Chapter 3

Review of Literature and Theoretical Frameworks

3.1 Introduction

In this chapter, review of literature on B2B e-marketplace is presented to understand the concept and transaction mechanisms in the B2B e-marketplace. The theoretical frameworks that are relevant in the context of adoption of innovation and frameworks used in the study are discussed. Findings of the previous empirical studies on electronic commerce adoption and e-marketplace both in the context of large organizations and MSMEs are discussed. Based on the review of literature, factors influencing the adoption of B2B e-marketplace are identified and hypotheses are developed.

According to Driedonks (2005), research on electronic markets can be divided into four streams. The first stream analyses electronic markets in comparison to other electronic co-ordination mechanisms. The second stream analyses electronic markets in comparison to non-electronic markets. The third stream of research looks at electronic markets from an institutional point of view such as roles and business functions. The fourth stream of research investigates factors that drive or hinder adoption of market systems. In the context of the present study, literature review of third and fourth streams as described above is undertaken to understand factors influencing adoption and also to identify benefits and barriers.

3.2 B2B e-marketplace: Business Models, Benefits and Barriers

In the past few decades, developments in information and communication technologies have resulted in increased use of information systems that facilitate communication and collaboration across the boundaries
of the organisations. Organisations use ICT solutions to conduct transactions with their customers, suppliers and other trading partners. ICT solutions that facilitate collaboration between two organisations are termed as inter-organisational systems (IOS) or inter-organisational information systems (IOIS). The term inter-organisational system was first introduced by Barrett and Konsynski (1982). There are several forms of inter-organisation systems in use such as Electronic Data Interchange (EDI), Supply Chain Management solutions, custom made solutions based on industry and B2B electronic marketplace.

Based on relationships between buyers and sellers, Choudhury (1997) identified three types of IOIS: electronic dyads, multilateral IOISs and electronic monopolies. Electronic dyads are bilateral IOIS where buyer (seller) establishes individual logical links with each selected number of sellers (buyers) for a product and EDI is an example of such a system. Multilateral IOIS allows a firm to communicate with large, potentially unlimited, number of trading partners over a single logical inter-organisational link. Example of such a system is B2B e-marketplace. Electronic monopolies are IOIS that support a sole source relationship for a product (or set of products) and is a special case of electronic dyads (Choudhury, 1997).

3.2.1 Concept and characteristics of B2B e-marketplace

Bakos (1991) define electronic marketplace (or electronic market system or simply e-marketplace) as an inter-organisational information system that allows the participating buyers and sellers to exchange information about prices and product offerings. The firm operating the system is referred to as intermediary, which may be a market participant- a buyer, or seller, an independent third party, or a multi-firm consortium (Bakos, 1991).

The role of e-marketplace is to establish a bilateral relationship between the buyer and the seller. As an economic institution, e-marketplace facilitates exchange of information, goods, services and payments and
provides an infrastructure – defining protocols and processes that rule the interaction (Madanmohan, 2005).

Kaplan and Sawhney (2000) used the term e-hubs to define neutral internet-based intermediaries. Even though the terms e-marketplaces, e-hubs, and exchanges are sometimes used interchangeably, few researchers define an exchanges and e-hubs differently. Gulledge (2002) defines it as follows

“An exchange is more comprehensive than a hub. A hub is typically focused on the execution of release or delivery orders against a pre-existing contract. An exchange may be used to establish a contract (e.g. through an auction) or to facilitate spot purchasing (e.g. from a catalog)”.

In the present study, term B2B e-marketplace is used to refer to exchanges or internet portals that facilitate all types of transactions between multiple buyers and sellers.

Bakos (1991) identify five major characteristics of electronic marketplaces

1. An electronic marketplace can reduce customer costs of obtaining information about the prices and product offerings of alternative suppliers as well as supplier’s costs of communicating information about their prices and product characteristics to additional customers.
2. The benefits realized by individual participants in an electronic marketplace increase as more organisations join the system.
3. Electronic marketplaces can impose significant switching costs on their participants.
4. Electronic marketplaces typically require large capital investments and offer substantial economies of scale and scope.
5. Potential participants in electronic marketplaces face substantial uncertainty regarding the actual benefits of joining such a system. Occasionally this uncertainty remains even after an organization joins the system.
3.2.2 Classification and Business Models of B2B e-marketplace

Several business models of e-marketplace exist depending upon their services provided, electronic trading process supported, the ownership pattern, the type of products traded (direct or indirect) and the industry it operates. B2B e-marketplaces have several revenue models such as advertising, transaction fees, software/technology licensing fees, subscription fees, hosting and integration services fees, consultancy fees etc. Successful e-marketplaces usually have multiple revenue options.

Electronic marketplaces can be classified based on ownership as buyer hosted, seller hosted, neutral and industry or consortium hosted (Premkumar, 2003b). Neutral e-marketplaces are owned by an independent intermediary.

According to Kaplan and Sawhney (2000), neutral e-hubs, by definition face chicken and egg problem, in that they need to get buyers as well as suppliers into their system without compromising on neutrality. The benefit neutral hubs have is that they are true “market makers” because they bring both buyers and sellers together.

Neutral e-hubs are most likely to succeed in markets that are fragmented on both the buyer and seller sides. In such markets, neutral e-hubs add value by reducing transaction costs (aggregating) and improving matching (providing liquidity) (Kaplan and Sawhney, 2000). Figure 3.1 shows the business model of neutral B2B e-marketplace.

According Madanmohan (2005), buyer owned marketplaces are more likely to be successful when there are few large buyers in that industry and similarly for supplier/seller owned marketplaces. He argued that markets with history of collaboration, offer process focused e-marketplaces competitive advantage over activity focused e-marketplaces. In his study, he found that e-marketplaces that enhanced the value but preserved the opaqueness of the market seem to succeed. He also argued that biased (buyer, seller or consortia owned) marketplaces are in a better position to emerge as
successful e-marketplaces since they are guaranteed to receive a large volume of their owners transactions helping them achieve sufficient liquidity.

![Diagram of B2B e-marketplace with Internet, Buyer 1, Buyer 2, Buyer 3, Seller 1, Seller 2, Seller 3, Auctions, RFQ, Electronic Catalogue, Consulting/EC Solutions, Credit Verification, Transaction Processing]

Figure 3.1: Business model of neutral B2B e-marketplace

The key to a successful seller oriented e-marketplace is to provide multiple sellers a forum to present their catalogues and conduct in-trade with as many buyers as possible. Marketplaces that have focused on business processes have endured and neutral marketplaces are successful where buyers and sellers are highly fragmented (Madanmohan, 2005).

According to Choudhury (1997), as multilateral IOIS (B2B e-marketplace) provide greatest benefit for a spot market exchange process as there is no ongoing relationship between buyer and seller and each transaction pairing is individually determined.

Based on the types of products and industry segments they cater, e-marketplaces are classified as vertical or horizontal. Vertical e-marketplaces
focus on products and services pertaining to one particular industry such as Pharma, Textile and the like. They find business opportunities in some inherent problems in the industry and intervene by adding value to existing activity in the value chain. Some of the Indian vertical e-marketplaces are Fibre2fashion.com and Chemicalregister.com. Fibre2fashion.com is one of the leading e-marketplace in the apparel and textile industry providing services for manufacturers as well as service providers in the industry. Horizontal e-marketplaces are those e-marketplaces which facilitate companies from multiple industries to participate and conduct transactions on the internet. Some of the popular horizontal e-marketplaces in India are Indiamarkets.com, Indiamart.com, Tradeindia.com, Trade2gain.com etc. The vertical portals have a better opportunity for providing tailor made solutions for business organizations in the industry and addressing their concerns (Upadhyaya et al., 2009).

