CHAPTER 4

PHASE I - PILOT STUDY OF EXPORT MANUFACTURERS AND FREIGHT FORWARDERS

4.1. Introduction

Literature review covered the relevant areas of focus under the research. The comprehensive coverage of the found research studies in the area of apparel exports, its lead time and logistics complexities led to identification of three research gaps. The three main objectives of the present research were made basis the three identified research gaps. The first objective of the research was to identify key issues and challenges of outbound logistics activities involved in Indian apparel exports. Before identification of key issues and challenges, the validation of identified issues and challenges was required for Indian apparel exports. Any gap in identification of issues and challenges was also required to be checked. The cost parameters which occur due to delay in export import business were covered in the literature. Like logistics issues and challenges, the identified cost parameters needed validated in Indian scenario. Moreover, any gap in identification of cost parameters was required to be checked too. The part of third objective was to calculate delay lag resulting through delivery lead time affected by logistics issues and challenges. Calculation of delay lag would require the in depth knowledge of usual time taken by all logistics activities involved in apparel exports for the given scenario (Ahsan and Azeem, 2010). Thus it was required to calculate the cycle time\(^1\) of all seven outbound logistics activities involved in apparel exports in case of no delay scenario. It was also required to find out the manageable delay lag so that crucial delay lags could be differentiated. India has 12 major and 176 minor seaports (GOI report, 2014) and it was important to find the seaports which are used for apparel shipments. It was decided to conduct pilot study having focus on all above areas. Section 4.2 explains the rationale and objective of the pilot study and Section 4.3 focuses on research

\(^1\) The cycle time of an activity is defined as elapsed time span from start till end of activity (Chopra et al, 2010).
design. Section 4.4 describes the execution of pilot study through Delphi technique. Section 4.5 and Section 4.6 focus on data analysis and findings respectively.

4.2. Objectives of Pilot Study

The pilot study\(^2\) was conducted for the present research having focus on following:

- Validation of issues and challenges involved in outbound logistics activities of apparel exports
- Identification of outbound logistics issues of challenges beyond available literature
- Validation of parameters of cost implications due to delay in logistics activities of apparel exports
- Identification of parameters of cost implications beyond available literature.
- Identification of seaports used for apparel shipments
- Calculation of cycle time of outbound logistics activities of apparel exports
- To find out number of days of delay which can be managed for loading on the planned vessel

4.3. Research Approach and Design

For pilot study mixed method approach was adopted. Mixed research method incorporates elements of both qualitative and quantitative approaches (Creswell, 2014). This pilot study followed exploratory research design. The two main purposes were: 1) To validate identified logistics issues and challenges, cost implications and 2) To explore the unidentified ones

\(^2\) The pilot study survey can be less structured than large scale survey with open ended questions and less sample size (Malhotra and Dash, 2011). The pilot survey can also be used to explore the possibility to form new variables for the main study (Bryman and Bell, 2007).
The number of issues and challenges and cost implications were more than fifty and hence it was decided not to go for structured interview. Delphi\(^3\) technique was selected to conduct the pilot study.

4.3.1. Adoption of Delphi technique

The Delphi technique may be characterized as a method of structured group communication process. The technique is effective in allowing a group of individuals, as a whole, to deal with a complex problem (Linstone and Turoff, 2002). Delphi technique was first developed in 1950 at Rand Corporation. This technique usually involves sending questionnaire to a certain number of people who constitute an expert panel. Questionnaire can also be sent electronically. The identity of experts remains anonymous from each other for this purpose. The questionnaire may be structured or relatively unstructured. The responses are collated and the original or a revised questionnaire is recirculated. The revised questionnaires are frequently accompanied by an anonymised summary of responses. Experts are invited to confirm or to modify their previous response. This procedure is repeated for number of rounds until consensus is formed basis some criteria.

Thus, Delphi technique typically involves number of rounds, feedback of responses to participants between rounds, opportunity for participants to modify their responses, and anonymity of responses. One of the reasons of employing Delphi technique is the non-feasibility of expert group meetings considering cost and time. Selection of experts is an important aspect as selection of people knowledgeable in the field, and their commitment to multiple rounds of questions on the same topic is essential. Experts are often assumed to be professionally or scientifically qualified and/or to have achieved high status. They must know that about information required, expected time, purpose of the study and what will be done with the information. The optimum size of the expert panel is seven to twelve members (Buckley, 1995; Linstone and Turoff, 2002; Loo, 2002; MacCarthy and Atthirawong, 2003; Mullen, 2003; Grisham, 2008, Walson, 2008; Hadaya et al, 2012; Xia and Chan, 2012).

