THE STATE OF ICT IN KEY SECTORS

LESOTHO

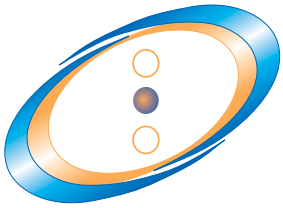



Business • Education • Health • Tourism

2013

Second Edition

LESOTHO COMMUNICATIONS AUTHORITY



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A comprehensive reference guide
to the state of ICTs in Lesotho

THE STATE OF ICT IN KEY SECTORS
Business, Education, Health and Tourism

Published by Lesotho Communications Authority
30 Princess Margaret Road • Old Europa • Maseru • Lesotho
P.O. Box 15896 • Maseru 100 • Lesotho • Southern Africa

Telephone: +266 2222 4300/5222 1300
Facsimile: +266 2231 0984/2232 6081
Website: www.lca.org.ls

Editor: **M. Mochebelele**
Enquiries: admin@lca.org.ls or lca@lca.org.ls

A digital copy of this publication is available from our website.

ISBN: 978 - 99911 - 660 - 2 - 5 - Hard copy
ISBN: 99911 - 660 - 2 - 5 - Online copy

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ACRONYMS AND ABBREVIATIONS

3G	Third Generation
ADSL	Asymmetric Digital Subscriber Line
B&B	Bed and Breakfast
BoS	Bureau of Statistics
BTS	Base Transceiver Station
CDMA	Code-Division Multiple Access
CHAL	Christian Health Association of Lesotho
CPE	Customer Premises Equipment
EDGE	Enhanced Data rates GSM Evolution
GSM	Global System for Mobile Communications
EVDO	Evolution-Data Optimised
FAX	Facsimile
FTC	Farmers Training Centre
GoL	Government of Lesotho
GPRS	General Packet Radio Service
HMIS	Health Management Information System
HSS	Health System Strengthening
ICT	Information and Communications Technology
IECCD	Integrated Early or Elementary Childhood Care and Development
ITU	International Telecommunication Union
LCA	Lesotho Communications Authority
LEC	Lesotho Electricity Company
LTDC	Lesotho Tourism Development Corporation
MCA	Millennium Challenge Account
MOET	Ministry of Education and Training
MTICM	Ministry of Trade and Industry, Cooperatives and Marketing
OPD	Out-Patient Departments
QEII	Queen Elizabeth II
QMMH	Queen Mamohato Memorial Hospital
SA	South Africa
UN- ESCWA	United Nations Economic and Social Commission for Western Asia
UPS	Uninterruptible Power Supply
VSAT	Very Small Aperture Terminal
Wi-Fi	Wireless Fidelity
WiMAX	Worldwide Interoperability for Microwave Access

ACKNOWLEDGEMENTS

It gives me a great pleasure to present this second edition on the state of the communications sector in Lesotho, this time focusing only on the four key sectors while the first edition also included a continental overview as well as detailing an evolution of the sector at large. This study was carried out at an interesting time when the network operators were busy deploying next generation networks and introducing new services such as mobile money. The report was prepared by M. Mochebelele, D. Maqutu, and M. Phakisa, in the Economics, Research and Market Development division. The Bureau of Statistics, through its staff played a pivotal role during the survey design and sampling phase of the project.

The Authority is grateful to the enumerators for giving it their all during the difficult period of data collection and later the data capturing exercise. At various stages of the project, the team also benefited immensely from the colleagues who graciously responded to queries and rendered support. The Authority also takes the opportunity to extend its thanks to all the respondents who took their valuable time to willingly respond to the questions posed to them during the data collection. The quality of data provided by them was without question, and encouraging trends were observed between the current and previous survey results.

M. Posholi
Chief Executive Officer

EXECUTIVE SUMMARY

This report presents the outcomes of the second survey on the access to and utilization of ICTs in Lesotho. It builds on the first edition, which reviewed the state of ICTs in the business, education, health and the tourism sectors in 2009. It should, however, be noted that the current edition does not include the continental overview of the information society as well as the general sector growth. These surveys are undertaken periodically as part of LCA's mandate to contribute to the measurement of the information economy.

The survey concentrated mainly on the demand side of ICT services from four sectors, namely, business, education, health and tourism. In the business sector, the study covered small and large manufacturing and trading enterprises whereas in the education sector, only three levels of schooling were targeted and these were primary, secondary and high schools. In the health sector, the study aimed at both private and public hospitals, clinics and surgeries while in the tourism sector, the study concentrated on accommodation establishments and they comprised hotels, lodges, guesthouses, Bed and Breakfasts (B&Bs) and other accommodation arrangements such as nature reserves. The data were collected using face-to-face interviews and every effort was made to reach all entities in the samples.

Access to electricity is one of the key drivers for a successful integration of ICTs and in this regard, the results indicate that a significantly high number of the accommodation establishments (84%) were connected to the electricity grid, followed by businesses (75%) and health facilities (59%) while less than a quarter of the schools were connected to the grid (23%). The prevalence of computers was relatively high in the hospitality business (58%) while in the other sectors it ranged between 20 and 40 percent. The results also show that the number of entities that had employees with basic computer skills was high across all the four sectors, with the minimum at 67 percent for schools. The computers were used mostly for word processing, information storage and accounts; also most schools with computers used them for the offering of computer studies.

Furthermore, the findings show that Internet connectivity still remains below fifty percent in all entities across the four sectors with the worst being schools, where seven percent of them had Internet. With regard to the mode of Internet connectivity, mobile Internet was used mostly by health facilities, businesses and schools whereas most of accommodation establishments used ADSL. A limited number of accommodation establishments, businesses and schools owned websites while none of the health facilities had websites. Moreover, the digital divide between urban and rural persists in terms of public access to Internet through Internet cafés. For instance, amongst health facilities with Internet cafés in their locality, 96 percent were in urban settings and the remaining four percent were situated in rural areas. Also, all schools with Internet cafés in their locality were found in urban areas.

Comparison of some of the key ICT indicators from the current survey and the previous one shows a positive growth in most of the cases across all sectors except in the education sector. For instance, there was an improvement in the number of entities with computers and Internet connectivity in businesses, health facilities and accommodation establishments from 2009 to 2013. In terms of the mode of Internet connectivity, the results point to a huge decline in the Dial-up service in favour of faster technologies with larger data carrying capabilities. This is the clearest evidence that broadband is the ultimate for stakeholders in terms of need. While there was a significant growth in the number of entities that used mobile phones for business purposes, there was a notable decline in the number of entities that had fixed telephones ❑

CHAPTER 1 - INTRODUCTION

1.1 Background

Information and communication technologies (ICTs) are generally defined as technologies that facilitate communication and the processing of information by electronic means, and include everything from radio, satellite, television to telephones, computers and the Internet (UN-Department of Economic and Social Affairs, 2012). Given the general acceptance of ICTs as enabler in almost all spheres of life, the access to, and adoption of ICTs continues to grow globally even though countries and stakeholders are at vastly different stages of addressing their needs through the e-services.

Businesses use ICTs to improve different facets of their operations with the aim of reducing costs, increasing efficiency and improving their competitiveness. For instance, many types of business software can improve information and knowledge management, leading to more efficient business processes and better performance. Furthermore, e-mail and Internet can improve communication, reduce transaction costs and increase the speed and reliability of transactions for both business-to-business and business-to-consumer transactions.

The accommodation segment is a vital component of the tourism industry; it consists of different forms of sleeping and hospitality facilities. Hotels, lodges, guesthouses, B&Bs, nature reserves, national parks, hostels, conference centres, homestay are the most common forms of overnight accommodation and hospitality services in Lesotho. With the advancement in technology, the accommodation sub-sector, like many other sectors now needs to use ICTs to plan, manage and market services.

There are many ways in which ICTs can also make a difference in education and health; by replacing the traditional methods of delivering educational and health services as well as ushering in improved planning, management, monitoring and evaluation of activities. For instance, the use of ICTs in the health facilities can improve the collection, storage, retrieval and transmission of individual patient information. In addition, given the increased use of mobile technologies, m-health (medical and public-health practices supported by mobile devices) has a potential to improve the delivery of health services to a wider range of the population (ITU, 2010). Furthermore, m-health or other applications, including telemedicine, can deliver healthcare services at a distance, by providing and exchanging information for diagnosis, treatment and prevention of diseases and injuries. Similarly, given the limited institutions of learning and teachers in many developing countries, distance learning can have a positive impact on training of teachers (ITU, 2006). ICTs also provide students with new resources that allow them to acquire requisite skills for the evolving information economy that they are to become a part of.

As governments recognize the benefits and potential of ICTs as a catalyst for social and economic development, the demand for reliable, comprehensive and comparable statistics continues to rise. In order to gauge the benefits of the rapidly changing information economy, there is a need to monitor and benchmark progress based on measurable ICT indicators with a view to designing and reviewing national policies and strategies periodically. While demand for data on access to, and use of ICT has grown, statistics on ICT indicators are still limited.

Lesotho is no exception with regard to the limited statistics on information economy and faces the increasing demands from local and international institutions including the Government. As a response to this need for ICTs statistics, LCA, as a member of the information society, conducted a baseline survey in 2009 with a view to gauging the extent of ICTs infrastructure, access and usage in business, tourism, health and education sectors. This 2013 survey is the second in a sequel of similar surveys that will be carried out on a periodic basis. The two studies have, in the main, used the core list of ICT Indicators that was first proposed by the global Partnership on Measuring ICT for Development (http://measuring-ict.unctad.org) and adopted by the United Nations Statistical Commission in 2007. This core list of ICT indictors has since evolved over time following annual reviews at the World Telecommunication/ICT Indicators Symposium (WTIS).

1.2 The scope of the study

This countrywide study concentrated mainly on the demand site of ICT services from four sectors, namely business, education, health and tourism. In the business sector, the study covered small and large manufacturing and trading enterprises whereas in the education sector, only three levels of schooling were targeted and these were primary, secondary and high schools that were registered with the MOET in 2012, regardless of whether they were private, missionary or public schools. In the health sector, the study aimed at both private and public hospitals, clinics and surgeries while in the tourism sector, the study concentrated on accommodation establishments which comprised hotels, lodges, guesthouses, B&Bs and other accommodation arrangements such as nature reserves.

1.3 The survey design and data collection

The Bureau of Statistics (BoS), as the national statistics office charged with the responsibility for the collection of official statistics in the country, were engaged during the design and preparation of samples for this study. There were four independent, sector specific surveys carried out in the study. The business sample was drawn from an updated sampling frame of 18,368 registered manufacturers and trading enterprises, and those made up the bulk of the formal business sector in Lesotho during 2012. In education, the sample was drawn from 1,794 schools that ranged from primary to high schools, and this was limited to those that were registered with the MOET in 2012. There were 290 health facilities that comprised hospitals, clinics and surgeries. There were 149 accommodation establishments, and they included hotels, lodges, guesthouses and B&Bs.

Representative probability samples of 903 businesses, 329 schools, 143 health facilities and 86 accommodation establishments were selected. These samples were constructed to allow for separate estimates for key indicators in each of the ten districts of Lesotho. Overall, there were 1,461 sampling units and Table 1.1 presents their breakdown by districts.

Table 1.1 Breakdown of samples by districts

Districts	Business sector		Education sector		Health sector		Tourism sector	
	Sample	Percent	Sample	Percent	Sample	Percent	Sample	Percent
Berea	77	8.5	34	10.3	16	11.2	5	5.9
Botha-Bothe	72	8.0	26	7.9	12	8.4	7	8.2
Leribe	117	13.0	41	12.5	17	11.9	9	10.6
Mafeteng	70	7.8	35	10.6	14	9.8	7	8.2
Maseru	298	33.0	45	13.7	28	19.6	19	21.2
Mohale's Hoek	55	6.1	34	10.3	13	9.1	5	5.9
Mokhotlong	69	7.6	27	8.2	11	7.7	9	10.6
Qacha's Nek	36	4.0	28	8.5	10	7.0	8	9.4
Quthing	59	6.5	29	8.8	10	7.0	9	10.6
Thaba Tseka	50	5.5	30	9.1	12	8.4	8	9.4
Total	**903**	**100**	**329**	**100**	**143**	**100**	**86**	**100**

The data were collected using face-to-face interviews with a team of 14 trained enumerators. Since there was a need to reach all entities in the samples, follow-up visits were done in cases where a key person to be interviewed was not available. Furthermore, where follow-up visits were not successful, follow-up interviews were done telephonically.

1.4 Structure and organisation of the report

The rest of the report is organised as follows. In chapter two, a detailed analysis of ICT indicators in businesses is presented, followed by chapter three with an in-depth account of ICT indicators in education. Chapters four and five deal with ICT indicators in health facilities and accommodation establishments respectively. Chapter six provides comparative statistics across the four sectors; the last chapter gives a brief comparison of the selected key ICT indicators for the 2009 and 2013 surveys in the four sectors ❑

CHAPTER 2 - ICT IN BUSINESS

2.1 Introduction

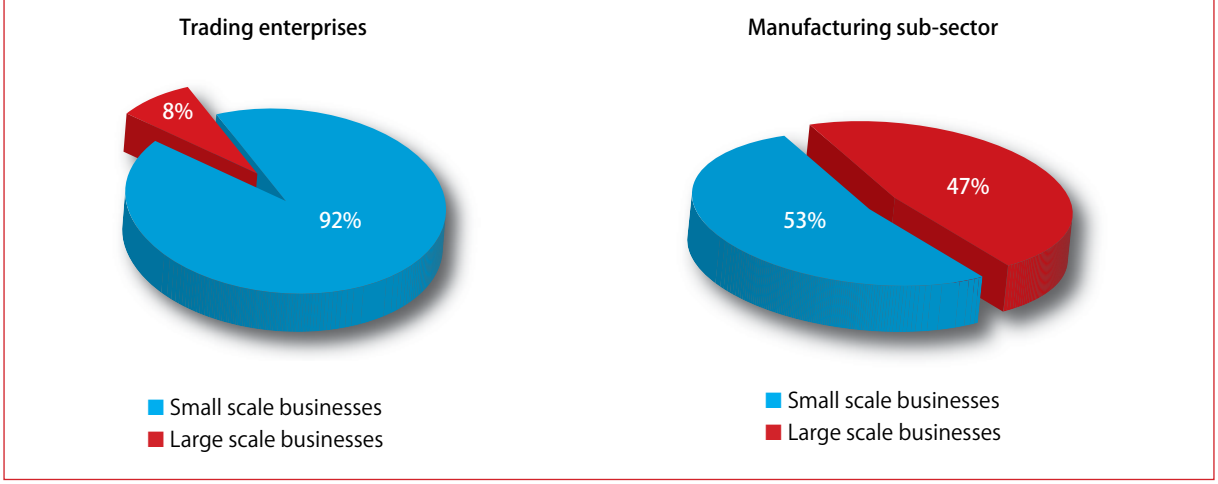
2.1.1 The structure and organisation of the business sector in Lesotho

The Lesotho business sector includes the manufacturing sub-sector, trading enterprises, cooperatives and street vendors. The Ministry of Trade and Industry, Cooperatives and Marketing (MTICM) is responsible for the registration and licensing of these businesses (MTICM, 2012). To this end, the MTICM supports private sector job creation and poverty reduction through creation of an enabling environment for trade, investment, business and industrial development. The size of a business is determined by taking stock of the number of its employees. In this regard, a business was classified as small if it had less than 10 employees while one with 10 or more employees was classified as large.

2.1.2 The scope of the survey

This study targeted manufacturing and trading enterprises, which make up the bulk of the formal business sector in Lesotho. The sample consisted of 903 businesses with trading enterprises constituting 85 percent of the sample while businesses in the manufacturing sector comprised 15 percent. With both trading and manufacturing businesses, small scale traders constituted a majority. In trading enterprises, small scale traders accounted for 92 percent while in the manufacturing sector, 53 percent were made up of small scale businesses. Figure 2.1 presents the percentage distribution of businesses classified by type and size of business.

Figure 2.1 Businesses by type and size



2.2 Profile of the business employees

While majority of the respondents were business employees (71%), they assumed managerial or supervisory positions in the business, which placed them in a favourable position to provide the information requested in relation to the business. The remaining 29 percent of the respondents were business owners themselves.

The average age of respondents was 36 years. In terms of disaggregation by gender, there were more female respondents (53%) compared to their male counterparts (47%).

With regard to the distribution of employees in the trading enterprises, there were noticeable differences between male and female employees. That is, there were more male employees (54%) compared to female employees (46%). There were no marked differences in terms of the average number of employees categorised by gender in both small and large scale trading enterprises. On average, there were two female and four male employees in small scale trading businesses while among the large scale trading enterprises, there were on average 20 female and 22 male employees. The largest of these enterprises had up to 544 employees. The proportion of employees that were expatriates formed seven percent of all employees in the trading enterprises with an average of two and four non-local employees for small and large businesses respectively.

Unlike the distribution of employees by gender in the trading businesses, the manufacturing sector had a high proportion of female employees (62%) compared to their male counterparts who constituted 38 percent of the workforce. Similarly, large scale manufacturers had an average of 159 female employees compared to 81 male employees. However, a different trend was observed in small scale businesses where the average number of female employees (2) was one third of their male peers (6). The largest of these firms employed as many as 1,856 people in its total workforce. The non-local employees constituted four percent of all the employees in the manufacturing sector and there were three and five expatriate employees on average for small and large businesses respectively. A detailed breakdown of the profile of employees is presented in Table 2.1, showing the average number of employees classified by gender, business type and size.

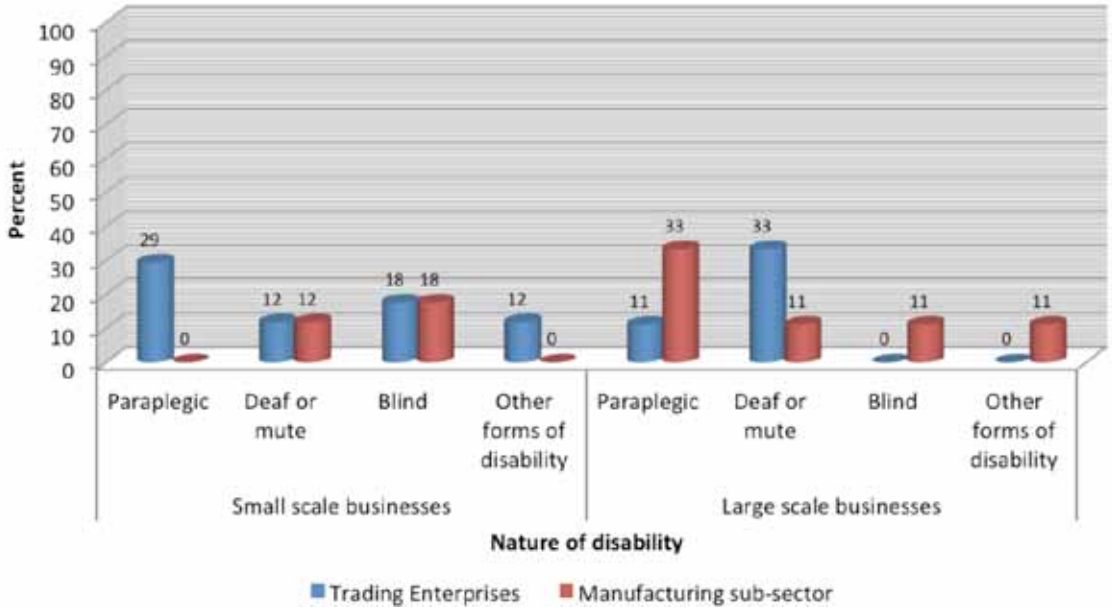
Table 2.1 The average number of business employees by gender

	Trading enterprises			Manufacturing sub-sector		
	Average number of employees per micro enterprise	Average number of employees per large scale enterprise	Percentage of employees by sex and citizenship	Average number of employees per micro enterprise	Average number of employees per large scale enterprise	Percentage of employees by sex and citizenship
Females	2	20	46	2	159	62
Males	3	22	54	6	81	38
Expatriates	2	4	7	3	5	4

2.2.1 Disabilities

Information was sought from respondents on whether there were any employees in the businesses with disability. Three percent of the businesses had employees that were disabled and of these, 35 percent had employees that were paraplegic, 31 percent had deaf and mute employees while 27 percent had blind employees. Figure 2.2 shows the distribution of the businesses with disabled employees by the nature of disability. With regard to the number of businesses that had ICT facilities for the disabled staff and the general public, only one business (out of all businesses) supplied hearing aid for its partially deaf staff member.

Figure 2.2 Businesses with employees with disability by nature of disability



2.2.2 Computer awareness and appreciation among employees

Businesses were asked to provide information related to the number of employees who had computer appreciation or awareness. More than half (59%) of the businesses had at least one employee with basic computer appreciation skills. A breakdown by type and size of business showed that small businesses in the manufacturing sub-sector had a higher proportion of employees with computer skills (67%) than small businesses in the trading enterprises (54%). However, in large businesses a slightly higher proportion of trading enterprises had computer literate employees (85%) compared to businesses in the manufacturing sub-sector (81%).

With regard to computer literate employees, there was no difference in the average number of male and female employees within the small and large businesses among the trading enterprises. That is, in small trading enterprises, the average number of employees with computer appreciation was two, which was the same for both males and females (Table 2.2). Similarly, in large trading enterprises, there were on average eight female and seven male employees with computer literacy. In the manufacturing sub-sector, the average number of male and female employees with computer skills was similar in small businesses, however, a marked difference was observed between male and female employees with computer awareness in large businesses. Specifically, in small manufacturing businesses there were on average two female and three male employees with computer appreciation while in large businesses there were on average 19 female and eight male employees with computer literacy (Table 2.2). A limited number of businesses (6%) had employees who were ICT qualified, that is, employees with a diploma or degree in ICT related fields.

Table 2.2 The average number of business employees with computer appreciation by gender

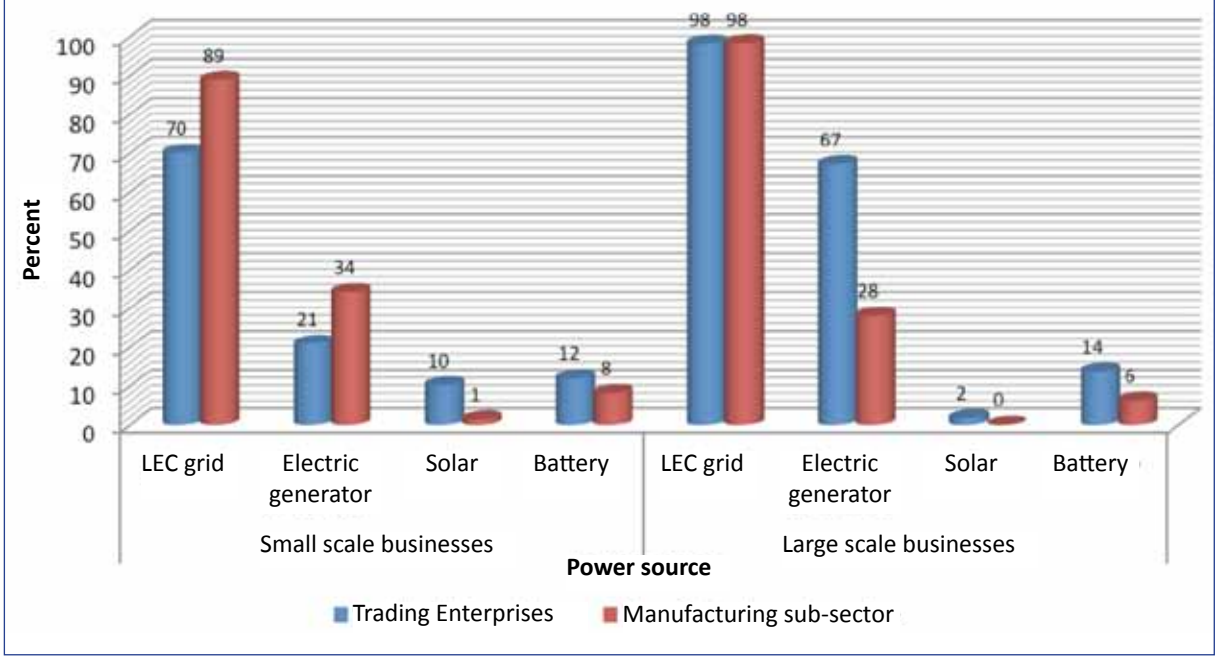
	Trading enterprises		Manufacturing sub-sector	
	Average number of employees per micro enterprise	Average number of employees per large scale enterprise	Average number of employees per micro enterprise	Average number of employees per large scale enterprise
Females	2	8	2	19
Males	2	7	3	8

2.3 Source of energy in businesses

The main source of energy in businesses was the Lesotho Electricity Company (LEC) power grid with 75 percent of them connected to it. In addition, 26 percent of businesses had generators, eight percent used solar system and eleven percent used other sources such as batteries connected to electric inverters. The latter were used mostly to play radios and televisions as well as for charging mobile phones and lighting, particularly in the rural areas. Furthermore, businesses that were connected to the main power grid and also had generators for backup constituted 21 percent.