Kaplan and Sawhney (2000) classified B2B e-marketplaces based on what businesses buy (manufacturing inputs or operating inputs) and how they buy (systematic sourcing versus spot sourcing) into four categories as follows:

- MRO hubs (operating supplies, systematic sourcing, horizontal focus)
- Yield Managers (operating supplies, spot sourcing, horizontal focus)
- Catalog hubs (manufacturing inputs, systematic sourcing, vertical focus)
- Exchanges (manufacturing inputs, spot sourcing, vertical focus)

B2B e-marketplaces also differ in their pricing mechanism: in some prices are fixed in electronic catalogues, while in others prices are established dynamically through seller or buyer auctions (Grieger, 2003). Electronic processes used by the intermediary to establish the price of the products exchanged on the electronic platform or price discovery strategies commonly used today by e-marketplaces are: electronic multi-vendor catalogue, electronic auction, the electronic Request for Proposal (RFP), electronic exchange, and dynamic pricing strategy (Hadaya, 2004). Electronic Marketplaces offer diverse services and support activities of the supply chain...
either by enabling a particular transaction electronically or by aggregating information from several sources. Some of the services offered by B2B e-marketplaces are electronic catalogue, content management, hosting services, transaction processing, credit verification, insurance, financing, logistics, system integration and consulting services.

Credit rating service provided by the e-marketplace helps the firms to get a credit rating through a third party credit rating firm or through e-marketplace itself to establish trust among business partners. For example, Indiamarkets.com a leading horizontal e-marketplace has an alliance with Dun and Bradstreet, India, to provide credit rating to the participating companies. On the other hand, electronic marketplaces such as IndiaMart.com provide authentication and verification services on their own through IndiaMart Trustseal service (Upadhyaya et al., 2006).

In India, a number of e-marketplaces with infomediary model have emerged such as Indiamart.com, Tradeindia.com, and Fibre2fashion.com that act as B2B directories. They provide information on products but actual transactions are enabled offline. Such e-marketplaces operate primarily on advertising and subscription based revenue. They provide services such as electronic catalogue and hosting services, buyer and seller postings, provide information on latest industry trends, new technologies, trade fairs, facilitate in disposing excess inventory, used machinery. There are very few e-marketplaces such as Indiamarkets.com, metaljunction.com that are more focused towards buyers and facilitate transactions such as auctions and reverse auctions.

3.2.3 Business value of B2B e-marketplace to Buyers and Sellers

The business value provided by electronic marketplace to buyers is well researched. However, there is a debate in the literature on the value provided to the sellers. B2B e-business, in general, can result in lower purchase costs, reduced inventory and higher efficiency in logistics for buyers (Baron et al., 2000).
According to Bakos (1991), the major impact of electronic market systems is that they typically reduce the search costs buyers must pay to obtain information about the prices and product offerings. They ultimately increase the efficiency of inter-organisational transactions, in the process affecting the market power of buyers and sellers. Buyers are benefited in two ways: first, they enjoy lower prices because of increased competition among sellers; second, they enjoy allocational efficiencies from being better informed about available products, thus making purchases to suit their needs.

Kaplan and Sawhney (2000) observed that e-hubs create value by two ways – Aggregation and Matching. Aggregation brings a large number of buyers and sellers under one roof and reduce transaction costs by “one stop shopping”. Aggregation works well where cost of processing purchase order is high, products are specialised, suppliers are highly fragmented, purchasing done on the basis of pre-negotiated contracts. Matching mechanism brings buyers and sellers together to negotiate prices on dynamic real time basis. It works best when products are commodities and are standardized, trading volumes are high, demand and prices are volatile.

Malone et al. (1987) suggest that IOIS can offer three kinds of transaction cost efficiencies: electronic brokerage, electronic communication and electronic integration. Choudhury (1997) argue that a multilateral IOIS (B2B e-marketplace) is designed to maximize electronic brokerage benefits and reduce search costs to a buyer(seller) of finding the optimal source for a product it is trying to buy (sell).

It is evident in the literature that this business value is at the cost of the sellers. Electronic marketplaces usually favor the buyers by lowering buyer search costs and thus reducing seller’s profits and market power (Bakos, 1991). The best strategy for sellers may be to control the type of system and emphasise product rather than price information, buyers will use the system to locate the most appropriate product in the market (Bakos, 1991).

Since customers of B2B marketplaces tend to focus on getting the best price, sellers face cutthrot competition and pressures to standardize...
products so that they are more directly comparable to the competition's—thus diminishing the distinctiveness of the brand (Baumgartner et al., 2001). B2B marketplaces also erode the direct relationships that sellers had with their customers. Many sellers have therefore, avoided these marketplaces, preferring instead to establish bilateral e-trade relations (Baumgartner et al., 2001).

There are, however, few motivations to use B2B e-marketplaces for sellers. For sellers, some of the benefits are lower marketing costs and increased sales (Baron et al., 2000), capability to expand their markets, acquire new customers, service customers at a lower cost, reduction of their dependence on sales forces, elimination of traditional market intermediaries and elimination of continually producing expensive catalogs (Loukis et al., 2011). There are greater opportunities for suppliers and buyers to establish new trading partnerships, either within their supply chain or across supply chains. The potential advantages to be gained by joining an e-marketplace will vary between industries and businesses, and indeed between buyers and sellers.

Stockdale and Standing (2004) identified potential benefits of B2B e-marketplaces in the context of MSMEs. Several benefits can be achieved by SMEs by participating in e-marketplace such as access to wide range of markets, greater potential for partnerships, 24/7 accessibility, enhanced information exchange, improved customer services, ease of updating catalogues/product information and distribution, lower search and transaction costs, ability to enter supply chain of larger companies.

MSMEs can use B2B e-marketplaces in several ways. As a buyer, they can search for new suppliers, post buying requests and search for new/used investment goods. As a seller, they can use e-marketplace to find new leads, put new and used products for sale. An MSME that is selling to a large buyer may require to participate in reverse auctions or to exchange data electronically to save costs (emarketservices.com). As using B2B e-marketplaces require low technical know-how, it is highly relevant to small
firms to search suppliers or develop leads. Services such as credit rating help firms to have better brand image on the electronic marketplaces.

Rask and Kragh (2004) identify four motives for e-marketplace participation by buyers and suppliers:

- **Exploration**: Initial e-marketplace takes place on trial basis and decision to continue or discontinue participation is a direct result of actual experiences. Decisions are internally motivated.

- **Legitimacy**: E-marketplace participation is motivated primarily by external drivers rooted in company’s relationships with other companies and happens as a consequence of ongoing political negotiations rather than careful planning.

- **Efficiency**: The decision to participate in e-marketplace is driven by internally generated wish to obtain company-specific advantages and is made as a consequence of the careful evaluation of expected outcome.

- **Positioning**: Industry specific competitive conditions are the driving forces behind the decision to participate in e-marketplaces. Decisions are planned and taken with the purpose of improving the competitive position of the company.

Rask and Kragh (2004), based on 41 case studies in 12 European countries found that buyers tend to be proactive and planning oriented, while suppliers are driven by external forces.

