CHAPTER 6
SUMMARY AND CONCLUSIONS

6.1 Introduction

This Thesis attempts to provide an overview and in depth analysis of recent and contemporary economic development theory, practice and outcomes in an effort to set the stage for the variety of analyses presented in subsequent chapters of this thesis. As such it has been focused but at the same time it has attempted to identify the critical elements of the past 60 or so years of economic development practice and policy in general and a great extent as applied to the Indian experience.

At the same time it has not been a definitive treatment either generally or more specifically as it applies to India. These include questions about distributive effects of past and current Indian development efforts using ICT, the potential that India may be able to leapfrog steps in the usual development process, institutional reform, liberalization, growing and building forward and backward linkages to the ICT industry, and more generally the role of technology in development of Rural India.

Capability building in the software industry followed an evolutionary path. The ability of software firms to participate more fully in global markets can be attributed to the advantage provided by a technological discontinuity and by the advent of new information technologies that enabled software firms to reach out to global markets from the outset. Software firms were less encumbered than manufacturing firms by administrative heritage.

From the 1990s onwards, learning through cross-border interactions and involvement in practice was speeded by the adoption of appropriate technologies and modular organizational design to enable participation across geographically dispersed sites. Successful firms learned, adapted, and innovated through interactions with global customers and the creation of cross-border communities of practice, thus building local capabilities, and confirming evidence from research on international technology
transfer that the most vibrant firms in emerging economies are those that build their own capabilities.

Software, a new industry, had the opportunity to take advantage of technological changes to start a knowledge-based industry. Moreover, government policy played a role in the development of software by encouraging software exports to nurture the indigenous development of the computer industry, and by removing barriers to its growth through reforms in the mid-1990s.

An example is the introduction of the Software Technology Parks Scheme in the early 2000s to ensure adequate infrastructure and administrative support for exporting which facilitated a shift away from on-site to offshore service provision in the 2005s. Consequently, software rapidly became visible as a global industry.

The rapid and continuing growth of the software industry in the last decade suggests that there is a concomitant growth in the number of members in the community involved in knowledge production. This critical mass of knowledge workers combined with the success of software globally has altered the space of possibilities for Indians leading to the convergence of aspirations and identities with counterparts in the developed world.

However, replicating the success of the software industry in other industries and ensuring that the benefits of IT are accessible to the wider spreader rural population necessitates accompanying changes in the institutional environment. Greater benefits are likely to be reaped from a focus on developing the IT, power and transportation infrastructures to enable all sectors of the economy to use IT to improve productivity and by nurturing a wider range of industries and institutions to support the diffusion of IT.

Moreover, collaboration between public sector research institutions and industry such as the joint participation of the Indian Institute of Science (IISC), and Encore Software, a Bangalore-based software development company, in developing the computer, a low-cost mobile PC (priced at approximately Rest 500) using leading-edge technologies and open-source software must be encouraged along with the formation of a strong local venture capital industry. Such measures may do much to bridge the
digital divide and to alleviate institutional wider participation in the domestic and global knowledge economy.

This is to conclude that there is huge scope to do work in making Process for Indian Rural Development. Rural Areas need Healthcare, Education, and Automated Agriculture and E- Governance services to change their living style and upgrade the livelihood.

“Thus, cross- border innovation in ICT focused on Rural requirements may offer new ways to bridge the gap between poverty and wealth.”

This chapter summarises the thesis relating the work to the aims, objectives and research questions set out in Chapter One, the gaps observed in Chapter Two and the chapters on data analysis and discussion. To begin, a brief discussion is included to place the conclusions in context. Following this, conclusions are made and recommendations for future research in this area are suggested.

The limitations of this research are discussed. Furthermore both short term and long term recommendations have been made that relate to the different stakeholders including whole government, government ministries, technical o officers, implementers, development partners nod theirs

Before drawing conclusions, key issues are highlighted.

6.1.1 The need for e-government

The World Summit on the Information Society (WSIS 2004) declaration provided ambitious targets, such as advancement on e-governance, closing the digital gap and generally connecting every place and everyone on the globe through ICTs. This has been advocated at all recent Commonwealth meetings, the World Summit on the Information Society and other international forums. E-government is nowadays seen as a possible answer to improving provision of government services and poverty reduction.

