

CHAPTER 2

REVIEW OF LITERATURE

The objective of this chapter is to discuss the existing literature pertinent to the fundamental aspects associated with innovation adoption, implementation and performance among SMEs. The past research on innovation is voluminous and multi-disciplinary. This section will explore and critically analyse the range of literature, research, theories and models that has emanated from many fields of knowledge such as management, psychology, sociology, economics and science. The empirical literature relating to the facilitators and barriers of innovation adoption are discussed initially, followed by those related to the innovation-performance linkage. This is followed by a discussion on research gaps identified. The detailed explanation of developing conceptual model is provided towards the end.

When innovation studies started to emerge as a separate field of research in 1960s, they were mostly considered to be a part of science. Later, there was realization that science is only a part of the ingredients that lead to successful innovations. Research on the role of innovation in bringing about economic and social changes has proliferated in the recent years, particularly within the social sciences with an inclination towards being multi- disciplinary. This is on account of the fact that no single discipline can totally capture all the dimensions of innovation. Joseph Schumpeter (1939) is one of the earliest proponents of innovation who developed an original approach by focusing on the role of innovations in promoting economic and social change.

2.1 FACILITATORS AND BARRIERS OF INNOVATION ADOPTION

In their study on process innovations among a sample of 54 manufacturing SMEs operating in Malaysia, Yahya et al (2011) found that leadership and culture were prominent among the drivers for innovation. The major barriers to innovation

were found to be lack of knowledge and skills, networking and training due to perhaps lack of adequate financial resources.

Damirch et al (2011) investigated the modifying role played by innovative organizational climate in the relationship between transformational leadership style and innovative behaviour among a sample of 150 workers of Ardabil Province SMEs in Iran. The results showed that innovative organizational climate modified the relationship between rational stimulation, inspirational motivation, individual consideration and innovative behaviour. No direct relationship was established between the predictive variables and innovative behaviour; however predictive variables were found to have a great effect on innovative behaviour through the mediating variable i.e., innovative organizational climate.

Rabia et al (2009) explored the moderating role of organizational size in the relationship between transformational leadership and organizational innovation as well as the impact of transformational leadership on organizational innovation on a sample of 296 managers from the telecommunication sector of Pakistan. Hierarchical regression models revealed that organizational size significantly moderated the relationship between all attributes of transformational leadership (Charisma, Inspirational Motivation, Intellectual Stimulation and Individualized Consideration) and organizational innovation, except idealized influence. The results showed positive and significant impact of transformational leadership on organizational innovation.

Reinstaller et al (2010) examined the drivers and barriers to internationalization of Europe's innovative firms. They studied the relationship between innovation and internationalization, and reviewed the policies, at the EU and national levels, supporting firms in these activities. The results showed that innovative companies were more likely to engage in exports. Exporting and innovation were found to be complementary strategies that resulted in higher export shares, turnover and employment growth at the firm level. They also found existence of substantial barriers to innovation with respect to knowledge on markets and technologies, access to finance and the shortage of skilled labour. Barriers to innovation acted as barriers to internationalization as well.

According to Marcati et al (2008), entrepreneur's innovation and personality play a very important role in the adoption of innovations among the Small and Medium sized Enterprises. The study was conducted on a sample of 188 SMEs in five industrial sectors of Italy. The study demonstrated the importance of the psychological underpinnings of human capital with respect to innovations, and in particular, the key role of personality related variables, and their influence on entrepreneur's intention to adopt innovations. It was found that entrepreneurs with different tendencies to innovate had different personality traits.

Lynch (2007) undertook a longitudinal survey of both manufacturing and non-manufacturing businesses in USA during 1990's to explore the incidence and intensity of organizational innovation and factors associated with investment in organizational innovation. It was found that employers with more external focus and broader networks were more inclined to invest in organizational innovations. Investment in human capital, information technology, R&D and physical capital were complementary with investments in organizational innovations.

Wong and Fung (2005) explored the relationship between technological innovativeness and organizational culture among 70 SMEs in Hong Kong using path analysis. The study revealed that learning ability, centralization, specialization, external orientation, formalization, sufficient slack, achievement orientation and risk orientation were influencing the innovativeness in various perspectives. Learning ability of an organization influenced the number of administrative innovations adopted and the early adoption of administrative innovations. Centralization was also found to be supporting administrative innovations. The results also suggested that early adoption of technical innovations is statistically associated with formalization, external and achievement orientation characteristic and sufficient slack in the organization.

Liu (2005) developed an organizational innovation (OI) model that established influencing factors and dimensions of OI. The model was empirically tested in the high-tech industries of Taiwan. The study concluded that the most important dimensions for measuring organizational innovation included product innovation, process innovation, organizational structure and climate innovation.

Jung et al (2004) investigated the influence of top manager's leadership style, directly and indirectly, on firm's innovation. A multi source approach was used to collect data from 32 Taiwanese companies in the electronics and telecommunication industry. The findings revealed a direct and positive linkage between the style of leadership labelled as 'transformational leadership' and organizational innovation. Organizational climate for innovation was found to have a significant and positive impact on organizational innovation, whereas link between empowerment and innovation was negative.

Gurkov (2004) conducted a quasi-longitudinal survey of 2800 top corporate executives of Russian industrial enterprises in order to understand the innovative attempts of Russian enterprises and the economic and institutional factors that foster or hinder their innovation. The results showed that Russian CEOs perceived innovation to be the best competitive weapon. Their resources for radical innovations were limited. Besides lack of finance, the superimposed narrower strategic focus, rigidities of local business networks, weaknesses of external infrastructure of innovation and absence of state support created barriers to implement radical innovations.

Zhu et al (2003) investigated the impact of facilitators and inhibitors on electronic business (EB) adoption at the firm level, based upon the technology-organization-environment theoretical framework. The conceptual model developed was tested on a surveyed data of 3100 businesses and 7500 consumers in eight countries of Europe. After controlling the variations of industry and country effects, the results showed that technology competence, firm size and scope of business, consumer readiness and competitive pressure were the significant adoption facilitators; while lack of trading partner readiness was the significant barrier to adoption. As EB intensity increased, the impact of consumer readiness and lack of trading partner readiness decreased, while competitive pressure remained significant.

Paul et al (2002) studied the role of organizational climate that can affect organizational context on innovation adoption by way of medical imaging technologies at 70 hospitals in America. Context factors identified were

organizational size, slack resources and organizational age. The climate dimensions that moderated the organizational context were risk orientation, external orientation and achievement orientation. The results revealed that organizational size and slack were positively associated with innovativeness. Hierarchical regression indicated that risk orientation and external orientation interacted significantly with the context dimensions of organizational size and organizational age.

Gopalakrishnan and Bierly (2001) proposed a new typology of organizational innovation based on the integration of theories of organizational learning and theories of knowledge using the constructs: tacit-explicit, systemic-autonomous and simple- complex and their impact on methods of sourcing, cost of implementation and innovation effectiveness. The researchers hypothesized that as innovations become more tacit, systemic and complex, they tend to be more internally sourced, more costly to implement and more effective. The study was conducted on 101 banks in the United States. The results showed that autonomous innovations were less likely to be internally sourced than systemic innovations; autonomous and complex innovations were more costly to implement than systemic and simple innovations; and that explicit innovations were more effective than implicit innovations.

