

# DELIVERY PERFORMANCE IMPROVEMENT: A CASE OF A SECURE LOGISTICS PROVIDER

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## ABSTRACT

*The need for Secure Logistics Providers is concerned with outsourcing logistics which is focused on the expected safe delivery of valuable products. Delivery in Full and on Time is the major concern, as customers expect to receive their goods on time especially before noon (on the same date of flight arrival). The focus firm is ABC Logistics Company. Its KPI is set at 95% effectiveness for a morning flight arrival, but this standard was not being achieved. This research project's purpose, therefore, is to identify improved delivery performance of shipments which arrive before 7.30 AM. First, data of import shipments during January–December 2014 and January–April 2015 is collated. Second, the current import process is analyzed. Third is identifying factors which are controllable and uncontrollable, with the focus then on the controllable factors. To eliminate these factors, shipment consolidation is the first chosen alternative. Combining various shipments with various Master Air Way Bills at origin into one, helps reduce the process time. A Review and Revision of the training procedure is the second chosen alternative, to improve the sorting skills. The implementation period of May–December 2015 increased the effectiveness to 95%, compared to the same period in 2014 which was only 72% which shows that the chosen alternatives worked well.*

**Keywords:** *Secure logistics provider, delivery performance, Air Way Bills*

### บทคัดย่อ

ธุรกิจผู้ให้บริการ โลจิสติกส์ทางด้านความปลอดภัยบุคคลที่สามนั้น จะเน้นดูแลสินค้าที่มีมูลค่าสูงเป็นหลักการส่งสินค้าตรงเวลาและครบถ้วนเป็นสิ่งที่ลูกค้าให้ความสำคัญมากที่สุด ลูกค้าให้ความสำคัญมากในเรื่องความตรงต่อเวลาโดยเฉพาะการส่งสินค้าก่อนเที่ยง (สำหรับสินค้าที่มาจากเที่ยวบินที่ลง ณ วันเดียวกัน) ในขณะที่เดียวกันทางบริษัทได้กำหนดดัชนีชี้วัดความสำเร็จของงาน (KPI) ไว้ที่ 95% สำหรับเที่ยวบินที่ลงช่วงเช้าก่อนเวลา 7.30 น. แต่ทางบริษัทไม่เคยประสบความสำเร็จในปีที่ผ่านมาเลย จุดประสงค์ในการทำงานวิจัยนี้ คือการพัฒนาความสามารถการส่งสินค้าของเที่ยวบินเข้าให้ได้ตามเป้าที่บริษัทตั้งไว้ ข้อมูลที่นำมาใช้ในการศึกษานั้น คือข้อมูลของการส่งสินค้านำเข้าของช่วงเวลาเดือนมกราคมถึง เดือนธันวาคม ปี พ.ศ. 2556 และระหว่างเดือนมกราคม ถึง เดือนเมษายน พ.ศ. 2557 ลำดับต่อมาคือการวิเคราะห์ขั้นตอนการทำงานของสินค้านำเข้าในปัจจุบัน ลำดับถัดไปคือการหาสาเหตุที่ทำให้เกิดความล่าช้าในการ