This means the need to implement ICT projects in government is not in contention because the benefits are many. In this context, the ongoing transformation of governmental administration, albeit still at its initial stages in the developing world, is the first step towards the achievement of e-government initiatives. Recently, the Indian government, following these global initiatives and targets has initiated several
ICT e-administration projects in the ministries with various degrees of success and failure.

6.1.2 Need for this research

In contrast to developed countries which have better conditions for ICT implementation, developing countries encounter several problems as identified in this research. Following global trends, the political establishment is expected to be increasingly involved in the implementation of e-government.

It is also anticipated that in addition to the few existing donor-funded e-administration projects, more government-supported projects will be initiated. It is therefore vital that these initiatives succeed in order to be instrumental in accelerating the process of e-government. To date, studies of ICT projects in developing countries have been general and few. This leads to a need for research using case studies and gathering empirical data to take note of specific contextual issues that affect ICT implementation and to suggest some solutions.

The investigation of the Indian e-administration initiatives in this thesis was an attempt to address the above need. The methodology builds on the Heels' and Beynon-Davies' models for ICT implementation and enables a better explanation of success and failure of government informatics in developing countries as well as proposing viable solutions.

6.1.3 Research perspective

This study belongs to the category of research that deals with the development of e-government infrastructure, rather than its outputs or outcomes. The user perspective was not the focus of the study because the emphasis was on systems success from the organisational and technological implementation perspective and not the user perspective. In addition to being implementation process oriented, the study ultimately aimed to generate theory and recommendations for good practice.

The case study approach, using some elements of a grounded theory approach, the systematic gathering and careful coding of data, and the use of an inductive process to facilitate the emergence of categories from the literature and the data, and the casual relationships between these emergent categories were found to be appropriate. This produced new concepts and categories of ICT implementation, such as identifying the institutional issues, funding issues, staffing issues, individual issues and donor issues and their solutions which are explored in Chapter Six and strategies for success which were proposed in the same chapter.

The strategies and actions suggested in this chapter should aid in planning for the future success of ICT implementation. The framework developed as a result of this research helps to illustrate ways of understanding and analysing issues and situations
while looking for solutions. With the help of concepts developed and used in this research, the study provides a clear analytic story (Strauss & Corbin 1990). The rigorous coding of data and creative categorisation and sub-categorisation of variables included in quotations (using Atlas/it) helped to accomplish the conceptual density necessary to make the analytic story credible and consistent.

6.1.4 Key Finding

A key finding of this research is that most of the factors identified by other researchers important for the success or failure of ICT implementation are also relevant in the Indian context. This, as noted by Heels (2002b), reflects the presence of situation specific issues that require local solutions and improvisations and recognition of this will help reduce the design actuality gaps in ICT implementation and help ensure success.

6.2 Research results

This section relates the results of this research to the research aims and objectives. The research responds to five research questions, three aims and ten objectives posed in Chapter One. The research questions, aims and objectives are revisited in the three tables below for easier reference.

Table 6.1: Research Questions

| 1. What critical factors or variables can be identified as important in terms of their effect on ICT project implementation in government in general? |
| 2. Are there common variables and can the variables be synthesized and categorized under common broad categories for specific action to be taken in developing countries like India? |
| 3. Are there unique characteristics or factors that are unique to India? |
| 4. Are there relationships between the factors identified and are there factors that have effect on others or are independent? |
| 5. Can this, in turn, result in a framework that can be used to guide ICT implementation in India and other developing countries? |
| 6. Does the resulting framework build on previous frameworks either in terms of its applicability to real life situations, its inclusive nature, its cohesiveness, and its ability to generate questions for further research? |
Table 6.2: Aims

1. Determine the drivers for successful implementation for ICT projects in the government of India and, in particular, determine how these are related to those of developing countries and how these would differ from those in a typical western government.

2. Determine strategies to overcome the main barriers to effective implementation through Modelling.

3. Develop a document that provides recommendations and guidelines for an effective strategy for effective ICT project implementation for use by the Indian government and other similar governments of developing countries.