### 3.2.4 Barriers to use B2B e-marketplace by MSMEs

Although B2B e-commerce solutions are claimed to create value for firms, the record shows that firms have been slow in adopting these solutions. Experts opine that some of the causes for slow adoption of B2B electronic commerce are lack of trust, new B2B startups unable to bring enough buyers and sellers to same platform, enterprises reluctant to commit resources to
new B2B startups, lack of preparedness of the market and incompatible computer systems (Dai and Kauffman, 2002). The slow progress is to a large extent due to a variety of technological, organizational, and legal factors that diminish the value offered by B2B e-marketplaces, and therefore, reduce both the number of buyers and sellers participating in them, and the number & value of the electronic transactions they perform (Loukis et al., 2011).

Lee and Clark (1997) identify three types of adoption barriers that prevent electronic market systems success: lack of adequate electronic product description, thinness of the market (lack of critical mass) and resistance to change (inertia of old ways of doing business).

In the small firms context, several studies (Gulledge, 2002; Stockdale and Standing, 2004; Gengatharen and Standing, 2005) have researched on barriers to e-marketplace adoption. Some of the major challenges faced by SMEs in adopting e-commerce stem from a lack of technological expertise and uncertainty about the benefits offered by e-commerce (Gengatharen and Standing, 2005).

Gulledge (2002) identify two barriers to use e-marketplaces by suppliers/SMEs: profit squeeze and technology squeeze. Profit squeeze refers to reduction in profit margins which will result in suppliers preferring traditional channels where they can better manage their profit margins. “Technology squeeze” refers problems of suppliers in dealing with plethora of incompatible standards and technologies that may lead to frustration.

Stockdale and Standing (2004) identify internal and external barriers to adopt B2B e-marketplace by MSMEs. External barriers are lack of understanding of SME needs by the e-marketplaces, no common technology standards, and lack of e-competence of industry sector. Internal barriers are lack of understanding of e-environment by SMEs, financial constraints, lack of familiarity with global trading mechanisms, unable to identify benefits (Stockdale and Standing, 2004).
Macgregor and Vrazalic (2005) classify barriers to e-commerce adoption by SMEs into two categories: “too difficult to use” and “not suitable”.

3.3 Theoretical Frameworks to understand adoption of B2B e-marketplaces

To understand various determinants of electronic marketplace adoption, in this section various theoretical frameworks on technology adoption in the literature are reviewed. There are several studies that use theories on innovation adoption at the individual level such as Technology Acceptance Model (TAM) (Davis, 1989), Theory of Planned Behavior (TPB) (Ajzen, 1991) and Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003).

The factors influencing individual adoption of technology differ significantly from the organisation’s adoption of technology as there are several internal and external factors that would influence adoption. Some of the firm level theoretical frameworks on adoption are Diffusion of Innovation Theory (Rogers, 1995), Technology, Organisation and Environment framework (Tornatzky and Fleischer, 1990), Institutional theory (Scott and Christensen, 1995; Scott 2001) and Transaction cost theory (Coase (1937, 1991); Williamson (1975,1985)). Several studies have been undertaken in IS field using these theoretical frameworks. For more complex new technology adoption, it is important to combine more than one theoretical model to achieve a better understanding of IT adoption phenomenon.

In the present context of organization adoption of e-marketplace, constructs from firm level adoption theoretical frameworks have been used. These theories provide us frameworks to understand the adoption from broadly four dimensions: organization factors, environmental factors, technology/B2B e-marketplace related factors and product characteristics. Brief discussion on these theories is presented in the following sections.
3.3.1 Diffusion of Innovation Theory

Diffusion of Innovations (DOI) theory is concerned with the manner in which a new technological idea, artifact or technique, or a new use of an old one, migrates from creation to use. According to DOI, technological innovation is communicated through particular channels, over time, among the members of a social system. The stages through which a technological innovation passes are:

- **Knowledge** (exposure to its existence, and understanding of its functions);
- **Persuasion** (the forming of a favorable attitude to it);
- **Decision** (commitment to its adoption);
- **Implementation** (putting it to use); and
- **Confirmation** (reinforcement based on positive outcomes from it).

Rogers (1995) proposed that adoption behavior is influenced by beliefs related to relative advantage, compatibility, complexity, trialability, and observability.

**Relative Advantage** is defined as the degree to which an innovation is perceived as being better than the idea, product or service it supersedes. The relative advantage of an innovation is highly innovation-specific (Rogers, 1995).

**Complexity** is defined as the degree to which innovation is perceived as difficult to understand and use (Rogers, 1995).

**Compatibility**: The degree to which innovation is perceived as being consistent with existing values, past experiences, and needs of potential adopters. (Rogers, 1995)

**Trialability**: The degree to which innovation may be experimented with, on a limited basis. (Rogers, 1995)
**Observability:** The degree to which the benefits of an innovation are visible to others. (Rogers, 1995)

The **Technology Acceptance Model** (TAM) by Fred Davis (Davis, 1989) has two constructs that is similar to DOI constructs. It models how users come to accept and use a technology. The two constructs of TAM are perceived usefulness (PU) or the degree to which a person believes that using a particular system would enhance his or her job performance and Perceived ease-of-use (EOU) or the degree to which a person believes that using a particular system would be free from effort. Perceived usefulness in TAM is equivalent to Rogers’ relative advantage in DOI while perceived ease of use is equivalent to complexity (EOU suggests that low cognitive effort is required for using the innovation, whereas complexity connotes the opposite).

The importance of perceived ease of use and perceived usefulness/benefits/relative advantages in adoption of electronic business has been identified an important factor influencing adoption of innovation (Chong and Pervan, 2007; Mehrten et al., 2001; Grandon and Pearson, 2004b).

The DOI theory also found that individual characteristics, internal characteristics of organizational structure, and external characteristics of the organization are important antecedents to organizational innovativeness.

### 3.3.2 Institutional Theory

Institutional theory emphasizes that institutional environments are crucial in shaping organizational structure and actions (Scott and Christensen, 1995; Scott, 2001). According to the institutional theory, organizational decisions are not driven purely by rational goals of efficiency, but also by social and cultural factors and concerns for legitimacy. Institutional theory has traditionally been concerned with organizational legitimacy and how the need for legitimacy fosters the emergence of norms and practices that prove resistant to change (Scott, 2001).
Legitimacy is construed as "a generalized perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially construed system of norms, values, beliefs, and definitions" (Suchman, 1995). If enhancing organizational legitimacy is the motive for joining an electronic market, an organization achieves its objective just by entering the market (Grewal et al., 2001). In other words, by virtue of a firm’s entry into an electronic market, it is in a position to assert to its stakeholders that it is technologically advanced and ready for the challenges of the information age (Grewal et al., 2001).

The theory claims that firms become more similar due to isomorphic pressures and pressures for legitimacy (Dimaggio and Powell, 1983). This means that firms in the same field tend to become homologous over time, as competitive and customer pressures motivate them to copy industry leaders. For example, rather than making a purely internally driven decision to adopt e-commerce, firms are likely to be induced to adopt and use e-commerce by external isomorphic pressures from competitors, trading partners, customers, and government (Oliveira and Martins, 2011).

Therefore, the institutional theory can explain how behavior of external forces such as competitors, trading partners, can influence organization adoption of an innovation. Institutional theory identifies three key pressures: mimetic, coercive and normative pressures that can lead organizations to conform to the practices of other organizations (Dimaggio and Powell, 1983).