Distribution of businesses by type and size showed that almost all large businesses regardless of whether they were in manufacturing or trading were connected to LEC power grid as the main source of energy. Although majority of small businesses were connected to the LEC power grid, there were differences between the two types of businesses in favour of the manufacturing sub-sector. With regard to ownership of a generator by different types of businesses, a higher proportion of large businesses in the trading enterprises had generators than large businesses in the manufacturing sub-sector while for small businesses, the reverse was true. For a detailed breakdown of businesses by type and size, refer to Figure 2.3, which presents the distribution of businesses classified by source of energy, type and size.

Figure 2.3 Businesses with energy by source

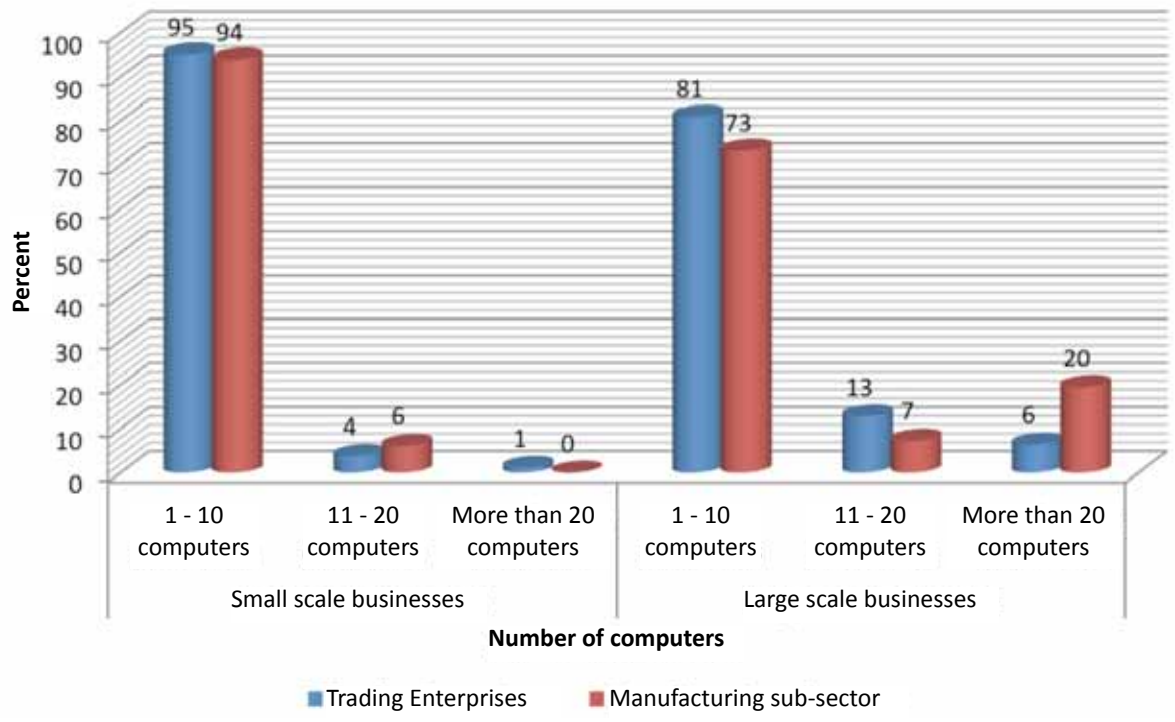


2.4 ICT Infrastructure, access and usage in businesses

2.4.1 Presence of computers and servers

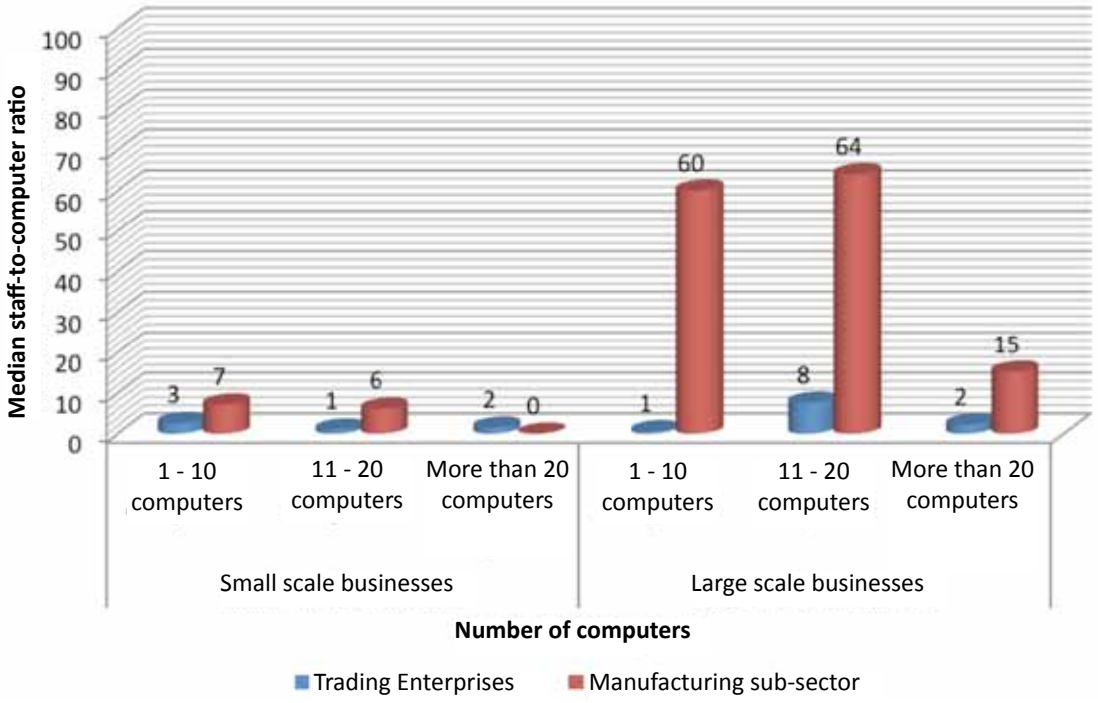
The respondents were asked to provide in detail, information related to the presence of ICT equipment, especially working computers and servers in the businesses. Overall, there were 1,686 computers available for businesses in the sample. The proportion of businesses with computers constituted 34 percent and the remaining 66 percent had no computers. Of the businesses with computers, 90 percent owned at least 1 to 10 computers, about six percent had 11 to 20 computers and four percent had more than 20 computers. Almost 40 percent of businesses with computers had at least one server. Eighty three percent of these had 1 to 10 computers connected to the server, while 94 percent had 11 to 20 computers connected to the server. All businesses that owned more than 20 computers had them connected to the server. Figure 2.4 presents percentage distribution of businesses with computers classified by type of business and computer category of business, which is determined by number of computers that the business owned.

Figure 2.4 Businesses with computers classified by category



With regard to the average number of employees that shared a computer, that is, employees-to-computer ratio, there was an average of three and five employees to one computer in small and large trading enterprises respectively. In manufacturing sub-sector, there were on average seven employees per computer in small businesses and 30 employees to one computer in large businesses. A further breakdown of employees-to-computer ratio classified by type of business and computer category of business is presented in Figure 2.5.

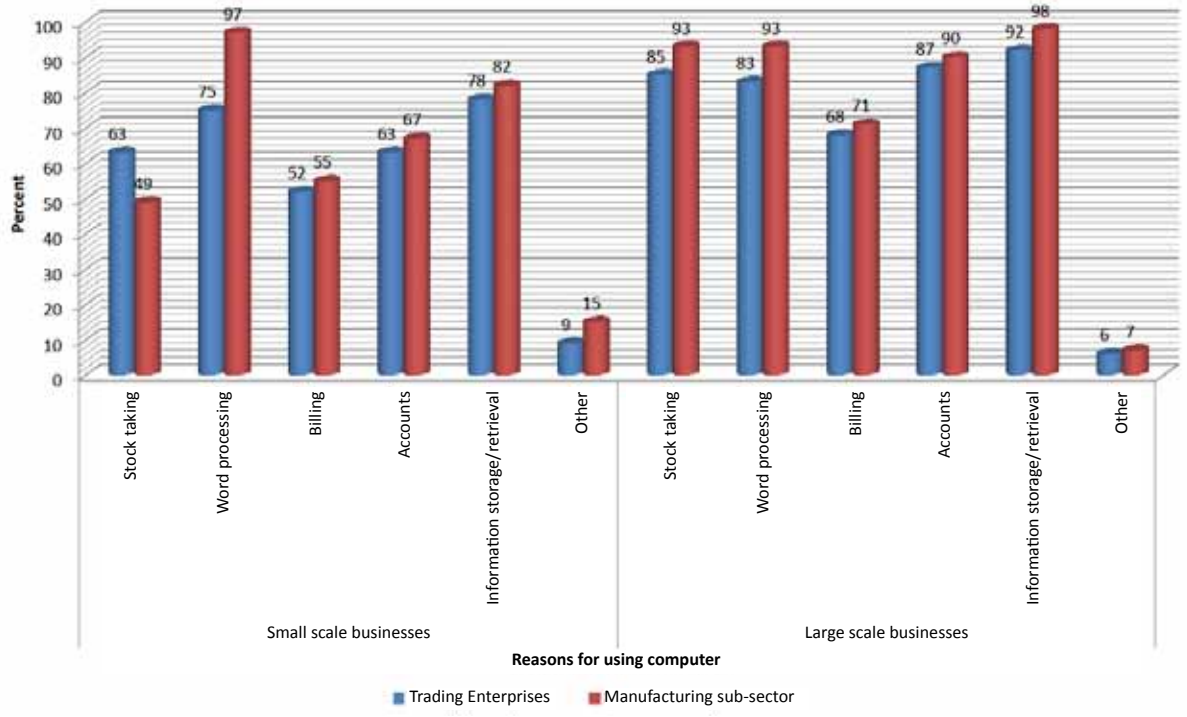
Figure 2.5 Staff-to-computer ratio by number of computers (businesses with computers)



Majority of businesses with computers used them for information storage and retrieval (91%), word processing (90%) and stock taking (82%). Almost three quarters of the businesses (74%) reported using computers for all the three reasons mentioned previously, namely, word processing, stock taking and information storage and retrieval. Less than half of the businesses used computers for managing their financial accounts (42%) and billing of clients (34%). Figure 2.6 depicts the percentage distribution of computers by type of business and the purpose for which computers were used.

With businesses that had computers, 93 percent reported that at least one of their employees used a computer on a daily basis whereas a limited proportion of businesses had employees that used computers once a week (14%) and at times once a month (4%). Regarding the number of employees that used these computers, the results showed that on average, six employees used computers on a daily basis, which was higher than the average number of employees that used computers once a week (2) and once a month (1).

Figure 2.6 Businesses with computers by type of usage



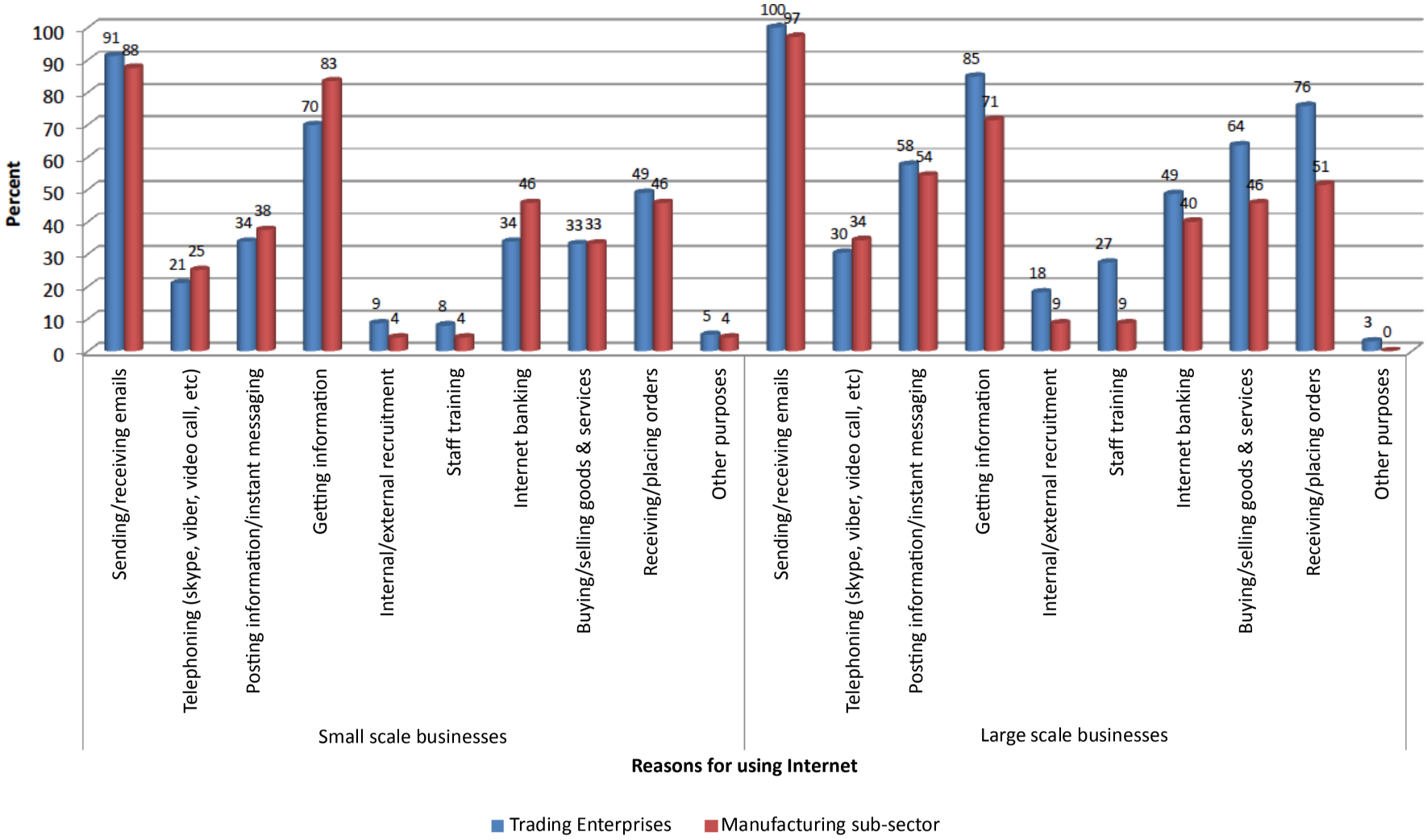
2.4.2 *Internet connectivity*

Information relating to Internet connectivity issues was solicited from the businesses and a quarter of these businesses (26%) had Internet connectivity while the remaining businesses (75%) were not connected. Of all the businesses with Internet, seven percent used only mobile phones to access Internet. Amongst businesses with computers, 71 percent had Internet connectivity with an average of five computers connected to the Internet. Regarding the type of data subscription that the businesses used, more than half (52%) were on post-paid, 44 percent were on prepaid and very few businesses (4%) used South African (SA) network.

With regard to businesses that were not connected to Internet, respondents were asked to provide reasons for not having Internet connection. Several reasons were mentioned and they included lack of knowledge about Internet and its value to the business, prohibitive connection costs and lack of infrastructure such as absence of network coverage (e.g., Base Transceiver Stations -BTS) as well as electricity. Respondents were also asked when they were planning to have Internet in their businesses. Majority (95%) reported that they were not planning to connect Internet in the near future while a limited number (4%) reported that they would get connected within a year or more. Also, one percent said installation was in progress at the time of the study.

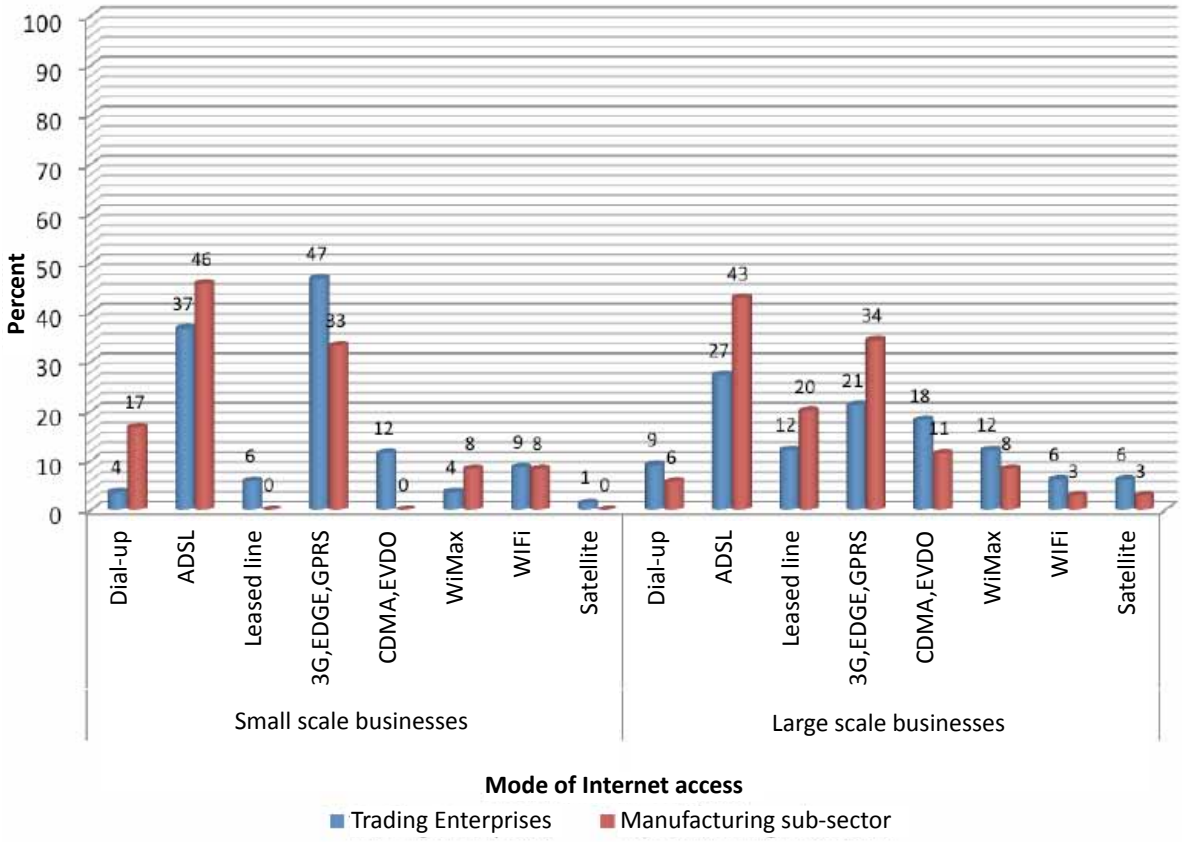
Most businesses with Internet reported their common usage as sending and receiving e-mails (93%) as well as getting information (74%). Other reasons that were cited for using the Internet included receiving and placing orders (53%), posting of information or instant messaging (41%), buying or selling of goods and services (39%), Internet banking (38%) as well as telephoning, 25% (e.g. skype, viber, video call etc.). Figure 2.7 presents the businesses with Internet connectivity classified by type of business and type of Internet usage.

Figure 2.7 Business with Internet connectivity by type of usage



Almost half (50%) of the businesses used mobile Internet that included 3G, EDGE, GPRS, CDMA or EVDO technologies. The other commonly used mode of Internet connectivity by businesses was ADSL (37%) whereas businesses that used leased line constituted eight percent. Small proportions of businesses were connected to Internet through Wi-Fi (7%), WiMAX (6%), Dial-up (6%) as well as VSAT or satellite (2%). On the aggregate, businesses that used wireless networks (WiMAX, Wi-Fi, VSAT or Satellite) constituted 15 percent. Figure 2.8 shows the breakdown of businesses by mode of Internet access classified by business type and size.

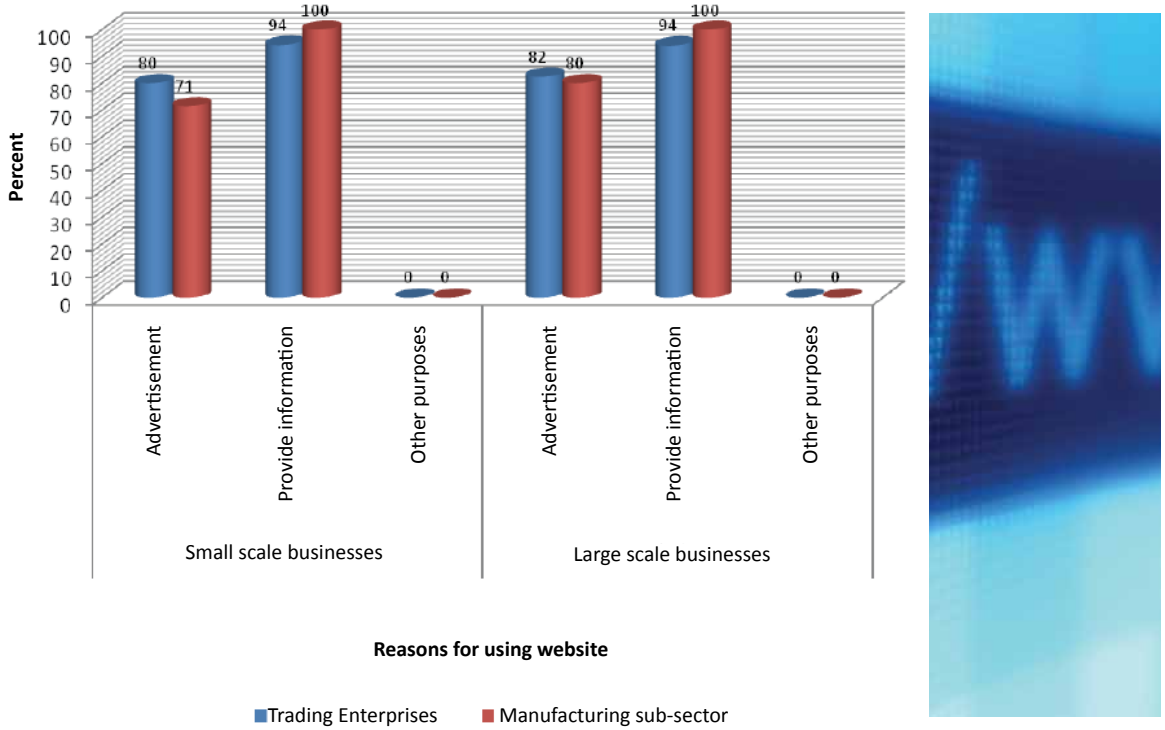
Figure 2.8 Mode of Internet access for businesses with Internet



2.4.3 Web presence

On the overall, a limited proportion of businesses (8%) had a website, and the earliest was launched in 1997 and the most recent was launched in 2012. Amongst businesses with a website, almost half (49%) had websites specifically designed for them (hosted in Lesotho) while the other half (51%) had websites hosted elsewhere outside the country. Majority of businesses used their websites mainly for providing information (96%) and advertising (80%). In addition, more than half (53%) of the businesses had the information on their websites updated once a month; 29 percent had it updated within a period of one year and those that never updated their website information constituted 18 percent. With regard to website redesign and realignment, 29 percent of businesses reported that they had been redesigning their websites once a year while 12 percent did so once in more than one year; and businesses that never redesigned their websites constituted 59 percent. Figure 2.9 depicts the percentage distribution of businesses with websites by type of usage.