Table 6.3: Objectives

1. To identify and assess the input and output variables of ICT applications in government using published literature;
2. To carry out case studies on current projects in the Indian government to identify the factors for success and failure and combine these with published information to form the foundation of a theoretical framework for ICT implementation;
3. To identify unique characteristics and variables specific to India e-administration implementation;
4. to model relationships between factors with the aim of identifying their interrelated tendencies.
5. To identify criteria and develop framework, based on the findings of objectives 1 to 6 To establish the possibility of 'technology leapfrog' in the application of new technologies or upgrading of existing ones in the Indian government after a review of the case studies.
6. To produce a strategy document, based on the lessons learned in objectives 1 to 6 above, for use by Indian and other developing government officials that would help lead to a methodology for effective implementation of ICT
7. To disseminate the findings through publications in refereed conferences and journals.
8. To seek opinions from professionals and practitioners on the findings and recommendations made to verify the validity of this research.
6.2.1 Variables that affect ICT project implementation

This subsection responds to research questions one and objective one and two which both pose the issue of the variables or factors that affect ICT implementation in general and specifically in India. Initial factors were identified using the literature concerning both developed and developing countries together with general literature on ICT systems. This sensitized the researcher to factors that may or may not be present in India.

The factors that affected ICT implementation in India were identified through data gathering using interviews and documents. Objective one was, therefore, successfully achieved. Some of these factors can apply to ICT implementation outside e-administration. However, because of power and bureaucracy, they apply more to government.

6.2.2 Synthesis of variables

The research question two and objective two, three and four deal with the categorisation of variables. The Indian data was presented in Chapter Five, analysed, and discussed in Chapter Six.

6.2.3 Significant findings

Research question three and objective three concern the issue of unique characteristics that were found in India which are not covered in the published literature. These issues as they were found in India were: increased internal pressure

- Lack of ICT departments political power play
- hiring former government employees as consultants
- Prevalence of corruption
- lack of knowledge management, sharing and trickle down through the bureaucratic system
- Consultancy issues where former employees are hired at a higher pay
- Some factors are more critical while some have strong effects on others.

The analysis of the above items in Chapter Six and recommendation in Chapter chapter six presented a new contribution to e-administration implementation literature. As can be noted from the above list, pressure is shifting from external to internal pressure. This can be attributed to the awareness among stakeholders who include the ICT champions, users and some senior officers, of the importance of ICT to increased efficiency and effectiveness.

Internal pressure implores senior decision makers to consider restructuring ICT sections and hopefully make them departments, headed by qualified personnel. The
departments should also have adequate budgets for enhancing the ICT function in the ministries.

Different countries have different styles of governance and the Indian government is no exception and political power play has an effect on policy formulation, recruitment, budgetary and procurement processes. Corruption can be seen as one consequence of a lack of clear policies and the vested interests of politicians. Knowledge sharing, which may occur in other countries, was found to be a significant issue in India, particularly when it involved consultants not passing on knowledge, and office workers who go for training or study tours but do not share knowledge with their co-workers.

Succession training is also a related problem. Finally, different countries have a different resource base due to economic, political or global status and this affects their use of ICT.

**6.2.4 Modelling relationships between variables**

Research question four, research aim two and objective four are concerned with the issue of establishing relationships between variables. The two scenarios how factors within these two categories affect all other factors and how they contribute to various degrees of failure. From these scenarios, it would be possible to know the most significant issues that need to be addressed either through various interventions or local improvisation. These relationships feed into the e-administration implementation framework and the recommendations and guidelines document where priority areas are identified.

**6.2.5 The ICT implementation framework**

Research question five and six raise the question of the possibility of a framework that aids the analysis and understanding of ICT situation in the government of India. This is related to the requirements of objectives five which require the development of a framework that can be used to evaluate and plan ICT projects in India.

Apart from clearly showing the mirroring effect, i.e. the same variable can be articulated in a positive and negative way. It shows how variables can increase or decrease the chance of success. This leads to a descriptive model shown in Figure that includes actions for success in response to the identified problems...

It consolidates the knowledge generated from this research necessary to improve ICT implementation in government. The checklist and models of the framework can also be used to carry out an e-readiness assessment before, during and after an implementation process.
6.2.6 Mechanizing for bridging the gap between success and failure

Research question five implies the need to develop a framework that is applicable and also builds on previous frameworks. This is related to objectives five and six which highlights the need to identify known mechanisms for ensuring the success of ICT projects. The Heeks; ITPOSMO (2000b) and Beyond-Davies (2002) functionality, usability and utility models, and the categorisation of failure by both writers inform the framework developed in this research. One difference, however, with the Beynon-Davies model is that the issue of usability and defining user requirements has not been emphasised in this research because the focus is on high level organisational decisions and factors that may affect implementation of ICT systems in general rather than an information system in particular.