**Mimetic Pressures** is nothing but bandwagon effect. It implies that over time organizations become more similar to other organizations and follow best practices adopted by other organizations. (Dimaggio and Powell, 1983). Mimetic isomorphism, seen as the tendency of firms to mimic or copy the actions of those organizations that are perceived to have high levels of legitimacy, was therefore, identified as the institutional pressure most likely to contribute to continuance inertia (Dimaggio and Powell, 1983). An organization will imitate the actions of other structurally equivalent organizations because those organizations occupy a similar economic
network position in the same industry and, thus, share similar goals, produce similar commodities, share similar customers and suppliers, and experience similar constraints (Burt, 1987). Mimetic behavior can be the optimal choice when an organization is seeking to avoid risk, particularly given that following the lead of another organization represents a decision to adopt a course of action that has already proven successful (Kondra and Hinings, 1998).

**Coercive pressures** refer to pressures exerted by organisations upon which the organisations are dependent and by cultural expectations in the society within which they are dependent (Dimaggio and Powell, 1983). In the context of EDI adoption, Teo et al. (2003) identified coercive pressures that stem mainly from dominant suppliers, dominant customers, and the parent corporation. Dependence on customers arises when organizations rely heavily on customers that account for much of their sales and customers that have alternative suppliers (Teo et al., 2003). Dependence on suppliers arises when organizations are unable to switch to alternative suppliers, thereby relying on existing suppliers that account for much of their purchases (Teo et al., 2003).

**Normative pressures** refer to pressure exerted by members of social networks (trade associations, professional associations, accreditation agencies and channel members). Strategic processes taken by organisations are subject to value and norms shared among members of social networks (Dimaggio and Powell, 1983). According to social contagion literature, a focal organization with direct or indirect ties to other organizations that have adopted an innovation is able to learn about that innovation and its associated benefits and costs, and is likely to be persuaded to behave similarly (Burt, 1982). These normative pressures manifest themselves through dyadic inter-organizational channels of firm-supplier and firm-customer (Burt, 1982) as well as through professional, trade, business, and other key organizations (Powell and Dimaggio, 1991).

Teo et al. (2003) identified in the context of FEDI adoption, normative pressures faced by an organization stand to be increased by a higher
prevalence of adoption of FEDI among its suppliers and customers, and by its participation in professional, trade, or business organizations that sanction the adoption of FEDI (Teo et al., 2003).

Triandis (1971) identified that when a behavior is relatively new, the influence of social norms and affect outweigh economic variables.

3.3.3 Transaction Cost Theory

Transaction Cost Analysis (TCA) has gained attention from IT researchers studying inter-organisation systems. While institutional theory emphasizes on legitimacy orientation of organization, transaction cost theory focuses on efficiency orientation. Transaction cost analysis arises from early works of Coase (1991) and Williamson (1975, 1985). One of Coase’s (1937) initial propositions was that firms and markets are alternative governance structures that differ in their transaction costs. Specifically, Coase proposes that under certain conditions, the costs of conducting economic exchange in a market may exceed the costs of organizing the exchange within a firm. Williamson (1975) has augmented Coase’s initial framework by suggesting that transaction costs include both the direct costs of managing relationships and the possible opportunity costs of making inferior governance decisions. Williamson’s micro analytical framework rests on the interplay between two main assumptions of human behavior (i.e.; bounded rationality and opportunism) and two key dimensions of transactions (i.e., asset specificity and uncertainty) (Rindfleisch and Heide, 1997).

Bounded rationality simply means that certain physical limits exist on the human ability to process information (Barney, 1990). Opportunism is the assumption that, given the opportunity, decision makers may unscrupulously seek to serve their self-interests, and that it is difficult to know a priori who is trustworthy and who is not (Barney, 1990).

TCA’s key dependent construct is governance structure and independent constructs are asset specificity, environmental uncertainty, and behavioral uncertainty. Transaction cost theory identifies uncertainty and
asset specificity as a key antecedent of an organization choice of governance structures (Rindfleisch and Heide, 1997).

 Transaction cost analysis has been used in several studies related to inter-organisational relationships and the independent variables have been operationalized in various ways in the literature depending on the context. Choudhury (1997) proposed two transaction characteristics as determinants of choice of IOIS: demand uncertainty and market variability. Malone et al. (1987) proposed that transactions for high asset-specificity and/or complexity of description will be supported by electronic hierarchies while transactions for other products will be supported by electronic markets. Contrary to Malone et al. (1987), Choudhury (1997) in their study of aircrafts parts industry, found that small portion of transactions are conducted over electronic markets in spite of the parts having low asset specificity and complexity of description. This indicates that there is need to investigate product characteristics and its impact on B2B trading in different contexts.

3.3.4 Technology Organisation and Environment Framework

The Technology Organisation and Environment (TOE) framework was developed by Tornatzky and Fleischer (1990). The framework identifies three aspects that influence the process of organisation adoption of technological innovation: technological context, organizational context, and environmental context (as shown in Figure 3.2).

- **Technological context** describes both the internal and external technologies relevant to the firm. These include existing technologies and current practices inside the firm, as well as the pool of available technologies in the market.
- **Organizational context** refers to descriptive measures about the organization such as scope, size, and managerial structure and internal resources, availability of slack resources.
- *Environmental context* is the arena in which a firm conducts its business—its industry, competitors, and dealings with the government (Tornatzky and Fleischer, 1990).

![Figure 3.2: Technology, Organisation and Environment Framework (Tornatzky and Fleischer, 1990)](image)

The TOE framework is consistent with Roger’s Diffusion of Innovation theoretical analysis. In the context of inter-organisational systems, several studies have used TOE framework to understand organization adoption of IOS (Iacovou et al., 1995; Kuan and Chau, 2001, Chong et al., 2009) and electronic business (Zhu et al., 2003; Oliveira and Martins, 2010).

### 3.4 Factors influencing adoption of B2B e-marketplace by MSMEs

Electronic business, or e-business, designates the use of Internet and digital technology to execute all of the activities in the enterprise. E-business includes activities for the internal management of the firm and for coordination with suppliers and other business partners. It also includes electronic commerce, or e-commerce (Laudon and Laudon, 2006).
Electronic commerce is the part of electronic business that deals with the buying and selling of goods and services electronically with computerized business transactions using the Internet, networks, and other digital technologies. It also encompasses activities supporting those market transactions, such as advertising, marketing, customer support, delivery, and payment (Laudon and Laudon, 2006).

As e-marketplace is a form of electronic business, literature on adoption of electronic business both in the context of large and small firms is reviewed to understand the factors that would influence adoption of B2B e-marketplace. In the present study, adoption refers to the range of behavior of the firm from the decision to use B2B e-marketplace to full and regular use of it. Non-adoption refers to the decision not to use B2B e-marketplace at all. This definition is consistent with definition used by Driedonks et al. (2005).

The literature review shows that it is difficult to develop a unifying, one-size-fits-all theory of innovation adoption. Theories and frameworks probably need to be tailored to the type of innovation and its adoption context (Molla and Licker, 2005). To identify determinant factors influencing e-marketplace adoption by MSMEs, a detailed review of literature in the areas on B2B electronic business, electronic commerce, inter-organisational systems and electronic marketplaces was undertaken. Studies related in the context of large organisations as well as small firms were reviewed and is presented in the following sections.

