

**FACTORS INFLUENCING RESISTANCE TO INFORMATION TECHNOLOGY  
RELATED CHANGE IN THE TELECOMMUNICATION INDUSTRY: A CASE  
STUDY OF DIALOG TELECOM**

**BY**

HEMAMALI TENNAKOON

**(2009/MISM/037)**

**Submitted in accordance with the requirements for the degree of**

**MASTERS IN INFORMATION SYSTEMS MANAGEMENT**

**at the**

**UNIVERSITY OF COLOMBO**

SUPERVISOR: DR.C.C.JAYASUNDARA

**DECEMBER 2011**

**DECLARATION**

I certify that this Dissertation does not incorporate without acknowledgement any 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: .....

.....

Hemamali Tennakoon

The undersigned, have supervised the dissertation entitled **FACTORS INFLUENCING RESISTANCE TO INFORMATION TECHNOLOGY RELATED CHANGE IN THE TELECOMMUNICATION INDUSTRY: A CASE STUDY OF DIALOG TELECOM** presented by Hemamali Tennakoon, a candidate for the degree of Masters in Information Systems Management, and hereby certify that, in my opinion, it is worthy of submission for examination.

Date: .....

.....

Dr.

**C.C.JAYASUNDARA**

Supervisor

## ABSTRACT

With rapid technological changes, organizations and individuals are faced with numerous challenges as to how best to cope with and adapt to such changes. There can be forces encouraging change and forces against change. This particular piece of research is interested in investigating the second category: forces against change or resistance to change. The researcher has defined five research objectives to investigate the factors effecting individuals to resist information technology (IT) related change. The research objectives were aimed at identifying organizational, individual and technological factors influencing IT related change while the research also endeavoured to identify which factors have the strongest influence in the change process. The fifth research objective was concerned with providing suggestions to minimize resistance to IT related change. A review of past research was used to identify the three main categories of resistance factors (Individual, Technological, and Organizational) and these factors were tested in the context of IT related change in the Sri Lankan Telecommunication sector, with special emphasis on Dialog Telekom (Pvt) Ltd. from where a simple random sample of 220 was drawn for data gathering. A questionnaire was used as the data collection tool to test the relationship between the above categories of factors with resistance to IT related change. The respondents to the questionnaire included IT users from both managerial and non-managerial levels at Dialog Telekom (Pvt) Ltd. representing all the departments. Data gathered from the respondents were analysed using Spearman's correlation as the suitable statistical treatment. In the results obtained, the most striking finding is that when technological factors were tested, it was revealed that only 'the extent to which the user requirements are met by the technology' acts as a strong influencer in determining resistance behaviour. Other factors such as system design; accessibility or usability of the system shows no significant impact on resistance. Towards the latter part of the thesis, recommendations and suggestions were discussed which could be useful to practicing managers and scholars alike in managing and understanding resistance to IT related change in organizations.

*Keywords: Information Technology (IT), Resistance, Change, Telecommunication*

*Industry*

## **ACKNOWLEDGEMENT**

First of all, I would like to thank my supervisor, Dr. C.C. Jayasundara, for all the support He has given me, for guiding me when I needed it. I would also like to thank those who helped me collect data at Dialog Telekom (Pvt.) Ltd. and also the participants of my study for taking the time to fill out the questionnaire.

I also wish to thank the faculty and staff of FGS, Colombo University, particularly Ms. Pavithra for her patience and support. My language editor Ms. Nayomi Abayasekara should also be mentioned with gratitude for correcting many mistakes and carefully reading through the dissertation for errors.

My colleague at work as well as the fellow students of the MISM program has always been supportive and encouraging. For that, I thank them too.

Without the support and encouragement of my parents, I couldn't have accomplished as much as I have. Thank you for helping me find the strength to keep moving forward and reaching for my goals.

## TABLE OF CONTENTS

ABSTRACT .....	iii
ACKNOWLEDGEMENT .....	iv
TABLE OF CONTENTS.....	v
LIST OF TABLES.....	ix
LIST OF FIGURES .....	xi
LIST OF ACRONYMS .....	xii
CHAPTER 01: INTRODUCTION.....	1
1.1 Introduction.....	1
1.2 Background to the research.....	1
1.3 Conceptual background .....	3
1.4 Contextual background.....	6
1.5 Statement of the problem.....	8
1.6 Research objectives and research questions .....	9
1.7 Significance of the study.....	11
1.8 Theoretical significance.....	11
1.9 Practical significance .....	12
1.10 Research methodology.....	13
1.10.1 Research strategy .....	13
1.10.2 Time horizon.....	13
1.10.3 Sampling .....	13
1.10.4 Data collection.....	14
1.10.5 Data analysis techniques.....	15
1.11 Conclusion.....	16

CHAPTER 02: LITERATURE REVIEW .....	17
2.1 Introduction.....	17
2.2 IT in organizations .....	17
2.3 Why invest in IT? .....	18
2.4 Organizational change and theories on change.....	19
2.5 IT related change .....	22
2.6 Telecom industry and IT .....	23
2.7 Organizational stakeholders and IT change .....	25
2.8 Relationship between organizational culture, structure and IT change .....	27
2.9 Effects of technological change .....	29
2.9.1 Positive impact.....	30
2.9.2. Negative impact .....	31
2.9.3 Technology acceptance model (TAM) .....	32
2.9.4 Factors effecting technology acceptance .....	33
2.9.5 How people resist IT .....	37
2.9.6 Factors effecting resistance to IT .....	38
2.10 Conclusion .....	46
CHAPTER 03: CONCEPTUAL FRAMEWORK AND METHODOLOGY .....	47
3.1 Introduction.....	47
3.2 Concepts used for the purpose of the current research .....	47
3.3 List of hypotheses .....	55
3.4 Measurement of variables and data collection methods .....	58
3.5 Ethical issues in data collection .....	59
3.6 Sampling strategy and justification.....	59
3.6.1 Population .....	60
3.6.2 Sample .....	62

3.7 Data analysis and use of software packages .....	62
3.8 Conclusion .....	64
CHAPTER 4: ANALYSIS AND FINDINGS .....	65
4.1 Introduction.....	65
4.2 Data presentation and discussion .....	65
4.2.1 Presentation of demographic variables .....	65
4.2.2 Cross -tabulation of demographic variables .....	70
4.2.3 Resistance behaviour .....	72
4.2.4 Reliability.....	74
4.3 TESTING HYPOTHESIS USING CORRELATION .....	75
4.3.2 Relationship between ‘self-esteem’ and ‘employee resistance behaviour’ .....	76
4.3.3 Relationship between ‘job satisfaction’ and ‘employee resistance behaviour’ .....	77
4.3.4 Relationship between ‘attitude/perception’ and ‘employee resistance behaviour’ .....	78
4.3.5 Relationship between ‘personal competencies’ and ‘employee resistance behaviour’ .....	78
4.3.6 Relationship between ‘prior experience’ and ‘employee resistance behaviour’ .....	79
4.3.7 Relationship between ‘locus of control’ and ‘employee resistance behaviour’ .....	80
4.3.8 Relationship between ‘self- efficacy’ and ‘employee resistance behaviour’ .....	81
4.3.9 Relationship between ‘natural resistance’ and ‘employee resistance behaviour’ .....	82
4.3.10 Relationship between ‘leaving the comfort zone’ ‘and employee resistance behaviour’ .....	83
4.3.11 Relationship between ‘self-interest’ and ‘employee resistance behaviour’ .....	84
4.3.12 Relationship between ‘gender’ and ‘employee resistance behaviour’ .....	85
4.3.13 Relationship between ‘culture’ and ‘employee resistance behaviour’ .....	86
4.3.14 Relationship between ‘change of workload’ and ‘employee resistance behaviour’ ...	87
4.3.15 Relationship between ‘loss of promotions’ and ‘employee resistance behaviour’ .....	87
4.3.16 Relationship between ‘fear of redundancy’ and ‘employee resistance behaviour’ .....	88
4.3.17 Relationship between ‘need for security’ and ‘employee resistance behaviour’ .....	89

4.3.18 Relationship between ‘changing norms’ and ‘employee resistance behaviour’ .....	90
4.3.19 Relationship between ‘organizational support’ and ‘employee resistance behaviour’	91
4.3.20 Relationship between ‘user participation’ and ‘employee resistance behaviour’ .....	91
4.3.21 Relationship between ‘loss of power’ and ‘employee resistance behaviour’ .....	92
4.3.22 Relationship between ‘lack of communication’ and ‘employee resistance behaviour’ .....	93
4.3.23 Relationship between ‘understanding the need to change’ and ‘employee resistance behaviour’ .....	94
4.3.24 Relationship between ‘ownership of change’ and ‘employee resistance behaviour’..	95
4.3.25 Relationship between ‘cost of change’ and ‘employee resistance behaviour’ .....	95
4.3.26 Relationship between ‘Extent to which the user requirements are met by the technology’ and ‘employee resistance behaviour’ .....	96
4.3.27 Relationship between ‘system design’ and ‘employee resistance behaviour’ .....	97
4.3.28 Relationship between ‘accessibility of the system’ and ‘employee resistance behaviour’ .....	98
4.3.29 Relationship between ‘purpose of the system’ and ‘employee resistance behaviour’	99
4.3.30 Relationship between ‘reliability’ and ‘employee resistance behaviour’ .....	100
4.4 SUMMARY OF THE RESEARCH FINDINGS .....	101
4.5 Derived research model .....	105
CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS .....	108
5.2 General recommendations .....	113
6.0 FUTURE RESEARCH.....	116
REFERENCES .....	118
Appendix A.....	126
Appendix B.....	131



## LIST OF TABLES

Table 1. Factors effecting Technology acceptance.....	34
Table 2. Factors identified as having a negative influence on (resistance) IT related change.....	40
Table 3. Organizational change models.....	48
Table 4. Break-down of variables.....	51
Table 5. Telecommunication operators in Sri Lanka.....	60
Table 6. Reasons for selecting correlation as the analysis technique and reasons for choosing Spearman’s Correlation .....	63
Table 7. Organizational Level of employees .....	65
Table 8. Level of IT knowledge of employees .....	66
Table 9. Distribution of the Sample by Gender .....	67
Table 10. Age of the Respondents .....	68
Table 11. Educational Qualifications of the Respondents .....	69
Table 12. Cross Tabulation Between IT Knowledge and the Organizational Level of the Employees.....	70
Table 13. Cross Tabulation Between IT Knowledge and Gender .....	71
Table 14. Cross Tabulation Between IT Knowledge and Age .....	71
Table 15. Cross Tabulation between IT Knowledge and Highest Level of Education.....	72
Table 16. Resistance Behaviour.....	72
Table 17. Reliability Statistics .....	74
Table 18. Correlation Between Inter-personal Relationship and Resistance to IT Related Change .....	75
Table 19. Correlation between Self- esteem and Resistance to IT Related Change .....	76
Table 20. Correlation between Job Satisfaction and Resistance to IT Related Change .....	77
Table 21. Correlation between Attitude towards IT and Resistance to IT Related Change .....	78
Table 22. Correlation between Personal Competencies and Resistance to IT Related Change.....	79

Table 23. Correlation between Prior IT Experience and Resistance to IT Related Change .....	80
Table 24. Correlation between Locus of Control and Resistance to IT Related Change.....	81
Table 25. Correlation between Self-efficacy and Resistance to IT Related Change .....	82
Table 26. Correlation between Natural Resistance and Resistance to IT Related Change.....	83
Table 27. Correlation between Leaving Comfort Zone and Resistance to IT Related Change .....	84
Table 28. Correlation between Self-interest and Resistance to IT Related Change .....	85
Table 29. Correlation between Culture and Resistance to IT Related Change.....	86
Table 30. Correlation between Change of Workload and Resistance to IT Related Change .....	87
Table 31. Correlation between Loss of Promotions and Resistance to IT Related Change.....	88
Table 32. Correlation between Fear of Redundancy and Resistance to IT Related Change .....	89
Table 33. Correlation between Need for Security and Resistance to IT Related Change .....	89
Table 34. Correlation between Changing Norms and Resistance to IT Related Change .....	90
Table 35. Correlation between Organizational Support Relationship and Resistance to IT Related Change .....	91
Table 36. Correlation between User Participation and Resistance to IT Related Change.....	92
Table 37. Correlation between Loss of Power and Resistance to IT Related Change.....	92
Table 38. Correlation between Understanding the Need for Change and Resistance to IT Related Change .....	94
Table 39. Correlation between Ownership of Change and Resistance to IT Related Change.....	95
Table 40. Correlation between Cost of Change and Resistance to IT Related Change .....	96
Table 41. Correlation between Extent to which User Requirements are met by Technology and Resistance to IT Related Change .....	97
Table 42. Correlation between System Design and Resistance to IT Related Change.....	98
Table 43. Correlation between Accessibility of the System and Resistance to IT Related Change .....	99
Table 44. Correlation between Purpose of the System and Resistance to IT Related Change .....	99
Table 45. Correlation between Reliability and Resistance to IT Related Change .....	100
Table 46. Summary of Research Findings.....	101

## LIST OF FIGURES

Figure 1. Kurt Lewin’s Force Field Analysis .....	4
Figure 2. Employee Attitudes, Involvement and Reactions to Technology Change .....	22
Figure 3. The original Technology Acceptance Model (TAM).....	32
Figure 4. Research model to be tested .....	55
Figure 5. Market share of mobile operators in 2006 –Fixed line.....	60
Figure 6. Market share of mobile operators in 2006 –Mobile .....	61
Figure 7. Organizational Level of the Employees .....	66
Figure 8. Employees’ knowledge about Information Technology .....	67
Figure 9. Distribution of the Sample by Gender.....	68
Figure 10. Age of the Respondents.....	69
Figure 11. Educational Level of Respondents .....	70
Figure 12. Derived Research Model .....	105

## **LIST OF ACRONYMS**

CAD- Computer Aided Design

E-Commerce- Electronic Commerce

ERP- Enterprise Resource Planning

G.C.E. - General Certificate of Education

ICT- Information and Communication Technology

ICTA- Information and Communication Technology Agency

IS- Information Systems

MIS- Management Information Systems

NHS- National Health Service

OB- Organizational Behaviour

TAM- Technology Acceptance Model

WLL- Wireless Local Loop

# **CHAPTER 01: INTRODUCTION**

## **1.1 Introduction**

In this introductory chapter, an overall view of the research will be described briefly including the following.

The background to the research section will comprise of two parts: the conceptual background describing the underlying concepts for this research such as Information Technology (IT), Change and Resistance to Change and contextual background analyzing the context in which the research has been conducted, that is, the Sri Lankan Telecommunication Industry. Then the problem statement will be discussed which describes the research aim. In the objectives section, five objectives which this research aims to achieve eventually have been explained. How the research objectives are to be achieved has been discussed in the 'research questions section'. Finally, the methodology used in conducting the research is briefly described.

## **1.2 Background to the research**

In today's dynamic world, it would not be an overstatement to say that change is the only constant. Organizational change has become a fascinating area of study for many scholars and researchers and there are numerous definitions coined by them over the years. According to Senior and Fleming (2006, pg.35), "the winds of change blow variably and, to a degree, unpredictably". Nevertheless, they were able to identify four main triggers

for change, out of which, technological factors is one. They have further divided the technological factors into four sub categories as follows.

1. Information Technology/the Internet
2. New production processes
3. computerization of processes
4. Change in transportation technology

Further, Waddell *et al* (2000) also identifies technology as a contributor in bringing about change in organizations. However, as can be seen from Senior and Fleming's definition above, there are many types of technological change but, for the purpose of this study, the researcher is only interested in Information Technology (IT) related change.

According to the force-field analysis developed in 1960s by Lewin, there are two opposing forces of change, namely: driving forces and resisting forces (Senior & Fleming 2006, pg.287). Out of the two, what one should worry about the most is the resisting forces since their influence is negative on the change process.

Then again, one may want to clarify the meaning of IT in an organizational framework. It is argued that the term IT has no precise definition but rather an umbrella term (Zorkoczy and Heap, 1995). In another definition by Turban et al (2008 p.17), IT is described as "the collection of computer systems used by an organization which includes software, hardware, databases, networks and other electronic devices". Moreover, in this study, the type of IT being discussed is broader in meaning, that is, the researcher is interested in

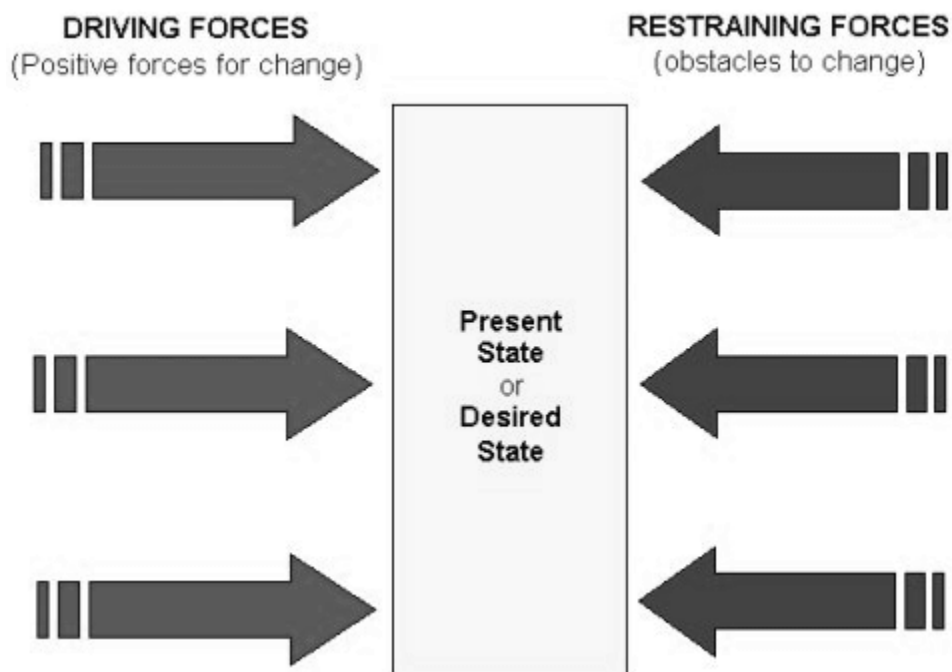
any type of IT that has been recently introduced to the organizations because it is also understood that across industries and organizations, the types and usage of IT could differ.

### **1.3 Conceptual background**

The evolution and the revolution brought about by Information Technology (which is also referred to as Information and Communication Technology (ICT)) opened up avenues for individuals and organizations to use limited resources in an effective and efficient manner. The exciting possibilities of utilizing time, information and people with the aid of IT popularized as well as increased its usage. Particularly in organizations where ‘time is money’ and information is vital to the day- to- day operations, IT provided a solution in which people and information were brought together.

In recent years Sri Lanka has also identified the importance of IT and the benefits that can be gained by it. The e-Sri Lanka initiative is an effort by the government to popularize IT in Sri Lanka. As the World Bank states “e-Sri Lanka is our first integrated e-Development programme in the world” (The Catalyst, 2006) Parallel to this programme, the government and the Information and Communication Technology Agency (ICTA) of Sri Lanka have launched “300 programmes, ranging from e-Society to e-Government” (Anon, 2006) which also includes e-Citizen, e-Leadership projects. The government also introduced an Act named Information and Communication Technology Act, No. 27 in 2003. It “provide for the setting out of a national policy on information and communication technology” for “both the public and private sectors” (ICT Act, 2003)

In addition to the above, this study also uses concepts borrowed from theories such as the Force Field Analysis of Lewin (Lewin, 1943) and the Technology Acceptance Model (TAM) by Fred Davis and Richard Bagozzi (Bagozzi *et al*, 1992; Davis *et al*, 1989). The Force Field Analysis as depicted below looks at two main forces influencing change: namely the driving forces and the restraining forces. The driving forces are positive or encouraging factors of change while restraining forces are what is known as the resistance to change.



**Figure 1. Kurt Lewin's Force Field Analysis**

(Source: McShane & von Glinow 2003, pg.479)

Out of the two forces discussed above, this research is interested in identifying the resisting factors of change where such forces are considered as a key challenge to organizations (Watson, 1971; Coch & French, 2008). In the literature review, based on



past research, such resistance factors were identified. These are discussed in sub-section 2.8.6.

The TAM introduced by Davis (1986) looks at why people accept or reject technology and has developed a model showing relationships between two key variables—perceived usefulness and perceived ease of use. Perceived usefulness relates to how a user evaluates new technology in terms of its usefulness or the ability of the technology to improve user’s job performance in the organization. Perceived ease of use describes the user’s understanding of the amount of effort he/she should put in to use the technology. These two variables will determine their attitude towards the technology, the behavioural intention to use the technology and the actual usage of the technology as a result of it (Davis, 1986 cited in Park et al., 2007). The TAM was used to identify factors which should be present in order for users to accept technology so that the researcher can investigate whether the absence of such factors will cause resistance.

Finally it should be mentioned that based on the information gathered from literature and with the use of the theories mentioned above, the researcher was able to develop a research model to be tested comprising of three components (Organizational, Individual and Technological factors) that is hypothesized as having a relationship with resistance to IT related change. The chapter on methodology discussed this model in detail and in addition the testing of the model appears in the data analysis and findings section towards the latter part of this report.

#### **1.4 Contextual background**

As mentioned under the conceptual background, IT related changes are abundantly seen in organizations of all types and size. The aim of this study is to apply the concepts mentioned under the conceptual background into the Sri Lankan Telecommunication sector to investigate the effects of IT related change on individuals and factors influencing resistance to change. Reasons for selecting the Sri Lankan Telecommunication industry will be further discussed below.

With the development of broadband telecom networks, use of Internet-based capabilities as well as the rapid increase of new entrants to the telecommunication industry has led to key improvement in telecom service provision organizations in Sri Lanka during the past few decades. The intense competition between various local and foreign telecom operators both public and private has significantly changed the Information and Communication Technology (ICT) infrastructure of Sri Lanka.

Statistics provided by the Telecommunication Regulatory Commission of Sri Lanka amply illustrate the above by stating that “in keeping with the above, drastic changes have taken place in the telecommunications sector since 1990s. The fixed access (both wire-line and WLL) telephone connections have risen from 121,388 in 1991 to 939,013 in 2003 – a growth of over 700%. The number of Wireless Local Loop (WLL) connections by the two operators; Suntel and Lanka Bell stood at 116,021 in 2003. The most significant trend in the local telecom sector has been the phenomenal growth of the number of cellular connections. It increased from a mere 1800 in 1991 to a staggering 1,393,403 in 2003. The overall tele-density which stood at around 3 to 4% a few years

back has increased to 12.2% in 2003.” (Telecommunication Regulatory Commission, 2004)

These changes were not possible without organizational level ICT infrastructure changes and in order to remain competitive, players in the telecommunication industry has and is still undergoing considerable amounts of IT related change on a regular basis. These may range from new systems development to IT acquisition, upgrading of existing systems etc.

Therefore, the telecom industry has been identified as suitable for this particular study where the effects of IT change, the resistance factor if any can be observed in abundance. Due to resource constraints and time availability, this was further narrowed down to Dialog Telekom Pvt. (Ltd).

Dialog Telekom Pvt. (Ltd.) is a subsidiary of the Axiata Group Berhad (Malaysia) with a market capitalisation valued at Rs. 102.61 billion (as at 30th September 2010) and a customer base of 5,949,114 Pre-paid and 767,082 Post-paid customers (Status as at 30th September 2010) (Dialog Corporate website, 2010). Industry reports state that Dialog Telekom dominates the telephony market “commanding a 46% share of SIM cards activated (6.373 million) and a 58% share of sub-industry revenue in 2009” (Equity Analytics, 2010). With such a market leadership position and an employee base of four thousand (as of April 2009) (Lanka Business Online, 2009), this company emerge as a suitable candidate to be considered for the sample selection. How the sample was selected is further explained under sub-sections 3.6.1 and 3.6.2.