ขนส่งสินค้า ซึ่งพบว่าสาเหตุที่ทำให้เกิดความล่าช้านั้นมีทั้งสาเหตุที่สามารถควบคุมดูแลได้และที่ไม่สามารถควบคุมได้ ดังนั้นบริษัทจึงเน้นความสำคัญไปที่สาเหตุที่สามารถควบคุมได้เพียงอย่างเดียว ซึ่งสาเหตุที่กล่าวถึงนั้นประกอบด้วย กระบวนการทำงานและทักษะในการคัดแยก ลำดับสุดท้ายคือการสรุปและลงความเห็น สำหรับวิธีการจัดการที่เลือกมาใช้อันดับแรกนั้นคือการรวบรวมสินค้าเพื่อขนส่ง (Shipment Consolidation) ซึ่งเป็นวิธีการรวบรวมสินค้าที่ต้นทาง ตั้งแต่สองรายการขึ้นไปโดยใช้ ใบตราส่งสินค้าทางอากาศที่ออกให้โดยสายการบิน (Master Air Way Bill) เพียงชุดเดียว ซึ่งช่วยลดระยะเวลาของขั้นตอนการทำงาน อีกหนึ่งวิธีการที่นำมาใช้ คือการอบรม ทักษะการตรวจสอบและแก้ไขของพนักงาน ซึ่งช่วยในการพัฒนาทักษะในการคัดแยก วิธีการที่ถูกเลือกทั้งสองวิธีนั้นได้เริ่มนำมาใช้ตั้งแต่เดือน พฤษภาคมถึงเดือนธันวาคมปี พ.ศ. 2557 ซึ่งผลที่ได้รับนั้นเพิ่มขึ้นมากเมื่อเปรียบเทียบกับช่วงเวลาเดียวกันในปีที่ผ่านมาเปอร์เซ็นต์ประสิทธิภาพในปี พ.ศ. 2556 อยู่ที่ 72% ในขณะที่ปี พ.ศ. 2557 นั้นเพิ่มขึ้นเป็น 95% ซึ่งจากประสิทธิภาพที่ได้ทำให้สังเกตเห็นว่าตัวเลือกที่นำมาใช้นั้นทำงานได้ดีมากและผลที่ได้รับเปลี่ยนแปลงไปในทางดี

## INTRODUCTION

ABC Company in Thailand was established in 1986. It mainly serves the gems and jewelry community and provides security services to cash centers. The scope of secure logistics management services includes pick and pack, inventory management, secure storage, customs clearance, airline handling, secure transportation, cash processing, replenishment and delivery. The scope of secure transportation services includes armored truck transportation, secure air and sea freight, couriers, air charters and armored messengers.

### Statement of the Problems

In order to improve the delivery performance, those problems have to be resolved. Since 2014, ABC Thailand set its KPI on delivery performance at over 95%, which target it has not reached. Specifically, the shipments that arrived by air before 7.30 AM which have to be delivered to customers before noon was only 82% effective. As a consequence, this research attempts to seek to answer the question, “**How to improve the delivery performance of ABC Thailand?**” The study emphasizes only the working process in the company’s import shipments because the revenue from imports is higher than the other services of the company. Imports percentage of effectiveness was the lowest and the quantity of shipments was the highest. The period that was analyzed was from January 2014 to April 2015, as the most up-to-date information.

## REVIEW OF RELATED LITERATURE

### The Nature of Secure Logistic Providers

The terms such as logistics alliances, logistics outsourcing, third party logistics, contract distribution and contract logistics, describe the outsource company that processes some parts of or all logistics activities that were previously performed internally (Sink, Langley, & Gibson 1996).

### Customs Clearance

Customs Clearance is well defined as the set of operations processed by customs authorities, which include, but are not limited to:

import processing; export and transit declarations; appraisal of origin; worth and classification of merchandise; gathering and processing of duties and fees; examination; inspection and cargo releasing; managing audits of shipment post-clearance; process of crucial shipment and management of waivers; exemption schemes; and re-exportation schemes (De Wulf & Sokol, 2005).

### **Distribution Center**

A physical location where the physical distribution system exists is referred to as a Distribution Center (DC) (Tompkins, White, Bozer, & Tanchoco, 2003) or a distribution warehouse (Van den Berg & Zijm, 1999).

### **Delivery Performance**

The link in a supply chain that directly deals with customers is the delivery of goods or services is therefore called “the driver of customer satisfaction”. Another term for delivery performance is perfect order delivery. Perfect order delivery adds to OTIF other essential components such as perfect invoicing (right quantity, right price and right item number) and perfect receipt (correct bill of lading and packing slip) (Gunasekaran, Patel, & McGaughey, 2004).

