CHAPTER 6

CONCLUSION

This chapter provides a summary of the key issues that have been addressed by the research and how the research was constructed. The implementation of the survey and the findings are presented in a narrative form. This chapter also includes the contributions to knowledge, practice, and methodology. The limitations of the study are explained and a possible direction for the further research is set. Finally, the chapter is concluded with a short summary.

6.1 SUMMARY OF RESEARCH

The textiles and clothing industry is highly intensive in labour, raw material, product, capital and inventory. These companies have employed a wide array of technologies for enhancing the efficiency and effectiveness of different business processes. ERP has been identified as one such tool and it has proven to be critical to the success of many companies. The textile industry in India has a significant presence in the nation’s economy as well as in the international textile economy. The scope of the market availability is huge because the Indian textile export is only 6% of the total global exports and is only one-fourth of that of China (Intexfair 2008). To capitalise the opportunities the Indian textile and apparel industry has to move forward with a sense of urgency and purpose.
Some prerequisites for globally competing textile industry are global best practices, adopting rapidly changing technologies and efficient processes, innovation, networking and better supply chain management, and ability to link up to global value chains (Dun and Bradstreet 2006). ERP in textiles and apparel industry provides enhanced and effective coordination that reduces cost in manufacturing and logistics. However, penetration of ERP in this industry is low. This research aims to investigate the motivational factors and their interaction in driving the ERP adoption, particularly in the knitwear garment industry.

SMEs are the backbone of a country’s economy, particularly for the developing countries. Despite its commendable contribution to the country’s economy, SME sector faces a number of problems and these factors obstruct the SMEs from surging ahead (“Challenges of SME sector” n.d.). Study on ERP adoption in SME’s requires attention, because the issues of SME’s are different from the large organisations and the motives that drive ERP adoption are unique and need to be understood independently for a better penetration of ERP system. Pouder and St. John (1996) viewed that industries will have different rates of adoption of innovation and this leads to an interesting question of what motivates the SME garments cluster to adopt ERP. IT managers should recognize the need for ERP and investigate what is driving ERP implementation and if it is the appropriate solution for their enterprise? This research proposes a conceptual framework to investigate the motives or the driving forces by which the enterprises choose to go in for an ERP system.

The adoption of ERP can be looked upon at two levels. Organisational and individual levels, identified at two different stages of the ERP lifecycle (Esteves and Pastor 2001; Rajagopal 2002; Somers and
Nelson 2004). Organisational level of ERP adoption research focuses on the early stages of the ERP lifecycle. This phase is the one during which managers must question the need for a new ERP system. In this phase the definition of system requirements, its goals and benefits, and an analysis of the impact of adoption at a business and organisational level are usually done.

Jeyaraj et al. (2006) identified various theories used in individual / organisational IT adoption research. It is understood that the studies using TAM and DoI for ERP adoption have not considered the influence of economic and institutional factors that the SMEs face due to their size and dependence in the supply chain. TOE framework has also been claimed to be a generic theory of technology adoption/diffusion that can be used to study SMEs’ willingness to adopt ERP. TOE model explains the influence of technological, organisational and the environmental factors in the process of adoption and implementation of the technological innovations by the firm.

There is only a little research work published on IS adoption by SMEs and researches that are focussed on the early stages of the adoption decision are necessary to help in evaluating and selecting an ERP system (Bernroider and Tang 2003; Cereola 2008). The existing models do not address the characteristics of SME’s such as lack of financial support, lack of government support, lack of skilled technicians, pressure from the supply chain, high disintegration leading to smaller units and competition with-in the industry from similar organisations and larger enterprises. The decision-making characteristics of the SME are different because they are influenced by the interaction of both external and internal factors. This study tries to develop an ERP adoption model for SME’s that illustrates the interaction
between the institutional theory, complexity theory and the cost benefit analysis.

The decision to fulfil the goals or needs is affected by the benefits and the risk associated with the acquisition of a product, which is often evaluated from the knowledge of previous learning or cognitive process. Developing on this fundamental motivation process of Dugree et al. (1996), it is proposed that the driving force in ERP adoption can be identified as the institutional isomorphic pressures and the decision to adopt ERP is affected by the evaluation of the benefits, challenges and the organisational complexity that create a need for the product.