3.4.1 Organisation adoption of e-business: Findings from related studies

Several studies in electronic business are found in the literature using theoretical frameworks of Diffusion of Innovation and TOE framework. Few studies such as Teo et al. (2003) have used institutional theory to identify factors that influence adoption of inter-organisation systems. Findings of the studies on electronic business adoption context has been summarised in Table 3.1.
### Table 3.1: Chronology of contemporary literature on organisation adoption of e-business

<table>
<thead>
<tr>
<th>Author</th>
<th>Context and Scope</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teo et al. (2003)</td>
<td>Intention to adopt Financial EDI from 222 non-adopters in Singapore</td>
<td>Findings reveal that all three institutional pressures--mimetic pressures, coercive pressures, and normative pressures--had a significant influence on organizational intention to adopt FEDI.</td>
</tr>
<tr>
<td>Moodley (2003)</td>
<td>Adoption of e-commerce among 120 firms in South African manufacturing sector</td>
<td>B2B e-commerce is in embryonic stage in the South African manufacturing sector. The ability to realise efficiency gains in the B2B electronic marketplace will largely hinge on the climate of confidence and trust that businesses are able to create in their relations with their suppliers and customers.</td>
</tr>
<tr>
<td>Zhu et al. (2004)</td>
<td>612 firms across 10 countries in Financial services industry</td>
<td>Based technology organization environment framework, this study identifies that technology readiness, financial resources, global scope and regulatory environment influences e-business value. Competitive pressure influences adoption but e-business value is associated with organizational resources.</td>
</tr>
<tr>
<td>Teo and Ranganathan (2004)</td>
<td>B2B E-commerce adoption in 108 Firms in Singapore</td>
<td>Found moderate level of adoption of B2B electronic commerce. Problems to measure benefits, fear of opening corporate systems to suppliers &amp; customers and not enough time to develop new skills for b2b efforts emerged as a top three challenges in deployment.</td>
</tr>
<tr>
<td>Moodley and Morris (2004)</td>
<td>Empirical research based on 32 interviews of South African Garment Export producers</td>
<td>Low ecommerce adoption and use. Trading relationships involve complex information exchange and highly personalized products to be developed. B2b ecommerce was not effective in reducing transaction costs or in opening up new opportunities.</td>
</tr>
<tr>
<td>Author</td>
<td>Context and Scope</td>
<td>Findings</td>
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<tr>
<td>-----------------</td>
<td>-----------------------------------------------------------------------------------</td>
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</tr>
<tr>
<td>Molla and Licker (2005b)</td>
<td>Empirical research of 150 south African firms</td>
<td>Proposes and empirically tests a model based on perceived organization e-readiness and perceived environmental e-readiness that encompasses innovational, managerial, organizational and environmental characteristics as determinants of e-commerce adoption and institutionalization.</td>
</tr>
<tr>
<td>Kramer et al. (2005)</td>
<td>Empirical study of 2139 firms in 10 countries</td>
<td>They find that globalization leads to both greater scope of e-commerce use and improved performance, measured as efficiency, coordination, and market impacts. Scope of e-commerce use also leads to greater firm performance of all three types. Globalization has differential effects on B2B and B2C e-commerce, however, such that highly global firms are more likely to do B2B but less likely to do B2C</td>
</tr>
<tr>
<td>Hsu et al. (2006)</td>
<td>Empirical research of 294 large firm in United States</td>
<td>Pressure from trading partner is an important driver for diversity of e-business use and government pressure is important driver of e-business volume</td>
</tr>
<tr>
<td>Zhu et al. (2006)</td>
<td>Empirical study of 1857 firms in 10 countries</td>
<td>Using TOE framework they develop a model to identify key antecedents to e-commerce adoption in three assimilation stages: initiation, adoption, routinization. Their key findings are: competition positively affects initiation and adoption, but negatively impacts routinization, technology readiness is the strongest factor facilitating assimilation in the developing countries</td>
</tr>
<tr>
<td>Chong et al. (2009)</td>
<td>Collaborative commerce adoption in 109 Malaysian firms in electronics and electrical industry</td>
<td>Information sharing culture factor was found to have the strongest influence on the adoption of e-commerce, followed by organization readiness and external environment. Contrary to other technology adoption studies, this research found that innovation attributes have no significant influence on the adoption of e-commerce.</td>
</tr>
</tbody>
</table>
We can find three groups of factors in the literature: technology factors, organizational (internal to firm) factors, environmental (external to firm) factors that are found to have influence on adoption of electronic business.

In the developing countries context, Molla and Licker (2005b) developed a model to study electronic commerce adoption among organisations (shown in Figure 3.3). Molla and Licker (2005b) identified that Perceived Organization E-Readiness (POER) and Perceived Environment E-Readiness (PEER) influence initial adoption and institutionalization of electronic commerce in organisations.

![Diagram](image)

**Figure 3.3:** Molla and Licker (2005b) model of e-commerce adoption for organisations in the developing countries

There is evidence in literature that there is significant difference in e-business adoption patterns among small and large firms (Macgregor and Vrazalic, 2005). Small firms possess unique set of characteristics which defines their decision making process. Small businesses have a centralised management and small business owners have a strong influence in the decision making process; decision making in small businesses are intuitive,
rather than based on detailed planning and exhaustive study (Bunker and MacGregor, 2000). Small businesses have lower control over their external environment than larger businesses, and therefore, face more uncertainty (Hill and Stewart, 2000)

Small firms have narrow product/service range (Bunker and MacGregor, 2000), and are not interested in the larger market share (MacGregor et al., 1998). Small firms usually survive by having few large customers and in B2B transactions long term buyer supplier relationships plays an important role (Grey et al., 2005). Long term relationship based contracts in B2B transactions provides benefits such as reduction in transaction and agency costs, improved information sharing for production co-ordination, customized pricing and price stickiness (Grey et al., 2005).

In the small firms context, one of the earliest study was the model developed by Iacovou et al. (1995). They developed a model to study EDI adoption among small firms as shown in Figure 3.4.

![Figure 3.4: Iacovou et al. (1995) model of EDI adoption in small firms](image-url)
Iacovou et al. (1995) found that there was positive relation between perceived benefits and adoption of EDI, organizational readiness and adoption were not strongly related and external pressure was strongest explanatory variable influencing small firms to adopt EDI.

EDI adoption is usually initiated by the large buyer to streamline its operations with suppliers, therefore, the findings of the study is not surprising. Iacovou et al. (1995) classified adopters into different categories such as unprepared adopter, ready adopter, coerced adopter and unmotivated adopter based on these factors.

In the context of small firms, several studies have been conducted on adoption of e-business. Brief summary of the studies are presented in Table 3.2. The studies on small firms adoption on electronic business have primarily focused on (a) Identifying factors that influence adoption (b) Identifying drivers/enablers and barriers/inhibitors to electronic business (c) e-commerce usage levels and patterns.

Most of the studies have identified external pressure as an important driver to adopt internet and electronic commerce among SMEs (Iacovou et al., 1995; Mehrtens et al., 2001; Grandon and Pearson, 2004a; Looi, 2005) and have reported limited use of electronic business among small firms (Beveren and Thompson, 2002) and limited benefits of use of electronic business (Al-Qirim, 2006).

