Chapter 4

Conceptual Framework

A survey of the literature indicated lack of research in the Indian low voltage switchgear industry regarding Adoption of Internet for Distribution and hence a case study of the industry was carried out to identify the relevant issues concerning the adoption of internet. This chapter proposes to develop a conceptual framework of the research by blending the theoretical inputs of the literature survey with the empirical findings of the SAP-LAP analysis.

4.1 Conceptual models:

According to Tassabehji, et al. (2007), the success of an e-business enabled supply chain depends on two major factors: a) collaboration between partners (Norris et al., 2000) and integration of supply chains through linking information systems (Cigolini et al., 2004; Zank and Vokurka, 2003) and b) Information visibility (Kehoe and Boughton 1998; Garcia – Dastugue and Lambert 2003) including the ability to share accurate data and information from a wide range of operating areas across the supply network (Lancioni et al., 2000).

Mentzer (2004) argued that competitive advantage can be obtained not just through the products sold, but also through the way in which we manage the flows in a supply chain.

The case study has highlighted ‘availability of products’ and ‘management of working capital’ as the two critical success factors for the LV switchgear distribution. While the adoption of Enterprise Resource Planning (ERP) by the manufacturers has positively impacted these critical success factors to some extent, there was a need to carry forward these benefits of ERP implementation across the distribution channel. Hence, the manufacturers have extended ERP to the distributors through internet. The case study has also revealed that the nature of the product – market characteristics of low voltage switchgear does not make e-commerce feasible. Hence the adoption of internet is confined to establishing connectivity with the distributors for sharing of
information and enhancing communication. The distribution channel has adopted internet for online order entry and for accessing information regarding orders, inventory, accounts, products and performance.

4.1.1 Research Issue No. 1

The first research issue is about the factors facilitating adoption of internet by the distributors. Technology Acceptance Model (TAM) introduced by Davis (1989) postulates that Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) are primary relevance for computer acceptance behavior. Extension of Technology Acceptance Model (TAM2) developed and tested by Venkatesh and Davis (2000) explains Perceived Usefulness and Usage Intentions in terms of social influence processes and cognitive instrumental processes.

TAM provides the underlying structure for theoretical model for the research issue. The case study has identified three groups of factors viz. Enablers, Motivators and Order Entry Benefits, influencing the adoption of internet by the distributors. Enablers represent the Perceived Ease of Use (PEOU) factors, whereas motivators and order entry benefits represent Perceived Usefulness (PU) factors. TAM2 provides the framework for identifying the antecedents of Enablers, Motivators and Order Entry Benefits. The proposed conceptual model is shown in figure 4.1. The antecedents of these three factors are presented as indicators in the Table 4.1

![Conceptual Model](image)

**Fig 4.1 Conceptual Model for factors facilitating the adoption of internet**

*Source: Developed for this research*
4.1.2 Research Issue No. 2

The second research issue deals with the impact of adoption of internet on the performance of the distributors. Manufacturers are increasingly using internet to communicate better with their partners and improve customer service with online information, ordering and high quality fulfillment. (Joachim, 2000). The internet and e-business technology provide opportunities for the industry to create integrated business practices to lower transaction costs across value chain, increase company's responsiveness, decreasing inventories, and increase quality of customer services to enhance customer satisfaction (AT Kearney, 2000; Majumdar and Gupta, 2001).

As per the case study, the impact of adoption of internet on the performance of the distributors has been quantified as: Enhanced Order Execution Capability, Improved Working Capital Management and Improved Responsiveness. The proposed conceptual model for this issue is given in figure 4.2.

```
Adoption of Internet

  Enhanced Order Execution Capability
  Improved Working Capital Management
  Improved Responsiveness
```

Fig 4.2 Conceptual Model of Benefits of Adoption of Internet

Source: Developed for this research

The summary of the constructs and their indicators, as derived from the case study, is given in Table 4.1.
Table 4.1: Constructs

<table>
<thead>
<tr>
<th>Constructs</th>
<th>Explanation</th>
<th>Indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Adoption of Internet</td>
<td>The degree of usage of the applications by the distributor.</td>
<td>Email usage, Order entry, Tracking order status, Accessing information on stocks, accounts, products, prices and performance</td>
</tr>
<tr>
<td>2. Enablers</td>
<td>Ease of accessing and using the website / ERP.</td>
<td>Quality of internet connection, Ease of accessing and navigating website, Ease of downloading information and Computer literacy of staff.</td>
</tr>
<tr>
<td>3. Motivators</td>
<td>Benefits which motivate the distributors to use internet</td>
<td>Ease of order entry, Availability of latest information, Accuracy and faster availability of information, 24 X 7 access.</td>
</tr>
<tr>
<td>4. Order Entry Benefits</td>
<td>Benefits of online order entry as compared to alternative methods.</td>
<td>Easier order entry, Faster order registration, Order execution priority and Higher accuracy of order entry.</td>
</tr>
<tr>
<td>6. Improved Management of Working Capital</td>
<td>Improved ability to control inventory, payables and receivables within appropriate levels.</td>
<td>Planning of inventory, Disposal of slow moving stocks, Avail cash discounts and performance bonuses and Shorter dispatch to invoicing cycles.</td>
</tr>
<tr>
<td>7. Improved Responsiveness</td>
<td>Improved ability to speedily respond to customers and manufacturers.</td>
<td>Reduced dependency on manufacturer, Reduction in follow-up time, Improved monitoring of business and Faster response to customers.</td>
</tr>
</tbody>
</table>

Source: Developed for this research

4.2 Path Diagrams and Hypotheses:

The two research issues described in the foregoing are represented by path diagrams and the relationship among the constructs hypothesized as indicated below.

Research Issue No.1: What are the factors which have facilitated adoption of internet by the distributors?
Hypothesis H1: Enablers are positively related to the adoption of internet by the distributors.

Hypothesis H2: Motivators are positively related to the adoption of internet by the distributors.

Hypothesis H3: Order Entry Benefits are positively related to the adoption of internet by the distributors.

Research Issue No 2: *What is the impact of adoption of internet on the operational parameters of the distributors?*
Hypothesis H4: Adoption of internet is positively associated with enhancement of order execution capability of distributors.

Hypothesis H5: Adoption of internet is positively associated with improved management of working capital by the distributors.

Hypothesis H6: Adoption of internet is positively associated with improved responsiveness of the distributors.

4.3 Chapter Summary

Indian LV switchgear manufacturers have deployed internet for establishing connectivity with the members of their distribution channels for sharing information and enhancing communication.

The conceptual models around the two research issues, facilitating factors for adoption of internet and the impact of adoption on performance of distribution channel, have been developed and hypotheses derived. The researcher proposes to test and validate these models by Structural Equation Modeling in the next Chapter.