Though both models were designed to deal with information systems implementation, as described in Chapter One, information systems are considered as one part of ICT systems. There it is argued that information systems are passengers on ICT system platforms. Heeks model discusses design-reality gaps which the descriptive model and the recommendations of this research seek to address.

This, as required by Objective Five, creates a way to bridge the gap between success and failure which is also addressed by Heeks' model. The action for success discussed in Chapter Six includes local improvisation, design divisibility and includes consideration for situation specific problems that Heeks identifies as an area for further research. Ideas on technology leapfrog are mentioned below.

6.2.7 Technology leapfrog

Objective six poses the question of "technology leapfrog". Basically, this is achieved through the use of appropriate good practices from other countries and the use of current technology instead of following the technology path used by developed countries.

Seen from a good practice perspective, and especially with regard to the implementation of e-government, it would not be proper to try to design the e-administration structure from scratch why there are successful models that have been implemented in other countries, especially those with similar circumstances to India, which could lead to good practice acquisition.

The identification and use of current technologies rather than following the same way used by developed countries is recommended. For example, the use of fibre
optic cables rather than the copper wires and the use of wireless communication which may not require cabling 'of building.

Cabling a building takes time to design and wireless technology may be easier to adopt. In the case of the Highway Maintenance Management System, failure of remote points was due to connectivity problems that could be solved through wireless technology. The use of PDAs could be an appropriate technology that could lead to 'leaps'.

6.2.8 Decision methodology

To meet the challenge of objective seven which raises the issue of a decision methodology, the action for success discussed in this chapter, the e-administration implementation framework, and the recommendations document, indicates what individual stakeholders should consider and enables decision making in both the short and long terms. As observed by Moran (1998), planning is a very important feature in the success of any project.

Moran identifies strategy, vision and planning to be crucial in the success of ICT projects. Further, Graves (1998) observes that strategic planning can help in prioritisation of ICT which may mean funding those areas of ICT implementation which are most strategic to the organizations mission for example efficient documentation or information and knowledge sharing within governments. Moran supports the idea of alignment between organizational and ICT strategies of organisations concerned.

This, as the case of India has shown, is one area that requires attention since most ministries and departments did not mention the strategic contribution that ICT would make towards the achievement of their goals. They, therefore, did not have a clear vision. About ICT implementation which affected their commitment. In this research, planning is discussed in chapters two, six and seven and its effect on success or failure of ICT projects stressed.

In India, no deliberate plan for ICT was found during this research. Problems resulting from lack of planning corroborate was tell ET all’s (2003) findings in a study of local authorities carried out in the UK. In this study, it was found that poor planning and lack of preparedness ere major problems identified by the directors together with competing needs.

The study also identified the issue of a lack of standardised strategies for implementation which led to various departments taking different approaches. All these related to planning which required a systematic approach to implementation. Conducting e-readiness assessment by implementers, as recommended in this Chapter,
would help in planning for success by identifying specific issues that need to be addressed.

6.2.9 Dissemination and testing of the research output

Objective eight and nine identifies the need for dissemination and testing of results. Copies of this thesis will be availed to the Ministry of Education, India as a requirement. The dissemination has also been achieved through the seven publications in refereed journals, refereed conferences and workshops as shown in detail.

As a final test and to satisfy objective nine, the recommendations and guidelines document has been sent to e-government practitioners in India and to a few other prominent African researchers. The replies obtained were overwhelmingly positive about the applicability and usefulness of the recommendations and guidelines resulting from this research. The responses, reported in Chapter five and given in more detail, provide a very pleasing and satisfactory endorsement of the research.

6.3 Limitations

In this section, the limitations of this study are discussed. Some of these limitations were due to the need to impose some boundaries on the investigation, and to maintain focus and scope. Other limitations were outside the scope of the researcher's control such as time and access. Although this research has successfully synthesised the variables affecting ICT implementation in government, identified an action for success, developed models and a framework and made recommendations, the author acknowledges that there were limitations. Five primary limitations are discussed briefly in this section.

6.3.1 Research approach

The question here is whether the research could have been done differently, for example by using a purely positivist approach. In essence, this would mean starting with a range of hypothesis or formal propositions which are then tested through a survey using questionnaires. This approach was considered but the researcher decided that, in view of the relatively small size of the target population and the number of respondents required, a pure positivist approach was not appropriate because it would require a larger survey and would assume that most factors were known.