### **Shipment Consolidation**

This primarily focuses on terminal consolidation where stuffs from various origins are separated at a single terminal to be dispatched to different destinations on the same carriage. Consolidating to reduce costs is not an up to date development (Hall, 1987).

## **METHODOLOGY**

This chapter begins with identifying data collection from the company records, Second is the analyzing of the current import working process of the company, ABC Thailand Third, is a defining of factors that affect low delivery performance. Lastly will be a conclusion. Figure 3.1 shows the Research Methodology Framework Diagram for this study.

### **Data Collection**

The researcher reviews the documents related to the data of total import shipments collected during January to December 2014 and January to April 2015 which is the most up-to-date record.

### **Analyzing the Current Process**

Step 1: Starting from flight arrival, cargo is checked for quantity and condition and if confirmed, the cargo will be moved to the vault of Thai Airways International (TG).

Step 2: A Customer Service Representative (CSR) keys data of each shipment into the Excellency and Electronic Data Interchange (EDI) system.

Step 3: An Airline officer check data in the EDI system. If this is confirmed, a Delivery Order (DO) is released.

Step 4: ABC's shipping agent picks up the DO and pays storage charges to the Airline.

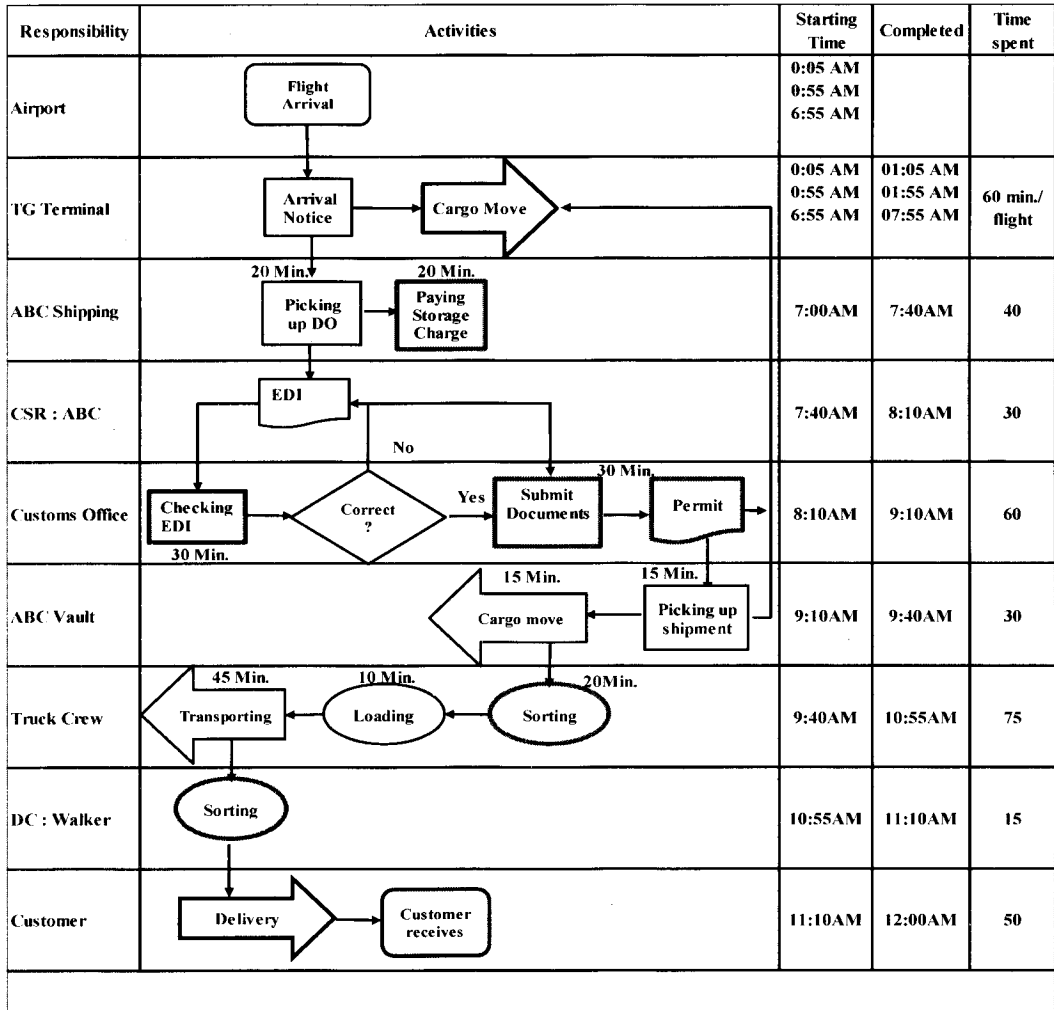
Step 5: The customs clearance process is done by a customs officer. Data in the EDI system is checked, confirmed, and permission given.

