC Company.

5.4 Managerial Implications

The finding in this research can be a guideline for the online business, especially eBay businesses who have been keeping up with the changes of eBay Top Rated requirements since 2016. The findings do not only eliminate the late delivery rate, but also provide a more highly shipment service level. In effect, customers will receive their purchased items as fast as they were. Internal processes become systematic and managerial because of the working procedure. Any works without guidelines produce inefficient and ineffective outcomes, e.g. human error and lead time of the process increases. So, either old or new workers can do, following the simple working

procedures for productivity. Moreover, classification is an efficient tool for solving the mess of the working process because it makes difficult things to be easy. By applying the classification system, this research can prevent the invoices problems, e.g. damaged, missing, and erroneous invoices. Therefore, those companies who have similar working process, these findings can be a case study with less investment but gain positive outcomes.

5.5 Limitations and Recommendations for Future Research

This research was conducted to improve the internal process in eBay business. Companies have different individual working processes even if they are in the same type of business. So, the new processes in this research might not match with the other business processes due to different goods, services, and industries.

As to the limitation of this research, this research has mainly concentrated on the US shipment; therefore, customers from other countries are not included in this project. Moreover, there are other factors that affect the late delivery: external factors, e.g. delay from US customs clearance, late delivery from the postage performance. In addition, eBay regulations always change, terms and requirements change to be more complex. Finally, there is limitation of timing in collecting the new results by using TO-BE process. The new results have not achieved the target of 4.00% of the eBay requirement because the research has collected the data from March to June 2017 only.

There are recommendations for the future research. Workers should manage and adjust the working process with the Thai holiday of each month in advance, because there are many Thai holidays which may be on the same shipment date. If the holiday is on the shipment date, the product must be shipped a day before. In the case of long holiday like New Year and Songkran Festival, the shipment is affected. Therefore, the company should have the means to motivate the workers, such as incentive, shift work, benefits. For example, ABC should pay overtime for workers in the long

holiday. The offering of incentive to the workers who achieve the target of the company has mutual benefits to the workers and the company because the company maintains its performance and the workers also gain from the benefits.

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