A triangulation approach, involving a wider survey using questionnaires targeting the donor community, was considered and the questionnaires were designed
and distributed. However after the researcher distributed the questionnaires, the UK Department for International Development and the World Bank indicated they would not respond to the questionnaires.

The European Union and the US Agency for International Development accepted the first set of questionnaires but did not return them. Later the researcher left a second set of questionnaires with these organisations but they were not completed either. Subsequent inquiries were unsuccessful and the donors indicated there were sufficient information on their websites about their practice and directed the researcher to these websites.

An alternative would have been to take a highly interpretive approach such as phenomenological and explore peoples' experience of ICT implementation. This was rejected due to time consideration and the need to fully understand the situation in a number of ministries.

6.3.2 Data collection

The interviews were unstructured with an average duration of 45 minutes. Some interviews were not taped, because the respondents thought the theme and content were sensitive. Instead, notes were taken and later transcribed. The disadvantage to this approach was that the researcher could not use the exact words spoken by the respondents.

The dynamics of ICT technology was also seen as a problem for sustainability. At the Ministry of Health, their systems were based on MS DOS and it became difficult to update to a Windows system. Though the problem was compounded by a lack of funds, the obsolete technology posed its own challenges to sustainability. Technology was also observed to be a problem when it came to maintenance of both hardware and software especially when there were no experienced employees. The following were observations linking technology to sustainability.

"There is a problem in the case the database collapses due to lack of expertise" (Ministry of Labour and Human Resources Department). "We had a big problem converting the DOS based systems. We simply stopped using them. In some cases, the transfer of the ICT champion affected the sustainability of projects. This was observed at the Department of Roads and at the Ministry of Health.

At the Department of Roads, the head of section who was very interested in the success of the Highway Maintenance Management System left, since that time the system started failing slowly to the extent that during the time of the interview, it existed only at the headquarters and even at the headquarters the network had failed and most PCs were dysfunctional.
6.3.3 Donor perspective

As indicated above, the donors were not ready to participate in the research. This meant that the donor perspective was not captured from a primary source but rather from a secondary source using the information on their websites and the Development Gateway website. However, this information, though reliable, could not be considered to be of the same level of accuracy as that which would have been obtained directly.

This also means that data from the donor community could not be analysed or compared with the data from government, and the donor perspective could only be obtained from specific references made during the interviews and from reports obtained from the ministries in addition to donor's websites. From the findings of this research, this is not expected to have changed the conclusions significantly because a good amount of donor information was obtained from sources included in this research.

6.3.4 Number of ministries

The number of ministries covered by the research could have been increased to cover the whole government. From this, one would have collected a broader set of views. However, this would also have meant the use of questionnaires which may not have given the depth of detailed data derived from interviewees. In addition, some of the ministries in the present arrangement were recently split from the mainstream ministries and they were not expected to offer any new outlook.

6.3.5 Comparison with other organisations

A comparison between ICT implementation in the ministries and other public bodies would have been interesting because several of these organisations had some success with ICT projects and it would have been useful to see whether similar factors were at play in both organisations. The government also funds the public organisations, though their operations are quasi-governmental so they have more autonomy in their plans, however, it would have been interesting to involve them.

6.4 Recommendations

Aim three and objective eight identify the need for a recommendations and guidelines document while objective ten identifies the need for testing the findings of this research by seeking opinions of practitioners and professionals in government informatics.
While the need to implement ICTs in government is being advocated in the global agenda as witnessed during various global meetings, it is evident that there is an urgent need to demonstrate that ICT projects will help achieve the expected benefits. From the preceding chapters setting out the aims and objectives, literature review, methodology and analysis and discussion of findings, various issues emerged for ICT implementation in government.

In particular, these issues beset those trying to establish e-government in developing countries and for these, recommendations have been made.

6.4.1 Findings

The interviewees suggested some of the recommendations themselves, so it is expected that the recommendations are grounded in reality and thus quite applicable. Guidelines have been developed to help with the implementation of the recommendations.

From the comments given by the practitioners and professionals, it can be concluded that the recommendations and guidelines document is a useful toolkit showing a strategy that can be adopted to increase chances of success of e-administration implementation. From the comments, the document is more relevant and Africa in general but it may not apply to other developing nations due to difference in circumstances including funds and political situation.