Figure 2.9 Businesses with websites classified by type of usage



2.4.4 *Onsite presence of communication and CPE*

With regard to communication facilities, most businesses (72%) owned a mobile phone whereas less than half of the businesses had a fixed telephone (39%) and a fax machine (21%). A limited number of businesses (5%) had a two-way radio. Amongst businesses with voice communication, the most common form of subscription was a prepaid service (79%) while 27 percent were on post-paid service[1]. Furthermore, businesses that used both prepaid and post-paid services constituted six percent whereas businesses that used South African (SA) network in addition to the local network constituted three percent.

Information was sought from the respondents on whether businesses had an e-mail or not. On the overall, 18 percent had an e-mail address specific to the business. In addition, amongst the businesses with a server and more than one computer, 46 percent of them had intranet.

With regard to ICT equipment owned by businesses, half of them had radios (50%) and a limited proportion had television sets (18%)[2]. Of those with television sets, 62 percent had a satellite dish connected to a television while the remaining used antennae. Information was also sought regarding equipment such as electronic cash registers and speed points for electronic payments. Less than a third of them (27%) had electronic cash registers and a very small proportion had the speed points (4%). Table 2.3 presents the proportion of businesses with communication facilities and equipment classified by the type of business.

[1] The frequencies exceed 100% because a business can use more than one type of subscription.

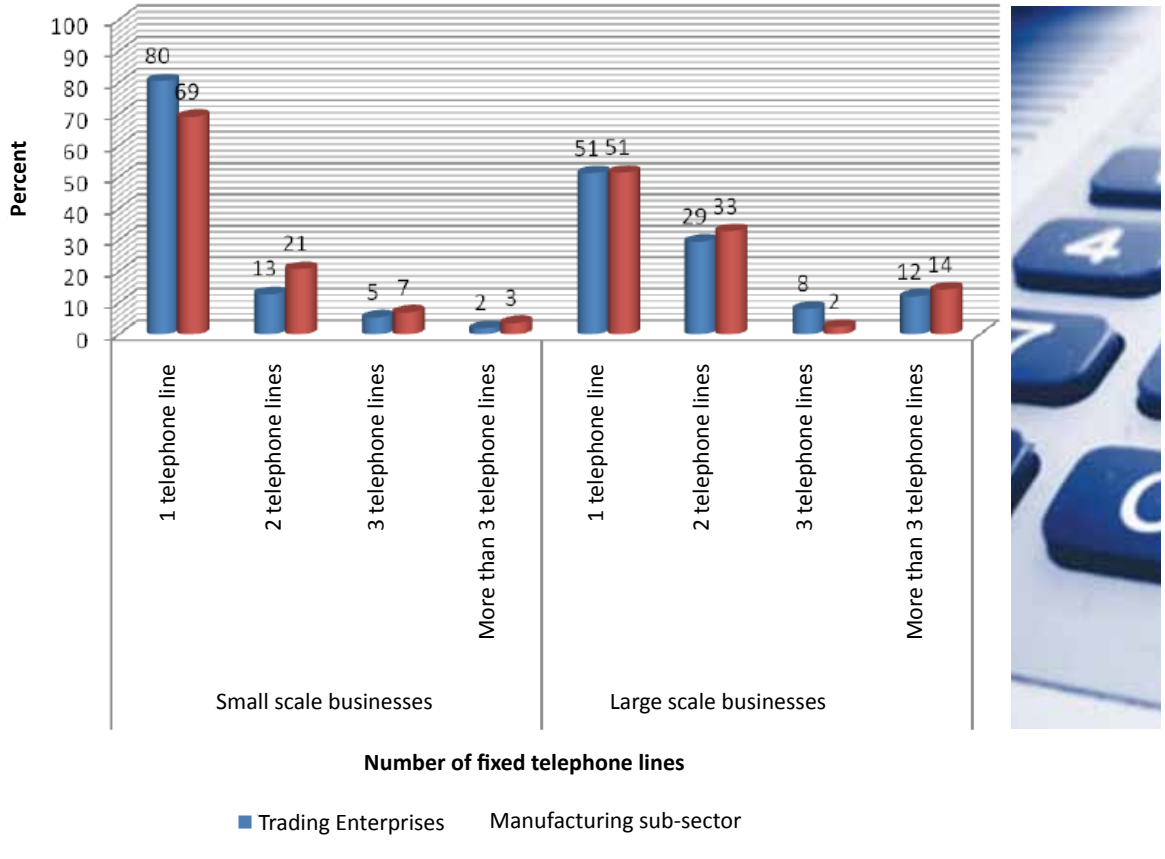
[2] These figures excluded the radio or television services on handsets.

Table 2.3 Businesses with communication facilities and other ICT equipment

Communication facilities and other ICT equipment	Trading enterprises (%)		Manufacturing sub-sector (%)	
	Small	Large	Small	Large
Businesses with mobile phone	74.5	45.8	76.7	67.2
Businesses with fixed telephone	32.4	86.4	39.7	67.2
Businesses with facsimile machine	14.7	59.3	27.4	48.4
Businesses with E-mail	13.9	37.3	20.5	45.3
Businesses with two-way radio	3.7	10.2	4.1	14.1
Businesses with radio sets	51.5	61.0	45.2	34.4
Businesses with television sets	17.7	32.2	12.3	12.5
Businesses with electronic cash register	28.0	52.5	5.5	21.9
Businesses with speed point	2.4	28.8	0.0	3.1

Of the 39 percent of the businesses that had a fixed telephone, more than two thirds (72%) had one telephone line. The number of businesses with more than one telephone decreased as the telephone lines increased. Eighteen percent had two telephone lines, five percent had three lines and another five percent had four or more lines. A detailed disaggregation of businesses with a fixed telephone classified by business type and the number of telephone lines is depicted in Figure 2.10.

Figure 2.10 Businesses with fixed telephone lines by number of lines



The study sought to establish whether businesses were located in areas that had access to the public pay phones as well as Internet cafés, and majority of businesses (83%) had access to a public phone within a walking distance with an average of four minutes from the business premises. Moreover, more than half of the businesses (59%) had Internet cafés in their localities and these were situated within an average walking distance of eight minutes. Table 2.4 shows businesses with access to public payphones, Internet cafés and the mean access time to reach them classified by type and size of business.

Table 2.4 Businesses with access to public payphones, Internet cafés and the mean access time

Business size and type		Access in percentages		Mean access time in minutes	
		Public payphone	Internet Café	Public payphone	Internet Café
Trading enterprises	Small scale	79.8	54.3	3.50	7.38
	Large scale	96.6	82.6	4.00	12.30
Manufacturing sub-sector	Small scale	94.5	79.5	4.00	9.62
	Large scale	89.1	67.2	6.05	11.47

2.4.5 ICT support

Amongst businesses with computers, majority (77%) outsourced technical support services and a limited proportion (17%) relied on in-house technical support provided by employees. Less than 10 percent (6%) of the businesses had not experienced any problems that required technical support. Table 2.5 shows the distribution of businesses with different kinds of technical support classified by the type and size of business.

Table 2.5 Businesses with technical support by type

Business type →	Trading enterprises (%)			Manufacturing sub-sector (%)		
Business size ↓	In house	Out source	No technical support	In house	Out source	No technical support
Small scale	15	79	6	6	91	3
Large scale	30	66	4	24	68	7

2.5 Cost of communication

Respondents were asked questions on monthly cost of communication as well as the other monthly running costs of the business. Cost information was obtained from almost half (49%) of the businesses and the communication costs accounted for up to five percent of the total running costs. Costs attributed to different types of communication facilities included a monthly average of M300.00 for fixed telephones, where twenty five percent of the businesses with the least usage reported a monthly cost of M100.00 or less and twenty five percent of the businesses with the most usage incurred costs of M500.00 and above per month (Table 2.6).

There was an average expenditure of M250.00 per month for mobile phones with the bottom twenty five percent of the businesses incurring M100.00 per month and those with the most usage spending M500.00 and above per month. An average monthly cost of Internet was M300.00 while an average of M245.00 was spent monthly for fax services. Other costs that reflect the money paid by businesses for using

employees personal mobile phones amounts to an average of M130.00 per month while costs that reflect bundled services (e.g., airtime used for both voice and data services) recorded a relatively higher average of M275.00 per month.

Table 2.6 The cost of communication in the businesses

Communication facility	Average cost	25th Percentile	75th Percentile
Fixed telephone line	300.00	107.50	500.00
Mobile phone	250.00	100.00	500.00
Internet	300.00	180.00	537.50
Facsimile machine	245.00	100.00	500.00
Two-way radio	18.00	8.00	-
Staff mobile phone	130.00	65.00	250.00
*Bundled service	275.00	185.00	775.00

* The bundled cost was dominated by cases where the airtime loaded on the mobile phone was used for both Internet and voice; as a result the users could not apportion cost for the two services.

Table 2.7 Integration of ICTs in business

	Business type	Percentage of businesses owning computers		Percentage of businesses with network server (businesses with computers)		Average number of computers connected to the server (businesses) with a network server)		Average number of computers connected to Internet (businesses with Internet connection)	
		Small scale	Large scale	Small scale	Large scale	Small scale	Large scale	Small scale	Large scale
Businesses with 1 to 10 computers	Trading enterprises	95.1	80.9	85.5	69.0	4.00	5.35	2.77	4.26
	Manufacturing sub-sector	93.9	73.2	87.5	38.9	3.75	3.00	3.52	3.85
Businesses with 11 to 20 computers	Trading enterprises	3.8	12.8	11.3	20.7	14.00	12.00	14.20	13.60
	Manufacturing sub-sector	6.1	7.3	12.5	16.7	0.00	13.50	14.00	16.00
Businesses with more than 20 computers	Trading enterprises	1.1	6.4	3.2	10.3	13.50	56.67	43.00	60.00
	Manufacturing sub-sector	0.0	19.5	0.0	44.4	0.00	39.38	0.00	30.00

CHAPTER 3 - ICT IN EDUCATION

3.1 Introduction

3.1.1 The structure and organisation of the Lesotho education system

The Government of Lesotho through the Ministry of Education and Training (MOET) plays a significant role in terms of policy direction for education, as well as working in partnership with churches that own schools. There are four main levels within the Lesotho education system (MOET, 2008). The first level includes integrated early or elementary childhood care and development (IECCD) which lasts three years, followed by primary education which covers seven years of basic education. The third level consists of five years of secondary education, which comprises three years of junior secondary and two years of senior secondary (high school). Finally, the fourth level consists of tertiary education (post high school education) with most programmes taking a minimum of three or four academic years.

The number of schools at different levels that were registered with the MOET in 2012 are presented in Table 3.1.

Table 3.1 Number of schools in Lesotho classified by level

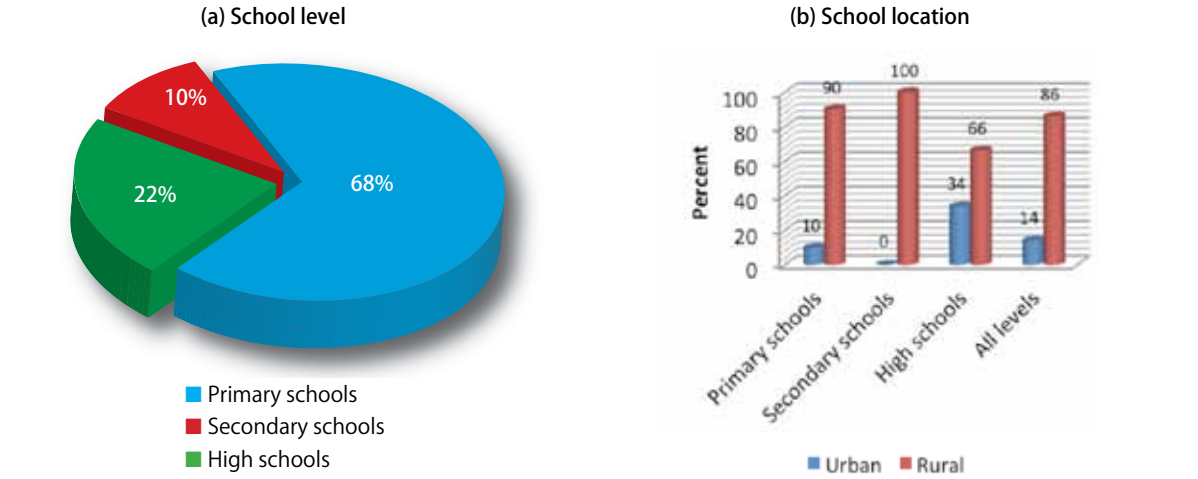
School level	Number of schools
Pre-primary	1233
Primary schools	1469
Secondary schools and High schools	326
Source: Ministry of Education and Training, 2014	

3.1.2 The scope of the survey

The survey concentrated only on three levels of the Lesotho educational structure, and these were primary, secondary and high schools that were registered with the MOET in 2012. The targeted respondents were mainly the school principals or deputy school principals.

The sample consisted of 329 schools. A little more than two thirds (68) of them were at a primary school level, 10 percent at secondary level and 22 percent at a high school level (Figure 3.1(a)). Majority of schools (86%) irrespective of the school level were located in rural areas and the remaining 14 percent were in urban areas (Figure 3.1(b)). None of the secondary schools in the study were in urban areas.

Figure 3.1 Schools by level and location



Across all the three levels of the schools studied, majority (78%) were owned by missionaries, followed by the government (18%). Community and privately owned schools constituted a small fraction of the schools in the survey (Table 3.2).

Table 3.2 School ownership classified by school level

School level	School ownership (%)				
	Public	Missionary	Private	Community	Total
Primary schools	14.3	82.1	1.8	1.8	**100**
Secondary schools	32.4	58.8	2.9	5.9	**100**
High schools	22.5	71.8	2.8	2.8	**100**
Total	**17.9**	**77.5**	**2.1**	**2.4**	**100**

3.2 Profile of the schools, personnel and students

3.2.1 Staff, students and library facilities

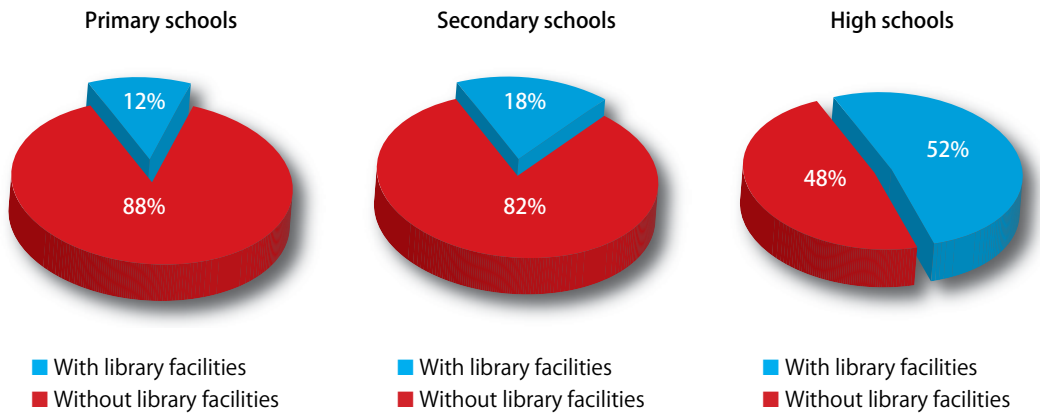
The primary, secondary and high schools had the mean student enrolments of 251, 104 and 509 respectively. The average number of teachers in primary, secondary and high schools were eight, seven and twenty respectively. Across all school levels, there were on average more female teachers than their male counterparts, and the difference is more pronounced at the primary school level (Table 3.3). The number of students taught by one teacher, that is, the student-to-teacher ratios in primary, secondary and high schools were 34, 16 and 25 students respectively.

Table 3.3 The average number of students and teachers by school level

School level	Students	Teachers		
		Males	Females	Total
Primary schools	251	2	6	**8**
Secondary schools	104	3	4	**7**
High schools	509	9	11	**20**

Less than a quarter of the schools (21%) had a library or at least a depository building to keep books and other materials for reading and studying. Sixteen percent of these schools had an archive section in their libraries. The results showed that the presence of library facilities varied with the school level. Among the schools with library facilities, primary schools made up 39 percent, secondary schools accounted for nine percent, whereas high schools constituted more than half (53%). Figure 3.2 presents the proportion of schools with library facilities disaggregated by school level.

Figure 3.2 Schools by library presence



Among schools with library facilities, close to a quarter (24%) of the high schools had at least one member of staff whose main responsibility was to help students with library facilities. Secondary schools with library facilities did not have staff members who were tasked to help students with library facilities, and a very small percentage of primary schools (0.4%) with library facilities had at least one staff member who among other duties was charged with helping students in the library.

Majority of high schools (80%) had administrative staff members other than teaching staff, while 18 percent and four percent of secondary and primary schools respectively had staff members dedicated solely to administrative duties of the schools.

A very limited proportion (0.4%) of the primary schools had at least one member of staff who was not a Lesotho national, and 12 percent of the secondary schools had at least one such staff member. High schools with employees that were expatriates constituted 38 percent. Table 3.4 presents the percentage distribution of the expatriate staff and other staff excluding teaching staff by school level.

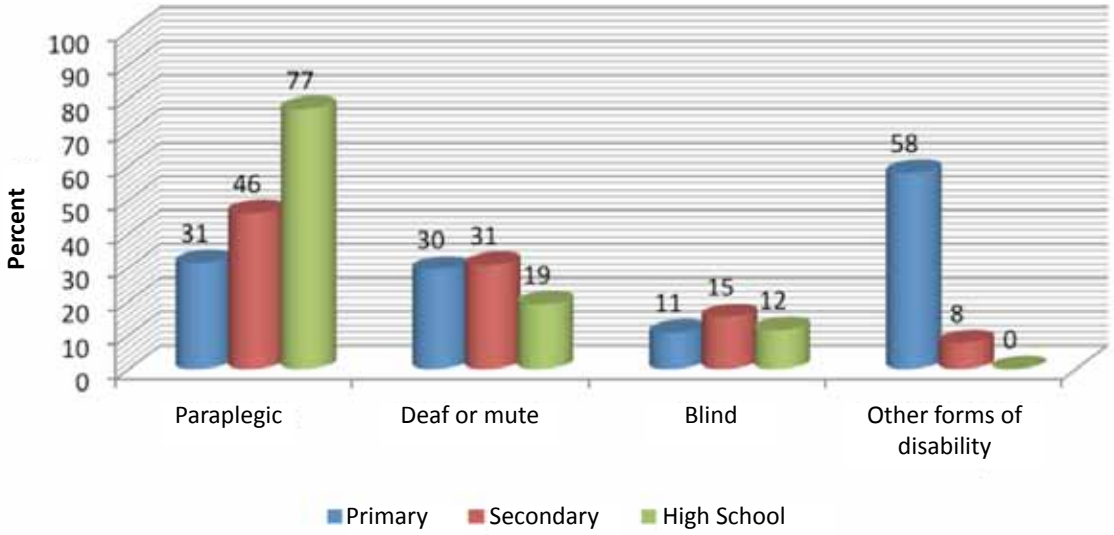
Table 3.4 School staff by school level

School level	School employees (%)		
	Library staff	Admin staff	expatriates
Primary schools	0.4	4.0	0.4
Secondary schools	0.0	17.6	11.8
High schools	23.9	80.3	38.0

3.2.2 Disabilities

Generally, less than half of the schools (46%) had students with one form of disability or the other. Forty four percent of these schools had students with non-print disabilities, such as mental retardation. Moreover, 40 percent of these schools had students that were paralyzed, 28 percent had deaf and mute students, and 11 percent had blind or visually impaired students. With regard to the presence of special ICT facilities for disabled people within the school premises, only one school had hearing aids to assist deaf and mute students. Otherwise, the rest of the other schools did not have any support facilities for disabled people. Figure 3.3 shows the split of disabilities across the school levels.

Figure 3.3 Schools with students with disability by nature of disability



3.2.3 Computer awareness and appreciation among teachers

Two thirds of the schools (67%) had employees (teachers, administrators and library staff) who had computer appreciation or awareness. There were on average three female employees with computer appreciation compared to an average of two male employees. All secondary and high schools had at the minimum, one employee with basic computer skills and more than half (52%) of primary schools had at least one employee with such skills (Table 3.5).

The survey also sought to establish whether schools had teachers who held an academic qualification in ICT related courses. Six percent of the schools had at least one teacher who was qualified in ICT related fields. A higher proportion of high schools had at least one ICT qualified teacher (19%) compared to secondary (9%) and primary (1%) schools (Table 3.5).

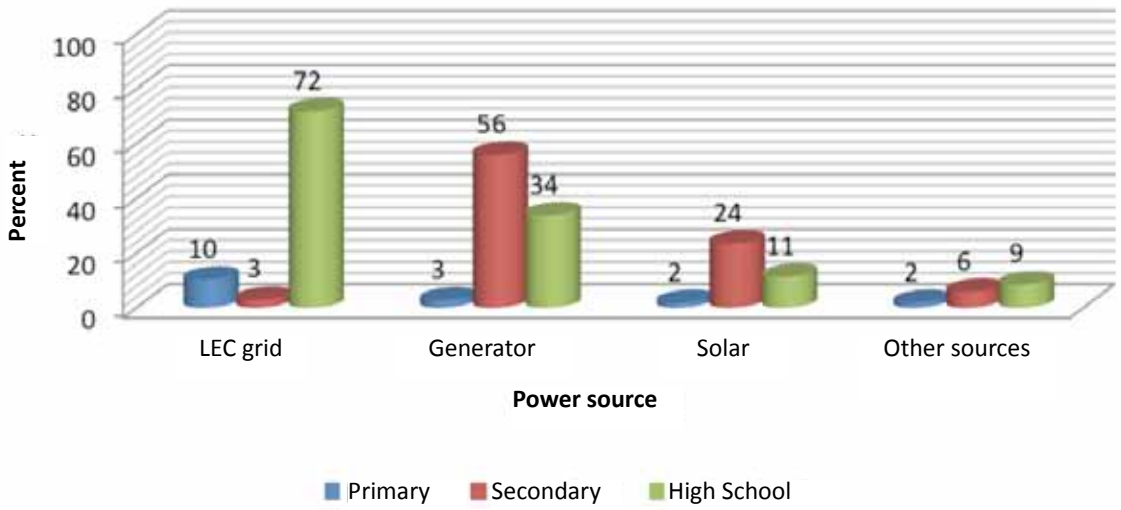
Table 3.5 Schools with ICT skilled employees and ICT qualified teachers

School level	Employees with basic computer skills (%)	Teachers with ICT qualifications (%)
Primary schools	52	1
Secondary schools	100	9
High Schools	100	19

3.3 Source of energy in schools

A little more than one out of every five (23%) of the schools were connected to electricity grid; 15 percent had invested in generators for electricity; while six percent harnessed solar energy; and four percent used batteries and invertors to charge the staff mobile phones and to power other low consuming appliances. Figure 3.4 illustrates the proportion of schools with different energy sources across the school levels. It is also shown in Figure 3.4 that majority of high schools were connected to electricity grid while generators as well as solar energy were mostly used by secondary schools.