In another study, Damanpour and Gopalakrishnan (2001) examined the dynamics that governed the adoption of product and process innovations at the firm level over time on a sample of 101 commercial banks in the United States. The study revealed that product innovations were adopted at a greater rate and speed than process innovations; a product-process pattern of adoption was more likely than a process-product pattern; the adoption of product innovations had a positive association with adoption of process innovations; and high-performance banks adopted product and process innovations more evenly than low performance banks.

Galia et al (2012) compared the perception of obstacles faced by French and Italian firms and analyzed the differences in the determinants of barriers to innovation during the period 2002-2004 using Community Innovation Survey 4 on a sample of 4969 observations. The study found that perception of obstacles varied across countries. Among the two countries, French innovators were found to be

more affected by barriers to innovation. For French firms, the most frequent obstacle to innovation was the lack of internal financial resources while Italian firms were more hampered by external financial resources and the perception of high innovation costs.

Kamalian et al (2011) examined the barriers to innovation on a sample of 86 SMEs in Iran. The findings of the study revealed that the most significant barriers were associated with costs, whereas the least significant were associated with lag of information. The collaboration with universities and higher educational institutions was found to be highly missing. Lack of skilled labour was yet another prominent barrier for these SMEs.

Zhu et al (2011) studied the institution related barriers to innovations among SMEs in China by interviewing 82 top managers and owners at 41 SMEs. The important barriers identified were competition fairness, access to financing, laws and regulations, tax burden and support systems. The results showed that despite the improvements in the environment for SMEs, they continued to confront institution- based barriers that prevented them from unleashing their innovation potential in China.

Holzl and Janger (2011) studied the differences in perception on innovation barriers between innovative and non-innovative firms with respect to 18 European Union countries based on the data from Community Innovation Surveys for the years 2002-2004 and 2004-2006. An analysis of differences across country groups revealed that barriers related to the availability of skilled labour, innovation partners and knowledge were more important barriers to innovation for firms located in countries close to the frontier, while the opposite was found to be true regarding external financing barriers. The evidence regarding barrier-related non-innovators revealed a negative relationship between the propensity to innovate and the perception of innovation barriers.

The results of UK innovation survey 2009 (Robson and Kenchatt 2010) showed that the perception of cost related barriers to innovation was higher among both large and small businesses. The firms engaged in innovation activity were, on

an average, more than twice as likely to perceive cost and regulatory factors as barriers than businesses who did not attempt to innovate. This finding highlighted that businesses that attempted to innovate were able to 'learn' about the barriers to innovation. The results of UK innovation survey 2005 (Robson and Ortman 2006) also revealed similar results. Cost was regarded as the most significant barrier to innovation, including the direct resource costs of innovation activities, their perceived economic risk and the costs of acquiring finance. The impact of Government regulations was also thought to be a barrier to innovation, particularly by smaller firms. Lack of qualified personnel was another important constraining factor perceived by smaller businesses.

Tiwari and Buse (2007) conducted a survey at Metropolitan region of Hamburger in Germany to identify the barriers to innovation among SMEs. The responses from 70 SMEs revealed that the external barriers in the order of prominence were financing issues, problems in finding suitable and qualified personnel, bureaucratic hurdles and difficulties in finding cooperation partners from outside. The most prominent internal barriers were found to be, amongst others, in the areas of marketing, conceptualization of innovative products and internationalization. The challenges for international innovations were a general concentration on home markets, lack of resources and know-how and fear relating to uncertainties in the target markets.

Kartiwi and MacGregor (2007) investigated the correlation and underlying factors of barriers to e-commerce (as perceived by SME owner/managers) in the developing economy, Indonesia. They then compared the findings with SME owner/manager perceptions on the same at the developed economy, Sweden. The study showed differences in the groupings and priorities of barriers to e-commerce between the two economies. The important finding was that while Swedish respondents were more concerned with technical issues, the Indonesian respondents were more concerned with organizational barriers.

Alwis and Senathiraja (2003) studied the impact of social-cultural background of entrepreneurs on management and business practices of selected SMEs in jewellery and textile industry in Sri Lanka. Survey was conducted on a

sample of 175 business units. They found that though ethnicity plays a dominant role in determining business practices other than religion, education and age, ethical natures of business practices are determined by religion. Cragg and King (1993), in their study on 27 manufacturing firms, found that lack of financial and managerial resources and inadequate levels of technical expertise were the major inhibitors of information technology adoption in small businesses.

An empirical survey was carried out by the Cambridge Small Business Research Centre (1992) to investigate the SME innovative behaviour in UK. Data were collected from more than 2000 SMEs on a range of issues relating to technology and innovation. The research found that 60% of the sample had initiated a major product or service innovation in the last five years and that SMEs were highly innovative across sectors. However, this survey did not explore the antecedent or consequent linkage of innovativeness.

2.2 INNOVATION ADOPTION AND PERFORMANCE LINKAGE

Gunday et al (2011) investigated the innovation-performance linkage among 184 manufacturing firms in Turkey. The study revealed that innovations performed in manufacturing firms had positive and significant impact on innovative performance. Organizational or administrative innovations had more impact on innovative capabilities as it had the greatest regression coefficient with innovative performance. Product innovation also was observed as a critical driver for innovative performance. Overall, the innovation strategy was found to be an important driver of firm performance.

Weng et al (2011) studied the determinants of product innovations and its effect on hospital performance in Taiwan. The cross sectional study of 217 hospitals using structural equation modelling revealed that hospital scale affected technological innovation positively and that technological innovations positively influenced ambulatory, emergency and in-patient performance. While market factors didn't have a direct impact on technological innovation, organizational factors such as hospital scale, ownership and teaching status were found to be critical factors affecting innovation.

Gebreeyesus and Mohnen (2011) examined the impact of network embeddedness on absorptive capacity and innovation performance in the footwear cluster of Ethiopia. The study revealed that business interactions with buyers, suppliers and other producers were the major channels through which knowledge flow into the cluster. The econometric analysis revealed that there is a positive and strong effect of local network position and absorptive capacity on innovation performance.

Colombelli et al (2011) studied the relationship between innovation and growth in French industries over a period from 1992 to 2004. They found that innovative firms produced more growth than non innovative firms. Process innovators were more productive in terms of growth than product innovators. Cozza et al (2011) studied the impact of product innovation on the economic performance of firms operating in the medium and high tech industries in Italy. A positive and significant 'innovation premium' both in terms of profitability and growth (in the short run) was found for those firms who introduced new innovative products. It was also revealed that this innovation premium was particularly large for small firms and even more so, with respect to newly established firms.