The objective of the study is to address the research question by empirically testing the influence of the institutional isomorphic pressures in the garments cluster. It also analyses how other motivational factors like awareness of benefits, challenges and complexity of their business process respond to the institutional isomorphic pressures and influence the ERP adoption of the knitwear garment firm.

Institutional theory has emerged as a powerful explanation to account for the influence of external institutions on organisational decision-making and outcomes. DiMaggio and Powell (1983) argued that the managerial decisions are strongly influenced by the three institutional mechanisms such as coercive, mimetic and normative isomorphism. They create and diffuse a common set of values, norms and rules to produce similar practices and structures across the organisations that share a common organisational field.

Organisations are often attracted by the benefits of ERP that are characterized by integration, flexibility and scaling. There has been an
extensive research on the issues concerning the implementation of these systems and achieving the promised benefits (Kalling 2003). Parr and Shanks (2000) argued that the rationale for implementation varies between companies and lie between a range of motivators broadly categorised on technical, operational and strategic benefits. Shang and Seddon (2004) categorised the various benefits on a comprehensive framework of organisational, operational, managerial, and strategic and IT infrastructural benefits.

Organisations should not only understand the benefits obtained from the ERP system but also of the barrier or risk, which pose a challenge. Complexity of ERP leads to a high-level risk. The risks involved in the adoption of ERP can be categorized as project, technology and process-related risks (Saatcioglu 2007). Nzaou et al. (2008) studied the implementation risks from the adoption stage onward under six main dimensions of risk in the implementation namely organisational, business-related, technological, entrepreneurial, contractual and financial risk.

Many studies have found that the organisational characteristics are also significant determinants of organisational IT adoption. Studies related to organisational characteristics and ERP adoptions are found in literature. Buonanno et al. (2005) have done an exclusive study on the organisational characteristics on ERP adoption like company size, the market area, the membership in an industrial group, the presence of branch offices, the level of diversification, and the degree of functional extension. ERP adoption is the behavioural outcome that is understood as having adopted the ERP system or not adopted the ERP system.
Based on the literature, a conceptual model was developed for the study. To validate the model empirically, the following research design was formulated. A survey method using a self-administered questionnaire was used to collect data. The survey instrument was developed by adopting the standard instruments as explained in earlier section. The SMEs of Tirupur knitwear garment cluster was considered as the population of the study and the members of TEA and AEPC were considered as the sample framework. Within the framework, 1000 companies were randomly selected as the sample. Dillman’s (2007) tailored survey methodology was used. 229 responses were received by mail survey and a multiple contact mode. Cases that were incomplete, unusable and the outliers were removed. The data were prepared for the SEM analysis. The measurement model was first tested and then the structural model was analysed for the path coefficients and the goodness of fit. Since our research model proposes to measure the multiple mediating effects simultaneously, AMOS, which implements the direct and indirect effect analysis, was used.

The constructs measured by multiple items are tested for unidimensionality, convergent validity, internal consistency and discriminant validity. For this purpose, the measurement model of the latent constructs, perceived benefits, perceived challenges and institutional isomorphic pressures was developed and CFA was performed. The measurement model of institutional isomorphic pressures theorised as three constructs; mimetic, coercive and normative pressures were tested. The factor loading of each item on the latent construct showed a poor fit of the model. Therefore, an exploratory factor analysis to examine what each measured item really indicates was performed. By iteration, the model was found to fit the data, only when the items were loaded on five components. While observing the grouping of the items, the factors were identified as the
agents of pressure’, in contrast to the ‘mechanisms of the pressure’ as proposed in the conceptual model. These factors are labelled as Associate pressure, Customer pressure, Competitor pressure, Supplier pressure and the Government pressure. However, the supplier and the government pressures being insignificant were removed from further analysis. The modification in the constructs was theoretically justified because the findings correlate to the argument of Benders et al. (2006).

