IDENTIFICATION OF BEST PRACTICES FOR SOFTWARE OUTSOURCING SUCCESS IN PUBLIC SECTOR ORGANIZATIONS IN SRI LANKA

BY

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Dedicated to

My beloved father late W.G. Jinasena and mother Sumana.

Declaration

I do hereby, certify that this dissertation does not incorporate without acknowledgement of any other material previously submitted for the Degree or Diploma in any University, and to the best of my knowledge and belief it does not contain any material previously published or written by another person except where due reference is made in the text.

Date: 16/01/2012

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The undersigned, has supervised the dissertation entitled **Identification of Best Practices for Software Outsourcing Success in Public Sector Organizations in Sri Lanka** presented by I.U. Goonetilleke, a candidate for the degree of Masters in Information Systems Management, and I do hereby, certify that, in my opinion, it is worthy of submission for the examination.

Date: 16/01/2012

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After working on this project for over a year I present this research. I hope this report may contribute in some form to those who are involved in the research of the related area.

Abstract

Outsourcing has become common in today's working environment. The software outsourcing plays a vital role in automation of the public services around the world. The area of this research is under-studied and published literature was not found in Sri Lanka. Public sector outsourcing projects are time consuming activities due to various reasons. Therefore the government officers have a very negative attitude on automation among the public organizations such as ministries, departments, statutory boards, authorities, commissions and public companies. Outsourcing organizations need to implement changes cautiously and evaluate their in-house capabilities. They also need to fully understand and apply the software outsourcing investment evaluation and benefits realization processes. In order to reach the degree of improvements, the Best Practices would be identified by this research. All these are to be done before and during the vendor/technology selection assessment and contract negotiation process. The data was collected from the survey of fourteen (14) organizations based on thirty (30) projects and two hundred and twelve (212) system users from the public sector organizations. The users were included from the all the categories of the organizations such as top, middle and junior staff members. The status of those projects include success, failure, partial failure and in developing stage. While doing the research several key issues were identified in outsourcing application software life cycle and those were discussed in the research too. The research has identified success, failure factors and software outsourcing success from the literature survey to design a conceptual model and introduced the Best Practices for the Sri Lankan context. The model was tested by identifying the relationship between success and prevention of failure factors with outsourcing success. This study will help the management and the Information Technology staff to identify the failure factors and take the necessary precautions using Best Practices. Hence, this study is timely and relevant for the public sector organizations in Sri Lanka as they are working towards the e-Government.

Key words: Outsourcing, e-Government, Best Practices, Information Technology

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Abbreviations

CIO - Chief Innovation Officer

ICT - Information and Communication Technology

ICTA - Information and Communication Technology Agency

IS - Information Systems

IT - Information Technology

SPSS - Statistical Package for Social Science

CHAPTER 1

INTRODUCTION

1.1　Background

"Outsourcing" is defined in many ways by the researchers. In recent years outsourcing has become an area of management focus. This will result in downsizing the organization, changing the mindset and developing virtual offices (Everett and Dixon, 2006). In the 1990s Information Systems (IS) outsourcing started to become very popular. In that era the very first Information Technology (IT) outsourcing agreement was signed between Eastman Kodak in the United States and service providers from IBM Businessland (Suhaimi, Hussin and Mustaffa, 2007). The recent research indicate that IT outsourcing market in the world has increased very rapidly (Gonzalez, Gasco and Llopis, 2005; Gonzalez, Gasco, Llopis, 2010). It was also noted by the researchers that IT has become the most active in part of the "outsourcing revolution" (Kakabadse and Kakabadse, 2001). When outsourcing IS/IT, software outsourcing is also included within that framework.

This study mainly focuses on "public sector organization's software outsourcing" projects that have not been considered separately by most of the researches. In addition, the difference here is the study based on the public sector organizations. Elpez and Fink (2006) have concluded in their research that IS outsourcing in the public sector has been totally neglected and only researches of private sector were very popular among the researches.

When the organizations are not developing in-house software, they tend to purchase or outsource from another party. Outsourcing software application could offer important business or service benefits over in-house development in many situations. Also outsourced software applications could introduce issues for the project and long term success of the resulting solution (Atkinson, 2005). In the current environment of right sizing the organizations have to focus on their key business and all the core activities could not mange internally. Software outsourcing has made a significant difference in public and private sector organizations (Sullivan and Ngwenyama, 2005).

The public sector outsourcing is being popular in the governments that follow the e-Government concept. Therefore the researcher has mainly reviewed on e-Government based researches in developing countries which could be compared with Sri Lankan context. According to Malaysian e-Government projects, they have stated that the e-Government provides many opportunities for the states and citizens, but they also provide many challenges. The biggest challenge was that the public organizations have to deliver electronic services to citizens to deal with their service providers. Most of the risks are involved when dealing with service providers. Once these risks are prior identified it could be mitigated easily. However, researches on Risk Management in e-Government outsourcing projects have not been given enough attention (Rainford, 2004).

In order to carryout the "Regaining Sri Lanka", the government of Sri Lanka has given the highest priority for Information and Communication Technology (ICT). In November 2002, "e-Sri Lanka: An ICT Development Roadmap" was introduced. To activate the e-Sri Lanka vision in July 2003 Information and Communication Technology Agency (ICTA) was formed. Most of the government offices have Chief Innovation Officers (CIOs) who are responsible for their ICT related work. Also the government has introduced an e-Government policy for the country. The main objectives of ICT policy in Sri Lanka are:

- Improved efficiency and effectiveness of government organizations in Sri Lanka,
- Easy and accessibility of government information and services for citizens, and other government organizations,
- Promote good governance,
- Develop ICT competence among government employees,
- Manage ICT resources in sustainable manner. (ICTA, 2010).

As the government of Sri Lanka has introduced the e-Government solutions ICTA has taken care of the major software projects under their consultancy. However, most of the government offices are not coming under the major projects and they also have to help the e-Government. These institutions follow the standard tender procedure in the government sector.

The application of IT in government sector organizations is much more complicated and widely-ranging than the private sector. Those are mainly due to rules and regulations which are totally different to the private sector and occasionally these changes are due to the government which ruled by that period.

According to Smuts *et al* (2009), there is evidence to suggest that organizations are not achieving the desired benefits from IS outsourcing. This was illustrated in the United States, United Kingdom and Australia using data from senior IS managers who were asked to rate their overall success with Information Systems outsourcing on a seven-point scale. They established that 50% of the 192 respondents rated their overall satisfaction as 5 or above out of 7, while 29% indicated that their organizations were dissatisfied with their IS outsourcing arrangements with a score of 3 or below. A survey conducted by PA Consulting Group (PA Consulting Group as quoted by McIvor, 2000) found that only 5% of the organizations surveyed achieved high levels of benefits from IS outsourcing (Smuts *et al*, 2009).

Also the trend in public offices in Sri Lanka is to outsource the application software from the private sector and there were some similar type of identified problems according to the literature in the other countries such as Spain, Australia, Iran and Malaysia. When they started software outsourcing in the public sector they also faced the same problems like in Sri Lanka.

Considering all the above situations this research will be presenting "Best Practices" for the software outsourcing purpose. According to Jayakody and Sanjeewani (2004) "best" was known as the highest in the studies and it cannot be "better". Also they have stated that the "Best Practices" means "High-performance practices" in an organization.

Since there was insufficient literature for software outsourcing in Sri Lanka this research tried to compare similar studies, in order to identify success and failure factors which influence software outsourcing. The research model was presented followed by the research method. Next, the results of data analysis are described and discussed before conclusions were drawn.

The survey was based on all the public sector organizations that are using outsourced software systems including completed, developing and testing stage. The background

information of the outsourced systems was taken from the Head of IT and there was another questionnaire for the key users of the systems. However the main target category was the system users within those organizations as they have a different view of the automated system. Their response was satisfied to carryout this research.

1.2 Statement of the Problem

There are forty five (45) ministries in the Sri Lankan government and under them there are departments, statutory boards, authorities, commissions and government companies (GIC, 1st October 2010). Most of these institutions have websites and different types of software packages.

When reviewing the literature and conducting the preliminary research it was found that best practices for software outsourcing success was not thoroughly studied in Sri Lanka previously. Although the outsourcing is one of the key topics in the e-Government, many public sector organizations need advice and guidance. Thus having a set of best practices, it seems to be easier to present the state of progress and assess the success of outsourcing software in public sector organizations. The research question guiding the study is as follows:

What are the Best Practices for Software Outsourcing Success in the Public Sector Organizations in Sri Lanka?

To study this research question, a questionnaire was developed according to the conceptual model. The questionnaire was distributed to randomly selected application software users including the heads of the Information Technology in the public organizations who are using the outsourced systems.

1.3 Objective of the study

The objective of this study is to find out software outsourcing successes and failures in public sector organizations from literature and based on that to further identify relevant aspect for public sector organizations in Sri Lanka. This would be helpful to the public offices that work for e-Government success in future in Sri Lanka.

Main Objective:

To find out the best practices on software outsourcing in the public sector organizations and to develop a conceptual framework to improve success rates in software outsourcing in Sri Lanka.

Specific Objectives:

1. To find the Information Technology (IT) / Information Systems (IS) outsourcing items and reasons to outsource.
2. To find out factors that lead to successes and failures in software outsourcing.
3. To analyze the relationships between success and failure factors with best practices in software outsourcing.
4. To introduce a framework with a set of recommendations for software outsourcing success in Sri Lankan public sector organizations.

Table 1.1 - Summary of the Study

Objective	Research Question	Method/s	Technique
Objective 1	What are the IS/IT outsourcing background in the public sector in Sri Lanka and reasons to outsource?	User survey using questionnaire.	Descriptive Frequency Analysis
Objective 2	What leads to successes and failures in software outsourcing?	Literature review, User survey using questionnaire	Summarizing
Objective 3	What is the relationship between success / failure factors with software outsourcing success in Sri Lankan public sector organizations?	Find out the statistics	Pearson Correlation Coefficient
Objective 4	What is the framework for software outsourcing success in public sector organizations in Sri Lanka?	Results based on the defined Hypothesis.	Final outcome

1.4 Significance of the study

In recent years most of the Governments in the world are increasingly viewing Information and Communication Technologies (ICTs) as a key factor for accelerating and achieving economic and social development in their countries. ICT is seen as an important tool for improving delivery of public services, making government more transparent and accountable, broadening public participation, facilitating the sharing of information and knowledge among the people, and integrating marginalized groups and deprived regions. There have been some notable successes in e-Governance in the Asian region, example in Korea, Malaysia and Singapore. The challenge facing many governments today, especially those in developing countries like Sri Lanka, is to avoid the temptation of introducing ICT for ICT's sake. Instead the focus must firmly be on the human aspect and the needs of the citizens, and then deciding how best, and in what context, to apply ICTs to enable effective delivery of those needs (Rainford, 2004).

1.5 Definition of Terms

Best Practices:

Management Practices and work processes that lead to world-class, superior performance. Best Practices must be documented and distributed (Chen and Perry, 2003).

e-Government:

e-Government involves the automation or computerization of existing paper-based procedures that will prompt new styles of leadership, new ways of debating and deciding strategies, new ways of transacting business, new ways of listening to citizens and communities, and new ways of organizing and delivering information (ICTA, 2010).

Information Technology (IT):

This is acquisition, processing, storage and dissemination of vocal, pictorial, textual and numerical information by a microelectronics-based combination of computing and telecommunication (Chen and Perry, 2003).

Information Systems (IS):

Any combination of information technology and people's activities using that technology to support operations, management, and decision-making is known as Information Systems (Chen and Perry, 2003).

In-house Sourcing/In-sourcing:

This means applying outsourcing's discipline to internal staff (Beaumont and Sohal, 2004).

Outsourcing:

Work that was formerly done inside the organization is performed by an external organization or third party known as the vendor or client or outsourcer (Beaumont and Sohal, 2004).

Public Sector Organizations in Sri Lanka:

Public sector organizations also known as Government organizations include Ministries, Government Departments, Provincial Councils, District Secretariats, Divisional Secretariats, Local Authorities, Government Corporations, Statutory Bodies and Government Companies (ICTA, 2010).

Software Outsourcing:

Software outsourcing has been categorized in the IT sector in three (3) ways. They are offshore, nearshore and inshore. Offshore software outsourcing is from a geographical location by taking advantage from the telecommunication. Near-shore software outsourcing is from neighboring countries. Onshore software outsourcing is from own country (Sahay, Nicholson and Krishna, 2003).

1.6   Limitation of the study

- The study does not include all the public sector organizations that have outsourced their application software packages as the survey would be limited to only the responded organizations.

- Some projects were pilot projects because the systems were recently installed. Therefore the overall outcome of the project could not be discussed.

- The time period for data collection was limited for 3 months (1st October to 31st of December). The three (3) months time is insufficient to collect data from the public organizations in Sri Lanka as they were not supportive for this type of academic researches.

1.7 Structure of the Research

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1.8 Chapter Summary

The background of the IS/IT outsourcing and software outsourcing was studied to respond the research problem. The statement of the problem was described.

Main objective and the specific objectives were clearly described in order to find out the solution. The specific objectives along with the methodology and techniques were summarized in a table.

The significance of the study based on introducing the best practices of software outsourcing in public sector organizations in Sri Lanka was described here. Identified limitations to the study were explained.

Definition of terms such as Best Practices, e-Government, Information Technology, Information Systems, In-house Sourcing/In-sourcing, Outsourcing, Public Sector organizations in Sri Lanka, Software Outsourcing were noted.

Finally the summary of the overall research was illustrated.

CHAPTER 2
LITERATURE REVIEW

2.1 Introduction

A literature survey is defined as "The documentation of a comprehensive review of the published and unpublished work from secondary sources of data in the areas of specific interest to the research" (Vaidya, Sajeev and Callender, 2006).

The purpose of the literature review is to conduct a logical and methodical survey of the literature pertaining to research on software outsourcing in public sector and to identify the findings of successes, failures, challenges, risk factors and risk mitigation methods. Finally the outcome of all this could be taken as best practices for outsourcing software in public sector organizations.

Number of researches was carried out recently on Information Systems (IS) and Information Technology (IT) outsourcing related issues in developed and developing countries. According to those studies outsourcing IS/IT in private sector is a more popular topic than in public sector. However the levels of success of these projects are not clear. Therefore IS/IT outsourcing has become a major research topic around the globe. This is because IS/IT is useful to make effective and efficient managerial decisions through technological support. Since e-Governing is becoming very popular around the globe, necessity of the IS/IT based systems is increasing daily (Hussin *et al*, 2006).

It has to be noticed that IS /IT outsourcing in the public sector is particularly under-studied (Khalfan and Gough 2001). Therefore, there is very little literature that examines the actual linkage between IS/IT outsourcing and the use of evaluation methodologies as well as the critical issues on evaluating and managing IS/IT outsourcing contracts, in both the public and private sectors (Pervan and McDermid, 2007).

2.2 What is Outsourcing?

Since there were many definitions for "Outsourcing" given by the different researchers, the following definitions were found by the author.

Procurement of products or services from sources is external to the organization. In service organizations, this process usually involves the transfer of operational control to the suppliers (Rajabzadeh, Rostamy and Hosseini, 2008).

"Outsource" is also known as "external source". It is a management approach that allows delegating to an external agent the operational responsibility for processes or services previously delivered by an activity. It can be defined as "the purchase of a good or a service" (Franceschini *et al*, 2003).

The two main actors of outsourcing processes are the "outsourcee" and the "outsourcer". The "customer", outsources his/her requirements, while the second, the enterprise, delivers outsourced services (similar to the terms supplier or vendor) (Franceschini *et al*, 2003).

Franceschini *et a*l, (2003) have shown from their research that outsourcing process could be categorized into stages as in figure 2.1.
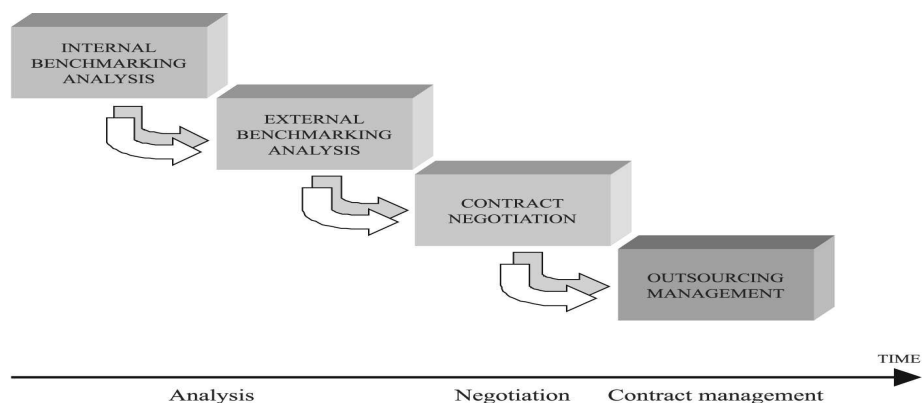
Figure 2.1 - Outsourcing Process

Source - Franceschini *et al* (2003)

2.2.1 IS/IT Outsourcing

IS/IT outsourcing definitions were as follows.

"Handling over the management of some or all of an organization's IT, IS and related services to a third party" (Gonzalez, Gasco and Llopis, 2010a).

"Subcontracting part or all of a company's IS function to one or more external vendors" (Suhaimi, Hussin and Mustaffa, 2007).

"The organizational arrangement instituted for obtaining IT services and the management of resources and activities required for producing these services" (Hussin *et al*, 2006).

"Physical and/or human resources related to an organization's information technologies (IT) are going to be provided and/or managed by an external specialized supplier" (Gonzalez, Gasco and Llopis, 2005).

"Acquisition of services and/or products, through continuous interactions between parties to the agreement; may it be temporary or designated within an agreed length of time" (Ismail *et al*, 2005).

"IT Outsourcing is as an act of delegating or transferring some or all of the IT related decision making rights, business processes, internal activities, and services to external providers, who develop, manage, and administer these activities in accordance with agreed upon deliverables, performance standards and outputs" (Dhar and Balakrishnan, 2006).

IS outsourcing would be managed by an external specialized supplier. This would be temporary or permanent. Also this would be a client's whole IS functions or part of it. IS outsourcing was started in 1963 when Ross Perot and his company Electronic Data Systems (EDS) signed an agreement with Blue Cross for the handling of its data processing services (Gonzalez, Gasco and Llopis, 2005a). However IS outsourcing became popular in the 1990s, after the spread of the success achieved by Eastman Kodak with the outsourcing of its IS (Gonzalez, Gasco and Llopis, 2005a). IT outsourcing is being practiced very widely and

researches have proved that it is very popular in government organizations too (Hussin *et al* 2006). IT outsourcing is the practice of transferring the execution, ownership and responsibility of at least one phase of the Software Development Life Cycle and its related resources such as people and assets to an external supplier (Bremmer, 2008).

2.2.2 Software Outsourcing

In globalized economy many organizations gain advantage by reducing the cost, optimizing efficiency and providing better customer services. Outsourcing software development has played a vital role to gain success worldwide (Koh, Ang and Straub, 2004).

Mainly software outsourcing could be defined as a contract and a set of mutual obligations between a customer and a supplier (Ho *et al*., 2003). Therefore, the mutual obligations could be considered as the essence of an IT outsourcing contract. In this regard the supplier agrees to make specific contributions to the customer in return for certain benefits from the customer (Koh, Ang and Straub, 2004).

An organization's IT outsourcing configuration influences the quality of the relationship between client and supplier was found by Alborz, Seddon and Scheepers (2004). Considering the model illustrated below in figure 2.2 it was proven that outsourcing configuration is important for the successful development of a quality relationship between parties. The organizations were seeking to increase their operational excellence and decrease the operational cost of IT outsourcing, and ultimately to improve the success of their IT outsourcing arrangements. The aim of the above study was to test empirically the extent to which configuration affects the quality of the information technology outsourcing relationship. It was stated that the quality relationships depend not only on good communication and positive attitudes of managers responsible for making outsourcing work, but also on developing and maintaining an appropriate outsourcing configuration.

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┌─────────────────────────┐
│ Configuration           │
│ Outsourcing Intent      │
│ Results of Due          │
│ Diligence               │          Influences      ┌──────────────────┐      ┌──────────────────┐
│ - Size and Complexity   │─────────────────────────→│ Quality of       │      │ Outsourcing      │
│ - Supplier              │                          │ Relationship as  │      │ Success as       │
│ Evaluation/Selection    │                          │ Perceived by the │─────→│ Perceived by the │
│ - Cultural Fit          │                          │ client and the   │      │ client and the   │
│ Contract                │                          │ supplier         │      │ supplier         │
│ - Flexibility           │                          └──────────────────┘      └──────────────────┘
│ - SLA                   │
│ Governance              │
│ Arrangement             │
│ - Skill                 │
└─────────────────────────┘
        │ Constrains
        ↓
┌─────────────────────────┐
│ Operationalization      │          Influences
│ Transition              │
│ Performance             │
│ Management              │
│ Contract Management     │
│ Working Relationship    │
│ Knowledge Exchange      │
└─────────────────────────┘
  Revisions
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Figure 2.2 - Outsourcing Relationship Model

Source - Alborz, Seddon and Scheepers (2004)

2.2.3 e-Government and Outsourcing for e-Government

Different definitions were given by the following researchers and organizations for e-Government.

"e-Government is considered as one of the most powerful tool to spread digital dividend across different social segments of any developing country" (Davidrajuh, 2004).

"The continuous optimization of service delivery, constituency participation and governance by transforming internal and external relationships trough technology, the internet and new media" (Chen and Perry, 2003).

The research model of figure 2.3 is shown that the public agencies need to take a long-term, strategic approach to managing IT outsourcing arrangements (Chen and Perry, 2002). Also it was noted that to get better performance, the IT projects should be properly managed and management of a good strategic partnership using performance measures and committing sufficient resources is a key to success. Therefore when IT outsourcing it should be more considered and managed rather than a traditional procurement. The author has finally mentioned that having proper service level agreement will lead the IT projects success and also it would save the time and cost of the projects.

| **External Factors** | **Internal Factors** | **Outcome** |

Political/ Regulatory Environment → Top management support

Partnership approach

Selective outsourcing with a strategic fit

IT Marketplace → Commitment of financial and human resources → Performance

Relationship management

Management capacity

Characteristics of Technology Services → Performance management using service-level contracts

Figure 2.3 - Analytical Framework of Managing Government IT Outsourcing

Source - Chen and Perry (2002)

Researches from Malaysia have identified many risks in e-Government. Since the Malaysian government is actively moving towards e-Government they tend to do research on these things. There are many risks in e-Government especially when the developments of the projects are handed to the service providers. However risks should be managed and risk management should be seen as one of the critical success factors in IT outsourcing. The

survey had been done regarding the Malaysian government organizations. Finally concluded when there is a risk management committee and practice risk management would be able to complete the outsourcing activities successfully (Aris, Mohamed and Arshad, 2007).

2.3 Public Sector Software Outsourcing around the World

Public sector organizations are attached to the government of the respective country. Using IT in these huge complex operations could be enhanced by properly focused applications of IS/IT. Various countries adopt their own systems implementation methodology for outsourcing process. Depending on the process of operation it could be either success or failure. Finally it would be benefited by the citizens to gain quality service (Gichoya, 2005). According to the reviewed researches, the countries given below were discussing outsourcing experience in public sector organizations. The software outsourcing experience was included Information Systems / Information Technology outsourcing.

2.3.1 Australia

The outsourcing trend began in Australia in the early 1990s both with the Labor and Coalition Federal Governments which were pushed hard by IS/IT consultants and economic rationalists. Also in 1995, the Council of Australian Governments was formed to implement the National Competition Policy (NCP) and began to outsource many of their IS/IT functions. By the year 2000, more than half of the Australian outsourcing market was made up of public-sector organizations (Mendez, Mendoza and Pérez,2006) as the Australian Federal and state governments had already outsourced most of their IS/IT functions (Kakabadse and Kakabadse, 2001).

The researcher who was identified the model shown in figure 2.4 has mentioned the research findings indicate that IS/IT outsourcing success should be done under careful attention and evaluation and to ensure organizational success.
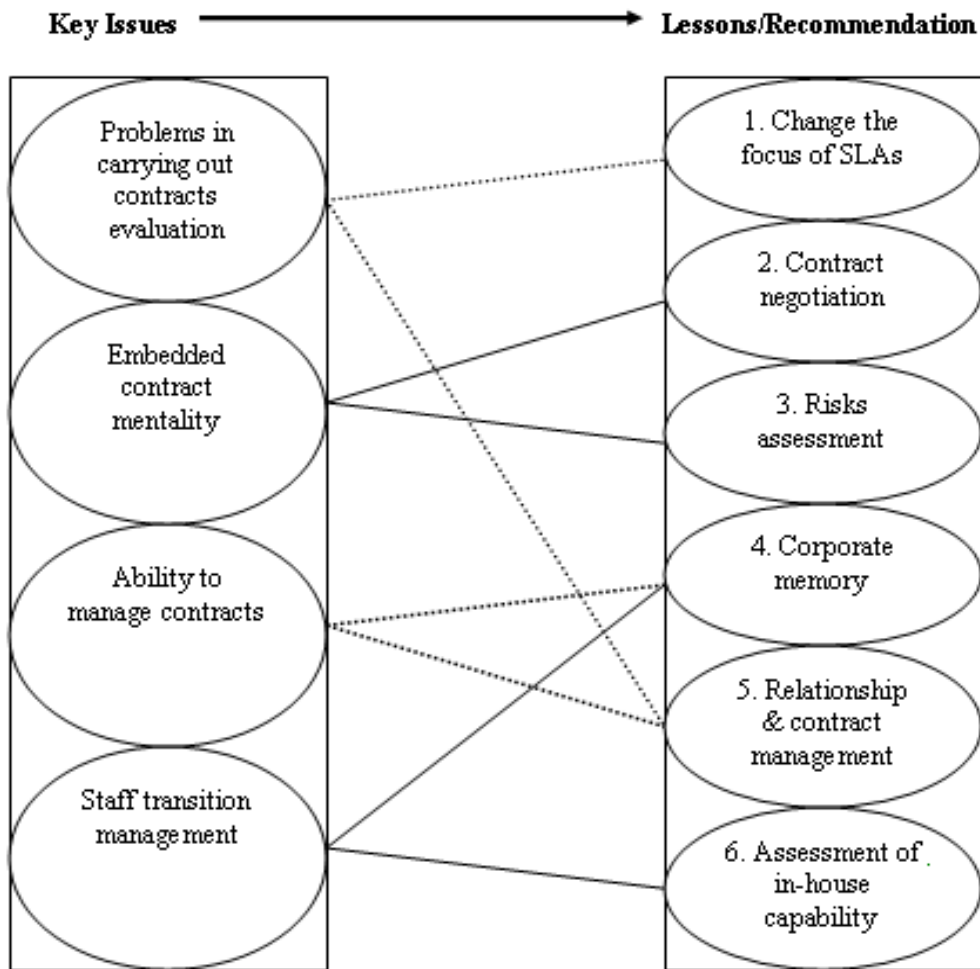
Figure 2.4 - Key Issues on Outsourcing Success
Source: Lin, Pervan and McDermid (2007)

Based on the literature review and the results from the survey and case studies, there are several important factors that govern successful and less successful outsourcing decisions. Such as, change focus of SLAs (measurable and intangible objectives), Contract negotiation (alliance/partnership), Risk assessment/management, Corporate memory, Relationship and contract management and Assessment of in-house capability (Lin, Pervan and McDermid, 2007).