## 1.5 Statement of the problem

It is alleged that “change is a constant reality in today’s workplace, causing substantial psychological stress within a workforce concerned about its livelihood and quality of life” (Wojtecki & Peters, 2000). In 1994, a study conducted among telecommunication workers in Queensland, Australia measured the relationship between job satisfaction and computer usage among other factors (Zeffane, 1994). The researchers’ interpretation of the results establishes the fact that none of the computer-usage characteristics had any significant negative effect on job satisfaction. In a similar research conducted by Salanova & Cifre (2004) on IT implementation and change it was discovered that employees faced with technology implementation for the first time show more positive attitude towards the change.

Contrary to the above findings Stam *et al.*, (2004) conducted a research to investigate the resistance to digital information and Information Technology among employees of a social service agency and found that,

“the employees at first appeared resistant to technology, and their more salient concerns were twofold: they were resisting the administration's treatment of them, in part because of other technology adoptions that they found inconvenient (e.g. requirements for carrying cellular phones), and in part because of a reported belief that their clients might not feel comfortable in the presence of the new technology.” (pg.10)

Therefore, within the context discussed under section 1.4 and also based on the above research findings, it is evident that any organizational change does not go without meeting some resistance and this could be held true for IT related change as well. According to De Silva (2010, personal communication., 10 May), at Dialog Telekom, a company wide technological change has taken place during the past six months where an Enterprise Resource Planning (EPR) system has been introduced. It was revealed to the researcher in an informal discussion with the above source that some of the employees are showing signs of anxiety and even a milder level of resistance to the change process that has taken place. If the literature discussed above is to be applied to Dialog Telekom, one could argue that there are telltale signs of resistance in the organization after the implementation of the new system and investigating possible reasons for their resistance may become useful to the decision makers in order to deal with resistance. Thus, the following problem statement was derived in conducting this research. Note that the following statement is a broader identification of the research problem even though the actual focus of the current research will be a case study on Dialog Telekom.

**“What are the organizational, technological and individual factors that will induce resistance to IT/IS related change Sri Lankan Telecommunication sector organization?”**

### **1.6 Research objectives and research questions**

Based on the problem statement mentioned in the previous section, the following research objectives and corresponding research questions can be formulated for the study of IT resistance factors at Dialog Telekom.

The first objective of the researcher would be to identify the environmental factors that would cause resistance to IT related change in the selected organization. The environment referred to here is the organizational environment and for the purpose of this research they will be identified as 'organizational factors'. This research objective can be addressed by answering the following research question.

***'What are the organizational factors causing resistance to change?'***

The second research objective is to study the personal characteristics of employees who will come directly into contact with the new IT implementations at the organization. To reach this objective, the researcher intends to find an answer to the following research question.

***'What are the individual factors causing resistance to change?'***

According to the literature, the technology that will be introduced to the organization is equally important in understanding its effects on individuals. Therefore, the third research objective would be to investigate technological aspects that influences resistance to IT change in telecommunication sector organizations. This can be done by answering the question below.

***'What are the technological factors causing resistance to change?'***

After the study of the three factors mentioned above, it would be useful to know which of the said factors have a stronger influence on the change management process. Therefore,

the fourth research objective is to identify the stronger influencers to resistance by answering the following question.

***‘Which factors have the strongest influence on the change process?’***

The final objective of the researcher is to provide practical recommendations that would be of use to both employees and employers alike when managing IT related change. The following research question will address this final objective.

***‘How can the resistance be minimized in this organization?’***

### **1.7 Significance of the study**

The significance of the study is seen as two folds. One is the theoretical significance and the other is the practical significance of the research. They are being separately discussed below.

### **1.8 Theoretical significance**

The main purpose of this study is to identify the factors influencing resistance to IT related change in the telecommunication. By understanding the nature of the above stated association, the researcher can come up with a framework to overcome organizational as well as behavioral issues towards IT induced change that might hinder various organizational aspects such as the productivity of an organization, employee job satisfaction and motivation etc.

Moreover, suitable IT diffusion strategies can be explored so as to manage change efficiently and effectively. The framework may be of use to practicing managers as well

as for the employees to identify how negative effects can be minimized and enhance positive effects while enabling them to take necessary precautions to manage employees in IT enabled environment. This study may also help reduce the knowledge gap regarding IT related change, employee behavior and organizational productivity.

Also, to develop the above mentioned theoretical model to be tested, theories/models such as the Technology Acceptance Model, the Force field Analysis etc. has been used in combination. As a byproduct, the usefulness, applicability and validity of the said theories has also been tested which would be an added benefit to future researchers.

### **1.9 Practical significance**

Moreover, educators can use this research to highlight the importance of studying the diffusion and adaptation of IT in organizations and thus develop programs to cope with the changes brought about by IT. This knowledge can be passed on to students who will become future employers and employees in workplaces with the intention that they will know how to handle IT in the best interest of employees and the organization. Specifically, the study will benefit those who will be employed in the Telecommunication industry and for the managers and decision makers of such organizations. Moreover the findings of this study can also be used in proper planning of IT investments in organizations more effectively and efficiently by lining them with employee's needs.

IT and the impact it has on employees is an important issue in today's organizations, the significance of the study is apparent.



## **1.10 Research methodology**

A brief overview of the research methodology that was used to achieve the outcomes mentioned above are discussed under this section.

### **1.10.1 Research strategy**

The research strategy used in this research is the deductive reasoning where logics of a theory can be used to generate prepositions or hypotheses to be tested.

### **1.10.2 Time horizon**

A cross-sectional method was used due to limited time available. This will represent a snapshot of one point in time when the research has been conducted.

### **1.10.3 Sampling**

Considering the competitors in the telecommunication industry, it was noted that Dialog Telekom holds the topmost position compared to other telecommunication operators in the industry (Equity Analytics, 2010). Thus, it was selected as the organization from which to collect data. According to De Silva (2010, personal communication, 10 May), it is in the head office branch that most of the IT related changes takes place. A recent example is the introduction of an Enterprise Resource Planning (ERP) system at the head office branch (De Silva 2010, personal communication, 10 May). Therefore, the scope of the research was narrowed down to the head office branch. Thus, for the purpose of the study, the company Dialog Telekom was considered as the population from which a sample of 217 was selected using simple random sampling. Further details of how the final sample was selected are discussed in detail in the methodology section.

#### **1.10.4 Data collection**

A survey was considered more appropriate for descriptive research studies such as this one and since large samples with low response rates are being used, this method accommodates “variables that exist or have already occurred are selected and observed” (Kothari, 2002). Even though the researcher has selected a single organization for the study and hence limits the research to a case study, it has been proven by scholars that integrating case study and survey research method (using a multi-method approach) is valid in Information Systems research (Gable, 2010).

Quantitative data was gathered as primary data using a questionnaire as the data collection tool since it is suitable for large scale inquiries, saves cost and poses no threat of interviewer bias (Kothari 2002, pg. 118-125).

The questionnaire consisted of five sections. Section one was to gather demographic data and to inquire from the respondents the organizational level they belonged to and the level of IT knowledge they have. This section contains variables measured through Ratio, Ordinal, Nominal and Dichotomous scale (Bryman & Bell 2007, pg.357). Section two looks at individual factors leading to resistance. Twelve variables were tested using a five point Lykert scale ranging from ‘strongly disagree’ to ‘strongly agree’. Section three tested thirteen variables falling into the category of ‘organizational factors’ and the measurement scale is as same as in the above section. Section 4 was on technological factors influencing resistance and in this section; five variables were tested using the

same five point Lykart scale. The final and the fifth section was measuring resistance as the main variable and uses a Nominal scale.

Limitations were noticed in using the questionnaire as the data collection tool since it took longer to receive responses to the questionnaires than initially estimated. Some of the questionnaires were rejected due to incompleteness and lack of accuracy. Questionnaires were e-mailed to some respondents and others were given a printed copy.

#### **1.10.5 Data analysis techniques**

To analyze the primary data that has been gathered, statistical software (SPSS v.17) was used. Descriptive statistics were obtained to explain the demographic variables while cross-tabulation was used to see associations between demographic variables. After satisfying that the data gathered is valid by using Chronbach's alpha value, correlation was used as a means of measuring the relationships between the main variables. Spearman's correlation was deemed appropriate since it could be used for non-parametric measures; do not require the assumption that the relationship between the variables is linear etc. The justification of the data analysis techniques used in discussed in detail in Chapter 3, section 3.7.

## **1.11 Conclusion**

Based on the concepts mentioned under conceptual background and in the context of the Sri Lankan Telecommunication Industry, the research was conducted to test the validity of the research questions using the above mentioned methodology. The results/findings of the overall research are discussed in a later chapter.

## **CHAPTER 02: LITERATURE REVIEW**

### **2.1 Introduction**

In order to identify research gaps, to understand the conceptual and contextual background, to formulate the research questions and to analyze the research question from different viewpoints, a literature survey was conducted. This literature survey consists of research findings and critique on IT in organizations, impact of IT on organizations, changing nature of IT, employees attitude towards IT related changes, acceptance/resistance factors, Etc. Theories such as the Technology Acceptance Model (TAM) and the Force Field Analysis by Lewin was used as the theoretical foundation in this research which are explained in detail in the literature review section.

### **2.2 IT in organizations**

As a result of the industrial revolution, mechanizations and automation took over organizations in order to replace manual, repetitive work earlier performed by individuals. The trend continued as the business environment changed rapidly and as organizations realized the economic benefit of technology. According to Krell (2000, pg. 9-10)

“one of the main forces for change in today's environment is the rapid development, dissemination and adoption of new technology. The result of rapid technological change is that the social and economic environments also change at an ever-increasing rate. Indeed, many of these changes take place at a rate faster than many individuals or organizations can adequately tolerate.”

It is evident that new technology has not been a silent invader in organizations but had contributed towards changes in the social environment as well. Early researchers were interested in studying the social impact of technology, particularly IT, since technology was seen as a key contributor towards “complex organizational change” (Yogesh 1993, pg.3). Unfortunately, it is stated that "the literature on IT and organizational change does not currently support reliable generalizations about the relationships between IT and organizational change (Markus & Robey 1988, pg.583)

When discussing IT and related change, it is important to understand this broader term and clarify what it means in an organizational context. There are many interpretations and viewpoints on what could be considered as IT in an organization. According to one such argument IT is being considered as “comprising of five basic components - computers, communications technology, work stations, robotics, and computer chips” (Yogesh, 1993) Another interpretation of the term IT classifies it into two classes: namely Type One and Type Two. Type One technologies include single-user hardware (e.g., microcomputers, laptops, portable terminals) and software (e.g., word processing, spreadsheets) while Type Two technologies include for example stand-alone Computer Aided Design (CAD) drawing systems, E-mail, voice mail etc. (Fichman 1992, pg.10)

### **2.3 Why invest in IT?**

Keeping in mind such definitions of IT as discussed above, it is also important to understand why managers are keen on investing in IT even when such decisions might be associated with “revolutionary effects on organizational life”. (Eason, 2001). One of the key reasons why IT is much sought after in organizations is because of the way it is

changing the competitive nature of organizations both within the ICT sector and outside of it (Keil *et al*, 2001; Stratopoulos & Dehning, 2000). In addition, there are many other benefits brought about by ICT. For instance, Todd (no date) states that "A wide range of new technologies have given businesses access to faster communication, increased efficiencies, and the ability to work away from the office, New technology has opened a door of opportunities for companies and employees willing to explore non-traditional work arrangements".

It could be said that with the changing nature of the workforce and organizations combined with the reducing cost of technology has enabled flexibility in terms of work relations (e.g. tele-commuting, network organizations), new business models (E-commerce [Electronic Commerce] and internet based businesses) in the business environment. Especially with regards to developments in the telecommunication sector, a concept known as the law of telecosm has been coined where the distance between individuals and organizations has reduces to such an extent due to ICT that the distance no longer matters. Standardization of technology has also benefited industries such as "information technology, telecommunication, media share technological bases and platforms." (Keil *et al* 2001, pg.4)

#### **2.4 Organizational change and theories on change**

In a recent study, Brisson-Banks (2009) has selected a number of change management theories and have discussed them in detail to evaluate the nature of the theories and their contributions. On the top of the list was the Force Field analysis model of Kurt Lewin's (1951) which is one of the key theories used in developing the research model of this

research. Lewin identifies two types of forces that are involved when change is considered in an organization. They are called the 'driving forces' and 'restraining forces', those that encourage change and those that discourage change respectively. (McShane & Von Glinow, 2003). This is an important theory compared to the others that will be discussed later since it is the one theory that has looked in the driving and restraining forces. Lewin argues that equilibrium will occur when the two forces are equal. When the driving forces are stronger than the resistance forces, there will emerge a need for change. According to the theorist, what an organization should worry about is if there happens to be more restraining forces than driving forces, how to overcome them.

Beckhard (1969) (cited in Brisson-Banks, 2009) introduced a theory on organizational change which implies that change should be a goal directed activity with an end result in mind. Once a set of goals have been identified, one has to see where they are compared to where they want to be and then determine how an organization should 'change' in order to achieve the desired future state. To put this into action, one has to have a road map. These were identified as the key stages in Beckhard (1969) model and it can be seen that the model has not considered forces for and against change as has been done by Lewin.

In a similar vein, Thurley (1979) (cited in Brisson-Banks, 2009), "recognize need for change, see which of the strategies (Directive, bargained, hearts and minds, analytical and action-based) best suited the situation and use it to introduce change" (pg.6). What is meant by 'directive' is to taking the initiative for change in a crisis situation, whereas 'bargained' implies that employees and employers have to reach a compromise if they are to see through the change process. 'Hearts and minds' mean an attempt to change the



attitudes of employees in a positive perspective to willingly embrace change while ‘analytical’ and ‘action based’ describes change as a theoretical as well as a practical endeavor. Once again, this theory also advises on how best to implement change and does not recognize resistance as a key component of change.

The fourth theory on change by Bridges (1991) (cited in Brisson-Banks, 2009) discuss three stages of change; namely the ending phase, neutral zone, new beginnings. Ending phase is to do with parting with the old systems when embracing new change and neutral zone is to do with new environment once the change has been introduced. The third stage which is about ‘new beginnings’ describes how the change that has been implemented would be adjusted and absorbed by the environment. This model is slightly different to that of the others discussed above since it discusses not only the environment before but also the environment after change. However, acceptance or resistance of change is not included.

The last change theory to be discussed under this section is by Kotter (2007). As discussed by Armstrong (2006) in his paper, Kotter introduces an eight stage model of change. The eight stages include; establishing a sense of urgency, forming a powerful guiding coalition, creating a vision, communicating the vision, empowering others to act on the vision, planning for and creating short-term wins, consolidating improvements and producing still more change, institutionalizing new approaches. These stages are self-explanatory and describe good practices that should be adopted when introducing change such as ‘empowerment’ and ‘communication’. This is a comprehensive model that covers the change management process from start to finish. However, similar to the other

theories discussed (except the model by Lewin), this too does not include any insights into acceptance and resistance. This justifies the researchers' choice of Lewin's Force Field analysis as a base theory for this research.

## 2.5 IT related change

Change of any nature, causes a certain amount of disturbance in an organizations. Individuals are creatures of habit and prefer living in comfort zones. When the tranquility of their comfort zones are being disturbed, often than not, there will be unrest and confusion. It is argued that it is not the technology that creates change in organizations but the "choice of technology" and how it is implemented in organizations (Olson, 1982).

However, what is worthwhile noting is that ICT is "an exogenous force with the ability to determine organizational change" (Constantinides & Barrett 2006, pg. 78)

There is research evidence to indicate that change could be discussed both in a positive and negative perspective as can be seen from the diagram below (This has been discussed further in subsection 2.8.1 and 2.8.2 )

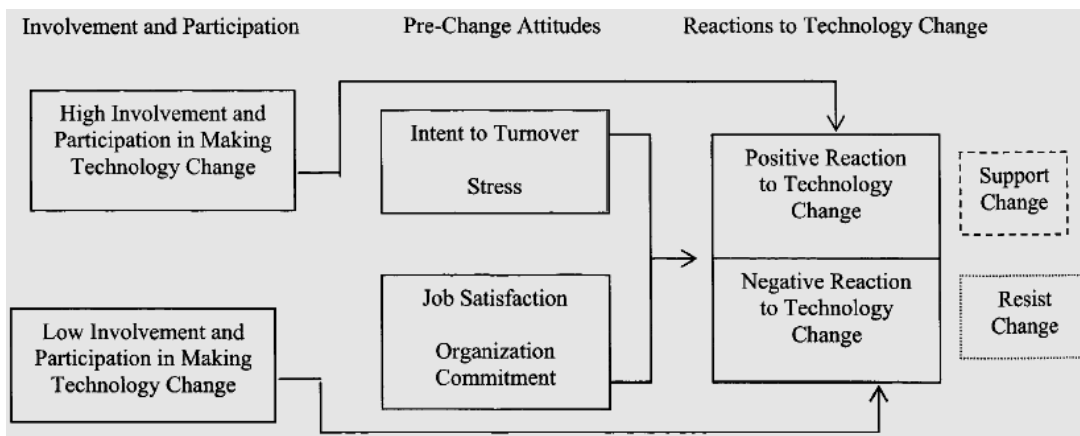


Figure 2. Employee Attitudes, Involvement and Reactions to Technology Change

(Source: Schraeder et al, 2006)

It could be seen from the above diagram that there is a relationship between the level of involvement in the change process and the reaction to technology change. When the involvement is high, a positive reaction or support for change is observed and vice versa. If the change is accepted and supported, it would be considered as a smooth and successful process of implementation, but unfortunately in IT implementations, resistance is an expected variable (Keen 1981) and even though the degree of resistance might vary, individuals do generally resist, especially when it is considered unfavorable (Joshi, 1991). Nevertheless, even at the face of resistance and risk of failure, IT related change is inevitable as it claimed to help survive the hostile competition of organizational environment (Cooper, 2000) Understanding the dynamics of techno-change and managing it well (Markus, 2004) as well as knowing how to successfully integrate IT into an organizations business processes will undoubtedly add value to a company (Stratopoulos & Dehning, 2000). Thus, in the recommendations section of this research, the researcher aims to investigate and suggest successful IT change management techniques based on past literature.

## **2.6 Telecom industry and IT**

There exists a close relationship between telecommunication industry and IT in such a way that it is argued "the development of telecommunication industry is based on the progress of telecommunication technology, and the telecommunication technology take an extremely important role in the process of the development of telecommunication industry." (Bo *et al*, 2008). The main reason for this association is the continuous developments in the IT industry itself which has been providing technologies to the

telecommunication industry such as “operating systems, distributed computing environments, middleware, user-interface technologies, server-side facilities and services, languages, and software development methodologies.” (Brandau *et al*, 1999)

Since the context in which this research was conducted is in the telecommunication industry, it is important to understand the use of IT in this particular industry. The usage of IT can vary from business to business and from organization to organization, thereby defining IT in many ways than one depending on the afore mentioned variables. These varying definitions of IT in the telecommunication industry have made it difficult to compare results of IT usage in organizations. For instance, some studies only include management information systems, external services, and personal computing while others use a broader definition to include IT such as electronic mail, telephones, facsimile, and reproduction machines (Weill & Olson, 1989). However, the users of IT in the telecom industry may have a different view point on the subject. According to a study, the interviewees defined IT as “include everything” (Weill & Olson, 1989) meaning that their organization is a highly IT induced one where IT is being used almost everywhere.

In conclusion of this section, it ought to be mentioned that scholars believe the telecommunications to be a part of the information industry. Not Therefore, only the changes in the IT sector but also the rapid changes in the information industry can undoubtedly have an impact across organizations in the telecommunications industry (Brandau *et al*, 1999).

## **2.7 Organizational stakeholders and IT change**

There is evidence from the past where heavy investments on IT related change has ended up in financial losses to the organization failing to bring about the desired change. Management can come up with apparently sensible ideas for the long term survival of the organization and decide on buying and installing the latest IT infrastructure. However, there is another side to the story, often ignored or overlooked. Regardless of the cost, the size, complexity of IT that is being introduced into the organization, it is ultimately the use that is has been put into which makes it a success or failure. Then, who is responsible for putting it to use? The end users will be burdened with the task of utilizing the IT that has been introduced and to contribute towards enhancing the productivity. Without the proper use of computer systems, one cannot expect organizational performance to increase and for it to be used successfully, the contribution of HR to organizational change processes is essential. (Doorewaard & Benschop 2003, pg.274)

However, when studying organizational changes (IT related or otherwise), there appear two types of forces: namely driving forces and restraining forces as described by Lewin in his force-field analysis of change (McShane & Von Glinow, 2003). Driving forces are those that encourage change or create urgency for change while restraining forces are those that discourage change. It is believed that "resistance to end-user systems by managers and professionals is a widespread problem. To better predict, explain, and increase user acceptance, we need to better understand why people accept or reject computers" Davis (1989, pg.9). End-user resistance can be further elaborated based who we mean by users. According to Martinko *et al* (1996), the main reason why IT projects fail without achieving the intended objectives is due to the people involved. 'People' are

defined as users, clients, managers etc. and the failures are attributed to their resistance. In another research, the term is broadly used to include stakeholders who are directly being affected by IT change and it further states that “new uses of IT, however, have the potential for big improvements in organizational performance – and the potential for all kinds of havoc and disruption for employees, customers, and other stakeholders.” (Markus 2004, pg. 4-5). However, for the purpose of this research, we are only focusing on the impact of IT related change on organizational employees and reasons behind their acceptance/resistance to IT change.

Based on the above discussion, understanding why ‘people’ or end-users resist IT related change is a question worth asking since the margin of success or failure relies considerably on how well the users adapt to the change and utilizes it in an effective and efficient manner. The expectations of IT related change processes are often high as decision makers often associate IT implementations with increased productivity and success. Once again there are two sides to this argument from the view point of the executives and that of the IT specialists. McDonagh and Coghlan (2000 pg.298) argues that “executives assuming an economic focus and IT specialists assuming a technical focus” in their perspective towards IT related change. Often, these two viewpoints are seen causing conflicts between executives and IT specialists when the expected results are not achieved in the end. One of the main reasons for such clashes is misunderstanding of the user requirements. This could be attributed to the failure of communication between IT staff and end-users (Doorewaard & Benschop, 2003 pg274). Sheedy (2008, pg.1) gives sound advice not only to the IT executives but also to organizational decision makers when he says, "focus on the people, not the technology, to ensure success".

There are dozens and dozens of reasons as to why people resist change and some of the reasons are later discussed in section 2.8.6. Nevertheless, to conclude this section with a few of them, Martinsons and Chong (1999, pg.124) states “even a good technical system may be sabotaged if it is perceived to interfere with an established social network. Thus a good understanding of the intended end-users, their tasks, and the interdependencies between the two is a likely prerequisite for IS success.” Further, Gefen and Straub (1997, pg.389) points out that gender has not been considered in IT related change and advice to consider this in IT diffusion models. The researchers also point out that culture might also be related to IT related change and resistance. Therefore, organizational culture and IT change is being discussed in details in the next section (2.7).

## **2.8 Relationship between organizational culture, structure and IT change**

Culture of an organization is a unique characteristic, which differs greatly from one organization to another even within the same industry. Cultures in organizations are formed based on “basic patterns of shared assumptions, values, and beliefs considered to be the correct way of thinking about and acting on problems and opportunities facing the organization” (McShane & Von Glinow, 2003).

Culture of an organization plays a critical role in the IT change management process and according to Dasgupta (n.d.), “The culture of an organization influences the start of the diffusion process and as new technologies are adopted and diffused, the task environment, formalization, and centralization in the organization will change and the culture will change with it.” It is apparent from the above statement that not only does the

culture influences the change process but also with it, changes the organizations structure as well.