\(^3\) Delphi study was employed by Keebler and Plank, 2009 for logistics related research.
4.3.2. Questionnaire development

The questionnaires\(^4\) were developed for three stages:

Objectives of the first stage:

- Validation of issues and challenges involved in outbound logistics activities of apparel exports
- Identification of outbound logistics issues of challenges beyond available literature
- Validation of parameters of cost implications due to delay in logistics activities of apparel exports
- Identification of parameters of cost implications beyond available literature.

First stage questionnaire - Questions were designed to validate logistics issues and challenges and cost implication parameters for current scenario of Indian apparel exports. All questions were dichotomous with answer options to choose – yes or no with space of remarks as optional (Chaturvedi, 2006). Additionally it was asked to mention relevant issues and challenges and cost implication parameters which were not found in literature.

Objectives of the second stage:

- Identification of seaports used for apparel shipments
- Calculation of cycle time of outbound logistics activities of apparel exports
- To find out number of days of delay which can be managed for loading on the planned vessel

Second stage questionnaire - First question was designed to enquire the seaports used for apparel shipments in North and South India cluster. Then subsequent questions were designed to find out cycle time (with no delay scenario) for all seven outbound logistics activities involved for advised seaports. Then question was asked to find out delay lag (in number of days) which can be managed for cargo to get loaded on

\(^4\) A questionnaire is a formalised set of questions for obtaining information from respondents (Malhotra and Dash, 2011).
the planned vessel\(^5\). Additionally question was asked to validate one logistics issue which was identified during stage one.

Objectives of the third stage:
  
  - Validation of cycle time and the manageable delay lag for cargo to get loaded on the planned vessel.

Third stage questionnaire- One question was about validating the cycle time of all seven outbound logistics activities involved for selected seaports and the manageable delay for cargo to get loaded on the planned vessel.

The questionnaire used for pilot study is shown in appendix I.

4.3.3. Sampling frame and sample profile

The stakeholders who are directly involved in day to day operations of outbound logistics activities were considered. The sample frame and sample profile was as follows:

**Sample Frame:** Stakeholders handling apparel export shipments in the selected area of study (Stakeholders covered: Manufacturer exporters, Freight Forwarders).

As mentioned in Chapter 3 that in FOB shipments, the cost and responsibility of apparel shipments is on apparel exporter till the cargo crosses the ship’s rail in seaport, therefore the apparel exporters were chosen for this study. Freight forwarders play important logistics of apparel shipments (Fierro and Benitez, 2009). Apparel exporters normally outsource their logistics to third party who are freight forwarders. The selection of freight forwarders and carriers is generally based on the buyer’s choice or requirement (Yi et al, 2011). Freight forwarders are international trade specialist who can manage variety of logistics related function to facilitate the movements of cross border shipments. Some of the logistics functions are booking vessel space, preparing relevant documentation, paying freight charges on behalf of shipper/buyer, arranging inland transportation services, many value added services,  

\(^5\) Intercontinental liner services typically have a calling frequency of one vessel per week. Therefore if the planned vessel is missed then cargo is delayed for one week to get loaded on the vessel (Fagerholt, 2002; Christiansen et al, 2004; Notteboom, 2006; Lei, 2006).
etc. (Babbar and Prasad, 1998; Murphy and Daley, 2000; Costes et al, 2009). “Freight forwarders are in an excellent position to provide information on logistics, since private firms in most countries use the services of freight forwarding companies to ship their products into and out of the country” (Hausman et al, 2005)

Sample Profile: Experts holding post in senior management and having experience of more than 20 years in handling logistics of apparel export shipments. Grisham (2008) framework was followed.

4.3.4. Sampling technique and Sample size

Sampling technique: Since the requirement was to identify the experts having experience of more than 20 years, a non-probability judgemental sampling technique was adopted. Judgemental sampling occurs when a researcher selects sample members to conform to some criterion (Cooper and Schindler, 2006). In the study, criteria was to have experience of more than twenty years in managing logistics activities of ocean bound apparel export shipments.

Sample Size: As mentioned in the introduction of Delphi technique that seven to twelve experts are required, twenty experts were approached for study. Sixteen experts agreed to participate in the study. Eight experts were from north India cluster and eight of them were from south India cluster.