2.3.2 Canada

The Ontario government developed strong and effective e-government management functions headed by a Chief Information officer (CIO) from each department. When doing software development the researcher has found that the most difficult decision concerns the outsourcing of software development for government applications. It was also stated in the research that the e-Government outsourced software development was difficult of its budgetary situation, in addition to financial constraint resulting from tax deduction. The Government was ideologically disposed to private sector solutions. As a consequence, Ontario has had substantial experience outsourcing IT in the past decade (Borins, 2003).

2.3.3 Chile

Chile is known to have made a significant progress in becoming a leader in ICT use in Latin America. It has digital literacy, e-Government, e-Transactions (e-Business), and legal framework. Chile has recognized ICT as an important instrument to gain growth. However, very little of reporting of ICT outsourcing activity has been studied in Chile (Kini, 2007).

2.3.4 Europe

In Europe the public-sector outsourcing of IS/IT functions has also grown very fast like the other developed countries. In the UK public sector, the term 'IS/IT outsourcing' is now used interchangeably with other programs such as compulsory competitive tendering and contracting out (DeHondt, 2009).

2.3.5 Kenya

Presently the Kenyan Government is having Information Technology Investment and Management Framework connection with all the ministries to the Internet under the Executive Network. They have the connection to run integrated information systems for Integrated Financial Management Information System (IFMIS) and the Integrated Personnel and Pensions Database (IPPD) (Gichoya, 2005).

2.3.6 Kuwait

A study of IS/IT outsourcing in the public sector in Kuwait has found the reasons for outsourcing include cost saving and lack of required skills. Another IS/IT outsourcing study

examines the political power between bureaucrats, IS/IT consultants and vendors in the Israeli public sector (Khalfan, 2004).

2.3.7 Malaysia

Malaysia's private sector and public sector organization deals a significant amount of IT outsourcing and the rising trend is very high. Even though the large amount of IT projects is high in the country, the level of success of these projects is less. Therefore the majority of the practical situation of IT outsourcing in Malaysia is not fully automated. In Malaysia public sector outsourcing experience was started with Malaysia's strategic framework which was known as National IT Agenda (NITA) formulated in 1996 and the Multimedia Super Corridor (MSC). Before those Malaysian government's large-scale systems integration projects were for Malaysian Postal Office and Amanah Saham Nasional Berhad for Permodalan Nasional Berhad (PNB). The new IT outsourcing projects include the Malaysian Smart Schools which were awarded to Telekom Malaysia Consortium, and the Generic Office Environment (GOE) project which was awarded to Electronic Data Services (EDS) Malaysia. The research based on figure 2.5 found that there is a positive relationship between IT outsourcing success with service quality, partnership quality and IT Outsourcing Arrangements (Koh, Ang and Straub, 2004).
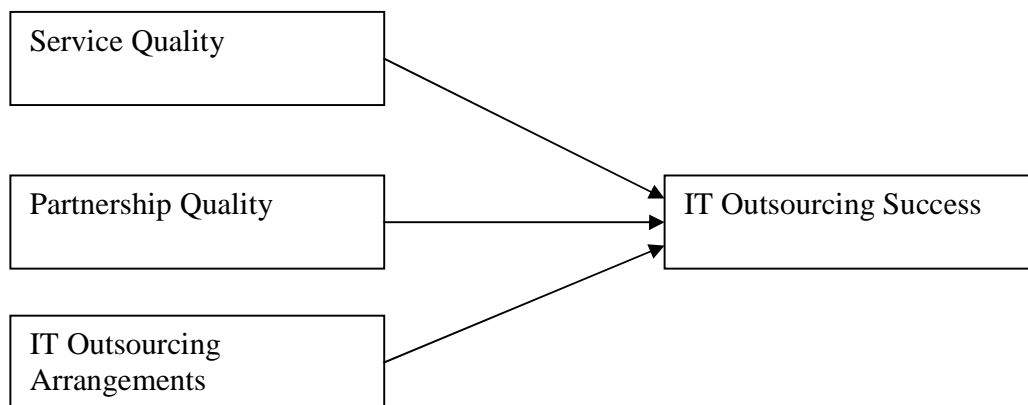
Figure 2.5 - Relationships of IT Outsourcing Success

Source – Koh, Ang and Straub (2004)

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2.4 Comparison of Public vs Private Software Outsourcing

As stated by the Introduction in this chapter most of the researches done in IS/IT outsourcing for the private-sector organizations have not considered the different circumstances in public sector. Only a few IS/IT outsourcing studies in the public sector have been carried out. A review of relevant IS/IT outsourcing literature in the public sector has identified the following organizational objectives that organizations aim to achieve in their IS/IT outsourcing projects:

- Lower costs,
- Access the required expertise and skills,
- Increased efficiency/service level,
- Greater focus on core functions,
- Increased flexibility,
- Reduced problems of managing industrial relations,
- Risk sharing.

However objectives for IS/IT outsourcing in public sector are very much similar to the private-sector organizations. There are several differences between the private and public sectors in IS/IT outsourcing which have been identified. Some of them are as follows:

- The manner of the decision-making process,
- Accountability in purchasing decisions,
- Personnel management and recruitment,
- Risk of failures,
- Organizational cultures and the management of information systems

(Khalfan, 2004).

However it was found that IS/IT outsourcing in the private-sector organizations are more efficient than the public sector. Because of the poor management practices in public-sector organizations there were several software projects which have been abandoned. However, unlike private-sector organizations, public-sector organizations are not designed to be competitive, but they are always fair, open, objective, and accountable, as they have been controlled by the government. Also IS/IT outsourcing in the public sector is highly complex because most of the functions are specialized. It is a very politically sensitive process with many stakeholders holding very different and often conflicting perspectives. Public-sector

organizations have to meet multiple, often conflicting goals such as providing better service with reduced budgets and staff. They may also be forced to provide services required by law, without consideration of economic and strategic aspects. The motivation for IS/IT outsourcing by private-sector organizations is internally generated and it forms part of the organization's strategy (Burnes and Anastasiadis, 2003). Public and private sector organizations face the same problem of limited ability to use freed capacity for introducing newly developed products or services. However private sector organizations have an overriding goal of profit maximization where as public organizations do not aim on profit (Khalfan, 2004). The private-sector organizations are free to define their requirement and to achieve the best value for money for themselves, where as the public-sector organizations are subject to external audit and often have to operate within a tight definition of best value that relates to economy, efficiency, and effectiveness (Burnes and Anastasiadis, 2003). Some problems in public sector organizations were impossible tendering timetables, dubious savings claims, deep dissatisfaction, non-delivery of service levels, allegations of conflicts of interest, and failure to monitor and evaluate the contracts properly. One of the most often critical reasons for the impressive failure in most public-sector organizations is failure to monitor and evaluate their IS/IT outsourcing contracts properly, especially the performance of contractors (Khalfan, 2004).

Most of the Information Systems were success in the private sector than the public sector in Australia. This was proved by a research of IS success conducted in public sector on qualitative case studies of 3 major Western Australian government agencies. When they were describing the difference between the public and the private sector, the majority of participants (16/21) claimed that the two sectors are uniquely identifiable. The key differences were accountability, expenditure control and taking a long-term perspective. Those were reflected in the comments made by participants in their data gathering phase. The conceptual model of the research is shown in figure 2.6. According to the model, it had taken only the highest ranked IS variables. Using different approaches to interpret the findings (e.g. considering the other variables) would lead to different IS success models (Elpez and Fink, 2006).
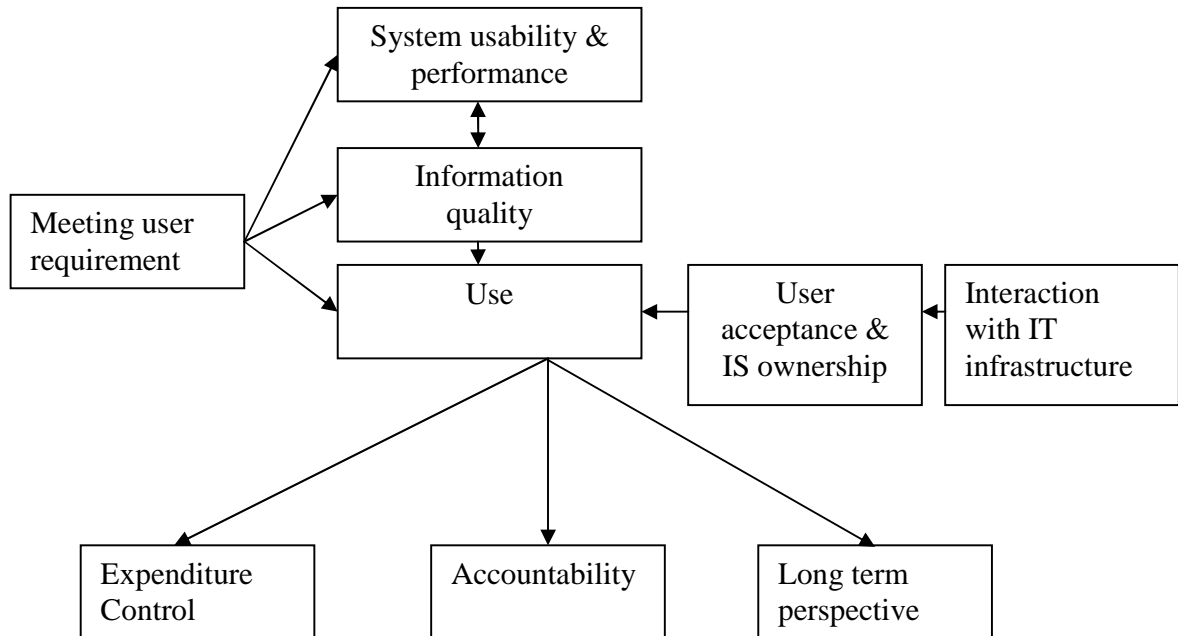
Figure 2.6 - IS Success Variables in Public Sector

Source - Elpez and Fink (2006)

As stated in the figure 2.7 the researchers have proved from their research that Organization type (public vs business) and degree of outsourcing contribute towards explaining variation in outsourcing success. The importance of information sharing contributes towards explaining outsourcing success and the importance of conflict management is a marginal variable in explaining outsourcing success.
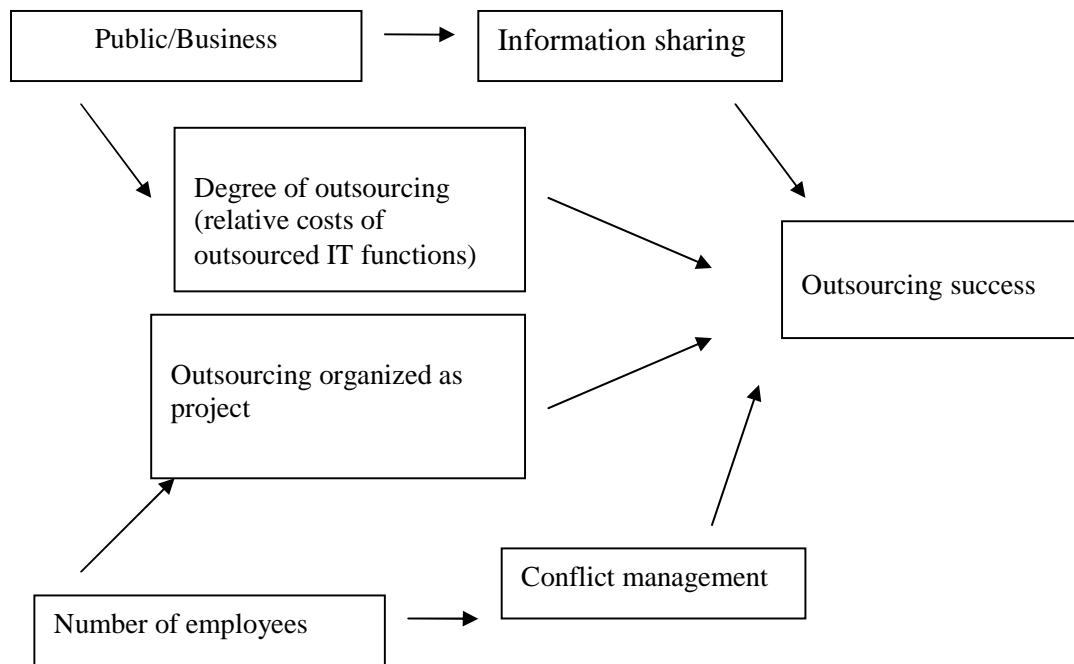
Figure 2.7 - Public vs Business Outsourcing Success

Source - Ekker, Andresen and Gottschalk (2007)

2.5 Background of IT in Public Sector Organizations in Sri Lanka

The Government of Sri Lanka has initiated a re-engineering government programme under the e-Sri Lanka Road Map in 2002 (Nanayakkara and Weerawarna, 2009). e-Government could be defined broadly as use of Information and Communications Technology (ICT) to promote more efficient and effective government, facilitate more accessible government services and allow to access information and make government more accountable to citizens (ICTA Survey, 2008). To implement e-Government readiness projects the Information and Communication Technology Agency (ICTA) of Sri Lanka was appointed as the main regulatory body. The main task of this organization was to implement the e-Government programme under the guidance of the Presidential Secretariat. To be successful the e-Government projects should follow a well established e-Government model to achieve better results. Therefore ICTA has been following an e-Government model under the

reengineering government programme for the last five years. This will be implemented according to the Sri Lankan context (Nanayakkara and Weerawarna, 2009).

ICTA has done surveys on ICT usage on Government sector organizations and the final report shows services provided by in-house IT Divisions and Outsourced Companies. The sample was taken as per table 2.1. Also the survey provided baseline information to identify and measure the potential areas for ICT development in the government sector and to identify how ICT itself can contribute to enhancing government services. To promote the usage of ICT functions in each organization, ICTA has appointed a Chief Innovation Officer -CIO (ICTA survey, 2008).

Table 2.1 - IT Survey in Sri Lanka

Subpopulation	Subpopulation Size	Sub sample Size(excluding buffer)	Sub sample Size(including buffer)	Completed
Ministries	56	34	38	34
Departments	75	40	45	41
Statutory bodies	136	53	58	52
Ministries (PG)	47	26	30	26
Departments (PG)	194	60	65	60
District Secretariat	25	15	18	15
Divisional Secretariat	335	75	90	75
Total		**303**	**344**	**303**

Source - ICTA survey (2008)

According to figure 2.8 the bar graph illustrates the services provided by in-house IT Divisions vs Outsourced IT functions. It describes that the In-house software support is 25% where as 58% is outsourced. Also in-house software maintenance is 25% and outsourced is 59%.

	Desk Side Support	Internet & e-mail	Database Maint.	Networking	Hardware Maint.	Software support	Software Maint.	Other
In-house	40%	31%	34%	19%	19%	25%	25%	4%
Out sourced	35%	37%	30%	38%	80%	58%	59%	3%
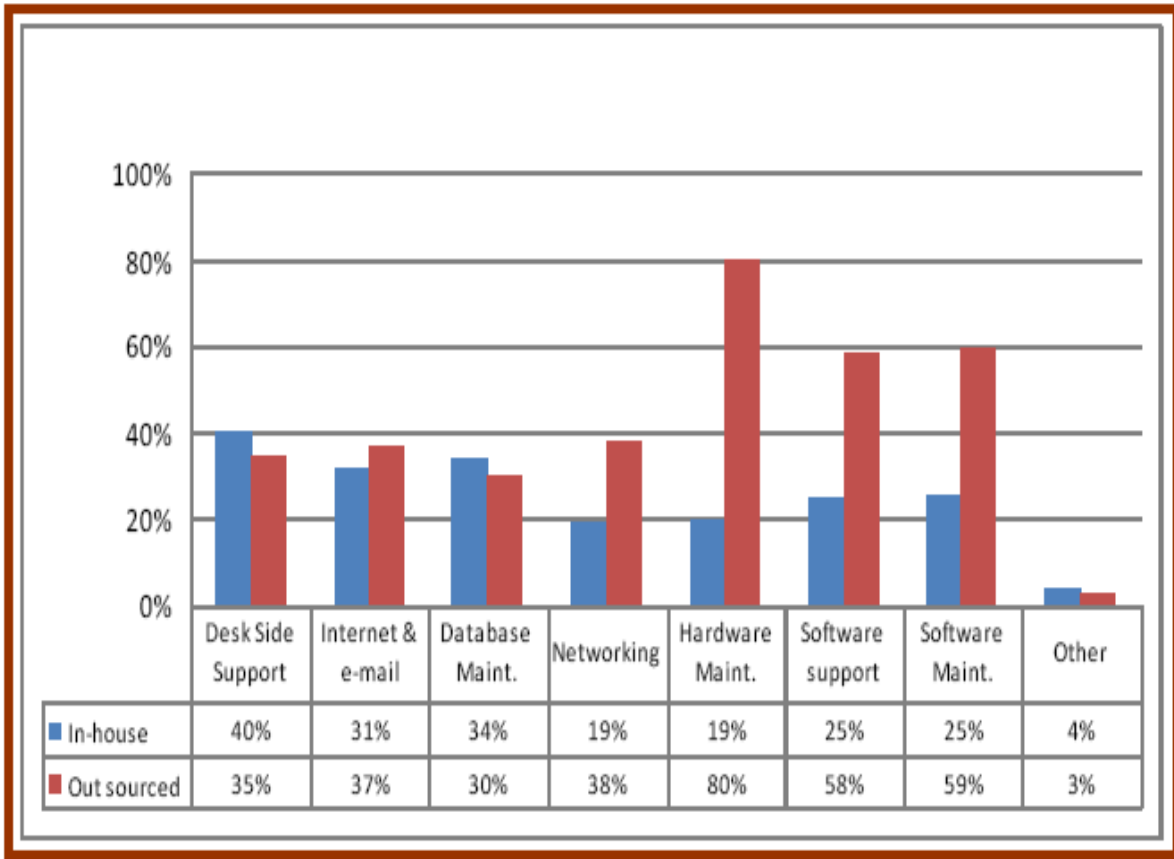
Figure 2.8 - In-house vs Outsource IT Functions in Sri Lanka
Source - ICTA Survey (2008)

Under the findings by the surveys, most of the government organizations use only standard application packages such as word processing, spread sheet etc. This shows that only a few government offices use application software with a database. Information system is considered as one of the most significant forces of modernization that drives a "technology push" for socio-economic development in the country. A study done by a Sri Lankan researcher has showed there have been numerous failures in developing information systems for organizations in Sri Lanka. This is mainly due to the ignorance of the social context within the information systems development and implementation. Information system practitioners in Sri Lanka usually evaluate the success of information systems from the standpoint of technical and economic rationality only (Gunathunge, 2003).

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2.6 Choosing Outsource over In-source

With the economy driving towards globalization, many companies wanted to gain a competitive advantage by cutting their costs, optimizing efficiency, and great customer service. This would tend to outsource their software applications (Schwartz, A and Ye, G., 2002).

A survey was done for 50 North American states for their software outsource activities. 84% have outsourced their activities whereas 16% have in-house developments. It was surveyed how much they knew about software outsourcing and what additional information they needed to make correct decisions in their software projects. The research concluded that most of them have outsourced to reduce costs, improve turnaround and operate their systems with near 100 percent reliability. In the public sector environment it is noticeable the size and complexity makes data maintenance a difficult challenge. In addition to the challenge of maintaining the database with the latest changes, the organization must also control costs in order to be competitive. This situation is referred to as "Doing more with less". The research was identified the "Reasons to outsource IS activities" such as reduce cost, reduce development cycles, speed up process, run parallel activities, acquire expertise, insufficient in-house capacity, outsource non-core activities, improved response to customer objectives and in-house staffing level stable. Out of the above acquiring expertise, insufficient in-house capacity, reduced development cycle and speed up process were the major reasons for outsourcing. Also the top management drove most of the outsourcing effort. When Comparing outsourcing work of with in-house work the software outsourcing the senior executives gave high marks for the following:

- Development schedule – faster,
- Intellectual capacity – better,
- Scheduling flexibility – better,
- Product quality – better   (Schwartz, A and Ye, G., 2002).

Outsourcing in public sector is mainly due to achieving the best practice, to improve the cost discipline skills of managers, to improve quality of service and to help senior managers focus core competencies of the organization. Method of selecting the proper software vendor should meet the basic principles of good governance, transparency, accountability and

integrity (Kakabadase and Kakabadase, 2001). The development was written by Kakabadase and Kakabadase (2001) was a specialized task that involves huge investments and a specialized workforce. Outsourcing the same could give the companies a chance to develop software at a lower rate, employ specialized labor at a cheaper cost, promote software research and save time.

To explore effectiveness in outsourcing implementation, Kakabase and Kakabadase (2001) has done a capability comparison with another survey. Finally it was identified that four core capabilities for managing outsourcing contracts as follows.

Managers need to be skilled at:
- Integrating different ways of working between their own organization and external suppliers,
- Preparing the organization to become ready for outsourcing,
- Managing the outsourcing commitment,
- Monitoring staff and lower-level management in the host organization to meet the outsourcing challenge.

The study was proved by the above authors that the companies generally outsource because they want to save IT costs, better focus on their core business, or because they consider the internal IT function Inadequacy, ineffective, or incompetent.

2.7 Benefits of Outsourcing

Knowledge sharing between service receiver and service provider through an outsourcing partnership and its effect on information technology (IT) outsourcing lead to success is identified by Ismail1 *et al* (2005). However knowledge sharing is considered as one of the major motives of outsourcing partnership based on trust to ensure partnership quality. The relationship between knowledge sharing and IT outsourcing success was examined. Finally the knowledge sharing is positively associated with IT outsourcing success was found by them. The study was based on both public and private organizations in Malaysia that have outsourced their IT functions. The table 2.2 shows the benefit of outsourcing.

Table 2.2 - Benefit of Outsourcing

Net Benefits	Strategic Benefits	1. Add to research on core business. 2. Increase control of IT expenses. 3. Satisfied with overall benefits from outsourcing.
	Economic Benefits	1. Enhanced economics on scale in human resources. 2. Enhanced technological on scale in technological resources. 3. Increased control of IT expenses. 4. Able to manage cost structure through unambiguous contractual arrangements.
	Technological Benefits	1. Able to reduce the risk of technological obsolescence. 2. Increased to access key information technologies.
Service Quality	Tangibles	The service provider 1. Has up-to-date hardware and software. 2. Physical facilities are visually appealing. 3. Employees are well dressed and neat in appearance. 4. The appearance of the physical properties in the IT unit is in keeping with the kind of service provided.
	Reliability	1. When service provider promises to do something by a certain time they do. 2. When users have a problem service provider shows sincere interest in solve it. 3. Service provider is dependable. 4. Service provider services at the time they promise. 5. Service provider insists on error free records.
	Responsiveness	Service Provider 1. Tells users exactly when service will be performed. 2. Gives prompt service to users. 3. Is always willing to help users.

		4. Is never too busy to respond to user request. 5. Respond to users need at their own disposal.
	Assurance	1. The behavior of service provider instills confidence in users. 2. Users well feel safe in their transaction with the service provider. 3. Service provider is consistently courteous. 4. Service provider has the knowledge to do their jobs.
	Empathy	The service provider 1. Gives users individual attention. 2. Has operation hours convenient to all. 3. Assign employees who give users personal attention. 4. Has the user's best interest at heart. 5. Understands the specific needs of the users.

Source - Ismail *et al* (2005)

The relationship between a client's and its service provider's objectives and values, coordination and control systems, processes, capabilities and information and technology are likely to affect outsourcing outcomes was found by Waheed Molla (2004).

Factors like lower costs, improved productivity, higher quality, higher customer satisfaction, time to market, and ability to focus on core areas are some of the benefits of outsourcing were originated by Dhar and Balakrishnan (2006).

The research regarding onshore outsourcing is having following reasons or expectations for IS outsourcing: Focusing on Strategic Issues, Increasing Flexibility, Improving Quality, Getting rid of Routine Tasks, Having Alternatives to IS Staff, Reducing the Risk of Technological Obsolescence, Facilitating Access to Technology, Saving Staff Costs, and Saving Technology Costs were mentioned by Gonzalez, Gascoy and Juanz (2008).

By outsourcing, companies can focus their efforts on core business, medium-/long-term targets and diversification opportunities. Outsourcing would achieve comparable quality more cheaply, lower inventory cost, reduced management time and improved production flow. IT outsourcing is cost effective access to specialized computing and system development skills (Kakabadse and Kakabadse, 2001).

The knowledge sharing has a positive effect on outsourcing success. As the sample the research considered Korean public offices. The objective of this study was to assess the impact on knowledge sharing, organizational capability, and partnership quality on IS outsourcing success. This study confirmed that knowledge sharing is one of the major predictors for outsourcing success, organizational capability to learn or acquire the needed knowledge from other organizations is a key source of successful knowledge sharing, and partnership quality is a significant factor between knowledge sharing and outsourcing success (Lee, 2001).
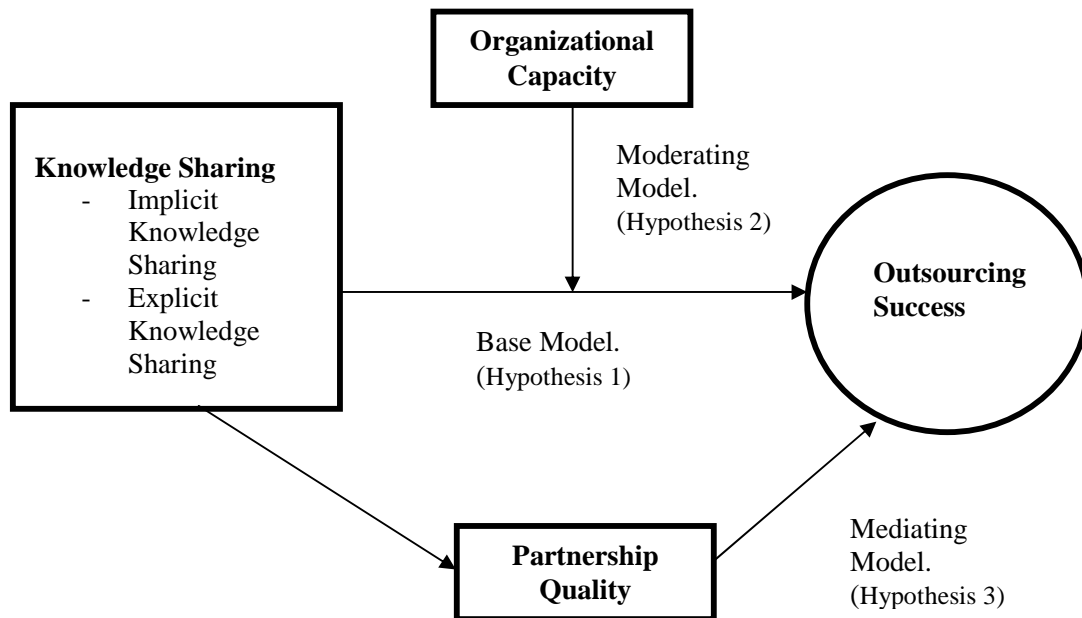
Figure 2.9 - Impact of IS Outsourcing Success

Source - Lee (2001)

2.8 Reasons for the Success of Software Outsourcing Projects

Measuring outsourcing success was extremely difficult and recent surveys suggested measuring the degree of success factors as the overall satisfaction achieved with the adoption of outsourcing and its perceived benefits. However the researcher identified the satisfaction as a good measure of outsourcing success for two reasons: firstly, because it means including and tacitly calibrating the costs and benefits involved in outsourcing and, secondly, because satisfaction is a valid measure, unlike other more specific measures which are not appropriate in all cases (Gonzalez, Gascoy and Juanz, 2008).