Number of studies has been conducted to explore the relationship between IT adaptation and its impact on structural changes in organizations. In one such study, two organizations were studied where two systems were implemented and it was observed new technology changes has changed aspects of ‘organizing labor’ the hierarchy of the organization (Schwarz, 2002). This notion is further strengthened by Leavitt and Whisler (1958 cited in Markus & Robey, 1988) when they argue that “Information Technology would alter dramatically the shape of organizations and the nature of managerial jobs. Organizations would recentralize, levels of middle management would disappear, and top management elite would emerge”. There is a counter argument made by Simon (1977 cited in Markus & Robey, 1988) stating that “computers would not change the basic hierarchical nature of organizations, but would recentralize decision making. Line organizational structures would shrink in size, and the number of levels would decrease. Staff departments would increase in number and size, making structures more complex and requiring more lateral interaction.” However, there exist different types of organizational structure (e.g.: Divisional, Functional, Matrix, Network etc) and cultures (Collective, uncertainty-avoidance, bureaucratic etc.). Depending on such attributes, the success/failure of IT change implementations and acceptance/resistance to IT change could depend. Landles (1987) states that “more bureaucratic structures will be more successful in adopting change” because the centralized decision making, rigid rules and regulations, command and control type of management practices will rather forcibly



introduce change to the users leaving them with little choice but to accept, in some cases rather against their better judgment.

In conclusion it could be said that the effects of IT change on the culture and the hierarchy/structure of an organization is contributing towards resistance to IT change since in some cases it creates a sense of insecurity, loss of status, dislodge people from their comfort zones etc. However, in today's organizations, 'telecommuting', 'network organizations' are popular terms which has been the favorable result of cultural and structural changes brought about by IT replacing the traditional tall organizational hierarchies and secure, collective cultures . Both the said terms came into use with the spread of IT and telecommunication networks across the globe. ICT has reduced the distance between people and organizations and has come to a state where distance no longer matters. Olson (1982) argues "office automation permits many office workers to be potential "telecommuters" or "remote office workers" in that their work can be performed at a remote site with the support of computer and communications technology." Therefore, one could safely surmise by considering the above arguments and supporting literature that IT changes and its effect on organizational culture and structure has mix results, both favorable and otherwise.

## **2.9 Effects of technological change**

In the previous section, it was apparent that there are both favorable and unfavorable effects of IT related change on two aspects of an organization. In this section, this is

further explored to include positive and negative effects of technological change of all manners in organizations.

### **2.9.1 Positive impact**

Speaking in economic terms, ICT has contributed its share towards productivity growth of organizations and in return boosting economic growth. In US alone, during the period 1980-2004, ICT –specific technological change has increased the productivity growth by about 0.73% (Martinez *et al*, 2009). Looking at the positive impact of ICT related change in a different angle, one could take the aspect of communication within organizations and how it has been improved over the years. This positive impact can be seen at departmental level improving inter-departmental relations “and increased accessibility of experts within an organization as a result” (Olson, 1982) as a result of electronic communications" Olson (1982). Not only does it boast about improved communication but also of “augment the human capacity to process information" (Englebart, 1995)

Discussing further the positive impact of IT change, the impact of technology on employees and their skill levels are often criticized as demanding the workers to improve and learn new skills to deal with the new technologies. However, Bauer and Bender (2004) argues in their research that “jobs that employ the newest technology and flexible workplace systems are only created for skilled workers leaving employment of unskilled workers unaffected” while “new information technologies seem to increase churning rates among skilled workers and professionals and engineers."

### **2.9.2. Negative impact**

Unfortunately, there are more opposing research findings that contradict the above notion that skill levels of employees are not much affected by ICT changes. For instance, Badescua and Ayerbe (2009) argues that to gain the maximum use out of IT, skills related to the use of new technology should be acquired and it is essential that workers have multiple skills. Further, it is argued that the absence of such skills will lead to “negative, short-term consequences when employees do not have the skills to use high technology.” (Badescua & Ayerbe, 2009). A similar view is voiced by Krell (2000, pg. 10) and further states that some of the skills required ought to be in specialized areas while being flexible enough at the same time so that the organization can use the same workers for multiple tasks.

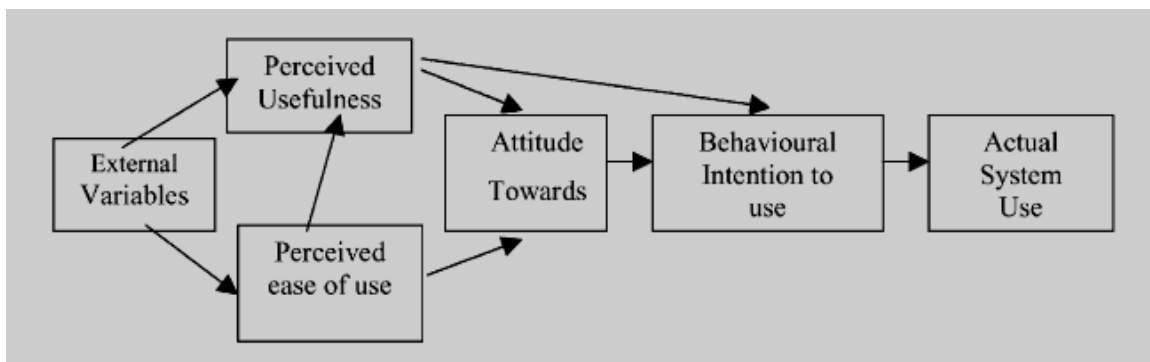
Such changes in the workplace are not often welcomed by employees and to add to this, in some instances where computers were used to automate work replacing the human labor has resulted in “throwing large numbers of secretaries, clerks and even managers and professionals out of work ” (Eason, 2001). Further, in some instances, ICT was being used to monitor employees and control work causing “widespread dissatisfaction and alienation (Braverman, 1974 cited in Eason 2001) which could be identified as a possible cause of resistance to IT. In addition to the above mentioned, it also effected “social organization of work, access to resources, formal and informal organizational structures, and bureaucratic control patterns.” (Stal *et al*, 2004; Davidson 2006, pg. 36).

What is evident from the above analysis is that the implementation and use of IT or in other words ICT related change will have different effects on organizational stakeholders

who are either directly or indirectly involved in the change process. Ample evidence and examples to testify this argument is being discussed in the study conducted by Constantinides and Barrett (2006, pg.78) where the implementation of electronic trading in the London Insurance Market was studied to reveal how the introduction of ICT changes affected the different stakeholder groups (i.e., market leaders, brokers and underwriters, multinational brokers).

### 2.9.3 Technology acceptance model (TAM)

Researchers interested in identifying the factors that determines acceptance of technology aimed at grouping together such factors into a model and such an accepted model was put forward by Fred Davis in 1985 naming it the Technology Acceptance Model (TAM). The original version of the model is depicted below.



**Figure 3. The original Technology Acceptance Model (TAM)**

(Source: Legrisa et al, 2003 pg.193)

As can be seen, there are four main factors (perceived usefulness, perceived ease of use, attitude towards technology, the purpose for which the technology has been used for /behavioral intension to use) grouped together. According to Davis (1993), out of the four

main variables mentioned above, it was identified that perceived usefulness, perceived ease of use has a strong positive impact on the user acceptance when a study was conducted among 112 users with regards to two end user systems.

However, there are criticisms to the TAM and to a variety of more recent extensions of the model. Stal *et al* (2004) states that “resistance to the technology-driven change that we encountered had effectively no relation to the character or capabilities of the technology itself” which questions the validity of the TAM and its practicality in understanding technology acceptance factors. Further to this argument, the model is also criticized in one instance for not including gender as a significant variable. (Gefen & Straub, 1997 pg. 390)

#### **2.9.4 Factors effecting technology acceptance**

Based on past research conducted on technology acceptance, the following factors were identified as motivators in user acceptance of IT and related change.

**Table 1. Factors effecting Technology acceptance**

<b>Key</b>	<b>Technology Acceptance Factor</b>	<b>Related research paper/s</b>	<b>Summary Description</b>
A1	Usability	Bailey and Pearson (1983)	In this study, 38 factors were identified as affecting information system satisfaction and acceptance of IT/IS. Among them are factors such as Convenience of access, Reliability, Flexibility of systems, Feeling of control, Error recovery Etc was identified.
		Al-Gahtani and King (1999, Pg289)	Identified ease of use, as important in determining user attitude towards IT and related change.
A2	Usefulness of IT	Davis (1989)	A longitudinal study of 107 users reveled that “perceived usefulness is a major determinant of people's intentions to use computers.” This study further argues that even though usability of IT/IS is important (as mentioned in A1 above), what is even more critical in user acceptance is the usefulness of the system and that it should not be over- looked, because “Users may be willing to tolerate a difficult interface in order to access functionality that is very important, while no amount of ease of use will be able to compensate for a system that doesn't do a useful task.”
		Al-Gahtani and King (1999, Pg289)	Identified relative advantage offered by IT/IS as important in determining user attitude towards IT and related change
A3	Locus of Control	Martinko <i>et al</i> (1996)	Locus of control can be described as “a personality trait referring to the extent to which people believe events are within their control”

			<p>(McShane &amp; Von Glinow) and those with internal locus of control will feel very much in charge of the situation while others with external locus of control will think that events in their life are due to fate and luck.</p> <p>Based on this understanding of locus of control, it is argued that when individuals have more internal locus of control, they tend to show more positive attitudes towards computers "than subjects with an external locus of control."</p>
A4	Curious about new IT developments	Huff and Munro (1985)	It is said that "A substantial number of people who work with information technology are curious about new developments, and take it upon themselves to read about them - often outside of regular working hours." This might lead to a positive understanding of IT/IS and its usage in organizations and might be helpful in IT change management since such employees may take the initiative in readily accepting such change instead of resisting.
A5	Improved productivity and profits	Joshi and Sauter (1991)	Employees understanding of technology could convince them of the usefulness of IT in terms of improving individual and organizational productivity. In other words, "employees realize that there is likely to be an increase in productivity and profits due to computerization. Therefore, one of the conditions that employees have persistently advanced for accepting computer systems is that their salary scales and job classifications should be upgraded."
A6	Senior leadership who accepts change fast	Sawyer and Southwick (2002)	Different levels of the organization's hierarchy may accept IT change at different rates. Some will readily accept such as the senior leadership

			whereas the workers who are directly affected by such changes may accept change less willingly and more slowly. But the example that is being set by the top management in embracing IT change willingly might discourage lower level employees from resisting and rejecting such changes.
A7	Colleague's opinion	Kim and Kankanhalli (2009)	It was identified that in some instances, succumbing to peer pressure, their opinion etc. people tend to like (or even dislike) IT and related change.
A8	Perceived value	Kim and Kankanhalli (2009)	As part of the TAM discussed above, perceived value of the technology also act as a determining factor of IT acceptance. i.e. the usefulness of the technology in organizational work, its ability to improve productivity etc.
A9	Switching cost	Kim and Kankanhalli (2009)	When new technology or IT systems are being introduced, an encouraging (or discouraging) factor is the direct cost or switching cost from previous systems to the new one. Also, the return on investment or the benefits gained for the costs incurred is also used in accepting technology.
A10	Organizational support	Kim and Kankanhalli (2009)	During technology change in organizations, those who are directly affected by the change will need organizational support in terms of training to get accustomed with the new technology, management and leadership guidance, stress management etc. If the organizational support is high, the users or those affected by the change will show a more favorable attitude towards change.
A11	Enjoyment in using the technology	Al-Gahtani and King (1999)	In some cases, it is identified that if the new technology offers satisfactions and enjoyment to the users rather than stressing them out,



			the satisfaction gained in using the new technology will positively affect the user acceptance of the technology change.
--	--	--	--

(Source: Compiled by researcher based on literature)

### **2.9.5 How people resist IT**

Moving the discussion now towards the resistance to IT and related change, it came to notice when reading through the literature that people display resistance to IT change in many ways. According to Egan and Fjermestad (2005, pg.1), "... the natural human response to change is resistance. People become attached to familiar ways of doing things, even ways they initially regarded as cumbersome, costly, or ineffective. ...In essence, life is a series of attempts to resist change, sometimes to incorporate a change that can't be opposed, and then to resist any new changes."

It was noticed that some of these are extreme demonstrations of resistance. For instance, in one study it was identified that people display resistance to the introduction of computers by "active sabotage (i.e. destruction of hardware), oral defamation, complaints of inability to use the computers, and refusals to use the computers." (Davidson & Walley, 1985).

In addition to the above forms of showing resistance, individuals communicate their resistance through 'stress', 'dissatisfaction' (Rafaeli, 1986), 'anxiety', 'attitudes' (Igbaria & Parasuraman, 1989), and 'apprehension' (Meyer & Goes, 1988) or uneasiness.

Timmons (2003) conducted a study in the UK National Health Service (NHS) hospitals to study the resistance to a newly implemented computer system and found out that even though people resisted, it did not prevent the new system being implemented. Nevertheless, the resistance continued and in many forms it was shown to the management. For instance, minimizing or 'putting off' the use of the system, criticizing the system and in some rare, severe cases, refusal to use the system. There is also evidence to show that in some instances, people use passive resistance to show their dislike towards an IT related change. One again, a study conducted in a hospital after a system was introduced, it was noted that "resistance behaviors initially consisted mostly of apathy and lack of interest, they later became more aggressive." (Lapointe & Rivard, 2005) and similarly Davidson and Walley (1985) discovered another form of passive resistance i.e. not attending computer training classes that was introduced to help users get accustomed to the new system.

However, the conclusion that could be derived from analyzing how people resist IT related change is that regardless of how people show resistance, the effects of it on the organization will not be positive and it will not help in getting the expected outcomes for the organization either (Nov & Ye, 2008) . Therefore, it is important to identify the causes for resistance so that it can be minimized before it could disrupt the change management process.

### **2.9.6 Factors effecting resistance to IT**

As mentioned in the concluding paragraph above, the importance of understanding resistance to IT related change is apparent. Therefore, in this section, a summary is being

given on factors effecting resistance to IT change as identified through previous research studies.

Table 2. Factors identified as having a negative influence on (resistance) IT related change

Key	Resistant Factor	Explanation	Evidence from the literature
R1	Culture	Organizations with a strong culture resists change which is related to the adaptation of new Information Technology	Dasgupta (n.d.) Cooper (2000)
R2	Change in workload	User's reaction to a computer system is explained in Kaplan and Duchon (1988) research as assessed by their change in workload. If the new system increases an individual's workload, it is likely that such a system is rejected or resisted by users.  In Joshi and Sauter (1991), India's public sector banking employees were observed disliking a new system when it required for the employees additional inputs in the form of learning and understanding new technology which they perceive as increasing their current workload.	Kaplan and Duchon (1988)  Joshi and Sauter (1991)  Lapointe and Rivard (2005)  Bagranoff <i>et al</i> (2002)
R3	Loss of promotion	Fear of the loss of advancement opportunities and promotions due to new IT implementation which might flatten and delayer the organization (Thinned-out organization)	Egan and Fjermestad (2005)  Joshi and Sauter (1991)
R4	New IT/Technology not meeting the users requirements	New technology is expected to improve the current situation and to assist users in their work. But if the new system fails to meet their requirements, the results would inevitably be resistance. As Hales (1991) argues, system development should be more 'human-centered' rather than being 'technology centered', because it is the users that "deliver value, define expectations, requirements and systems characteristics"	Landles (1987)  Hales (1991)  Bagranoff <i>et al</i> (2002)
R5	Fear of redundancy	Fear of losing one's position/job due to the introduction of new technology	Landles (1987)  Joshi (1991)

R6	Need for security/certainty	During times of change, people undergo a period of uncertainty and insecurity. This feeling of insecurity is not only about losing the job as previously mentioned, but also about whether they can come with the new technology.	Landles (1987) Curtis and White (2002)
R7	Need for good relationships	Another fear people have of IT related change is that it might disrupt their existing organizational relationships. If a new system threatens to disrupt good relationships, people might display resistance to such systems.	Landles (1987)
R8	Self esteem	A person with self-esteem demands respect and recognition from the organization. In some cases, new technologies might alter a person's job and its status which will damage his/her self-respect or the respect others have for the person. This personal loss could therefore act as a strong resistance factor.	Landles (1987) Timmons (2003) Lapointe and Rivard (2005)
R9	Job satisfaction	It is argued by Landles (1987) that "A technological change like computerization can greatly simplify a person's job and rob them of much of its satisfaction"	Landles (1987)
R10	(Negative) attitude/Perception	Some individuals may have a negative perception or attitude towards computers; IT and technology due to lack of knowledge, trust in the organization etc. which will prevent them from willingly accept a new technology/system.	Landles (1987) Schwarz and Watson (2005)
R11	Changing Norms	Introduction of an IT related change will inevitably change many aspects of the organization ranging from the culture, structure, people etc. This may be true for the existing norms and standards of the organizations as well. When such established norms and standards are being change in an organization, those directly affected by it will resist.	Landles (1987)
R12	Poor system design	poor system designs may include unsatisfactory "functionality, interface designs, modes of presentation, accessibility of work stations, inadequate response times, etc." (Markus, 1983)	Markus (1983) Malato and Kim (2004) Marakas and Hornik (1996)

			Lapointe and Rivard (2006)
R13	Own failure	<p>For example, a user of a new IT system who finds it difficult to master the new system “may attribute failure to the difficulty of using the technology and more likely to attribute his or her own failure to the system itself”</p> <p>Some individuals are also known to be technophobic who are by birth I fear of technology. Such people might fail at using a new technology faster than others.</p>	<p>Martinko <i>et al</i> (1996)</p> <p>Timmons (2003)</p> <p>Wargin and Dobiey (2001)</p>
R14	Accessibility	<p>When one has to rely more on a new technology that has been introduced, how easily and faster it can be accessed is important since the users are depending on the technology to perform required work tasks. If the new technology is inaccessible or consumes considerable time to do so, users will soon get tired with long waiting periods and the wastage of time.</p>	Martinko <i>et al</i> (1996)
R15	Negative prior experience	<p>Another important factor why people resist IT related change is previous negative experiences they may have had with information technologies. This makes them biased towards all technologies and creates in them a sense of discomfort towards using such technologies, hence leading to resistance.</p>	<p>Martinko <i>et al</i> (1996)</p> <p>Bagranoff <i>et al</i> (2002)</p>
R16	Locus of control	<p>There can be two types of people: those who are having an external locus of control and those having an internal locus of control. People with internal locus of control are self-confident and in perfect control of their situations while those with external locus of control believe in fate and luck with regard to their success and failure. It is this second category who is more likely to resist IT related change.</p>	Martinko <i>et al</i> (1996)
R17	Self-efficacy	<p>It was observed in the study of Hill <i>et al.</i> (1987) that people with low computer self-efficacy/efficiency were reluctant to use computer.</p>	Hill <i>et al</i> (1987)
R18	System is too generalized	<p>Rather than introducing a system for a specific user requirement/s, some systems can be too complex or too general having integrated/included many modules in it. This might easily confuse a user and take more time for them to</p>	Timmons (2003)

R19	System breaking down too often	get use to it. It would be rather frustrating when a system breaks down often and in some instances it might affect other interdependent work units in the organization. Moreover, work will get delayed and paperwork will pile up. Therefore, lack of reliability of a technology or an IT system is another contributing factor for resistance.	Timmons (2003) Malato and Kim (2004)
R20	Resist a particular change or just resist (Natural Resistance)	“Internal attributes of an individual, such as the natural human tendency to resist change as well as certain personality characteristics and cognitive orientations” as described by Marcus (1983) is another factor for resistance.	Dewan <i>et al</i> (2004) Markus (1983)
R21	Lack of training /lack of organizational support	When the organization does not provide sufficient and effective training to the individuals to get familiar with the new IT systems users will not know how to successfully use the system. Moreover, they will also expect top management support in helping them cope with the stresses of the change process.	Malato and Kim (2004) Kim and Kankanhalli (2009)
R22	Lack of user participation	End users often say after a new system has been introduced that “nobody asked us” meaning there was no user participation in the IT related change management process. This lack of involvement might make the users feel unimportant and left out of the decision making process.	Malato and Kim (2004)
R23	Loss of power/ reducing worth in the organization/ Loss of social identity	In one instance, when a new system was implemented in a hospital, doctors were required to enter prescriptions to the system so that the nurses could perform the treatment. However, since this change made the doctors feel as if they are losing their power over the rest of the hospital staff and some doctors refused to practice it. Result was the nurses refusing to administer the treatments if the prescription is not entered into the system by the doctors.	Lapointe and Rivard (2005) Wargin and Dobbey (2001) Bagranoff <i>et al</i> (2002) Egan and Fjermestad (2005) Curtis and White (2002)

R24	Lack of communication	When IT related change is not properly communicated well in advance, when management expectation of the users not told to the users and when the users feedback/inputs were not considered in the change management process, this would lead to miscommunication, misunderstanding and user dissatisfaction.	Schwarz and Watson (2005) Egan and Fjermestad (2005) Egan and Fjermestad (2005)
R25	Not understanding the big picture	When not properly communicated, employees and users will not understand why such change is needed or how it is going to benefit the larger organization. This lack of understanding of the overall effects of IT change on the organization is identified as another resistance factor.	Wargin and Dobiye (2001) Egan and Fjermestad (2005) Curtis and White (2002)
R26	Leaving comfort zone	People are creatures of habit and they dislike leaving things that are familiar to them. But changes of any kind will violate the tranquility of their comfort zones.	Bagranoff <i>et al</i> (2002) Egan and Fjermestad (2005)
R27	Self interest	Individuals have their own personal goals and objectives which they wish to achieve and if a new change appears to threaten their self-interest, they may try to safeguard or protect themselves for it by rejecting the new system.	Curtis and White (2002)
R28	Lack of ownership	When a change is being introduced using the command and control type of leadership/management, the users will simply have to abide by the changes and they will have no ownership in the change process since they were not consulted nor are they responsible for any of the decisions taken in the change management process.	Curtis and White (2002)
R29	Cost of Change	The direct costs that organizations have to incur in introducing new IT systems are sometimes considerable in amount and rather discouraging. There is also the risk of failure. The transition from old system to the new will require more money and the addition of all these factors act as a resistance	Egan and Fjermestad (2005) Kim and Kankanhalli



	factor in some cases.	(2009)
R30	Gender It has been suggested by Gefen and Straub (1997) that gender be included in IT related change studies to investigate and see if it is acting as a resisting factor. Therefore, in this research we aim to give special attention to gender as a factor and investigate its relationship in terms of resistance to IT related change.	Gefen and Straub (1997)

(Source: Compiled by researcher based on literature)

## **2.10 Conclusion**

It is clear from the above literature review that organizational change and resistance is a widely studied and researched area. As part of this empirical research, IT related change has also been studied from various perspectives. However, a gap in the literature has been identified where gender among other factors has not been considered in relation to user resistance. Therefore, it will be included in this research and using the selected organization of the telecommunication industry, the factors identified through previous research was tested to recognize cause- and- affect relationships between such factors and resistance, particularly in the Sri Lankan telecommunication industry. The hypotheses listed in section 3.3 were aimed at testing the above mentioned associations and the result of it would meet the research objectives mentioned in chapter 01.

## **CHAPTER 03: CONCEPTUAL FRAMEWORK AND METHODOLOGY**

### **3.1 Introduction**

‘Research’ is defined as a “scientific and systematic search for pertinent information” (Kumar 2008, pg.1). The term ‘systematic’ is of importance here because it is the research ‘methodology’ that helps the researcher to systematically solving the problem. (Kumar 2008, p.5; Oliver, 1997).

The methodology for this research consist of the following components which will be discussed in detail within this chapter.

The first section will be a discussion of the concepts used such as change models and the Technology Acceptance Model (TAM). Then the chapter will continue to discuss the underlying research design, that is, the use of deductive reasoning, collection of quantitative data, data collection techniques, justification for the choice, ethical issues, how it was carried out, difficulties involved and what was done to overcome the issues. The latter part of this chapter includes the sampling strategy and justification and data analysis techniques used.

### **3.2 Concepts used for the purpose of the current research**

In analyzing and investigating the research question, it is necessary to identify the key concepts and theories that will be needed. One of the key concepts that need to be understood is ‘change’. Changes can occur in many forms in organizations but for the purpose of this research, we are focusing on ‘technological change’. However, it is useful to briefly discuss different viewpoints on organizational change and look at theoretical models put forward by various scholars. The following table summarizes some of the notable change theories to date.