Figure 3.4 Schools with energy by source



There is a huge gap between urban and rural schools in terms of access to a reliable supply of electricity (Table 3.6). More than 75 percent of the schools in urban areas were connected to the power grid while less than 15 percent of schools in rural areas were connected to electricity grid. Moreover, rural schools depended mainly on other sources of energy such as generators and solar systems (Table 3.6).

Table 3.6 Schools by source of energy and area

Source of energy	Urban (%)	Rural (%)	All (%)
Power grid	78.3	13.8	22.8
Generator	2.2	17.0	14.9
Solar system	0.0	7.1	6.1
Batteries	2.2	3.9	3.6

3.4 ICT Infrastructure, access and usage in schools

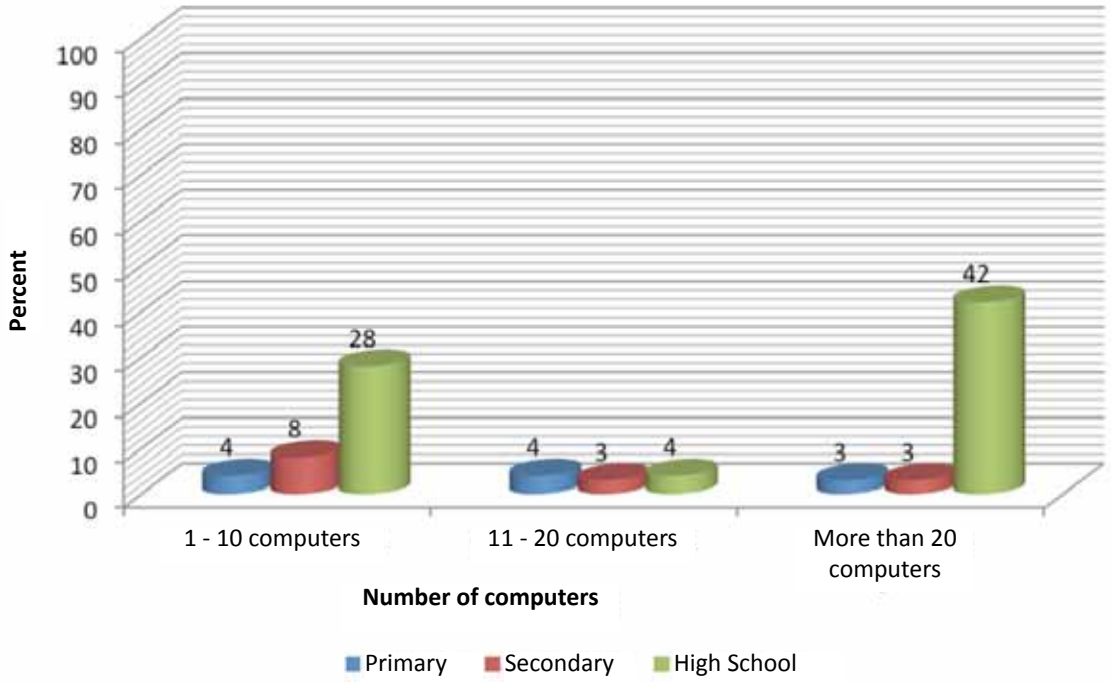
3.4.1 Presence of computers and servers

More than a quarter (28%) of the schools had at least one working computer, and overall, there were close to two thousand (1,942) computers available for educational use in all the schools surveyed. The results confirm that the dominant ICT access model in schools is the computer laboratory. For instance, amongst schools with computers, almost two out of three were using a laboratory for students to have access to

computers and the number of computers in the laboratories ranged between two and eighty. Majority of schools with computers were high schools (74%) and the remaining 26 percent was shared between secondary (14%) and primary (12%) schools.

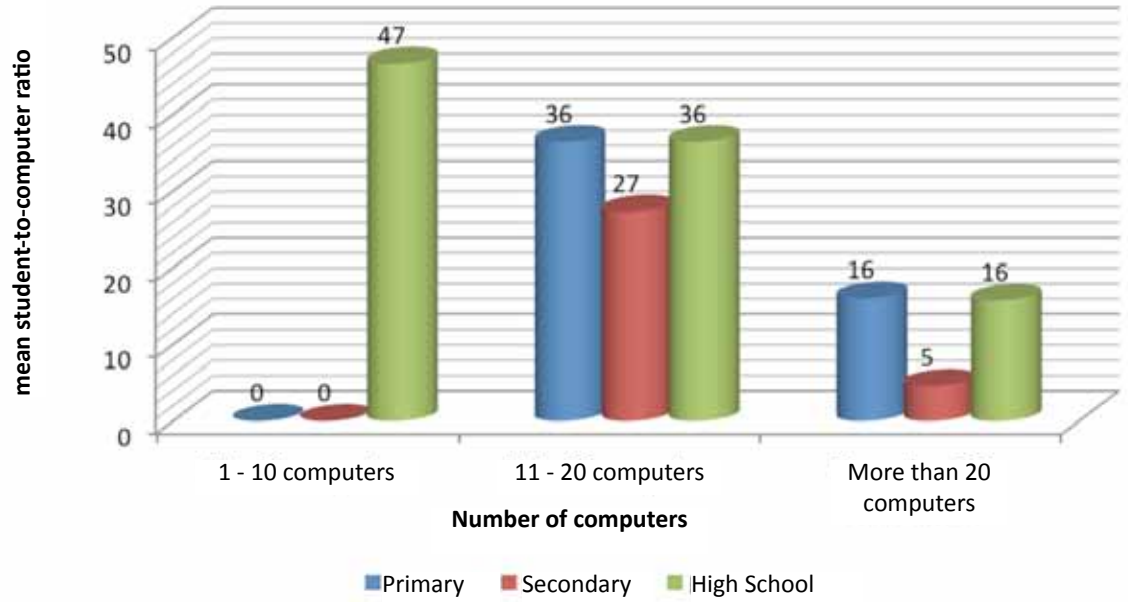
Over 60 percent (63%) of the schools with computers offered computer studies as a credit subject. In terms of school level, majority of high schools (77%) offered computer studies compared to the limited proportion of secondary (11%) and primary (13%) schools that offered such studies. Furthermore, amongst schools that offered computer studies as a credit subject, 81 percent had it as a compulsory subject while it was an optional subject in 19 percent of them. In schools where the computer subject was offered as an optional course, 44 percent of the students registered for it. Figure 3.5 depicts the percentage distribution of schools with computers classified by level and number of computers.

Figure 3.5 Schools with computers classified by level



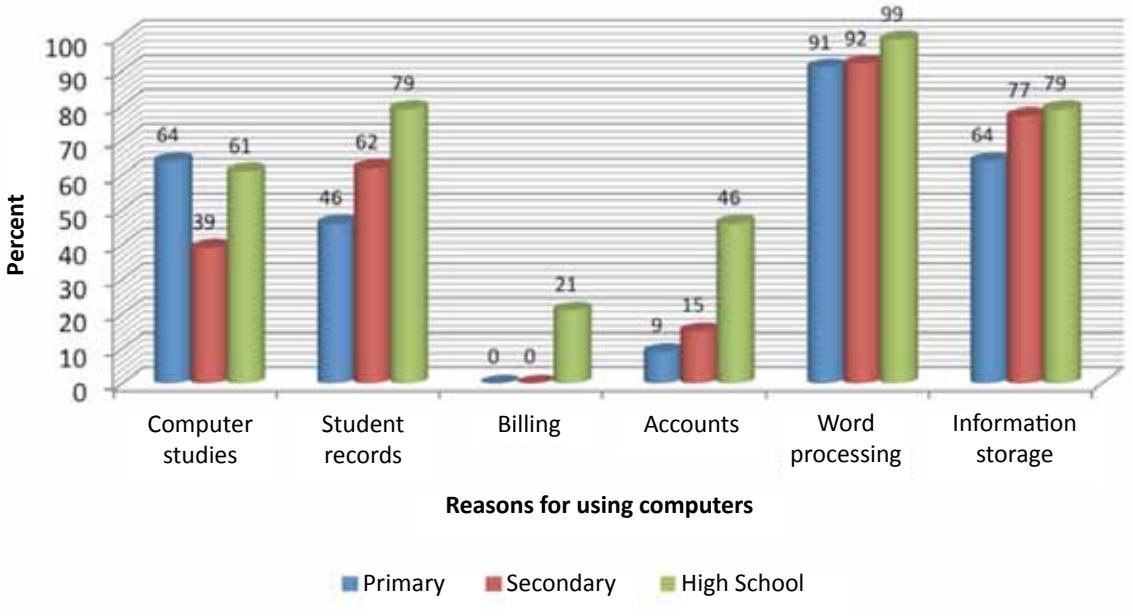
One of the major findings of the survey was the student-to-computer ratio, which measures the average number of students per computer in schools that offered computer studies. Across all the school levels, there were 17 students to one computer on average. At primary school level, there was a slightly higher number of students that had to share a computer compared to secondary and high school levels. That is, there was an average of 23 students per computer in primary schools whereas in secondary and high schools, the student-to-computer ratios were 5:1 and 17:1 respectively. Figure 3.6 shows the student-to-computer ratio by number of computers (for schools that offer computer studies).

Figure 3.6 Student-to-computer ratios by number of computers (for schools that offered computer studies)



Majority of schools with computers used them regularly for word processing (97%); information storage and retrieval (77%) and student records (73%). As mentioned earlier, significantly more than half (63%) of the schools were using computers for computer studies. Moreover, more than one third of the schools with computers processed the school accounts using a computer, and a limited proportion (15%) used them for billing purposes. Figure 3.7 shows the schools with computers by type of usage.

Figure 3.7 Schools with computers by type of usage



Of the schools with computers, 85 percent had at least one member of staff that used a computer every day, while 41 percent had at least one member who used a computer almost once a week. Twenty one percent of these schools had a member of staff who used a computer once in a month, while six percent had a member who used a computer at least once in six months.

Seventeen percent of the schools with a working computer had at least one operating server with an average of 21 computers connected to the server. According to the responses in the schools without computers, the main obstacles to acquiring computers were lack of electricity, lack of funding, insufficient space, lack of trained staff, and poor security.

3.4.2 Internet connectivity

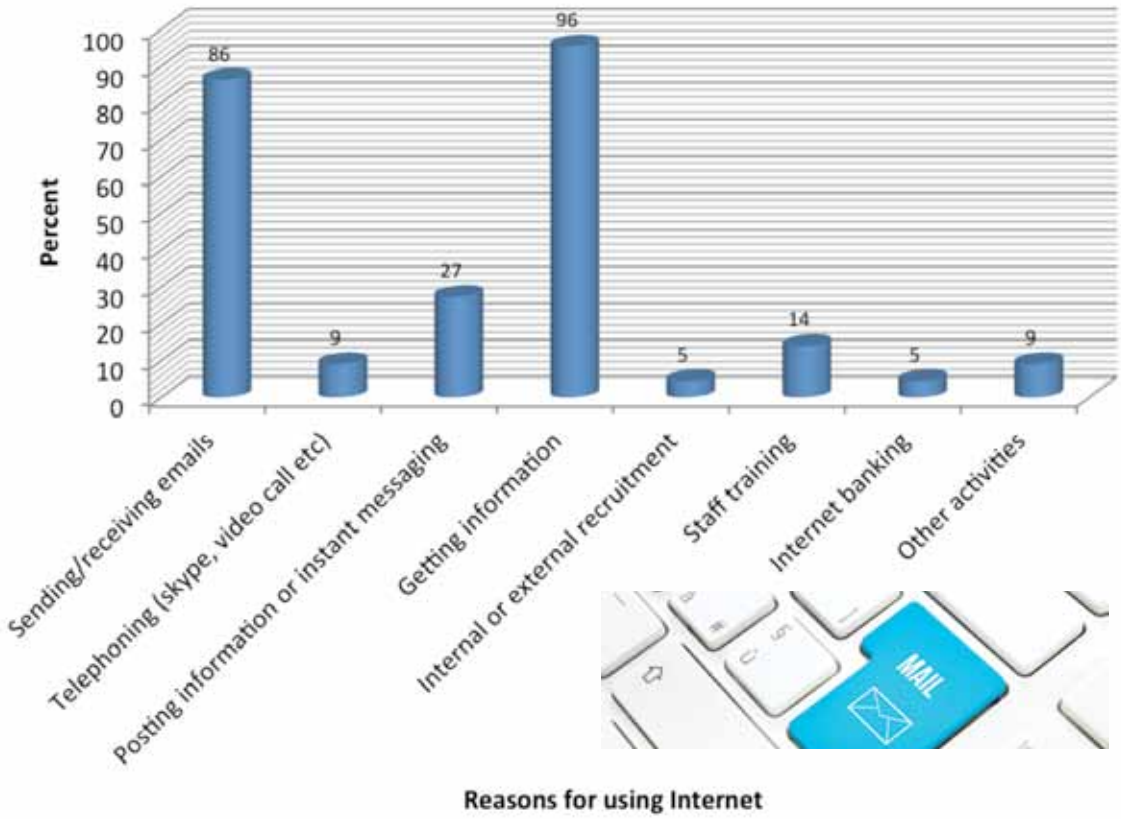
Overall, seven percent of the schools had Internet connection. Amongst schools with computers, 24 percent were connected to the Internet and all of them were high schools. There was an average of eight computers connected to the Internet in those schools with Internet. More importantly, four percent of the schools had network points either in their computer laboratories, offices and class rooms.

There were a number of reasons cited for lack of Internet access in schools. Majority of them (78%) reported high connection costs as the main inhibiting factor for connecting Internet. Moreover, information was sought from schools without Internet connection regarding when they were planning to get connected. Most schools (75%) with computers did not know when they would have Internet connection while a limited proportion (18%) had intentions to be connected within a year or two at the most and the remaining schools (7%) had no plans to get connected to Internet.

Only five high schools out of all the primary, secondary and high schools had the intranet. In addition, eleven high schools had a dedicated, school-specific e-mail address. Only one high school used cloud services and the same school was the only one that provided wireless Internet connection for access to students and staff.

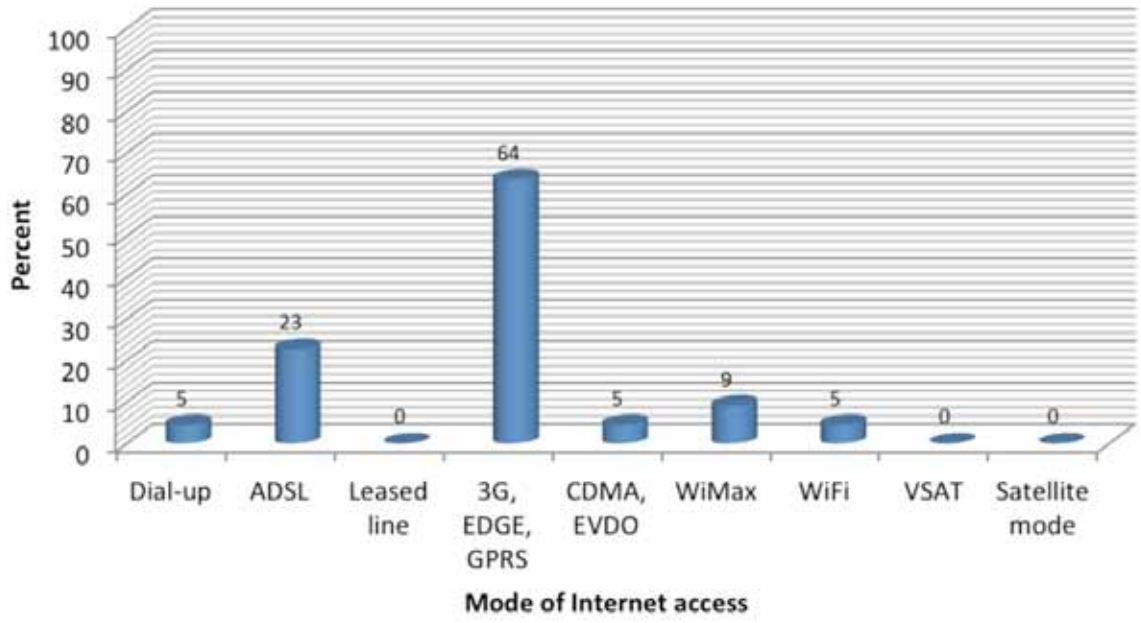
Almost 96 percent of the schools with Internet used it to access information, while 86 percent used it for e-mail. Twenty seven percent of the schools used Internet for posting information or instant messaging while nine percent used Internet for telephoning (e.g. skype, viber, video calling etc.). Figure 3.8 shows the breakdown of the schools by use of Internet for different purposes.

Figure 3.8 Type of usage for schools with Internet (only high schools)



With regard to the mode of Internet connection in schools that were connected, majority of them (68%) were connected via mobile Internet that included 3G, EDGE and GPRS, CDMA and EVDO followed by 23 percent of the schools that were connected through ADSL. Schools that were connected through dial-up and Wi-Fi constituted five percent each. Nine percent of the schools were connected through WiMAX, and none of the schools covered in the survey used satellite for Internet connection. Figure 3.9 shows the proportion of schools by mode of Internet connection across the school levels.

Figure 3.9 Mode of access for schools with Internet



Amongst the schools with Internet access, more than a quarter (27%) allowed students to surf Internet during study periods, weekends and schools breaks while the remaining 73 percent did not provide Internet access to students. In schools where students were not afforded access to Internet, it was reported that Internet was available in the principal's office and at times in staff rooms for access by staff only.

3.4.3 Web presence

Less than one percent of all schools (three high schools) had a website and two of these schools hosted their websites locally while one hosted it outside the country. These schools began using their websites between 2010 and 2012 and all their website designs as well as information had never been updated since they were launched. All the schools had used their websites to market the school.

3.4.4 Onsite presence of communication and CPE

Lack of communication facilities and services amongst the schools in Lesotho raises cause for concern. Less than one in five schools (18%) had a fixed telephone; two percent had a fax machine; and all of them were high schools located in the urban areas. Although over 80 percent of the schools used mobile phones for school business, only 6% of these schools owned mobile phones, with the rest being staff personal cell phones used for school purposes. None of the schools in the survey used two-way-radios for communication.

With regard to ICT equipment, a limited fraction of schools used radios (6%) and television sets (10%) for educational purposes. Half of the schools with televisions had a satellite dish connected to a television while another half used an aerial. The schools were also asked whether they owned speed points for payment of

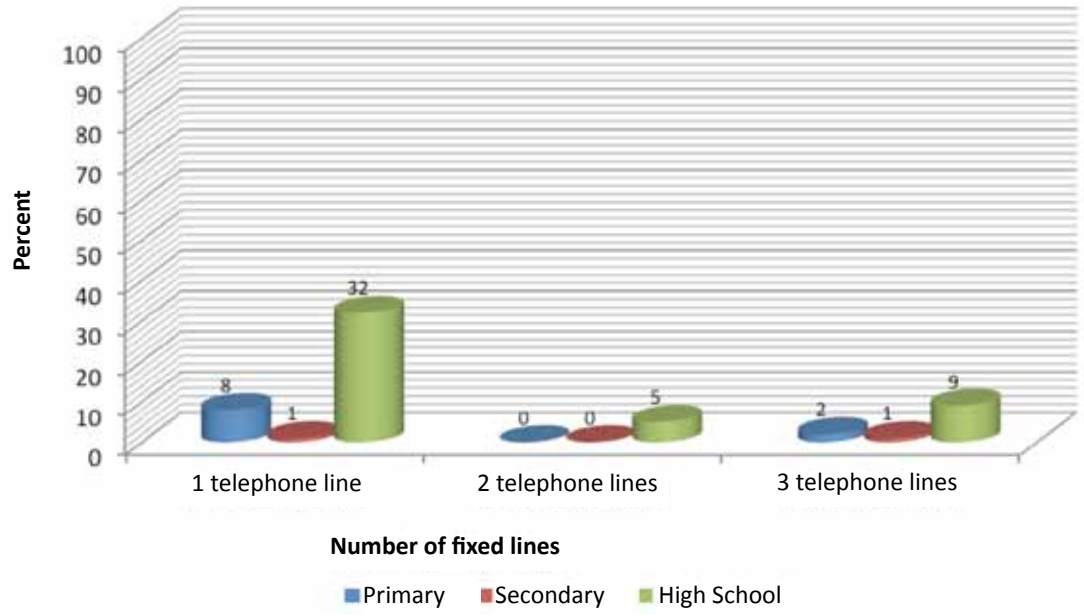
school fees and other transactions, and no schools had them. Table 3.7 presents the proportion of schools with communication facilities and equipment across their respective levels.

Table 3.7 Schools with communication facilities and other ICT equipment

Communication facilities and other ICT equipment	All schools (%)	School level (%)		
		Primary schools	Secondary schools	High schools
Schools with mobile phone	83.3	92	91	54
Schools with fixed telephone	17.6	5	6	65
Schools with facsimile machine	2.4	-	-	10
Schools using E-mail	3.3	-	-	16
Schools with two-way radio	-	-	-	-
Schools with radio set	6.1	4	3	16
Schools with television set	9.7	2	3	37

As was reported earlier, a limited number of schools (18%) had a fixed telephone line. Of these schools, 70 percent had one telephone line, nine percent had two telephone lines and 21 percent had three telephone lines. Figure 3.10 gives the disaggregation of schools with fixed telephone lines by number of lines and school level.

Figure 3.10 Schools with fixed telephone lines by number of lines



Regarding the type of subscription for the schools that used mobile phones for school business, almost all the schools (97%) were on prepaid subscription while a limited number (4%) was on post-paid service. There was a very small proportion (1%) of schools that used SA network in addition to the local networks.

Majority of schools (93%), regardless of whether they were located in an urban or a rural setting, had access to a public phone within a walking distance of an average of three minutes from the school premises. The reverse was true with Internet cafés because only 11 percent of the schools had them in their locality and

these were all urban areas. The average walking distance to the nearest Internet café was 13 minutes. Table 3.8 shows schools with access to public payphones, Internet cafés and mean access time.

Table 3.8 Schools with access to public payphones, Internet cafés and mean access time

School level	Access in percentages		Mean access time in minutes	
	Public payphone	Internet Café	Public payphone	Internet Café
Primary schools	96	7	2	15
Secondary schools	97	-	2	-
High schools	85	30	5	12

3.4.5 ICT support

A very high proportion (82%) of schools with computers had outsourced technical support for maintenance of their computers. Thirteen percent of the schools used some of their staff members to support the deployment and maintenance of computers (in-house support) while five percent did not experience any technical problems with their computers since they were installed.

3.5 Cost of communication

Information was sought regarding monthly communication costs as well as the other running costs of schools. This culminated in responses from one third of the schools, and communication costs accounted for one percent of the schools total running costs. On average, schools spent M200.00 per month on fixed telephones, where a quarter of the schools with the least usage had a monthly expense of M150.00 or less. Another quarter of the schools with the most usage incurred over M400.00 per month (Table 3.9).