The following factors would cause the success of outsourcing projects which was originated by McConnell (1997).

Selecting a propoer vendor: Software outsourcing success depends on choosing the best vendor. Cost is always part of the decision in outsourcing. But selecting and awarding the software vendor should not be the lowest bid. A software project should be accurately estimated and carefully managed and costing less than a bid is not a factor to select the bid. Fixed-price (flat-rate) contracts can result in reduced functionality if the firm is forced to cut corners to meet the budget. Even if the flat-rate project is re-estimated to include the new scope, valuable evaluating time is lost.

Correct Requirement: The reason that software projects fail most often is inadequacy definition of the software requirements. The customer should have better understanding of the purpose and a clear idea of the requirement that could be interpreted to the vendor. Time taken to define the scope of the project is not a waste of time. Time taken to define the scope of the project should be as accurate as possible. Also allowing the outsourcing firm additional time and resources to analyze the project requirements and prepare a thorough scope document on which the customer could sign off. Internal projects are rarely adequately documented. In outsourcing, both the task and the performance level should be defined. Agree on the specifics of what role each of the customers will have in the development of the project. Scheduling, budget, and deliverables should be clearly stated. A comprehensive understanding of goals and their relative priorities is crucial. Although the initial stages of

any software project can be time consuming and challenging, clear expectations result in superior software.

Communication: All the preliminary arrangements had been completed by the customer; the focus was on clear communication among the project stake holders. Designate a project "champion" from the customer side will be the single point of contact with the outsourcer's project manager or technical lead. Maintaining a consistent information exchange increases the quality of the end-product and reduces delays and confusion. The key internal staff member should plan to interface with the outsourcing firm for weekly status meetings and be available to answer daily questions. Agree on a preferred format and anticipated duration for updates and stick with it. The "champion" should also consolidate feedback from the internal stakeholders so that the instructions to the outsourcing firm remain focused. When the customer hires a firm to create the software product, the vendor becomes contractually bonded to complete the services agreed according to requirement. The research was noted that the work should be assessed in the following stages:

- Multiple approval stages with sign-off at each milestone,
- Re-estimates during project,
- Code reviews,
- Project reports (written or verbal),
- Bug fix verification.

Teamwork: Clear expectations, open communication, and accountability processes all involve a commitment to common goals. Teamwork is critical to any successful outsourcing relationship. Customers need to motivate the staff to full cooperation and collaboration with the outsourcing firm. Access to source code, bug lists, and documentation should be free of delay. Sometimes the most useful thing the customer offers the firm is to meet the expectations.

Finally a software development expert is an effective way to build the software capabilities that the customer needs. When the customer works with a firm they trust, they become a valuable extension of the in-house team. Outsourcing offers the customer to benefit from specialized knowledge and experience, reduced risk, and the flexibility of the firm. Like any business relationship, outsourcing can be a great return-on-investment or a frustrating

mistake. Choosing the right service provider makes all the difference. Ultimately, the success of the partnership depends on the customer commitment to clear expectations, open communication and accountability.

Outsourcing software development has proven to be a great success for many companies worldwide. Globalization was the reason for most of the companies and it was forcing a lot of company's to constantly improve their competitive edge. Outsourcing will reduce the internal costs while allowing the company to focus on its core competencies. In a fast moving technological world, it is unlikely that the company will be able to design a whole spectrum of technical software. Thus it is wise to outsource some of the functions while keeping intact the business processes.

Cost Saving: Outsourcing makes sense for cutting costs while reducing workload on the employee. Outsourced labor may cost 90% less than the same labor performed in-house in Western Europe or North America, particularly for low-level tasks. It also makes development projects more attractive.

Time Saving: Software development takes less time when people are working on the customer's applications around the clock. Therefore the customer can get the product to the market quicker.

Flexibility: When there is an outsourcing process going on the customer doesn't have to spend time recruiting, hiring, training, and housing employees for short-term projects.

Talented IT Professionals: The customer will have immediate access to some of the best and brightest information-technology professionals by going overseas and bypassing the gaps in hiring pools in more developed countries.

Focused Strategy: Outsourcing software development will streamline the business processes. It will provide a focused strategy to have a competitive advantage in the technological race.

Improved Compliance: Outsourcing software development would create an automated compliance system that will reduce human follow-ups in business processes.

Enhanced Accuracy: Offshore development will improve work accuracy in terms of given deadlines on a project. Defined software will deliver accurate results in less turn around time.

Technological Advances: Technology is evolving in different countries of the world. Companies thriving to gain competitive advantage are better off outsourcing software development.

Risk Mitigation: The customer could mitigate risks by choosing an outsourcing firm that has a high-quality project management system and a tried-and-true process for developing applications. Several functions can be outsourced by a company in different departments. From management training to payroll software, outsourcing takes care of it all. Offshore development has become a giant industry with more to come. Website development & web design are increasingly outsourced by almost all companies for better maintenance and timely upgrades. Outsourcing software development is now the key to a company's success. It is the best solution in the age of globalization and technological advances.

Information system success factors were discussed by Gonzalez, Gasco and Llopis (2005) in their research after completing a literature survey and interviewing 357 IT Managers. They have mainly found the factors below considering as the success factors.

- Provider's understanding of clients' objectives,
- Choosing the right provider,
- A clear idea of what is sought through outsourcing,
- Provider's attention to clients' specific problems,
- Frequent client-provider contacts,
- A good-value-for-money relationship,
- Top management's support and involvement,
- Proper contract structuring.

The study was done by Elpez and Fink (2006) in Australia for 3 major Western Australian government agencies and finally the success factors were ranked as follows:

1. Meeting user requirements,
2. System usability and performance,
3. User acceptance and IS ownership / Interaction with rest of IT infrastructure,

4. Improvements in employee productivity,

5. Meeting budgeted criteria.

A research based on IS outsourcing success had selected a large number of public sector organizations and some of the private sector organizations in Hong Kong as the sample by Lee (2001). Finally the following factors were identified by him to lead success of outsourcing:

1. Able to refocus on core business,

2. Enhanced our IT competency,

3. Increased access to skilled personnel,

4. Enhanced economies of scale in human resources,

5. Enhanced economies of scale in technological resources,

6. Increased control of IS expenses,

7. Reduced the risk of technological obsolescence,

8. Increased access to key information technologies,

9. Satisfied with our overall benefits from outsourcing.

The top five reasons for IT projects success were good user support and involvement, good project management and leadership, effective planning, executive and sponsor commitment, and total organisation and project team commitment were found by Standing, Guilfoyle, Lin and Love (2006).

Understanding long term and short term goals, having a strategic view, existing clear selection criteria, communication management, having a full structured contract, top management support, using external experts, continuous process evaluation and recognition of core activities of organizations were the success factors of outsourcing software in Iranian public sector organizations. The outcome of the research was found by the binomial test and the order of results according to the above listed order. (Rajabzadeh, Asghar, Rostamy and Hosseini, 2008)

Success factors were cateogrized based on the software projects by Chow and Cao (2007). The following table 2.3 describes the relevent factors of outsorcing software based for this rsearch.

Table 2.3: Success Factors in Software Projects

Dimension	Factor
Organizational	- Strong executive support - Committed sponsor or manager - Cooperative organizational culture instead of hierarchal - Oral culture placing high value on face-to-face communication - Collocation of the whole team - Facility with proper work environment - Appropriate Reward system
People	- Team members with high competence and expertise - Team members with great motivation - Managers knowledgeable in outsourcing process - Managers who have light-touch or adaptive management style - Coherent, self-organizing teamwork - Good customer relationship
Process	- Strong communication focus with daily face-to-face Meetings - Honoring regular working schedule – no overtime - Strong customer commitment and presence - Customer having full authority
Technical	- Well-defined coding standards up front - Pursuing simple design - Rigorous refactoring activities - Right amount of documentation - Regular delivery of software - Delivering most important features first - Correct integration testing - Appropriate technical training to team

Source - Chow and Cao (2007)

Information Technology critical success factors were identified by Mendez, Mendoza and Pérez (2006) according to the management factors in table 2.4.

Table 2.4: Success Factors in Management Category

Success factor	Definition
Strategic Management	- Strategic approach: Focusing on the strategy, having a vision and a strategic plan. - Long-term relationships: Development of a multi-annual plan for outsourcing relationship, Choosing long-term relationships - Outsourcing as an intellectual asset not only a matter of costs - Separation of short-term and long-term goals: Short-term goals should be separated from long-term goals - Jointly establishing business orientation : Common goals, Work jointly to determine business orientation,
Personnel Management	- Focusing on the employees : Management of personnel issues, Communicating with employees, Continuous communication with employees, Special attention to personal matters, Personnel management, Strong relationships with personnel, Keeping employees focused - Managing resistance to change and promoting the outsourcing idea : Expect and accept resistance to change, Having a team promoting the outsourcing idea - Team work promotion
Operational Management	- Management control - Delivery performance - Cost management - Development and use of best practices
Contract Management	- Efficient contract control with good contract management - Clear points between client and provider: Clear definitions, Clear points with the provider - Flexibility: Be flexible, Development of strategies and a flexible contract, adjustable to the business changes

	▪ Use of SLA
Client-Provider relationship commitment	▪ Efficient knowledge sharing: Information exchange ▪ Cooperation between organizations: Interdependence
Client-Provider relationship communication	▪ Understanding between both organizations: Clear understanding, Understanding the needs and objectives of the client, Understanding the client, Understanding both organizations, Understanding the client's needs ▪ Keeping active communication lines: Efficient communication, Efficient relationship between managements, Two-way communication at each level, Communication as a key factor, Keeping the whole organization informed.
Technical/Technological	▪ Expertise and technical knowledge ▪ Keeping a high innovative capacity regarding service and technological advantages

Source: Mendez, Mendoza and Pérez (2006)

2.9 Reasons for the Failure of Software Outsourcing Projects

Most Information Systems and ICT projects either failed totally or partially. The research problem was discussed by Heeks (2002) as "Do most Information Systems projects in e-Government succeed or fail?" He has also discussed about "hard – soft gap" and "public – private gap".

The *total failure* of an initiative never implemented or in which a new system is implemented but immediately abandoned. This type of outcome can be defined relatively objectively. The researcher has taken as an example India's Indira Gandhi Conservation Monitoring Centre. It was intended to be a national information provider based on a set of core environmental information systems. Despite more than a year of planning, analysis and design work, this information system never became operational, and the whole initiative collapsed shortly afterwards (Heeks, 2002).

A second possible outcome is the *partial failure* of an initiative in which major goals are unattained or significant undesirable outcomes. The notion of partial failure may be relatively straightforward. It was explained in the study that the Tax Computerization Project in Thailand's Revenue Department which set out seven areas of taxation that were to be computerized. At the end of the project, only two areas had been partly computerized, and the other five were not operational (Heeks, 2002).

A journal article written by Lews (2003) has noted that the software implementation projects were failure due to challenging and interplay of people, techniques, experience, cultures and technology. Also these projects can be a "hot potato" which no one is willing to touch. Six software project failures was identified by it such as, incomplete requirements, lack of user involvement, lack of resources, unrealistic expectations, lack of executive support, and changing requirements and specifications. Lack of understanding of the software development process and the effect of that method used in the project plan, schedule and cost estimates were identified for project failure (Han and Huang, 2007).

According to the article written by Han and Huang (2007), they found the proportion of Development Country IS projects fall into each of the three outcome categories such as "total failure" or "partial failure" or "success". The question is hard enough to answer in industrialized countries. This indicates that, very roughly, something like one-fifth to one-quarter of IS projects industrialized in country fall into the "total failure" category, something like one-third to three-fifths fall into the "partial failure" category, and the remaining minority fall into the "success" category.

Software projects failure is due to one of the reasons such as unrealistic or unarticulated project goal, inaccurate estimates of needed resources, badly defined system requirements, poor reporting of the project's status, unmanaged risks, poor communication among customers / developers / users, use of immature technology, inability to handle the project's complexity, sloppy development practices, poor project management, stakeholder politics and commercial pressures. All the software projects fail due to one or more of the above reasons. The software failures could also be due to business environment, technical management, project management and organizational culture (Han and Huang, 2007).

A survey carried out in USA has found that 31% of sofware projects were cancelled before completion. Then KPMG (1997) tried to find out "what the causes of project failure were?" They sent a questionnaire focusing on IT project management issues to Canada's leading 1,450 public and private sector organizations. KPMG's 1997 Survey of Unsuccessful Information Technology Projects revealed that the three most common reasons for project failure are:

- Poor project planning - Specifically, inadequacy risk management and a weak project plan. Risk management becomes more important as the organization gets bigger, so larger organizations need to pay more attention to this area.
- A weak business case - The need for the system should be justified in ways that relate directly to the organization's business needs.
- Lack of top management involvement and support – This often dooms the project to failure before it starts. Securing buy-in from the top, often by a strong business case backed up with a realistic project plan, is an essential step.

Other findings are:

- Projects fail more often because of schedule overruns than budget overruns.
- Many projects fail because they use new or unproven technology.
- Poor estimates or weak definitions of requirements at the project planning stage also contribute to project failure.
- Projects can run into trouble due to the vendors' inability to meet commitments.

The survey found that out of failed projects, 605 were planned to take less than one year to complete. It was outlined there that the reasons behind the failure of information technology projects could be avoided and minimize the risk of future failures by learning the lessons of past mistakes, and improve project management techniques so that the staggering costs of IT project failures do not affect the particular organization (Hospodar and Trevisan, 2008).

Failure factors and how to make the software projects succeed was published by Haughy (2010) is shown in table 2.2. Also these solutions could be considered as best practices.

Table 2.5 - Making Software Projects Succeed

Failure Factor	Solution/Best Practices
Not enough time: For a good design and system study it will take much time. If the design was not properly done ongoing frequent changes may occur. When this happens time and budget will consume at a very rapid rate.	Time taken to make good design will resist having a quick start of the coding. Allocating time for this will help to run the rest of the project well.
Insufficient Budget: Many software projects go to lowest price. Unrealistic budget will slow down the project.	Be realistic of the budget and it should be on actual requirement. Avoid electing a lowest vendor and select vendors who have proven track records.
Poor Communication: "Never assume anything" also true for the software projects. Good communication is vital for software project success. Customer, user and the development team should communicate well each other.	By identifying the potential communication breakdowns at the start and never assuming that everyone can understand.
Never reviewing project progress: It is important to monitor progress on regular basis. This will prevent the delays on any issues among the stake holders	Frequent milestones should be set to review the progress of the project. Team members have to work closely.
Inadequacy testing: Testing at the end of the project the customer will suffer.	Testing should be carried out throughout the development life cycle and integration test should be done at the end of the project.
Testing in the production environment: Testing in the customer's office is high risk and it should not be done due to security issues and releasing without testing.	All testing should be done at the development environment and final tested and error-free software should be installed in the customer's environment.
Lack of quality assurance: Code changes	Take time to check the quality and document

are not documented and not proper design methodology tends to incomplete the software project. This will happen to re-work, lost time and make customer unhappy.	before releasing to the customer.
Not confirming to the industry standards: Having proper industry standards will prove accessibility, portability, usability and reducing problems for ever. International Standard Organization (ISO) is one of the main organizations of maintaining software standards as well.	Introduce international standards to the projects. Review and update the standards regularly.

Source - Haughy (2010)

Since outsourcing is very expensive, it is not suitable for very small organizations. The decision to outsource would be impossible to generalize. Many companies fail in the execution of strategic outsourcing. Organization culture leads to failure. Outsourcing for the wrong reasons also may fail outsourcing software. Any person cannot outsource their problems directly. There are several standard methodologies for outsourcing software development. When considering the figure 2.10 the pie chart shows 10% of the staff works closely, having the vendor's staff perform the work on site under close supervision. Another 20% on site and combination of vendor and in-house staff would do this work under normal supervision. The remaining 70% of the project goes off site, under the vendor's control. In any case, when a vendor performs outsourced work off site, it is critical to have your own agent at the site. It is recommended to have customer's staff with vendors. All these should be negotiated before starting the contract.
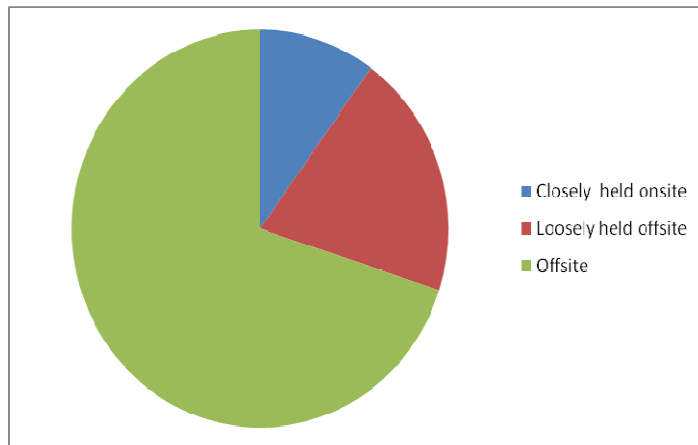
Figure 2.10 - Methodologies for Outsourcing Software Development

Source – Laplante *et al* (2004)

Finaly the authors have recommended to practice negotiating the contract throughout the project life cycle, carefully set expectations to have proper quality management infrastructure and have your own employee at the vendor's site. This applies to all the projects that have outsourced domestically or overseas. It was recommended to have one employee from the customer's side for every 20 vendor employees.

The reason to failure of the IS projects rather than the other high-tech projects was found by Yeo (2002). It was based on Singapore-based organizations. The study was found that the reasons to failure such as underestimation of timeline, weak definitions of requirements and scope, inadequacy project risk analysis, incorrect assumptions regarding, ambiguous business needs and unclear vision.

Standing *et al* (2006) have, identified four major types of failures:

(1) Correspondence failure,

(2) Process failure,

(3) Interaction failure,

(4) Expectation failure.

They have stated in their study that 67% of total on going outsourcing IT projects were in their country when they carried out the research. The main reasons or causes for IT project failure mentioned by researchers are lack of user support and involvement, lack of properly defined project scope, lack of executive management support and commitment, imprecise defined objectives and knowledge of the IT project, and poor project management and leadership (Standing *et al*, 2006). The figure 2.11 shows the theoretical model of a research and it shows relationships of the attributes of success and failure of IT projects in Australia.
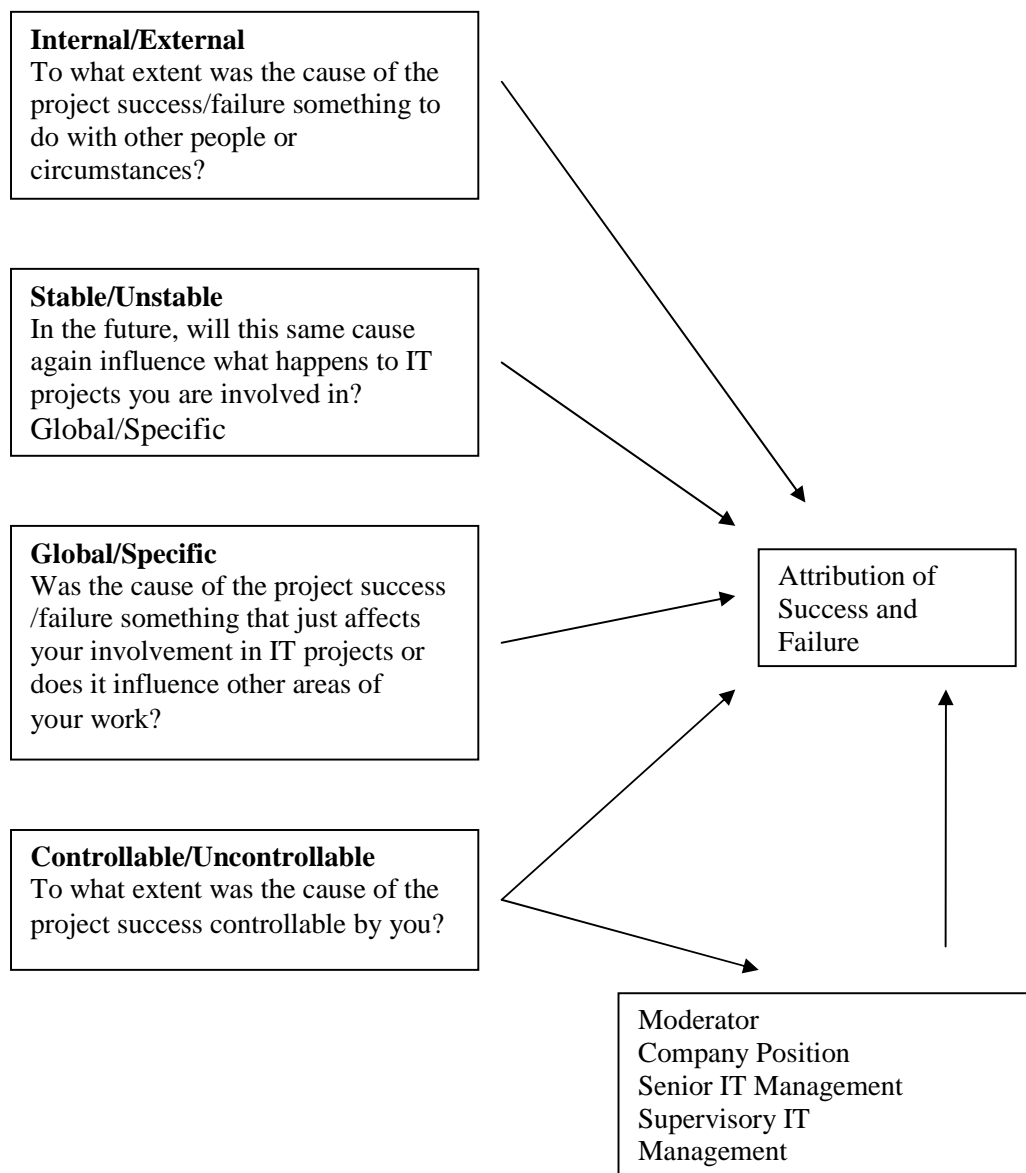
Figure 2.11 - The Attribution of Success and Failure in IT Projects

Source – Standing *et al* (2006)

As a result of resrach done for the Iranian public sector organizations limitaions in another meaning failure or delay was due to ggovernment rules and regulations, employee's resistance, low quality of outputs, control on outputs, volume of organization's functions, Limitation of experts and control/area/size of project (Rajabzadeh, Asghar, Rostamy and Hosseini, 2008).

Failure or Problem research is typically based on 'lessons learned' from certain types of projects, however most of them are similar enough to be generalized (Chow and Cao, 2007).

Table 2.6: Failure Factors in Software Projects

Dimension	Factor
Organizational	▪ Lack of executive sponsorship ▪ Lack of management commitment ▪ Organizational culture too traditional ▪ Organizational culture too political ▪ Organizational size too large ▪ Lack of agile logistical arrangements
People	▪ Lack of necessary skill-set ▪ Lack of project management capabilities ▪ Lack of team work ▪ Resistance from groups or individuals ▪ Bad customer relationship
Process	▪ Ill-defined project scope ▪ Ill-defined project requirements ▪ Ill-defined project planning ▪ Lack of agile progress tracking mechanism ▪ Lack of customer presence ▪ Ill-defined customer role
Technical	▪ Lack of complete set of correct agile practices ▪ Inappropriateness of technology and tools

Source: Chow and Cao (2007)

Suvillivan and Ngwenyama (2005) have noticed that in past few years most of the public sector outsource IS projects were failure due to lack of outsourcer's experince, opprtunistic behaviour by the vendor, vendor's lack of experince, lack of vendor financial responciblity, lack of vendor perfomance monitoring and Loss of skilled people. However they have suggested appropriate management strategies in their research.

2.10 Software Outsourcing Risk

Since outsourcing is not bad in itself and it only means that, as in other risky business ventures, risk assessment and risk management are the important contributors to the success of an IT outsourcing process (Aubert, Patry and Rivard 2001). The researches on IT outsourcing risk and risk management over the years were done by Aubert, Patry and Rivard (2001). When the risk is identified and cleared to manage, risk becomes a lot more manageable. It was proved that the organizations with a lot of resources, awarding larger contracts, would have more flexibility when managing their risk portfolio and more possibilities to reduce their risk factor.

The risk factors that are common in IT outsourcing were studied by many researchers (Dhar and Balakrishnan, 2006). It was found some studies have addressed many risks factors associated with IT outsourcing. The researcher has decided to focus specifically on risk factors that are quite common, important and sensitive to global IT outsourcing, and later validate those using case studies. Effects of risk factors are like geographical location, political, cultural, quality standards, legal contracts and intellectual property.

The main objectives of IT outsourcing were reducing cost and desire to focus on the business not in IT. However to reduce initial outsourcing risk the organization must be capable of managing the IT services first. He has identified eleven (11) risks of software outsourcing such as Possibility of weak management, Inexperienced staff, Business uncertainty, Outdated technology skills, Endemic uncertainty, Hidden costs, Lack of organizational learning, Loss of innovative capacity, Dangers of eternal triangle, Technological indivisibility and Fuzzy focus. He has also written that all these 11 factors will not occur in every sourcing decision. Some can be reduced and some can be avoided by implementing those suggestions.

"Undesirable outcomes" along with the "Factors leading to outcome" related global IT sourcing is shown in table 2.7 (Dhar and Balakrishnan, 2006).

Table 2.7: IT Outsourcing Risk Exposure

Undesirable outcomes	Factors leading to outcome
Unexpected transition and management costs	- Lack of experience and expertise to the client with the activity - Lack of experience of the client with outsourcing - Uncertainty about the legal environment
Switching costs (including lock-in, and repatriation and transfer to another supplier)	- Asset specificity - Small number of suppliers - Scope - Interdependence of activities
Costly contractual amendments	- Uncertainty - Technological Discontinuity - Task complexity
Disputes and litigation	- Measurement problems - Lack of experience and expertise of the client and/or of the supplier with - outsourcing contracts - Uncertainty about the legal environment - Poor cultural fit
Service debasement	- Interdependence of activities - Lack of experience and expertise of the supplier with activity - Supplier size - Supplier financial stability - Measurement problems - Task Complexity

Loss of organizational competencies	▪ Scope ▪ Proximity of the core competencies ▪ Interdependence of activities
Hidden service costs	▪ Complexity of the activities ▪ Measurement problems ▪ Uncertainty
Cost of delayed delivery / non-delivery	▪ Vendor fails to deliver as per ▪ Delayed delivery due to unexpected change in the requirements
Poor quality and reliability	▪ Inability to control vendor's technical quality ▪ Loss of control over vendor's technical quality
Damages due to security breach	▪ Security requirements practices ▪ Intellectual property protection ▪ Privacy concerns
Loss due to disasters and recovery costs	▪ Loss of control over disaster recovery ▪ Loss of data and information
Loss due to vendor's opportunism, including loss in future revenue	▪ Vendor becomes competitor ▪ Vendor takes advantages of contractual gap and charges additional amount for services
Vendor lock-in	▪ Long term contractual agreement ▪ Few vendors leads to limited options

Source: Dhar and Balakrishnan (2006)

The transaction cost theory and agency theory based perspective to mitigate risk in IT outsourcing. They defined "risk" as the probability of occurrence of an undesirable event, the severity of its consequences or the variability of returns on assets. Risk is also written as a "danger or hazard". In the research it was noted that the risk assessment requires that three questions would be addressed as follows.