Levy et al. (2005) found in their study of UK SMEs that strategic intent influences the decision to invest in e-business and those SMEs that are remaining in the existing markets are the least likely to invest. They find that product innovation rather than market penetration drives SMEs to invest in e-business. A qualitative study by Stockdale and Standing (2004), identified benefits and barriers to adopt B2B e-marketplace in Australia as discussed in section 3.2.3 and 3.2.4.
Table 3.2: Chronology of contemporary literature on e-business adoption by small firms

<table>
<thead>
<tr>
<th>Author</th>
<th>Context and Scope</th>
<th>Findings</th>
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<tbody>
<tr>
<td>Iacovou et al. (1995)</td>
<td>EDI adoption among SMEs in British Columbia through in-depth case studies of seven small firms</td>
<td>Developed a model based on three factors: organization readiness, external pressures and perceived benefits to study EDI adoption among small firms.</td>
</tr>
<tr>
<td>Mehrten et al. (2001)</td>
<td>Internet adoption among SMEs</td>
<td>Identified perceived benefits, organization readiness and external pressure as factors that influence SME decision to adopt internet.</td>
</tr>
<tr>
<td>Korchak and Rodman (2001)</td>
<td>E-business adoption among 114 US small manufacturers</td>
<td>Larger employee sized SMEs adoption of e-business higher than their smaller counterparts. SMEs segmented to disengaged SMEs, slow adopters, progressive SMEs and advanced SMEs.</td>
</tr>
<tr>
<td>Daniel and Wilson (2002)</td>
<td>E-commerce adoption among 678 UK SMEs</td>
<td>Competitive pressure was main reason for adopting e-commerce by UK SMEs. Information sharing and communication were found to be main factors where SMEs were finding the maximum benefit.</td>
</tr>
<tr>
<td>Beveren and Thompson (2002)</td>
<td>E-commerce use in 179 Australian SMEs</td>
<td>Low e-commerce use among SMEs and firm size important factor influencing adoption of e-commerce</td>
</tr>
<tr>
<td>Rao et al. (2003)</td>
<td>Qualitative study of Electronic commerce development in the context of US</td>
<td>Identified four stages: presence, portals, transaction integration and enterprise integration in SME adoption of e-commerce and identified barriers and facilitators in each stage</td>
</tr>
<tr>
<td>Grandon and Pearson (2004)</td>
<td>E-commerce adoption in 83 SMEs in Chile</td>
<td>Chile SMEs receptive to adopt e-commerce and possess financial and technological resources to implement it, perceive ecommerce compatible and useful, feel external pressure to adopt e-commerce</td>
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(Table 3.2 continued)
(Table 3.2 continued)

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<tr>
<th>Author</th>
<th>Context and Scope</th>
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<tbody>
<tr>
<td>Lau and Voon(2004)</td>
<td>E-commerce adoption among SMEs in Singapore</td>
<td>The findings show that the most important factor influencing adoption of E-commerce by SMEs is the motivation and control of the SME owner-manager. This is followed by perceived compatibility of e-commerce with organizational values, experiences, and needs; risk-taking propensity of SME owner-manager; perceived complexity of electronic commerce; market turbulence; perceived relative advantage and government policy and support.</td>
</tr>
<tr>
<td>Levy et al., (2005)</td>
<td>E-business use among 354 small firms in UK</td>
<td>They found that strategic intent influences the decisions to invest in e-business. Identifies drivers and inhibitors of e-business adoption in SMEs.</td>
</tr>
<tr>
<td>Kaynak et al. (2005)</td>
<td>E-commerce adoption among 237 manufacturing SMEs in Turkey</td>
<td>EC adoption was significantly influenced by its perceived benefits. The perceived limitations of EC applications were found to have no statistically significant effect on EC adoption. The analysis also showed that company and industry-specific factors, with the exception of amount of resources allocated for export development, did not appear to have any significant impact on EC adoption.</td>
</tr>
<tr>
<td>Looi(2005)</td>
<td>E-commerce adoption among 184 SMEs in Brunei Darussalam</td>
<td>Competitive pressure emerged as the most important factor in adoption of electronic commerce, followed by IT knowledge, relative advantage, security and government support.</td>
</tr>
<tr>
<td>Macgregor and Vrazalic (2005)</td>
<td>Barriers to e-commerce adoption among 477 non-adopter SMEs in Sweden and Australia</td>
<td>Identified “too difficult to use” and “not suitable” as two important barriers to adoption of e-commerce.</td>
</tr>
</tbody>
</table>
**Review of Literature and Theoretical Frameworks**

(Table 3.2 continued)

<table>
<thead>
<tr>
<th>Author</th>
<th>Context and Scope</th>
<th>Findings</th>
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<tbody>
<tr>
<td>Jeon et al., (2006)</td>
<td>Adoption of e-business by 204 SMEs in Korea</td>
<td>Using data of 94 non-adopters and 110 adopter SMEs, they identified that CEO’s knowledge of IT, relative advantage and benefit, government support, globalization strategy and north Korean factor as key determinants of adoption. Business size, cost and competitive pressure of the industry do not seem to play an important role in the adoption of e-business</td>
</tr>
<tr>
<td>Stockdale and Standing (2006)</td>
<td>Qualitative study on e-commerce adoption based on government funded research project in Australia</td>
<td>SMEs differ in attitudes to online business and have been classified into five groups based on firm motivations. Authors suggest adoption initiatives to be targeted at only two groups: Paddlers and Waders</td>
</tr>
<tr>
<td>Al-Qirim (2006)</td>
<td>E-commerce adoption in small firms in New Zealand based on focus group of 6 MSMEs</td>
<td>Studied organization, technology, environment and individual context of e-commerce adoption. They found low level of e-commerce adoption and use among SMEs in New Zealand. They found that SMEs derived very limited benefits from their investments.</td>
</tr>
<tr>
<td>Lohrke et al. (2006)</td>
<td>Internet use by 42 SMEs in US using transaction cost analysis</td>
<td>Found that there is relationship between high information specificity and increased SME internet use</td>
</tr>
<tr>
<td>Chong and Pervan (2007)</td>
<td>Perceptions and experiences of 115 Australian SMEs in the implementation of Electronic Commerce</td>
<td>They found that seven factors: perceived relative advantage, trialability, observability, variety of information sources, communication amount, competitive pressure, and non-trading institutional influences, significantly influence the extent of e-commerce deployment by SMEs.</td>
</tr>
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</table>
### (Table 3.2 continued)

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<tr>
<th>Author</th>
<th>Context and Scope</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Servais et al. (2007)</td>
<td>Empirical study 1000 Danish manufacturing firms</td>
<td>Born global firms use internet to convey market presence, but only to a limited extent do they sell their products via the internet. They use internet to support already existing relationships.</td>
</tr>
<tr>
<td>Simmons et al. (2007)</td>
<td>Internet adoption among 50 Northern Ireland SMEs in agri-food industry</td>
<td>Identifies importance of marketing ability and industry norms as central determinants of internet adoption among agri-food industry SMEs</td>
</tr>
<tr>
<td>Alam et al. (2011)</td>
<td>Empirical study of e-commerce adoption among 200 SMEs in Malaysia</td>
<td>Found that relative advantage, compatibility, organizational readiness, manager’s characteristics and security have significant impact on e-commerce adoption</td>
</tr>
</tbody>
</table>

#### 3.4.2 Organization adoption of B2B e-marketplace: Findings from related studies

In the context of B2B e-marketplaces, researchers have used institutional theory and transaction cost theory in addition to DOI and TOE to understand adoption determinants. Several studies (Grewal et al., 2001; Son and Benbasat, 2007) identify efficiency and legitimacy oriented factors to explain e-marketplace adoption by firms. Table 3.3 presents the summary of the review of the empirical studies on B2B e-marketplace adoption.

There are very few large scale empirical studies on the small firm’s adoption on B2B e-marketplaces. Recently, Chong et al. (2011) in the context of SMEs in China; Lin et al. (2011) in the context of Australian SMEs;
Saprikis and Vlachopoulou (2012) in the context of SMEs in Greece were few studies that are found in the literature in the context of SME’s B2B e-marketplace adoption.

Based on empirical study conducted among 114 SMEs in China, Chong et al. (2011) develop critical success factors framework for Chinese SMEs that participated in B2B e-marketplaces. They identify internal factors such as successful customer relationships, security and trust, transparency of information, IS/IT infrastructure, top management support, supply chain facilities and external factors such as global competitiveness, government commitments, cultural consideration as critical for success of Chinese SMEs participation in B2B e-commerce (Chong et al., 2011).