Bala Subrahmanya et al (2010) analysed the drivers, dimensions, outcomes and achievements of technological innovations carried out by SMEs in the auto components, electronics and machine tool sectors of Bangalore, India. The study also compared innovative versus non innovative firms in terms of growth rates of their sales turnover, investment and employment. Data collected from 214 SMEs operating in the 3 sectors were analysed using correlation, ANOVA and regression analyses. The results revealed that a substantial portion of SMEs in all the three sectors were innovative, mostly informally. The internal technology push in the form of self motivation, technical qualification, knowledge, experience and innovative ideas of entrepreneurs; and the external demand pull by way of competition, customer demand, supplier support and market opportunities contributed to the emergence of innovations. The important objectives of innovation were to enhance competitiveness by quality improvements, cost reduction, extension

of product range, replacement of phased out products, apart from penetrating international markets. Innovative SMEs registered higher growth relative to non-innovative SMEs in terms of not only sales turnover, but also employment and investment in all the three sectors. There was a statistically significant positive correlation between innovation sales and sales growth. Innovation sales, along with investment growth and employment growth, had a positive influence on GVA growth, in all the three sectors.

Shigang Yan (2010) investigated competitive strategy and business environment influencing Chinese SMEs' performance. The study hypothesized that cost, differentiation and innovation strategies will have a positive association with SMEs' performance. It was further premised that strategic alliance and environmental dynamism will have positive influence, while competitive pressure will negatively influence their performance. Data were collected from 121 SMEs operating in China's construction industry. Sales growth and profit growth were used for measuring competitiveness. Regression analyses revealed that cost, differentiation and innovation strategy had significant positive relationship with business performance. Strategic alliance and environmental dynamism were not found to be positively supporting firm performance. Competitive pressure was negatively related to construction SMEs' performance, as hypothesized. The study revealed that cost, differentiation, and innovation strategies are key competitive strategies used by SMEs in China's transitional economy.

Mateja Bodlaj (2010) studied the impact of a responsive and proactive market orientation on the extent of novelty, innovation performance and business performance. Data gathered from 325 Slovenian companies that introduced product, process, marketing and organizational innovations during the period 2005-2007 were analyzed using structural equation modelling. The findings revealed that only a proactive market orientation was positively related to the degree of novelty. There was no support found for the direct impact of both market orientations on innovation performance and business performance.

Pradeep Dharmadasa (2009) studied a sample of 222 manufacturing SMEs comprising of 104 family and 118 non-family businesses in the Australian context.

The study investigated the linkage between organizational learning, innovation and firm performance. Regression and Chow tests were conducted to understand and compare the within family SMEs and between family and non family SMEs' with respect to the direct and indirect effects of organizational learning on innovations and firm performance. The results revealed that whereas the effects of formal planning and innovation on firm performance of family SMEs were stronger than that of non-family SMEs, the effects of employee training and management development on firm performance were stronger among non-family SMEs.

Hoq and Ha (2009) adopted the Resource Based View (RBV) to understand the key antecedents to innovativeness, namely social capital orientation, market orientation and entrepreneurial orientation, as well as the relationship between innovativeness and business performance on a sample of 321 SMEs in Bangladesh. With the investigation on how each of key antecedents and innovativeness were related and how they collectively enabled the organization to adopt and perform, the researchers hypothesized that innovativeness will be positively related to business performance; and that social capital orientation, market orientation and entrepreneurial orientation will be positively related to innovativeness. The scale for performance (i.e. "overall sales growth") assessed profitability, growth in sales, market share as well as general performance. The model provided a good fit to the data and all hypothesized relationships were supported using structural equation modelling. Empirical findings confirmed that innovativeness was an important determinant of business performance. Results also showed that while innovativeness was an important direct driver of performance, it also appeared to be a necessary mediator of the link between social capital orientation and performance.

Marques and Ferreira (2009) investigated the factors that contributed to the building of a firm's innovative capacity and assessed the way in which this contributed to improvements in the firm's performance in the manufacturing industry in the Beira Interior Region of Portugal. A conceptual model was proposed consisting of five separate dimensions: the firm; the entrepreneur; the external business environment; the firm's innovative capacity; and the firm's performance. The results provided evidence regarding the factors influencing the innovative

capacity of firms and showed the effects of superior innovative capacity on firms' competitive advantage, which in turn contributed to improved performance.

Kriengsak Panuwatwanich (2008) researched the innovation diffusion process among the Australian Architectural and Engineering Design (AED) organizations. The hypothesized model consisted of three climate constructs, namely, leadership for innovation (LFI), team climate for innovation (TCI) and organizational culture for innovation (OCI), along with two outcome oriented constructs addressing innovation diffusion outcomes (IDO) and business performance (BPM). A questionnaire survey conducted on 181 design professionals working in 57 AED firms revealed that the sampled firms had moderately strong climate for innovation, moderate level of innovation diffusion outcomes and a moderate to high level of business performance. The model was then assessed using structural equation modelling (SEM) technique. The results revealed that among the constructs, the leadership for innovation was the most influential construct, impacting on the creation of both the climate as well as organizational culture for innovation. The study empirically proved that organizational culture for innovation directly influenced the innovation diffusion outcomes, and also mediated the relationship between this construct with both leadership and team climate for innovation. The positive relationship between innovation diffusion outcomes and business performance was also established.

Christina and Andy (2008) investigated the extent to which product innovation moderated the relationship between capabilities and competitive advantage among SMEs in UK. A longitudinal sample of 300 manufacturing SMEs in traditional and high-technology industries was taken to evaluate the effects of innovating and using capabilities continuously over time (2002 and 2004). It was hypothesized that firms that used multi-skilling capabilities will have a greater probability of being top-performing enterprises than firms not using these capabilities; and among the firms using multi-skilling capabilities, firms that were innovators will have a greater probability of being top-performing firms than non-innovators. The dependent variable taken to represent competitive advantage was productivity measured by way of annual sales per employee. Regression analyses

indicated that firms consistently innovating and using job rotation or multi-skilling were more likely to be top performers. Firms that only used multi-skilling capabilities, but did not innovate, had a lower probability of being top-performing enterprises, compared to non-innovators that did not use these capabilities. Among innovators, firms using multi-skilling capabilities were about two times more likely to be top performers than firms not using these capabilities.

Bronwyn et al (2008) developed a structural model of innovation which incorporated information on innovation success along with R&D expenditures and productivity measures and applied the model to a data of 361 Italian SMEs from the "Survey on Manufacturing Firms" conducted by Mediocredito-Capitalia (an Italian commercial bank) covering the period 1995-2003 (3 waves). The researchers investigated on how and when innovation took place in SMEs and whether and how innovation outcomes impact SME firms' productivity. The results showed that firm size was negatively associated with the intensity of R&D, but positively with the likelihood of having product or process innovation. There was a strong association of process innovation with capital investment, and process innovation had a large impact on productivity. Larger and older firms seemed to be less productive. Product innovations had positive impact on firms' labour productivity, but process innovations exerted the largest effect, via the associated investment.