(1) What can happen?

(2) How likely is this outcome?

(3) If it does occur, what are the consequences?

(Dhar and Balakrishnan, 2006)

Loss of critical skills and competences, qualification of the provider's staff, The provider's lack of compliance with the contract, unclear cost-benefit relationship, hidden costs, security issues, irreversibility of the outsourcing decision, possible opposition of the IS staff and inability to adapt to new technologies were the main risk factors of IS outsourcing from customer point of view. All these risk were in very much higher when the customer decided for total outsourcing the IS/IT functions (Gonzalez, Gasco and Llopis, 2005).

Below research model has discussed inherent risk in ICT outsourcing in public sector organizations in Malaysia. The research has proved that ICT outsourcing has positive relationship with inherent risk (Arshad, May-lin and Mohamed, 2007).
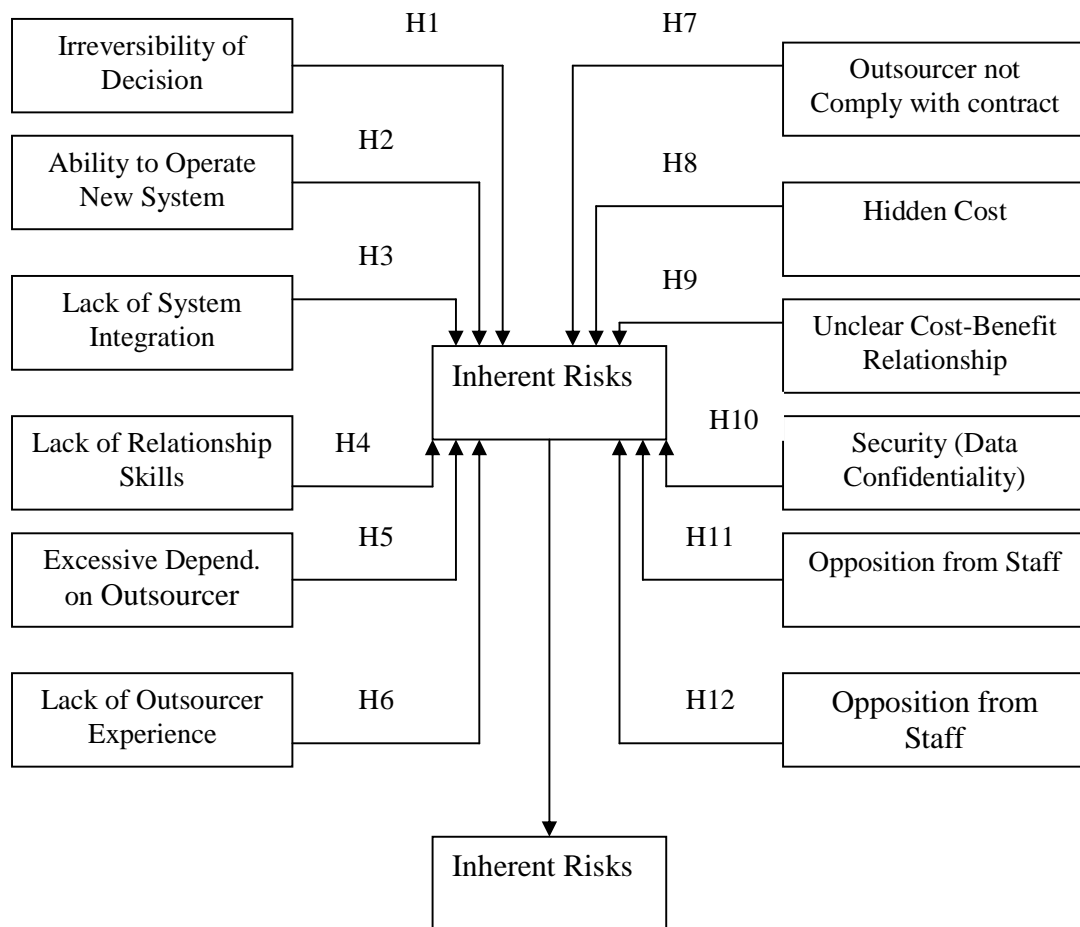
Figure 2.12 - ICT Outsourcing: Inherent Risks, Issues and Challenges

Source - Arshad, May-lin and Mohamed (2007)

IT outsourcing risks were highlighted by case study and theoretical literature of Rouse and Corbitt (2003). Those studies were included IT outsourcing risk as follows:

- Service degradation, with consequent impacts on organizational performance,
- Being locked into higher-than-market cost structures, or obsolete technology,
- Additional hidden costs of ensuring compliance, negotiation, and litigation,
- Organizational disruption and additional costs of poor transition,
- Vendor related risks (e.g. vendor overselling its capabilities; vendor going out of business or walking away from that market; vendor failing to protect records,
- Vendor unresponsiveness,
- 'Lock in' (where the purchaser has no option but to continue with an unsatisfactory arrangement),

- Diversion of managerial attention and resources (away from core business),
- Inflexibility (due to contractual constraints or prohibitive amendment costs),
- Downstream organizational losses (loss of skills and tacit knowledge - and capacity to exploit IT for business advantage, loss of innovative capacity; loss of intellectual property),
- Impacts on competitive advantage.

2.11 Risk Management in Software Projects

With an effective risk management program, future problems could be avoided rather than solving the current problems (Arshad, May-lin and Mohamed, 2007).

To avoid crisis in software projects the managers should handle risk in a way to succeed and avoid crisis. Na *et al* (2007) have identified seven (7) risk management processes:

1. Identify risk factors: There are different type of risk factors such as Integrating , Upgrading , No source code and vendor failures/buyouts,
2. Assess risk probabilities and effects on the project,
3. Develop strategies to mitigate identified risks,
4. Monitor risk factors,
5. Invoke a contingency plan,
6. Manage the crisis,
7. Recover from a crisis.

A risk in IT outsourcing projects to be evaluated and managed was found by Aubert *et al* (1998). In their research they have given a process framework for the management of IT outsourcing risk, and assess the usefulness of the framework using the data gathered. It also describes a conceptual definition of risk and of risk exposure and risk management framework.

A research was found that the risk could be minimized by considering alternatives such as; resorting to selective outsourcing or outsourcing with multiple providers, retain the internal knowledge required to handle the outsourcing provider or even to revert to the outsourcing process. With the option of multiple providers, the customer firm can negotiate outsourcing contracts with multiple providers differentiated by competence,

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experience and market position from different providers' skills complementary (Gonzalez, Gasco and Llopis, 2005). However, even these strategies have their risks; for instance, points out that it is difficult to manage and coordinate the work of several providers. It is suggested that it is not easy to specify each provider's responsibilities either, especially when the outsourced processes are interdependent (Gonzalez, Gasco and Llopis, 2005). Finally it is noticed that the management and coordination of multiple contracts are very time-consuming (Gonzalez, Gasco and Llopis, 2005). Understanding the nature of the outsourced work is the other practice that would surely help to reduce risk. This could be implementing by signing short-term contracts, demanding up-to-date documentation about those contracts and also with the customer's ability to retain the skills and competences needed to ensure that contracts add value to profits (Gonzalez, Gasco and Llopis, 2005).

The most of IT outsourcing risks can be controlled and mitigated by applying and practicing risk management. Therefore, risk management in IT outsourcing framework will be developed to assist organizations in managing risks in IT outsourcing projects were found by Aris, Arshad and Mohamed (2008).

2.12 Issues and Challenges in Outsourcing

Some challenges in ICT outsourcing in public sector in Malaysia were identified. Although they have a governing body to coordinate the planning, implementation and management of government projects for the entire public sector, there are still a number of issues and challenges that need be addressed as follows: Inappropriate ICT Outsourcing, Transfer of Technology (TOT), Poor Documentation, Vendor Management, Transparency in Awarding the ICT Outsourcing Project and Specification in Request for Proposal (RFP) (Arshad, May-lin and Mohamed, 2007).

2.13 Best Practices in Outsourcing Success

The managers in Sri Lankan firms have given least importance to best practice for "outsourcing" has been noted by Jayakody and Sanjeewani (2004) in their research. The results they have obtained from "The best business practices of Sri Lankan firms" are shown in the table 2.8.

Table 2.8 - The Best Business Practices of Sri Lankan Firms

Factor	Mean	SD	No. of variables	Rank
Factor1. A bias for action	4.680	1.246	5	1
Factor2. Customer orientation	4.320	1.038	9	3
Factor3. Quality focus	4.521	1.307	4	2
Factor4. Relationships with employees	4.029	1.202	5	5
Factor5. Relationships with customers	4.141	1.183	3	4
Factor6. Outsourcing	3.643	1.496	2	6

Source: Jayakody and Sanjeewani (2004)

Information system functions outsourcing found as a booming industry by the market analysts and the research on "Strategic Intent for IT Outsourcing" was done by DiRomualdo and Gurbaxani (2001). The findings of our research strongly establish the importance of understanding the different types of strategic intent for IS/IT improvement, business impact, and commercial exploitation is the role that outsourcing can play. In their article it was argued that there is no "one size fits all" approach to IT outsourcing and each type of strategic intent for IT outsourcing requires different approaches and tactics to be realized successfully. In evaluating IT outsourcing opportunities and structuring relationships, managers for IS and the business should remember the primary requisites for success are consistency, competency, compatibility, and continuity. The following practices are recommended by them.

Design the outsourcing contract to consistently reflect and reinforce each strategic intent pursued: The most important finding was that the strategic intent for outsourcing must drive the operating philosophy of the relationship and be reflected in the critical features of the outsourcing contract. The contract must included contract type, pricing provisions, reward and penalty mechanisms, performance measures, and non-pricing provisions. The customer's and vendor's relationship agenda should be aligned.

Make sure customer and the outsourcing vendor have the right mix of competencies and know-how: It is important to test whether the vendor has the competencies it needs to deliver what you expect both now and in the future. For IS improvement, factors such as economies of scale, technical expertise, and IS management processes must be validated. Business impact requires change management competence and re-engineering skills as well as process know-how. Commercial exploitation demands sales and marketing prowess, an established customer base, and viable channels of distribution. The customer of the outsourcing services must ensure that it retains an IS organization with the capabilities required to manage the relationship well. Investments in training and staff recruitment may be necessary to ensure the right people and skills. Key competencies include IT performance measurement, IT services market tracking, project management, and deal making, negotiation, and conflict resolution. Market expertise, finance, and licensing-management skills are also required if the client intends to exploit its systems commercially.

Make sure the customer's organizational culture and work practices are compatible with your partner: Outsourcing vendors must be chosen with care, paying particular attention to shared objectives and cultural fit. For a successful outsourcing relationship, the operating styles and cultures of both organizations, client and vendor, must be compatible at all levels. Managing for results requires sustained effort by both the client and the outsourcing vendor. Both parties must develop a mutual understanding of their work processes and identify critical aspects of the relationship.

Enable continuity by designing contracts and relationships to anticipate change: It is important to shift in these priorities and to build flexibility into contracts and alliances to deal with them. The contract must be flexible enough to deal with future changes in requirements. Set up the relationship structure and management mechanisms to work successfully with the outsourcing vendor over a long term period. However the business and technical objectives for information technology are always difficult to achieve and the chances of success are greatly increased when strategic intent is well understood and the relationship is managed to address these critical issues.

Rajabzadeh, Asghar, Rostamy and Hosseini (2008) have done a research for an Iranian Public sector organization and found the effective factors of outsourcing software. Special attention was mentioned in their research when selecting a software vendor. The main factors were financial stability, commercial capabilities, reputation and past experience of the firm, strategic positioning, suggested cost, quality of provided services, contractor's attitudes toward outsourcing, contractor's size and same commercial contracts of contractor.

2.14 Software Outsourcing Theories

"Identify and rank critical issues in IT outsourcing relationships" were rank by Gottschalk and Solli-Sæther (2005) on his research. Basically 11 management theories were applied in this research. Theory of core competencies, resource-based theory, neo-classical economic theory, transaction cost theory, contractual theory, agency theory, partnership and alliance theory, relational exchange theory, stakeholder theory, social exchange theory and theory of firm boundaries. The research was done using case studies and survey.

The following theories were diagnosed the relationship of the contract using three (3) theories such as:

- *Agency theory* - To help design the types of contract and relationships necessary to provide and support an environment of trust.
- *Transaction Cost Economics (TCE)* – Provider must always look forward to technological changes which will allow it to improve the quality and number of services it can provide the user.
- *Resource Based View (RBV)* – Tool used to determine the strategic resources available for the company. (Gottschalk and Solli-Sæther, 2005)

2.15 Chapter Summary

Identification of software outsourcing in the other developed and developing countries were mainly noted in this chapter. Background information in public sector outsourcing projects and e-Government concept in the other countries were clearly recognized to compare with Sri Lanka.

By reviewing the literature the success factors, failure factors and best practices in software outsourcing was identified and categorized. The summarized factors with similar characteristics were grouped together as the study need to develop the conceptual framework based on it.

CHAPTER 3
RESEARCH DESIGN

3.1 Introduction

This chapter explains and justifies the research methodology of testing the conceptual model with collected data. Reviewed literature from the chapter 2 was used to propose a conceptual framework (figure 3.1 in page 65) for Best Practices for Software Outsourcing Success in Public Sector Organizations in Sri Lanka. In order to achieve the research objectives stated in the chapter 1 the report comprised the five phases given below:

- **Phase 1**: Detailed study focused on literature review,
- **Phase 2**: Develop the research model accordingly, and categorized success and failure factors, define best practices as per literature. Introduce Hypothesis for groups of variables known as factors,
- **Phase 3**: Data collection through preliminary survey to identify the IT background of the public organizations. For this purpose questionnaire (*Annexure 2*) were distributed to the head of Information Technology / Chief Innovation Officer / Chief Information Officer,
- **Phase 4**: Data collection through the questionnaire (*Annexure 3*) from the system users,
- **Phase 5**: Background study on general characteristics and identify the relationships between success and failure factors with the dimensions of best practices using data analysis.

This research would consider outsourced (from the local software vendors) specialized application software packages being used by the public sector organizations in Sri Lanka. The difference of this specialized application software packages was that it would not be duplicated in another organization in Sri Lanka as their service is unique in the government sector. The common software such as website implementation, finger scanning with attendance system, payroll and accounting systems (provided by the General Treasury attached to the Ministry of Finance and Planning) were not considered because those

packages could not be considered as specialized application software systems and most of those systems are being used for only for the back-office systems. The researcher believes that when providing front-office services to the public only more problems could occur than a back-office system.

3.2 Conceptual Framework

The conceptual framework shown in Figure 3.1 was built based on the analysis of literature. In order to select the most relevant variables for testing, a comprehensive review of the empirical research on success factors and failure factors of outsourcing software was conducted. This review included 91 published studies. The research model illustrates the success and failure factors that lead to success of outsourcing. Failure factors are considered here because most of the variables included in failure factors could be mitigate the risks associated in this process. The researcher has summarized all the success and failure factors from the previous researches in public sector organization around the globe as illustrated in *annexure 4*. This research has taken out each one from the common factors and categorized to carry out the research in Sri Lankan public sector organizations. The basic structure of this conceptual research frame differentiates between five classes of variables such as **Scope, Quality, Communication, Time and Cost.** These five variables finally considered as outsourcing success. Then the relationship between outsourcing success and failure factors with outsourcing success was explored. The model was enabled to identify the best practices out of five groups of success factors and four groups of prevention of failure factors.

The 24 success factors were grouped into Organizational, Strategic Management, Operational, Technical and Client/Provider. Also 23 failure factors were grouped in Resistance, Financial, Risks and Inadequacy.

3.2.1 Success Factors

Organizational – This consists of seven (7) variables as follows:

1. Strong top management support and involvement (Gonzalez, Gasco and Llopis, 2005; Mendez, Mendoza and Pérez, 2006; Chow and Cao, 2007; Rajabzadeh, Rostamy and Hosseini, 2008)

2. Appropriate rewarding systems and incentives (Elpez and Fink, 2006; Mendez, Mendoza and Pérez, 2006; Chow and Cao, 2007)

3. Cooperative organizational culture instead of hierarchal (Mendez, Mendoza and Pérez, 2006; Chow and Cao, 2007)

4. Establish team work environment and motivate team members (McConnell, 1997; Standing *et al*, 2006; Chow and Cao, 2007)

5. Setting-up penalties (Mendez, Mendoza and Pérez, 2006)

6. Providing necessary training (Chow and Cao, 2007)

7. Promote outsourcing idea to the staff members (Gonzalez, Gasco and Llopis ,2005; Mendez, Mendoza and Pérez, 2006)

Strategic Management - This consists of four (4) variables as follows:

1. Focusing on vision and a strategic plan including short-term and long-term goals (Mendez, Mendoza and Pérez, 2006; Rajabzadeh, Rostamy and Hosseini, 2008)

2. Development of a multi-annual plan for outsourcing relationship (Mendez, Mendoza and Pérez, 2006)

3. Outsourcing as an intellectual asset, not only a matter of costs (Mendez, Mendoza and Pérez, 2006)

4. Identify overall benefits of outsourcing. (Mendez, Mendoza and Pérez, 2006)

Operational - This consists of four (4) variables as follows:

1. Keep track on delivery performance of the final product (Mendez, Mendoza and Pérez, 2006; Rajabzadeh, Rostamy and Hosseini, 2008)

2. Strong customer commitment and presence through out the outsourcing life cycle (Standing *et al*, 2006; Chow and Cao, 2007)

3. Management control (Mendez, Mendoza and Pérez, 2006; Standing *et al*, 2006; Chow and Cao, 2007

4. Follow cost management (McConnell, 1997; Gonzalez, Gasco and Llopis, 2005; Mendez, Mendoza and Pérez, 2006)

Technical - This consists of four (4) variables as follows:

1. Follow the clear selection criteria with proper evolution team (Rajabzadeh, Asghar, Rostamy and Hosseini, 2008)

2. Proper documentation with coding standards (Chow and Cao, 2007)

3. System integration testing on site. (Chow and Cao, 2007)

4. Keeping a high innovative capacity regarding service and

Technological advantages (McConnell, 1997; Mendez, Mendoza and Pérez, 2006)

Client/Provider - This consists of five (5) variables as follows:

1. Selecting the right provider (McConnell, 1997; Gonzalez, Gasco and Llopis, 2005)

2. Maintain client-provider relationship, confidence and cooperation (Gonzalez, Gasco and Llopis, 2005; Mendez, Mendoza and Pérez, 2006; Chow and Cao, 2007)

3. Provider's understanding of clients' objectives (McConnell, 1997; Gonzalez, Gasco and Llopis, 2005; Elpez and Fink, 2006, Chow and Cao, 2007)

4. Periodical progress meetings (McConnell, 1997; Gonzalez, Gasco and Llopis, 2005; Mendez, Mendoza and Pérez, 2006; Chow and Cao, 2007)

5. Setting penalties and developing incentives (Mendez, Mendoza and Pérez, 2006)

3.2.2 Failure Factors

Resistance – This consists of five (5) variables as follows:

1. Employee's resistance to change (Arshad, May-Lin and Mohamed, 2007; Chow and Cao, 2007; Rajabzadeh, Asghar, Rostamy and Hosseini, 2008)

2. Lack of team work (Chow and Cao, 2007)

3. Lack of necessary skilled people (Gonzalez, Gasco and Llopis, 2005; Suvillivan and Ngwenyama, 2005; Chow and Cao, 2007; Rajabzadeh, Rostamy and Hosseini, 2008)

4. Lack of customer presence (Chow and Cao, 2007)

5. Sudden loss of IT expertise and critical skills (Sullivan and Ngwenyama, 2005; Arshad, May-Lin and Mohamed, 2007)

6. Loss of innovative capacity (Méndez, Mendoza and Pérez, 2006)

Financial - This consists of four (4) variables as follows:

1. Additional hidden costs of ensuring compliance, negotiation, and litigation (Rouse and Corbitt, 2003)

2. Cost of delayed delivery/non-delivery (Gottschalk and Solli-Sæther, 2005)

3. Unexpected transition and management costs (Sullivan and Ngwenyama, 2005)

4. Loss due to disasters and recovery costs (Sullivan and Ngwenyama, 2005)

Risks - This consists of six (6) variables as follows:

1. Governmental rules and regulations (Rajabzadeh, Asghar, Rostamy and Hosseini, 2008)

2. Vendors or outsourcer's lack of experience (Sullivan and Ngwenyama, 2005)

3. Hidden costs in outsourcing contract risk (Arshad, May-Lin and Mohamed, 2007)

4. The provider does not comply with the contract (Yeo, 2002; Gonzalez, Gasco and Llopis, 2005; Arshad, May-Lin and Mohamed, 2007; Han and Huang, 2007)

5. Security issues (Yeo, 2002; Gonzalez, Gasco and Llopis, 2005; Arshad, May-Lin and Mohamed, 2007; Hanand Huang, 2007)

6. Lack of legacy and new system integration risk (Arshad, May-Lin and Mohamed, 2007)

Inadequacy - This consists of six (6) variables as follows:

1. Lack of project management capabilities (Suvillivan and Ngwenyama, 2005; Chow and Cao, 2007; Han and Huang, 2007)

2. Poor project scope (Yeo, 2002; Gonzalez, Gasco and Llopis, 2005; Méndez, Mendoza and Pérez, 2006; Chow and Cao, 2007)

3. Lack of organizational learning (Méndez, Mendoza and Pérez, 2006; Han and Huang, 2007)

4. Outdated technological tools (Méndez, Mendoza and Pérez, 2006)

5. Control/area/size/time of project (Rajabzadeh, Asghar, Rostamy and Hosseini, 2008)

6. Low quality of outputs (Rajabzadeh, Asghar, Rostamy and Hosseini, 2008)

3.2.3 Best Practices

The dimensions included in the Best Practices are shown in table 3.3 as 'Factors'. These measurements were selected by the researcher as those were more appropriate for the Sri Lankan public sector organizations when outsourcing application software. Since all of the manual systems are replaced by the outsourced computerized systems the outsourced application software would be according to the user requirement (scope), errors and bugs free with user friendly (quality), having proper interaction among stake holders (communication), for reasonable value (cost) and timely installed (time) product.

Scope - Meeting all requirements and objectives (Chow and Cao, 2007; Rajabzadeh, Rostamy and Hosseini, 2008).

Quality - Delivering good product or project outcome (Chow and Cao, 2007; Rajabzadeh, Rostamy and Hosseini, 2008).

Communication - Strong communication channels between client/provider and also among the project team members with the other employees in the customer's organization (Lin, Pervan and McDermid, 2007; Rajabzadeh, Rostamy and Hosseini, 2008).

Cost - Delivering within estimated cost and effort.(Chow and Cao, 2007; Rajabzadeh, Rostamy and Hosseini, 2008).

Time - Delivering on time. (Chow and Cao, 2007; Rajabzadeh, Rostamy and Hosseini, 2008).
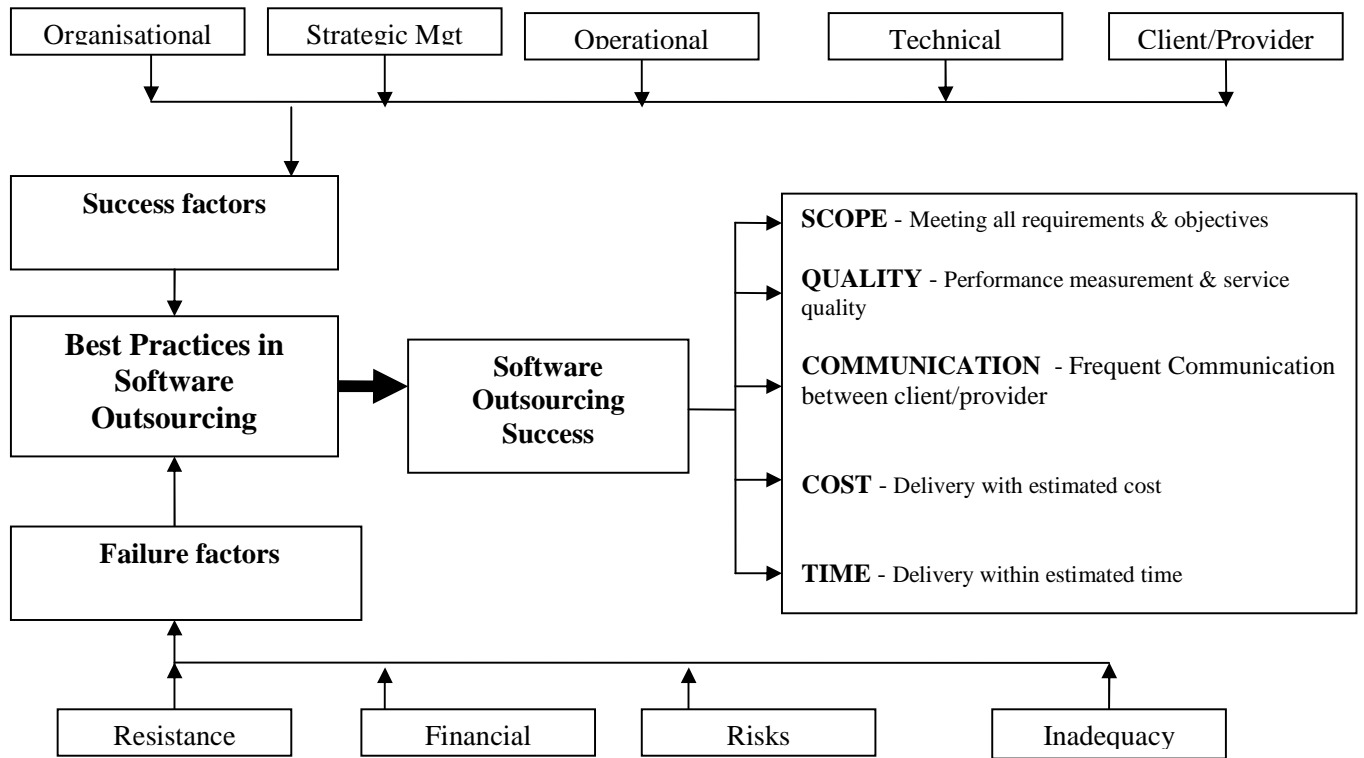
Figure 3.1 - The Conceptual Framework for this Research

3.3 Hypothesis

Based on the conceptual model the similar characteristic variables are grouped together and hypotheses were introduced for those groups known as factors.