**Table 3. Organizational change models**

Theorist/s	Theory/model name	Brief Description
Kurt Lewin (1951)	3-Step Model/Force field analysis	Identified two main forces influencing change: namely driving and restraining forces. These can encourage and discourage change. In addition, the theory identifies three stages of change-unfreezing, changing and refreezing.
Richard Beckhard (1969)	Goal driven change	Identify and set goals for change, diagnose the present condition with regards the goals, define how/what changes should occur, develop an action plan to implement change.
K. Thurley (1979)	Directive, bargained, hearts and minds, analytical and action-based model	Recognize need for change, see which of the strategies (Directive, bargained, hearts and minds, analytical and action-based) best suite the situation and use it to introduce change
Bridges (1991)	3 stage model	Discuss three stages (Ending phase, neutral zone, new Beginnings) and emphasize on the importance of incorporating transitions in change models to improve the success rate of their

		upcoming change
Kotter (2007)	eight step process	Establishing a sense of urgency, Forming a powerful guiding coalition, Creating a vision, Communicating the vision, Empowering others to act on the vision, Planning for and creating short-term wins, Consolidating improvements and producing still more change, Institutionalizing new approaches are the eight stages discussed in this theory

(Source: Brisson-Banks, 2009)

Out of the models/theories discussed above, it is Lewin's Force field analysis that is considered as the principle theory on which this research is being built. The reason for such a choice is that as argued by Brager and Holloway (1993, pg.18) , "force-field analysis entails the systematic identification of opposing forces" and therefore, it is in this theory that resistance to change could be distinctively identified as a separate factor.

Also, in this research, even though it does not investigate into acceptance of technology driven change, the Technology Acceptance Model (TAM) by Fred Davis (1985) to get an understanding as to what factors can encourage acceptance. As a result of the use of this model, it was possible to understand that if presence of such factors will lead to acceptance of technology, the absence might lead to either rejection/resistance or neutrality towards technology. This model has been discussed in detail in the chapter 2, section 2.8.3.

As was clarified in chapter 01, that there is no single definition for ‘Information Technology’. Therefore, the terms technology, Information Technology (IT), Information Systems (IS) were interchangeably used to mean the same. Based on the above factors, the following were identified as dependent and independent variables.

**Dependent Variable: Employee Resistance Behavior**

Various forms of resistance could be displayed by individuals as can be seen from the literature review. Eight types of resistance were investigated under this research. Complaining about the change process, oral defamation or talking in an offensive manner about the change, refusing to use the new technology, display signs of stress when using the technology, showing less interest about the technology and how to use it, attempts at trying to destroy the system/technology are the types of resistance behavior that was investigated. By collecting data about these behavioral outcomes, the researcher was able to get an understanding of the resistance behavior.

**Independent variable: Technological, individual and organizational factors**

Three factors were identified as having an impact on the employee resistance to IT related change and sub-variables were identified under each category.

The following table gives a breakdown of the variables.

Table 4. Break-down of variables

Independent Variable/s	Source/s	Dependent Variable/s	Sources/s
<b>Individual Factors</b>		<b>Employee Resistance Behavior</b>	
Effect on inter-personal relationships (R7) <b>H1</b>	Landles (1987)	Complain	Davidson and Walley (1985)
Self-esteem (R8) <b>H2</b>	Landles (1987); Timmons (2003); Lapointe and Rivard (2005)	Defamation	Davidson and Walley (1985)
Job satisfaction (R9) <b>H3</b>	Landles (1987)	Refusing to use the new technology	Davidson and Walley (1985)
Attitude/perception (R10) <b>H4</b>	Landles (1987); Schwarz and Watson (2005)	Display signs of stress	Rafaeli (1986)
Personal Competencies (R13) <b>H5</b>	Martinko et al (1996); Timmons (2003); Wargin and Dobiey (2001)	Show dissatisfaction	Rafaeli (1986)
Prior experience (R15) <b>H6</b>	Martinko et al (1996); Bagranoff et al (2002)	Delay using the technology	Timmons (2003)
Locus of control (R16) <b>H7</b>	Martinko <i>et al</i> (1996)	Show lack of interest	Davidson and Walley (1985); Lapointe & Rivard (2005)
Self-efficacy (R17) <b>H8</b>	Hill <i>et al</i> (1987)	Sabotage/Destructions	Davidson and Walley (1985)
Natural Resistance (R20) <b>H9</b>	Dewan <i>et al</i> (2004); Markus (1983)		

Leaving comfort zone (R26) <b>H10</b>	Bagranoff <i>et al</i> (2002); Egan and Fjermestad (2005)
Self-interest (R27) <b>H11</b>	Curtis and White (2002)
Gender (R30) <b>H12</b>	Gefen and Straub (1997)
<b>Organizational Factors</b>	
Culture (R1) <b>H13</b>	Dasgupta (no date); Cooper (2000)
Change of workload (R2) <b>H14</b>	Kaplan and Duchon (1988); Joshi and Sauter (1991); Lapointe and Rivard (2005); Bagranoff <i>et al</i> (2002); Egan and Fjermestad (2005)
Loss of promotions (R3) <b>H15</b>	Joshi and Sauter (1991)
Fear of redundancy (R5) <b>H16</b>	Landles (1987); Joshi (1991)
Need for security (R6) <b>H17</b>	Landles (1987); Curtis and White (2002)
Changing norms (R11) <b>H18</b>	Landles (1987)
Organizational support (R21) <b>H19</b>	Malato and Kim (2004); Kim and Kankanhalli (2009)
User participation (R22) <b>H20</b>	Malato and Kim (2004)



Loss of power (R23) <b>H21</b>	Lapointe and Rivard (2005); Wargin and Dobiely (2001); Bagranoff <i>et al</i> (2002); Egan and Fjermestad (2005); Curtis and White (2002); Schwarz and Watson (2005)
Lack of communication (R24) <b>H22</b>	Egan and Fjermestad (2005); Egan and Fjermestad (2005)
Understanding the need to change (R25) <b>H23</b>	Wargin and Dobiely (2001); Egan and Fjermestad (2005); Curtis and White (2002)
Ownership of change (R28) <b>H24</b>	Curtis and White (2002)
Cost of change (R29) <b>H25</b>	Egan and Fjermestad (2005); Kim and Kankanhalli (2009)
<b>Technological Factors</b>	
Extent to which the user requirements are met by the technology (R4) <b>H26</b>	Landles (1987); Hales (1991); Bagranoff <i>et al</i> (2002)

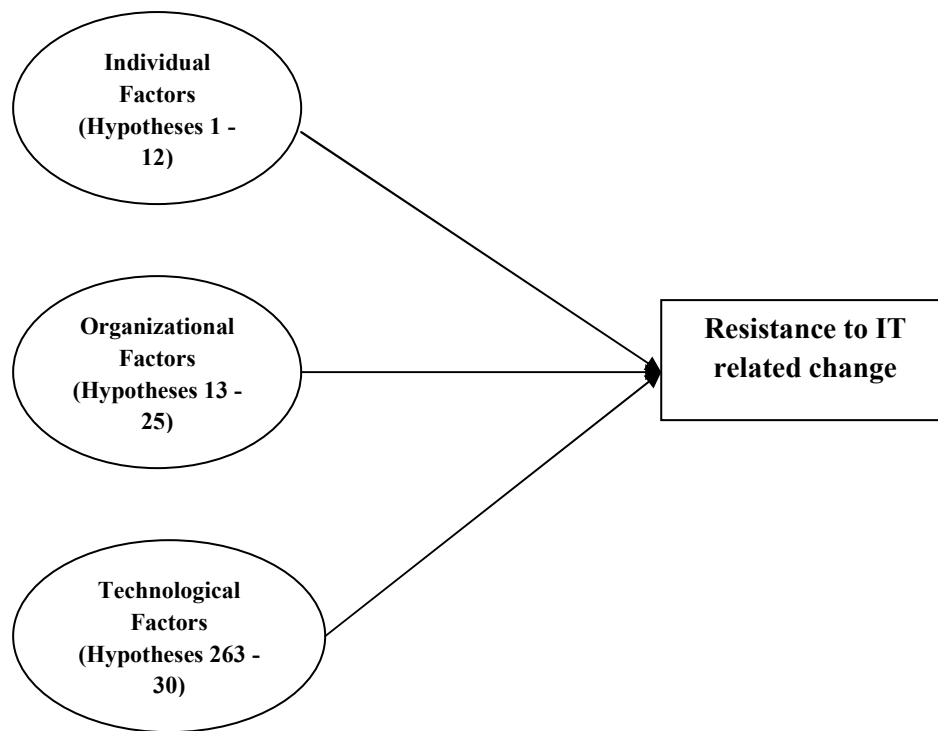
System design (R12) <b>H27</b>	Markus (1983);Malato and Kim (2004);Marakas and Hornik (1996);Lapointe and Rivard (2006)
Accessibility of the system (R14) <b>H28</b>	Martinko <i>et al</i> (1996)
Purpose of the system (General or specific) (R18) <b>H29</b>	Timmons (2003)
Reliability (R19) <b>H30</b>	Timmons (2003);Malato and Kim (2004)

Based on the above variables, a working research model was derived as follows.

1

---

<sup>1</sup> A list of definitions used to describe the factors identified in Table 5 are given in Appendix B



**Figure 4. Research model to be tested**

The model simply categorizes the resistance related factors identified through literature into three categories as individual, organizational and technological. Under each main category, there are sub factors as described in table 5. Each of these factors and its relationship to resistance behavior is tested by a hypothesis. The researcher is testing each individual, organizational and technological factor against resistance behavior to see if there is any causal relationship between the two. The hypothesis derived to test the above mentioned relationships depicted in the model tested are given in the next section.

### **3.3 List of hypotheses**

#### **Individual factors**

**Ho1:** Inter-personal relationships do not have an impact on employee resistance behavior

**Ha1:** Inter-personal relationships has an impact on employee resistance behavior

**Ho2:** Self-esteem does not have an impact on employee resistance behavior

**Ha2:** Self-esteem has an impact on employee resistance behavior

**Ho3:** Job satisfaction does not have an impact on employee resistance behavior

**Ha3:** Job satisfaction has an impact on employee resistance behavior

**Ho4:** Attitude/perception does not have an impact on employee resistance behavior

**Ha4:** Attitude/perception has an impact on employee resistance behavior

**Ho5:** Personal Competencies does not have an impact on employee resistance behavior

**Ha5:** Personal Competencies has an impact on employee resistance behavior

**Ho6:** Prior experience does not have an impact on employee resistance behavior

**Ha6:** Prior experience has an impact on employee resistance behavior

**Ho7:** Locus of control does not have an impact on employee resistance behavior

**Ha7:** Locus of control has an impact on employee resistance behavior

**Ho8:** Self efficacy does not have an impact on employee resistance behavior

**Ha8:** Self efficacy has an impact on employee resistance behavior

**Ho9:** Natural Resistance does not have an impact on employee resistance behavior

**Ha9:** Natural Resistance has an impact on employee resistance behavior

**Ho10:** Leaving comfort zone does not have an impact on employee resistance behavior

**Ha10:** Leaving comfort zone has an impact on employee resistance behavior

**Ho11:** Self- interest does not have an impact on employee resistance behavior

**Ha11:** Self- interest has an impact on employee resistance behavior

**Ho12:** Gender does not have an impact on employee resistance behavior

**Ha12:** Gender has an impact on employee resistance behavior

### **Organizational Factors**

**Ho13:** Culture does not have an impact on employee resistance behavior

**Ha13:** Culture has an impact on employee resistance behavior

**Ho14:** Change of workload does not have an impact on employee resistance behavior

**Ha14:** Change of workload has an impact on employee resistance behavior

**Ho15:** Loss of promotions does not have an impact on employee resistance behavior

**Ha15:** Loss of promotions has an impact on employee resistance behavior

**Ho16:** Fear of redundancy does not have an impact on employee resistance behavior

**Ha16:** Fear of redundancy has an impact on employee resistance behavior

**Ho17:** Need for security does not have an impact on employee resistance behavior

**Ha17:** Need for security has an impact on employee resistance behavior

**Ho18:** Changing norms does not have an impact on employee resistance behavior

**Ha18:** Changing norms has an impact on employee resistance behavior

**Ho19:** Organizational support does not have an impact on employee resistance behavior  
**Ha19:** Organizational support has an impact on employee resistance behavior

**Ho20:** User participation does not have an impact on employee resistance behavior  
**Ha20:** User participation has an impact on employee resistance behavior

**Ho21:** Loss of power does not have an impact on employee resistance behavior  
**Ha21:** Loss of power has an impact on employee resistance behavior

**Ho22:** Lack of communication does not have an impact on employee resistance behavior  
**Ha22:** Lack of communication has an impact on employee resistance behavior

**Ho23:** Understanding the need to change does not have an impact on employee resistance behavior  
**Ha23:** Understanding the need to change has an impact on employee resistance behavior

**Ho24:** Ownership of change does not have an impact on employee resistance behavior  
**Ha24:** Ownership of change has an impact on employee resistance behavior

**Ho25:** Cost of change does not have an impact on employee resistance behavior  
**Ha25:** Cost of change has an impact on employee resistance behavior

### **Technological Factors**

**Ho26:** Extent to which the user requirements are met by the technology does not have an impact on employee resistance behavior  
**Ha26:** Extent to which the user requirements are met by the technology has an impact on employee resistance behavior

**Ho27:** System design does not have an impact on employee resistance behavior  
**Ha27:** System design has an impact on employee resistance behavior

**Ho28:** Accessibility of the system does not have an impact on employee resistance behavior  
**Ha28:** Accessibility of the system has an impact on employee resistance behavior

**Ho29:** Purpose of the system does not have an impact on employee resistance behavior  
**Ha29:** Purpose of the system has an impact on employee resistance behavior

**Ho30:** Reliability does not have an impact on employee resistance behavior  
**Ha30:** Reliability has an impact on employee resistance behavior

### **3.4 Measurement of variables and data collection methods**

All the independent variables are being measured through a 5-point Likert scale ranging from 'strongly agree' to 'strongly disagree'. In the Likert scale used, 'strongly agree' was denoted by '5', 'agree' denoted by '4', 'uncertain' denoted by '3', 'disagree' denoted by '2' and 'strongly disagree' denoted by '1'. '1' was considered as the lowest value while '5' was considered as the highest value on the scale. The data collection tool used was a 'personally administered questionnaire' (Sekaran, 2000). The questionnaire was a structured one having five (5) sections in it.

Section one was to gather demographic data and to inquire from the respondents the organizational level they belonged to and the level of IT knowledge they have. This section contains variables measured through Ratio, Ordinal, Nominal and Dichotomous scale. (Bryman & Bell 2007, pg.357)

Section two looks at individual factors leading to resistance. Twelve variables were tested using a five point Lykart scale ranging from 'strongly disagree' to 'strongly agree'.

Section three tested thirteen variables falling into the category of 'organizational factors' and the measurement scale is as same as in the above section.

Section four was on technological factors influencing resistance and in this section; five variables were tested using the same five point Lykart scale.

The final and the fifth section were measuring 'resistance behavior' as the main variable and uses a Nominal scale. There were nine types of resistance outcomes were measured to

understand the main variable: 'resistance behavior'. Respondents were also asked if they liked change as oppose to resisting it.

### **3.5 Ethical issues in data collection**

Since the data was collected from employees of an organization, it was essential to obtain the prior consent of the management before approaching the individuals in the selected sample. The management was willing to assist the researcher as long as sensitive, confidential information was not gathered through the questionnaire (See the questionnaire used in Appendix A). The researcher also, assured the management as well as the respondents that the data will be strictly used for academic purposes and any information that might harm the reputation of the organization will not be revealed to the public.

### **3.6 Sampling strategy and justification**

In the telecommunication industry of Sri Lanka, the following has been identified as key players in a recent categorization. "Bharti Airtel is competing with Telekom Malaysia's Dialog Telekom, Millicom International Cellular's Tigo, Hutchison Telecom's Hutch, and Sri Lanka Telecom's Mobitel." (The Economic Times, 2009). In another such study, the following telecommunication operators were identified according to their main service category<sup>2</sup>.

---

<sup>2</sup> Etisalat, the latest entrant (2010) into the telecom sector has not been considered in this study as they are still new to the market.

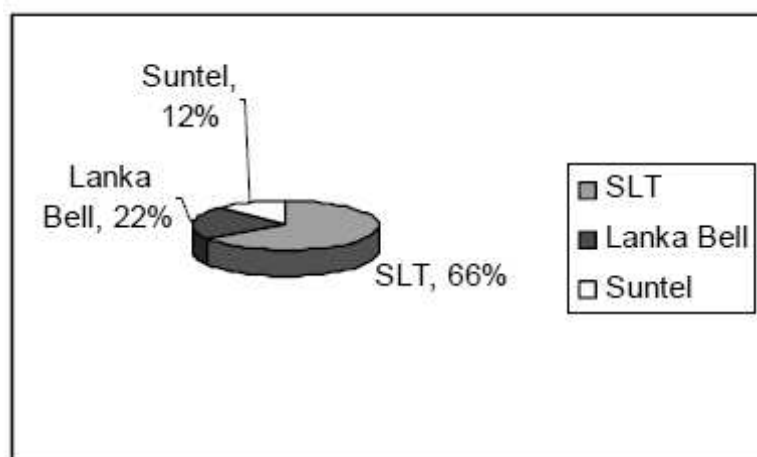
### 3.6.1 Population

**Table 5. Telecommunication operators in Sri Lanka**

<b>Operator</b>	<b>Main Service Category</b>
Sri Lanka Telecom	Fixed Access
Suntel	Fixed (wireless) Access
Lanka Bell	Fixed (wireless) Access
Dialog	Mobile & Fixed (wireless) Access
Celltel	Mobile
Mobitel	Mobile
Hutch	Mobile

(Source: Knight-John, 2007)

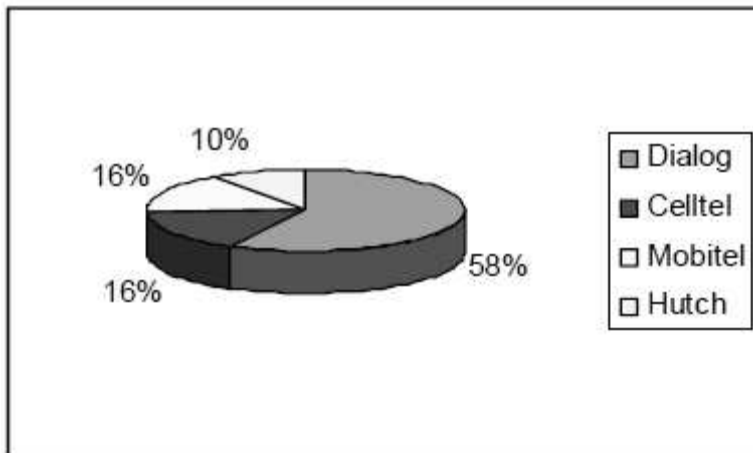
Considering the above list of telecom operators as the population, the sample was selected based on their market share. The market share is depicted separately for mobile operators and fixed line operators below.



**Figure 5. Market share of mobile operators in 2006 –Fixed line**

(Source: Knight-John, 2007)





**Figure 6. Market share of mobile operators in 2006 –Mobile**

(Source: Knight-John, 2007)

Based on the market shares depicted above Sri Lanka Telecom and Dialog Telecom (both offering fixed line and mobile services) have the highest shares. The researcher has eliminated other operators based on two arguments. First, as pointed out by Montgomery and Wernerfelt (1991, pg.2), there is a correlation between market share and performance (Higher the market share, higher the performance). Secondly, Devaraj and Kohli’s argument that “there is a relationship between investment in information technology (IT) and its effect on organizational performance” (pg.2) supported by Melville *et al* 2004, pg. 2) leads to the following conclusion. Linking the two arguments together, it could be concluded that an organization with higher market share is a high performing one and thus need the assistance of Technology to keep performing well. Therefore, the two organizations with higher market share above are likely to be using technology to a greater extent than the other organizations that has been eliminated.

However, there exists a data collection limitation where employees of Sri Lanka Telecom have been restricted from disclosing information to any outside parties. Therefore, the data collection was limited to Dialog Telekom Pvt. (Ltd.). The Head Office branch was selected

for data collection since it was discovered that key IT changes were first introduced at the Head Office (De Silva 2010, persona communication, 10 May)

### **3.6.2 Sample**

At the head office branch, there are approximately 500 (De Silva 2010, personal communication, 10 May) employees working in different departments and a proportionate sample were drawn from the Head Office. Table for determining sample size from a given population by Krejcie and Morgan (1970) was used to determine the sample size. Accordingly, for a population of 500 employees, a sample of 217 is deemed appropriate at a 95% confidence level with a 5% margin of error since this is a sociology research (Kothari, 2002). The respondents included both managerial and non-managerial staff belonging to various departments. Two hundred and fifty questionnaires were distributed using simple random method even though only 217 were required. This was done to avoid non-response error (Boone, 2000). Simple random sampling was used because it gives each individual in the population an equal chance of being chosen (Kothari, 2002). A list of employee names was used as the sampling frame and every other employee on the list was selected. The respondents in the selected sample belonged to both managerial and non-managerial categories and in the questionnaire, there was a question asking them to indicate which category they belonged to.

### **3.7 Data analysis and use of software packages**

The raw data collected in the primary research stage needs to be further processed in order to identify relationships between variables. Analysis of data is two folds: Descriptive and inferential/statistical analysis. Descriptive analysis is used largely for the study of distribution of one variable and thus is not suitable for this research. As can be seen from the conceptual framework, there exist more than one variable providing data and bivariate/multivariate

analysis is required. With this type of data, it is required to know the relationship of the two or more variables in the data to another (Kothari, 2002).

SPSS v.17 statistical software was used in the analysis process; first and foremost a descriptive analysis was conducted for the demographic variables in the questionnaire. Cross-tabulation of data was also carried out to see secondary associations between demographic factors. Cronbach’s alpha value was also obtained to test the reliability of the responses. Correlation was used as a means of measuring the relationships between the main variables. There are several correlation analysis techniques such as “Pearson correlation coefficient, Spearman rank correlation coefficient and Spearman semi-quantitative correlation coefficient, Kendall tau-a, -b and –c correlation coefficients, Gamma correlation coefficient” (Bolboacă & Jäntschi, 2006) etc. For the purpose of this study, Spearman’s correlation was used. Given below are the reasons for choosing this method.

**Table 6. Reasons for selecting correlation as the analysis technique and reasons for choosing Spearman’s Correlation**

<b>Reasons for choosing Correlation techniques</b>	<b>Reasons for choosing Spearman’s correlation method</b>
Identify a relationship for a given set of bivariate data and provides a measure of how well a least squares regression line ‘fits’ the given set of data. (Francis, 1998)	A non-parametric measure of correlation between variable which assess how well an arbitrary monotonic function could describe the relationship between two variables, without making any assumptions about the frequency distribution of the variables. (Bolboacă & Jäntschi, 2006)
Used with interval scale data to measure the strength of the relationship between two variables by measuring the degree of ‘scatter’ of the data values. (Francis, 1998)	Does not require any assumptions about the frequency distribution of the variables. (Bolboacă & Jäntschi, 2006)
	Does not require the assumption that the relationship between variable is linear. (Bolboacă & Jäntschi, 2006)
	Statistical significance is that it is computed by the use of a permutation test (a statistical test in which the reference

	distribution is obtained by permuting the observed data points across all possible outcomes, given a set of conditions consistent with the null hypothesis). (Bolboacă & Jäntschi, 2006)
	The coefficient of determination (or r squared) gives information about the proportion of variation in the dependent variable which might be considered as being associated with the variation in the independent variable. (Bolboacă & Jäntschi, 2006)

Hypotheses were tested to see if there are correlations or associations between the dependent and independent variables. The significance level of the relationship between the two variables was compared against the chosen significant level of 0.05. If the significance value was less than 0.05, then the null hypothesis was rejected.

### **3.8 Conclusion**

With the use of the conceptual framework and the working research model, it was possible to analyze the data gathered to develop a new research model. The findings of the research after the data has been analyzed using the above technique is being discussed in Chapter 4.