4.4. Execution of Delphi technique

The pilot study was completed in 45 days with three stage execution of Delphi technique. First stage questionnaire was sent to all experts through e-mail. It took 16 days to get the response from all experts with two rounds of reminder. Second stage questionnaire was sent upon the review of first stage reply. Experts took 12 days to respond on second stage questionnaire. One reminder was sent at this stage requesting response. Third stage took 9 days of time to receive response from all experts with one reminder.
4.5. Data collection and analysis

In the first stage questionnaire 53 logistics issues and challenges under 7 outbound logistics activities were mentioned for validation. All sixteen experts validated all 53 issues and challenges for Indian apparel exports. Two experts mentioned about one more issue which was not listed in the questionnaire. They mentioned about the non-availability of garment of hanger (GOH) containers which becomes a major challenge if the shipments is supposed to be sent in hanging hanger form. This issue got validated at second stage and consensus was achieved on the same. In the second stage all six cost implication parameters got validated and consensus was achieved. No additional cost parameter was advised by the experts. The cycle time of all seven logistics activities mentioned by experts in the second stage got tabulated. In the third round the cycle time tabulation was circulated to get consensus. One expert changed his response of one activity in third round and consensus was achieved.

4.6. Findings of pilot study

In total 54 issues and challenges under 7 outbound logistics activities got validated for further study. The division of 54 issues and challenges are given figure in 4.1.

The detail of identified issues and challenges under seven outbound logistics activities in context of Indian apparel exports are listed below,

Export Documentation:

1. Number of documents required in existing process
2. Complication involved in current export documentation process
3. Clerical errors in export related documents
4. Lack of clarity in export sales contract/international practices and guidelines
5. Partial automation/integration of systems for export documentation at various export related agencies

Export Packaging:

1. Lack of availability of containers for garment stuffing
2. Lack of availability of containers for hanging garment stuffing
3. Delay involved in less than container load (LCL) consolidation stuffing

Figure 4.1. Validated Issues and Challenges of Outbound Logistics Activities

Road Transportation:

1. Bad quality /condition of roads
2. Lack of availability of trucks/trailers for road transit
3. Inefficiency /older technology (GPS, etc.) inbuilt in trucks /trailers
4. Lack of expansion of road network
5. Lack of professionalism/skills of truck driver
6. Delay involved in interstate regulatory check points
7. Waiting time due to vehicle entry restrictions in cities
8. Lack of maintenance practices of trucks/trailers
9. Unfavourable weather conditions / acts of God during road transit

Customs Clearance:

1. Lack of understanding of valuation and supporting procedures/policies of customs officials
2. Lack of clarity on product/tariff classification issues at customs
3. Lack of staff/officers/resources at customs
4. Limited working hours of customs officials
5. Technical challenges in EDI systems
6. Corruption/bureaucracy/non-cooperation of customs officers
7. Missing documents/error in documents or in registered data at customs
8. Delay involved in manual/physical inspection at customs
9. Wrong declaration by shipper
10. Lengthy appeal process against decisions at customs
11. Heightened security initiative like CSI, CTPAT at customs

ICD/CFS warehousing and material handling:

1. Lack of cargo handling equipment at ICD/CFS
2. Less number of multiple vehicle entry points at ICD/CFS
3. Lack of storage space at ICD/CFS
4. Lack of number of rail sidings at ICD/CFS
5. Lack of latest technology used in warehousing systems at ICD/CFS
6. Lack of training and experience of people at ICD/CFS
7. Lack of coordination between various intermodal players involved at ICD/CFS
8. Lack of maintenance practices at ICD/CFS
9. Increased security regulations at ICD/CFS

Rail Transportation:

1. Lack of availability of rakes/wagons for rail transportation
2. Lack of number of dedicated tracks for container rail transportation
3. Lack of regular frequency of container rail services due to evacuation constraints
4. Lack of planning and coordination in cargo rail services
5. Lack of priority to passenger trains over container trains
6. Unfavourable weather conditions / acts of God

Port warehousing and material handling

1. Space shortage for seaport operations/storage/internal movement
2. Lack of berthing space and quay infrastructure
3. Older information technology (IT) system at seaport
4. Lack of cargo handling equipment at seaport
5. Less number of vehicle entry points at seaport
6. Bureaucratic issues at seaport operations
7. Labour related issues at seaport
8. Lack of coordination between various parties involved at seaport operations
9. Increased security regulations at seaport
10. Lack of maintenance practices at seaport
11. Unfavourable weather conditions / acts of God at port

Six cost implication parameters got validated by experts. These cost implications parameters were considered in case of occurrence of delay due to logistics issues and challenges in Indian apparel exports.