With respect to mobile phones, the average monthly expenditure was at M200.00 with the bottom twenty five percent of the schools spending M100.00 or less and the upper 25 percent incurring M500.00 or more per month. The average monthly cost of Internet was M225.00 while M128.00 was spent monthly for fax. Schools that also used personal mobile phones of staff for school business incurred on average M700.00 in monthly expenses. Table 3.9 presents the average communication costs for monthly usage of different facilities and services.

Table 3.9 The average cost of communication classified by type of facility used

Communication facility	Average cost	25th Percentile	75th Percentile
Fixed telephone line	200.00	150.00	437.00
Mobile phone	200.00	100.00	500.00
Internet	225.00	100.00	650.00
Facsimile machine	128.00	100.00	-
Two-way radio	-	-	-
Staff Mobile phones	700.00	100.00	2000.00

Table 3.10 Integration of ICT in schools

	School level	Percentage of schools owning computers	Percentage of schools with network server	Average number of computers connected to the server (schools with a network server)	Average number of computers connected to Internet (schools with internet connection)	Number of schools with network points in computer rooms	Percentage of schools offering computer studies as a credit subject (schools with computers)	Percentage of schools with computer studies (schools with mandatory computer studies)	Percentage of students taking computer studies (schools having computer studies but not mandatory)
Schools with 1 to 10 computers	Primary	1.8	-	-	-	-	-	-	-
	Secondary	20.6	-	-	-	-	-	-	-
	High	35.2	1.4	2	1.7	1	1.5	-	80
Schools with 11 to 20 computers	Primary	1.8	-	-	-	-	36.4	28.6	50
	Secondary	8.8	-	-	-	-	23.1	60.0	-
	High	5.6	-	-	-	-	3.0	2.4	25
Schools with more than 20 computers	Primary	1.3	0.5	30	-	-	27.3	28.6	50
	Secondary	8.8	2.9	22	-	-	15.4	20.0	100
	High	53.5	16.9	29	10.4	6	56.7	82.9	36

CHAPTER 4 - ICT IN HOSPITALITY BUSINESS

4.1 Introduction

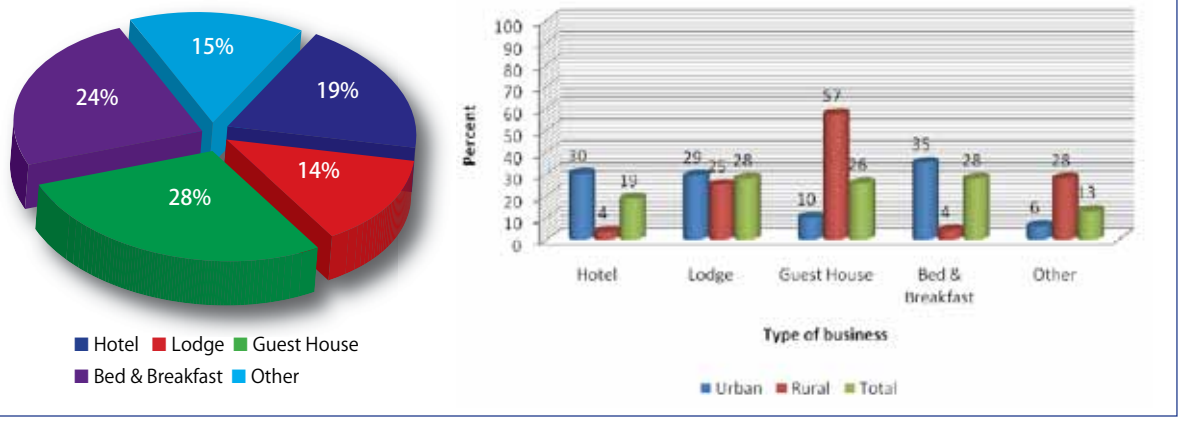
4.1.1 The structure of accommodation and hospitality industry

The Government of Lesotho has identified the tourism sector as one of the key drivers of development due to its potential to bring about the economic growth and the much needed employment in the country. To this end, the Government established Lesotho Tourism Development Cooperation (LTDC) in 2002, whose mandate is promotion and development of tourism in Lesotho (LTDC, 2014). The Lesotho tourism industry comprises many service providers that include accommodation and hospitality providers, travel agencies, car hire firms, and restaurants among others.

4.1.2 The scope of the survey

The survey covered a sample of 86 accommodation establishments throughout Lesotho. Two thirds of these establishments (67%) were located in an urban setting, while the remaining one third (33%) were situated in the countryside. Hotels made up 19 percent of all the establishments in the study while lodges accounted for 14 percent. Guesthouses and B&B constituted 28 percent and 24 percent respectively. The remaining 15 percent comprised 'other', which was made up of hostels, farmer's training colleges (FTC), nature reserves, conference centres, and homestay, among others (Figure 4.1). While responses obtained from owners of accommodation establishments were few (16%), majority of respondents (84%) were employees at a managerial level and were in a position to answer the survey questions.

Figure 4.1 Breakdown of accommodation establishments by type and area



4.2 Profile of the hospitality business

With regard to the average number of employees in different types of accommodation businesses, hotels had the highest average number of employees (61), followed by lodges with 19 employees, then guesthouses and B&Bs with nine and five employees respectively. With respect to gender, the average number of male and female employees was more or less the same in all types of establishments. For instance, the average number of male and female employees in hotels was 31 and 30 respectively (Table 4.1).

As expected, hotels had more guest-rooms (single and shared rooms, executive suite etc.) than other establishments, with an average of 53 individual rooms and they ranged between 21 and 158. Lodges had an average of 29 guestrooms ranging between six and 100 while there were 11 rooms on average for guesthouses and they ranged between three and 18. With regard to B&Bs and 'other' types of accommodation establishments, the average number of guestrooms was seven (number of rooms ranging from 3 to 18) and 13 (with a range of 2 to 32 rooms) respectively (Table 4.1).

Furthermore, information was sought from the accommodation establishments regarding the number of guests that they usually accommodate in a period of a month. In total, these establishments hosted close to twenty thousand guests (17, 069). In a period of a month, a facility with the lowest number of guests attracted only two people whereas one with the highest number of guests had 1, 925 visitors. The reported average number of guests in a typical month for hotels was 492 whereas lodges and guesthouses accommodated an average of 207 and 135 guests respectively. B&Bs housed an average of 65 guests and the other accommodation establishments serviced 162 guests (Table 4.1). This included both foreign and domestic visitors. Lastly, very few establishments had expatriate employees.

Table 4.1 Number of employees, guests and guest rooms by type of establishment

Business type	Average number of employees			Average number of guest rooms	Average number of guests per month	Number of establishments with expatriates
	Male	Female	Total			
Hotel	31	30	61	53	492	4
Lodge	9	11	19	29	207	2
Guesthouse	5	4	9	11	135	4
B&B	2	3	5	7	65	-
Other	7	6	12	13	162	1

4.2.1 Disabilities

There were three accommodation establishments with disabled staff members and these consisted of a hotel, a lodge and one other type of accommodation in a form of a conference centre. The type of disability reported in the conference centre was paraplegic, whereas both the hotel and lodge had staff members that were deaf or mute. Furthermore, all the accommodation establishments did not have any ICT related facilities for the disabled people.

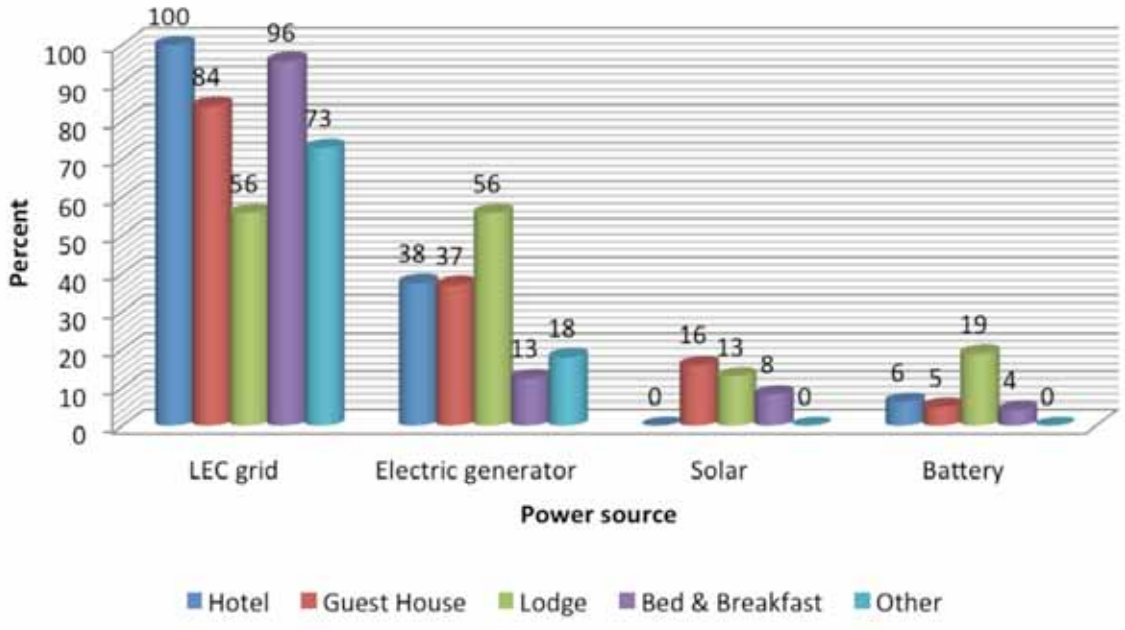
4.2.2 Computer awareness and appreciation among employees

Eighty seven percent of the accommodation establishments had at least one employee with computer appreciation or awareness. Moreover, all hotels had at least one staff member with computer appreciation while over 80 percent of lodges, guesthouses and B&Bs had at least one employee with computer awareness. In addition, over 70 percent of 'other' accommodation establishments had at least one member of staff with computer appreciation. Furthermore, 14 percent of the accommodation establishments had at least one ICT qualified employee.

4.3 Source of energy in accommodation establishments

Majority of accommodation establishments (84%) were connected to the power grid and almost a third (31%) had generators. A small proportion of the establishments used solar system (8%) and batteries (7%) as a source of electricity. All of the hotels in the survey were connected to the electricity grid, and more than a third (38%) had a generator for back-up. None of the hotels had a solar system to back-up electricity and only one hotel had a battery for redundancy. Almost sixty percent of the lodges (56%) were connected to the power grid and the same proportion had a generator. Majority of guesthouses (84%), B&Bs (96%) as well as 'other' accommodation establishments (73%) were connected to the power grid whereas generators were owned by 37 percent of the guesthouses, 13 percent of the B&Bs and 18 percent of 'other' establishments. A limited number of guesthouses (16%), lodges (13%) and B&Bs (8%) used the solar system. None of the 'other' establishments used solar as a source of energy. Figure 4.2 depicts the type of accommodation establishment classified by the source of energy.

Figure 4.2 Accommodation establishments with energy by source



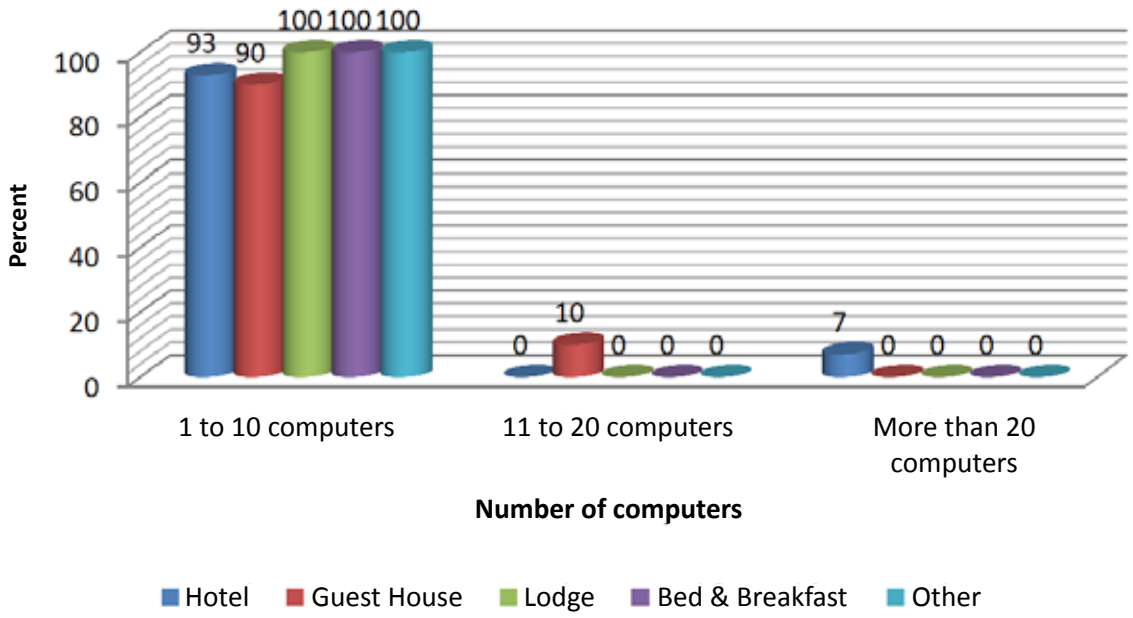
4.4 ICT Infrastructure, access and usage in accommodation establishments

4.4.1 Presence of computers and servers

Close to 60 percent (58%) of the accommodation establishments had at least one working computer that was used for business. Majority of hotels (88%) had at least one working computer, followed by B&Bs (58%), then 'other' accommodation establishments (55%) and guesthouses (53%). In comparison with the other types of businesses, less than half of the lodges (38%) had at least one working computer. The number of computers ranged between one and 10 in the majority of establishments in contrast to a few establishments, in particular hotels with 20 or more computers. Figure 4.3 shows the proportion of accommodation establishments classified by the number of computers they owned.

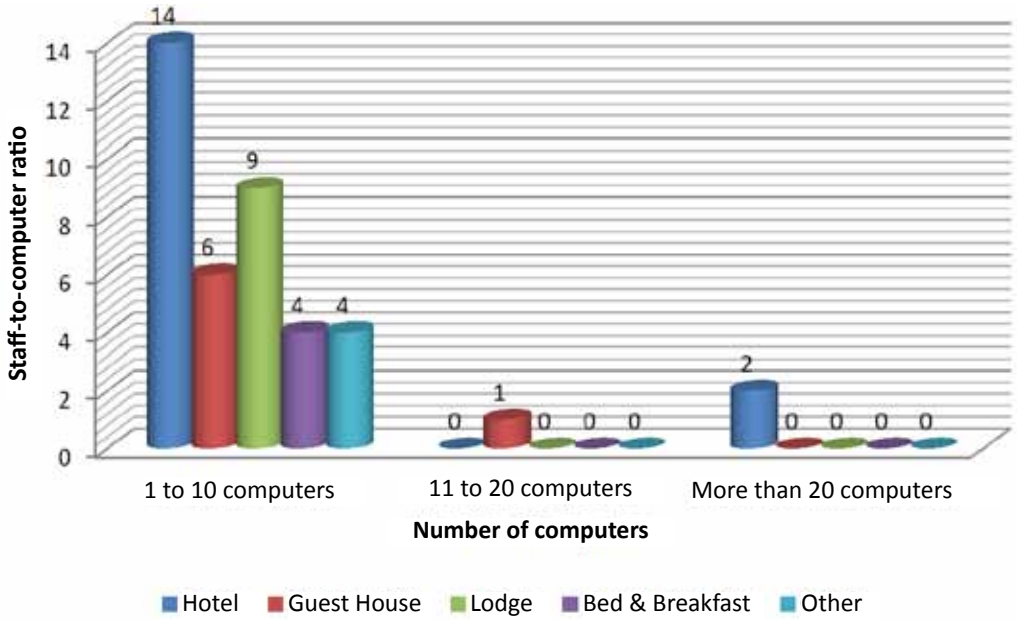
Amongst the accommodation establishments with computers, 26 percent had an operating network server with an average of five computers connected.

Figure 4.3 Accommodation establishments with computers classified by category



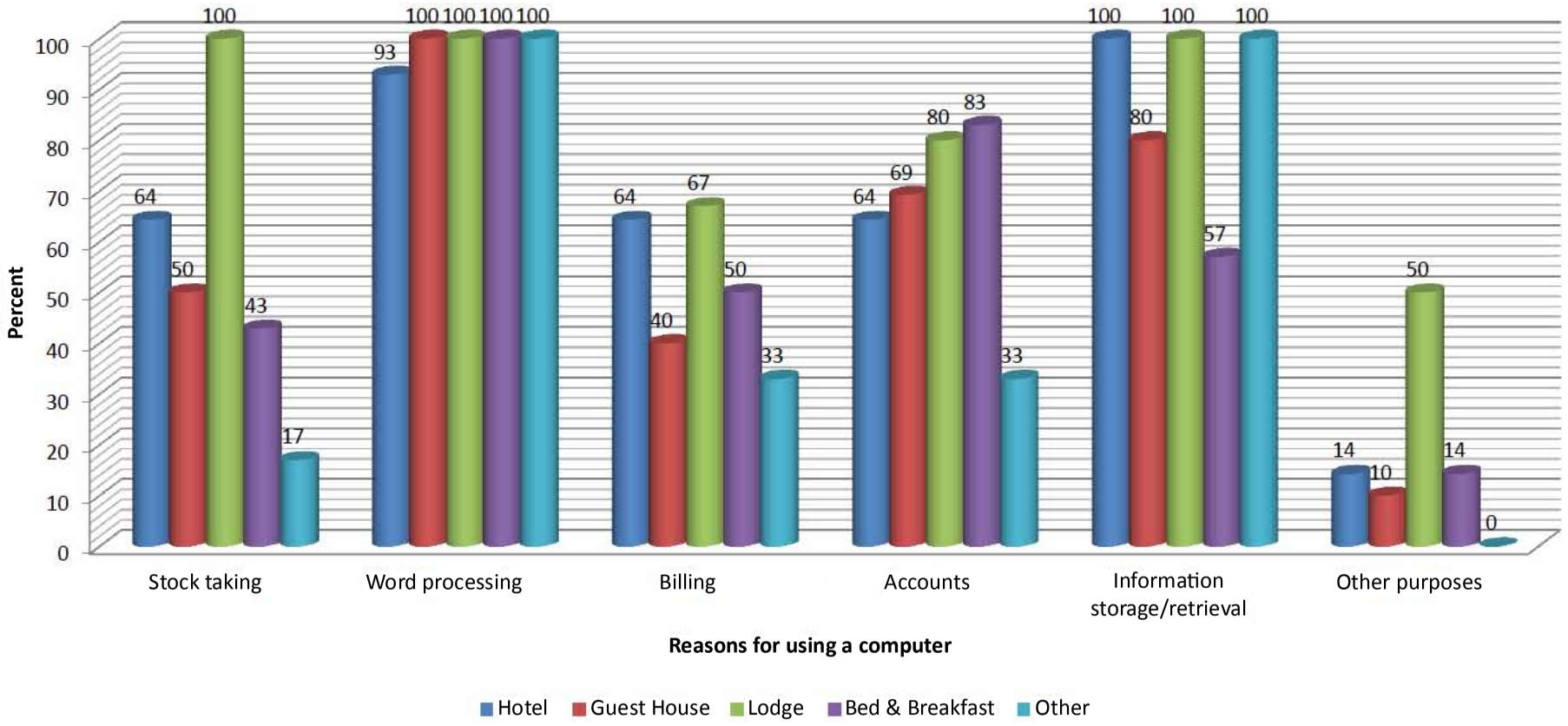
For the establishments with computers, the staff-to-computer ratio was on average at four staff members to one computer. A further disaggregation of establishments by type of establishment indicated a similar trend of four staff members to one computer for hotels, guesthouses, B&Bs as well as 'other' establishments. A slight deviation of staff-to-computer ratio from the overall was observed with lodges, where on average; nine staff members shared one computer. Figure 4.4 presents staff-to-computer ratio classified by the number of computers in the business.

Figure 4.4 Staff-to-computer ratio by number of computers (establishments with computers)



Amongst establishments with computers, almost all of them (98%) had computers that were used for word processing and 84 percent for information storage and retrieval. More than half of the businesses used computers for accounts (64%), stocktaking (54%) and billing (52%). Sixteen percent of the businesses reported to use a computer to perform other basic tasks that include bookings amongst others. Figure 4.5 presents a further disaggregation of the reasons for using computers by type of accommodation establishments with computers.

Figure 4.5 Accommodation establishments with computers by type of usage



Information was sought from accommodation establishments with regard to the number of employees that used a computer every day, once a week and once a month. A majority of establishments (88%) had an average number of five employees that used computers almost every day. Less than a third (28%) had an average of two staff members that used a computer once a week and a limited proportion (12%) had an average of one employee that used a computer once in a month.

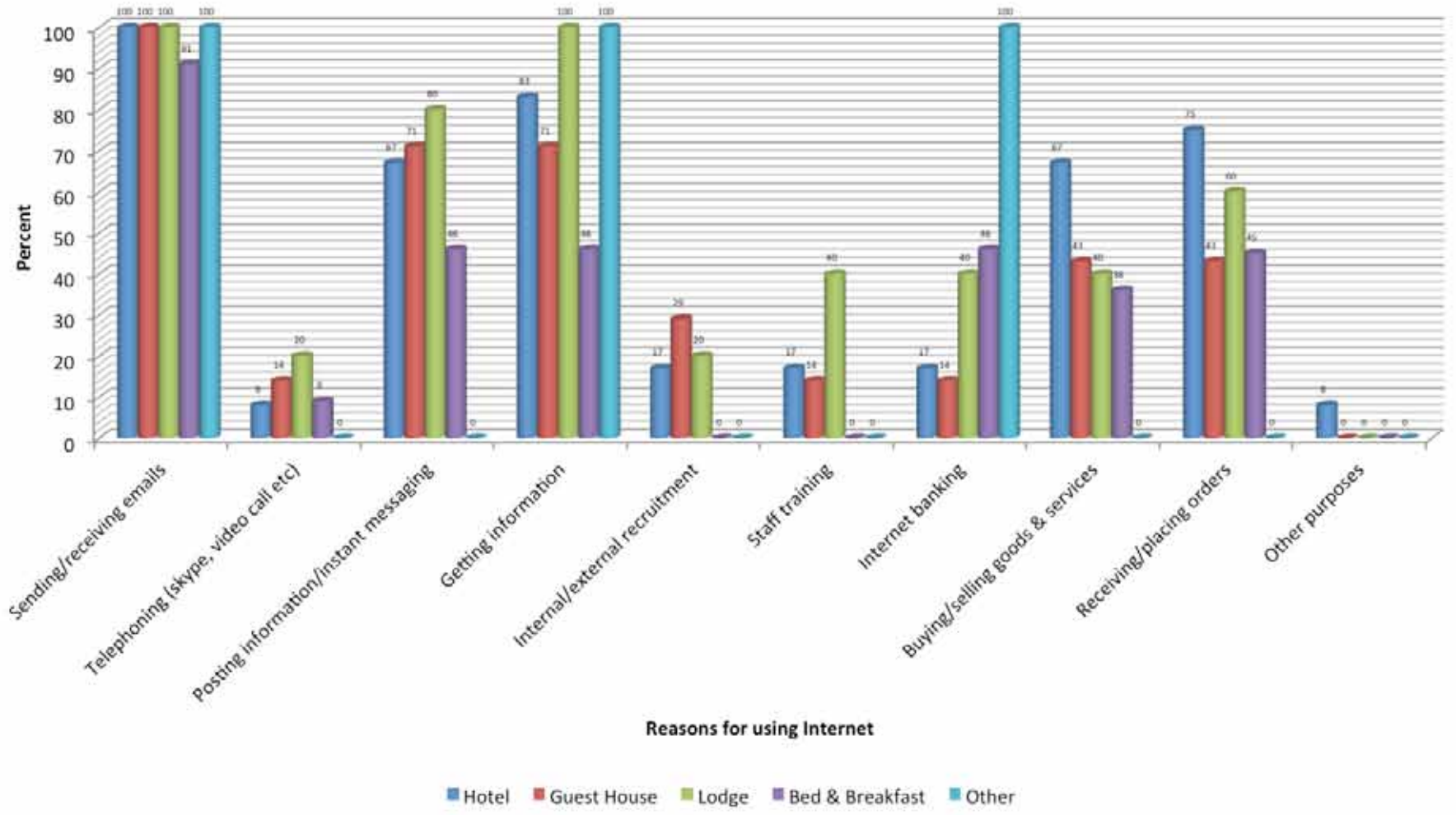
4.4.2 Internet connectivity

Out of all the establishments, 42 percent had Internet connection and among those with computers (desktop, laptop and tablet), almost three quarters (72%) had Internet with an average of 10 computers connected to the Internet. Some of the establishments with Internet access through computers also had Internet access through the business mobile phones (12%). Regarding the different types of accommodation establishments that had computers with Internet connection, hotels constituted 33 percent, while B&Bs, guesthouses, lodges and other establishments comprised 31 percent, 19 percent, 14 percent and 3 percent respectively. Of the accommodation establishments that used a mobile phone to access Internet as an additional device to computers, hotels made up one third (33%) and the rest constituted 17 percent each.