## CHAPTER 4: ANALYSIS AND FINDINGS

### 4.1 Introduction

Data presentation can be two-folds: the presentation of the demographic information of the respondents and analysis of the main variables of the study. The first category of data representation concerned with demographic information consists of the organizational level of the respondent, their knowledge about Information Technology (IT), their gender, age, and educational qualifications. These data elements were cross tabulated and a descriptive analysis was conducted as the first step in the data analysis.

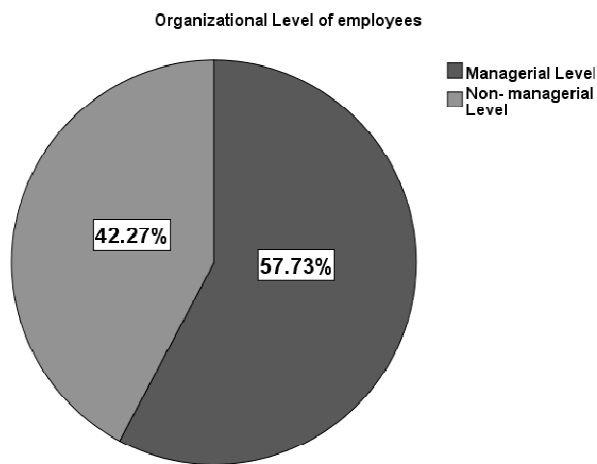
The second stage of this chapter covers the objectives of the study and the results of the conducted tests of reliability and significance of the relationships through the use of statistical technique Spearman's correlation. The significance level chosen for this study is 0.05 (95% confidence). In analysing the data, the statistical software SPSS v.17 was used.

### 4.2 Data presentation and discussion

#### 4.2.1 Presentation of demographic variables

**Table 7. Organizational Level of employees**

	Frequency	Percent
Valid Managerial Level	127	57.7
Non- managerial Level	93	42.3
Total	220	100.0

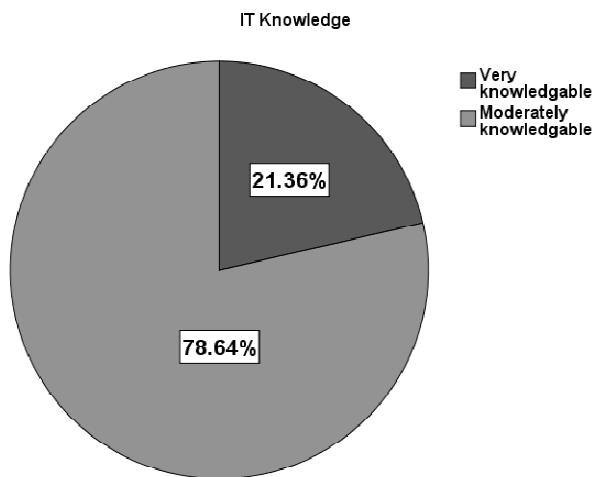


**Figure 7. Organizational Level of the Employees**

The above pie chart summarizes the distribution of employees who participated in this study according to their positions in the organization. Two broad organizational levels were considered: namely, managerial and non-managerial. It seems that majority of the employees (57.73%) who uses Information Technology (IT) in the organization belong to the managerial level while the rest are employed in a non-managerial capacity.

**Table 8. Level of IT knowledge of employees**

	Frequency	Percent
Valid very knowledgeable	47	21.4
moderately knowledgeable	173	78.6
Total	220	100.0

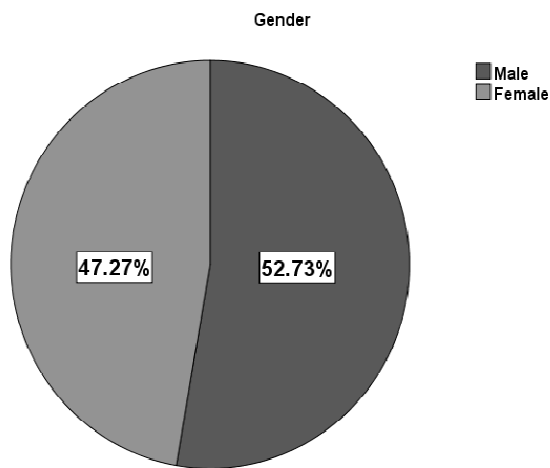


**Figure 8. Employees' knowledge about Information Technology**

It can be seen that out of the four categories of IT knowledge tested in the questionnaire, there are no employees with 'no knowledge' of IT or who are 'not interested in knowing' about the usage of IT. 78.64% of the workers responded that they are 'moderately knowledgeable' while the others consider themselves to be 'very knowledgeable' in IT.

**Table 9. Distribution of the Sample by Gender**

		Frequency	Percent
Valid	male	116	52.7
	female	104	47.3
	Total	220	100.0



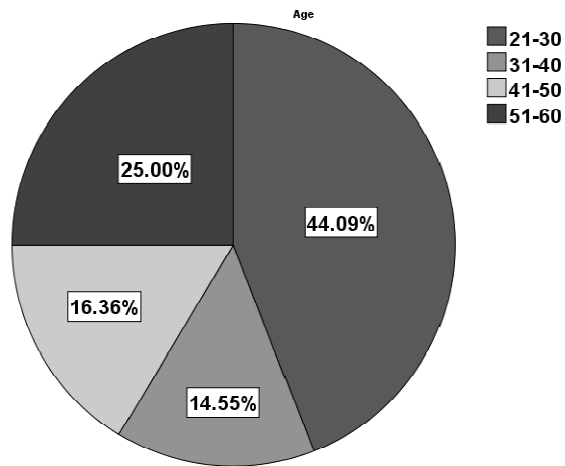
**Figure 9. Distribution of the Sample by Gender**

Gender wise distribution shows a near equal situation but the number of male respondents is higher (116) in this study than the female workers (104).

**Table 10. Age of the Respondents**

		Frequency	Percent
Valid	21-30	97	44.1
	31-40	32	14.5
	41-50	36	16.4
	51-60	55	25.0
	Total	220	100.0



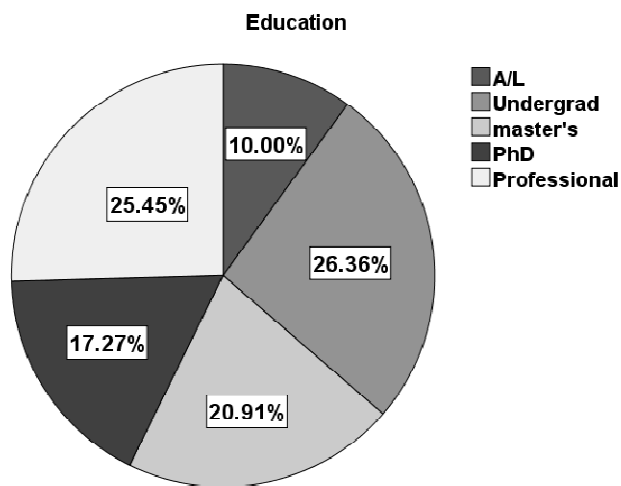


**Figure 10. Age of the Respondents**

Majority of the workers were in the age category 21-30 (44.09%) while a quarter of the sample (55 employees) consisted of individuals whose age is between 51-60. 16.36% of the workers were aged 41-50 while the rest were in the range of 31-40.

**Table 11. Educational Qualifications of the Respondents**

	Frequency	Percent
Valid A/L	22	10.0
Undergrad	58	26.4
master's	46	20.9
PhD	38	17.3
Professional	56	25.5
Total	220	100.0



**Figure 11. Educational Level of Respondents**

Approximately, twenty six percent of the respondents had undergraduate level educational qualifications while 25.45% of the workers were qualified with a professional qualification. 20.91% of the workers had a Master's degree while 17.27% had a PhD as their highest level of educational qualification. Only 10% of the respondents were in possession of G.C.E (Advance Level) qualifications and none of the workers were having G.C.E (Ordinary Level) as their highest education qualification.

#### 4.2.2 Cross -tabulation of demographic variables

**Table 12. Cross Tabulation Between IT Knowledge and the Organizational Level of the Employees**

		Organizational Level of employees		Total
		Managerial Level	Non- managerial Level	
IT Knowledge	Very knowledgeable	47	0	47
	Moderately knowledgeable	80	93	173
Total		127	93	220

It is interesting to observe that majority of the managerial level workers are ‘moderately knowledgeable’ in IT while there were no non-managerial workers who are ‘very knowledgeable’ in IT.

**Table 13. Cross Tabulation Between IT Knowledge and Gender**

		Gender		Total
		Male	Female	
IT Knowledge	Very knowledgeable	47	0	47
	Moderately knowledgeable	69	104	173
Total		116	104	220

Gender wise, it shows that none of the female staff consider themselves to be ‘very knowledgeable’ in IT. However, they profess to have a ‘moderate level of knowledge’ in IT. Compared with the male counterparts, the number of female workers with moderate IT knowledge is higher than male workers.

**Table 14. Cross Tabulation Between IT Knowledge and Age**

		Age				Total
		21-30	31-40	41-50	51-60	
IT Knowledge	Very knowledgeable	6	15	11	15	47
	Moderately knowledgeable	91	17	25	40	173
Total		97	32	36	55	220

Employees between ages 31-40 and 51-60 appear to have a higher knowledge of IT than those in other age categories. However, youngest group of employees between ages 21-30 are showing the highest numbers in terms of their moderate level of IT knowledge.

**Table 15. Cross Tabulation between IT Knowledge and Highest Level of Education**

		Education					Total
		A/L	Undergrad	master's	PhD	Professional	
IT Knowledge	Very knowledgeable	0	0	14	23	10	47
	Moderately knowledgeable	22	58	32	15	46	173
Total		22	58	46	38	56	220

Individuals with General Certificate of Education (G.C.E) -Advance Levels, as their highest educational qualification indicate that they have only a moderate level of IT knowledge and none of them were in the ‘very knowledgeable’ category. Out of the six levels of educational qualifications given, those with a PhD are having a sound knowledge of IT. Employees qualified with an undergraduate degree have a higher ‘moderate level of knowledge’ in IT compared to others.

#### 4.2.3 Resistance behaviour

**Table 16. Resistance Behaviour**

#	Resistance behaviour	Yes (%)	No (%)
1	Complain	85.5	14.5
2	Show dissatisfaction	71.8	28.2
3	Show lack of interest	40	60
4	Show signs of stress	25.5	74.5
5	Oral Defamation	18.2	81.8
6	Refuse to use the system	14.5	85.5
7	Delay using the system	14.1	85.9
8	Sabotage	0	100

Researchers have found out various ways in which individuals in organizations show their resistance to IT related change. Davidson and Walley (1985) identify active sabotage (i.e.

destruction of hardware), oral defamation, complaints of inability to use the computers, and refusals to use the computers as some of such behaviours. In the current research it was identified that none of the employees in the selected organization used 'sabotage' as a means of displaying their resistance. Complaining about the change is the most commonly used form of resistance display behaviour where 85.5 % of the respondent answered in the affirmative to have used this method to show their resistance. Oral defamation can be identified as the fifth highest displayed resistance behaviour and refusal to use the system taking the sixth place.

Stress and dissatisfaction (Rafaeli, 1986) are two more types of resistance behaviour identified in previous literature. In the table above, it can be seen that showing dissatisfaction is in the second highest position where 71.8% of employees using this behaviour to show their resistance. The fourth type of behaviour used by users is showing signs of stress when a new technological change has been introduced.

Timmons (2003) argues that in some instances, resistance can take the form of employees 'putting off' using the system or delay using the system. This form of behaviour can be placed as the seventh highest type of behaviour used by the employees of the selected company as per the above table. Timmons (2003) further argues that it is very rare in employees to refuse using the system. This notion can be further collaborated by the findings above where refusal to use the system is seen as the sixth mostly used behaviour.

Davidson and Walley (1985) points out that some employees may use passive resistance or in other words, show lack of interest towards the new IT change that has been introduced. In the present research it can be seen that this mode of resistance is in the third position in the table above.

Each resistance behaviour was considered separately when entering it to SPSS. For example, if a respondent has ticked ‘complain’ as outcomes of resistance behaviour, it was entered as ‘yes’ in SPSS and for the behaviours that are not ticked, it was entered as ‘no’. Once this was repeated for all the questionnaires, the average response for the main variable ‘response behaviour’ was obtained by dividing the summation of the response outcomes by eight. There were no respondents who specified any other resistance outcomes in addition to the ones given in the questionnaire. Even though the respondents were given the option to say ‘yes’ if they prefer IT related change instead of resisting it, none of the respondents answered in the affirmative.

#### 4.2.4 Reliability

In order to determine whether the questionnaire produces reliable responses, a pilot study was conducted initially involving 40 respondents. Consequently, these data sets were entered in to SPSS v.17 and the reliability statistics were obtained to confirm the reliability of the questionnaire. The output of the above test is given below.

**Table 17. Reliability Statistics**

Cronbach's Alpha
.724

“The Cronbach’s Alpha is a reliability coefficient that indicates how well the items in a set are positively correlated to one another. Cronbach’s Alpha value is computed in terms of the average inter-correlations among the items measuring the concept. The closer Cronbach’s Alpha value to 1, the higher the internal consistency and reliability.” (Sekaran, 2003; Pg. 307)

Some argue that the figure 0.80 is considered as an acceptable level of internal reliability (Bryman & Bell, 2007) while others believe even an alpha value of 0.7 is reliable (Schutte *et al*, 2000). According to this belief, the above Cronbach's Alpha value of 0.724 could be deemed as acceptable. Thus, the reliability of the items measuring the concept in this research can be considered as reliable.

#### 4.3 TESTING HYPOTHESIS USING CORRELATION

For the purpose of testing the hypothesis, the following alternative and null hypothesis were defined.

**Null hypothesis = Ho**

**Alternative Hypothesis= Ha**

Using the above guidelines, the validity of the list of hypothesis defined under Chapter 3 was tested as follows.

##### 4.3.1 Relationship between 'Inter-personal relationships' and 'employee resistance behaviour'

Ho1: Inter-personal relationships do not have an impact on employee resistance behaviour

Ha1: Inter-personal relationships has an impact on employee resistance behaviour

**Table 18. Correlation Between Inter-personal Relationship and Resistance to IT Related Change**

			Inter-personal relationships	Resistance
Spearman's rho	Inter-personal relationships	Correlation Coefficient	1.000	-.358**
		Sig. (2-tailed)	.	.000
		N	220	220
	Resistance	Correlation Coefficient	-.358**	1.000
		Sig. (2-tailed)	.000	.
		N	220	220

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

**Interpretation:** The significance value in the above table is 0.000 which is less than the chosen significance level of 5% (0.05). Hence the null hypothesis can be rejected and the alternative hypothesis can be accepted. Thus the inter-personal relationships can be considered as having a significant association with resistance to IT related change.

In interpreting this finding, the correlation coefficient value in the coefficients table gives a lower negative value which indicates a negative linear relationship. This would mean that the increase in one variable may decrease the other variable and thus, higher the inter-personal relationships between employees, lower the level of resistance to IT related change will be. Landles (1987) discovered a similar finding in his research which indicates that if a new system threatens to dispute good relationships, people might display resistance to such systems.

#### 4.3.2 Relationship between ‘self-esteem’ and ‘employee resistance behaviour’

Ho2: Self-esteem does not have an impact on employee resistance behaviour

Ha2: Self-esteem has an impact on employee resistance behaviour

**Table 19. Correlation between Self- esteem and Resistance to IT Related Change**

			Self esteem	Resistance
Spearman's rho	Self esteem	Correlation Coefficient	1.000	-.335**
		Sig. (2-tailed)	.	.000
		N	220	220
	Resistance	Correlation Coefficient	-.335**	1.000
		Sig. (2-tailed)	.000	.
		N	220	220

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



**Interpretation:** The significance level less than 0.05 and this causes the null hypothesis to be dismissed. Therefore, it indicates a relationship between self-esteem of employees and their resistance behaviour towards IT related change. It also shows that the relationship has a negative correlation: meaning that if the new IT change should increase a person’s self-esteem, it is likely the person will show less resistance to change. In past research by Landles (1987), Timmons (2003) and Lapointe and Rivard (2005), similar results have been discovered.

#### 4.3.3 Relationship between ‘job satisfaction’ and ‘employee resistance behaviour’

Ho3: Job satisfaction does not have an impact on employee resistance behaviour

Ha3: Job satisfaction has an impact on employee resistance behaviour

**Table 20. Correlation between Job Satisfaction and Resistance to IT Related Change**

			Job satisfaction	Resistance
Spearman's rho	Job satisfaction	Correlation Coefficient	1.000	-.287**
		Sig. (2-tailed)	.	.000
		N	220	220
	Resistance	Correlation Coefficient	-.287**	1.000
		Sig. (2-tailed)	.000	.
		N	220	220

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

**Interpretation:** At the chosen significant level of 0.05, the null hypothesis gets rejected since the significant level in the above table is below 0.05. It could be interpreted that there is a negative relationship between the two variables. In other words, as an employee’s job satisfaction increases, it will have lesser negative impact on resistance to IT related change. This finding could be further strengthened by that of Landles (1987). He argues that “technological changes such as computation can greatly simplify a person’s job and rob them of much of its satisfaction” (pg. 82)

#### 4.3.4 Relationship between ‘attitude/perception’ and ‘employee resistance behaviour’

Ho4: Attitude/perception does not have an impact on employee resistance behaviour

Ha4: Attitude/perception has an impact on employee resistance behaviour

**Table 21. Correlation between Attitude towards IT and Resistance to IT Related Change**

			Attitude	Resistance
Spearman's rho	Attitude	Correlation Coefficient	1.000	-.480**
		Sig. (2-tailed)	.	.000
		N	220	220
	Resistance	Correlation Coefficient	-.480**	1.000
		Sig. (2-tailed)	.000	.
		N	220	220

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

**Interpretation:** Once again the null hypothesis could be dismissed since the significance is 0.000 which is less than 0.05. The two variables are negatively related. If employee’s attitude towards IT related change could be improved, it would mean that they will resist less. Schwarz & Watson (2005) states that some individuals have negative perception or attitude towards computers, IT and technology due to lack of knowledge, trust in the organization etc. which will prevent them from willingly accepting a new technology.

#### 4.3.5 Relationship between ‘personal competencies’ and ‘employee resistance behaviour’

Ho5: Personal Competencies does not have an impact on employee resistance behaviour

Ha5: Personal Competencies has an impact on employee resistance behaviour

**Table 22. Correlation between Personal Competencies and Resistance to IT Related Change**

			Personal Competencies	Resistance
Spearman's rho	Personal Competencies	Correlation Coefficient	1.000	-.634**
		Sig. (2-tailed)	.	.000
		N	220	220
	Resistance	Correlation Coefficient	-.634**	1.000
		Sig. (2-tailed)	.000	.
		N	220	220

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

**Interpretation:** In testing the relationship between the two variables ‘personal competencies’ and ‘resistance to IT’, it is discovered that the alternative hypothesis is acceptable and also there exists a strong negative relationship between the two variables. If employees have skills, competencies and confidence about the usage of new information technologies, they will show less resistance to such changes as they will believe they can cope with them well. Martinko *et al.* (1996), Timmons (2003), Wargin and Dobeiy (2001) explain in their research that some users are technophobic and might fear technology. Such people might try to cover up their personal incompetence or inabilities to use the technology by blaming it on the system.

#### 4.3.6 Relationship between ‘prior experience’ and ‘employee resistance behaviour’

Ho6: Prior experience does not have an impact on employee resistance behaviour

Ha6: Prior experience has an impact on employee resistance behaviour

**Table 23. Correlation between Prior IT Experience and Resistance to IT Related Change**

			Prior experience	Resistance
Spearman's rho	Prior experience	Correlation Coefficient	1.000	-.347**
		Sig. (2-tailed)	.	.000
		N	220	220
	Resistance	Correlation Coefficient	-.347**	1.000
		Sig. (2-tailed)	.000	.
		N	220	220

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

**Interpretation:** considering the significant levels, the null hypothesis gets rejected and it shows a negative relationship between the two variables. Depending on whether people have positive or negative prior experience with the IT related changes, they will decide on whether to resist new technology changes or not. According to Bagranoff *et al.* (2002) and Martinko *et al.* (1996), if past experience has been a negative one, this tend to make them biased towards any new technologies, hence leading to resistance.

#### **4.3.7 Relationship between ‘locus of control’ and ‘employee resistance behaviour’**

Ho7: Locus of control does not have an impact on employee resistance behaviour

Ha7: Locus of control has an impact on employee resistance behaviour

**Table 24. Correlation between Locus of Control and Resistance to IT Related Change**

			Locus of control	Resistance
Spearman's rho	Locus of control	Correlation Coefficient	1.000	-.075
		Sig. (2-tailed)	.	.269
		N	220	220
	Resistance	Correlation Coefficient	-.075	1.000
		Sig. (2-tailed)	.269	.
		N	220	220

**Interpretation:** even though the alternative hypothesis gets accepted and proves that there is a relationship between an individual's 'locus of control' and resistance to IT change, it is still a very weak relationship. Accordingly, it means that when people believe they have internal locus of control, they believe that they are in perfect control of their situation and is confident about themselves. Martinko *et al.* (1996) points out, there is a tendency that such people will resist IT related change less due to such confidence. This collaborates with the above research findings as well.

**4.3.8 Relationship between 'self- efficacy' and 'employee resistance behaviour'**

Ho8: Self -efficacy does not have an impact on employee resistance behaviour

Ha8: Self- efficacy has an impact on employee resistance behaviour

**Table 25. Correlation between Self-efficacy and Resistance to IT Related Change**

			Self -efficacy	Resistance
Spearman's rho	Self -efficacy	Correlation Coefficient	1.000	-.549**
		Sig. (2-tailed)	.	.000
		N	220	220
	Resistance	Correlation Coefficient	-.549**	1.000
		Sig. (2-tailed)	.000	.
		N	220	220

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

**Interpretation:** Personal efficiency in using technology is also important to IT users. According to the above hypothesis, it can be seen that at the given significant level, the alternative hypothesis is acceptable and thus indicates a considerable relationship between the two variables. When the level of efficiency in using technology is high, it will cause less resistance to using new technologies. This finding can be further strengthened by the study of Hill *et al.* (1987) who observed that people with low self-efficacy were reluctant to use computers.

#### **4.3.9 Relationship between ‘natural resistance’ and ‘employee resistance behaviour’**

Ho9: Natural Resistance does not have an impact on employee resistance behaviour

Ha9: Natural Resistance has an impact on employee resistance behaviour

**Table 26. Correlation between Natural Resistance and Resistance to IT Related Change**

			Natural Resistance	Resistance
Spearman's rho	Natural Resistance	Correlation Coefficient	1.000	-.260**
		Sig. (2-tailed)	.	.000
		N	220	220
	Resistance	Correlation Coefficient	-.260**	1.000
		Sig. (2-tailed)	.000	.
		N	220	220

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

**Interpretation:** In some situations, due to internal individual attributes such as the natural human tendency to resist change. This can be termed as ‘natural resistance’ (Dewan *et al.*, 2004) and the analysis above shows that natural resistance is a factor to be considered in managing resistance to IT. However, the statistical interpretation would not sound logical since both variables are measuring variations of the same variable. Nevertheless, the result is useful in identifying ‘natural resistance’ as one of the factors contributing to IT related change.

#### **4.3.10 Relationship between ‘leaving the comfort zone’ ‘and employee resistance behaviour’**

Ho10: Leaving comfort zone does not have an impact on employee resistance behaviour

Ha10: Leaving comfort zone has an impact on employee resistance behaviour

**Table 27. Correlation between Leaving Comfort Zone and Resistance to IT Related Change**

			Leaving comfort zone	Resistance
Spearman's rho	Leaving comfort zone	Correlation Coefficient	1.000	-.164*
		Sig. (2-tailed)	.	.015
		N	220	220
	Resistance	Correlation Coefficient	-.164*	1.000
		Sig. (2-tailed)	.015	.
		N	220	220

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

**Interpretation:** Correlation between the two variables proves to be significant at 0.05 level and there exists a negative relationship between the variables. Leaving the comfort zone might make individuals unhappy and this may result in resistance to change. Similar findings were discovered by Bagranoff *et al.* (2002) as well as Egan and Fjermestad (2005).