Vandana Ujjual (2008) made an empirical analysis of performance, innovation and networks among high technology firms through a survey conducted in five hi-tech Scottish clusters. A structural simultaneous equation model was developed to explain the linkage between the innovation input, output and performance. The results revealed that the high- tech firms with aggressive innovation strategies, international markets and global products, still found it vital to be embedded in local networks, which in turn helped to raise their performance. Technology push factors, research networks, knowledge spill over from markets and radical innovations determined innovation input intensity. Firms were unable to achieve innovation performance through innovation investment alone; integration of internal and external resources was found to be an essential pre condition. Innovation sales intensity was found to be dependent upon demand pull factors such

as customer networks, exports and market expansion strategies. Lack of internal resources, capabilities and Government support were the major obstacles to commercialisation of innovations by these firms.

According to the European Commission Study (Berlin 2008) on the impact of ICT adoption on innovation and business performance among selected sectors of EU, ICT capital had an indirect impact on labour productivity and thus enabled firms to improve their performance. The results also showed that large firms were significantly more likely to use ICT than SMEs. The major barrier for ICT adoption by SMEs was the lack of awareness about the possible benefits that ICT could offer.

Dibrell et al (2008) investigated the mediating effects of Information Technology (IT) on the relationships among the product and process innovations and firm performance measured in multiple profitability and growth rate metrics. Using structural equation modelling on a sample of 397 SMEs, the researchers found that increase in emphasis placed on innovations (both product and process) positively impacted the emphasis the managers' placed on IT, impact of innovation on performance (measured in profitability and growth) was primarily indirect and an increased emphasis on IT abetted managers' perception of their firm's performance as compared to that observed among peer firms.

Lin and Chen (2007) attempted to explore the linkage between innovation and business performance by conducting an empirical study on 877 SMEs operating in Taiwan. In view of the premise that innovation leads to organizational performance, it was predicted that incremental innovations and radical innovations will be positively related to organizational performance of SMEs. Innovations were measured on two dimensions- the nature of innovation (radical/incremental) and the types of innovation (technological/ marketing/ administrative/ strategic). Company sales was taken as the indicator for business performance. The results indicated that about 80 per cent of the surveyed companies implemented some sort of innovation. Although more incremental than radical innovations were practiced, the ranking of each was similar. As a whole, SMEs in Taiwan placed more emphasis on technological and marketing innovations. Hierarchical regression analysis conducted to test the hypotheses revealed that only incremental and radical administrative

innovations positively explained company sales. Radical administrative innovations were found to be more powerful than the incremental ones. As firm size explained a major portion of company sales, it was recommended to be treated as an antecedent in future relevant research.

Anh et al (2007) studied innovation and export relationship among 2738 SMEs operating in Vietnam based on the SME Innovation Survey database. Instrumental variable approach and bi-variate probit model were employed to measure the endogeneity of innovations such as product innovations, process innovations and improvement of existing products. All these three measures of innovations were found to be important determinants of innovations as well as exports. Geroski (2005) examined the effects of the major innovations and patents to various performance indicators such as profitability, stock market rates of return and business growth. They found that the observed direct effects of innovations on firm performance were relatively small, and the benefits from innovations were mostly indirect. However, innovative firms seemed to be less subject to cyclic, sectoral and environmental forces when compared to their non-innovative counterparts.

Ciptono (2006) examined the association between a company's innovation strategy and its non-financial performance in 140 upstream and downstream SBUs of 49 oil and gas companies in Indonesia. The sequential model suggested a causal sequence between six dimensions of innovation strategy (leadership orientation, process innovation, product/ service innovation, external innovation source, internal innovation source and investment) that could lead to higher non-financial performance measured in terms of productivity and operational reliability. The structural equation modeling and hierarchical multiple regression analyses supported the importance of innovation strategy as a determinant of company's non-financial performance. The upstream SBUs were found to be relying more on external innovation sources and downstream SBUs emphasized on using internal sources of innovation.

Bernard de Veer (2005) studied 533 innovating and non innovating firms in South Africa. The study was conducted on a longitudinal data set of South African Innovation Survey conducted during 2001. The results revealed that innovation had

a positive impact on business performance among the South African firms. However, the positive effect was limited to product innovations and not to process innovations. The positive impact of innovation was felt on total sales growth. No effect was seen on export intensity growth. Increase in radical innovations was found to be followed by increase in sales. The effect of innovations on business performance was similar irrespective of the firm sizes. McAdam and Keogh (2004) studied the relationship between firms' performance and innovation. They found that in competitive environments, the firms' inclination to innovations was vital in order to obtain higher competitive advantage.

The relationship between innovation and performance has been investigated not only in the business context, but also in other contexts. Diederens et al (2002) investigated the significance of relationship between innovation and farm performance in the Dutch agriculture sector based on the Dutch Farm Accountancy Data Network. They concluded that innovative farmers showed significantly higher profits and growth figures than those farmers who were not innovative. According to them, the time lag between innovation and performance will take at least one to two years.

Favre et al (2002) studied the relationship between innovation and profits on a sample of 2879 French firms. They found a positive relation between the two. Among other measures, R&D intensity had more positive impact on profits. The causal factors identified were R&D intensity, market share and concentration. Terziovski (2001) investigated the relationship between continuous improvement/innovation management practices and SME performance in Australia. A continuous improvement and innovation management practice framework (CIAIM) was developed within which hypotheses were tested using multiple regression analysis. The results from 115 responses revealed that CIAIM model was a reliable and valid instrument for measuring and predicting continuous improvement-innovation management practices and SME performance and that there was a positive relationship between such practices and SME performance.

Tim et al (2001) examined the relationship between innovative activity, outcomes and the performance of SMEs in Wales. The researchers assessed the

innovative potential (the configuration of management practices, capabilities, internal and external linkages facilitating the generation of appropriation of ideas) of 30 manufacturing SMEs and their association with operational and general business performance. They found that though initiatives had been instituted, it was done without a clear appreciation of how, if, and which innovative activities led to improved business performance.

Roper (1997) investigated the relationship between product innovation and turnover growth among the small businesses in Germany, Ireland and UK. On a sample of 3629 firms based on the Product Development Survey (PDS), he found significant difference between the innovating and non-innovating firms in terms of growth in sales. A strong correlation was established between product innovation and turnover growth and this was commonly noticed in all the three countries investigated.

The results of CBI/ NatWest Annual Innovation Trends Survey (1997) consistently reported that majority of the companies who initiated innovations improved their business performance in terms of profits, market share and new markets penetration. This survey collected data from manufacturing as well as non-manufacturing sectors. The key characteristics of innovation in UK companies were measured from a broad range of information (innovation inputs, external links, innovation outputs, influences on innovation and innovation resources). The survey established that innovations have led to improved business performance.

Atuahene Gima (1996) compared innovation performance of 600 Australian manufacturing and service firms. New product and new service developments were taken as the performance indicators. Respondents rated the degree of innovation success on a 12-point scale in terms of market share; sales, growth and profit objectives; cost efficiency, etc. The results revealed that potency of factors affecting innovation performance differed between service and manufacturing firms.