Hypothesis 1

Organizational factors are positively associated with software outsourcing success.

Hypothesis 2

Strategic Management factors are positively associated with software outsourcing success.

Hypothesis 3

Operational factors are positively associated with software outsourcing success.

Hypothesis 4

Technical factors are positively associated with software outsourcing success.

Hypothesis 5

Client/Provider factors are positively associated with software outsourcing success.

Hypothesis 6

Prevention of Resistance factors is positively associated with software outsourcing success.

Hypothesis 7

Prevention of Financial factors is positively associated with software outsourcing success.

Hypothesis 8

Prevention of Risk factors is positively associated with software outsourcing success.

Hypothesis 9

Prevention of Inadequacy factors is positively associated with software outsourcing success.

3.4 Survey Procedure - Data Collection

The data was collected during the period from 1st October to 31st December 2010. Data collecting approach was quantitative analytical method. The participants were assured of confidentiality of their personal and organizational information.

3.4.1 Population

The target population for this research was all heads of Information Technology, Chief Innovation Officers, project members and those who were using the outsourcing software applications in public sector organizations in Sri Lanka. The first task was to find out the

public organizations that have outsourced development of their application software. Since this type of data is not freely available from one place the researcher had to go through all the official websites of the government of Sri Lanka and Government Information Centre website (GIC, 1st October 2010). The contact details of all 45 ministries attached to the Sri Lankan government (As at 1st October 2010) were found from those two web sites. The researcher had to send questionnaires (annexure1) to the secretaries of the ministries to find out the outsourced software packages of their respective institutions. Most of the websites had given a contact person and the letters were addressed with attention to them. Expecting a satisfied response, the covering letter and self-addressed stamp envelope were attached with it. The response was very slow and follow-up phone calls were made after two-three weeks of posting. However most of these ministries do not have a separate information technology division/section/unit and therefore the researcher had to contact Heads of Administration or Planning Division. Some of them were not aware of outsourcing software and others have standard payroll and accounting packages which were provided by the General Treasury attached to Ministry of Finance and Planning. Finally, only five ministries responded. Out of them only two ministries had outsourced software systems and the other three (3) gave their contact details of the institutions under them.

Since only two organizations were not enough for the research the researcher had to find all the institutions such as departments, statutory boards, provincial councils, authorities, commissions, public offices and public companies under 45 ministries through their websites given in GIC website (GIC, 1st October 2010). For this study only 106 organization including ministries, departments, statutory boards, authorities and commissions were considered. To find out the organizations that had outsourced software the researcher sent e-mails to all 106 organizations but only 6 organizations responded. Since the response was slow, the researcher personally made telephone calls to the organizations and reminded to answer the e-mails. From them only 14 organizations answered and agreed to participate for the research. However according to their data 1680 system users were using outsourced systems in their respective organizations. Since some systems were not fully implemented and a very few handed over to the users, the researcher had to be satisfied with that amount. This amount was considered as the population for the research. It was found that only one organization is doing offshore outsourcing and it was not taken for consideration as this

research is mainly considering onshore (local software providers) outsourcing as mentioned in the start of this chapter.

Depending on the requirement, the institutions had outsourced or had being outsourcing different systems. As mentioned in Chapter 1- Introduction in this research, the year 2002 was a significant year for the Government Offices regarding Information Technology. Therefore, the researcher has considered only the specialized software systems that were outsourced after the year 2002.

3.4.2 Sample Selection

The sample was considered as the 20% of the population. This percentage was identified after reviewing similar researches in other countries (Gonzalez *et al*, 2005). Thus 336 individuals from outsourcing organization participated in the research. Random sampling technique was used to distribute the questionnaire.

Most of the CIOs were very supportive but some were reluctant to participate as they were busy with work.

3.4.3. Data Collection

Data collection was handled by formal interviews with Head of IT/CIO questionnaire to the users were distributed.

3.4.3.1 Interviews

Interviews were carried out with heads of IT/CIO to gather data of IT environment in their organization. These lasted 1 – 1 1/2 hours. Apart from the interviews, e-mails and telephone conversations were also had with them. This was done with heads of IT/CIO because they are the most knowledgeable persons in the organization's outsourcing projects, and should also have sufficient ability and information to assess various aspects of outsourcing deals. The previous researches have also identified this category as the key Information category of the study (Wang, 2002). Therefore without their support, the research could not be handled further. The researcher has taken a note of their background, organization and projects.

3.4.3.2 Questionnaire Design

The questionnaire was designed to obtain a comprehensive view of software outsourcing practices in Sri Lanka. Three types of questionnaires were distributed and all of those are given in the appendix.

Before handing over to the system users, all three types of questionnaires were gone through by the Head of IT and five other users. The above questionnaire was helpful to collect both primary and secondary data.

Questionnaire 1 (*Annexure 1*) – This was designed for the head of the Administrator (Secretary to the Ministry) in ministries attached to the Sri Lankan government (Mailed before the change of the ministries – as at 1st of October).

Questionnaire 2 (*Annexure 2*) – This was designed for the head of IT or CIO in the public organizations. IT background of the organization was identified from this. Usage of outsourcing software was also identified as a percentage. This was also helpful to identify the number of users in their organizations to hand over the questionnaire 3.

Questionnaire 3 (*Annexure 3*) - This questionnaire was based on a conceptual frame work of this research. The factors were selected by the researcher according to the Sri Lankan context. Basically three main purposes would be responded from this questionnaire. It was to get the feed back for the pre-identified success factors, failure factors and the best practices from the system users in public sector organizations. The success and failure factors consisted of nine main categories with five-point Likert Scale questions from "strongly disagree" to "strongly agree" as shown in table 3.4. This was distributed among 20% of the population.

Table 3.4 - Likert Scale for Success and Failure Variables

Scale	Score
Strongly disagree	1
Disagree	2
Moderate	3
Agree	4
Strongly agree	5

Final part was the "Best Practices" and five scales were given as in table 3.5 to measure it. In addition, three open-ended summary questions were used.

Table 3.5 - Likert Scale for Best Practices

Scale	Score
Not Important	1
Less Important	2
Moderate	3
Important	4
Very Important	5

3.5 Data Analysis Techniques

There were three questionnaires to consider for data analysis. While the questionnaire 1 was given to ministries to gather information of their attached organizations, questionnaire 2 was distributed to find out the background information of outsourcing and the questionnaire 3 was mainly designed for the conceptual frame work of the research.

Questionnaire 1 – This was not taken for any analysis work specially done as piliminary servey of identification of offices under the ministries in Sri Lankan government and their background of outsourcing systems.

Questionnaire 2 - Descriptive Frequency Analysis was used to analyse and MS-Excel was used to draw the graphs.

Questionnaire 3 - There were altogether nine groups of success factors and failure factors which were used for hypotheses. The five of success factors are: (1) Organizational, (2) Strategic Management, (3) Operational (4) Technical (5) Client/Provider and the 4 groups of failure factors are. (6) Resistance (7) Financial (8) Risks (9) Inadequacy. 47 variables were attached to the above mentioned nine groups. Descriptive Analysis tool was used to find out the percentage of each scale and average number of response was considered to check the hypothesis in each group. Relationship between each factor will be tested with the "Best Practices" dimensions such as a) scope b) quality c) communication d) cost e) time. The significance of the relationship was checked using Pearson's correlation.

SPSS (Statistical Package for Social Science) for Windows (version 13) was used to analyze the data collected.

3.6 Chapter Summary

This chapter mainly focused on research methodology of conducting the research. The hypotheses were identified according to the literature. Based on the conceptual framework the questionnaire was designed accordingly to collect data.

The process of gathering the data faced many difficulties and took a much longer time than had initially been planned. Finding the public organizations attached to each ministries took time and most of them were very busy as they had reshuffled the cabinet ministers and the budget. All these took a long time to respond. Many of them failed to respond even though the researcher had given several follow-up, telephone calls.

Depending upon the responding rate the sample was selected from the population of all outsourced systems users from the public sector organization. The data analysis was done according to respondents out of the sample.
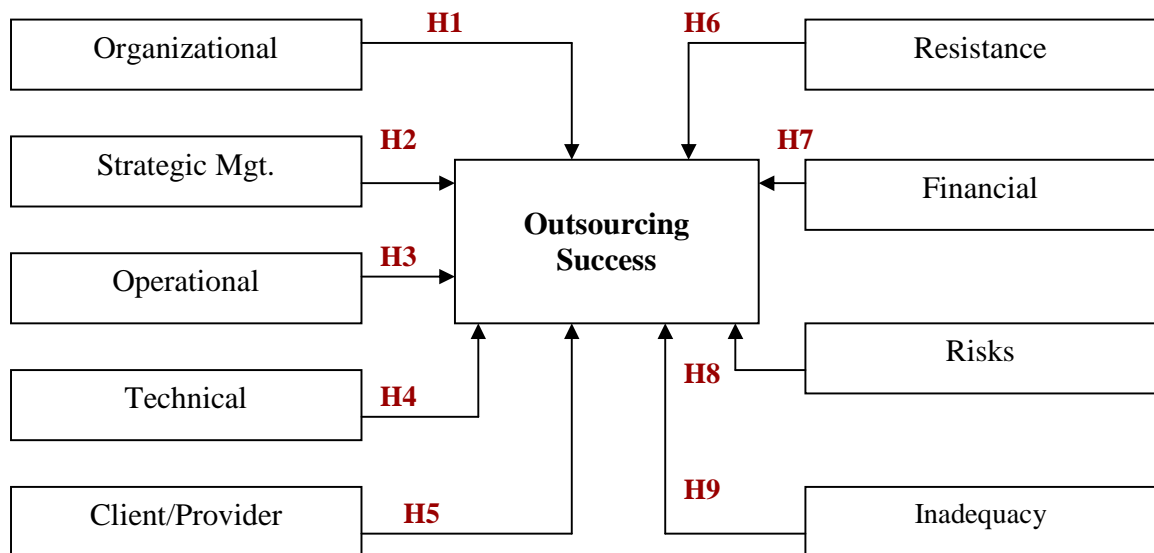
Figure 3.2 – Summary of Analysis

CHAPTER 4
SURVEY RESULTS

4.1 Introduction

There are two sets of data to be analyzed according to the results of the questionnaires.

- **Data set 1:** This data contains the response of the Heads of Information Technology (IT) / Chief Innovation Officers (CIO) responded for this questionnaire was attached in the *annexure 2*. This will be analyzed under **"4.2 – Information Technology Background of the Organizations"** of this chapter.

- **Data set 2:** System users responded for this questionnaire attached in *annexure 3*. This is analyzed under **"4.3 - Detailed study on the Outsourced Software Projects"** of this chapter.

4.2 Information Technology Background of the Organizations

Information Technology Background information such as outsourced Information Systems (IS) / Information Technology (IT) services in each organization, reasons to outsourced, the number of projects outsourced and method of tender awarded – Information and Communication Technology Agency (ICTA) vs direct will be discussed. These data will help to identify the background of the software project. Hence this information was gathered from the heads of IT in fourteen (14) organizations that have responded for the questionnaire (annexure 2) and fed into a separate SPSS dataset.

4.2.1 Response to the Research

As noted in chapter 3 the total population for this research was one thousand six hundred and eighty (1680). Out of the total population, 20% of the sample was three hundred and thirty six (336). 20% of the users were calculated by the individual organizations. There were two hundred and twelve (212) officers who had responded whereas hundred and twenty four

(124) had not responded. Finally 63% of the response rate from the sample was taken to continue the research. The table 4.1 shows the number and percentage of respondents.

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Table 4.1 - Response to the Research

Category	Number of Respondents	Percentage of Respondents (%)
Responded	212	63
Not responded	124	37
Total	**336**	**100**

Source - Survey data

The figure 4.1 illustrates the response to the research in a pie chart. It is clearly figured out that more than 50% of the sample has responded to the research.
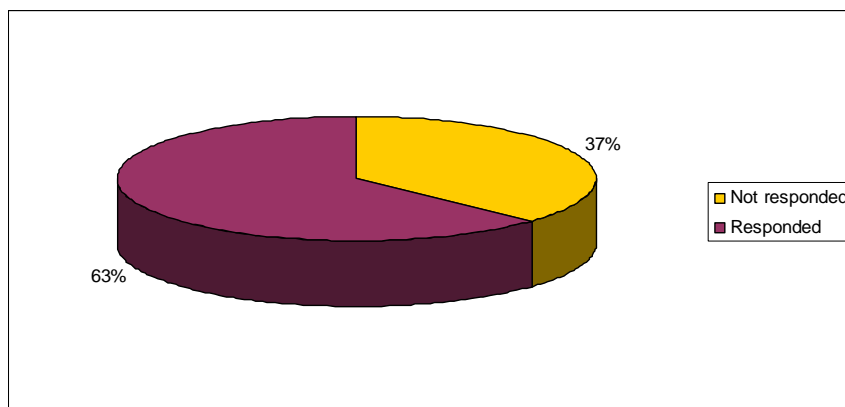
Figure 4.1 - Response to the Research
Source - Survey data

4.2.2 Outsourced IS/IT Services

While going through the literature and according to the researcher's experience it was noticed that there are many IS/IT services being outsourced by the public organizations. The table 4.2 shows the percentage of outsourcing services in each organization that has responded to the questionnaire. According to the data, application software development / customization, end-user support and database/software maintenance have outsourced 100% by all the 14 organizations. Only 50% of the organizations have outsourced their e-commerce web site development which is the lowest outsourced service among the 14 organizations.

Table 4.2 - Outsourced IS/IT Services

IS/IT Service	Percentage of outsourcing %
Database/Software maintenance	100.0
Application software development/customization	100.0
End-user support	100.0
Staff and end-user training	92.9
Database Creation	92.9
System integration	85.7
E-commerce website development	50.0

Source - Survey data

4.2.3 Reasons to Outsource

Outsourcing is done due to different reasons (see table 4.3). Considering the mean value, the highest mean value is 7.79 for "Quality and Reliability". The expectation of the above highest mean value describes that final software product would be a software without any trouble, user friendly, less software bugs and with developed high industry standards. The second highest is "New Technology" which has a mean value of 7.50. Since the heads of IT/CIOs need to go in for the new technology with their innovative ideas, with their qualifications, experience and the requirement this has been given priority. The equal mean value is given for "Customer Satisfaction" and "Access to State-of-the-art Technology" while the lowest was given for "Allows major capital expenditure avoidance". Also it is noticeable that the cost factor is not a considerable factor for reason to outsource. The result of this shows the responses are interested about the quality of the product and do not depend on the cost factor.

Table 4.3 – Reasons to Outsource

Reason	Mean	Rank
Quality and Reliability	7.79	1
New Technology	7.50	2
Customer Satisfaction	7.21	3
Access to State-of-the-art Technology	7.21	3
Organization's Strategic Goals	7.00	4
Focus on Core Activities	6.57	5
Need for IT Expertise	6.14	6
Reducing the burden of Legacy Systems	5.71	7
Competitive Advantage	5.43	8
Low Cost	5.21	9
Allows major capital expenditure avoidance	4.50	10

Source- Survey data

4.2.4 Information of the Software Projects

Here the researcher considered all modules based on software projects handled by the 14 organizations during the year 2002-2010. There were thirty (30) projects which were included for the survey and the results are given below. As stated in chapter 3 the researcher mainly concentrated on the major software systems of their organizations. Here it includes the analyzed data relevant to the method of the tender awarded, the project progress and the project status.

4.2.4.1 Method of Tender awarded – ICTA vs Direct

When taking the sample of this research, twenty three (23) out of thirty (30) projects had outsourced their software directly through the respective organizations. The rest of the projects had consulted ICTA and project coordinating work was totally done by them. However when the researcher was interviewing the heads of IT/CIOs it was found that the difficulties are more when it is directly outsourced without any consultation. The risk is very much high and the difficulty of handling the software vendors in Sri Lanka is not an easy task. However the process is changed if those offices have suitable IT qualified heads of IT/CIO.

The table 4.4 shows a percentage of 76.7% offered direct tenders and only 23.3% through ICTA.

Table 4.4 - Methods of Tenders Awarding

Method	Number of Projects	Percentage (%)
Direct	23	76.7
ICTA	7	23.3
Total	**30**	**100.0**

Source - Survey data

According to the figure 4.2 shows that the direct outsourcing projects are more in the sample of this study and they would be the people who really need the best practices of outsourcing as they handle their projects without consulting a third party.
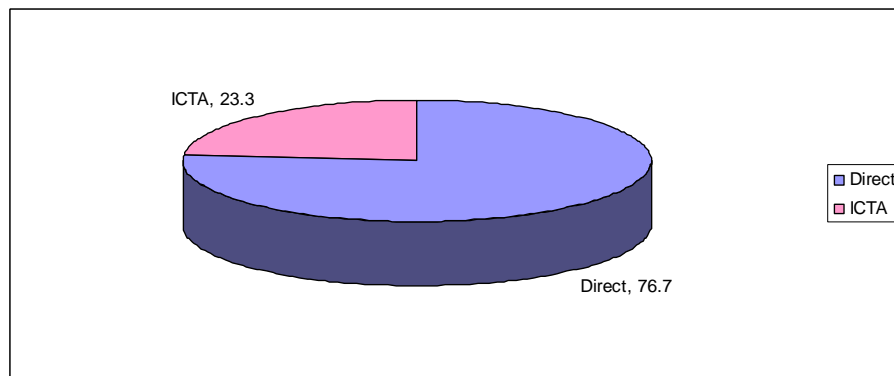
Figure 4.2 - Methods of Tender Awarding
Source - Survey data

4.2.4.2 Progress of Outsourcing Projects

The response of the 30 projects had different project status such as "completed", "test run" and under "developing stage" as at 31st of December 2010. Table 4.5 shows that 70% of the projects have been "completed" and 13.3% are presently doing their "test run" of the software system and only 5% is under the "developing stage". The pilot projects are also included here as completed projects.

Table 4.5 - Progress of Outsourced Projects

Status	Number of Projects	Percentage (%)
Completed	21	70.0
Test Run	4	13.3
Developing Stage	5	16.7
Total	**30**	**100.0**

Source - Survey data

The figure 4.3 illustrates a pie chart of the corresponding results of table 4.5. It is noted that more than 50% of the sample is containing completed projects as at the last date of the survey. Very few numbers of projects are under developing stage and test run.
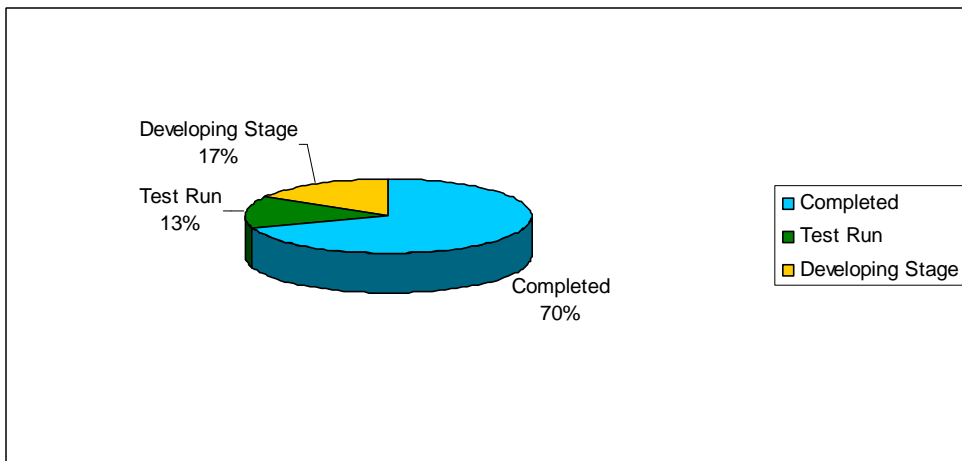
Figure 4.3 - Progress of Outsourced Projects
Source - Survey data

4.2.4.3 Status of Outsourced Software Projects

The table 4.6 shows the project status of the software projects in 14 organizations. There are 66.7% projects which are successful and 16.6% are still in developing stage. Only 3.3% of failure projects are included in the sample and 13.4% is partially failed. However according to the table 4.6 this research covers the experience of all the project status such as "success", "failure", "partial failure" and projects in "developing stage".

Table 4.6 - Status of Outsourced Software Projects

Status	Number of Projects	Percentage (%)
Success	20	66.7
Developing	5	16.6
Partial failure	4	13.4
Failure	1	3.3
Total	**30**	**100.0**

Source - Survey data
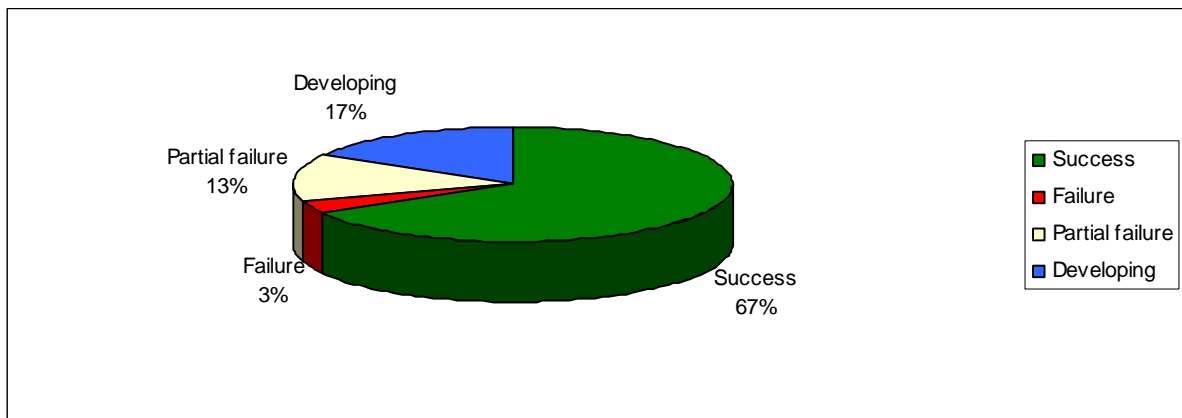
Figure 4.4 - Status of Outsourced Software Projects
Source - Survey data

4.3 Detailed study on the Outsourced Software Projects

This questionnaire (*Annexure 3*) was distributed randomly among the system users in public sector organizations and only in the head offices in Colombo. This data set is different to the above discussed data set under the heading 4.2. Since the researcher wants to find out the correct image of the software outsourcing in the public sector organizations in Sri Lanka, this was done among the system users attached to those organizations. However in the reviewed literature all the researches were based of the views of heads of IT but not the views of systems users.

Reliability of variables

The research questionnaires were developed by the researcher by using identified success and failure variables from the summarized data from the literature (*Annexure 4*). Since the non-availability of standardized questionnaires for the relevant variables, the questionnaire was distributed for 5 sample respondents and few modifications were done accordingly. After the minor modifications the final questionnaires distributed among the users. The reliability of the variables were tested with Cronbach's Alpha Coefficient in the statistical package SPSS (Statistical Package for Social Science). The SPSS outputs displayed below clearly shows the reliability of the variables. When the coefficient value is closer to value '1' is preferable (Arshad, May-Lin and Mohamed, 2007; Gonzalez, Gascoy and Juanz, 2008). According to the table 4.7 shows that all the fifty two (52) variables are having 0.908 and it is very much closer to '1'.

Table 4.7 - Reliability Test

Item	Number of variables	Cronbach's Alpha
All	*52*	*0.908*
Success	24	0.844
Failure	23	0.865
Best Practice Dimensions	5	0.580 appox 0.60

Source - Source - SPSS computation of source data

4.3.1 Respondents Category in Organizations

The system users can be in different categories such as, top, middle and non-management. Anyone who uses the software system is analyzed here. IT staff is also included for this. The results are shown in table 4.8 and it shows that 51% of the respondents were attached to the middle management and they were the main users of the system. The other main users are non-management with around 45% of the respondents. However the top management was only 4.2% and the research would not consider much on this category as they hardly use the system. Also the middle management is mostly involved through the outsourcing procedure and they are the category who is very much familiar with the outsourcing process.

Table 4.8 - Respondent Category in Organizations

Employee Category	Number of Respondents	Percentage %
Top Management	9	4.2
Middle Management	107	50.5
Non-management	96	45.3
Total	**212**	**100.0**

Source - Survey data
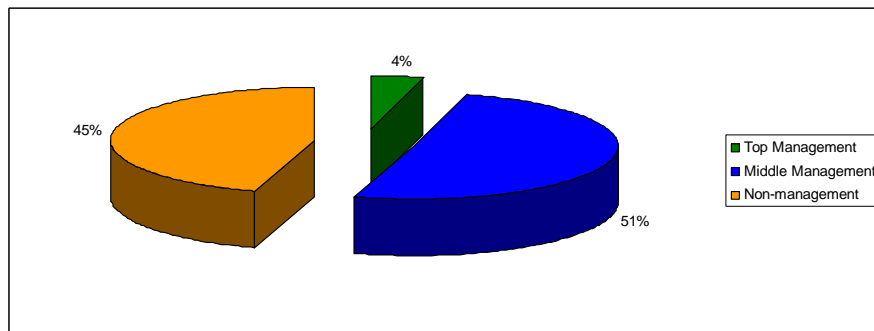
Figure 4.5 - Respondent Category in Organizations

Source - Survey data

4.3.2 Role of the Respondents in Outsourcing Project

The project team attached to the software outsourcing project has different duties and roles in a project. In some cases the respondents of this research could not be attached to one of the roles stated in the table 4.9. The table 4.9 shows that 46.7% of the users were not involved in the project team but finally they became the system users. This may lead to mislead the requirement of the automation. However 34.4 % of them were members of the project team. A very low percentage of 5.7% participated in the system testing role.

Table 4.9 - Role of Respondents in Outsourcing Project

Role	Number of users	Percentage of users (%)
Member of the project team	73	34.40
Participated only in requirement gathering stage	23	10.80
Participated only in system testing stage	12	5.70
Only a system user in final product	99	46.70
Other	5	2.40
Total	**212**	**100.00**

Source - Survey data
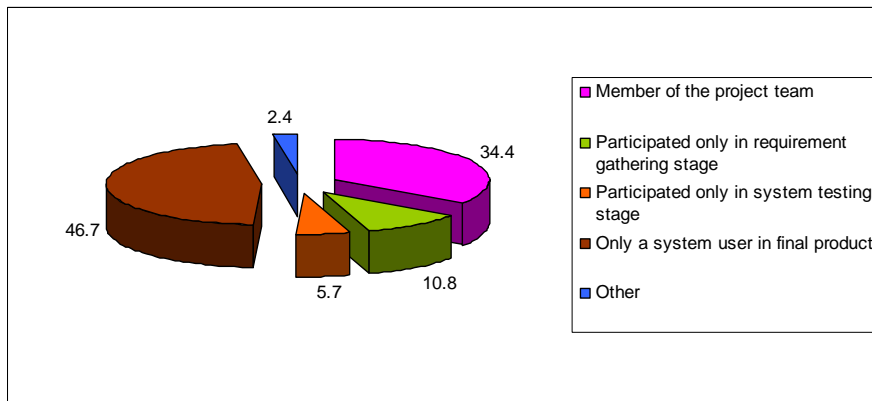
Figure 4.6 - Role of Respondents in Outsourcing Project
Source - Survey data

4.3.3 Identifying the Success Factors

As described in Chapter 3 there are five success factors identified along with the variables from the Literature. Answers were based on the Sri Lankan context. The individual system users were asked to evaluate with Likert value between 1 and 5 the factors determining outsourcing success. Starting from "Strongly Disagree" to "Strongly Agree" each factor was categorized. All the details were attached in the annexure.