The measurement model of perceived benefits that has five constructs: operational benefit, managerial benefits, strategic benefits, IT infrastructure benefits and organisational benefits was tested. The model was found to have high goodness of fit. Finally, the measurement model of perceived challenges that has four constructs namely resource challenges, technology challenges, people challenges and organisational challenges was verified. This model was also found to have high goodness of fit. The reliability of the constructs was also examined by the Cronbach’s Alpha. For the constructs with only two items, their correlation was tested. The alpha values for the constructs are all above the acceptable level of 0.7.

After refining the items in the measurement model and obtaining an acceptable fit, a theoretical validation of the modifications was also done and the complete structural model was developed. The model was tested for mediation effect. The causal steps methods developed by Baron and Kenny (1986) was used. Hayes (2009) suggested that SEM software such as AMOS has implemented the indirect effect and bootstrapping technique that can be used effectively. Before performing the mediation analysis with bootstrapping analysis for indirect effect, the relationship between the test variables in the structural model was tested. For this the zero order correlation between the independent variable to moderating variables,
moderating variables to the dependent variable was established. The results show that all the relationships involving the perceived challenges are significant, but negative. All the other variables show a significant positive relationship. This confirms to the first and the second step described in Baron and Kenny mediation analysis.

Having established the relationship between each variable in the model, the evaluation of the indirect effect of institutional isomorphic pressures mediated by the perceived benefits, perceived challenges and organisational complexity was considered. In the ‘analysis properties’ of AMOS, the ‘Indirect, direct and total effects’ analysis was selected in the output menu and a maximum likelihood bootstrapping of 5000 samples with a 95% confidence interval in calculating the lower bound and upper bound values was selected and the estimates were calculated. The goodness of fit of the model was analysed and shows a considerably good fit. The results of the path analysis are analysed in two parts; one before the bootstrapping, that indicate the results of the sampled firms and the second part with the bootstrapping to simulate the results to the population. The results of the sample indicate that the direct influence of institutional isomorphic pressures are positive and significant on the ERP adoption. The perceived benefits, perceived challenges and the organisational complexity were found to mediate the influence of institutional isomorphic pressures on ERP Adoption. To find the significance of the indirect effect, the bootstrapped results are analysed. All the estimates of the bootstrapped regression weights are within the non-zero range, indicating the rare possibility of the effects becoming zero or no mediation. This confirms a significant mediation effect.
Shang and Seddon (2004) proposed that ES benefits change (increase and decrease) in response to internal and external triggers, and these changes bring additional benefits and problems. Inspired by this statement, it was proposed to test the intervening factors that probably mediate the forces towards ERP adoption. The study finds that the pressures from the customer are both mimetic and coercive and provide reasons for the firms to adopt ERP. The institutional isomorphic pressures were explained by the associate pressure, customer pressure and the competitive pressure more prominently. The supplier pressure, though positive, did not have a high impact, and government pressure was found to be insignificant. This coincided with the findings of Kouki et al. (2007), who studied the institutional isomorphic pressures on ERP assimilation in a manufacturing food company. The institutional isomorphic pressures were also found to increase the ERP adoption directly. This proves the earlier studies of Teo et al. (2003).

It was found that the perceived benefits have an influence on ERP adoption, as in the previous studies. This shows that the respondents are aware of the operational, managerial and infrastructure benefits more than the organisational or strategic benefits. In a similar manner, there is awareness of the challenging factors that are relevant to this industry. The results show that except for human resource and the people challenges, the industry is capable of managing the other challenges like finance, technology and organisational.

From the path coefficients of the structural model, it is understood that the institutional isomorphic pressures increases the perceived benefits and perceived benefit thereby increases the ERP adoption. Similarly, the institutional isomorphic pressures reduce the
perceived challenges but this in turn negatively affects the ERP adoption. To investigate the mediating effect of the variables, the direct effect of institutional isomorphic pressures on ERP adoption is compared with two conditions, one in the absence of the mediating variables and the other in the presence of the mediating variables. The results show that the direct effect of the institutional isomorphic pressures on ERP adoption is lesser when the perceived benefits, perceived challenges and organisational complexity are included, indicating that the total effect is partly caused by the indirect effect or the mediation effect. In addition, to examine the type of mediation, the change in the direct effect was analysed. Since the direct effect does not become zero or negative when the mediating variables are included, it is concluded that the mediation effect is complementary by nature (Zhao et al. 2010).