#### **4.3.11 Relationship between 'self-interest' and 'employee resistance behaviour'**

Ho11: Self- interest does not have an impact on employee resistance behaviour

Ha11: Self- interest has an impact on employee resistance behaviour



**Table 28. Correlation between Self-interest and Resistance to IT Related Change**

			Self interest	Resistance
Spearman's rho	Self interest	Correlation Coefficient	1.000	-.138*
		Sig. (2-tailed)	.	.040
		N	220	220
	Resistance	Correlation Coefficient	-.138*	1.000
		Sig. (2-tailed)	.040	.
		N	220	220

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

**Interpretation:** The significance of the two variables tested above is 0.040 which is less than the chosen significance level of 0.05. Therefore, the alternative hypothesis can be accepted. Moreover, it can be seen that there is a negative correlation between the two variables. Individuals are conscious about protecting their self-interest and tend to resist if they appear to be threatened by change (Curtis & White, 2002). The findings also confirm this notion.

#### 4.3.12 Relationship between ‘gender’ and ‘employee resistance behaviour’

Ho12: Gender does not have an impact on employee resistance behaviour

Ha12: Gender has an impact on employee resistance behaviour

**Table 29. Correlation between Gender and Resistance to IT Related Change**

			Gender	Resistance
Spearman's rho	Gender	Correlation Coefficient	1.000	-.385**
		Sig. (2-tailed)	.	.000
		N	220	220
	Resistance	Correlation Coefficient	-.385**	1.000
		Sig. (2-tailed)	.000	.
		N	220	220

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

**Interpretation:** The significance value in the above table is 0.000 which is less than the chosen significance level of 5% (0.05). Hence the null hypothesis can be rejected and the alternative hypothesis can be accepted. This is an important finding since this addresses a gap in the current literature on resistance to IT related change. Gefen and Straub (1997) has suggested that gender could be included in IT related change studies and see if it has any impact as a resistance factor. It is evident from the above findings that there is an association between gender and resistance to IT change.

#### 4.3.13 Relationship between ‘culture’ and ‘employee resistance behaviour’

Ho13: Culture does not have an impact on employee resistance behaviour

Ha13: Culture has an impact on employee resistance behaviour

**Table 29. Correlation between Culture and Resistance to IT Related Change**

			Culture	Resistance
Spearman's rho	Culture	Correlation Coefficient	1.000	.259**
		Sig. (2-tailed)	.	.000
		N	220	220
	Resistance	Correlation Coefficient	.259**	1.000
		Sig. (2-tailed)	.000	.
		N	220	220

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

**Interpretation:** According to Cooper (2000), organizations with strong organizational cultures resist change related to adaptation of new information technologies. As can be seen from the significance level and correlation coefficient in the above table, it proves Cooper’s argument. The alternative hypothesis can be accepted since the significance level is less than 0.05. Also, the relationship between the two variables show a positive one where stronger the organizational culture, higher the resistance.

#### 4.3.14 Relationship between ‘change of workload’ and ‘employee resistance behaviour’

Ho14: Change of workload does not have an impact on employee resistance behaviour

Ha14: Change of workload has an impact on employee resistance behaviour

**Table 30. Correlation between Change of Workload and Resistance to IT Related Change**

			Change of workload	Resistance
Spearman's rho	Change of workload	Correlation Coefficient	1.000	-.150*
		Sig. (2-tailed)	.	.026
		N	220	220
	Resistance	Correlation Coefficient	-.150*	1.000
		Sig. (2-tailed)	.026	.
		N	220	220

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

**Interpretation:** If a new system or technology is likely to increase an individual’s workload, it is more likely that the system/technology is rejected or resisted by users (Kaplan & Duchon, 1988; Joshi & Sauter 1991; Lapointe & Rivard, 2005; Bagranoff *et al.*, 2002; Egan & Fjermestad, 2005). The statistical analysis of data depicted in the table above indicates that this claim is true and there is a relationship between the change of workload and resistance to IT related change. If an individual’s job is highly affected in terms of its work load after an IT change is introduced, this could lead to higher resistance.

#### 4.3.15 Relationship between ‘loss of promotions’ and ‘employee resistance behaviour’

Ho15: Loss of promotions does not have an impact on employee resistance behaviour

Ha15: Loss of promotions has an impact on employee resistance behaviour

**Table 31. Correlation between Loss of Promotions and Resistance to IT Related Change**

			Loss of promotions	Resistance
Spearman's rho	Loss of promotions	Correlation Coefficient	1.000	-.321 **
		Sig. (2-tailed)	.	.000
		N	220	220
	Resistance	Correlation Coefficient	-.321 **	1.000
		Sig. (2-tailed)	.000	.
		N	220	220

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

**Interpretation:** Fear of the loss of advancement opportunities and promotions due to new IT implementation (e.g. flattening/de-layering or thinned-out organizations) was identified by Joshi and Sauter (1991) as a contributing factor to resistance. The research findings above shows similar outcomes where one can conclude that the fear of loss of promotion has an impact on IT related change.

#### **4.3.16 Relationship between ‘fear of redundancy’ and ‘employee resistance behaviour’**

Ho16: Fear of redundancy does not have an impact on employee resistance behaviour

Ha16: Fear of redundancy has an impact on employee resistance behaviour

**Table 32. Correlation between Fear of Redundancy and Resistance to IT Related Change**

			Fear of redundancy	Resistance
Spearman's rho	Fear of redundancy	Correlation Coefficient	1.000	-.222**
		Sig. (2-tailed)	.	.001
		N	220	220
	Resistance	Correlation Coefficient	-.222**	1.000
		Sig. (2-tailed)	.001	.
		N	220	220

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

**Interpretation:** It was tested to see if fear of losing one’s position/job due to introduction of IT has any impact on resistance, it was discovered that there is a relationship between the two variables. The significant value of the coefficient is 0.001 which is less than 0.05. Therefore, one can accept the alternative hypothesis. Similar results were encountered by Landles (1987) and Joshi (1991) which strengthens the above finding.

**4.3.17 Relationship between ‘need for security’ and ‘employee resistance behaviour’**

Ho17: Need for security does not have an impact on employee resistance behaviour

Ha17: Need for security has an impact on employee resistance behaviour

**Table 33. Correlation between Need for Security and Resistance to IT Related Change**

			Need for security	Resistance
Spearman's rho	Need for security	Correlation Coefficient	1.000	-.592**
		Sig. (2-tailed)	.	.000
		N	220	220
	Resistance	Correlation Coefficient	-.592**	1.000
		Sig. (2-tailed)	.000	.
		N	220	220

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

**Interpretation:** During times of change, people undergo a period of uncertainty and insecurity. Landles (1987) and Curtis and White (2002) states in their research that such fears in individuals can act as a motivator to resist change. This indeed seems true as can be seen from the findings above. There appears to be a relationship between the two variables where a heightened sense of security will reduce resistance.

#### 4.3.18 Relationship between ‘changing norms’ and ‘employee resistance behaviour’

Ho18: Changing norms does not have an impact on employee resistance behaviour

Ha18: Changing norms has an impact on employee resistance behaviour

**Table 34. Correlation between Changing Norms and Resistance to IT Related Change**

			Changing norms	Resistance
Spearman's rho	Changing norms	Correlation Coefficient	1.000	-.546**
		Sig. (2-tailed)	.	.000
		N	220	220
	Resistance	Correlation Coefficient	-.546**	1.000
		Sig. (2-tailed)	.000	.
		N	220	220

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

**Interpretation:** Landles (1987) points out that introduction of an IT related change will inevitably change many aspects of the organization ranging from organizational culture, structure, people etc. and this may be true for the existing organizational norms and standards as well. When the data was analysed to see if there is truly such a relationship between the individual’s concern for changing norms and resistance, it was discovered that there is an association between the two. This can be seen in the table above where the significance level is less than 0.05 allowing the researcher to accept the alternative hypothesis.

#### 4.3.19 Relationship between ‘organizational support’ and ‘employee resistance behaviour’

Ho19: Organizational support does not have an impact on employee resistance behaviour

Ha19: Organizational support has an impact on employee resistance behaviour

**Table 35. Correlation between Organizational Support Relationship and Resistance to IT Related Change**

			Organizational support	Resistance
Spearman's rho	Organizational support	Correlation Coefficient	1.000	.489**
		Sig. (2-tailed)	.	.000
		N	220	220
	Resistance	Correlation Coefficient	.489**	1.000
		Sig. (2-tailed)	.000	.
		N	220	220

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

**Interpretation:** Malato and Kim (2004) and Kim and Kankanhalli (2009) discuss in their research the importance of organizational support in reducing resistance to change. For example, if effective training is not given to individuals to familiarize them with new IT changes, they will not know how to successfully use the technology. In the current research, it was discovered that there is an association between organizational support and resistance supporting this argument.

#### 4.3.20 Relationship between ‘user participation’ and ‘employee resistance behaviour’

Ho20: User participation does not have an impact on employee resistance behaviour

Ha20: User participation has an impact on employee resistance behaviour

**Table 36. Correlation between User Participation and Resistance to IT Related Change**

			User participation	Resistance
Spearman's rho	User participation	Correlation Coefficient	1.000	-.284**
		Sig. (2-tailed)	.	.000
		N	220	220
	Resistance	Correlation Coefficient	-.284**	1.000
		Sig. (2-tailed)	.000	.
		N	220	220

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

**Interpretation:** The significance level in 0.000 which is less than 0.05 and therefore, the alternative hypothesis can be accepted. Moreover, it can be seen that there is a negative correlation between the two variables where user participation increases, the resistance reduces. Malato and Kim (2004) points out that lack of user participation in IT change implementation may make them feel less important and thus cause resistance.

#### 4.3.21 Relationship between ‘loss of power’ and ‘employee resistance behaviour’

Ho21: Loss of power does not have an impact on employee resistance behaviour

Ha21: Loss of power has an impact on employee resistance behaviour

**Table 37. Correlation between Loss of Power and Resistance to IT Related Change**

			Loss of power	Resistance
Spearman's rho	Loss of power	Correlation Coefficient	1.000	-.465**
		Sig. (2-tailed)	.	.000
		N	220	220
	Resistance	Correlation Coefficient	-.465**	1.000
		Sig. (2-tailed)	.000	.
		N	220	220

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



**Interpretation:** There are number of studies which discusses about the social identity of an individual and how it effects organizational change. Lapointe and Rivard (2005), Wargin and Dobbye (2001), Bagranoff *et al.* (2002), Egan and Fjermestad (2005), Curtis and White (2002) and Schwarz and Watson (2005) claims that for instance, when a new system is installed in an organization, some users might feel as if they have lost power over the rest of the staff and thus refuse to use the system. It is evident from the table above that at a significant level of 0.05, the hypothesis Ha21 gets accepted. In other words, there is an association between the fear of loss of power and resistance to IT related change.

#### 4.3.22 Relationship between ‘lack of communication’ and ‘employee resistance behaviour’

Ho22: Lack of communication does not have an impact on employee resistance behaviour

Ha22: Lack of communication has an impact on employee resistance behaviour

**Table 39. Correlation between Lack of Communication and Resistance to IT Related Change**

			Lack of communication	Resistance
Spearman's rho	Lack of communication	Correlation Coefficient	1.000	.024
		Sig. (2-tailed)	.	.726
		N	220	220
	Resistance	Correlation Coefficient	.024	1.000
		Sig. (2-tailed)	.726	.
		N	220	220

**Interpretation:** In the absence of proper communication between the management and IT users about upcoming changes, users will not know of the management expectations, user’s feedback and input will be ignored which could result in miscommunication, misunderstanding and user dissatisfaction Egan and Fjermestad (2005). But there is no evidence to suggest that lack of communication is a strong influencer as a resistance factor. As can be seen from the table above, the significance level is 0.726 which is greater than

0.05. This suggests that the null hypothesis can be accepted. In other words, it signifies that there is no relationship between lack of communication and resistance to IT related change. However, this does not mean that communication in change management is unimportant.

**4.3.23 Relationship between ‘understanding the need to change’ and ‘employee resistance behaviour’**

Ho23: Understanding the need to change does not have an impact on employee resistance behaviour

Ha23: Understanding the need to change has an impact on employee resistance behaviour

**Table 38. Correlation between Understanding the Need for Change and Resistance to IT Related Change**

			Understanding the need to change	Resistance
Spearman's rho	Understanding the need to change	Correlation Coefficient	1.000	-.344**
		Sig. (2-tailed)	.	.000
		N	220	220
	Resistance	Correlation Coefficient	-.344**	1.000
		Sig. (2-tailed)	.000	.
		N	220	220

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

**Interpretation:** If users do not understand why a certain change is needed and how it is going to benefit them and the organization as a whole, they tend to ask the questions ‘why do we need this change?’, ‘what is in it for us? Etc. This lack of understanding of the overall effect of IT change on the organization is identified as another resistance factor by Wargin and Dobiye (2001), Egan and Fjermestad (2005) and Curtis and White (2002). The statistical output above can be interpreted to mean that there is a relationship between understanding the need to change and resistance to change. The more people understand about the need to change, the less resistance they will show.

#### 4.3.24 Relationship between ‘ownership of change’ and ‘employee resistance behaviour’

Ho24: Ownership of change does not have an impact on employee resistance behaviour

Ha24: Ownership of change has an impact on employee resistance behaviour

**Table 39. Correlation between Ownership of Change and Resistance to IT Related Change**

			Ownership of change	Resistance
Spearman's rho	Ownership of change	Correlation Coefficient	1.000	-.177**
		Sig. (2-tailed)	.	.008
		N	220	220
	Resistance	Correlation Coefficient	-.177**	1.000
		Sig. (2-tailed)	.008	.
		N	220	220

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

**Interpretation:** When change is introduced by command and control type management, the users will simply have to abide by the changes and they will have no ownership in the change process since all the decisions are being taken by the management. Curtis and White (2002) recognize this as another contributing factor to resistance. The results above show a relationship between ownership of change and resistance. When employees feel a higher sense of ownership in the change management process, the less resistance they will show.

#### 4.3.25 Relationship between ‘cost of change’ and ‘employee resistance behaviour’

Ho25: Cost of change does not have an impact on employee resistance behaviour

Ha25: Cost of change has an impact on employee resistance behaviour

**Table 40. Correlation between Cost of Change and Resistance to IT Related Change**

			Cost of change	Resistance
Spearman's rho	Cost of change	Correlation Coefficient	1.000	-.274**
		Sig. (2-tailed)	.	.000
		N	220	220
	Resistance	Correlation Coefficient	-.274**	1.000
		Sig. (2-tailed)	.000	.
		N	220	220

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

**Interpretation:** Egan and Fjermestad (2005), Kim and Kankanhalli (2009) states that the initial direct cost an organization has to incur in introducing new IT is considerably large and rather discouraging. Monetary concerns such as these could act as a barrier to introducing IT changes of massive scale. This notion can be further supported by the findings of the current research which shows a relationship between cost of change and resistance.

**4.3.26 Relationship between ‘Extent to which the user requirements are met by the technology’ and ‘employee resistance behaviour’**

Ho26: Extent to which the user requirements are met by the technology does not have an impact on employee resistance behaviour

Ha26: Extent to which the user requirements are met by the technology has an impact on employee resistance behaviour

**Table 41. Correlation between Extent to which User Requirements are met by Technology and Resistance to IT Related Change**

			Extent to which the user requirements are met by the technology	Resistance
Spearman's rho	Extent to which the user requirements are met by the technology	Correlation Coefficient	1.000	-.192**
		Sig. (2-tailed)	.	.004
		N	220	220
	Resistance	Correlation Coefficient	-.192**	1.000
		Sig. (2-tailed)	.004	.
		N	220	220

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

**Interpretation:** Hale (1991) argues that technology or system development should be ‘human-centered’ rather than ‘technology-centered’, because ultimately, it will be the users who will be utilizing it to deliver the expected results. Therefore, it is important to see to what extent the new technology being introduced meets the user requirements. The research findings indicate a relationship between meeting the user requirements and resistance and show that if the extent to which the user expectations are met is higher, lower the resistance to change.

#### 4.3.27 Relationship between ‘system design’ and ‘employee resistance behaviour’

Ho27: System design does not have an impact on employee resistance behaviour

Ha27: System design r has an impact on employee resistance behaviour

**Table 42. Correlation between System Design and Resistance to IT Related Change**

			System design	Resistance
Spearman's rho	System design	Correlation Coefficient	1.000	.043
		Sig. (2-tailed)	.	.527
		N	220	220
	Resistance	Correlation Coefficient	.043	1.000
		Sig. (2-tailed)	.527	.
		N	220	220

**Interpretation:** Poor system design could include unsatisfactory functionalities, design, accessibility etc. (Marakas, 1983; Malato & Kim, 2004; Marakas & Hornik, 1996; Lapointe & Rivard, 2006). Instead of assisting the users in their daily work routines, a new technologies being introduced may become a hindrance if they are poorly designed. This may lead to dissatisfaction but the findings suggest that it might not lead to resistance. The null hypothesis gets accepted as the significance level of 0.527 is higher than 0.05 indicating there is no relationship between system design and resistance.

**4.3.28 Relationship between ‘accessibility of the system’ and ‘employee resistance behaviour’**

Ho28: Accessibility of the system does not have an impact on employee resistance behaviour  
 Ha28: Accessibility of the system has an impact on employee resistance behaviour

**Table 43. Correlation between Accessibility of the System and Resistance to IT Related Change**

			Accessibility of the system	Resistance
Spearman's rho	Accessibility of the system	Correlation Coefficient	1.000	-.028
		Sig. (2-tailed)	.	.676
		N	220	220
	Resistance	Correlation Coefficient	-.028	1.000
		Sig. (2-tailed)	.676	.
		N	220	220

**Interpretation:** When individuals become more and more dependent on technology, faster accessibility is expected and waiting periods are not welcomed. However, Markinko *et al.* (1996) suggest that this may not lead to resistance but only create dislike and dissatisfaction towards the technology. This is further justified by the research findings which show no relationship between accessibility of the system with resistance.

**4.3.29 Relationship between ‘purpose of the system’ and ‘employee resistance behaviour’**

Ho29: Purpose of the system does not have an impact on employee resistance behaviour

Ha29: Purpose of the system has an impact on employee resistance behaviour

**Table 44. Correlation between Purpose of the System and Resistance to IT Related Change**

			Purpose of the system	Resistance
Spearman's rho	Purpose of the system	Correlation Coefficient	1.000	-.109
		Sig. (2-tailed)	.	.107
		N	220	220
	Resistance	Correlation Coefficient	-.109	1.000
		Sig. (2-tailed)	.107	.
		N	220	220

**Interpretation:** Some parts of IT such as a system may have been developed to serve several purposes at the same time. Such a system could be considered as a general one with an integration of many modules. Specific user requirements may not have been met but still users can find it useful to fulfil a particular task once they get use to the new technology (Timmons, 2003). Therefore, it proves there is not relationship between the purpose of the system (general or specific) and resistance.

#### 4.3.30 Relationship between ‘reliability’ and ‘employee resistance behaviour’

**Ho30:** Reliability does not have an impact on employee resistance behaviour

**Ha30:** Reliability has an impact on employee resistance behaviour

**Table 45. Correlation between Reliability and Resistance to IT Related Change**

			Reliability	Resistance
Spearman's rho	Reliability	Correlation Coefficient	1.000	-.013
		Sig. (2-tailed)	.	.850
		N	220	220
	Resistance	Correlation Coefficient	-.013	1.000
		Sig. (2-tailed)	.850	.
		N	220	220

**Interpretation:** It would be rather frustrating to have an IT infrastructure that crashes or breaks down often but other than the annoyance and loss of time it causes (Timmons, 2003; Malato & Kim, 2004), there seem to be no relationship between system breakdowns and resistance. In the above table the significance is 0.850 which is greater than 0.05. Therefore, the null hypothesis can be accepted.



#### 4.4 SUMMARY OF THE RESEARCH FINDINGS

Table 46. Summary of Research Findings

Hypothesis		Relationship exists between variables (Yes/No)	Evidence from past research
<b>INDIVIDUAL FACTORS</b>			
<b>H1</b>	inter-personal relationships and resistance to IT change	Yes	Landles (1987)
<b>H2</b>	Self-esteem and resistance to IT change	Yes	Landles (1987), Timmons (2003), Lapointe & Rivard (2005)
<b>H3</b>	Job satisfaction and resistance to IT change	Yes	Landles (1987)
<b>H4</b>	Attitude/perception and resistance to IT change	Yes	Schwarz & Watson (2005)
<b>H5</b>	Personal Competencies and resistance to IT change	Yes	Martinko et al. (1996), Timmons (2003), Wargin & Dobiey (2001)
<b>H6</b>	Prior experience and resistance to IT change	Yes	Bagranoff et al. (2002), Martinko et al. (1996)
<b>H7</b>	Locus of control and resistance to IT change	Yes	Martinko et al. (1996)
<b>H8</b>	Self-efficacy and resistance to IT change	Yes	Hill et al. (1987)
<b>H9</b>	Natural Resistance and resistance to IT change	Yes	Dewan et al., 2004
<b>H10</b>	Leaving comfort zone and resistance to IT change	Yes	Bagranoff et al. (2002), Egan & Fjermestad (2005).
<b>H11</b>	Self-interest and resistance to IT change	Yes	Curtis & White, 2002
<b>H12</b>	Gender and resistance to IT change	Yes	Gefen & Straub (1997)
<b>ORGANIZATIONAL FACTORS</b>			
<b>H13</b>	Culture and resistance to IT change	Yes	Cooper, 2000
<b>H14</b>	Change of workload and resistance to IT change	Yes	Kaplan & Duchon (1988) ; Joshi & Sauter (1991) ; Lapointe & Rivard ( 2005) ; Bagranoff et al.(2002) ; Egan & Fjermestad (2005)
<b>H15</b>	Loss of promotions and resistance to IT change	Yes	Joshi & Sauter (1991)

<b>H16</b>	Fear of redundancy and resistance to IT change	Yes	Landles (1987) , Joshi (1991)
<b>H17</b>	Need for security and resistance to IT change	Yes	Landles (1987) , Curtis & White (2002)
<b>H18</b>	Changing norms and resistance to IT change	Yes	Landles (1987)
<b>H19</b>	Organizational support and resistance to IT change	Yes	Malato & Kim (2004) , Kim & Kankanhalli (2009)
<b>H20</b>	User participation and resistance to IT change	Yes	Malato & Kim (2004)
<b>H21</b>	Loss of power and resistance to IT change	Yes	Lapointe & Rivard (2005), Wargin & Dobiey (2001), Bagranoff et al. (2002), Egan & Fjermestad (2005), Curtis & White (2002) , Schwarz & Watson (2005)
<b>H22</b>	Lack of communication and resistance to IT change	No	Egan & Fjermestad (2005)
<b>H23</b>	Understanding the need to change and resistance to IT change	Yes	Wargin & Dobiey (2001), Egan & Fjermestad (2005) , Curtis & White (2002)
<b>H24</b>	Ownership of change and resistance to IT change	Yes	Curtis and White (2002)
<b>H25</b>	Cost of change and resistance to IT change	Yes	Egan & Fjermestad (2005) , Kim & Kankanhalli (2009)
<b>TECHNOLOGICAL FACTORS</b>			
<b>H26</b>	Extent to which the user requirements are met by the technology and resistance to IT change	Yes	Hale (1991)
<b>H27</b>	System design and resistance to IT change	No	Marakas (1983) ; Malato & Kim (2004) ; Marakas & Hornik (1996) ; Lapointe & Rivard (2006)
<b>H28</b>	Accessibility of the	No	Markinko et al. (1996)

	system and resistance to IT change		
<b>H29</b>	Purpose of the system and resistance to IT change	No	Timmons, 2003
<b>H30</b>	Reliability and resistance to IT change	No	Timmons (2003) ; Malato & Kim (2004)

The summary of the research findings above show that some of the factors identified as having an impact on resistance are acceptable while some are not. It can be seen that hypotheses 22, 27, 28, 29, 30 has been rejected and this means there is no relationship between the two variables tested. In summary, there is no relationship between communication and resistance to IT related change and there is no relationship between system design, accessibility of the system, purpose of the system (whether the system is being used for a general purpose or user specific task), reliability if the technology (e.g system breakage and downtime) with employee resistance to IT related change. This could be due to the fact that a technological change such as an Enterprise Resource Planning (ERP) system which has been introduced at Dialog Telekom is a standardized, large scale and organization wide system which cannot be personalized to suite every individual users. Therefore, it seems that the users are aware of this fact, thus showing no particular interest in factors such as system design, accessibility of the system, purpose of the system and reliability if the technology. More over, the employees of the organization seem to have little faith when it comes to communication methods used to inform them about the change. Either the communication techniques currently used in the company are inadequate or what is being communicated is of little use to the employees.