The results highlighted the urban-rural divide on access to the Internet in that 78 percent of the establishments were found in urban areas whereas the remaining 22 percent were situated in rural localities. Moreover, more than a third of the establishments (39%) had wireless Internet connection for their guests. Information pertaining to the type of data subscription was sought and more than half of the establishments (56%) were on prepaid, while the remaining 44 percent used post-paid. Very few accommodation establishments (3%) that were situated where there was no Lesotho network coverage used a SA network.

Most of the accommodation establishments (97%) used Internet for e-mail, and about 72 percent used it for sourcing information. Sixty three percent used Internet for posting information and instant messaging, while at least half of the establishments used Internet for receiving and placing orders (58%) as well as buying and selling goods and services (50%). Figure 4.6 shows the disaggregation of accommodation establishments with Internet connectivity by type of usage.

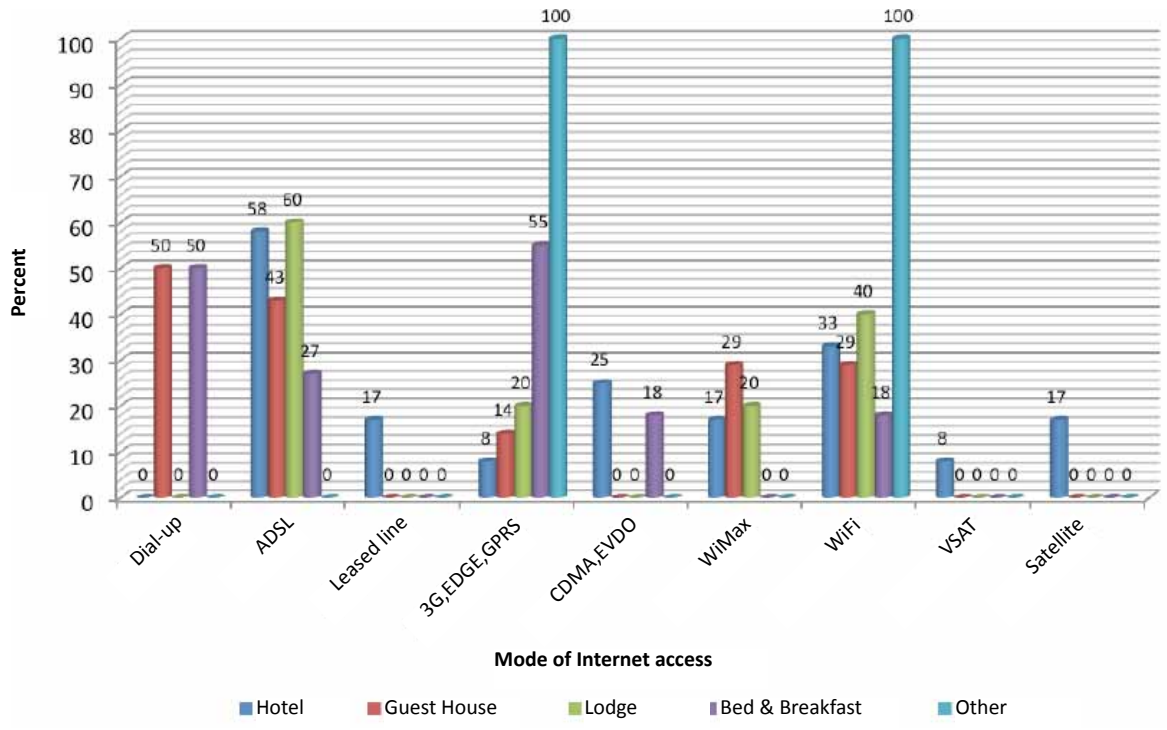
Figure 4.6 Accommodation establishments with Internet connectivity by type of usage



In relation to accommodation establishments that owned a computer but had no Internet connection, 43 percent were not planning to get connected, 21 percent reported that Internet installation was in progress, and a few (14%) were planning to connect at least within one year while 21 percent did not know when the business would have Internet.

With regard to the mode of Internet access amongst establishments that had Internet, 44 percent had access through ADSL while 39 percent and 31 percent had access through mobile Internet (3G, EDGE, GPRS CDMA, EVDO etc.) and Wi-Fi respectively. Seventeen percent had Internet access through WiMAX, six percent used dial-up and the same proportion used leased line. A limited fraction (8%) used a satellite. Figure 4.7 presents a breakdown of accommodation establishments with Internet connectivity by mode of access.

Figure 4.7 Accommodation establishments with Internet connection by mode of access



4.4.3 Web presence

On the overall, 28 percent of the accommodation establishments had a website, and a significant proportion (88%) of them had Internet connection. Amongst those with a website, about two thirds (67%) had them specifically designed for their establishments (hosted in Lesotho) while the remaining one third (33%) had websites hosted elsewhere. In addition, the earliest website in the accommodation business was launched in 1995 and the most recent was launched in 2012. In terms of breakdown by type of accommodation, 69 percent of the hotels had a website while lodges with a website constituted 25 percent. Guesthouses and B&B with websites comprised 17 percent each.

In relation to promoting their business on-line, all establishments with a website used it for advertising and providing information about the business. This is regardless of whether an establishment was a hotel, a

lodge, a guesthouse or a B&B. In addition, half (50%) of the establishments reported that the information on the website was updated once within a period of six months and one third redesigned or refreshed their websites once a year.

Close to half (48%) of the accommodation establishments had an e-mail address specific to the business. Amongst the hotels, 88 percent had an e-mail address specific to a hotel while B&B and lodges with a specific e-mail address consisted 50 percent and 44 percent respectively. Within guesthouses, 37 percent had an e-mail address specific to the business and other types of accommodation establishments with an e-mail address comprised nine percent.

4.4.4 Onsite presence of communication equipment and CPE

The communication facilities generally used by most accommodation establishments included fixed telephones (65%), mobile phones (57%), faxes (36%) as well as two-way radios (11%). With regard to other ICT equipment, 86 percent of establishments had television sets and 45 percent had radios. Over 20 percent of the establishments had electronic cash register (23%) and a speed-point machine (21%). Table 4.2 depicts the distribution of accommodation establishments with communication and information facilities and other equipment.

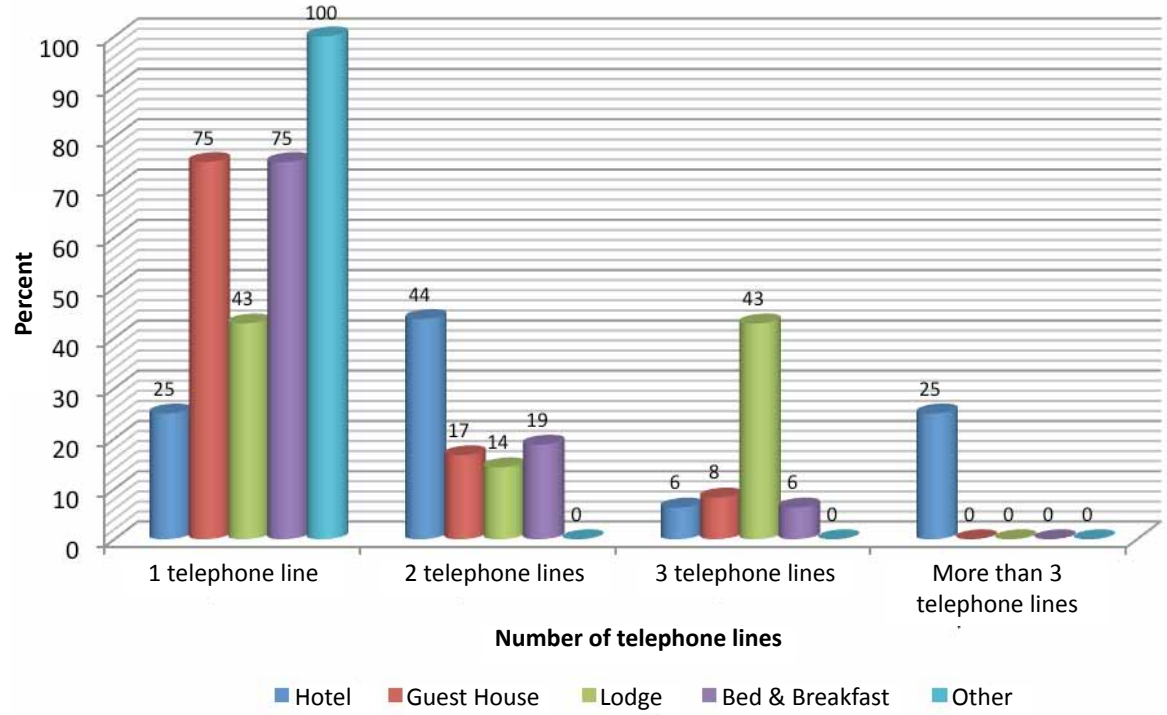
Table 4.2 Accommodation establishments with communication facilities and CPE

Accommodation establishments with communication facilities and customer premises equipment		Hotel (%)	Guest house (%)	Lodge (%)	B&B (%)	Other (%)
Fixed telephone line	Guest rooms	-	-	-	-	-
	Offices	100	63.2	43.8	66.7	45.5
	Conference hall	-	-	-	-	-
	Bar/restaurant	37.5	30.8	25.0	18.2	0
Fixed telephone extension	Guest rooms	43.8	5.3	25.0	0	0
	Offices	-	-	-	-	-
	Conference hall	33.3	0	25.0	0	0
	Bar/restaurant	-	-	-	-	-
Facsimile machine	Guest rooms	-	-	-	-	-
	Offices	87.5	36.8	18.8	25.0	9.1
	Conference hall	-	-	-	-	-
	Bar/restaurant	-	-	-	-	-
Two-way radios	Guest rooms	12.5	0	0	0	9.1
	Offices	6.3	0	6.3	4.2	36.4
	Conference hall	6.7	0	0	0	0
	Bar/restaurant	12.5	0	0	0	0
Radio sets	Guest rooms	12.5	10.5	0	0	0
	Offices	43.8	21.2	37.5	33.3	9.1
	Conference hall	13.0	14.3	16.7	0	12.5
	Bar/restaurant	50.0	46.2	50.0	27.2	0
Television sets	Guest rooms	100	63.2	62.5	66.7	18.2
	Offices	37.5	10.5	12.5	45.8	9.1
	Conference hall	40.0	28.6	41.6	27.3	50.0
	Bar/restaurant	87.5	47.4	83.3	63.4	25.0
Speed point machine	Guest rooms	-	-	-	-	-
	Offices	50.0	10.5	12.5	12.5	0
	Conference hall	-	-	-	-	-
	Bar/restaurant	18.8	15.4	8.3	0	0
Electronic cash register	Guest rooms	-	-	-	-	-
	Offices	31.3	10.5	6.3	0	0
	Conference hall	-	-	-	-	-
	Bar/restaurant	68.8	15.4	25.0	9.1	0

Among the accommodation establishments with fixed telephone lines, more than half (59%) had only one fixed line, 23 percent had two fixed lines, 11 percent had three fixed lines and seven percent had more than three fixed lines and those were mostly hotels. Figure 4.8 presents accommodation establishments with fixed telephone lines by number of lines.

Furthermore, information was sought from the establishments regarding the type of subscription for voice communication. Most of establishments (67%) used the prepaid service compared to 46 percent that were on post-paid plans. Only one accommodation establishment used SA network because of lack of coverage by the Lesotho networks.

Figure 4.8 Accommodation establishments with fixed telephone lines by number of lines



Majority of accommodation establishments (77%) had a public payphone in the business premises or within a walking distance of eight minutes on average. Access to Internet cafés showed disparities between urban and rural-based accommodation establishments. On the overall, almost 60 percent of establishments had Internet cafés located within reach of staff and guests and 98 percent of these establishments were situated in urban and peri-urban areas. On average, it would take eleven minutes to walk to an Internet Café. Table 4.3 shows a summary of accommodation establishments with access to public phones and Internet cafés as well as the average walking time to reach them.

Table 4.3 Accommodation establishments with access to public payphones, Internet cafés & the mean access time

Establishment type	Access in percentages		Mean access time in minutes	
	Public payphone	Internet café	Public payphone	Internet café
Hotel	93.8	87.5	4.5	8.1
Guesthouse	84.2	52.6	6.0	8.1
Lodge	56.3	37.5	7.4	15.8
B&B	83.3	79.2	8.1	12.3
Other	54.5	18.2	20.1	20.0

4.4.5 ICT support

Majority of the accommodation establishments (88%) using computers reported to be outsourcing IT support while six percent had "in-house" support and the remaining six percent had not experienced any problems to warrant a technical support. Amongst the hotels, 14 percent had at least one staff member that provided technical support for ICT related equipment and services while other types of establishments did not have such a staff member. Table 4.4 presents the percentage distribution of accommodation establishments with the type of ICT support sourced.

Table 4.4 Accommodation establishments with access to ICT support by type			
Establishment type	In-house (%)	Out-source (%)	Not experienced any problem (%)
Hotel	14.3	85.7	0
Guesthouse	0	90.0	10.0
Lodge	0	83.3	16.7
B&B	0	92.9	7.1
Other	0	83.3	16.7

4.5 Cost of communication

About three quarters (74%) of the establishments responded to the question regarding their communication cost, and approximately four percent of their total operating costs were attributable to communication services. An average of M650.00 was spent monthly on fixed telephone, where twenty five percent of the establishments with the least usage reported a monthly cost of M250.00 or less and twenty five percent of them with the most usage incurred costs of over M1500.00 per month (Table 4.5).

In relation to mobile phones, an average expenditure was M425.00 per month with the bottom twenty five percent of the establishments spending M187.00 or less and the upper 25 percent incurring costs of M1, 050.00 or more per month. The average monthly cost of Internet was M625.00 while an average of M617.00 was expended monthly for fax services. None of the establishments reported incurring any direct cost for using two-way radios. Table 4.5 depicts the average cost of communication using different communication devices.

Table 4.5 The average cost of communication classified by type of facility used			
Communication facility	Average cost	25th Percentile	75th Percentile
Fixed telephone line	650.00	250.00	1500.00
Mobile phone	425.00	187.00	1050.00
Internet	625.00	500.00	975.00
Facsimile machine	617.50	317.50	1050.00
Two-way radio	-	-	-

Table 4.6 Integration of ICTs in accommodation establishments

	Establishments type	Percentage of establishments owning computers	Percentage of establishments with network server (businesses with computers)	Average number of computers connected to the server (establishments with a network server)	Average number of computers connected to Internet (establishments with Internet connection)
Establishments with 1 to 10 computers	Hotel	81.3	35.7	5.00	3.00
	Guesthouse	47.4	0	-	2.00
	Lodge	37.5	50	3.00	4.00
	B&B	58.3	14.3	3.50	1.00
	Other	54.5	16.7	8.00	8.00
Establishments with 11 to 20 computers	Hotel	0	-	-	-
	Guesthouse	5.3	7.7	7.00	7.00
	Lodge	0	-	-	-
	B&B	0	-	-	-
	Other	0	-	-	-
Establishments with more than 20 computers	Hotel	6.3	7.1	238	238
	Guesthouse	0	-	-	-
	Lodge	0	-	-	-
	B&B	0	-	-	-
	Other	0	-	-	-

CHAPTER 5 - ICT IN HEALTH FACILITIES

5.1 Introduction

5.1.1 The structure and organisation of the Lesotho health system

Health care services are delivered predominantly by the Government and Christian Health Association of Lesotho (CHAL). Moreover, most hospitals are Government owned (48%) with CHAL and private sector owning 32 percent and 20 percent respectively (Ministry of Health, 2013). In each of the ten administrative districts, there is a district hospital providing primary and some secondary services (Downs, Montagu, da Rita et al., 2013). Each district also has a network of primary health care centres or clinics. Tertiary facilities, namely the Queen Elizabeth II (QEII), the Queen Mamohato Memorial Hospital (QMMH), the Tuberculosis Hospital and the Mental Hospital, are all located in Maseru.

The Lesotho health sector is one of the sectors that benefited from the Compact between the Government of United States (acting through the Millennium Challenge Corporation) and the Government of Lesotho. The Compact was aimed at reducing poverty through economic growth in Lesotho and the overall implementation of the Compact was overseen by the Millennium Challenge Account–Lesotho Authority (MCA-Lesotho). The health sector projects involved Health Systems Strengthening (HSS) and the Health infrastructure (MCA-Lesotho, 2014). The HSS component supported improvement of Health Management Information System (HMIS) as well as integration of health information and updating of data collection systems among others. The health infrastructure entailed construction and in some cases, refurbishment of 138 health centres, 14 hospital out-patient departments (OPD), National Reference Laboratory, Lesotho blood transfusion service centre, student dormitories and staff accommodation for the National Health Training College.

During the data collection phase of this study, most health centres and hospital OPDs were still under construction and as a result, they were using temporary structures to provide the health services. Table 5.1 presents the number of health services registered with the Ministry of Health in 2013.

Table 5.1 Number of health facilities classified by type

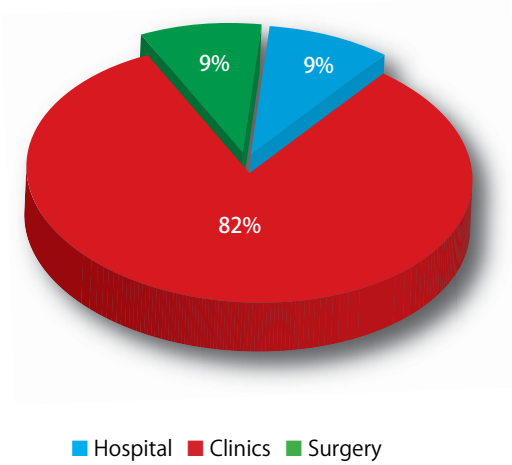
Type of health facilities/services	Number of health facilities/services
Hospitals	25
Health Centres/clinics	211
Other	69

Source: Ministry of Health, 2013

5.1.2 The scope of the survey

Information was sought from a sample of 143 health facilities with clinics constituting 82 percent of the sample while the hospitals and surgeries accounted for nine percent each (Figure 5.1).

Figure 5.1 Health facilities by type



Amongst health facilities included in the survey, public health facilities constituted a majority of hospitals (54%) and clinics (42%) whereas all the surgeries were privately owned (Table 5.2). All the public hospitals in the survey were in urban areas while all missionary hospitals surveyed were in rural areas. With regard to the clinics, majority of those owned by the Government and CHAL were in rural areas. All the surgeries in the sample were privately owned and in urban areas.

Table 5.2 Ownership of health facilities by type

Type of health service	Ownership of health facility (%)								
	Public			Missionary (CHAL)			Private		
	Urban	Rural	**ALL**	Urban	Rural	**ALL**	Urban	Rural	**ALL**
Hospital	53.8	0	**53.8**	0	7.7	**7.7**	38.5	0	**38.5**
Clinic/Health centre	1.7	40.2	**41.9**	5.1	29.9	**35.0**	19.7	3.4	**23.1**
Surgery	0	-	**0**	0	-	**0**	100	-	**100**

5.2 Profile of the health facilities, personnel and patients

On the overall, almost one third of the health facilities had at least one medical doctor. Of those facilities with a medical doctor, over half (54%) of them had one doctor while the rest had doctors ranging between two and seven. In addition, majority of the facilities with medical doctors had at least a male doctor (76%) while a few facilities had at least a female doctor (5%) and 20 percent had both male and female doctors. Over 95 percent of the health facilities had nurses, nurse assistants or clinical nurses and the majority of facilities (94%) had at least one female nurse whereas fewer facilities (26%) had at least one male nurse. Health facilities with professional staff that were expatriates constituted 30 percent and they were mainly hospitals.

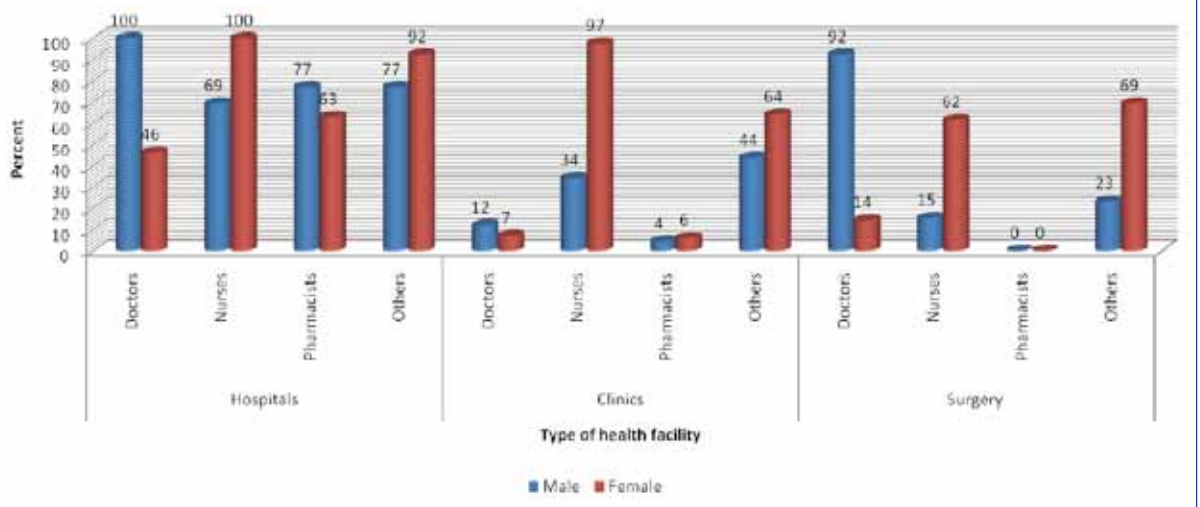
The distribution of professional staff by type of health facility is presented in Table 5.3 and Figure 5.2 depicts a disaggregation of staff by type of health facility while taking into account gender of the employees. For instance, all hospitals had at least one male doctor and 46 percent of them had at least one female doctor (Figure 5.2).

Table 5.3 The health facilities by proportion of employees

Type of health services	Health facilities with the type of professionals (%)				Health services with expatriates (%)
	Doctors	Nurses	Pharmacists	*Others	
Hospital	100	100	84.6	92.3	92.3
Clinics	12.8	98.3	8.5	70.1	23.1
Surgery	100	71.4	0	69.2	30.8

*Others include staff members in laboratories, x-rays, counselling, administration etc.