SD – Strongly Disagree   D - Disagree   M   - Moderate
A   - Agree   SA – Strongly Agree

4.3.3.1 Organizational Factors

The table 4.10 shows the seven variables of organizational factors along with its mean values. The variables were ranked depending on the mean values. The highest rank of the mean value 4.08 is for "Providing necessary training to employees and mangers in customer's organization". Thus it shows that proper training is very much essential for success of software projects. When carrying out the survey the researcher noticed that public sector employees who use systems are not very familiar with the Information Technology (IT) and the management should provide them proper training from reputed institutes in future. "Establish team work environment and motivate team members" have the second

highest mean value of 4.07. Without a team effect any project could not be succeed. Therefore building a team work environment within the office is needed very much. The "Strong top management's support and involvement" is rank in the 3rd place. Lack of top management support and their involvement are major problems for a project. Therefore the respondents have given their consideration for it. The 4th, 5th and 6th ranked were "Promote outsourcing idea to the staff members in customer's organization", "Cooperative organizational culture instead of hierarchal" and "Appropriate rewarding systems and incentives" respectively. Those variables were not important for the respondents compared to the first three variables. However the "Setting-up penalties on outsourcing vendors" is having the least mean value of 3.48. This shows that the respondents are not concerned of what they are getting back for working the systems success. The last column shows the average value for "Organizational Factors" as 3.79.

Table 4.10 - Summary of Response on Organizational Factors

Variable	Mean	Rank
Providing necessary training to employees and mangers	*4.08*	*1*
Establish team work environment and motivate team members	*4.07*	*2*
Strong top management's support and involvement	3.95	3
Promote outsourcing idea to the staff members in customer's organization	3.72	4
Cooperative organizational culture instead of hierarchal	3.66	5
Appropriate rewarding systems and incentives	3.55	6
Setting-up penalties on outsourcing vendors	3.48	7
Average	**3.79**	

Source - Survey data

As per the table 4.10, mean values of "Providing necessary training to employees and mangers" and "Establish team work environment and motivate team members" closer to maximum mean value of 5. This shows that the majority of the respondents were "strongly agree" or "agree" with these two variables when compare to the other variables in organizational factors.

4.3.3.2 Strategic Management Factors

Four variables are attached to "Strategic Management Factors" and the table 4.11 shows the mean values and corresponding ranks. Highest mean value of 3.90 is for "Focusing on vision and strategic plan including short-term and long-term goals". To implement the IT plan in the organizations it should be worked parallel with the organization's vision and the strategy. Therefore the majority of the respondents have responded for it. The 2nd highest mean value is for "Identify overall benefits of outsourcing". This shows that though the organizations have automated their activities and outsourcing was done the normal system users should also be aware of the overall benefit of it. If they know this better it would be a positive factor for this kind of projects. Least mean value of 3.38 was given for "Outsourcing as an intellectual asset, not only a matter of costs" was not much interested by the respondents.

Table 4.11 - Summary of Response on Strategic Management Factors

Variables	Mean	Rank
Focusing on vision and strategic plan including short-term and long-term goals	3.90	1
Identify overall benefits of outsourcing	3.82	2
Development of a multi-annual plan for outsourcing relationship	3.70	3
Outsourcing as an intellectual asset, not only a matter of costs	3.38	4
Average	**3.70**	

Source - Survey data

The first 3 mean values are greater than the average mean value of strategic management factors. It is also noticeable that development of a multi-annual plan for outsourcing relationship is equal to average value of 3.70.

4.3.3.3 Operational Factors

The Operational Factors are having four variables. According to the table 4.12 the highest mean value of 3.95 for 'Proper Management control'. This shows that the managers would be lead to success the outsourcing project. The 2nd and 3rd positions are given for "Strong customer commitment and presence through out the outsourcing life cycle" and "Keep track on delivery performance of the final product". Since these two mean values are very much closed to each other. It is understandable that the customer's involvement is very much needful to have a proper final product. Although when the product is installed and ready to

use there could be a lot of mismatching of the requirement and it would be caused to delay the projects.

Table 4.12 - Summary of Response on Operational Factors

Variables	Mean	Rank
Proper management control	3.95	1
Strong customer commitment and presence through out the outsourcing life cycle	3.85	2
Keep track on delivery performance of the final product	3.84	3
Follow most management rules	3.61	4
Average	**3.82**	

Source - Survey data

Mean values of proper management control, Strong customer commitment and presence through out the outsourcing life cycle and keep track on delivery performance of the final product are greater than the average mean value of operational factors.

4.3.3.4 Technical Factors

Technical Factors are applied for the system users directly and the variables are shown in table 4.13. There are 4 variables for technical factors. Out of all the variables "Proper documentation with coding standards" has the highest mean value of 4.04. This would be really affected when there are changes of the staff member in the software provider's or customer's side. The new staff members would have problems with the coding system. "System integration testing on site" is having the 2nd highest mean value of 4.03. This shows that if there is more than one sub module and the software vendors are from different parties the integration is impossible in different locations. Therefore the respondents have noted on it.

Table 4.13 - Summary of Response on Technical Factors

Variables	Mean	Rank
Proper documentation with coding standards	*4.04*	*1*
System integration testing on site	*4.03*	*2*
Follow the clear selection criteria	3.90	3
Keeping a high innovative capacity regarding service and technological advantages	3.85	4
Average	**3.95**	

Source - Survey data

Table 4.13 shows the mean values of proper documentation with coding standards and system integration testing on site are much closer to maximum mean value of 5. However the other two variables are having mean values lesser than the average value of 3.95.

4.3.3.5 Client/Provider Factors

Summary of the "Client/Provider" factors are shown in table 4.14. The main parties in the software project are the client and the provider. Five variables are attached to Client/provider factors. The highest mean value of 4.24 is given for "Provider's understanding of clients objectives". This describes that if the final product is not according to the requirement the project would be a total failure. The 2nd highest mean value of 4.05 is given for "Periodical progress meetings". Having progress meetings the project members could be easily discussed all the problems of the both parties and find the proper solutions for it. "Client-Provider Relationship", "Confidence and Cooperation" and "Selecting a right provider" is having the same rank. The least mean value of 3.47 is for "Setting penalties and developing incentives". This shows the majority is not concerned about penalties and intensives.

Table 4.14 - Summary of Response on Client/Provider Factors

Variables	Mean	Rank
Provider's understanding of clients' objectives	*4.24*	*1*
Periodical progress meetings	*4.05*	*2*
Maintain Client-Provider Relationship with Confidence and Cooperation	*4.03*	*3*
Selecting a right provider	*4.03*	*3*
Setting penalties and developing incentives	3.47	4
Average	**3.96**	

Source - Survey data

According to the table 4.14 mean values of provider's understanding of clients' objectives, periodical progress meetings maintain client-provider relationship with confidence and cooperation and selecting right provider variables are closer to maximum mean value of 5 and this is the only factor that is having more number of variables closer to maximum mean.

Summary of Success Factors

The table 4.15 shows the summary of response for the success factors with their mean values. It can be noticed that out of the all five success factors, "Client / Provider Factors" are having the highest mean value of 3.96 and also a very important factor to lead the software outsourcing success. The 2nd highest mean value shows in "Technical Factors" are having the highest mean value of 3.95 and it is understandable the new technology plays a vital role in software outsourcing. All the operational matters related variables are discussing in "Operational Factors". The lowest mean value of 3.70 is for "Strategic Management Factors" which is not a very much important for the systems users.

Table 4.15 - Summary of Success Factors

Success Factor	Mean	Rank
Client/Provider Factors	3.96	1
Technical Factors	3.95	2
Operational Factors	3.82	3
Organizational Factors	3.79	4
Strategic Management Factors	3.70	5

Source - Survey data

4.3.4 Identifying the Failure Factors

Similarly as in the success factors, failure factors are also described in Chapter 3. The respondents were evaluated with Likert values between 1 and 5. There are five identified failure factors such as Resistance, Financial, Risk and Inadequacy factors. Similar characteristic variables are grouped together.

SD – Strongly Disagree   D - Disagree   M - Moderate

A   - Agree   SA – Strongly Agree

4.3.4.1 Resistance Factors

There are 6 variables for the Resistance factors and table 4.16 gives the mean values and rank according to the mean value. Here the variables are categorized together as these variables tend to fail the projects very often. However as given in the table the respondents have given the highest mean value for "Lack of team work". To have a successful project the work is

very much helpful. Finally any project would not be success without a team sprit. The 2nd highest mean value is for "Lack of necessary skilled people". When considering in Sri Lanka the most of the customer's are not very much satisfied with the software providers as they do not have proper staff. In public organizations also need to have skilled people to handle the software project. "Employee's resistance to change", "Loss of innovative capacity", "Lack of customer presence" and "Sudden loss of IT expertise and critical skills" are having the mean values of 3.65, 3.62, 3.57 and 3.48 respectively.

Table 4.16 - Summary of Response on Resistance Factors

Variables	Mean	Rank
Lack of team work	3.87	1
Lack of necessary skilled people	3.75	2
Employee's resistance to change	3.65	3
Loss of innovative capacity	3.62	4
Lack of computer literacy	3.57	5
Sudden loss of IT expertise and critical skills	3.48	6
Average	**3.66**	

Source - Survey data

4.3.4.2 Finacial Factors

The table 4.17 shows four variables included in "Financial Factors" and its mean values. The highest mean value is 3.61 for "Cost of delayed delivery / non-delivery". This is because the vendor is providing only a few parts of items on time and others may be late or some times not delivered at all. In these cases the customer had to wait for a period of time for non-delivery problems are critical in the public sector. The 2nd highest mean value is for "Additional hidden costs of ensuring compliance, negotiation, and litigation". If the project management team is not aware about all expenses regarding the project this type of cost involvement would be possible to cause many problems. Therefore feasibility study is very important and it is very necessary that all the required items should be budgeted before the project starts. All these problems tend to the failure or partially failure of the projects. The least mean value is for "Loss due to disasters and recovery costs". Since the Sri Lankan public sector organizations are having the newly implemented systems and most of them are under warranty the respondents are not having any experience on disaster recovery systems.

Table 4.17 - Summary of Response on Finacial Factors

Variables	Mean	Rank
Cost of delayed delivery / non-delivery	3.61	1
Additional hidden costs of ensuring compliance, negotiation, and litigation	3.54	2
Unexpected transition and management costs	3.48	3
Loss due to disasters and recovery costs	3.42	4
Average	**3.51**	

Source - Survey data

4.3.4.3 Risks Factors

A total of seven variables are attached to risk factors as shown in table 4.18. "Vendors or outsourcer's lack of experience" is having the highest mean value of 3.87. The lowest risk factor is identified as "Government rules and regulations". This may be because in Sri Lanka the government is motivating for e-Government and presently they have not declared any objections to software projects. Identifying these risks the organization could plan to mitigate or minimize these risks before it gets worse.

Table 4.18 - Summary of Response on Risk Factors

Variable	Mean	Rank
Vendors or outsourcer's lack of experience	3.87	1
The provider does not comply with the contract	3.85	2
Lack of legacy and new system integration risk	3.70	3
Loss of IT expertise	3.67	4
Security issues	3.56	5
Hidden costs in outsourcing contract risk	3.55	6
Governmental rules and regulations	3.50	7
Average	**3.66**	

Source - Survey data

4.3.4.4 Inadequcy Factors

Inadequacy Factors include six variables as shown in table 4.19. Here all the variables related to weaknesses of the final out come of the project is been discussed. "Outdated technological tools" would be a project failure and the respondents have given highest mean value for it. The lowest mean value is for the "Control/area/size/time of project ".

Table 4.19 - Summary of Response on Inadequcy Factors

Variable	Mean	Rank
Outdated technological tools	*4.09*	*1*
Low quality of outputs	*4.06*	*2*
Poor project scope	3.92	3
Lack of project management capabilities	3.86	4
Lack of organizational learning	3.66	5
Control/area/size/time of project	3.65	6
Average	**3.87**	

Source - Survey data

Table 4.19 shows mean values of outdated technological tools and low quality of outputs are much closer to maximum mean value of 5. This shows that the majority of the respondents were agree with the first and second variable. Two variables out of the other variables are greater than average value of inadequacy and the other two are less than the average.

Summary of Failure Factors

The table 4.20 gives the summary of response in four failure factors. Since the total outcome is discussing in "Inadequacy Factors", the respondents have given the highest mean value. Then the failure factors of "Risk Factors", "Resistance Factors" and "Finacial Factors" are having mean values of 3.67, 3.66 and 3.51 respectively. The respondents were not much concerned about the "Financial Factors" as it is not very much applicable for all of them

Table 4.20 - Summary of Response on   Failure Factors

Failure Factor	Mean	Rank
Inadequcy Factors	3.87	1
Risk Factors	3.67	2
Resistance Factors	3.66	3
Financial Factors	3.51	4

Source - Survey data

4.3.5 Identifying the Best Practices

For outsourcing success the best practices should be applied. In Chapter 3 the researcher has noted the identified best practices for software outsourcing success from literature. Table 4.21 illustrates the best practices identified by the respondents of the Sri Lankan public sector users. The table 4.21 shows the mean value along with the dimensions such as scope, cost, quality, communication and time. The average of success is 3.93.

Table 4.21 - Summary of Response on Best Practice Dimensions

Best Practice	Mean
Communication	4.93
Quality	4.13
Scope	4.06
Time	3.78
Cost	3.73
Outsourcing Success	**3.93**

Source - Survey data

4.3.6 Hypothesis Testing

In chapter 3 the researcher has introduced nine (9) hypotheses in order to validate the conceptual model given in the same chapter. The hypotheses were based on correlation between the dependent variables (outsourcing success) and independent variables (success and failure factors).

In order to analyze these hypotheses, the value of Pearson's correlation coefficient was calculated by using SPSS for windows. Since the outcome cannot desired the two tailed test was used. Positive coefficients indicate the direct relationship further described as when one variable increases the other variable also increases. Negative coefficient describes when one variable increases the other variable decrease. The coefficients between .00 and .30 are considered weak, between .30 and .70 are moderate and coefficients between .70 and 1.00 are considered high. **However, this rule should be always qualified by the circumstances** (VISUALSTATISTICS, 2010).

Here the hypotheses were proved from the tested results of Pearson's correlation coefficient(r). Altogether there are forty seven (47) variables and five (5) outsourcing success dimensions, average values of these were taken for the test and the results were presented based on it. The variables were grouped as factors and best practice dimensions were grouped as outsourcing success. Therefore this research will be finding the relationships between nine (9) factors and outsourcing successes. Nine numbers of hypotheses will be tested for it. Here the outsourcing success depends on the results of the factors. Therefore the outsourcing success will be considered as the dependant variables while the success and prevention of failure factors will be considered as the independent variables.

4.3.6.1 Organizational Factors

Hypothesis 1 – H1

Organizational Factors are positively associated with software outsourcing success.

Organizational Factors	→	Outsourcing Success
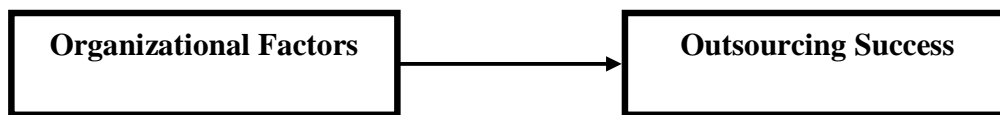
Here the correlation coefficient test was done for the independent variable, the organizational factors and with the dependent variable of outsourcing success. The results are shown in the table 4.22. The Correlation of Organizational Factors and Outsourcing Success is + 0.213 and p-value (significant value) is 0.002 (p-value < 0.01). Hence the two variables have positive significant relationship. Hence H1 is accepted and null hypothesis is rejected. Finally the result supports the proposed hypothesis, "*Organizational Factors are positively associated with software outsourcing success*".

Table 4.22 - Correlation of Organizational Factors and Outsourcing Success

		Outsourcing Success
Organizational Factors	Pearson's Coefficient	0.213**
	Significance	0.002
Results		+ve relationship

** Correlation is significant at the 0.01 level (2-tailed).

H0 – Rejected   H1 – Accepted

92

The results shown in the table 4.22 is taken from the average value of the 7 variables included in Organizational Factors. Those 7 variables are strong top management's support and involvement, appropriate rewarding systems and incentives, cooperative organizational culture instead of hierarchal, establish team work environment and motivate team members, setting-up penalties on outsourcing vendors, providing necessary training to employees and mangers and promote outsourcing ideas to staff members in the customer's organization.

4.3.6.2 Strategic Management Factors

Hypothesis 2 – H2

Strategic Management factors are positively associated with software outsourcing success

Strategic Management Factors	→	Outsourcing Success
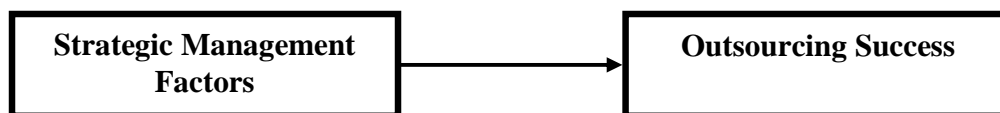
Here the strategic management factors are the independent variables and outsourcing success is the dependent variable. The test was done for the two variables and the output of the test is shown in table 4.23. It shows that Strategic Management Factors have a correlation coefficient of +0.198 with outsourcing success. The p-value for the same relationships has 0.004. Since the p-value < 0.01 the relationship is significant. The H2 is accepted while the null hypothesis is being rejected. Finally the result supports the proposed hypothesis, "*Strategic Management factors are positively associated with software outsourcing success*".

Table 4.23 - Correlation of Strategic Management Factors and Outsourcing Success

		Outsourcing Success
Strategic Mgt. Factors	Pearson's Coefficient	0.198**
	Significance	0.004
Results		+ve relationship

** Correlation is significant at the 0.01 level (2-tailed).

H0 –   Rejected   H2 – Accepted

4.3.6.3 Operational Factors

Hypothesis 3 – H3

Operational factors are positively associated with software outsourcing success.

Operational Factors	→	Outsourcing Success
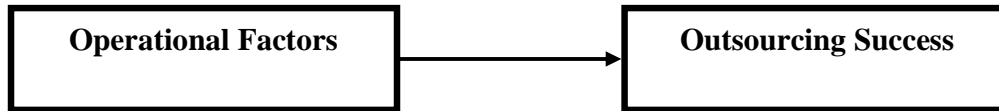
The test has been performed with the independent variable, the operational factors and with the dependent variable of outsourcing success. The test results gave the correlation of two variables as shown in table 4.24. The correlation coefficient between operational factors and outsourcing success is +0.181 and significant at 0.008 (p-value < 0.01). H3 is accepted and null hypothesis is rejected. Finally the result supports the proposed hypothesis, "*Operational factors are positively associated with software outsourcing success*".

Table 4.24 - Correlation of Operational Factors and Outsourcing Success

		Outsourcing Success
Operational Factors	Pearson's Coefficient	0.181**
	Significance	0.008
Results		+ve relationship

* Correlation is significant at the 0.01 level (2-tailed).

H0 – Rejected   H3 – Accepted

4.3.6.4 Technical Factors

Hypothesis 4 – H4

Technical factors are positively associated with software outsourcing success.

Technical Factors	→	Outsourcing Success
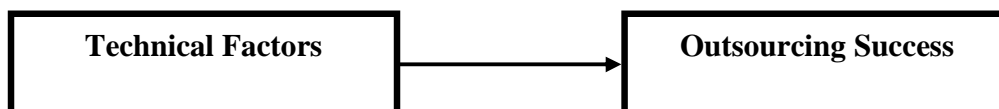
This test was done for independent variable, technical factors and dependent variable, outsourcing success. The result is shown in table 4.25 and it indicates correlation coefficient

of +0.128 and p-value of 0.064 (p-value > 0.05) the relationship is not significant. Therefore the H4 is rejected and null hypothesis is accepted. Finally the result does not support the proposed hypothesis, "*Technical factors are positively associated with software outsourcing success*".

Table 4.25 - Correlation of Technical Factors and Outsourcing Success

		Outsourcing Success
Technical Factors	Pearson's Coefficient	0.128
	Significance	0.064
Results		No relationship

H0 –   Accepted   H4 –Rejected

4.3.6.5 Client/Provider Factors

Hypothesis 5 – H5

Client/Provider factors are positively associated with software outsourcing success

Client/Provider Factors	→	**Outsourcing Success**
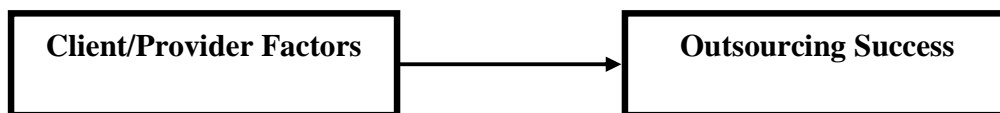
The test was done for average value of client/provider factor which is dependent variable and outsourcing success which is known as independent variable. The test result is displayed on table 4.26. The correlation coefficient between client/provider factor and outsourcing success is +0.105 and p-value is 0.128 (p-value > 0.05). Hence the relationship is not significant and the H5 is rejected and null hypothesis is accepted. Finally the result will not support the proposed hypothesis.

Table 4.26 - Correlation of Client/Provider Factors and Outsourcing Success

		Outsourcing Success
Client/Provider Factors	Pearson's Coefficient	0.105
	Significance	0.128
Results		No relationship

H0 –   Accepted   H5 –Rejected

4.3.6.6 Resistance Factors

Hypothesis 6 – H6

Prevention of Resistance factors are positively associated with software outsourcing success.
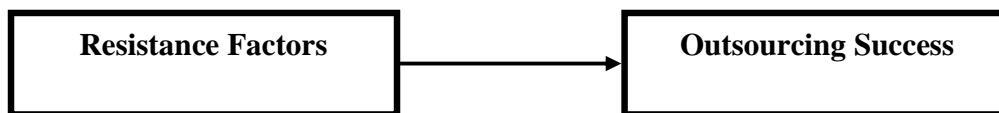
The test was done for resistance factors and outsourcing success and results are shown in table 4.27. Correlation coefficient of the variable is +0.275 and p-value 0.000 (p-value < 0.01) the relationship is significant and H6 is accepted and null hypothesis is rejected. The result supports the proposed hypothesis, "*Prevention of Resistance factors are positively associated with software outsourcing success*".

Table 4.27 - Correlation of Resistance Factors and Outsourcing Success

		Outsourcing Success
Resistance Factors	Pearson's Coefficient	0.275**
	Significance	0.000
Results		+ve relationship

** Correlation is significant at the 0.01 level (2-tailed).

H0 –   Rejected   H6 –   Accepted

4.3.6.7 Financial Factors

Hypothesis 7 – H7

Prevention of Financial factors are positively associated with software outsourcing success.

| Financial Factors | → | Outsourcing Success |
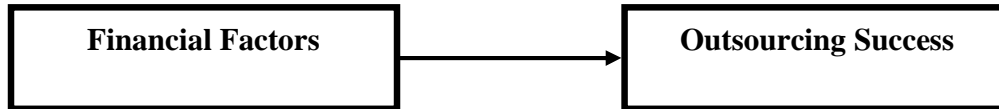
The test was done for financial factors and outsourcing success and the results are shown in table 4.28. Correlation coefficient of the variable is +0.135 and p-value 0.049 (p-value < 0.05). Thus relationship is significant and H7 is accepted while null hypothesis is been accepted. The result supports the proposed hypothesis "*Prevention of Financial factors are positively associated with software outsourcing success*".

Table 4.28 - Correlation of   Financial Factors and Outsourcing Success

		Outsourcing Success
Financial Factors	Pearson's Coefficient	0.135*
	Significance	0.049
Results		+ve relationship

* Correlation is significant at the 0.05 level (2-tailed).

H0 – Rejected   H7 – Accepted

4.3.6.8 Risk Factors

Hypothesis 8 – H8

Prevention of Risk factors are positively associated with software outsourcing success.

| Risk Factors | → | Outsourcing Success |
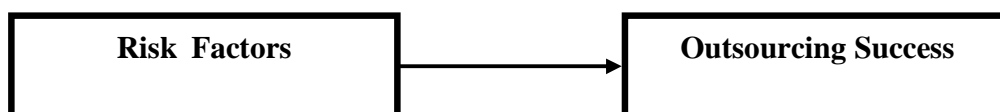
The test was done for average value for Risk Factors which is the independent variables and Outsourcing Success which is known as the dependent variable. The test result is displayed on table 4.29. Correlation coefficient between Risk Factors and Outsourcing Success is +0.407 and p-value is 0.000 (p-value < 0.01). The result shows that these two variables have positive relationship and Hypothesis 8 is accepted and null hypothesis is rejected. Finally the result supports the proposed hypothesis, "*Risk factors are positively associated with software outsourcing success*".

Table 4.29 - Correlation of Risk Factors and Outsourcing Success

		Outsourcing Success
Risk Factors	Pearson's Coefficient	0.407**
	Significance	0.000
Results		+ve relationship

** Correlation is significant at the 0.01 level (2-tailed).

H0 – Rejected   H8 – Accepted

4.3.6.9   Inadequacy Factors

Hypothesis 9 – H9

Prevention of Inadequacy factors are positively associated with software outsourcing success

Inadequacy Factors are the failure factors of outsourcing success. A hypothesis was suggested for the situation of preventing this. The independent variable was the Inadequacy Factors and the dependent variable was the Outsourcing Success. The correlation of this independent variable with the dependent variable was performed and the test result is displayed on table 4.30. The correlation coefficient between the variables is +0.233 and p-value is 0.001 (p-value < 0.01). This suggests a positive correlation between the independent and dependent variables and the H9 is accepted and null hypothesis is rejected. Finally the result supports the proposed hypothesis, "*Prevention of Inadequacy factors are positively associated with software outsourcing success*".

Table 4.30 - Correlation of Inadequacy Factors and Outsourcing Success

		Outsourcing Success
Inadequacy Factors	Pearson's Coefficient	0.233**
	Significance	0.001
Results		+ve relationship

** Correlation is significant at the 0.01 level (2-tailed).

H0 – Rejected   H9 – Accepted

4.4 Chapter Summary

The correlation of each independent variable with the dependent variable was analyzed using SPSS software. Table 4.31 shows the summarized test results of correlation analysis between factors and outsourcing success. Seven hypotheses were accepted while two was rejected. All the five success factors that were taken from the literature were tested for the Sri Lankan context and it was proved that three success factors out of five were applicable to Sri Lankan public sector organizations. The researcher believes that two factors that were failure are not much important or they do not understand the depth of these success factors. This is mainly due to their inexperience of the outsourcing subject. However all four failure factors were accepted to the Sri Lankan context.