All the research findings are being further strengthened with findings from previous research as can be seen from the table above. These findings are discussed within the analysis section as well as in the literature review.

Moreover, at this point it would be useful to refer back to the research objectives discussed at the beginning of the research. There were five main research objectives which the researcher was interested in achieving and five corresponding research questions. The research objectives were: 1. To identify the organizational factors influencing resistance to IT related change in the selected organizations, 2. To identify individual factors influencing resistance to IT related change in the selected organization, 3. To identify technological factors influencing resistance to IT related change in the selected organization, 4. To identify which factors will have the strongest influence on the change process, 5. To confer suggestion/s to minimize resistance to change in IT change management.

The above mentioned objectives correspond with five research question which has been answered by the analysis of the research findings. Based on the answers obtained for the research questions 1-4, the research model illustrated in the next section was derived.

#### 4.5 Derived research model

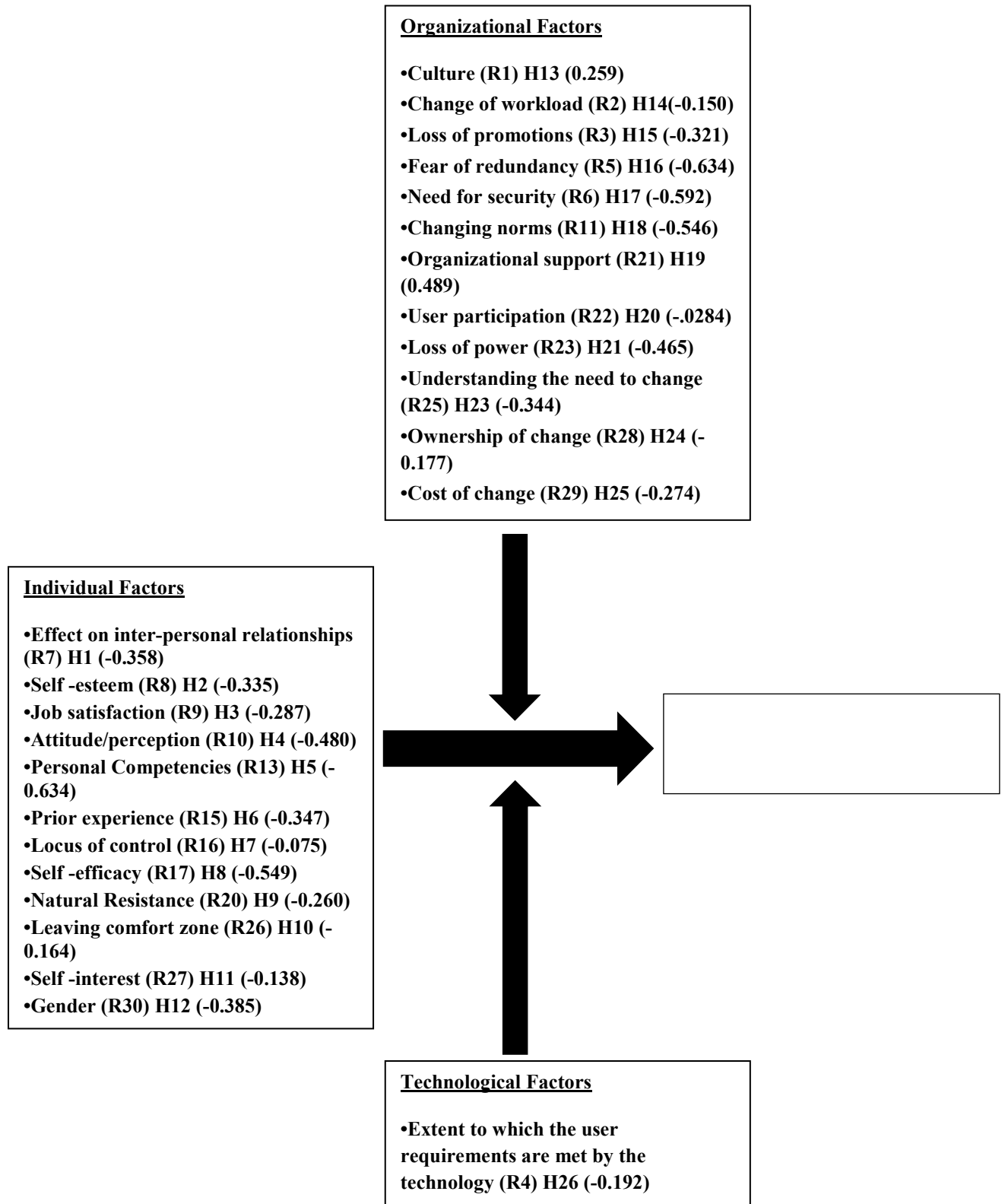


Figure 12. Derived Research Model

The first question was to identify which organizational factors causing resistance to change. It can be seen from the analysis that ‘organizational culture , changes in the workload brought about by change , loss of promotions in the organization due to de-layering/organizational restructuring due to usage of IT , fear of redundancy or losing one’s job , need for job security, changing organizational norms and practices with IT related change, extend to which the management and leadership of the organization support employees to cope with change , user participation in the change management process, loss of power over others in the organization, extend to which the individuals understand the need to change , the extent to which employees can claim to have ownership of change and the initial cost of change’ act as ‘organizational factors’ which influences resistance to IT related change in this organization.

The second research question related to objective number two is to identify which individual factors causes resistance to IT related change. It was discovered that ‘effect of IT related change on inter-personal relationships between individuals , how change effects an employee’s self- esteem , the impact of IT changes in the level of job satisfaction ,individual attitude and perception towards It change ,personal competencies of uses of new technology to work in comfort with technology , a person’s prior experience with previous IT change implementations ,employee’s self-confidence and belief about themselves and their ability to be in control of a situation or not (Locus of control) , self -efficacy or effectiveness with which a user can adapt to new IT implementations, resisting as a natural human reaction to change, fear of having to leave one’s comfort zone ,individual goals and self- interest and gender’ are the strong individual influences of resistance to It related change.

The third objective lead to the research question, ‘What are the technological factors causing resistance to change?’ and this can be answered as follows. The findings suggest that the only technological factor tested in this study which will have an impact on resistance is the extent to which the user requirements have been met by the technological change being introduced. Factors such as ‘system design, accessibility of the system, purpose of the system (whether the system is being used for a general purpose or user specific task), reliability if the technology (e.g. system breakage and downtime) were found to have no impact on resistance to IT related change.

Based on the answers obtained for the above three search questions, the researcher was able to identify the factors having a stronger influence on the change process. In answer to this fourth research question, a model depicted above was developed to illustrate the strongest organizational, individual and technological factors causing resistance to IT related change.

The final research objective was to confer suggestion/s to minimize resistance to change in IT change management and to achieve this objective, the fifth research question asks ‘how can the resistance be minimized in this organization?’ The next chapter discusses various suggestions and recommendations to minimize resistance to technology change and thus achieve the fifth objective.

## **CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS**

In conclusion, the results of this research have documented some insights into the factors that affects resistance to IT related change. Three main categories of factors were identified: namely, Individual factors, organizational factors and technological factors for ease of study. This indicates the heterogeneous nature of IT related change. Barrett et al. (2006) points out that “although the institutional context within which ICTs are introduced may play a role in shaping their effects on organizations, the changes associated with them are unlikely to be homogenous. Rather, their impacts are likely to be shaped by the interaction between institutional patterns and the interests of individuals and groups within organizations.” (pg.11). In the current research, the researcher was able to bring to the surface another dimension of IT related change other than organizational and individual dimensions which is denoted by ‘technological factors’ in this research. The research not only highlights the multi-dimensional nature of IT change in organizations, but also reveal a multi-disciplinary angle which brings together the knowledge of various subject areas such as Organizational Behavior (OB), Management Information Systems (MIS) and Information Technology (IT).

In the previous chapter, through the resting of a model, it has been identified what factors influence resistance to IT related change. The relationships between these variables and their effects included both positive and negative outcomes. The purpose of this chapter is to suggest solutions and recommendations to avoid negative outcomes as well as to improve positive outcomes. Used for this purpose are recommendations given by other researchers in pervious researches as well as suggestions by the researcher.



In giving recommendations, it is appropriate to look back at the research objectives and the previous literature used to identify research variables so that they can be matched with the findings of this research to identify implication and draw recommendations. It should also be mentioned that in the fourth research objective, the researcher was interested only in identifying the factors with the strongest influence on resistance. Therefore, in giving recommendations, the derived research model was used where the factors identified as not having a relationship with resistance to IT related change has been removed. The conclusions and recommendations were provided for the remaining factors which were identified as driving forces of resistance.

In doing so, the first research objective to be considered is the identification of organisational factors influencing resistance to IT related change. Change of workload was identified by Kaplan & Duchon, 1988; Joshi & Sauter, 1991; Lapointe & Rivard, 2005; Bagranoff *et al.*, 2002 and Egan & Fjermestad, 2005) as a resistance factor since people fear the new technologies will increase their workload. The current research also proved this claim to be true. In a similar vein, researchers identified that Fear of loss of promotions (Joshi & Sauter,1991), Fear of redundancy (Landles,1987; Joshi, 1991), Need for security (Landles,1987; Curtis & White, 2002), Fear of loss of power (Lapointe & Rivard, 2005; Wargin & Dobbey, 2001; Bagranoff et al., 2002; Egan & Fjermestad, 2005; Curtis & White, 2002; Schwarz & Watson, 2005) act as organizational resistance factors to IT related change. Moreover, employees lack of understanding of the need to change (Wargin & Dobbey, 2001; Egan & Fjermestad, 2005; Curtis & White, 2002), Ownership of change (Curtis & White, 2002), Cost of change (Egan & Fjermestad ,2005; Kim & Kankanhalli, 2009), Culture (Cooper, 2000) , Changing norms (Landles,1987), Organizational support (Malato & Kim,

2004; Kim & Kankanhalli, 2009), User participation (Malato & Kim, 2004), are other contributing organizational factors to resistance.

In this research, these factors were also proven as contributing to the resistance to IT related change in the selected organization. To overcome such restraining forces, scholars have recommended the use of appropriate formal and informal communication, employee training, employee engagement in the change management process, stress management to discuss their worries about change, negotiations with employees to reach a win-win situation where the change may benefit both the organization and the individuals (McShane & Von Glinow, 2003) . These techniques can be used prior to and during the change phase to give the individuals a broader understanding of the change process and its impact on their work life.

The second research objective looks into the individual factors of resistance and identifies Inter-personal relationships (Landles,1987), Self- esteem (Landles,1987; Timmons, 2003; Lapointe & Rivard, 2005), Job satisfaction (Landles, 1987), Attitude/perception (Schwarz & Watson, 2005), Personal Competencies (Martinko *et al.*,1996; Timmons, 2003; Wargin & Dobey, 2001), Prior experience (Bagranoff *et al.*, 2002; Martinko *et al.*,1996), Locus of control (Martinko *et al.*, 1996), Self -efficacy (Hill *et al.*, 1987), Natural Resistance (Dewan *et al.*, 2004), Leaving comfort zone (Bagranoff *et al.*, 2002; Egan & Fjermestad, 2005), Self-interest (Curtis & White, 2002), Gender (Gefen & Straub, 1997) as forces for resistance. Curtis & White (2002) recommends the following strategies to help reduce such factors as mentioned above and improve self-confidence of employees.

- **Introduce change slowly-** A phased approach is advised as more suitable rather than sudden, quantum implementations so that it gives users time to adjust them to the new change.
- **Participation-** Users participation throughout the change process from identifying the need for change till it is implemented and stabilized (Further explained in section 5.3)
- **Psychological ownership-** This related to the previous point where a user who is involved in IT change management process will understand the importance of his/her contribution to the decision making process and develop a feeling of being “psychologically tied to an object/organisation and having a feeling of possessiveness for that object/organisation”.
- **Education and Facilitation-** As mentioned under section 5.2, sometimes the dedication and hard work of users might be of no use if they lack the basic understanding of their work responsibilities and usage of the new technology. This may lead to underutilization of technology assets and in worse cases to overall project failure. Though training and educating the employees, such calamities could be overcome and users may also feel more confident, comfortable in their new environment under such facilitations.
- **Development of trust-** The organizational culture is an important determinant of trust among members in a firm. When there is less power distance and bureaucracy in an organization and more encouragement for innovation, risk taking, entrepreneurship etc., the more it will contribute towards developing trust between employees and the top level management of the organization. This will encourage users to be more

proactive and anticipate/welcome change as a challenge, an opportunity to improve them and in return improve the organization.

- **Additional support-** In addition to the above, an organization can improve the communication methods of the firm to facilitate transparency, free flow of change related information, listening actively to change related problems and suggestions of users etc. In addition, hiring additional staff during training periods might be useful so that employees can concentrate on the training rather than be pressurized between performing routine daily duties while undergoing training.
- **Change agent-** A change agent could be an external party or an internal party to the organization who could facilitate the change process. However, both types of change agents have their own advantages and disadvantages. For example, an internal change agent may have a biased view point on certain change related issues but will be more knowledgeable about the organizational culture, values and believes etc. The reverse is true for an external change agent. Therefore, to obtain a balanced view point, it might be advisable to get the involvement of both types of change agents if the firm's resources permit.

Source: Curtis & White (2002, Pg 18-19)

In addition to the above, Joshi (1991, pg. 237) suggest that “alleviating concerns about loss of employment, future prospects, praise, recognition, awards, extra temporary staff or overtime help during implementation, help line/on-demand help, Well-designed training programs to reduce learning effort and frustrations, emphasize the status and prestige of working in a modern environment with latest technology/ innovation, explain the need to pass on the

benefits to customers on account of the competition” might be useful strategies in overcoming resistance to change.

The third research objective is to identify the technological factors contributing to resistance. The research findings indicated that the extent to which the user requirements are met by the technology is a strong contributor to resistance. As previously suggested by Curtis & White (2002; McShane & Von Glinow, 2003), user involvement in the change process will help decision makers and IT developers to select and develop technologies that serves the user requirements.

The fourth research objective was to identify the factors with the strongest influence on resistance and this has been achieved by eliminating the factors rejected in the hypothesis testing. As mentioned previously, the recommendations provided here in this section are for the factors appearing in the derived research model depicted in figure 12.

## **5.2 General recommendations**

However, it is not always possible to predict all kinds of resistance behaviour and it is also not possible to eliminate resistance altogether from a change management process. Therefore, one needs to look into strategies that could be used in overcoming resistance when it is encountered as part and parcel of the change process.

In a study conducted by research organization to identify what factors effects successful implementation of IT or IS, it was discovered that three criteria can be rated on the top of the list. They are: ‘User Involvement’, ‘Executive Management Support’, and ‘Clear Statement of Requirements’ (Standish Group, 2006 cited in Qureshi & Davis 2007, pg.1). The

importance of user involvement is discussed separately below as for ‘executive management support’; it goes without saying that sound leadership and management skills are essential in a change initiative. In terms of clarifying the user requirements, it is essential to identify what the users’ expectations are of the system. Ultimately, it will be the end users who could either ‘make or break’ a system making it either a success or failure.

In the same study mentioned above, another important finding is discussed. It is said that “the existence of a hard working staff was considered to be least important in ensuring success of IS projects” (Standish Group, 2006 cited in Qureshi & Davis 2007, pg.1). An organization may have loyal and dedicated workers, but their best efforts and good intentions may be of little use if they do not have an understanding of how best to use the new technologies in a productive manner. User training and education, sound communication practices may be of use in such a situation to highlight the important aspects of the technology newly adopted such as its purpose, cost/benefit involved and specifically the benefits to the users (what is in it for them-users)

Some researchers have also argued that since new technical and social changes tend to be confronted by resistance (Bovey & Hede, 2001), it is always a good to be prepared and take preventive measures where possible. Users often resist by showing opposition to change, ignoring, undermining and refraining from using a new technology/system which will eventually lead to failure (Beaudry & Pinsonneault 2005). Therefore identification of resistance manifestations” (Kwahk & Kim, 2008) could be recommended as a contributing factor to successful new IT implementations.

According to Martinsons & Chong (1999, pg124), "IT can help people do a better job, but only if they are willing to use the technology and if they become effective users.

Unfortunately many IT applications are underutilized, misused or abandoned.” Therefore, it is evident that the users understanding of the intended end-use of the system, their tasks and responsibilities, dependencies between the users, technology/system with the rest of the organization and its stakeholders is important.

However, the problem with many technology implementations is that “user participation is biased toward technical features where it is dominated by efforts to solve hardware problems and later software bottleneck problems and not dealing with user-related problems” (Nielsen 2008, pg.268). This is highly criticized as discouraging user participation, their contribution to the decision making process and creating an atmosphere of ownership and responsibility, thus highlighting the importance of a ‘socio-technical approach’ in technology change implementation (Nielsen 2008). Nevertheless, Nielsen (2008) reminds the reader that not always would user participation work in reducing resistance but there is evidence to suggest participation could reduce resistance to a certain extent.

## 6.0 FUTURE RESEARCH

The findings indicate some positive and negative impact of these factors on resistance to IT related change while there is also evidence of an absence of any impact by certain technological factors such as system design, accessibility of the system, purpose and reliability of the system. In the analysis section these findings have been justified using previous empirical studies.

However, it is difficult to bring together the vast amount of research that has already been conducted in this area and to confer a single perfect answer to the problems caused by resistance factors to IT induced change. One cannot refuse the advantages of using IT in organizations and equally, it is doubtful whether the rapid technological changes in the work place and the belief that these technologies will increase employee productivity and efficiency are as true as they seem to be. However, this research attempts to provide some solutions to minimize the negative effects of resistance. Resistance to technological change may have been unavoidable in the past due to the abruptness in which it invaded the lives of employees. Nevertheless, few generations of individuals have been through such changes and instead of the former dislike, the new generations of employees have a more welcoming attitude towards IT thanks to the education and training they are being given. Self-awareness and understanding of the changing nature of work life in the modern world has also triggered such positive outcomes. In a developing country such as Sri Lanka where employees are beginning to follow this same trend, the situation is slightly different as can be seen from the research findings. However, studies of this nature is expected to assist employers to remedy such short comings in a Sri Lankan context in their future endeavours.



In future research in this field, one might use the strengths of conversation analysis or other more qualitative data collection methodologies to obtain an in-depth understanding into the psychological nature of resistance. Moreover, this research was limited to a cross-sectional study of a telecommunication sector organization. For future research, it could be fruitful to expand the time horizon of the research to a longitudinal one where organizations are selected across various industries and study resistance prior to the introduction of IT related change and continue the study until the change management process reaches stabilization or equilibrium stage. This would allow the findings to be generalized to broader population than can be done with the current research.

## REFERENCES

- Al-Gahtani, S.S. and King, M. (1999) Attitudes, satisfaction and usage: factors contributing to each in the acceptance of information technology. *Behavior and Information Technology*, 18(4), Taylor & Francis Ltd
- Anon (2006) Million Sri Lankan civil servants online. *The Sunday Times*, 21 May 2006, p. 4 [Online], Available at: <http://sundaytimes.lk/060521/ft/MilliomSLcivil.html> [Accessed: 12/06/09]
- Badescua, M. and Ayerbe, C.G. (2009) The impact of information technologies on firm productivity: Empirical evidence from Spain. *Technovation*, 29, 122–129
- Bagozzi, R. P., Davis, F. D., & Warshaw, P. R. (1992). Development and test of a theory of technological learning and usage. *Human Relations*, 45(7), 660-686
- Bagranoff, N., J. Eighme and H. Kahl. (2002) “Who moved my Ledger”, *The CPA Journal*, 72(10), 22-26
- Bailey, J.E. and Pearson, S.W. (1983) Development of a tool for measuring and analyzing computer user satisfaction. *Management Sciences*, 29 (5), 530–545.
- Barbara, S. and Fleming, J. (2006) *Organizational Change*, 3<sup>rd</sup> edition, Prentice Hall, London
- Barrett, M., Grant, D. and Wailes, N. (2006) ICT and Organizational Change: Introduction to the Special Issue. *Journal of Applied Behavioral Science*, 42, SAGE Publications.
- Bauer, T.K. and Bender, S. (2004) Technological change, organizational change and job turnover. *Labour Economics*, 11, 265– 291.
- Beaudry, A. and Pinsonneault, A., (2005) Understanding user responses to IT: a coping model of user adaptation. *MIS Quarterly*, 29, pp. 493 – 524.
- Bo, Y. Qiang, C. and Weiwei, W. (2008) The analysis of the relationship between the temporal variation of technology efficiency and its influencing factors in China’s telecommunication industry: Proceedings of the 2008 International Conference on Information Management, Innovation Management and Industrial Engineering. IEEE Computer Society. 494-497.
- Bolboaca, S.D. and Jantschi, L. (2006) “Pearson versus Spearman, Kendall's Tau Correlation Analysis on Structure-Activity Relationships of Biologic Active Compounds”. *Leonardo Journal of Sciences*, 9, 179-200
- Boone, H.N. (2000) “Determining sample size”, [online] <http://www.cals.ncsu.edu/agexed/aee577a/Class11/sample.html> [accessed: 12/05/2010]
- Bovey, W.H. and Hede, A., (2001) Resistance to organizational change: the role of defense mechanisms. *Journal of Managerial Psychology*, 16, pp. 534–548.

- Brager, G. & Holloway, S. (1993) "Assessing prospects for organizational change: The uses of force field analysis", *Organizational change and development in human service organizations*, , pp. 15.
- Brandau, R. Confrey, T. D'Silva, A. Matheus, C.J. and Robert, W. Weihmayer. (1999) Reinventing GTE with Information Technology. *IEEE Computer*, March 1999, .50-58.
- Brisson-Banks, C.V. (2009). "Managing change and transitions: a comparison of different models and their commonalities". *Library Management*, 31 (4/5) , 241-252
- Brown, S.A., Chervany, N.L., and Reinicke, B. (2007) What matters when introducing new Information Technology. *Communications of the ACM*, 50 (9)
- Bryman, A. and Bell, E. (2007). 'Business Research Methods'. 2nd ed., Oxford University Press, UK
- Coch, L. and French Jr, J. P. R. (2008) 'Overcoming resistance to change', *Organization Change: A Comprehensive Reader*, pp.341.
- Constantinides, P. and Barrett, M. (2006) Large-Scale ICT Innovation, Power, and Organizational Change: The Case of a Regional Health Information Network. *Journal of Applied Behavioral Science*,42, SAGE Journals
- Cooper, R.B. (2000) Information technology development Creativity: a case study of attempted Radical change. *MIS Quarterly*,24 ( 2), 245-276
- Curtis, E. and White, P. (2002) Resistance to Change-Causes and Solutions. *Nursing Management*, 8 (10)
- Dasgupta, S. (n.d.) The Role of Culture in Information Technology Diffusion in Organizations. Fairleigh Dickinson University
- Davidson, E. (2006) A Technological Frames Perspective on Information Technology and Organizational Change. *Journal of Applied Behavioral Science*, 42, SAGE publications.
- Davidson, R. S. and Walley, P. B. (1985), Computer fear and addiction: Analysis, prevention and possible modification. *Journal of Organizational Behavior Management*, 6, 37-51.
- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319-340.
- Davis, F.D. (1993) User acceptance of Information Technology: System characteristics, user perceptions and behavioral impacts. *International Journal of Man-Machine Studies*, 38, 475-487
- Davis,F.D., Bagozzi,R.P. and Warshaw, P.R. (1989) User Acceptance of Computer Technology: A Comparison of Two Theoretical Models. *Management Science*, 35 (8), 982-1003.
- Devaraj, S. & Kohli, R. (2003) "Performance impacts of information technology: Is actual usage the missing link?", *Management Science*, 49 (3), 273-289.