2.3 IDENTIFICATION OF RESEARCH GAP

Innovation used to be initially studied in the context of large firms (Hadjimanolis 2000). However, Schumpeter discussed the role played by small

firms in innovation (1939). As per the availability of resources and skills, small firms and large firms play a different role with respect to innovation (Rizzoni, 1991). Most of the studies concerning innovation management among large or small firms have been done in the context of industrialized and developed nations such as USA, UK, Germany etc. There is a considerable research and knowledge gap on innovation, especially at the level of the firms in developing countries (Bell and Pavitt 1992). Kim and Lee (1993) suggest studies on innovation among small firms should be conducted more in developing countries. The innovativeness among the small firms is influenced by the factors present in the national and regional contexts (Tidd, Bessant and Pavitt 2005).

Taking the variance model as the research approach for the present investigation on innovation adoption and its impact on business performance, a detailed analysis of the previously available literature has been done. The selection of antecedent (pre adoption) variables for the present study has been guided by a combination of diverse theoretical approaches that the researcher has come across during her process of literature review. Published literatures comprising of reviews, empirical studies, critical analyses, theories etc., were studied. The researcher noted the divergent views among the scholars about the antecedent variables of innovation. The theoretical approaches inadequately explained innovations, especially in the context of small and medium enterprises in developing nations like India. The established theories of firms were then gauged to arrive at a conclusion on the variables to be included in the study. These theories were:

- Entrepreneurship/ small firm theory
- The resource based view of strategy
- The environmental approach to strategy that focuses on inter-organizational relationship (Hadjimanolis 2000).

The entrepreneurship theory focuses on the characteristics of the entrepreneur influencing the functioning of the organizations (Amit, Glosten and Muller 1993). Accordingly, an entrepreneur identifies opportunities, organizes the resources and uses his managerial competence in directing the work of others as

well as creating and utilizing beneficial networks with other organizations. The important variables considered under this theory are the age, education, cosmopolitanism, experience etc., of the entrepreneur that modulates his behaviour and consequently his attitude towards adoption of innovations (Rizzoni 1991). Previous studies that probed the entrepreneur-innovation linkage show mixed results (Kim and Lee 1993). The measurement scales also have more relevance in developed countries and not much in the context of developing countries, especially in the SME context.

The resource based view emphasizes on the characteristics of the firms in terms of its resources and capabilities in developing innovation and thereby enhancing competitive advantage (Autio, Keil and Robertson 1998). R&D intensity, knowledge intensity in terms of presence of qualified personnel, strategy variables such as environmental technology scanning and existence of strategies, structural variables related to organizational structure and some demographic variables such as age and size of the firm etc., are the mostly assessed variables according to this approach (Meeus, Oerlemans and Hage 1999).

The environmental approach complements the resource based approach by emphasizing on the structural forces present in the operating environment of the firm and other socio-economic influences (Hadjimanolis 2000). These include the linkage of the firm with its environment in the form of networking and collaboration, intensity of competition, environmental changes related to uncertainty and dynamism as well as external constraints felt by the firms in acquiring or developing innovations (Amit, Glosten and Muller 1993, Damanpour 1996, Rothwell 1991). In view of these divergent, but interesting views on factors determining innovation adoption, a mixture of resource based view and environmental approach was decided to be adopted by the researcher.

2.4 DEVELOPING THE BROAD DIMENSIONS OF THE CONCEPTUAL MODEL

A detailed and systematic review of the past research works on innovation offer essential background knowledge on the concept of innovation, the various

factors influencing innovation adoption and their impact on a firm's business performance. Based on the variance approach, the antecedent consequence linkage of innovation adoption has been decided to be the subject of inquiry. Conceptualising innovation adoption involves the identification and analysis of three constructs namely objectives of the adoption, obstacles to adoption and drivers of adoption (Corrocher and Fontana 2008). The pre innovation adoption constructs in the form of objectives, facilitators and barriers together interplay leading to the decision to adopt innovation.

Innovation varies in forms and types and can range from purely technological to marketing and administrative changes that may be minor and incremental or major and radical. As adoption of innovations alone does not guarantee performance improvements, their implementation and integration in the organizational value chain also needs to be taken into account. Hence the innovation adoption at the firm context has to be viewed at two levels- pre adoption and post adoption. The constructs involved at both the stages have to be identified to propose the research questions and to frame the hypothesis. Based upon the variance model, the antecedents or the pre adoption variables have been categorized as the organizational members, the organization itself and the extra-organizational (environmental) factors (Damanpour 1991).

2.5 DETERMINATION OF SPECIFIC CONSTRUCTS IN THE HYPOTHESIZED MODEL

Analysis of gaps in the existing literature on innovation has given an understanding on the suitable approach to be adopted while deciding upon the variables of interest to be chosen for developing the conceptual model. A mixture of variables based upon the resource based approach and environmental approach has been decided to be adopted to fully understand the said linkage in the context of a cluster. On a detailed view of the entrepreneurial approach, it was felt that the entrepreneurial aspects and their influence on innovation adoption should be viewed separately without their influence in the conceptual model. Inclusion of entrepreneur's personal background such as education, age, experience etc., may add elements of subjectivity in the model. The model proposes to view innovativeness in

its totality in the knitwear cluster of Tirupur and hence the influence of subjective variables needs to be controlled. Another justification is that 'leadership' of an entrepreneur will be a manifestation of his personal profile, and hence inclusion of 'leadership' as a construct in the model and scaling it on the basis of items of measurement will help to capture the entrepreneurial dimensions within the model.

Also, the resource based variables such as age and size of the firm and their influence on innovation has to be viewed separately. With respect to the size of the business, all the firms intended to be surveyed in the research belong to the knitwear cluster of Tirupur, which is primarily an SME cluster. The 'size' is defined in this study with respect to the investment made in plant and machinery and conceptualizing 'size' with respect to the number of employees working in the firms is secondary. Hence, the association between the size of the firm (in terms of number of employees) and innovation has to be viewed separately. Previous studies that investigate the relationship between age of the firm and innovation adoption have given mixed results. Age of the firm is an indirect indicator of its life cycle stage and its inclusion in the model may influence the results. There are also divergent views on the direction of relationship between age of the firm and innovation. Certain studies have proved that age and innovation has a positive relationship, certain other studies have proved it in the reverse. Some other studies have found that until a point in time, the relationship is positive and thereafter it turns reverse. Hence, it is ideal that the association between age and innovation be viewed separately.

The types, quantity and quality of innovations in any organization depend upon both its external and internal environment. Changes and happenings in the external environment give an impetus to the organizations to adopt innovations. Innovative concepts and products of the organization in turn diffuse to the external environment. Such a study on innovation that focuses on the interplay between the internal and external environment has produced a body of knowledge in economics and strategic management (Tang 1998). This again refers to a mixed approach that draws from both resource based approach and environmental approach.

With respect to the environment surrounding a firm, Porter's five force model best explains the forces operating and influencing an organization from outside (Porter 1980). The major players, according to the model, include competitors, suppliers, buyers as well as potential entrants. An overview of the framework will explain the economic forces that shape the industry. In case of firms operating in a cluster, collaboration with and support received from these players is what that may impact or influence the rate of innovation adoption or rather the propensity of the firms to adopt innovations. Hence the external factor of primary importance to the firms in a cluster is found to be competition (faced by the firm from within the cluster and at the market place where firms compete with those catering to the target market from outside the cluster). The intensity of competition is a measure of market pressure to innovate (Birchall, Chanaron and Sonderquist 1996). Industrial cluster approach also stresses the competitive pressure of the environment on the firm (Porter 1998).