Here the researcher was mainly concerned about the behavior of the relationship of the independent and dependent variables. It was noticed that all the accepted hypothesizes have positive relationships between the factors and the outsourcing success. Therefore when there is an increase on independent variables (success and failure factors) the dependent variable (outsourcing success) also increases. However the strength of the correlation coefficient was not considered for this study as the main concern was already proven by the test (positive and significance relationship at .01 or .05). Significant relationships are having p-value < .05. The standard level of significance used to justify a claim of a statistically significant effect is 0.05. The term *statistically significant* has become synonymous with $P \leq .01$ *or* 0.05 (JERRYDALLAL, 2010)

Table 4.31 – Summary of Hypothesis Testing Results

Factor	Number of variables	Correlation Coefficient	Significance (2-tailed)	Hypothesis Results
Organizational	7	+0.213**	0.002	H1 accepted
Strategic Mgt .	4	+0.198**	0.004	H2 accepted
Operational	4	+0.181**	0.008	H3 accepted
Technical	4	+0.128	0.064	H4 rejected
Client/Provider	5	+0.105	0.128	H5 rejected
Resistance	6	+0.278**	0.000	H6 accepted
Financial	4	+0.135*	0.049	H7 accepted
Risk	7	+0.407**	0.000	H8 accepted
Inadequacy	6	+0.233**	0.001	H9 accepted

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

The final results from the mean value were not exactly matches with the hypothesis results because mean values were calculated summarizing the each question separately while hypothesis's testing were done evaluating each person's relationship with success. The researcher believes this discrepancy was occurred because the public sector users are not very much familiar with this type of questionnaire regarding the application software.

CHAPTER 5

DISCUSSION

5.1 Introduction

This chapter discusses an analysis of the findings from the study, based on already presented factors in the previous chapter and other available literature.

5.2 Achieving the Objectives

The survey was consists of two sets of data and the first was given only for the heads of the Information Technology / Chief Innovation Officer (CIO) and the second was for the system users in the public sector organizations. The data was collected from 14 organizations and 336 (20% of the total population) out of 1680 were participated and only 212 (63%) were respondent.

5.2.1 Outsourcing items in the public sector organizations

Most of the published articles that were found in Spain were about Software Information Systems outsourcing success where the research areas closed to this research. Gonzalez, Gasco and Llopis (2009) have done a research based on Spain firms and they have found reasons for software outsourcing were "focus on strategic issues, increased Information Systems (IS) Department flexibility and improved IS quality". They have not given priority for "providing alternatives to in-house IS, technology cost savings, following the fashion". When comparing these results with Sri Lanka, there are similarities found according to this research. Although Sri Lanka is a developing country, the respondents have given the highest priority for the quality but not for the cost. The results would apply for the present situation in two countries as the two researches were done during the same period. When analyzing the results obtaining by the Sri Lankan public sector organizations, the reasons they have decided to outsource were "quality and reliability, new technology, customer satisfaction, access to state-of-the-art technology". The lowest reasons were "competitive advantage, low cost, allows major capital expenditure avoidance". Gichoya (2005) has found in his research, the

vision, strategy and the government support were important for success while lack of funds and poor infrastructure are considered as major factors for failure in outsourcing projects. Elpez and Fink (2006) suggested that "developing countries are still far behind in implementing e-Government and it is hoped that successful implementation of Information and Communication Technology (ICT) projects will act as a strong foundation". It was based on Kenyan Government.

Since Sri Lanka has to go ahead with e-Government, all the Sri Lankan public organizations should be automated very soon. When carrying out the research the researcher has noticed that the period of 2003 – 2010 the progress for automation is very much slow. Although the ICT apex body in Sri Lanka handles major projects related to the government organizations, there are number of organizations handle directly by their own. These organizations are having number of issues regarding software outsourcing. When they are directly handled the projects, the funds are very limited and failure rate is high.

5.2.2 Success and Failure Factors of Software Outsourcing

Based on the literature the researcher has found the success and failure factors with their grouping for IT outsourcing in various developed and developing countries around the globe. The risk factors, challenges and the best practices related to software outsourcing also were reviewed. All those references are given in chapter 6 of this study. The similar variables were considered together and found twenty four (24) success variables and twenty three (23) failure variables for nine factors. The questionnaire was implemented based on the above and the respondents were given their opinion using the Linkert values between 1 and 5. The response was for the Sri Lankan context. "Client/Provider Factors" out of success factors and "Inadequacy Factors" out of the failure factors are having the highest mean value. The "Client/Provider Factors" are discussing the relationship between client and software provider while the "Inadequacy Factors" are discussing final outcome of the project. Those two factors are directly effect for the systems users.

Success factors –

When considering the success factors, two variables of organizational factors: providing necessary training to employees and managers (mean – 4.08) and establish team work

environment and motivate team members (mean – 4.07), two variables of technical factors: proper documentation with coding standards (mean – 4.04) and system integration testing on site (mean – 4.03), 4 variables from client/Provider factors: provider's understanding of clients' objectives (mean – 4.24), periodical progress meetings (mean – 4.05), maintain client-provider relationship with confidence and cooperation (mean – 4.03) and selecting a right provider (mean – 4.03) mean values are very much closer to maximum value of 5. As a result of this the researcher realized that the above variables could be taken as the most important variables to be considered when outsourcing software in public sector.

Failure factors –

However in failure factors, two variables of inadequacy factors: outdated technological tools (mean – 4.09) and low quality of outputs (mean 4.06), mean values are closer to maximum value of 5.

Since the above variables are closer to maximum value, the majority of the respondents are strongly agree with the above noted variables than the others. However as and illustrated in chapter 4 only very few variables are apart from their respective mean value with the success/factors mean values.

5.2.3 Relationship between Success/Failure Factors with Software Outsourcing Success and to Introduce Best Practices

Table 5.1 – Significant Order of the Factors

Factor	Number of variables	Correlation Coefficient	Significance (2-tailed)	Rank
Risk	7	+0.407**	0.000	1
Resistance	6	+0.278**	0.000	2
Inadequacy	6	+0.233**	0.001	3
Organizational	7	+0.213**	0.002	4
Strategic Mgt .	4	+0.198**	0.004	5
Operational	4	+0.181**	0.008	6
Financial	4	+0.135*	0.049	7

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).
Source: SPSS computation of source data

This research has suggested nine hypotheses and tested for the relationships between those successes and failure variables with the Best Practices dimensions named as scope, quality, communication, cost and time. As described in chapter 4 seven hypothesizes were accepted and only two were rejected. The aim of the study was to identify the best practices for software outsourcing success. Therefore the hypotheses were helped to find the positive significant relationships. Although the relationships are moderately correlated the study has identified the positive significant relationships between success/prevention failure factors with outsourcing success. When applying the correlation coefficient for two variables the results always depends on the circumstance of research (previously noted in chapter 4). Therefore in this situation the researcher is satisfied with the results because the set of recommendations would be identified from these results.

However going towards with the e-Government strategy, the Sri Lankan public sector organizations should be automated to provide e-services to the citizens. After visiting to the public offices the researcher has realized that they are not in a position to develop in-house software systems mainly the unavailability of the IT expertise and poor IT infrastructure. As described in earlier chapters the specialized software packages that are needed by the public sector organizations should be specially developed. Compared to the other sectors (banking, insurance, airlines etc) the public sector systems could not be customized. Therefore the only solution would be to outsource their application software from an outside party. To follow the outsourcing process in the public sector organizations need to have a set of recommendation and guidelines for software outsourcing which is not presently available. Therefore outcome of this research would be really needful to the heads of the organization and heads of Information Technology in respective organizations.

5.2.4 A Framework for the Software Outsourcing Success –

Figure 5.1 – Identified Framework for Software Outsourcing Success
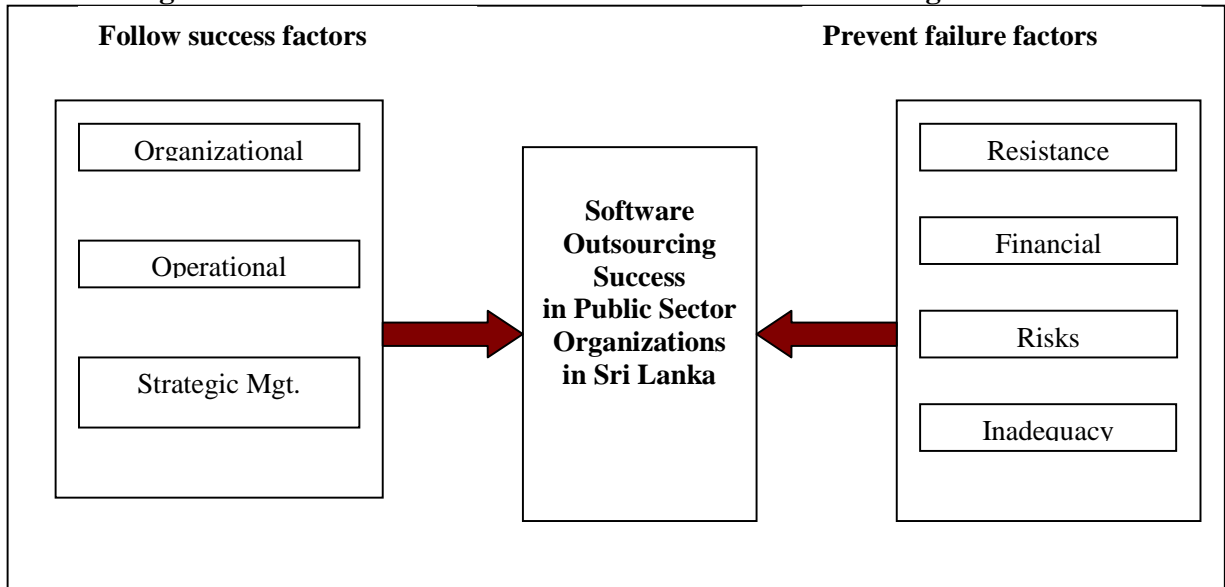
A conceptual framework was designed according to the factors identified by the literature. The results based on the hypothesis the framework was designed for software outsourcing success in public sector organizations in Sri Lanka. The final outcome of the framework was totally depended on the response of the system users in the public sector organizations.

5.3 Limitations Faced on the Survey

The researcher has experienced some limitations and difficulties while carrying out the survey. Acknowledging those would be benefited for the future academic researchers who would like to follow similar topics. To carry out an unbiased research the researcher wanted to find out all the public organizations in Sri Lanka that has outsourced software. Contacting heads of IT this could be clarified. However it was unable to find out IT related contact data in public sector organizations in one place or from a website. In July 2010 the researcher has visited ICT apex body in Sri Lanka and they were given contact details of only three CIOs which is not enough for a research. However in September 2010 the list of CIO's names and the organizations were published in their website without the contact telephone numbers or e-mail addresses. Difficulties of this type of basic information for an academic researchers tend to discourage doing researches regarding the public sector organizations in Sri Lanka. Finally

the researcher got the contact details from Government Information Centre website (GIC, 2010) and responded only 14 public sector organizations in Sri Lanka.

5.4 Suggestions in Open-ended Questions

A few of the respondents have stated their personal views in the open-ended questions in the questionnaire. Since these suggestions would be valuable to share the researcher has decided to include under this chapter.

Table 5.2 – Suggestions Made by the Respondents

Suggestion	Researcher's comments
Right coordination with the vendor	Already included in the research. Client/provider factors – Periodical progress meetings
Training and motivation of the team members	Already included in the research. Organizational factors – Providing necessary training to the employees.
ICT plans aligned to original overall plans	Already included in the research. Strategic management factors – Development of a multi-annual plan for outsourcing relationship.
Lack of similar project experience for the selected software provider also will caused failure.	This is partially covered by the research. Risk factors – Vendors or customer's lack of experience.
Regular labor turnover of the outsourced company	Already included in the research. Resistance factors – Sudden loss of IT expertise and critical skills.
Lack of project management approach. Not proper management team of operation.	Already included in the research. Inadequacy factors – Lack of project management capabilities.
Preparing documents and reports on time	Already included in the research. Technical factors - Proper documentation with coding standards
Organizational specific factors such as proper BPR	This should be taken by the top management before starting the outsourcing process.
Understanding the objective of outsourcing	Already included in the research. Organizational factors - Promote outsourcing idea to the staff members in customer's organization.

The most of the suggestions given in table 5.2 was included in the questionnaire 3 (annexure 3) in a different form. In addition to the above when interviewing the users most of them were not satisfied with the software vendors. Only few of them suggested developing software from an in-house IT department. However selecting a proper software vendor is the most important consideration in software outsourcing. Maintaining an in-house IT department is not practical in all the organizations due the high cost of the IT staff.

5.5 Chapter Summary

This chapter covers the discussion of the study according to the objective of the research. Then the identified best practices for software outsourcing in public sector organizations were stated with a framework. Significant order was illustrated with their respective order of significance.

 When the research was carrying out there were some limitations found by the researcher and also discussed in this chapter. Respondents were suggested their ideas to the open-ended questions in the questionnaire. All those were discussed here.

CHAPTER 6

CONCLUSION, RECOMMENDATIONS, LIMITATIONS AND FUTURE RESEARCHES

6.1 Conclusion

The main objective of this study was to identify the success and failure factors in public sector organizations around the world and to introduce software outsourcing best practices for Sri Lankan public sector organizations. The initial intention was to collect information from all the public sector organizations in Sri Lanka. However, this was limited due to lack of response given from the organizations. Finally only 14 organizations were willing to be interviewed and responding to the questionnaire.

White and Fortune (2002) concluded his research stating "A successful IT outsourcing relationship can help the outsourcing customer to achieve major benefits such as cost-savings, increased flexibility, better quality of services and access to new technology" this also could be applied for software outsourcing in public sector organizations.

The finding of the research confirms that software outsourcing is getting popular in Sri Lankan public sector organizations. Since the sample of this research include all types of software projects in public sector in Sri Lanka and the outcome will share the experience.

Survey done by ICTA in 2008 has shown this with figures that the most of the offices are using computer for word processing purpose. According to the literature the most of the studies suggest if a country is really need to implement ICT projects and to see a success, those involved in the design, implementation and management of IT-related projects and systems in the developing countries must improve their capacity to address the specific contextual characteristics of the organization, sector, country or region within which their work is located. Also the researchers have found that developing countries are still far behind

in implementing e-Government and it is hoped that successful implementation of ICT projects will act as a strong foundation for e-Government initiatives (Avgerou and Walsham, 2000; Gichoya, 2005). After having the interviews with the heads of IT in Sri Lanka, the researcher of this study also suggests that the software outsourcing for public sector is a complex and a critical area to handle. To have successful software projects the organizations should have an IT qualified head that could be convinced the idea of automation to the top management and to the line managers. Secondly will be the decision to outsource or in-source should be taken. This will depend on the organization's strength of the IT department in respective organization.

Software outsourcing would be an essential part of public organization's overall business automation. The motivation for outsourcing options involves the strategic, financial and technological benefits to be gained. A number of problems may also be encountered related to the service quality, costs or overall effect on operations. Although the risk assessment of the factors involved in these potential problems are useful tool for avoiding them in the first place. While there are no perfect deals, a number of measures can mitigate the risks of IT outsourcing. The main critical strategy is selection of a service provider selection as their standards are not satisfied by the customers. However better monitoring of the services delivered under the software outsourcing contract will help the organization to benefits it expects.

To proceed a successful e-Governance this research would be much helpful for the heads of IT/CIO who handles directly with the software vendors. Also their active participation for the interviews and questionnaire were very much appreciated.

Finally the results of this research would assist the public sector organizations when they outsource software projects and able to minimize the failure rate. These identified best practices would be really useful to the heads of the Information Technology (IT) who wants to outsource their software directly without any consultancy from a third party.

6.2 Recommendations

Best Practices for Software Outsourcing Success in two groups. One was found from success factors and the other is from failure factors. These success factor's variables should follow by the organizations and failure factor's variables should be prevented or avoided by the organizations. The success factors are:

Organizational Factors:

This includes variables such as strong top management's support and involvement, appropriate rewarding systems and incentives, cooperative organizational culture instead of hierarchal, establish team work environment and motivate team members, setting-up penalties on outsourcing vendors, providing necessary training to employees and mangers in customer and promote outsourcing idea to the staff members in customer's organization.

Strong top management's support and involvement:

The organization's the top management could initiate the requirement of outsourcing in their organizations. When being carrying out the process they could give their fullest support. Top management support would mainly require when approving the budget for outsourcing. However software outsourcing projects can not be handled alone by the head of the IT or the Chief Executive Officer or the Chief Innovation Officer. Successful product will be a team effect and not an individual property. Therefore the support of the top management makes the software project success.

Appropriate rewarding systems and incentives:

To appreciate the support given to the software project by the staff members who belong to the project should be rewarded and appreciated for their work by giving incentives. Since the public sector staff receiving low wages compared to private sector the results of this would benefit to the existing projects as well as in future projects. Also employee motivation would be very high. As an organization, this type of schemes should be introduced to perceive success in their up coming projects.

Cooperative organizational culture instead of hierarchal:

Within a corporative organizational structure all the staff members are in the same level and in a hierarchal structure the staff members report from bottom to top. Being in the same level the staff members would have a better position in a team than in the hierarchal culture. This would be directly applied when they hold responsibility of their role in the project. Thus all the members work together by taking the same responsibility to lead to the success of the software projects.

Establish team work environment and motivate team member:

The team work environment and different motivation method should be arranged by the management of the organization to implement a successful product. When there several modules in a systems could have separate teams for each module. Out of them the management could find their performance in each team. Since this type of working environment is new to the public sector conducting workshops within teams would learn how to behave and take individual responsibility within teams.

Setting-up penalties on outsourcing vendors:

When the vendor does not complete their systems on time the management should organize precautions for them by setting up the penalties. Most of the time this would work positively otherwise the vendor would not be able to make profits out of the projects. Also by setting up penalties on outsourcing vendors they may tend to complete their projects on target and the may not get delayed. This would help to project success.

Providing necessary training to employees and mangers:

Training is very essential in software projects. Awareness of subject would increase the scope of the projects and when they are properly trained the staff would like to add their contribution to the software outsourcing success. Otherwise only selected people would closely work with the project and the others contribution would not be satisfied.

Promote outsourcing idea to the staff members in the customer's organization:

Before starting the project the staff should get a clear idea of outsourcing otherwise they would think it would affect their job security. The reason, benefits and effectiveness of software outsourcing should be made aware to the staff. When they know the advantages of software outsourcing, the staff members would work towards success.

Strategic Management Factors:

This includes variables such as focusing on vision and a strategic plan including short-term and long-term goals, development of a multi-annual plan for outsourcing relationship, outsourcing as an intellectual asset, not only a matter of costs and identify overall benefits of outsourcing.

Focusing on vision and a strategic plan including short-term and long-term goals:

Organization vision and the strategic plan should be supported by its final product of automation scenario. All these plans should be parallel and work together. When one is being disorder would fail the project.

Development of a multi-annual plan for outsourcing relationship:

The software projects should have a separate IT plan for a period of five years time and its objectives should be according to the objectives of the corporate plans. This also would be related with the software provider's annual plan. All these plans together could release a better product.

Outsourcing as an intellectual asset, not only a matter of costs:

Idea of outsourcing and working towards it is an innovative effect of the staff and it was done based on their knowledge. Though it is a cost effective matter the knowledge of it would not be measured and would be lead to success of the outcome.

Identify overall benefits of outsourcing:

Before starting the project the detail study on the existing systems should be finalized. Benefits and advantages of outsourcing should be identified by the management and they should share this with the staff. This could be really supportive to success.

Operational Factors:

Operational factors include variables of keep track on delivery performance of the final product, strong customer commitment and presence throughout the outsourcing life cycle, proper management control and follow cost management rules.

Keep track on delivery performance of the final product:

When the software provider is delivering the final system the customer should check the final outcome against the requirement. This stage would be final stage of accepting the product. In case the customer made any negligence here the total project would be in wasted. Therefore the final product would be a quality one.

Strong customer commitment and presence throughout the outsourcing life cycle:

As the software vendor is from private sector they are not aware of public sector regulations and the work flow of the government institutions. Therefore in this type of specialized application system should be always monitored by the customer throughout the life cycle.

Proper Management control:

When there is proper management control throughout the outsourcing process, the project leaders and the team leaders would work methodically with their team members. This help to the software vendors to complete their projects within standards, allocated budget and time. The responsibility of the team members and their performance also could monitor by having a proper management control.

Following Cost management rules:

Always the costs of the application software projects are highly expensive because of the quality and professionalism. However the quoted prices could not be changed and it should be within the budget. Therefore the projects should pursue the cost management rules. When the budgetary allocation exceeds the projects could be abundant.

Resistance Factors:

The resistance factors were found from the failure factors. The best practices world identified by preventing the resistance factors in the public sector organizations. This include variables such as prevent of employee's resistance to change, prevent of lack of team work, prevent of lack of necessary skilled people, prevent of lack of customer presence, prevent of sudden loss of IT expertise and prevent critical skills and loss of innovative capacity.

Prevent employee's resistance to change:

In the most of the public sector organization's staff does not like to change their attitudes related to automations of manual systems. They have fear of their job security. The top management and the Information Technology staff could change this attitude by following the seminars and workshops. By preventing this situation outsourcing could be success in the public sector.

Prevent lack of team work:

Team work concept is highly recommended in software outsourcing success. The aim of the team should be the same and they should work together to have a successful final product. Therefore prevention of lack of team work is positively related on outsourcing success.

Prevent of lack of necessary skilled people:

In the most of the software systems are tend to failure as they have lack of skilled people. This would be specially applied for the public sector organizations with their wages. The organization's management has to minimize this type of situations to have a successful outcome.

Prevent of lack of computer literacy:

To familiarize the system the customer's staff should have high IT literacy. This would depend on the responsibility of the usage of the IT system. When the users do not understand they would reluctant to use the computerized system. Therefore all the responsible officers should know to work with the computer.

Prevent sudden loss of IT expertise and critical skills:

This would be mainly applied to the software vendor's organizations. However the customer would be the final victim. When there is a sudden loss of an IT expertise the recruiting procedure and to get familiar with the system would take time and the success would be slow. The strength of the software vendor's staff would help this type of situation.

Prevent of loss of innovative capacity:

In Sri Lankan government organizations have appointed a CIO to innovate their organizational culture and the staff via IT. When there are new ideas are booming latest features would able to add for the system. With new ideas the software systems could direct in a success path.

Financial Factors:

Financial factors also based from the failure factors. Therefore, by preventing this outsourcing could be success. This includes variables such as prevent additional hidden costs of ensuring compliance, negotiation, and litigation, prevent cost of delayed delivery / non-delivery, prevent unexpected transition and management costs and prevent loss due to disasters and recovery costs.

Prevent additional hidden costs of ensuring compliance, negotiation, and litigation:

In some cases the additional costs were included in agreements using various unknown terms. This would be tend have problems with the software provider. To overcome these situations the agreements should be clearly understand and signed from the both parties with their legal assistance.

Prevent cost of delayed delivery / non-delivery:

When the software venders are not delivering the product on time and will cause to delay the automation. Though the penalties are being introduced the cost of resources including time could not measure.

Prevent unexpected transition and management costs:

Similar to hidden cost the switching over the old or manual systems (Presently in Sri Lankan public sector organizations are converting manual systems to computerized systems) automated system also involving a cost. Proper plan of re-engineering the businesses process could be help to minimize this type of un-necessary cost.

Prevent loss due to disasters and recovery costs:

Once the systems is handed over to the customer and if there would be any disaster the system has to re-installed. Maintaining proper back-up systems and work according to disaster recovery plan would be minimized the troubles.

Risks Factors:

This also introduced from the failure factors and it includes variables such as prevent governmental rules and regulations, prevent vendor's or outsourcer's lack of experience, prevent hidden costs in outsourcing contract, prevent the provider does not comply with the contract, prevent security issues, prevent lack of legacy and new system integration risk and prevent loss of IT expertise.

Prevent governmental rules and regulations:

Frequent changes in the Governmental rules and regulations and some procedures to follow would be impossible to stream line the outcome of the project. Thus prevention of these variables would lead to success of the project.

Prevent vendor's or outsourcer's lack of experience:

Knowledge and the practice of handling similar types of duties would be very beneficial to the project throughout the outsourcing life cycle. To get successful results in the project these variables should be prevented.

Prevent hidden costs in outsourcing contract:

In some cases vendor's included hidden taxes and prices in foreign currency in their tender documents. Likewise having some hidden cost involved in the vendor's quotations. This would be cause to increase the initial budget of the software project. Finally could lead to partial failure of the outsourcing projects. Prevention could be done by appointing a qualified and experienced Technical Evolution Committee (TEC).

Prevent the provider does not comply with the contract:

Although the project was accepted by the vendor mostly the final product would not be according to the requirement. These issues may cause for the acceptance of the systems and failure of the project. Avoiding these could have a successful outcome.

Prevent security issues:

Security issues play a major role in risk factors. The outsourcing vendors are not concerned about all the security issues founded in software outsourcing. Therefore the customer's responsibility is to identify the security issues and prevent these issues would lead to success the system.

Prevent lack of legacy and new system integration risk:

When integrating the existing systems with the new system the technology may not comply. Therefore before integrating the total solution, modules or sub systems should be independently tested. It is advisable to study the integration prior to installation.

Prevent loss of IT expertise:

The sudden loss of IT expertise in the project team would decrease the growth of the project. This would apply for the both parties. IT expertises in the vendor's side change their jobs very frequently and this would affect the projects that they were working. The new persons take more time to become familiar with the systems. The persons without experience would be the worst. If a member could work for the project throughout the outsourcing life cycle it would be definitely successful.

Inadequacy Factors:

Inadequacy factors also identified from the failure factors and by preventing those outsourcing lead to success. This include variables of prevent lack of project management capabilities, prevent poor project scope, prevent lack of organizational learning, prevent outdated technological tools, prevent control/area/size/time of project and prevent low quality of outputs.

Prevent lack of project management capabilities:

The team members of the outsourcing software should thoroughly knowledgeable in IT project management. Their leadership would be lead the success of the organization's projects.

Prevention poor project scope:

The scope of the project should be clearly identified before starting the project. Both public organization and software vendor should discuss about the software project scope and should start to work accordingly. Then only the expected results would be obtained.

Prevention lack of organizational learning:

The Customers and the software provider should always closely work with the organizational behavior. Any changes within the organization could be aware by the project team and changes within their organizations should be aware by the both parties.

Prevention outdated technological tools:

To have a state-of-the-art project the technological tools should be designed newly. Since the Information Technology related fields are changing frequently the new systems should be compatible with the other infrastructure.

Prevention control/area/size/time of project:

The four main considerations of the project such as control, area, size and time should be identified during the time of the feasibility study. To have a successful project this should be monitored.

Prevention low quality of outputs:

The outcome of a successful project is the output should be a high quality one. Since the customer always tend to compare with the previous systems the new outputs should be standard high quality ones.

Based on the conclusion the process model is appropriate for describing the outsourcing best practices in public sector organizations. When handling a outsource projects there are several short comes and related factors to be considered. Also solutions to fix the problems are more important. Using researches and motivating academic researchers this could be done easily.