Wang et al. (2011), based on a content analysis of 155 cases of high performing online Chinese vendors, found that the first generation of SME B2B online vendors in China were highly motivated to increase sales and developed a set of Internet leveraged organizational capabilities to compete online, including capabilities for online marketing, product innovation, e-commerce management, etc.

Saprikis and Vlachopoulou (2012) found that e-marketplace characteristics, internal organizational factors and external pressure were influencing supplier adoption of e-marketplace. In their empirical study of 87 supplier adopters of B2B e-marketplace in Greece, they find that B2B e-marketplace characteristics such as services, ownership status, operational rules, and profile of participating firms had high impact on firm’s level of participation than organization factors and external factors.

Lin et al. (2011), based on a survey of 198 SMEs in Australia that traded in B2B e-commerce environment found that realization of B2B benefits has a mediating effect on the relationship between IT investment evaluation and the satisfaction with the B2B website adoption.
### Table 3.3: Chronology of contemporary literature on adoption of B2B e-marketplaces

<table>
<thead>
<tr>
<th>Author</th>
<th>Context and Scope</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grewal et al. (2001)</td>
<td>Empirical study of antecedents of B2B e-market participation among 306 adopters of e-marketplace in jewellery industry</td>
<td>Based on transaction cost and institutional theories, they developed and empirically tested a model with ability (IT capabilities, learning), motivation (efficiency and legitimacy) and environmental dynamism as key antecedents of organizational participation in electronic marketplace.</td>
</tr>
<tr>
<td>Joo and Kim (2004)</td>
<td>Empirical study to identify determinants of corporate adoption of e-marketplace; study conducted among 39 manufacturing firms in South Korea</td>
<td>Based on innovation theory, study tests innovation, environment and organization characteristics as determinants of adoption of e-marketplace. Findings indicate external pressure and organizational size have positive impact and relative advantage did not have significant impact on organizational adoption of e-marketplace.</td>
</tr>
<tr>
<td>Hadaya (2004)</td>
<td>Future level use of e-marketplace of 1200 firms in Canada</td>
<td>Firm’s past experience in ecommerce and factors that relate to its business relationships influence future level use and Complexity of e-commerce implementation negatively correlated with the future level use of e-marketplaces.</td>
</tr>
<tr>
<td>Son and Benbasat (2007)</td>
<td>Empirical study of 183 large buyer organisation’s adoption of e-marketplace.</td>
<td>Efficiency oriented factors such as product characteristics, demand uncertainty and market volatility had significant influence on adoption intent and/or participation level. Legitimacy oriented factors such as mimetic pressures, normative pressures and their sub-constructs impacted on adoption intent but not on participation level.</td>
</tr>
<tr>
<td>Loukis et al. (2011)</td>
<td>Case study of Hellenic Aerospace Industry, Greece</td>
<td>Identified seven benefits and nine barriers to adoption of e-marketplace from the context of large aerospace industry.</td>
</tr>
</tbody>
</table>
3.5 Conceptual Framework and Development of Hypothesis

To understand the factors that influence the Indian MSMEs to adopt B2B e-marketplace, a conceptual model is developed. The theoretical model shown in Figure 3.5 is a context specific model that identifies key factors drawing from adoption literature that would affect the MSMEs decision to adopt B2B e-marketplace. The model proposes to understand seller's perspective of B2B e-marketplace.

Broadly, the conceptual model proposes influence of factors arising from organizational context, environmental context, e-marketplace characteristics and product characteristics.

First, the model proposes that the organization resources such as financial, technical and human resources have a strong influence on the MSME's adoption of B2B e-marketplace.

Second, based on the transaction cost theory, the model proposes that product characteristics such as complexity of the product and asset specificity have an influence on adoption of B2B e-marketplace.

Third, the model proposes that there is strong influence of competitors, suppliers, and customer's adoption of B2B e-marketplace. These environmental factors that are proposed have theoretical foundation from institutional theory. Apart from influence of trading partners and competitors, uncertainty attributable to the product market environment such as demand uncertainty and market volatility have been proposed as important factors influencing adoption of B2B e-marketplace.

Finally, based on diffusion of innovation theory, three factors, perceived relative advantage, perceived complexity and compatibility of B2B e-marketplace is proposed to influence adoption.

The remaining of this section explains each of the elements of the model and hypothesized relationships of the influence of these elements on the B2B e-marketplace adoption is developed.
**Market Environment**

- Mimetic pressures (Adoption among competitors, perceived success of adopters)
- Adoption among suppliers
- Perceived dominance of supplier adopters
- Adoption among customers
- Perceived dominance of customers adopters
- Demand uncertainty (volume and frequency uncertainty)
- Market volatility

**Organisation resources**

(Human, Technical and Business Resources)

**Product characteristics**

(Product complexity and asset specificity)

**B2B e-marketplace characteristics**

- Perceived relative advantage
- Perceived complexity
- Compatibility

---

**Figure 3.5**: Conceptual model of MSME adoption of B2B e-marketplace
**Organisation resources**

There is evidence in the literature that firm’s internal resources influence adoption of innovation. Molla and Licker’s (2005b) model of e-commerce adoption in the context of the developing countries identified that the organization’s internal resources such as technical resources, human resources and financial resources influence adoption of e-commerce. Several factors such as availability of skilled employees, level of computerization, experience with network based resources and financial resources were found to be influential factors in adoption of electronic commerce (Molla and Licker, 2005b). Moini and Tesar (2005) identify firm characteristics such as size and resources available influence adoption of internet by SMEs.

Role of organizational readiness have been supported by several other studies as well (Mehrtens et al., 2001; Grandon and Pearson, 2004a). In the context of MSMEs, we can identify evidence in literature on resource constraints as the main barrier for not adopting IT (Mehrtens et al., 2001). Therefore, resources within the firm would have a strong influence on the MSME adoption of B2B e-marketplace. Organisation resources have been defined as human, technical and financial resources of the firm. Therefore, it is proposed that

**Hypothesis 1:** Organisation resources is positively related to MSME adoption of B2B e-marketplace

**Environmental factors and influence of competitors, suppliers, customers and trading partners**

Institutional theory proposes mimetic pressures, coercive pressures and normative pressures as key antecedents to organisation adoption of governance structures (Dimaggio and Powell, 1987) as discussed in the sub section 3.3.2. Son and Benbasat (2007) in their empirical investigation of organisational buyer adoption of e-marketplace identify that mimetic and normative pressures have found to have stronger influence on adoption intent in the pre-adoption period (Son and Benbasat, 2007). Mimetic pressures have
been defined as adoption among competitors and perceived success of competitor adopters consistent with Teo et al. (2003) and Son and Benbasat (2007). Therefore, it is proposed that

**Hypothesis 2:** *Mimetic pressures is positively related to B2B e-marketplace adoption by MSMEs*

Rask and Kragh (2004) identify that suppliers are more influenced by legitimacy motives when participating in B2B e-marketplace. MSMEs may use B2B e-marketplace for either identifying suppliers or to identify customers. Therefore, in the present study, the influence of both the trading partners: suppliers and customers in the adoption of B2B e-marketplace by MSMEs is explored. Customer adopting the e-marketplace is one of the motivations for adoption of e-marketplace for MSMEs (Stockdale and Standing, 2004).

