

Chapter 1

Introduction

1.1 Introduction

In today's context Information and communication are considered as integral factors to the activities of human society. However, in many cultures today, information retrieval and presentation is still done with the use of speech, drama, painting, song or dance. More recent technological innovations have increased further the reach and speed of communication, culminating, for now, with digital technology.

ICT is an umbrella term that includes any communication device or application, encompassing: radio, television, cellular phones, computer and network hardware and software, satellite systems etc. as well as various services and applications associated with them. Examples could be activities such as videoconferencing and distance learning. ICTs are often spoken of in a particular context, such as ICTs in education, health care, or highway development [1]

It has been indicated that Information and Communication Technology (ICT) can be grouped into three categories and they are as follows [36]

- Information technology consists of the use of computers, which have become indispensable in modern societies to process data and save time and effort. Computers are widely used in many organizations for various kinds of activities
- Telecommunications technologies which include telephones, faxes and broadcasting with radio and television, often through satellites.

- Networking technologies, which are best known as the internet, which has also extended to mobile phone technology, Voice over IP telephony (VOIP), satellite communications, and other forms of communication that, are still in their infancy.

Above categories do not operate in isolation from one another. Advantages and reach of the internet makes it a focal point for the use of these new technologies. The decentralized, widely-distributed, packet-based mode of transporting information makes this technology an efficient, cheap and flexible means of communication, which facilitates interrelationship with other technologies. As a result international telephone calls are increasingly made through the internet's network of networks, and television and radio are broadcast via the internet. Software, music and video are rented through the internet, sometimes without even requiring a copy on the local computer. The internet is accessible through mobile phone networks, which enables easy presentation of contents to users. Digital movies are being considered for distribution through the internet to cinemas. [2]



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Not only are new Information and Communication Technologies converge in this manner, the areas where they are applied are also becoming interrelated. Telecommunications are firmly based on computer technology, and are fundamentally dependent on the internet. A very good example is that the software which makes computers so useful is now often created by a team of programmers who live and work in different countries, while collaborating and communicating via the internet. Telephone companies are increasingly using VOIP to reduce their international communications costs. Consumer commodities too are becoming dependent on the internet [2]

1.2 Advantages of ICT

It should be noted that the components of ICT play an important role in many activities in our day to day work. Reasons why ICT is considered important are given below in most of the literature.[2]

- ICT has a very broad range of applications that span across various sectors of health, education, agriculture, government, commerce, etc.
- ICT enhances economic growth through making enhanced competitiveness possible, increased trade and investment.
- Creation of opportunities and empowerment by provision of access to local and global markets and promotion of rural development.
- Improved delivery of social services and reduction of vulnerability to natural disasters as well as reducing isolation of communities and providing immediate linkage to the modern world.
- Improved transparency and governance through availability of public domain.
- Introduction of new management and control methods in both public and private sectors hence facilitating enterprise resource management.
- Introduction to the new knowledge-based economy.
- Modernization of private sector through improved market access, sales, trade and knowledge of business trends.
- Facilitation of research and development.



1.3 ICT in Road Development

The road network of a country constitutes a vital component for the movement of people and goods and therefore plays an important role in integrating the country, facilitating economic growth and ultimately reducing poverty.

Sri Lanka has recognized needs of a modern and an efficient road network to promote faster economic development .This very clearly indicated in the Regaining Sri Lanka programme of the Government Road sector is considered as the backbone of the transport sector in the country[22]. Sri Lanka has a road network of about 92,700 Km comprising about 11,600 Km of national highways which are classified as Class A&B, 16500 Km of provincial roads of Class C, D, &E and 64,600 Km of Pradeshiya Sabas roads commonly known as Local Authority roads.[7] The country's road density of 1.6 Km/Km of area

which is much higher than India, Pakistan, and Bangladesh. Road density of Bangladesh which is approximately 1.36 Km/Km is lower than our country.[1]

In Sri Lanka about 80% passenger-Km is traveled on busses, over 15% on private vehicles, and the remainder on railways. To date there are almost 2 million registered vehicles in the country, growing at about 6% per annum. This sudden increase in vehicle population has resulted in a substantial augmentation in the traffic volumes on the trunk road systems of the country. Road transport accounts for about 92% of all passenger and freight transport, of which around 76% is carried by national highways.[32] Though the road density is higher in the country, it has been noted that there is significant pressure on the development and maintenance of road infrastructure. Therefore it has been identified that road infrastructure development need to be efficiently done and therefore ICT should be used appropriately.

In this connection it is observed that the road development can incorporate ICT in many ways as given below.

- Use of Computers and other related equipment like scanners, printers, etc. for data processing, design work, preparation of estimates and report writing.
- Use of different kinds of software which has been prepared for traffic data analysis, bridges and culvert designs, pavement designs and financial monitoring.
- Use of telecommunication technologies such as telephone (fixed and mobile), fax machines for information exchange between desks, sub offices, clients and contractors.
- Use of internet, VOIP, Networking facilities such as LAN for sharing information between main office, branch worksites, contractors for efficient communication.

Therefore, in order to improve the ICT use in the road infrastructure development, it is necessary to identify the present involvement or use of ICT.

The present study is carried out to identify the current situation of the country through an assessment of the status of ICT use by carrying out survey of road infrastructure development professionals and organizations. The objective of the study can be states as given below.

1.4 Objective of the Research

The objective of the study is to evaluate the status of ICT use in the road infrastructure development of Sri Lanka's road sector through a stake holder survey and make recommendations to contribute towards national development.

1.4.1 Specific Objective

To study literature, carryout a survey of individuals and organizations to identify the status through a situation analysis to make suitable recommendations



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1.5 Structure of the Dissertation

Chapter 2 describes the Literature Survey carried out for the research. The methodology adopted for the research is explained in Chapter 3. Data Collection and Checking is described in Chapter 4, where as the Analysis of these data is described in Chapter 5. Results are described in Chapter 6. Discussion and Conclusion are described in Chapters 7 & 8 respectively.

1.6 Summary

Information and Communication Technology can be grouped into three categories and the areas where they are applied are also becoming interrelated. ICT components play an important role in many activities in our day to day work. The road development can incorporate ICT in many ways. In order to improve the ICT use in road infrastructure development it is necessary to identify the existing involvement or use of ICT.



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