Figure 5.2 Professional staff by gender and type of health facility



5.2.1 *Disabilities*

There were four health facilities with disabled staff members and these consisted of three hospitals and one clinic. The form of disability reported in all the health facilities was paraplegic. Furthermore, all the health facilities did not have any special ICT facilities for the disabled people.

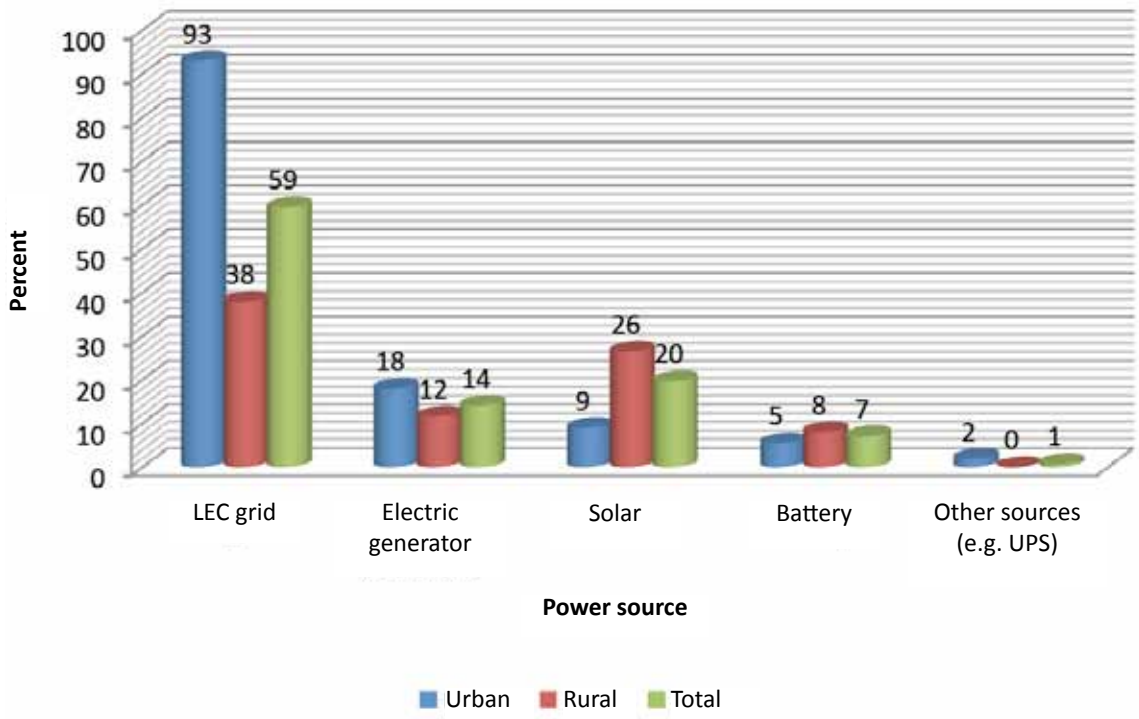
5.2.2 *Computer awareness and appreciation*

Eighty six percent of the health facilities had at least one employee with computer appreciation or awareness. Moreover, all hospitals had at least one staff member with computer appreciation while over 80 percent of clinics and surgeries had at least one employee with computer awareness. All facilities on average had three staff members with computer awareness. The average number of staff with computer appreciation at hospitals was 45 whereas in clinics and surgeries, it was three and two respectively. Furthermore, there were only two health facilities with ICT qualified employees.

5.3 Source of energy in health facilities

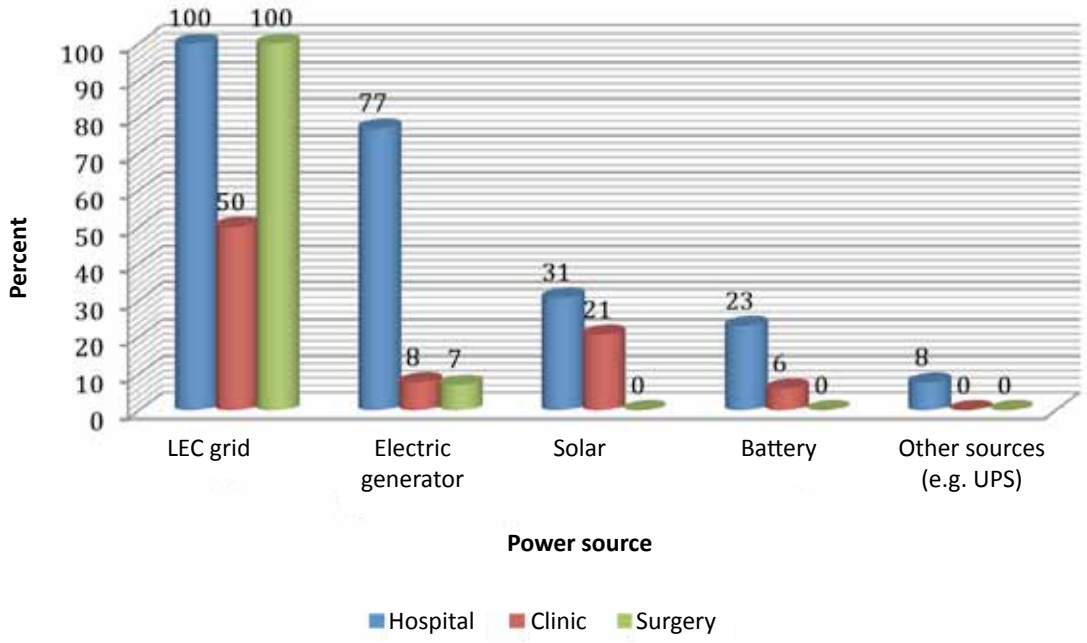
Almost 60 percent of the health facilities were connected to LEC power grid; 20 percent used solar as a source of energy; while 14 percent had generators. With regard to the use of different energy sources in urban and rural settings, over 90 percent of the health facilities in urban areas were connected to the power grid whereas less than 40 percent of the facilities in rural areas had electricity (Figure 5.3). In addition, solar energy was used by a higher proportion of health facilities in rural areas (26%) compared to the ones in urban areas (9%).

Figure 5.3 Sources of energy classified by urban-rural setting



It is shown in Figure 5.4 that all hospitals and surgeries were connected to the power grid while only half of the clinics were connected. Over 20 percent of hospitals and clinics had solar energy but none of the surgeries had this type of power supply.

Figure 5.4 Health facilities with energy by source

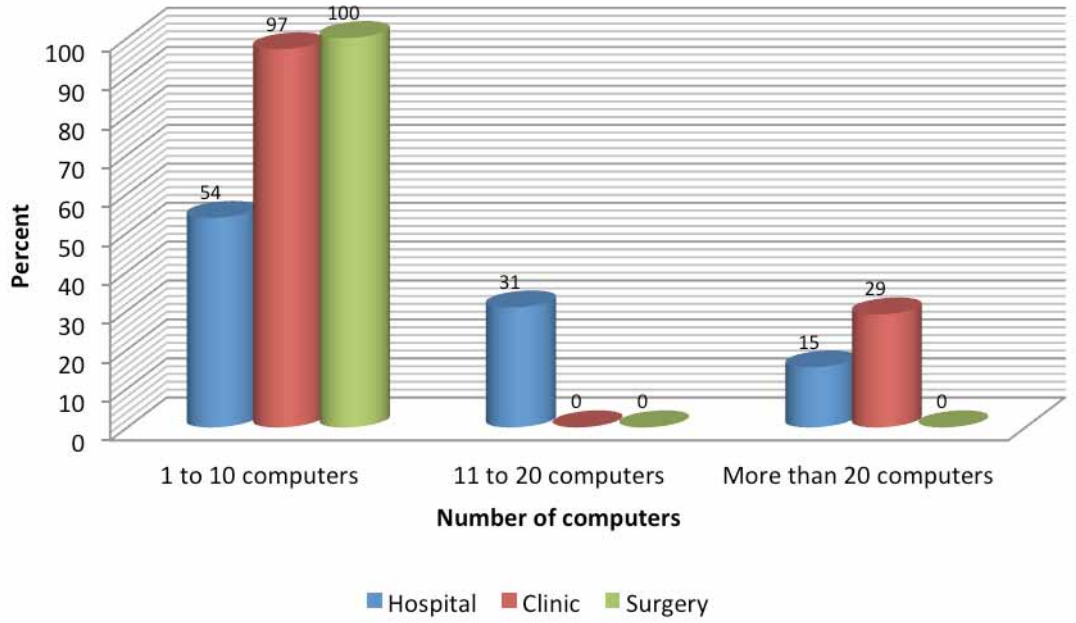


5.4 ICT Infrastructure, access and usage in health facilities

5.4.1 Presence of computers and servers

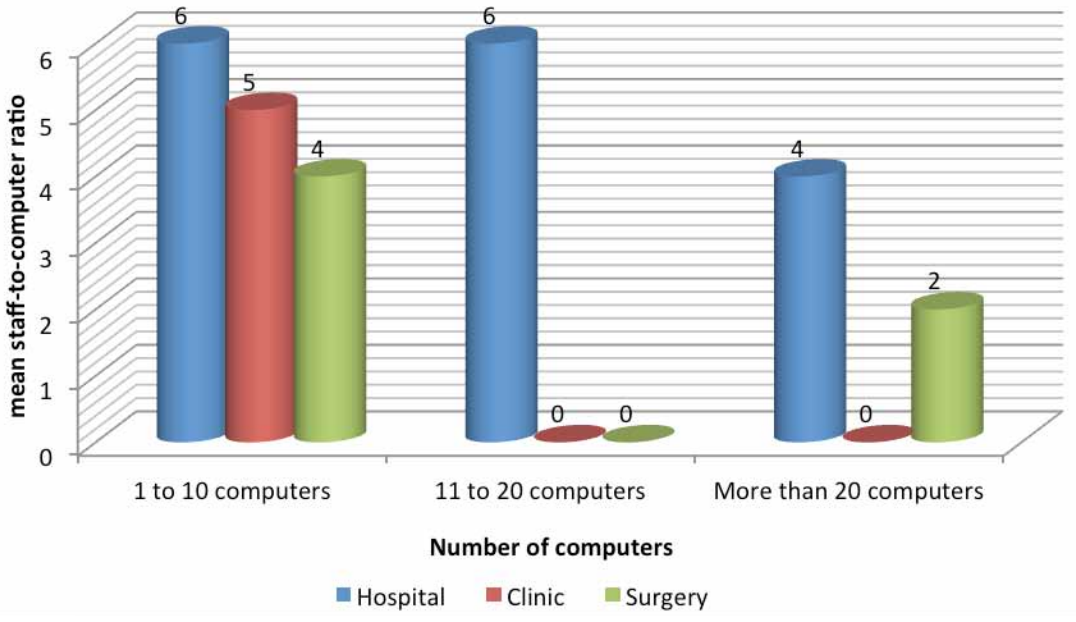
Forty percent of the health facilities had at least one computer in a working condition. All the hospitals had at least one computer; while 64 percent of surgeries and 30 percent of clinics owned at least one computer. Of all health facilities with computers, over half (51%) of them had one computer while the rest had computers ranging between two and thirty four. About one in five (21%) of the health facilities with computers had a network server with an average of seven computers connected to the server.

Figure 5.5 Health facilities with computers classified by type



With regard to staff-to-computer ratio, hospitals had the highest ratio of five staff members to one computer and were followed by clinics with a ratio of four to one and then surgeries with the ratio of two to one. Figure 5.6 shows that the staff-to-computer ratio slightly decreases with an increase in the number of computers.

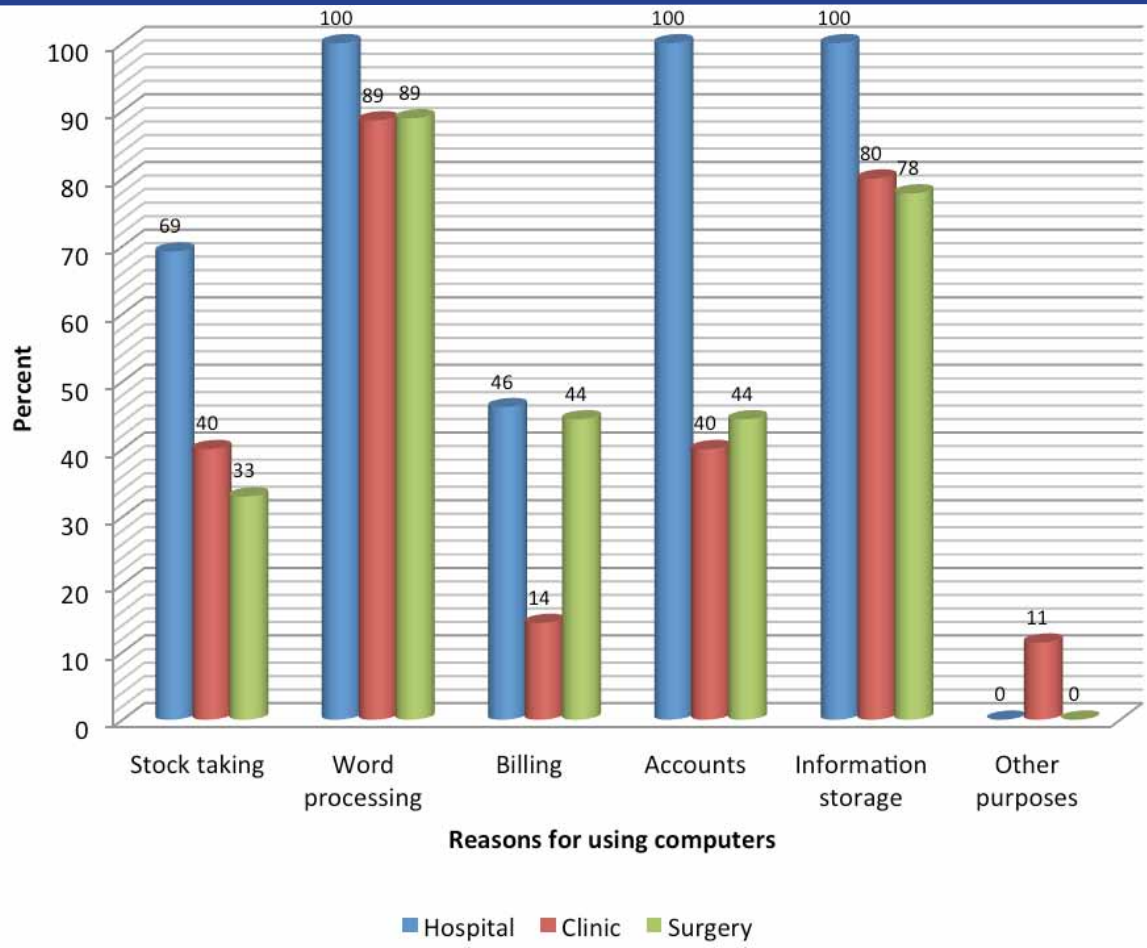
Figure 5.6 Staff-to-computer ratio by number of computers (for health facilities with computers)



Majority of health facilities with computers used them for word processing (91%) and storing of information (84%). Over half of the health facilities (54%) used computers for handling their accounts. Less than half of the health facilities used computers for stocktaking (46%) and few used them for billing (26%).

Analysis of reasons for using computers revealed a marked difference between hospitals, clinics and surgery. All hospitals used computers for word processing, information storage and for accounts (Figure 5.7). With regard to the use of computers for handling accounts, there is a noticeable difference between the proportion of hospitals and clinics as well as surgeries. That is, less than half of the clinics and surgeries managed their accounts by use of computers while management of accounts is computerized in all hospitals. Figure 5.7 presents health facilities with computers categorised by reasons for using computers at the level of facility type.

Figure 5.7 Health facilities with computers by type of usage



Information was sought from health facilities on the number of staff members that used a computer every day, once a week and once a month. Most of the health facilities (83%) had an average of eight employees that used computers almost every day. Close to 30 percent of health facilities had an average of three staff members that used a computer once a week and one in five (19%) had an average of two employees that used a computer once in a month.

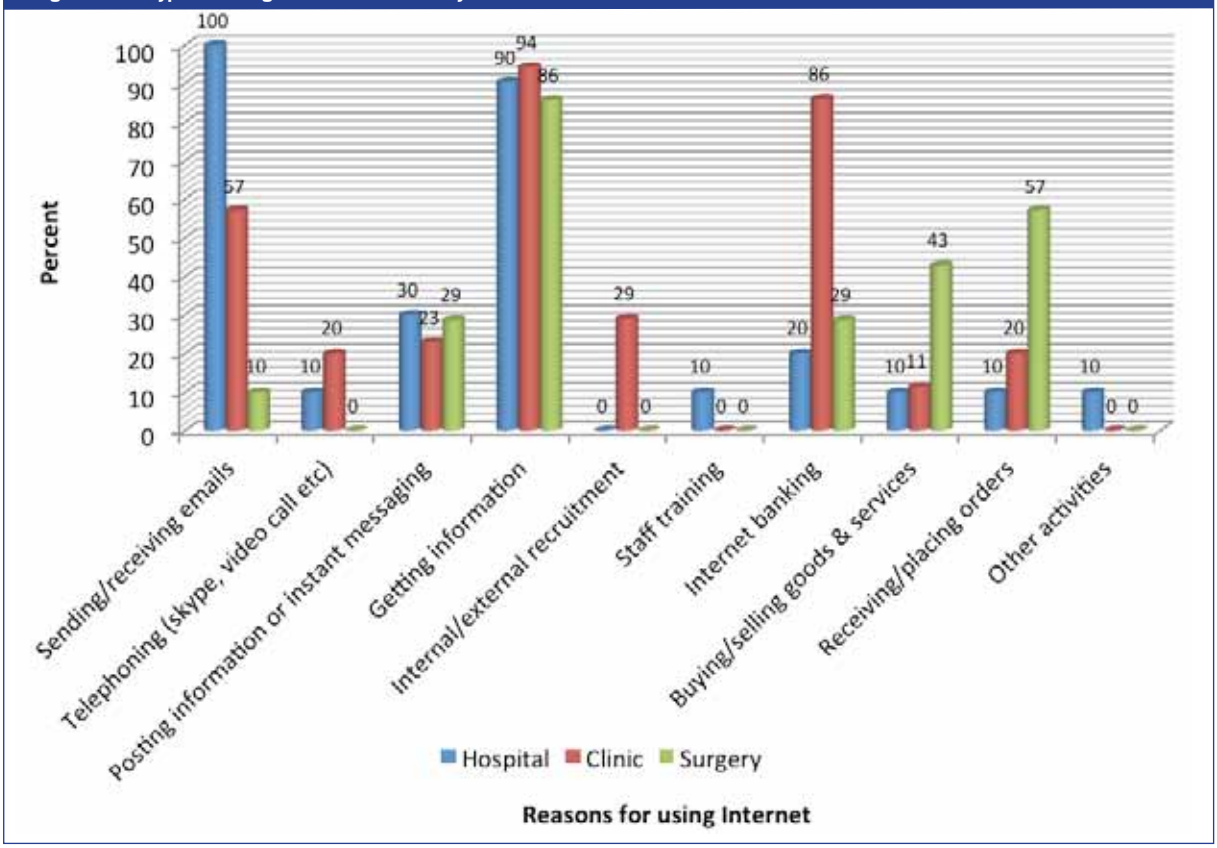
5.4.2 *Internet connectivity*

More than a third (36%) of the health facilities had Internet connectivity and almost 60 percent of facilities with computers (desktop, laptop and tablet) had Internet with an average of four computers connected to Internet. Of all health facilities, 13 percent had access to Internet exclusively by a mobile phone. Within the different types of health facilities that had computers with Internet connection, hospitals constituted 77 percent, while surgeries and clinics comprised 67 percent and 41 percent respectively. Of the health facilities that used mobile phones to access Internet, 94 percent were clinics and the remaining six percent were surgeries. None of the hospitals used mobile phones for data.

With health facilities that were in urban areas, 52 percent had an Internet connection while among rural health facilities, the proportion with Internet was 26 percent. With regard to the type of data subscription, half of the facilities (50%) were on prepaid, 44 percent used post-paid and four percent did not know the type of subscription. Very few health facilities (2%) reported using of SA networks.

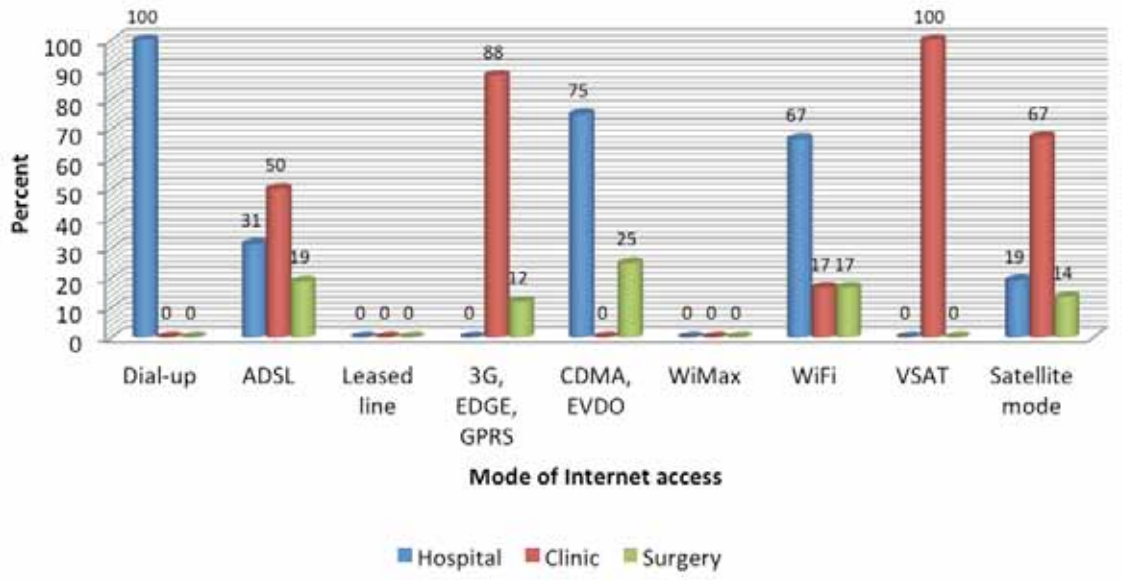
Majority of the health facilities (92%) used Internet for sourcing information, and about 72 percent used it for e-mail. When disaggregated by facility type, all hospitals and surgeries used Internet for e-mail whereas over 90 percent of both the hospitals and clinics used it for sourcing information (Figure 5.8). It is also shown in Figure 5.8 that a higher proportion of surgeries used Internet for receiving or placing orders, buying or selling goods and services as well as Internet banking than was the case in hospitals and clinics.

Figure 5.8 Type of usage for health facility with Internet



Sixty percent of the health facilities with Internet were connected through mobile Internet (3G, EDGE or GPRS, CDMA, EVDO etc.), whereas facilities that were connected via ADSL constituted 30 percent. Twelve percent of the facilities were connected to Internet through Wi-Fi and the same proportion was connected via VSAT. A very small proportion of health facilities (4%) were connected to Internet through Dial-up. Figure 5.9 shows mode of Internet access classified by type of health facility. Only clinics had a VSAT as their mode of Internet access while only hospitals used Dial-up.

Figure 5.9 Mode of access for health facilities with Internet



With regard to whether or not facilities had network points, the results revealed that 15 percent had network points with an average of two points. Among facilities with network points, hospitals and clinics constituted 45 percent and 41 percent respectively while the remaining 14 percent was made of surgeries.