The firm may also face uncertainty on account of turbulence happening in the external environment due to competition, entry of new players, shift in demand of customers and the like. Environmental change is related to uncertainty and dynamism (Damanpour 1996). Such a competition and turbulence may motivate or force the firms to adopt innovations to safeguard as well as improve their business in the market place. Therefore, competition and turbulence was found to be an essential area of inquiry with respect to innovation. Apart from this, collaboration with other forces in the cluster also needs to be investigated to find out what are the reasons for which firms collaborate and what the extent of such collaborations is. These forces include the players in the eco system surrounding the firm. Hence their influences on the cluster firms' innovation have to be studied. At the core of literature on regional innovation is the concept called 'innovation milieu' (Camagni and Cappello 1997). This refers to the complex network of informal social relationships in a limited geographical area that increases local innovative capability through synergetic and collective learning. Therefore, the environmental factors of interest in the present study are competition and turbulence in the environment and the collaboration among the SMEs in the cluster's eco system in terms of the purpose for which they collaborate and the extent of their association.

The internal environment of an organization is measured by its organizational structure, resources, climate and culture (Tang 1998). An organization is a complex system defined by the organizational variables. Integration of people, their knowledge and skills is the basic enabler of innovation in any organization. Innovation begins with the pursuit of an individual's initial idea and its gradual enhancement within the organization through the involvement of all the members present. Innovation begins with an individual, develops with a team and later engages the entire organization. The individual domain which is the starting point of pursuit towards innovation will be the entrepreneur. Such a domain can be explained by the construct called 'leadership'. Leadership which is more transformational in nature is what that drives innovation within the context of the firm. Literature has established a direct and positive link between a style of leadership labelled as "transformational" and organizational innovation. It has been proved that transformational leadership has significant and positive relationship with both employee empowerment and promotion of an innovation-supporting organizational climate (Jung, Chow and Wu 2004).

To develop innovativeness from this individual domain to the team domain, a right mix of people and an appropriate and supportive team climate is required. The team domain and its support in the organization can be measured by the construct 'organizational climate for innovation'. Besides the presence of such a team domain, innovation also requires effective integration of inputs from various functions. This means that an appropriate organizational structure that provides support to the team domain and thereby allowing diffusion of innovation throughout the organization is also a basic enabler of innovation. Hence the need for the construct 'organizational structure' can be justified.

Several research studies in the past have investigated the direct relationship between market orientation and business performance. Kirca et al (2005) did a meta-analysis of 114 studies and found that 17% of all consequences of market orientation were related to innovation, whereas 60% of them were related to organizational performance, e.g. overall business performance, profit, sales and market share. Limited and fragmented literature is available that measures the impact of market

orientation on innovation adoption (Grinstein 2008). According to Hurley and Hult (1998), there is a significant gap in market orientation research as they do not incorporate constructs related to innovation. Especially in the case of firms engaged in the Tirupur knitwear cluster, market or customer orientation is an essential pre condition for their survival and success. The cluster is a made to order cluster where the customer plays a very important role. An understanding of the needs of the customers will help the firms to earn goodwill and ensure repeated businesses. Sometimes, innovations are suggested and even forced by the customers. Hence understanding customers' expected standards of performance and their implementation and integration in the value chain is essential for these firms. Therefore, 'market orientation' is an essential pre innovation adoption construct internal to the firm.

The decision to adopt innovation is primarily dependent on the innovation objectives of the firm and hence the construct 'innovation objectives' become the starting point of the conceptual model. Having a greater number of innovation objectives, help firms to ensure innovation success. The general objectives of innovation can be product related, process related, market related and regulation related. A firm may also have specific objectives in these broad areas. Defining objectives provides a stimulus for the generation and implementation of ideas and other actions (Sullivan 2008).

A study on the antecedent consequent linkage of innovation adoption shall remain incomplete, if it does not take into account the barriers associated with innovation. The resource based approach and environmental approach discusses the barriers internal and external to the firm while adopting innovations. Even the presence of a strong objective to innovate or a strong enabler or facilitator of innovation may not turn into fruition when its positive influence is negated by the overriding presence of barriers. The assumptions behind the study of barriers are that once the barriers to innovation are identified, their impact is understood and efforts are taken to eliminate or reduce them, the natural flow of innovation can be re-established. SMEs are expected to face relatively more barriers when compared to their larger counterparts due to their inadequate resources and expertise

(Hadjimanolis 1999). Hence 'barriers to innovation' has also been decided to be a pre innovation adoption construct in the present research. According to Piatier (1984), barriers can be categorized into internal or endogenous and external or exogenous barriers.

The level of investment that a firm makes in Research and Development (R&D) is the most extensively used proxy for the level of innovation efforts (Rogers 1998). R&D involves original works undertaken on a methodical basis to enhance knowledge and also using this knowledge to devise new applications. A strong correlation between R&D and innovation effort has been already established in plenty of literature. According to the principles of open innovation, external R&D can significantly benefit firms (Chesbrough 2003). In their study, Battacharya and Bloch (2004) observed a significant positive influence of R&D on innovation adoption. Since 'R&D' is invariably used in most of the studies that measure innovation, the researcher has decided to add it as a facilitator construct that influences innovation adoption. However in the context of SMEs, usually separate funds will not be earmarked for R&D. SMEs will not usually have a separate department for research (Gottschalk and Janz 2001).

Innovation adoption will involve the organizational decision to make use of an innovation. Scholars of innovation usually categorize organizational innovation into administrative innovation and technological innovation (Kimberly and Evanisko 1981). These two basic kinds of organizational innovation have varying influences on organizational performance. So they must be considered independently when conducting research (Wolfe 1994). While most of the studies on innovation investigate into technological innovations, new or improved administrative or marketing practices can also result in enhanced business performance and therefore needs to be treated as other dimensions of innovation. Based on the socio-technical system theory, Damanpour et al (2009) considers administrative innovations as new approaches and practices to modify an organization's management processes. According to OECD (2005), the innovations adopted by an organization can be broadly classified into technological (involving product and process innovations), administrative and marketing innovations. The frequency of innovation adoption can

be empirically tested to determine the overall innovativeness of the firms or rather the propensity of the firms to adopt innovations. As the researcher adopts variance approach in the present study, the construct ‘innovation adoption’ will be conceptualized as a mediator between the pre and post adoption constructs.

Although studies on determinants of innovation adoption are abundant, studies on innovation implementation are very rare (Klein and Sorra 1996). Innovation implementation is the process of getting the employees’ appropriate and committed use of an innovation. Implementation failure occurs when employees, despite of the adoption of innovation, use or practices them less frequently so that the potential benefits of innovation cannot be realized. When implementation is effective, then organization’s performance is enhanced. Therefore, the moderating role of implementation can be empirically tested to find out whether high implementation improves the causal path between innovation adoption and business performance. Based on the above premise, rate of innovation implementation can be adopted as the moderating construct for the purpose of the present research.