Molla and Licker (2005b) found that the extent to which firm’s competitors, customers, suppliers and other business partners use e-commerce, influences the organisation adoption of e-commerce. Role of external pressure such as trading partners, suppliers, competitive pressure have been supported in several studies (Mehrtens et al., 2001; Chong and Pervan, 2007; Hsu et al., 2006; Lin, 2006; Jeon et al., 2006).

In the context of Financial EDI adoption, Teo et al. (2003) identifies coercive pressures that stem mainly from dominant supplier adopters and dominant customers adopters. They argue that resource-dominant organizations that have adopted EDI, would attempt to influence their resource-dependent trading partners to adopt EDI so as to increase their own benefits of adoption (Teo et al., 2003). With this evidence in the literature, in the context of MSMEs, it is proposed that coercive and normative pressures arising from adoption among suppliers, perceived dominance of supplier adopters, adoption among customers, perceived dominance of customer adopters would influence the adoption of B2B e-marketplace among MSMEs.

**Hypothesis 3:** *Adoption among suppliers is positively related to B2B e-marketplace adoption by MSMEs*
Hypothesis 4: Perceived dominance of supplier adopters is positively related to B2B e-marketplace adoption by MSMEs

Hypothesis 5: Adoption among customers is positively related to the B2B e-marketplace

Hypothesis 6: Perceived dominance of customer adopters is positively related to B2B e-marketplace adoption by MSMEs

**Product characteristics**

There is evidence in the literature that two characteristics of product: asset specificity and product complexity, has negative influence on organization adoption of B2B e-marketplace (Malone et al., 1987). Son and Benbasat (2007) in the context of organization buyer’s adoption of B2B e-marketplace identify that product characteristics (asset specificity and product complexity) have a significant negative influence on the adoption level of B2B e-marketplace among buyers. Asset specificity refers to the extent to which a product used by a firm cannot be used by other firms and product complexity refers to the amount of information necessary to describe the attributes of a product (Son and Benbasat, 2007). Moodley and Morris (2004) in their study on e-commerce adoption by garment manufacturers found that garment products that require high level of customization and complex information exchange are less likely to adopt e-commerce.

MSMEs that have products that have standard specifications and that can be put on the web easily are more likely to adopt e-marketplaces. Products that are highly customized and require complex information exchange and negotiation to fix price are less likely to use e-marketplaces. Product characteristics conceptualized as asset specificity and complexity together would therefore, have a negative influence on the adoption of B2B e-marketplace by MSMEs. Therefore, in the context of MSMEs, it is proposed that

**Hypothesis 7:** Product characteristics negatively influence the MSME adoption of B2B e-marketplace
Uncertainty in product market environment

In the context of e-marketplaces, Choudhury (1997) identify two types of uncertainty to influence buyer organization adoption of e-marketplace:

- Uncertainty attributable to the nature of demand (product demand uncertainty).
- Uncertainty attributable to market environment of the products (market volatility).

Demand Uncertainty

Son and Benbasat (2007) found that demand uncertainty is negatively related to the organization buyer adoption of B2B e-marketplace. They argued that demand uncertainty which was measured as uncertainty in frequency of purchases (frequency uncertainty) and uncertainty in volume of purchases (volume uncertainty) would have a negative influence on adoption of B2B e-marketplace by buyers. However, in the context of MSME, it is proposed that demand uncertainty would be positively related to B2B e-marketplace adoption by MSMEs as the higher uncertainty in the demand side would motivate the MSMEs to look for new customers.

Hypothesis 8: Demand uncertainty is positively related to B2B e-marketplace adoption by MSMEs

Market volatility

Market volatility was found to positively influence the level of use of B2B e-marketplace among adopters in the context of large purchasing organisations (Son and Benbasat, 2007). Market volatility or instability in the market would pressurize MSMEs to look for suppliers/customers who can provide them competitive prices. Therefore, it is proposed that

Hypothesis 9: Market volatility is positively related to B2B e-marketplace adoption by MSMEs
B2B e-marketplace related factors

Based on theoretical framework of diffusion of innovation theory and consistent with the related studies (Thong, 1999; Zhu et al., 2006; Li, 2008; Chong et al., 2009) in the context of innovation adoption, three constructs of diffusion of innovation theory: perceived relative advantage, complexity and compatibility were included in the present study. These factors capture perception of MSME owner/manager about the B2B e-marketplace.

Perceived relative advantage

Perceived relative advantage and perceived usefulness has been identified as one of the key factor in adoption of innovation in the literature. Jeon et al. (2006) identified perceived relative advantage as important factor influencing e-business adoption among SMEs. Driedonks et al. (2005), in their case study of a e-marketplace in Australian beef industry identify relative advantage, net benefits for key stakeholders groups, perceptions of innovations by potential users and potential user characteristics and initial knowledge/opinion as influential factors for B2B marketplaces rate of adoption.

The importance of perceived usefulness/benefits/relative advantages in SME adoption of electronic business has been supported in several studies (Mehrtens et al., 2001; Grandon and Pearson, 2004a; Lau and Voon, 2004; Kaynak et al., 2005; Moini and Tesar, 2005; Chong and Pervan, 2007). Firms that perceive that the new innovation is useful and beneficial for them are more likely to adopt innovation. In the context of the present study, perceived relative advantage is defined as ‘degree to which the e-marketplace is perceived better than traditional business’. Based on the literature review, it is assumed that higher the perceived relative advantage, MSMEs are more likely to adopt B2B e-marketplace. Therefore, it is proposed that

Hypothesis 10: Perceived relative advantage is positively related to B2B e-marketplace adoption by MSMEs
Perceived complexity

Perceived complexity and perceived ease of use (as in Technology Acceptance Model) has been well quoted in the literature to influence adoption of innovation. In the present study, perceived complexity is defined as ‘the degree to which B2B e-marketplace is perceived as difficult to understand and use’. Lau and Voon (2004) found that perceived complexity is an important factor influencing adoption of electronic commerce among SMEs in Singapore. Complexity of the innovation has also been identified as an important barrier for adoption of ICT technologies among small firms. Perceived complexity is believed to have negative influence on the adoption of B2B e-marketplace. If small firms perceived that B2B e-marketplace is complex to use, they are less likely to adopt B2B e-marketplace. Therefore, it is proposed that

Hypothesis 11: Perceived complexity of the e-marketplace is negatively related to MSME adoption of B2B e-marketplace

Compatibility

Diffusion of innovation theory proposes that if the innovation is perceived as being consistent with existing values, past experiences, and needs of potential adopters, then higher the adoption. In the context of the present study, compatibility is defined as the ‘degree to which B2B e-marketplace is perceived as being consistent with existing values, past experiences and needs of potential adopters’. If the MSMEs perceive that B2B e-marketplace is consistent with their need, they are more likely to adopt B2B e-marketplaces. Therefore, it is proposed that

Hypothesis 12: Compatibility is positively related to the B2B e-marketplace adoption by MSMEs

Even though several studies have examined the influence of these Diffusion of Innovation constructs, in the present study, their relative influence with other environmental, organizational and product related variables are examined.
3.6 Summary

B2B e-marketplace, their key characteristics and business models are discussed in this chapter. Benefits of e-marketplaces for buyers and sellers are outlined along with the discussion on barriers to adopt B2B e-marketplace. A review of various theoretical frameworks used to study organization adoption of innovation is discussed with specific focus on inter-organizational system. A review of existing literature on electronic commerce, electronic business and e-marketplace is presented to understand the factors influencing adoption of e-marketplace. Based on the review of literature, a conceptual model of the MSME adoption of B2B e-marketplace is developed and twelve hypotheses are proposed.