On the applicability of these recommendations and guidelines, there is evidence that some of these recommendations have been incorporated in ideas in the economy revitalisation strategy and the national budget. This is after they were sent to professionals responsible for preparing such documents.

A suggestion on prioritisation was put forward by one respondent. Though this is covered in the e-administration implementation framework, it may not work well due to the identified inter-relationships between factors. Other issues given in the comments to the recommendations and guidelines document are more or less covered in the document.

6.4.2 Limitations to the recommendations and guidelines

As mentioned. Above, the inter-relationship between factors may hinder the actualisation of some of the recommendations and guidelines. This may be due to the bureaucratic nature of the government, corruption, staff attitudes and organisational
culture, political goodwill, leadership issues, the low resource base of the government and issues arising from donor support. All these have been identified in the FITID and other models developed in this research.

6.5 Significance of the study

This study is significant in several ways discussed below.

1. Bridging the gaps identified

After a thorough analysis and synthesis of variables, the study undertook data gathering in the field and identified situation specific cases that led to ICT failure. The findings were in some cases similar to those found by other researchers especially Heels (087, 2000, 2001, 2002, 2003, 2004), Ciborra (1999, 2003), Ndou (2004) and Riley (2000, 2004).

However, in this thesis additional factors specific to e-administration in India were identified. Further, key differences relating to the Indian situation were highlighted. In this regard, this research has contributed to current literature on ICT implementation in government, e-administration in particular and e-government in general.

- lack of complete synthesis of variables
- lack of empirical case studies on ICT infrastructural implementation
- lack of literature on developing countries and especially on noted aspects
- lack of modelling of ICT implementation
- Financing of ICT projects Strategic alignment of ICT strategies with departmental, ministerial and national goals
- The political perspective
- The individual, perspective
- The corruption perspective
- Transient constraints resulting from the donor perspective the knowledge management perspective issues associated it consultants the above have been discussed and recommendations made in Chapter six.

2. Effects of political power play

This research highlighted the impact of political power and the need for strategic planning on ICT implementation. Politics has an effect on planning, policy formulation and legislation. In India, even after the ICT policy was formulated the legal and regulatory framework is yet to be completed. Political power was seen in the
appointment of senior personnel in the ICT related departments, which affected planning of these systems particularly where the officer appointed was not adequately qualified.

3. Recommendations and guidelines

The findings are important to implementers who may find something to reflect on as they implement ICT projects. The improvisations suggested can help them to deal with the difficult situation of dealing with politics and other issues.

The recommendations and guidelines document and which has been commended by practitioners, is a useful toolkit for those involved with e-administration implementation.

4. Models and framework

Several models have been developed in this research. Specifically the modelling of relationships between factors is of particular importance. A framework for e-administration implementation has also been developed.

The individual components of the framework namely the checklist, the models, the strategic planning model and the structured recommendations can all be used separately or in conjunction.

5. Publications

To satisfy objective nine, the achievements of the other aims and objectives have contributed to the body of knowledge in this area of interest and have led to publication of one journal paper, three papers in refereed conference proceedings, two papers in edited works and four workshop/seminar presentations. These are listed in the detail for discussion.
6.6 Future research

This section highlights the need for further research.

6.6.1 Research approach

Further research implications arising from the study reside in three categories. First, the study suggests that e-administration is still at initial stages of development in developing countries. Second, the study raises methodological implications.

This research has applied a positivist approach in terms of the assumed validity of findings because a large quantitative survey was not felt appropriate, while some aspects make use of qualitative data and people’s perceptions, tapping into interpretive ideas in terms of recognising the need to get people's perceptions with in-depth interviews.

Though this led to knowledge creation, the use of a pure positivist approach, carrying out a survey with a larger population, could have been used to determine whether the findings of this research were more generally applicable.

6.6.2 Benefits evaluation

Apart from the above issues, a check from the benefits point of view is necessary to solidify the arguments to support for e-administration. This will identify whether there is need to implement these projects, as discussed by As Hurst & Doherty (2003).

This is necessary as it may determine what systems the Indian government should implement as it rolls out its e-government strategy.

6.6.3 Breaking resistance

E-administration is expected to take away bureaucracy and corruption as mentioned in an article in the India Times Newspaper (Bagiire 2006). Bagiire argues that even as e-government helps to increase transparency and accountability, e-government also breaks bureaucracy.