Step 6: Cargo is moved from the TG Vault to ABC's Vault.

- Step 7: Cargo is sorted at ABC's Vault.
- Step 8: Cargo is loaded into a Truck.
- Step 9: Cargo is transported to the distribution centre (DC).
- Step 10: ABC's truck arrives at the DC and is sorted.
- Step 11: Cargo is delivered into the customer's hands.

Figure 1 is a swim lane diagram which shows the flow of ABC's Import Working Process, with time spent in each step.

**Figure 1: Flow of ABC Thailand Import Working Process with Lead Time of Morning Shipment (Arrival before Noon)**



Source: ABC Thailand

The next step is to analyze actual time spent during the year 2014 to April, 2015 compares with ABC's target lead time.

**Table 1: Comparing Average Time Spent and Target Lead Time Used of Morning Shipment (Arrival before Noon)**

<b>Part 1: Flight arrival: 0.05AM, 0.55AM, 6.55AM, 7.10AM</b>									
Step	Process	Starting Time	Finished time	Average time per MAWB	Time Spent (Min.)	Average Time Spent (Min)			
						2014	2015		
1	Cargo Checking & Moving to TG Terminal	0:05AM	1:05AM	60	60	60	60		
2	Airline informs shipment arrival	0:55AM	1:55AM	60	60	60	60		
		6:55AM	7:55AM	60	60	60	60		
<b>Part 2: Process by ABC's Company</b>									
3	Picking DO, Shipping Doc at TG Terminal	7:00AM	7:20AM	3	20	39	37		
4	Paying Storage Charge at Terminal	7:20AM	7:40AM	3	20	45	40		
5	CSR key in EDI	7:40AM	8:10AM	3	30	32	31		
6	Customs check and accepts EDI	8:10AM	8:40AM	3	30	34	32		
7	ABC submit Customs Entry and Shipping Doc to Customs, Customs release Permit.	8:40AM	9:10AM	5	30	33	31		
8	Picking up shipment at TG Vault	9:10AM	9:25AM	5	15	18	16		
9	TG Vault to ABC's Vault	9:25AM	9:40AM	15	15	14	16		
10	Shipments are checked and Sorted at ABC's Vault	9:40AM	10:00AM	3	20	27	26		
11	Loading to Truck	10:00AM	10:10AM	2	10	15	12		
12	Transportation	10:10AM	10:55AM	45	45	46	47		
13	Arrive Distribution Center (DC) & Sorting	10:55AM	11:10AM	3	15	25	23		
11	Delivery to customer	11:10AM	12:00AM	6	50	56	53		
Total time used				96	300	384	364		

Source: ABC Thailand

### Defining Factors

Controllable factors are factors that ABC could adjust and change which are working process and sorting skill. Uncontrollable factors are factors that ABC could not make any changes which are flight delay, system down, late customs clearance, late document from customer, ad-hoc job and traffic jam.