Several authors have supported the proposition that innovation has a direct impact on firm performance (Tidd, Bessant and Pavitt 2005, Damanpour 1991). SMEs adopting innovations may benefit in several ways. The performance implications of innovation among SMEs have attracted considerable attention (Rosenbusch, Brinckmann and Bausch 2010). Successful innovation involves effective development and implementation of creative ideas and practices that enhances overall business performance. Although innovation involves high initial and continuous investment costs, risks and uncertainty, the benefits of the same from competition, customer loyalty, price premiums and entry barriers for potential imitators overshadow the costs. The worth of an innovation can be found by analyzing its impact in terms of returns or business generated from it. Hence it will only be apt if the performance implication of innovation adoption is studied so that a complete cause effect relationship can be established. The business performance involves financial as well as market related performance. Therefore, the researcher has taken business performance indicators of SMEs as the dependent variable in the present research.

2.6 DEVELOPING THE CONCEPTUAL MODEL

The overall theoretical framework of the study rests on the behavioural theory of the firm. The behavioural theory of firm views the firm as a boundedly rational, adaptive and learning organization. The resource based and environmental based dynamic views are complementary to and extend the learning and assumptions of behavioural theory (Harder 2011). The predominant approach of the study is variance based that explores the causal relationships between the variables of interest. A process based approach to innovation is also adopted at a lesser degree to analyse the extent of implementation of innovations adopted. A mixture of resource based view and environmental approach has been taken to determine the antecedent variables that will impact innovation adoption and the consequent variables occurring after adoption.

The objectives of the firm to adopt innovation will certainly be the starting point of the causal model that links innovation adoption with constructs occurring before and after it sequentially. Within the organizational boundary, the pre adoption constructs that have an impact on decisions to adopt innovation have been classified into internal facilitator constructs as well as internal barrier constructs. From outside the organization also, there may be constructs that will impact an organizations decision to adopt innovations. These include external facilitator constructs as well as external barrier constructs. Summarizing the impact of internal and external factors, the pre innovation adoption constructs can be broadly classified into facilitators and barriers, which may be further subdivided into external and internal constructs. The frequencies of adoption of various types of innovation will determine the extent to which innovations are adopted by the firms. This rate of adoption has to be measured with respect to all the dimensions of innovation occurring within the scope of an SME such as technological (product and process), administrative and marketing innovations. Firm's business performance measured in terms of financial and market performance will be the dependent variable so that the impact of innovation adoption can be measured and suitable conclusions can be drawn and practice value of the model can be understood. The extent of innovation

implementation can be considered as a moderator variable so that impact of rate of innovation implementation on business performance can be captured.

There can be two possible approaches to the association model between the dimensions of a company's innovation strategy and its performance (Zahra and Das 1993). In the first approach, the dimensions of innovation are assumed to influence firm's performance directly and simultaneously (a simultaneous model of innovation strategy-company performance links). The second approach suggests a logical sequence among the innovation variables (a sequential model of innovation strategy-company performance links). In such a sequential model the innovation strategies (or the types of innovations adopted) may mediate between the independent variables and firm's performance. Even though the independent variables may not influence the business performance of the firm directly, it may still influence the dimensions of innovation (mediating variables) that in turn affect the company's performance. However, the rationale of choosing the sequence should be based on the theory related to the concepts involved (Ciptono 2006).

The analytical approach that can best measure such a sequential relationship is structural equation modeling (SEM). The structural relations will help the researcher to find out the effect of select variables on other variable of interest. The indirect effect of independent variables through a mediator on the dependent variable can be best summarized using this approach. Such an approach is also suggested when the theory is not highly refined, so that the insights from the path analysis can be used for trimming and refining theoretical models (Swamidass and Newell 1987). Structural equation modeling helps in theory development because it allows proposing and subsequently testing theoretical propositions about interrelationships among variables in a multivariate setting (Bollen 1989).

The conceptual model in the present research has been hypothesized in such a way that innovation adoption acts as a complete mediator between the pre and post adoption variables. There may be direct relationship between the pre adoption variables and the business performance. However, the researcher has not considered the influence of such direct relationships in this model. This suggests that 'innovation adoption', within the scope of this study, completely mediates the

impact of pre adoption or antecedent variables on the post adoption or the consequent variables of interest. Existence of direct relationships between the independent and dependent variables is outside the scope of this study.

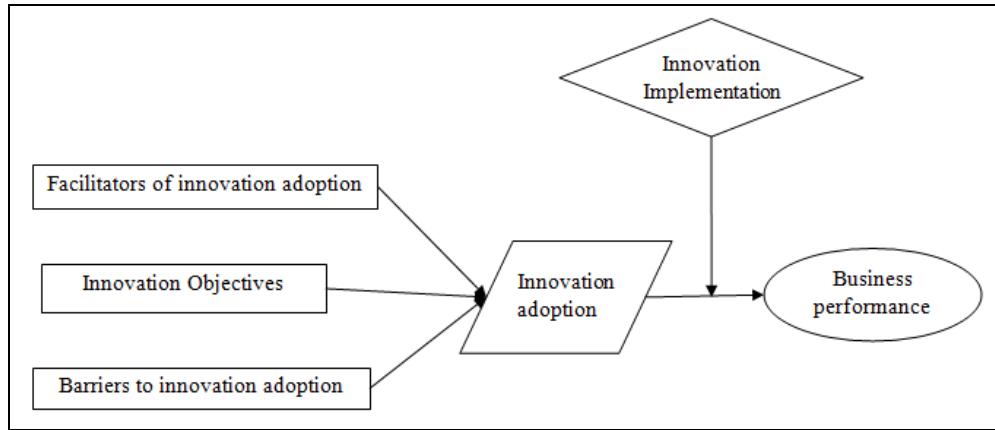


Figure 2.1 Conceptual model

Based on Structural Equation Modelling (SEM), the researcher has conceptualized the impact of the pre adoption or the antecedent variables on innovation adoption and that of adoption on the firm's performance in market and financial aspects. Innovation adoption will act as a mediating variable between the antecedents and the consequences of innovation adoption. The adoption by itself does not guarantee firm performance, and hence, innovation implementation construct acts as a moderating construct that moderates the causal relationship between innovation adoption and innovation consequences in the form of business performance. Hence while, innovation objectives, drivers (facilitators) and barriers are the independent variables; innovation adoption is the mediating variable; innovation implementation is the moderating variable and business performance of the organization is the dependent variable. SEM adopted for the conceptual model measures the causal relationship between the organizational antecedents and consequences of innovation mediated by organization's adoption of innovation and moderated by innovation implementation.