Bagiire further observes that this not desirable to many government workers because to them, bureaucracy means power and it is also a source of side income through corruption. Bagiire concludes that "in order to examine the risk of implementing e-governance solutions, the following factors have to be taken into account: whether a country is a democracy or a dictatorial regime; the government
structure - whether it is centralised or decentralised, the adequacy of the legal framework, and the level of trust in government”.

For these reasons, the Bagiire observes that, ”! For most African governments, the scale seems to be strongly tilted against e-governance ”. Such observations though not rounded in research could form the basis for further research on breaking this resistance.

6.6.4 Increasing internal pressure

Further research may be done on ways to increase pressure applied by ICT idolisers, users and citizens on the political establishment to implement these systems successfully.

As observed in this research, pressure is changing from external to internal pressure. Further, political goodwill has been observed in this research to be critical in implementation and adoption of the technology but this is largely lacking.

6.6.5 Role of Non-Governmental Organisations (NGOs)

The role of NGOs in ICT implementation could also be investigated. The researcher discovered that there was a volunteer from the United Nations Development Programme working with officers at the Directorate of E-government.

This aspect may be investigated and the role of other NGOs established to see whether they could help solve the problems associated with consultancy. NGOs are playing a major role in other fields in developing countries and their role in e-administration could be investigated.

6.6.6 Outsourcing

As observed by Silva (2002) outsourcing some of the systems may also be considered as a replacement for consultants or as a hybrid of consultancy. For general systems, like processing labour information, such systems are not considered to pose a threat to operations of the government and they can be outsourced.

However, some government functions are considered to have security risks and can only be maintained by approved officers. An investigation of how outsourcing is done or it can be done successfully in India is an area for further research.
6.6.7 Comparison with ICT implementation in the public sector

A comparison between ICT implementation in the ministries and other public bodies would enable the researcher to identify what similarities exist and what good practices maybe borrowed from these quasi-government organisations.

6.6.8 Expert system tool the issues identified and the recommended solutions:

For an implementer, a simpler to use tool could make it easier to evaluate them and make quick decisions. An expert system using weighted measures assigned to individual variables could make the decision making process easier as with other decision support systems? An expert system could be used to evaluate the likely success or failure of an ICT project. The possibility of designing such as system could also be an area for future research.

6.6.9 Long term study

A long term study could be carried out to see whether the recommendations made in this research are applicable in practice. This would help to prove or adjust the findings and recommendations of this research.

6.6.10 User requirements

Research can also be carried to investigate the extent that detailed user requirements are carried out and whether cur-rent approaches to modelling user and system requirements are implemented.

Furthermore, whether participative approaches to systems design are appropriate in the Indian context could be investigated.

6.7 Chapter summary

The findings of this study empirically identified the range of factors that can give the success or failure of ICT initiatives and enabled the making of recommendations. This thesis has examined the factors that determine the success or failure of government informatics in developing countries with specific reference to India in Rural Healthcare, Education and Agricultural Areas.

The theoretical foundation was established through an inductive analysis and synthesis of general ICT literature and literature on developed and developing
countries. Heels (2002b) observe that literature on developing countries is, however, either scarce or non-existent.

Hence, this study provides a contribution to ICT theory and helps in the understanding of developing countries’ ICT implementation. Some of the problems detailed here are temporary in nature; others are long term as identified in Chapter five. Some can be solved using available resources. Others can be solved through appropriate financing arrangements, and by improved training and retention of staff.

However, it must be recognised that it is most unlikely that all physical and individual problems relating to computerisation can be overcome, at least for some considerable time. Furthermore, once the physical and organisational infrastructure is in place then the challenge will be to develop systems that relate to specific local user needs. Thus, while computerisation and integration are worthy strategic aims, there must be an acceptance that problems will occur.

However, those who plan computerisation must make their plans in such a way as to take account of these problems. This chapter has summarised the thesis, pointing out the areas covered and not covered in this research and it includes suggestions for future research. The chapter has related the research to its aims and objectives specified in Chapter One and the gaps identified in Chapter Two.

It is hoped that information available in this research will reach those it is meant for. Towards this end, the recommendations have been circulated to some of the interviews and other people involved in similar research to test the applicability of the ideas generated in this research. Feedback from these people has enabled the researcher to reflect on the recommendations and guidelines. In addition, this feedback has proven the applicability of these recommendations and guidelines, albeit with some adjustments as suggested in the responses.