The firms need to move from the basic ICT to a strategic level ES as per the suggestions of Peppard and Ward (2004). The institutional isomorphic pressures tend to have more influence on SMEs rather than what the large businesses have because of their higher interdependency and being a weaker partner (Saunders and Hart 1993). Therefore, most of the SMEs are under pressure to adopt ERP, if its business partners mandate or recommend it to do so. This study highlights that the institutional pressure, when supported by the awareness on the benefits and challenges and the organisational complexity could lead to an increased intention to adopt ERP. Rather forcing the firms to adopt ERP, the stakeholders should concentrate on creating an awareness of the benefits and challenges through workshops, demonstrations etc. Since the major challenge was found to be people resources, efforts are required in developing human resources. The educational institutions and the vendors should join hands to produce trained employees. The response strategy of the firms to the institutional
isomorphic pressures and that of the motivational factors are also found from this study. When the pressure is high, there is a compromise on the perceived challenges and acquiescence when the perceived benefits are high.

6.2 RESEARCH CONTRIBUTION

The study has contributed to the domain of knowledge on ERP adoption in SME and to the research using mediation analysis in AMOS. The study also contributes to the practice by providing a model to predict the response of the firms to the motivating factors of ERP adoption.

6.2.1 Contribution to Knowledge

This study has contributed to the empirical validation of the mediating role of the perceived benefits, perceived challenges and the organisational complexity for the institutional isomorphic pressures on ERP adoption and their direct influences. The outcome of the study is a validated model of the motivating factors for ERP adoption of a SME knitwear garments cluster. Many studies have analysed the motivating factors as to simultaneously act on the adoption decision or moderating themselves together. This study contributes to the empirical validation of the mediating role of the motivating variables and in examining the relationship between them from a different perspective.

Clusters are formed and bound by certain forces. This study investigates the institutional isomorphic pressure in the perspective of a cluster. Organisations in the cluster develop into institutions and force homogeneity in the cluster. This study understands such forces of homogeneity as institutional isomorphic pressures with a special reference
to the Tirupur knitwear cluster. Understanding of the cluster institutional isomorphic pressures helps various stakeholders in the cluster for developing strategies with a due consideration to the role of institutions that will result in the competitive advantage to the cluster as whole and long-term sustainability. This study has identified that institutional isomorphic pressures are unique to industrial cluster

This study also contributes to the data analysis method by utilising the latest method of direct, indirect and total effect analysis with bootstrapping in the AMOS package for testing the mediation analysis. A conceptual model that is designed and further validated by experts and is empirically tested to present a valid model of the motivating factors for ERP adoption of a SME knitwear garment cluster. On the academic interest, this study contributes to the literature on institutional theory that the conceptual classification on the nature of the institutional forces can vary and rather be identified as the agents of pressure based on the source for analytical purpose. This research fills the gap relating to the nature of interaction between the motivating factors in ERP adoption as proposed by Shang and Seddon (2004) and Ugrin (2009).

6.2.2 Contribution to Practice

This research contributes to the practice by identifying the motivating factors and their interaction. This study reiterates that the vendors and consultants when marketing the ERP product, a mere pressure of the institutional network cannot produce the necessary impact on the adoption of ERP. This has to be complimented by the suitable benefits and reduced challenges. The study has highlighted the type of benefits that the firms envisage and the highest challenges the industry faces.
The strategic benefits are not understood by the industry and similarly the people challenges are the highest. The results direct at a possible solution to address the gap in creating motivation for ERP adoption that will be helpful to the stakeholders like software vendors, consultants, government agencies, financial institutions, business promotion agencies and other institutional members. This study stress the need for creating awareness on the benefits and the challenges of ERP adoption and highlights how certain forces can aggregate to create a positive influence. The study helps the managers of the industry to understand what are the benefits and challenges that can be expected in ERP applications. In addition, the study asserts that there should be compromise on the expected benefits and challenges, when there is an external force pressurising them to adopt ERP.