As the model is sequential, the constructs in the model can be classified into two levels- those that occur before innovation adoption (antecedents) and those that

occur after innovation adoption (consequences). Hence, the model can be viewed in detail as below:

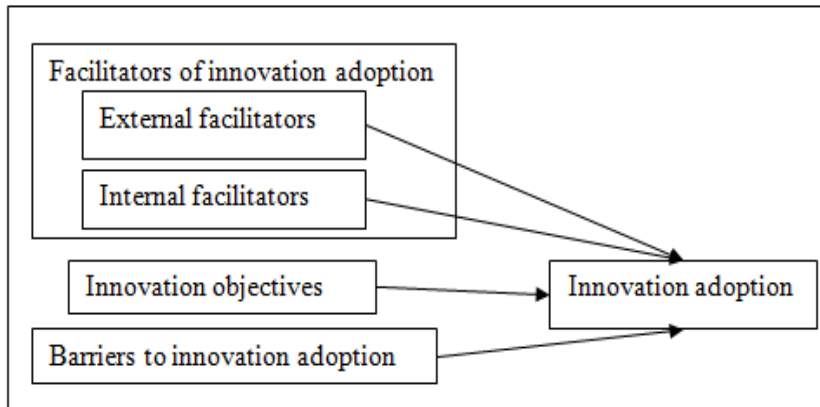


Figure 2.2 Conceptual model - Level 1

At the first level or the pre adoption phase, the objectives, facilitators and barriers of innovation are presumed to have a direct impact on innovation adoption. The facilitators are second order constructs and the composite index for the construct is determined by the individual first order constructs involved in its scope. The objectives, however, is a first order construct and is measured by a number of items. The barriers, though classified as internal and external, is considered as a single construct for the purpose of the hypothesized model. Innovation adoption is a second order construct measured by the dimensions of innovation adoption as first order constructs.

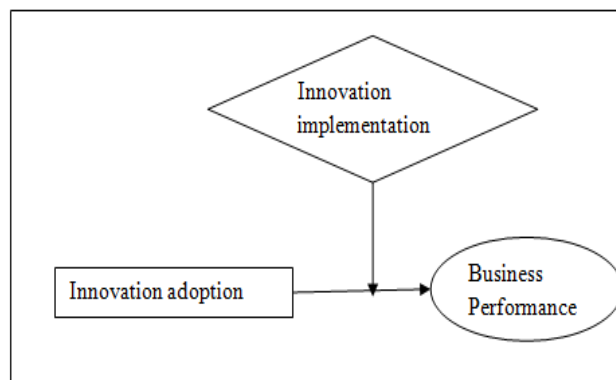


Figure 2.3 Conceptual model - Level 2

At the second level or the post adoption phase, the impact of innovation adoption on business performance is measured. Business performance though classified into financial and market performance, is considered as a single construct in the model. The construct ‘innovation implementation’ measures the extent to which innovations adopted are implemented. The objective is to find out whether rate of implementation will influence the adoption-performance linkage.

The construct ‘internal facilitators of innovation’, as mentioned earlier, is a second order construct. The first order constructs measuring internal facilitators are identified based upon the literature, discussions with experts and justifications made in this regard. The first order constructs comprising internal facilitator for the purpose of this study are ‘leadership’, ‘market orientation’, ‘climate for innovation’, ‘organizational structure’ and ‘internal R&D’. These constructs are measured by items identified from the literature. The relationships are established on the basis of theoretical perspectives.

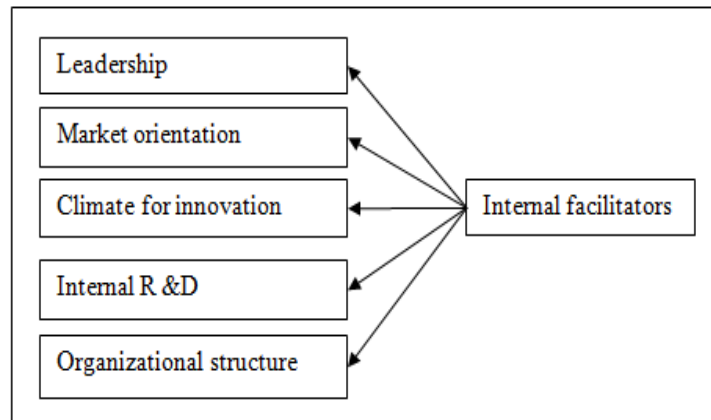


Figure 2.4 Internal facilitators - First order constructs

The construct ‘external facilitators of innovation adoption’ also is a second order construct and is measured by several first order constructs identified based upon the literature and discussions with experts in the industry and academics and justifications made in this regard. The first order constructs comprising external facilitator for the purpose of this study are ‘competition and turbulence’, ‘collaboration purpose’, ‘collaboration status’ and ‘external R&D’. These constructs

are measured by items identified in the literature. The relationships are established on the basis of theoretical perspectives.

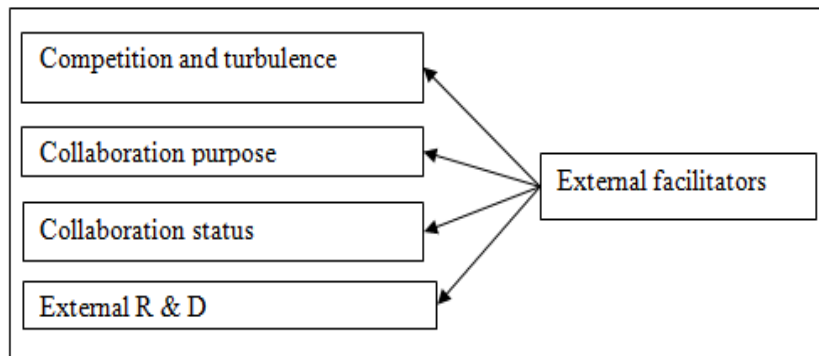


Figure 2.5 External facilitators - First order constructs

The construct ‘innovation adoption’ also is a second order construct and is measured by the frequency of adoption of the dimensions of innovations identified based upon the literature. The dimensions of innovation for the purpose of this research are ‘technological innovations’, ‘administrative innovations’ and ‘marketing innovations’ (OECD 2005). Technological innovations include both product and process innovations. The constructs are measured by items identified in the literature.

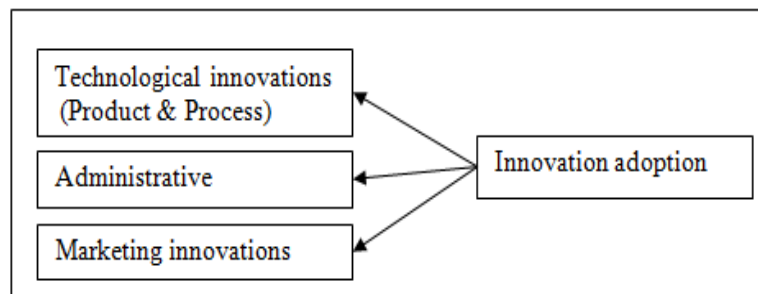


Figure 2.6 Innovation adoption - First order constructs

2.7 CHAPTER SUMMARY

This chapter has provided the theoretical and empirical background for the present research. At the beginning, the review of prominent empirical literature helped to examine the status of research on innovation. Based on the literature, the

research gaps were identified and conceptual model has been developed to guide the research further. While discussing the conceptual model, literature were again reviewed to detail the concepts chosen for the study. In the following chapter, the research questions and objectives are described, followed by logical development of hypotheses based upon the model and other relevant factors.