**Table 2: Failure Shipment during 2014 –End of April, 2015 (Flight Arrival before 7.30 AM)**

Factor		2014		2015	
		No. of Shipment	Percentage	No. of Shipment	Percentage
Controllable	Picking DO and Paying Storage	464	40%	130	43%
	Sorting Skill	116	10%	21	7%
	Customs clearance	290	25%	91	30%
	Flight delay	81	7%	15	5%
	Traffic	70	6%	12	4%
	Late Document from customer	58	5%	18	6%
	System down	35	3%	9	3%
Ad hoc job	46	4%	6	2%	
<b>Total Failure Shipment during 2014-2015</b>		<b>1159</b>	<b>100%</b>	<b>302</b>	<b>100%</b>

## FINDING AND DISCUSSION

### Alternative Solutions

Initially there are three alternative solutions that could improve delivery performance of the company which are increasing number of truck, reviewing and revising training procedure and shipment consolidation.

**Table 3: Advantages and Disadvantages of Alternative Solutions**

Alternative Solutions	Advantages	Disadvantages
Increase number of trucks	1) Shorten time to deliver	High cost on both fixed and variable cost.
Review and revise training procedure	1) Shorten sorting process 2) Deliver to the right place 3) Deliver to the right consignee 4) Deliver the right quantity	Waste of time and human resources in reviewing, and costly in training.
Shipment Consolidation	1) Shorten clearance process 2) Storage charge profitability 3) Cost reduction 4) Improve service efficiency and flexibility	Complexity of documents

The first solution of increasing the number of trucks is not chosen because of high investment cost. The solution of Shipment Consolidation is the best choice for ABC Company as there are no additional expenses while the company is also earning more profit. Reviewing and revising the training procedure is important as it concerns the company's service and accuracy.

**Shipment Consolidation Supply Chain.** The chain of Shipment Consolidation is started from the place of origin where a customer instructs ABC company to collect their goods, and ends at the destination when the consignee receives the goods.

**Review and Revise Training Procedure.** Training is included in the Shorten sorting process, for on-time delivery at the right place with correct quantity, to the right consignee according to the assignment. Implementation results are shown in Table 5.

**Table 4: Training Procedure (Truck Crew Training Course)**

Training Program	Detail of Training	Attendance	Schedule
New Staff Orientation	- Company Policy - Staff Responsibility	All positions	First day of working
Truck Crew Operations	- Sorting - Delivery procedure - Documentation - Security	Truck Crew	By Quarter

**Table 5: Comparison of Total Monthly Import Shipments between 2014 and 2015 (Flight arrival before 7.30 AM)**

Month	Flight Arrival Before 7.30 AM														
	TotalShipments			Delivery Before 12 AM			Effectiveness			Delivery After 12 AM			Next Days		
	2014	2015	Change	2014	2015	Change	2014	2015	Change	2014	2015	Change	2014	2015	Change
Jan	256	262	2%	184	194	5%	72%	74%	-8%	65	60	-8%	7	8	16%
Feb.	263	272	3%	187	204	9%	71%	75%	-12%	74	65	-12%	2	3	53%
Mar	312	319	2%	231	233	1%	74%	73%	8%	71	77	8%	10	10	-4%
Apr	312	318	2%	228	238	4%	73%	75%	-14%	79	68	-14%	5	11	128%
May	373	385	3%	269	365	36%	72%	95%	-81%	104	20	-81%	0	0	-
Jun.	343	354	3%	254	340	34%	74%	96%	-84%	89	14	-84%	0	0	-
Jul.	357	368	3%	253	350	38%	71%	95%	-82%	101	18	-82%	3	0	-100%
Aug.	347	358	3%	250	344	37%	72%	96%	-89%	92	10	-89%	5	4	-14%
Sep.	372	385	3%	272	366	34%	73%	95%	-87%	85	11	-87%	15	8	-45%
Oct	451	456	1%	325	438	35%	72%	96%	-85%	120	18	-85%	6	0	-100%
Nov	411	416	1%	292	395	35%	71%	95%	-82%	118	21	-82%	1	0	-100%
Dec	389	398	2%	282	382	35%	72%	96%	-84%	99	16	-84%	8	0	-100%
<b>Total</b>	<b>4,186</b>	<b>4,291</b>	<b>2.50%</b>	<b>3,027</b>	<b>3,849</b>	<b>27.14%</b>	<b>72%</b>	<b>90%</b>	<b>-63.76%</b>	<b>1,097</b>	<b>398</b>	<b>-63.76%</b>	<b>62</b>	<b>45</b>	<b>-27.92%</b>