Dewan, N.A., Lorenzi, N.M. and Zheng, S. (2004) Overcoming resistance to new technology. *Behavioral Health Management*, January/February 2004, 28-32

Dialog Corporate website (2010). [Online] Available at: <http://www.dialog.lk/about/investors/corporate-profile/> [Accessed: 10/06/10]

Doorewaard, H. And Benschop, Y. (2003) HRM and organizational change: an emotional endeavor. *Journal of Organizational Change Management*, 16 (3)

Eason, K. (2001) Changing perspectives on the organizational consequences of information technology. *Behavior and Information Technology*, 20 ( 5 ) , 323-328

Egan, R.W. and Fjermestad, J. (2005) Change and Resistance Help for the Practitioner of Change. Proceedings of the 38th Hawaii International Conference on System Sciences - 2005, IEEE

Englebart, D. C. (1995). Towards augmenting the human intellect and boosting our collective IQ. *Communications of the ACM*, 38, 30 - 33.

Equity Analytics (2010). 'Sri Lanka's Telecoms industry on the path to recovery'. [Online] Available at: <http://www.srilankaequity.com/2010/07/sri-lankas-telecoms-industry-on-path-to.html> [Accessed: 22/12/10]

Fichman, R.G. (1992) Information Technology Diffusion: A Review of Empirical Research. [Online] Available from: [http://www2.bc.edu/~fichman/Fichman\\_1992\\_ICIS\\_IT\\_Diff\\_Review.pdf](http://www2.bc.edu/~fichman/Fichman_1992_ICIS_IT_Diff_Review.pdf) [Accessed: 02 October 2009]

Francis, A. (1998) 'Business Mathematics and Statistics'. 5th ed. , Letts Educational, London.

Gable, G. G. (2010) 'Integrating case study and survey research methods: an example in information systems', *European Journal of Information Systems*, 3 (2), pp. 112-126.

Gefen, D. and Straub, D.W. (1997) Gender Differences in the Perception and Use of E-Mail: An Extension to the Technology Acceptance Model. *MIS Quarterly*, 21 (4), JESTOR

Hales, M. (1991) A human resource approach to information systems development-the ISU (information systems use) design Model. *Journal of Information Technology*, 6, 140-161

Hill, T., Smith, N. D. and Mann, M. F. (1987) Role of efficacy expectations in predicting the decision to use advance technologies: the case of computers. *Journal of Applied Psychology*, 72, 307-313.

Huff, S.L. and Munro, M.C. (1985) Information Technology Assessment and Adoption: A Field Study. *MIS Quarterly*, 9(4), 327-340.

Igbara, M. and Chakrabarti, A. (1990) Computer anxiety and attitudes towards microcomputer use. *Behaviour and Information Technology*, 9, 229-241.

Information and Communication Technology Act, No. 27 of 2003, Sri Lanka

Joshi, K. (1991) A Model of Users' Perspective on Change: The Case of Information Systems Technology Implementation. *MIS Quarterly*, 15(2), 229-242.

Joshi, K. and Sauter, V.L. (1991) Opportunities and Constraints in the Formulation of an Informatics Policy: The India Experience. *Information and Management*, 20, 313-22.

Kaplan, B. and Duchon, D. (1988) Combining Qualitative and Quantitative Methods in Information Systems Research: A Case Study. *MIS Quarterly*, 12 (4), 571-586.

Keen, P. G. W. (1981) Information Systems and Organizational Change. *Communications of the ACM*, 24 (1), 24-33.

Keil, T., Eloranta, E., Holmstrom, J., Jarvenpaa, E., Takala, M., Autio, E. and Hawk, D. (2001) Information and communication technology driven business transformation-a call for research. *Computers in Industry*, 44, 263-282

Kim, H.W. and Kankanhalli, A. (2009) Investigating User Resistance to Information Systems Implementation: A status Quo Bias Perspective. *MIS Quarterly*, 33 (3)

Knight-John, M. (2007) "Telecommunications Sector and Regulatory Performance in Sri Lanka: A Tale of Missed Opportunities?", Institute of Policy Studies of Sri Lanka" (Study done for LIRNEasia)

Kothari, C.R. (2002) 'Research Methodology: methods & Techniques'. 2nd ed. New Delhi: New Age International

Krejcie, R. V. and Morgan, D. W. (1970) "Determining sample size for research activities", *Educational and Psychological Measurement*, 30, 607-610.

Krell, T.C. (2000) Organizational longevity and technological change. *Journal of Organizational Change Management*, 13 (1)

Kumar, C.R. (2008), 'Research Methodology', APH Publishing Corporation, New-Delhi.

Kwahk, K.Y. and Kim, H.W. (2008) Managing readiness in enterprise systems-driven organizational change. *Behaviour & Information Technology*, 27 (1), Taylor & Francis Group

Landles, E. (1987) Information Technology and People: The Challenge of Change. *Journal of Information Technology*, 2(2), 81-83

Lanka Business Online (2009). 'Sri Lanka Dialog Telekom to save Rs500mn from staff cuts'. [Online] Available from: <http://www.lankabusinessonline.com/fullstory.php?nid=1716766503> [Accessed: 22/12/10]

Lapointe, L and Rivard, S. (2005) A multilevel model of resistance to Information Technology Implementation. *MIS Quarterly*, 29 (3), 461-491

- Lapointe, L. and Rivard, S. (2006) Getting physicians to accept new information technology: insights from case studies. *Canadian Medical Association Journal*, 174(11), 1573-1578
- Legris, P., Ingham, J. & Colletette, P. 2003, "Why do people use information technology? A critical review of the technology acceptance model", *Information & management*, 40 (3), 191-204
- Lewin K. (1943). Defining the "Field at a Given Time." *Psychological Review*. 50: 292-310. Republished in *Resolving Social Conflicts & Field Theory in Social Science*, Washington, D.C.: American Psychological Association, 1997.
- Malato, L.A. and Kim, S. (2004) End-user perceptions of a computerized medication system: is there resistance to change?. *Journal of Health and Human Services Administration*, Summer (2004), 34-55
- Marakas, G. M., and Hornik, S. (1996) Passive Resistance Misuse: Overt Support and Covert Recalcitrance in IS Implementation. *European Journal of Information System*, 5(3), 208-220.
- Markus, M. L. (1983) Power, politics and MIS Implementation. *Communications of the ACM*, 26, 430-444.
- Markus, M.L and Robey, D. (1988) Information Technology and Organizational Change: Causal Structure in Theory and Research. *Management Science*, 34 (5), 583-598, JESTOR
- Markus, M.L. (1983) Power, Politics, and MIS Implementation, *Communications of the ACM*, 26 (6), 430-444
- Markus, M.L. (2004) Technochange management: using IT to drive organizational change. *Journal of Information Technology*, 19, Palgrave Macmillan Ltd.
- Martínez , D. Rodríguez , J. and Torres, J.L. (2009) ICT-specific technological change and productivity growth in the US: 1980–2004. *Information Economics and Policy*, 1-9
- Martinko, M.J., Henry, J.W. and Zmud, R.W. (1996) An attributional explanation of individual resistance to the introduction of information technologies in the workplace. *Behavior and Information Technology*, 15(5), 313-330.
- Martinsons, M.G. and Chong, P.K.C. (1999) The Influence of Human Factors and Specialist Involvement on Information Systems Success. *Human Relations*, 52 (123), SAGE Publications
- McDonagh, J. and Coghlan, D. (2000). Sustaining the dilemma with IT-related change: the fortuitous role of academia. *Journal of European Industrial Training*, 24 (5)
- McShane, S. and Von Glinow, M.A. (2003) 'Organizational Behavior'. 2nd Ed. Tata McGraw-Hill Edition

Melville, N., Kraemer, K. & Gurbaxani, V. (2004) "Review: Information technology and organizational performance: An integrative model of IT business value", *MIS quarterly*, 28 (2), 283-322.

Meyer, A. D. and Goes, J. B. (1988) Organizational assimilation of innovations: A multilevel contextual analysis. *Academy of Management Journal*, 31, 897-923.

Mintzberg, H and Westley, F. (1992) Cycles of Organizational Change. *Strategic Management Journal*, 13 ( Special Issue: Fundamental Themes in Strategy) 39-59

Montgomery, C.A. & Wernerfelt, B. (1991) "Sources of superior performance: market share versus industry effects in the US brewing industry", *Management Science*, 954-959.

Nielsen, J.F. (2008) Models of Change and the Adoption of Web Technologies: Encapsulating Participation. *Journal of Applied Behavioral Science*, 44, SAGE publications.

Nov, O. and Ye, C. (2008). Personality and technology acceptance: Personal innovativeness in IT, openness and resistance to change. Proceedings of the 41st Hawaii International Conference on System Science, IEEE

Oliver, P. (1997). 'Research for business, marketing and education'. NTC Publishing Group, US

Park, N., Lee, K. M., & Cheong, P. H. (2007). University instructors' acceptance of electronic courseware: An application of the technology acceptance model. *Journal of Computer-Mediated Communication*, 13(1), [Online] Available at: <http://jcmc.indiana.edu/vol13/issue1/park.html> [Accessed: 22/12/10]

Olson, M.H. (1982) New information Technology and Organizationai Culture. *MIS Quarteriy/Special Issue*, 71-92

Qureshi, S. and Davis, A. (2007) Managing Resistance to Organizational Change: How GSS Can Reveal Role Related Resistance Behaviors. Proceedings of the 40th Hawaii International Conference on System Sciences, IEEE Computer Society

Rafaeli, A. (1986) Employee attitudes toward working with computers. *Journal of Occupational Behavior*, 7, 89-106.

Salanova, M. and Cifre, E., 2004. Information technology implementation styles and their relation with workers' subjective well-being. *International journal of operations & production management*, 24(1), 42-54

Sawyer, S. and Southwick, R. (2002) Temporal Issues in Information and Communication Technology-Enabled Organizational Change: Evidence From an Enterprise Systems Implementation. *The Information Society*, 18, 263-280

Schraeder, M., Swamidass, P.M. and Morrison, R. (2006) Employee Involvement, Attitudes and Reactions to Technology Changes. *Journal of Leadership & Organizational Studies*, 12, SAGE Publications.

Schutte, N., Toppinnen, S., Kalimo, R., and chaufeli, W. (2000). The factorial validity of the Maslach Burnout Inventory- General survey (MBI-GS) Across Occupational Groups and Nations, *Journal of Occupational and Organizational Psychology*, 73(1), pg.53-67.

Schwarz, G.M. and Watson, B.M. (2005) The Influence of Perceptions of Social Identity on Information Technology-Enabled Change. *Group Organization Management*, 30, SAGE Publications.

Schwarz, G.M. and Watson, B.M. (2005) The Influence of Perceptions of Social Identity on Information Technology-Enabled Change. *Group Organization Management*, 30, SAGE Publications

Schwarz, G.M.(2002) Organizational hierarchy adaptation and information technology. *Information and Organization*,12 , 153–182

Sekaran, U. (2000). ‘Research Methods for Business’. 3<sup>rd</sup> edition, John Wiley & Sons, New York

Sekaran, U. (2003). Research Methods for Business: A Skill Building Approach, 4th ed, Southern Illinois University.

Selig, G.J. (1982) Approaches to Strategic Planning for information Resource Management (iRiVI) in iViuitinational Corporations. *MIS Quarterly/June*, 33-45

Sheedy, T. (2008) People Management Is Fundamental To The Success Of Large Systems Integration Projects. Forrester Research Inc.

Stam, K. R., Stanton, J.M. and Guzman, I. R. (2004) Employee Resistance to Digital Information and Information Technology Change in a Social Service Agency: A Membership Category Approach. *Journal of Digital Information*, 5(4)

Stam, K.R, Stanton, J.M. and Guzman, I.R., 2004. Employee Resistance to Digital Information and Information Technology Change in a Social Service Agency: A Membership Category Approach. *Journal of Digital Information*, Vol 5, No 4

Stratopoulos, T. and Dehning, B. (2000) Does successful investment in information technology solve the productivity paradox?. *Information & Management*, 38, 103-117.

Telecommunication Regulatory Commission, 2004. ‘Sri Lanka Information and Communications Technology Industry’,[Online], Available at : [www.asocio.org/member/FITIS/FITIS-SL - ICT Industry.pdf](http://www.asocio.org/member/FITIS/FITIS-SL - ICT Industry.pdf) [Accessed: 23/05/09]

The Catalyst (2006) ICTA Quarterly Newsletter, August, 8<sup>th</sup> Issue

The Economic Times, (2009). [Online], Available at : [http://economictimes.indiatimes.com/Telecom/We\\_face\\_unfair\\_competition\\_in\\_Sri\\_Lankan\\_market\\_Airtel\\_/articleshow/4131293.cms](http://economictimes.indiatimes.com/Telecom/We_face_unfair_competition_in_Sri_Lankan_market_Airtel_/articleshow/4131293.cms) [Accessed: 12/06/09]

Timmons, S. (2003) Nurses resisting information technology. *Nursing Inquiry*,10(4), 257–269



Todd, J. (n.d) What is the impact of new technology in the workplace. [Online] Available from: <http://www.helium.com/items/436615-what-is-the-impact-of-new-technology-in-the-workplace?page=3> [Accessed: 22 October 2009]

Waddell, D M, Cummings, T. G. and Worley, C. G. (2000). *Organizational Development and Change*, Nelson, Australia

Wargin, J. and D. Dobiey. (2001) "E-business and change – Managing the change in the digital economy", *Journal of Change Management*, Vol. 2(1), 72-82

Watson, G. (1971) 'Resistance to change.' *American Behavioral Scientist*, 14 (5), ABI/INFORM Global, pg. 745-767

Weill, P. and Olson, M.H. (1989) Managing Investment in information Technology: Mini Case Examples and implications. *MIS Quarterly (March)*, 3-17

Wojtecki, J.G and Peters, R.G. (2000) *Communicating Organizational Change: Information Technology Meets the Carbon-Based Employee Unit*, Vol 2

Yogesh, M. (1993). Role of Information Technology in Managing Organizational Change and Organizational Interdependence [Online] Available From: <http://www.brint.com/papers/change/> [Accessed: 02 October 2009]

Zeffane, R. (1994) Computer usage and job satisfaction: An empirical exploration. *Information management & computer security*, 2(2), 10-22

Zitner, D. (2006) Physicians will happily adopt information technology. *Canadian Medical Association Journal*, 174 (11), 1583-1584.

Zorkoczy, P. and Nicholas, H. (1995) *Information Technology: an introduction*, 4<sup>th</sup> edition, Pitman Publishing, England.

## Appendix A

Ms. Hemamali Tennakoon,  
Faculty of Graduate Studies,  
University of Colombo,  
Sri Lanka.

15/10/2010

### Gathering data for a Postgraduate Research

Dear sir/madam,

This research is conducted as a partial fulfillment of the requirements for the Degree of Masters in Information Systems Management (MISM) offered by the University of Colombo. The aim of this research is to investigate and identifying the factors influencing resistance to IT related change in the telecommunication industry. Employee resistance to change is a common reaction in change management initiatives, and understanding the above mentioned relationship will be useful to decision makers in organizations.

Completion of the questionnaire should only take you a few minutes, and will help enormously with the research. There are no right or wrong answers, just choose the most appropriate response. The responses given will only be used for academic purposes and treated with strict confidentiality. Please mark your response in the appropriate box as indicated below.

#### **Example**

Q1. What is your favorite color?

- |                   |                                     |
|-------------------|-------------------------------------|
| Red               | <input type="checkbox"/>            |
| Blue              | <input checked="" type="checkbox"/> |
| Yellow            | <input type="checkbox"/>            |
| None of the above | <input type="checkbox"/>            |

**Thank you in anticipation for your help.**

## QUESTIONNAIRE

### PART 1: ABOUT YOU

1. To which of the following organizational levels do you belong?

Managerial

Non- managerial

2. Would you consider yourself as a person knowledgeable about Information Technology

Very Knowledgeable

Moderately Knowledgeable

Not Knowledgeable

Not interested in knowing

3. Which gender are you?

Male

Female

4. How old were you on the 1st of January 2010?

21-30

31-40

41-50

51-60

5. What are your highest education qualifications? (Please select only one)

General Certificate of Education (G.C.E.)- Ordinary Level

General Certificate of Education (G.C.E.)- Advanced Level

Bachelor's degree

Master's degree

Ph.D

Professional Qualifications

Other (Please specify)

## PART 2: INDIVIDUAL FACTORS

Ref #			Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree
R7	1	IT changes in my organization/department can affect existing relationships with my co-workers/colleagues	1	2	3	4	5
R8	2	If technology should alter my job status, it will affect my self-esteem/self-respect	1	2	3	4	5
R9	3	Sometimes technology changes can simplify tasks that I do and can effect job satisfaction	1	2	3	4	5
R10	4	I do not have much trust in computers or in technology	1	2	3	4	5
R13	5	I fear technology of any kind and am afraid that I will not be able to cope with new technologies	1	2	3	4	5
R15	6	I have has negative past experience with new technologies and IT changes	1	2	3	4	5
R16	7	I am a self-confident individual who believes that I have perfect control over my work related tasks	1	2	3	4	5
R17	8	My self-efficiency to use technology is high (Self efficacy)	1	2	3	4	5
R20	9	It comes naturally to me to resist any IT related change	1	2	3	4	5
R26	10	I am comfortable with the current IT systems used and would not wish for any change	1	2	3	4	5
R27	11	I wish to protect my own interests and if any changes threaten my self-interests, I would not hesitate to resist such change	1	2	3	4	5
R30	12	I believe that one's gender (male/female) also affects their acceptance/resistance of IT changes (e.g perception that males are more knowledgeable about IT than females)	1	2	3	4	5

## PART 3: ORGANIZATIONAL FACTORS

Ref #			Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree
R1	1	Our organization culture is such that we look forward to change (Proactive)	1	2	3	4	5
R2	2	I am concerned that any changes to the usage of Information Technology (IT) in future will change my current work load	1	2	3	4	5
R3	3	I believe that if any IT changes/system changes should occur, it may cause loss of promotions or advancement opportunities for me in my department /organization	1	2	3	4	5
R5	4	There is a tendency of losing my job if certain IT/system changes are done	1	2	3	4	5
R6	5	During times of change, I experience uncertainty and insecurity	1	2	3	4	5

R11	6	I fear that technology changes will alter our organizational and departmental norms such as the structure, culture, people etc.	1	2	3	4	5
R21	7	There is always organizational support when changes are introduced (e.g Training)	1	2	3	4	5
R22	8	I was consulted before any technology changes were introduced and I feel that my views were considered as important	1	2	3	4	5
R23	9	New technology or IT systems could affect my level of power and authority in the organization	1	2	3	4	5
R24	10	Whenever an IT related change occurred, all necessary details were communicated to me and my colleagues well in advance.	1	2	3	4	5
R25	11	If reasons for change is communicated to us, it is easy for us to understand why change is necessary	1	2	3	4	5
R28	12	If my participation in the change management process is encourages, it would create a sense of ownership in me.	1	2	3	4	5
R29	13	I have seen situations where decisions and attempts to introduce new technological changes being abandoned due to high costs in my department/organization	1	2	3	4	5

#### PART 4: INFORMATION TECHNOLOGY

Ref #			Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree
R4	1	From past experience, I have come to believe that any new IT changes has not/will not meet the user requirements	1	2	3	4	5
R12	2	In introducing new technology such as a new system, poor design could discourage me from using the system	1	2	3	4	5
R14	3	If a new system is not accessible easily or faster when needed, I would soon get tired of using such technologies	1	2	3	4	5
R18	4	IT/technology/ Systems that has been introduced so far are too generalized and does not meet specific user requirements of our department/ organization	1	2	3	4	5
R19	5	The reliability of existing technologies are poor and there are often system breakdowns/ malfunctioning etc.	1	2	3	4	5

## **PART 5: EMPLOYEE RESISTANCE BEHAVIOR**

1. If you dislike a particular IT related change, which of the following actions would you take (If applicable, feel free to tick more than one)

- |   |                          |
|---|--------------------------|
| Complain  | <input type="checkbox"/> |
| Oral defamation (e.g. Insult/talk bad about the system) | <input type="checkbox"/> |
| Refuse to use the system/IT                             | <input type="checkbox"/> |
| Display signs of stress                                 | <input type="checkbox"/> |
| Show dissatisfaction                                    | <input type="checkbox"/> |
| Delay using the system/IT                               | <input type="checkbox"/> |
| Show lack of interest                                   | <input type="checkbox"/> |
| Sabotage/destruction                                    | <input type="checkbox"/> |
| Other (Please specify)                                  | <input type="checkbox"/> |

**Or**

2. Do you think that instead of resisting Information Technology change, you will in fact like it?

- |     |                          |
|-----|--------------------------|
| Yes | <input type="checkbox"/> |
| No  | <input type="checkbox"/> |

## Appendix B

### List of Definitions

For the purpose of this research, the following definitions were used.

- **Employee resistance behavior-** How employees show resistance to IT related change
- **Self- esteem-** A person's evaluation of his/her own worth
- **Job satisfaction-** The extend to which a person likes or dislikes his/her job
- **Attitude/perception-** A mental state resulting from a person's values and beliefs
- **Personal competencies-** Ability of a person to use technology with little effort
- **Prior experience-** Past experience of an individual with regards to the use of technology
- **Locus of control-** A personal belief about the cause of good or bad results that occurs in a person's life
- **Internal Locus of control-** Individual's belief that good/bad things happen to them because of their own behavior
- **External Locus of control-** Individual's belief that good/bad things happen to them because of outside forces
- **Self efficacy-** Personal effectiveness of an employee to successfully/unsuccessfully use technology
- **Natural resistance-** Resisting for no particular reason
- **Leaving comfort zone-** Leaving a familiar environment that an individual is used to being in
- **Self-interest-** consider one's personal advantages
- **Culture-** (Organizational culture was considered in the research) Shared values, beliefs of individuals in an organization
- **Redundancy-** Being without a job or losing one's job
- **Security-** (Job security was considered) the security of a person's job in the sense that they have confidence about not losing their job, being demoted, transferred etc.
- **Norms-** Rules of behavior that are commonly agreed upon by the individuals in an organization
- **Organizational support-** The help given by the management of the organization and the leaders in the form of advise, training, sympathy, encouragement etc
- **User participation-** The involvement of users in the change management process from the point of identifying the need for change till the change has been introduced and stabilized
- **Power-** Formal and informal authority held by a person in an organization which gives him/her control over other and his/her job
- **Communication-** Formal and informal methods of communication such as meetings, reports, e-mails, grapevine etc.

- **Ownership of change-** Giving individuals the opportunity to make tangible contributions to the change process where they could trace back and recognize their contribution from that of others and feel responsible about it
- **Cost of change-** The amount of financial (E.g. Investing on IT equipment, training, developer's cost, installation and maintenance charges of technology) and non-financial (e.g. Time, effort, loss of good will, psychological pressure etc.) charges
- **User requirements-** What the users expect of the technology or the necessities, the basics the technology should offer
- **Accessibility of the system-** The convenience with which the technology could be accessed in terms of bypassing security mechanisms, navigability within the system to access various items the users require
- **Purpose of the system-** Whether the system has been developed for a user specific purpose or a general system that is designed to serve many purposes/requirements of different user groups/users
- **Reliability of the system-** The ability of a system (including both hardware and software) to satisfactorily perform the task for which it was designed