The understanding of the benefits and challenges will help the firms to frame their response strategy to the institutional isomorphic pressures. Though cost-benefit analyses are usually conducted by all companies as a project appraisal and return on investment measurement, the opportunity cost by complying with the pressures of the institutions will be usually missed. On the contrary, the awareness of benefits and challenges before confirming to the institutional isomorphic pressures will help managers to evaluate the value and consciously decide on whether ERP is required and will address their unique problems. The cluster e-readiness activities have already created an awareness of the ERP adoption and the potential benefit. The outcome of the study highlights the need for focusing on disseminating the strategic benefits of ERP adoption.
6.3 LIMITATIONS

Many factors contribute to the development of motivation to adopt ERP. This study takes a narrow view and looks at only a few factors, institutional isomorphic pressures, perceived benefits, perceived challenges and the organisational complexity. The conceptual model was arrived at after the analysis of literatures that could be accessed. A mediation model was proposed for the study and the statistical analysis is done by SEM technique.

SEM technique was the only choice for analysis due to the nature of the model (Second order latent construct, multiple mediation). To calculate the specific indirect effect and its significance, Mplus software is the best-recommended tool. However due to the availability and affordability the study was restricted to use AMOS only. The indirect, direct and total affect in AMOS software package is used in which the significance is checked using bootstrapping technique. There was limitation on the responses due to the inherent problem of the mail survey methodology in the SME. The sample size was small and multivariate non-normality was observed. This forced the use of SEM and bootstrapping methods. The other limitation is that the study was conducted in the SME sector of the knitwear garment industry and the findings can only be generalised to this particular industry. The study was done at only one instance (Cross-sectional study) due to time and cost restrictions.

6.4 FUTURE DIRECTION

Adoption or purchase decision is created by different motivational factors. Needs and wants for strategic IS raises both internally and externally and transformed into a drive. With the forces on one hand,
the decision-making can be an elaborate or a heuristic process. A rational decision making process looks at the economic justification. This study is framed in such a context in which the organisational complexity drives from internally to the firm and the institutional isomorphic pressures drive from external. These forces modify the perception of benefits and challenges and influence the ERP adoption. This study does not take into consideration other adoption theories such as DoI, Absorptive capacity, TAM etc. into the framework.

The organisational complexity was found to mediate the institutional isomorphic pressures. However, prior studies have found that the organisational size was one of the controversial predictor of ERP adoption. Therefore, like Iskanius et al. (2009) this study can be further extended by having an equal stratified sample dividing the enterprises into three different groups; micro, small, and medium enterprises.

In this study, the benefits were collectively used to predict the ERP adoption. This study can be extended to test the individual benefits leading to ERP adoption as suggested by Jang et al. (2009), who tested only the strategic benefits to predict the ERP adoption. This study proposes a mediation model and the statistical analysis is done by SEM technique. The indirect, direct, the total effect in AMOS software package is used with bootstrapping technique for testing the level of significance of the results. Further this study can be extended by including other motivating variables and still test their mediating effect on the ERP adoption. The mediation analysis can also be cross-validated using other statistical techniques.

To a larger extent, the test can combine both moderating and the mediating effects together in a model as suggested by Muller et al. (2005)
and Preacher et al. (2007). The successful validation of the conceptual model in the knitwear garment industry recommends that the model can be further replicated and validated in various types of industry and country settings. The Coimbatore unit of the Confederation of Indian Industry (CII) has mooted a cluster project for SME to help them adopt ERP solutions (Soundariya Preeetha 2009). The model of this study can be verified and adopted for such cases. Recently Tirupur knitwear garment industry has started trying the cloud model of ERP (Mishra 2011). Therefore, a similar study in analysing the diffusion and adoption of SaaS ERP can be considered.

6.5 SUMMARY

This concluding chapter provides an overall summary of the research work. The contributions of the study to the knowledge and to practice are highlighted. The limitations of the study are presented and a possible opportunity and direction for future research is recommended.