The cost implication parameters are as follows:
1. Administrative workload costs
2. Transportation costs
3. Sales and promotion plan costs
4. Inventory costs
5. Account receivable and cash flow
6. Customs-port costs

The major seaports used for apparel shipments were found as follows:

- For North India cluster- JNPT Mumbai, Mundra and Pipavav
- For South India cluster- Chennai and Tuticorin
The cycle time of seven logistics activities is listed below:

**Table 4.1: Cycle time of seven logistics activities in North and South India Cluster**

<table>
<thead>
<tr>
<th>Origin</th>
<th>Outbound Logistics Activities</th>
<th>ICD/CFS (storage/loading/unloading)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Export Documentation (with external agencies)</td>
<td>Customs Clearance</td>
</tr>
<tr>
<td>NCR</td>
<td>1 day</td>
<td>0.5 day- 1 day</td>
</tr>
<tr>
<td>Jaipur</td>
<td>1 day</td>
<td>0.5 day- 1 day</td>
</tr>
<tr>
<td>Ludhiana</td>
<td>1 day</td>
<td>0.5 day- 1 day</td>
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</tbody>
</table>

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<th>Outbound Logistics Activities</th>
<th>ICD/CFS (storage/loading/unloading)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Road</td>
<td>Rail</td>
</tr>
<tr>
<td>NCR</td>
<td>3-4 days</td>
<td>2-3 days</td>
</tr>
<tr>
<td>Jaipur</td>
<td>2-3 days</td>
<td>2 days</td>
</tr>
<tr>
<td>Ludhiana</td>
<td>3 days</td>
<td>4-6 days</td>
</tr>
</tbody>
</table>

Destination ports for North India Apparel Cluster: JNPT Mumbai, Mundra, Pipavav

<table>
<thead>
<tr>
<th>Origin</th>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Export Documentation (with external agencies)</td>
<td>Customs Clearance</td>
</tr>
<tr>
<td>Bangalore</td>
<td>1 day</td>
<td>0.5 day- 1 day</td>
</tr>
<tr>
<td>Tirupur</td>
<td>1 day</td>
<td>0.5 day- 1 day</td>
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<td>0.5 day</td>
<td>0.5 days- 1 day</td>
</tr>
<tr>
<td>Tirupur</td>
<td>0.5 day</td>
<td>N.A.</td>
</tr>
</tbody>
</table>

Destination ports for South India Apparel Cluster: Chennai, Tuticorin
In case of both North and South India cluster it was found that it would be very difficult for any apparel shipment to get loaded on the planned vessel in case delay exceeds more than three days, unless exporter bears extra transportation cost (to send the cargo from landlocked origin) till the gateway port through air mode or with express road services) and other kinds of costs.

4.7. Summary

The pilot study was conducted through Delphi technique. 16 experts having experience of more than 20 years in the field of logistics related operations of apparel exports participated in this phase of research. The industry experts validated the relevance of all 53 issues and challenges related logistics in context of Indian apparel exports. They suggested one more challenge of lack of availability of container compatible of hanging garment stuffing. Therefore, lack of availability of GOH (Garment on Hanger) container added. Moreover, all industry experts validated the cost implication factors for Indian apparel exports. They did not advise to add any other cost factor. Experts identified the most preferred seaports for North and South India apparel cluster. JNPT Mumbai, Mundra and Pipavav are seaports for North India and Chennai and Tuticorin ports are preferred by South India apparel cluster.

The experts advised cycle time for all seven outbound logistics activities for both cluster considering the scenario of no delay. The cycle time of export documentation, customs clearance and export packaging (containerisation) activity for both North and South India apparel cluster are same. In both cluster cycle time of export documentation, customs clearance and export packaging activity are one day, half day to one day and half day to one day respectively. The cycle time for ICD/CFS related activity is one day in North India cluster and half day to one day in South India cluster. Road transportation cycle time till seaports vary amongst clusters located in North India. The cycle time from Delhi NCR, Jaipur and Ludhiana are three to four days, two to three days and three days respectively. In South India apparel cluster, it takes half day to one day to reach seaport from Bangalore and Tirupur via road. Rail transportation cycle time from Delhi NCR, Jaipur and Ludhiana are two to three days, two days and four to six days respectively. Tirupur does not have rail connectivity till seaport and fro Bangalore, it
takes half day to one day in reaching seaport. Port related activities take one day of cycle time in both North and South India apparel clusters. Thus the total cycle time for North India ranges from six to eight days and for South India cluster cycle time ranges from four to five days.

The Industry experts suggested that three days of delay may be manageable for both North and South India cluster in terms of apparel cargo getting loaded on the same vessel for final destination. Though it is not certain and there are different types of cost implications. If delay exceeds for more than three days then it is highly improbable to load the cargo on the same vessel unless exporter bears extra transportation cost (to send the cargo from landlocked origin) till the gateway port through air mode or with express road services) and other kinds of costs. Although there is no surety that cargo will certainly get loaded on the planned vessel.

Thus there are three very important outcomes of pilot study. First is validation of logistics related issues and challenges and cost implications in context of Indian apparel exports and addition of one challenge in export packaging activity. Second is the calculation of cycle time for clusters of both North and South India in case of no delay. Third is the identification of manageable delay lag for both North and South India apparel clusters.