When following the Best Practices the researcher would like to share the experience for overall benefit by the software outsourcing organizations.

- Recommend to categorize all the public organizations. This could be done by the type of the organization such as Ministries, Departments, Statuary Boards and Commissions or area of organization or subject wise. Appoint a team leader from the apex body who can assist the CIOs and the team leader should be more knowledgeable and experienced in Information Technology.

- When appointing the CIO, he/she should be qualified in field of IT related but not only in Administration. The specialty here is CIO should have proper personnel

interaction skills to innovate their office staff and the top management regarding the IT subject.

- The apex body could select major projects and assist them closely to anybody that would agree. But the other organizations also should get support at least when they are outsourcing software, purchasing hardware, requiting IT personnel or appointing Technical Evolution Committees. All this would help to stop spending unnecessary money on software projects and audits.

- The organizations should have a separate internal audit staff members for software auditing is necessary because most of the auditors are not aware of the IT related technical words and IT system auditing qualified people should be appointed of hired for such audits.

- The author of the research has found when interviewing the heads of IT in most of the organizations they do not have a proper disaster recovery plan or proper backup systems in another location. When the e-Government is fully activated this would be a major feature to be considered.

- All the employees should get common certificates on IT subject and this should be issued for all the staff members without considering the position or designation.

- Before starting any software outsourcing project should streamline the business process. Then only the requirement is easily understandable by the software vendor.

- In Sri Lanka a very few software companies are up to the standard. Software developing staff is not capable of gathering requirement according to the user's objective. Therefore selecting a proper vendor should be carefully done. It is advisable to refer the benchmark of similar projects rather than going to the lowest bid.

6.3 Future Research

The area of outsourcing is very important topic for researches. Since the government sector automations started before ten years time in Sri Lanka, they are still in premature status in IS/IT outsourcing. Therefore overall the government offices would not have much experience on answering for this type of research. To have mature results the same research should be repeated in a few years time (after 3 – 5 years) to examine how outsourcing benefited to the public organizations and compare these results with the best practices that is identified by this research. However all types of staff members (top, middle and junior) should participate as in this research.

This research includes only 14 numbers of public organizations in Sri Lanka. But in future research the same success and failure factors would be measured with all the public organizations that has outsourced software applications. It is recommended to consider about the suggestions given by the respondents.

Contacting software providers/software vendors of these projects and to identify their views and public-private partnership in software outsourcing is an area to be researched. The differences between the software outsourcing in public sector and private sector organizations would be another area to be discussed in future. The comparison on public and private sector outsourcing was already found in literature but in Sri Lanka this type of research was found in published articles.

In few public organizations maintain in-house software staff and they would not have any faith in outsourcing process. Though the outsourcing is becoming famous in all the fields the software outsourcing may play vital role. The reason not to have software outsourcing is another study area for a researcher.

Compared to similar research the success and failures in software outsourcing best practices should be identified from the software provider's view. This should be mainly focused in providing services to the public sector.

6.4 Chapter Summary

In Sri Lanka the support for the academic researches are very much low and except some of the supportive heads of IT. The others think that it is a time consuming activity for them and would not considered about the outcome of it.

Under the recommendation, the "follow factors" that identified from the success factors and "prevent factors" identified from the failure factors were described with its respective variables. Some of the common recommendations were stated along with it.

At the end of the chapter some suggestions for the future research related to the outsourcing software in Sri Lanka were described.

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Annexure 1 - Letter and questionnaire for the ministries

I.U.Goonetilleke
21/4C,
Ananda Balika Mawatha,
Pagoda Road,
Pita-Kotte

…../10/10

………………………..
………………………….
………………………..
………………………...

Dear Sir/Madam,

<u>User Survey on Software Outsourcing Projects in Public Sector Organizations.</u>

I am a Postgraduate student, registered (2009/MISM/09) for Masters in Information System Management Degree at the Faculty of Graduate Studies, University of Colombo.

Please find the enclosed questionnaire regarding the above survey, which I have undertaken as a partial fulfillment of MISM program. The primary objective of this survey is to identify the Best Practices Outsourcing Software Success in Public Sector Organizations in Sri Lanka.

In this context, I would be grateful if you could kindly fill out the enclosed questionnaire and send in reply envelope (paid) provided.

Thanking You,

………………………………………..
I.U.Goonetilleke

Questionnaire

This is a preliminary survey to find out the software projects on each ministry and attached institutions.

1. Name of the Ministry   : --
2. Participant's Name   : --
3. Participant's Designation: : --

5. Do your ministry have any computer *software projects already completed or presently on implementation stage through outsourcing organization.

(*software projects include database creation, application software development/customization,system integration, end-user support, staff & end-user training, database/software maintenance, e-commerce website development or any other computer software related work.)

Computer System	Contact person	Telephone/e-mail

6. Are there any similar types of projects (*mentioned in the above) handled by the departments or statutory institutions attached to your ministry?

Department/ statutory institutions	Computer System	Contact person	Telephone/e-mail

7. If here are any systems or organizations that would not include in the above questions please indicate in below space.

Your contribution to this research project is very greatly appreciated. Please return your questionnaire in the reply paid envelope provided. If the envelope has been misplaced please forward to:

Ms. I.U. Goonetilleke
No. 21/4C, Ananda Balika Mw.,
Pagoda Road
Pitakotte.

Annexure 2 - Questionnaire for the heads of IT

The purpose of this survey is to determine ' **The Best Practices for Software Outsourcing Success in Public Sector Organizations in Sri Lanka'.** Your contribution to this research project is greatly appreciated.

1. Personal Particulars of Participant's
    1.1 Name   : ---
    1.2 Organization   : ---
    1.3 Position : Head of IT / Chief Information Officer/ Innovation Officer /-------------------
    1.4 Department/Section/Unit : --
    1.5 Please give a brief description about your role in the office regarding to the software project/projects :--

2. Which percentage of the following activities is carried out through outsourcing.

Indicate the appropriate portion for each of the following outsourced item.	Percentage of outsourcing
Database Creation	
Application software development/customization	
System integration	
End-user support	
Staff & end-user training	
Database/Software maintenance	
E-commerce website development	
Pl. specify	

3. Does your organization achieve the following objectives by outsourcing software? Please rank each of the objectives, on a scale of 1-12 (Always = 12, Very often = 8, Often =6, Sometimes = 4, Rarely = 2, Never = 1)

	Reason to outsource	Rank
1	Organization's strategic goals	
2	Low cost	
3	Focus on core activities	
4	Customer satisfaction	
5	Competitive advantage	
6	Quality and reliability	
7	Need for IT Expertise	
8	Making new technology work to the advantage of the organization	
9	Reducing the burden of legacy systems	
10	Allows major capital expenditure avoidance	
11	Access to state-of-the-art technology	
12	Pl. specify	

4. Complete the following table. **Outsourced Software projects** started after January 2002.

Name of the software project	Software Provider	Tender awarded by ICTA or direct	Implementation progress 1 –Completed 2 - On test run 3 – Developing stage	Status of the project S -Success F - Failure P - Partially failure

5. Do you have a specific IT department within your organization? Yes/ No

6. If no, please specify who is responsible for IT planning and expenditure ---------------------

7. How many users are using the outsourced system ? ---------

8. Give answers in percetage (%) for the following questions considering all your software projects.

8.1 What was the percentage of outsourcing software projects completed as per the required scope ? ------

8.2 What was the percentage of outsourcing software projects completed on time ? ------

8.3 What was the percentage of outsourcing software projects completed on approved budget? -------

8.4 What was the percentage of the quality of final product ? -----

8.5 What was the percentage of communication had with the software provider? ------

THANK YOU FOR YOUR PARTICIAPTION

Annexure 3 - Questionnaire for the users

The purpose of this survey is to determine ' **The Best Practices for Software Outsourcing Success in Public Sector Organizations in Sri Lanka**'. Your contribution to this research project is greatly appreciated.

1. Personal Particulars

    1.1 Organization   : --

    1.2 Level of your job responsibility:

                a) Top Management
                b) Middle Management
                c) Non-management Employee
                d)

    1.3 Mark one more role/roles that you have done in the software implementation project./projects

                a) Member of the project team
                b) Participated only in requirement gathering stage
                c) Participated only in system testing stage
                d) Only a system user in final product
                e) Specify --

2. Please mark on appropriate answer to indicate on each success factors

        1 – Strongly disagree
        2 – Disagree
        3 – Modarate
        4 – Agree
        5 – Strongly agree

2.1 Organizational Factors

a) Strong top management's support and involvement will affect on software outsourcing success
        1   2   3   4   5

b) Appropriate rewarding systems & incentives will affect on software outsourcing success
        1   2   3   4   5

c) Cooperative organizational culture instead of hierarchal will affect on software outsourcing success
        1   2   3   4   5

d) Establish team work environment & motivate team members will affect on software outsourcing success
        1   2   3   4   5

e) Setting-up penalties on outsourcing vendors will affect on software outsourcing success
        1   2   3   4   5

f) Providing necessary training to employees and mangers in customer will affect on software outsourcing success
        1   2   3   4   5

g) Promote outsourcing idea to the staff members in customer's organization will affect on software outsourcing success
        1   2   3   4   5

2.2 Strategic Management factors

a) Focusing on vision and a strategic plan including short-term and long-term goals will affect on software outsourcing success

      1   2   3   4   5

b) Development of a multi-annual plan for Outsourcing relationship will affect on software outsourcing success

      1   2   3   4   5

c) Outsourcing as an intellectual asset, not only a matter of costs will affect on out software sourcing success

      1   2   3   4   5

d) Identify overall benefits of outsourcing will affect on software outsourcing success

      1   2   3   4   5

2.3 Operational factors

a) Keep track on delivery performance of the final product will affect on software outsourcing success

      1   2   3   4   5

b) Strong customer commitment and presence through out the outsourcing life cycle will affect on software outsourcing success

      1   2   3   4   5

c) Proper Management control will affect on software outsourcing success

      1   2   3   4   5

d) Follow Cost management rules will affect on software outsourcing success

      1   2   3   4   5

2.4 Technical factors

a) Follow the clear selection criteria with proper evolution team will affect on software outsourcing success

      1   2   3   4   5

b) Proper documentation with coding standards will affect on software outsourcing success

      1   2   3   4   5

c) System integration testing on site will affect on software outsourcing success

      1   2   3   4   5

d) Keeping a high innovative capacity regarding service and technological advantages will affect on software outsourcing success

      1   2   3   4   5

2.5 Client/Provider factors

a) Selecting a right provider will affect on software outsourcing success

      1   2   3   4   5

b) Maintain Client-Provider Relationship with Confidence and Cooperation will affect on software outsourcing success

      1   2   3   4   5

c) Provider's understanding of clients' objectives will affect on software outsourcing success

      1   2   3   4   5

d) Periodical progress meetings will affect on software outsourcing success

      1   2   3   4   5

e) Setting penalties and developing incentives on will affect software outsourcing success

      1   2   3   4   5

3. Any successful factors on your software project other than the above mentioned in **2.1 – 2.5 .**

----

4 Please please mark on appropriate answer to indicate on each failure factors

        1 – Strongly disagree

        2 – Disagree

        3 – Modarate

        4 – Agree

        5 – Strongly agree

  .

4. Resistance Factors

a) Employee's resistance to change will cause to failure on software outsourcing

        1   2   3   4   5

b) Lack of team work will cause to failure on software outsourcing

        1   2   3   4   5

c) Lack of necessary skilled people will cause to failure on software outsourcing

        1   2   3   4   5

d) Lack of computer literacy will cause to failure on software outsourcing

        1   2   3   4   5

e) Sudden loss of IT expertise and critical skills will cause to failure on software outsourcing

        1   2   3   4   5

f) Loss of innovative capacity will cause to failure on software outsourcing

        1   2   3   4   5

4.2 Financial Factors

a) Additional hidden costs of ensuring compliance, negotiation, and litigation will cause to failure on software outsourcing

        1   2   3   4   5

b) Cost of delayed delivery / non-delivery will cause to failure on software outsourcing

        1   2   3   4   5

c) Unexpected transition and management costs will cause to failure on software outsourcing

        1   2   3   4   5

d) Loss due to disasters and recovery costs will cause to failure on software outsourcing

        1   2   3   4   5

4.3 Risks Factors

a) Governmental rules and regulations will cause to failure on software outsourcing

        1   2   3   4   5

b) Vendors or Outsourcer's lack of experience will cause to failure on software outsourcing

        1   2   3   4   5

c) Hidden costs in outsourcing contract risk will cause to failure on software outsourcing

        1   2   3   4   5

d) The provider does not comply with the contract will cause to failure on software outsourcing

        1   2   3   4   5

e) Security issues   will cause to failure on software outsourcing

        1   2   3   4   5

f) Lack of legacy and new system integration risk will cause to failure on software outsourcing

        1   2   3   4   5

g) Loss of IT expertise will cause to failure on software outsourcing

        1   2   3   4   5

4.4 Inadequacy Factors

a) Lack of project management capabilities will cause to failure on software outsourcing

                1   2   3   4   5

b) Poor project scope will cause to failure on software outsourcing

                1   2   3   4   5

c) Lack of organizational learning will cause to failure on software outsourcing

                1   2   3   4   5

d) Outdated technological tools will cause to failure on software outsourcing

                1   2   3   4   5

e) Control/area/size/time of project   will cause to failure on software outsourcing

                1   2   3   4   5

f) Low quality of outputs will cause to failure on software outsourcing

                1   2   3   4   5

5. Any failure factors on your software project other than the above mentioned in **4.1 – 4.3** .

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6. Which of these factors do you think are 'Best Practices for software outsourcing success?
Give a mark for each of these factors on a five point scale, **5 - very important , 1 - not important.**

Scope	- Meeting all requirement & objectives	- ----
Quality	- Performance measurement & service quality .	- ----
Communication	- Frequent Communication between client/provider	- ----
Cost -	- Delivery with estimated cost	- ----
Time -	- Delivery with estimated time	- ----

Specify any other best practices not mentioned in the above ---
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7. Please comment on any other thoughts you have on outsourcing software experiences

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THANK YOU FOR YOUR PARTICIAPTION

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Annexure 4 - Summary of Success/Failure factors and Best Practices from Literature

Success Factors

Organizational

▪ Top management support (Rajabzadeh, Rostamy and Hosseini, 2008) ▪ Top management's support and involvement (Gonzalez, Gasco and Llopis, 2005) ▪ Strong executive support (Chow and Cao, 2007) ▪ Union of both managements to support the project - Support by senior management, Ensuring support by senior executives, Union of both managements to support the project, Support at the directive level lines (Mendez, Mendoza and Pérez, 2006)
▪ Appropriate reward system (Chow and Cao, 2007) ▪ Improvements in employee productivity (Elpez and Fink, 2006) ▪ Members with great motivation (Chow and Cao, 2007) ▪ Keeping a high innovative capacity regarding service and technological advantages (Mendez, Mendoza and Pérez, 2006)
▪ Cooperative organizational culture instead of hierarchal (Chow and Cao, 2007) ▪ Focusing on the employees - Management of personnel issues, Communicating with employees, Continuous communication with employees, Special attention to personal matters, Personnel management, Strong relationships with personnel (Mendez, Mendoza and Pérez, 2006)
▪ Team me Total organisation and project team commitment (Standing *et al*, 2006) ▪ Collocation of the whole team (Chow and Cao, 2007) ▪ Team members with high competence and expertise (Chow and Cao, 2007) ▪ Building team work environment (McConnell, 1997)
▪ Setting penalties and developing incentives - Setting penalties and developing incentives lines (Mendez, Mendoza and Pérez, 2006)
▪ Provide necessary training (Chow and Cao, 2007)
▪ A clear idea of what is sought through outsourcing (Gonzalez, Gasco and Llopis ,2005)

▪ Promoting the outsourcing idea to the staff members (Mendez, Mendoza and Pérez, 2006)

Strategic

▪ Strategic approach - Focusing on the strategy, Strategic approach, Having a vision and a strategic plan, , Choosing long-term relationships, -,Separation of short-term and long-term goals - Short-term goals should be separated from long-term goals, Jointly establishing business orientation - Common goals, Work jointly to determine business orientation (Mendez, Mendoza and Pérez, 2006) ▪ Understanding long term and short term goals (Rajabzadeh, Rostamy and Hosseini, 2008) ▪ Having a strategic view (Rajabzadeh, Rostamy and Hosseini, 2008)
▪ Long-term relationships- Development of a multi-annual plan for Outsourcing relationship (Mendez, Mendoza and Pérez, 2006)
▪ Outsourcing as an intellectual asset, not only a matter of costs (Mendez, Mendoza and Pérez, 2006)
▪ Identify overall benefits of outsourcing. (Mendez, Mendoza and Pérez, 2006)

Operational

▪ Operational Management Control : Management control, Delivery performance, Cost management, Development and use of best practices (Mendez, Mendoza and Pérez, 2006) ▪ Recognition of core activities of organization (Rajabzadeh, Rostamy and Hosseini, 2008) ▪
▪ User support and involvement   (Standing *et al*, 2006) ▪ Strong customer commitment and presence (Chow and Cao, 2007) ▪

- Effective planning   (Standing *et al*, 2006)
- Considerable investment of time and effort - Considerable investment of time and effort, Periodical meetings lines with proper management control (Mendez, Mendoza and Pérez, 2006)
- Executive and sponsor commitment   (Standing *et al*, 2006)
- Managers knowledgeable in process (Chow and Cao, 2007)
- Managers who have light-touch or adaptive management style (Chow and Cao, 2007)
- Good project management and leadership   (Standing *et al*, 2006)
- Committed sponsor or manager (Chow and Cao, 2007)

- A good-value-for-money relationship (Gonzalez, Gasco and Llopis, 2005)
- Increased control of IS expenses (Mendez, Mendoza and Pérez, 2006)
- In-house cost saving (McConnell, 1997)
- Meeting budgeted criteria (Elpez and Fink, 2006)

Technical

- Existing clear selection criteria (Rajabzadeh, Rostamy and Hosseini, 2008)

- Well-defined coding standards up front (Chow and Cao, 2007)
- Pursuing simple design (Chow and Cao, 2007)
- Right amount of documentation (Chow and Cao, 2007)

- Correct integration testing (Cho Regular delivery of software (Chow and Cao, 2007)
- Delivering most important features first (Chow and Cao, 2007)
- System integration testing on site. (Chow and Cao, 2007)

- Keeping a high innovative capacity regarding service and technological

advantages (Mendez, Mendoza & Pérez, 2006)

- Expertise and technical knowledge (Mendez, Mendoza & Pérez, 2006)
- Technological Advances (McConnell, 1997)

Client/Provider

- Choosing the right provider (Gonzalez, Gasco and Llopis, 2005)
- Select a proper vendor (McConnell, 1997)

- Maintain Client-Provider Relationship , Confidence and Cooperation (Gonzalez, Gasco and Llopis, 2005)
- Good customer relationship (Chow and Cao, 2007)
- Cooperation between organizations: Interdependence, Cooperation between organizations (Mendez, Mendoza and Pérez, 2006)
- Contract Management : Efficient contract control - Good contract management, Clear points between client and provider - Clear definitions, Clear points with the provider, Flexibility - Be flexible, Development of strategies and a flexible contract, adjustable to the business changes, Use of SLA (Mendez, Mendoza and Pérez, 2006)

- Provider's understanding of clients' objectives (Gonzalez, Gasco and Llopis, 2005)
- Understanding between both organizations: Clear understanding, Understanding the needs and objectives of the client, Understanding the client, Understanding both organizations, Understanding the client's needs (Mendez, Mendoza and Pérez, 2006)
- Proper contract structuring (Gonzalez, Gasco and Llopis, 2005)
- Following requirement management process (Chow and Cao, 2007)

• Meeting user requirements (Elpez and Fink, 2006) • Provide a correct requirement (McConnell, 1997)
• Oral culture placing high value on face-to-face communication (Chow and Cao, 2007) • Provider's attention to clients' specific problems (Gonzalez, Gasco and Llopis, 2005) • Frequent client-provider contacts problems (Gonzalez, Gasco and Llopis, 2005) • Keeping active communication lines: Efficient communication, Efficient relationship between managements, Efficient communication, Communication, Two-way communication at each level, Communication as a key factor, Keeping the whole organization informed, Keeping active communication lines (Mendez, Mendoza and Pérez, 2006) • Clear communication channels among stake holders (McConnell, 1997) • Strong communication focus with daily face-to-face meetings (Chow and Cao, 2007) • Setting penalties and developing incentives (Mendez, Mendoza and Pérez, 2006)

Failure Factors

Resistance

• Employee's resistance (Rajabzadeh, Rostamy and Hosseini, 2008) • Resistance from groups or individuals (Chow and Cao, 2007) • Opposition of internal staff risk (Arshad, May-Lin and Mohamed, 2007)
• Lack of team work (Chow and Cao, 2007)
• Limitation of experts (Rajabzadeh, Rostamy and Hosseini, 2008) • Qualification of the provider's staff (Gonzalez, Gasco and Llopis, 2005). • Lack of necessary skill-set (Chow and Cao, 2007) • Vendor's lack of experince (Suvillivan and Ngwenyama, 2005) • Loss of skilled people (Suvillivan and Ngwenyama, 2005)
• Poor reporting of the project's status (Han, W. and Huang, S., 2007) • Lack of customer presence (Chow and Cao, 2007)

▪ Ill-defined customer role (Chow and Cao, 2007)

▪ Loss of critical skills and competences (Gonzalez, Gasco and Llopis, 2005)
▪ Loss of IT expertise risk (Arshad, May-Lin and Mohamed, 2007)
▪ Loss of innovation capacity (Méndez, Mendoza and Pérez, 2006)
▪ Downstream organizational losses - loss of skills and tacit knowledge and capacity to exploit IT for business advantage, loss of innovative capacity; loss of intellectual property. (Rouse and Corbitt, 2003)

Financial

▪ Organizational disruption and additional costs of poor transition (Rouse and Corbitt, 2003)
▪ Unclear cost-benefit relationship (Gonzalez, Gasco and Llopis, 2005).
▪ Additional hidden costs of ensuring compliance, negotiation, and litigation (Rouse and Corbitt, 2003)
▪ Hidden costs in the contract (Gonzalez, Gasco and Llopis, 2005)
▪ Cost of delayed delivery/non-delivery (Dhar and Balakrishnan, 2006)
▪ Unexpected transition and management costs (Dhar and Balakrishnan, 2006)
▪ Loss due to disasters and recovery costs (Dhar and Balakrishnan, 2006)

Risks

▪ Governmental rules and regulations (Rajabzadeh, Rostamy and Hosseini, 2008)
▪ Lack of outsourcer's experince (Suvillivan and Ngwenyama, 2005) ▪ Vendors lack of experience (Sullivan and Ngwenyama, 2005) ▪ Lack of outsourcer staff experience risk (Arshad, May-Lin and Mohamed, 2007) ▪ Personnel without experience (Méndez, Mendoza and Pérez, 2006) ▪ Lack of experience managing the outsourcing relationship risk (Arshad, May-Lin and Mohamed, 2007) ▪ Possibility of a management weakness (Méndez, Mendoza and Pérez, 2006)
▪ Hidden costs in outsourcing contract risk (Arshad, May-Lin and Mohamed, 2007)
▪ The provider's lack of compliance with the contract (Gonzalez, Gasco and Llopis,

2005)
▪ Ill-defined project requirements (Chow and Cao, 2007)
▪ The provider does not comply with the contract (Gonzalez, Gasco and Llopis, 2005)
▪ Badly defined system requirements (Han, W. and Huang, S., 2007)
▪ Unrealistic or unarticulated project goal (Han, W. and Huang, S., 2007)
▪ Outsourcer not complying with the contract risk (Arshad, May-Lin and Mohamed, 2007)
▪ Weak definitions of requirements and scope (Yeo, 2002)
▪ Inadequacy project risk analysis (Yeo, 2002)
▪ Security issues (Gonzalez, Gasco and Llopis, 2005)
▪ Unmanaged risks (Han, W. and Huang, S., 2007)
▪ Security (data confidentiality) risk (Arshad, May-Lin and Mohamed, 2007)
▪ Lack of legacy and new system integration risk (Arshad,   May-Lin and Mohamed, 2007)
▪ Ability to operate new system risk (Arshad, May-Lin and Mohamed, 2007)

Inadequacy

▪ Lack of project management competence (Chow and Cao, 2007)
▪ Inaccurate estimates of needed resources (Han, W. and Huang, S., 2007)
▪ Poor project management (Han, W. and Huang, S., 2007)
▪ Lack of vendor perfomance monitoring (Suvillivan and Ngwenyama, 2005)
▪ Ambiguous business needs and unclear vision (Yeo, 2002)
▪ Poor project scope (Chow and Cao, 2007)
▪ Unclear approach (Méndez, Mendoza and Pérez, 2006)
▪ Incorrect assumptions regarding (Yeo, 2002)
▪ Irreversibility of the outsourcing decision (Gonzalez, Gasco and Llopis, 2005)
▪ Lack of communication among customers / developers / users (Han and Huang, 2007)
▪ Lack of an organizational learning (Méndez, Mendoza and Pérez, 2006)
▪ Use of immature technology, inability to handle the project's complexity (Han,

W. and Huang, S., 2007)
▪ Inappropriateness of technology and tools (Chow and Cao, 2007)
▪ Outdated technological tools (Méndez, Mendoza and Pérez, 2006)
▪ Inability to adapt to new technologies (Gonzalez, Gasco and Llopis, 2005)
▪ Technological indivisibility (Méndez, Mendoza and Pérez, 2006)
▪ Control/area/size of project (Rajabzadeh, Rostamy and Hosseini, 2008)
▪ Low quality of outputs (Rajabzadeh, Rostamy and Hosseini, 2008)

Best Practices

Scope: ▪ Meeting all requirements and objectives (Chow and Cao, 2007). ▪ Strategic positioning (scope) (Rajabzadeh, Rostamy and Hosseini, 2008)
Quality: ▪ Delivering good product or project outcome (Chow and Cao, 2007). ▪ Quality of services and products (Rajabzadeh, Rostamy and Hosseini, 2008) ▪ Quality of provided services(Rajabzadeh, Rostamy and Hosseini, 2008)
Communication: ▪ Contract negotiation (alliance/partnership) (Lin, Pervan and McDermid, 2007) ▪ Relationship and contract management (Lin, Pervan and McDermid, 2007) ▪ Employees' motivations (Rajabzadeh, Rostamy and Hosseini, 2008) ▪ Contractor's selection criteria (Rajabzadeh, Rostamy and Hosseini, 2008) ▪ Strong communication channels between client/provider and also among the project team members with the other employees in the customer's organization (Lin, Pervan and McDermid, 2007).
Cost: ▪ Accuracy in budgeting (Rajabzadeh, Rostamy and Hosseini, 2008) ▪ Suggested cost (Rajabzadeh, Rostamy and Hosseini, 2008)

■ Financial stability (Rajabzadeh, Rostamy and Hosseini, 2008)
■ Delivering within estimated cost and effort.(Chow and Cao, 2007).
■
Time:
■ Delivering on time. (Chow and Cao, 2007).
■ On time performance (Rajabzadeh, Rostamy and Hosseini, 2008)