Source: ABC Company

From Table 5, the total flight arrival before 7.30 AM during 2014 is 4,186 in which successfully delivered before 12 AM was 3,027 shipments, while during 2015 the number is 4,291 (2.5% change). Total shipments delivered before 12 AM during 2014 is 3,027 while 2015 is 3,849. Effectiveness in 2014 is 72%, while 2015 is 90%. Total shipments delivered after 12 AM during 2014 is 1,097 while 2015 is 398 (-64% change). Total shipments delivered the next day in 2014 is 62 shipments while 2015 is 45 (-27.92% change).



**Table 6: Comparison of Average Time and Target Lead Time Spent in the Morning Shipment After Implementation**

Step	Process	Part 1: Flight arrival: 0.05AM, 0.55AM, 6.55AM, 7.10AM						
		Starting Time	Finished Time	Average time per MAWB	Time Spent (Min.)	Average Time Spent (Min)		
						Jan.-Dec. 2014	Jan.-Apr. 2015	May-Dec 2015
1	Cargo Checking & Moving to TG Terminal	0:05AM	1:05AM	60	60	60	60	60
2	Airline informs shipment arrival	0:55AM	1:55AM	60	60	60	60	60
		6:55AM	7:55AM	60	60	60	60	60
	<b>Part 2: Process by ABC's Company</b>							
3	Picking DO, Shipping Document at TG Terminal	7:00AM	7:20AM	3	20	39	37	10
4	Paying Storage Charge at Terminal	7:20AM	7:40AM	3	20	45	40	10
5	CSR key in EDI	7:40AM	8:10AM	3	30	32	31	30
6	Customs check and accept EDI	8:10AM	8:40AM	3	30	34	32	30
7	ABC submit Customs Entry and Shipping Doc to Customs.for Customs release Permit.	8:40AM	9:10AM	5	30	33	31	30
8	Picking up shipment at TG Vault	9:10AM	9:25AM	5	15	18	16	15
9	TG Vault to ABC's Vault	9:25AM	9:40AM	15	15	14	16	15
10	Shipments are checked and Sorted at ABC's Vault	9:40AM	10:00AM	2	20	27	26	15
11	Loading on to Truck	10:00AM	10:10AM	2	10	15	12	10
12	Transportation	10:10AM	10:55AM	45	45	46	47	45
13	Arrive at Distribution Center (DC) for Sorting	10:55AM	11:10AM	2	15	25	23	15
11	Delivery to customer	11:10AM	12:00AM	6	50	56	53	50
	Total time spent			94	300	384	364	275

Source: ABC Company

Table 6 shows a comparison of the average time and target lead time spent in the morning shipment after the implementation of shipment consolidation. ABC Company has been using the shipment consolidation since May 2015. After shipment consolidation was implemented, the total time spent during May to December 2015 was less than the target time of 25 minutes. Improved processes are the process of picking DO and shipping documents at TG terminal, paying storage charges at terminal, and the checking and sorting of shipments at ABC's vault.

## CONCLUSION

To improve delivery performance by the ABC company and to achieve the KPI, other alternatives incur extra cost. Shipment consolidation incurs no extra cost, rather it is reduced. Effectiveness of total shipment arrival before noon after using shipment consolidation is 90% (KPI is 95%). Even though overall effectiveness for year 2015 does not meet the company's objective, the implementation period was only May to December, 2015. The company believes that in 2016 the target will be achieved, as confirmed by the data. The total time spent is 275 minutes, which is 25 minutes less than the target time of 300 minutes.

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