Almost two thirds (64%) of the health facilities did not have Internet connection. The reasons cited for not having Internet included lack of infrastructure (48%), high connection costs (22%) and lack of knowledge (15%) among others. Information was sought from these facilities regarding when they were planning to connect Internet and 91 percent had no intention of being connected at all, six percent intended to apply for connection within a year and two percent said it would be at least a year before they would consider applying for Internet.

5.4.3 Web presence

None of the health facilities had a website, however approximately 11 percent had an e-mail address. Of these facilities, over half of the clinics (56%) had a dedicated e-mail address whereas hospitals and surgeries with an e-mail address constituted 19 percent and 25 percent respectively. None of the health facilities used cloud services. Moreover, there were three health facilities with intranet service including two hospitals and one clinic with computers ranging between 15 and 30.

5.4.4 Onsite presence of communication and CPE

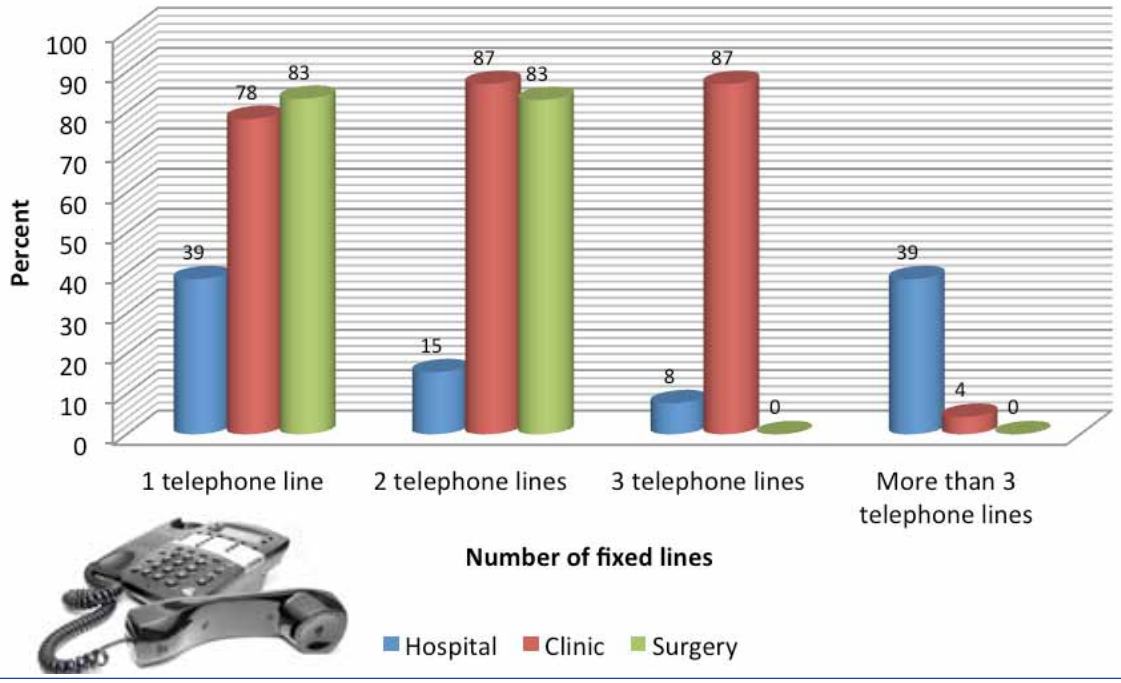
Twenty one percent of the health facilities had wards or rooms with beds for in-patients. All hospitals (100%) and approximately 15 percent of clinics had wards. None of the surgeries had rooms with beds to cater for in-patients. The distribution of health facilities with ICT devices in the wards was such that 23 percent had telephone extensions and the same proportion had television sets; 13 percent had alarms while seven percent had intercoms for emergencies and three percent had two-way radios and the same proportion had radios. With regard to communications equipment used in the offices, almost 60 percent of the health facilities had a mobile phone while 34 percent of the facilities had a fixed telephone line. Moreover, close to 30 percent of the health facilities had an office radio and 15 percent had a fax machine. Eighty nine percent of the health facilities had a waiting room and 23 percent of them had television sets while seventeen percent had radios. Table 5.4 presents the distribution of ICT facilities classified by the type of health facility.

Table 5.4 Health service providers with ICT facilities

Health Services with Information and Communication facilities		Hospital (%)	Clinic (%)	Surgery (%))
Fixed telephone line	Wards	-	-	-
	Offices	100.0	19.8	85.7
	Waiting rooms	-	-	-
Fixed telephone extension	Wards	53.8	0.0	-
	Offices	-	-	-
	Waiting rooms	-	-	-
Mobile phone	Wards	-	-	-
	Offices	53.8	60.3	50.0
	Waiting rooms	-	-	-
Facsimile machine	Wards	-	-	-
	Offices	53.8	8.6	35.7
	Waiting rooms	-	-	-
Two-way radios	Wards	0.0	5.9	-
	Offices	7.7	2.6	0
	Waiting rooms	-	-	-
Radio sets	Wards	0.0	5.8	0.0
	Offices	7.7	29.3	50.0
	Waiting rooms	0.0	12.9	7.1
Television sets	Wards	38.5	11.8	0.0
	Offices	15.4	2.6	0.0
	Waiting rooms	46.2	14.3	46.2
Speed point machine	Wards	-	-	-
	Offices	7.7	0.9	7.1
	Waiting rooms	-	-	-
Electronic cash register	Wards	-	-	-
	Offices	0.0	0.0	7.1
	Waiting rooms	-	-	-
Electric bell/alarm	Wards	30.8	0.0	-
	Offices	15.4	6.9	21.4
	Waiting rooms	-	-	-
Intercom	Wards	15.4	0.0	0.0
	Offices	15.4	1.7	21.4
	Waiting rooms	-	-	-

More than a third of the health facilities had a fixed telephone line and of those, close to 70 percent had one line, 10 percent had two lines, six percent had three lines and 14 percent had more than three lines. The distribution of fixed telephone lines classified by type of health facility for those with a fixed telephone is presented in Figure 5.10.

Figure 5.10 Health facilities with fixed telephone lines by number of lines



Of the health facilities with a fixed telephone or a mobile phone, majority of them (67%) were on prepaid subscription while a little over 40 percent were on post-paid subscription and three percent used SA network. Amongst these health facilities, eight percent were on both post-paid and prepaid services and it was established that such facilities had both a fixed telephone and a mobile phone while in some cases they had more than one telephone line.

Amongst clinics with voice communication, three out of four were on prepaid subscription. On the contrary, majority of hospitals (77%) and surgeries (75%) were on post-paid subscription (Table 5.5).

Table 5.5 Type of subscription by type of health facility

Type of subscription	Hospital (%)	Clinic (%)	Surgery (%)
Prepaid	38.5	75.6	41.7
Post-paid	76.9	30.5	75.0
SA network	7.7	12.0	8.3

Three out of five health facilities had access to public pay phones with an average walking time of three minutes. Furthermore, the proportion of health facilities with access to Internet cafés constituted 35 percent and the average walking time to the Internet café was ten minutes. The urban-rural divide of access to Internet through Internet cafés was underscored among the facilities with access to Internet in that 96 percent were found in an urban setting whereas the remaining four percent were situated in a rural locality. Table 5.6 presents the distribution of health facilities with access to public payphones and Internet cafés as well as the average time taken to reach the payphone and Internet café.

Table 5.6 Health facilities with access to public payphones, Internet cafés and mean access time				
Type of health facility	Access in percentages		Mean access time in minutes	
	Public payphone	Internet Café	Public payphone	Internet Café
Hospital	100.0	76.9	2	13
Clinic	54.3	22.4	3	10
Surgery	100.0	100.0	3	5

5.4.5 *ICT support*

Among health facilities with computers, 79 percent reported that they outsource ICT technical support and seven percent had staff in-house that provided ICT technical support as required. Less than 15 percent of the health facilities reported having not experienced any problems that require ICT technical support. Table 5.7 shows the distribution of health facilities with different kinds of ICT support classified by the type of facility.

Table 5.7 Health facilities with access to ICT support			
Type of health facility	In-house (%)	Out-sourced (%)	Not experienced any problems (%)
Hospital	0.0	8.6	11.1
Clinic	92.3	74.3	77.8
Surgery	7.7	17.1	11.1

5.5 Cost of communication

Information was sought from the health facilities regarding their monthly operating costs. Close to two thirds of the facilities responded, and showed that communication costs accounted for 1.4 percent of the total running costs. With regard to different types of communication amenities, the health facilities spent on average M300.00 for fixed telephones, where twenty five percent of those with the least usage spent M150.00 or less and twenty five percent with the most usage incurred over M1000.00 per month (Table 5.8).

Their expenditure on mobile phones averaged M300.00 per month with the bottom twenty five percent of the facilities spending M250.00 per month. The average monthly expenditure on Internet was M325.00 while an average of M160.00 was spent on fax. For health facilities that used staff personal mobile phones to transact their business, they spent on average of M100.00 per month. The expenditure of bundled services for data and voice was close to M400.00.

Table 5.8 The average cost of communication classified by type of facility used			
Communication facility	Average cost	25th Percentile	75th Percentile
Fixed telephone line	300.00	150.00	1000.00
Mobile phone	300.00	250.00	300.00
Internet	325.00	50.00	1000.00
Facsimile machine	160.00	53.75	575.00
Two-way radio	-	-	-
Staff mobile phones	100.00	50.00	360.00
Bundled services	386.50	300.00	3125.00

*The bundled cost was dominated by cases where the airtime loaded on the mobile phone was used for both Internet and voice; as a result, the users could not apportion cost for the two services.

Table 5.9 Integration of ICTs in health services

	Establishments type	Percentage of health facilities owning computers	Percentage of health facilities with network server (health services with computers)	Average number of health facilities with computers connected to the server (health facilities with a network server)	Average number of computers connected to Internet (health facilities with Internet connection)
Health facilities with 1 to 10 computers	Hospital	53.8	23.1	10	8
	Clinic	97.1	11.4	3	2
	Surgery	100.0	22.2	2	1
Health facilities with 11 to 20 computers	Hospital	30.8	7.7	8	13
	Clinic	0	0	0	0
	Surgery	0	0	0	0
Health facilities with more than 20 computers	Hospital	15.4	7.7	7	30
	Clinic	2.9	2.9	29	29
	Surgery	0	0	0	0

CHAPTER 6 - COMPARATIVE STATISTICS ACROSS THE SECTORS

This chapter presents a brief comparison of the key selected indicators across the business, education, health and tourism sectors. The simple pie charts are used to depict the specific statistics related to these ICT indicators.

6.1 Presence of electricity

The presence of electricity was higher (84%) in accommodation establishments, followed by businesses (75%), then health facilities (59%) and lastly schools with 23 percent.

6.2 Presence of computers

More than half (58%) of the accommodation establishments had computers. Forty percent of health facilities; 34 percent of businesses and 28 percent of schools owned computers.

6.3 Presence of network servers amongst entities with computers

The network servers were more prevalent in businesses (39%) compared to accommodation establishments (26%), health facilities (21%) and schools (17%).

6.4 Employees with basic computer skills

On the overall, the number of entities that had employees with basic computer skills was high across all four sectors. In the tourism and health sectors, 87 percent and 86 percent of entities had employees with basic computer skills respectively. Sixty seven percent of schools had staff members with basic computer skills and 59 percent of businesses also had employees with computer skills.

6.5 Internet connectivity

Internet connectivity remained below 50 percent across the four sectors. Forty two percent of accommodation establishments had Internet connectivity followed by 36 percent of the health facilities. The businesses that were connected to the Internet accounted for 26 percent while seven percent of the schools had Internet connection.

6.6 Modes of Internet connectivity

Internet on mobile handsets was used mostly by schools (68%), health facilities (56%) and businesses (50%) whereas with accommodation establishments the commonly used mode of Internet connectivity was ADSL (44%).

6.7 Wireless Internet connectivity

The prevalence of wireless Internet connectivity was higher in the accommodation establishments (47%) followed by 23 percent in health facilities, then 16 percent in businesses and nine percent in schools.

6.8 Presence of an e-mail address

A higher number of accommodation establishments had an e-mail address (48%) followed by businesses (18%), then health facilities (11%) and schools (3%).

6.9 Internet café in the locality

The presence of Internet café within a walking distance of an entity was higher in the businesses (59%) and accommodation establishments (59%) compared to the health facilities (35%) and schools (11%).

6.10 Web presence

The presence of websites remains low across all sectors. Accommodation establishments and businesses with websites constituted 28 percent and eight percent respectively. One percent of the schools had websites and none of the health facilities had websites.

6.11 Presence of mobile phone

Overall, more than half of entities had cell phones across all sectors. There was 83 percent prevalence of cell phones in the schools, 72 percent for the businesses, 59 percent for the health facilities and 57 percent for the accommodation establishments.

6.12 Presence of fixed telephone

Almost two thirds of accommodation establishments (65%) had fixed telephones whereas less than half of businesses (39%), health facilities (34%) and schools (18%) had fixed telephone lines.

6.13 Presence of a facsimile

The presence of fax machines was higher in the accommodation establishments (36%) followed by businesses (21%), then health facilities (15%) and lastly schools (2%).

6.14 Presence of two-way-radios

Overall, ownership of two-way radios was low and in some cases non-existent across all four sectors. Eleven percent of accommodation establishments had two-way radios while businesses and health facilities with two-way radios constituted five percent and three percent respectively. None of the schools had two-way radios.

6.15 Public phone in the locality

The prevalence of public phones within a walking distance of an entity was higher in schools (93%), followed by businesses (83%), then accommodation establishments (77%) and lastly health facilities (63%).

6.16 Presence of television sets

More than three quarters of accommodation establishments (86%) had television sets whereas less than a quarter in health facilities (24%), businesses (18%) and schools (10%) owned television sets.

6.17 Presence of a satellite dish

Almost all the accommodation establishments had satellite dishes (97%) followed by health facilities (64%) and businesses (62%), then schools (50%).

6.18 Presence of radio sets

The presence of radio sets was higher in businesses (50%), then in accommodation establishments (45%) and health facilities (43%). A limited number of schools (6%) had radio sets.

Figure 6.1 Presence of electricity

Figure 6.1: Electricity connection (LEC power grid) - Businesses

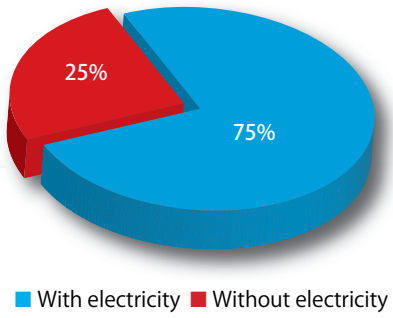


Figure 6.1: Electricity connection (LEC power grid) - Schools

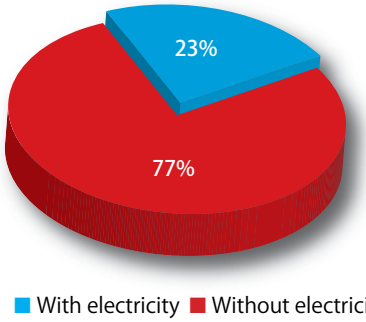


Figure 6.1: Electricity connection (LEC power grid) - Health facilities

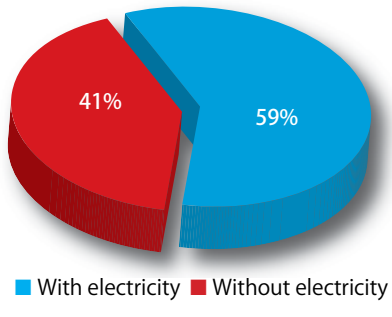


Figure 6.1: Electricity connection (LEC power grid) - Accommodation establishments

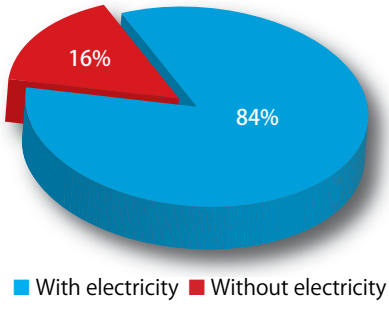


Figure 6.2 Presence of computers

Figure 6.2: Computers - Businesses

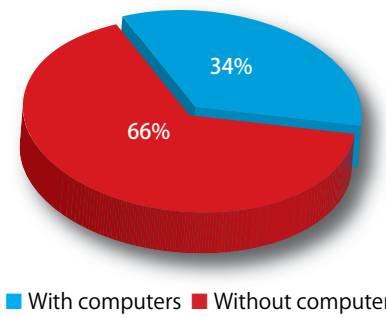


Figure 6.2: Computers - Schools

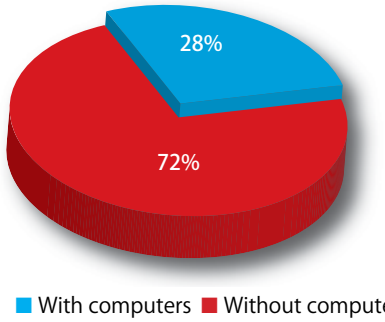


Figure 6.2: Computers - Health facilities

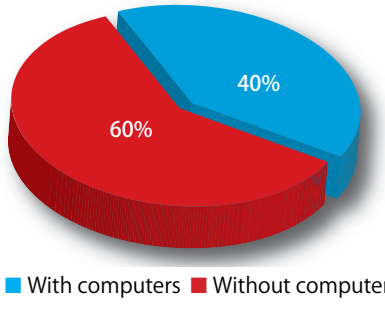
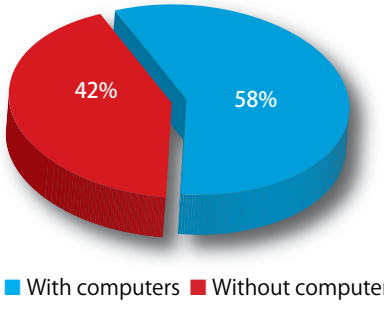


Figure 6.2: Computers - Accommodation establishments



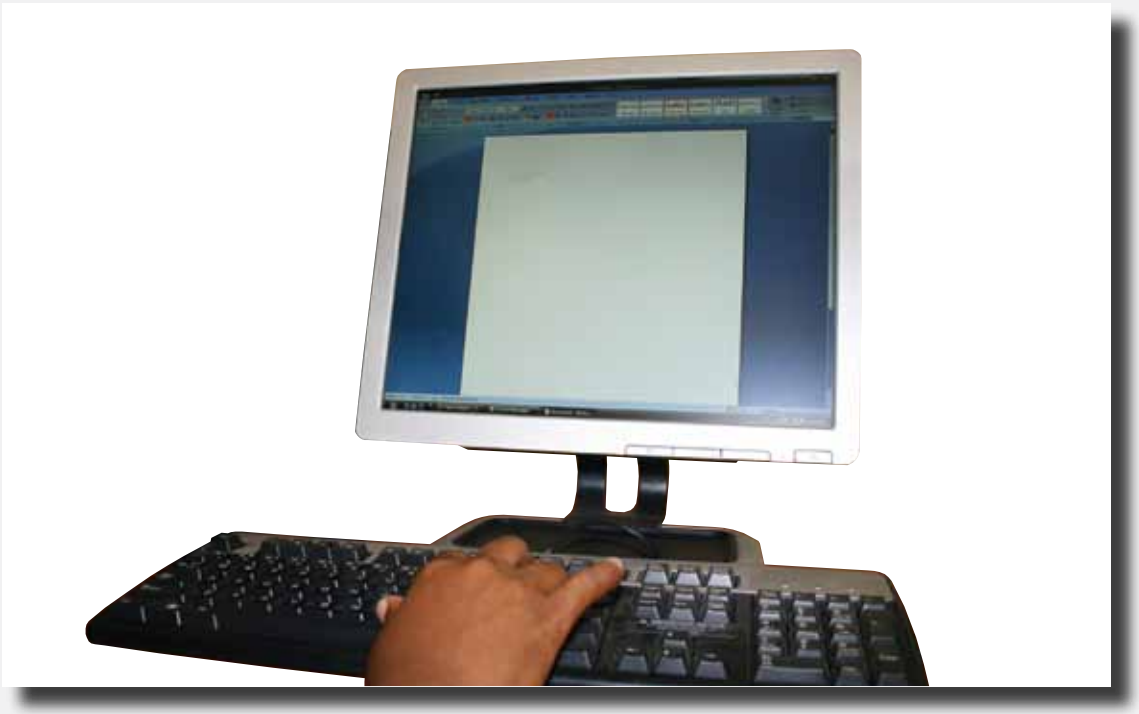


Figure 6.3 Presence of network servers amongst entities with computers

Figure 6.3: Network server - Businesses

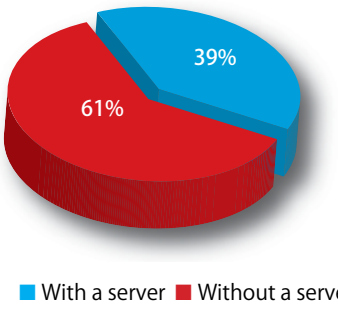


Figure 6.3: Network server - Schools

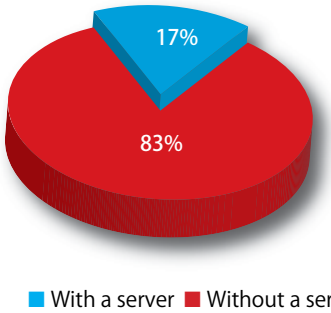


Figure 6.3: Network server - Health facilities

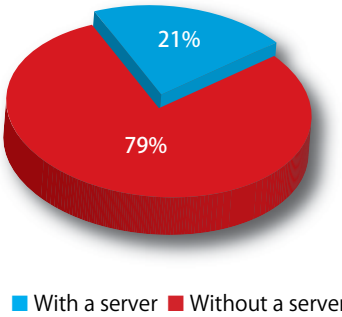


Figure 6.3: Network server - Accommodation establishments

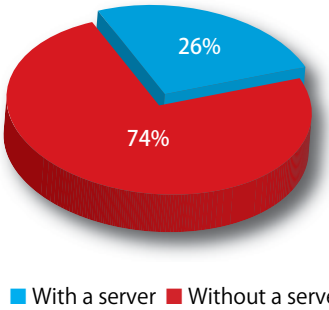
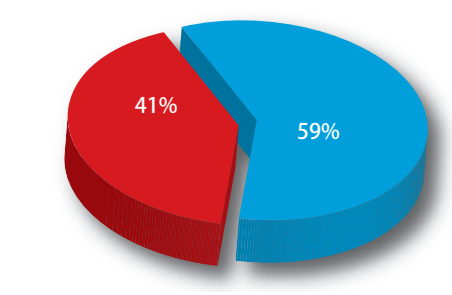


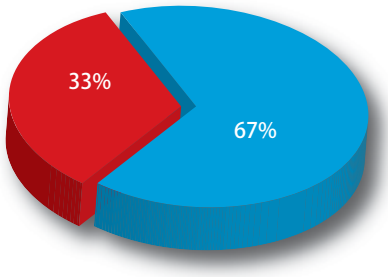
Figure 6.4 Employees with basic computer skills

Figure 6.4: Employees with basic computer skills - Businesses



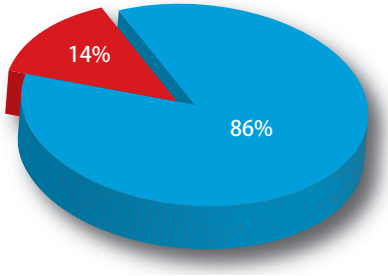
With employees with basic computer skills
Without employees with basic computer skills

Figure 6.4: Employees with basic computer skills - Schools



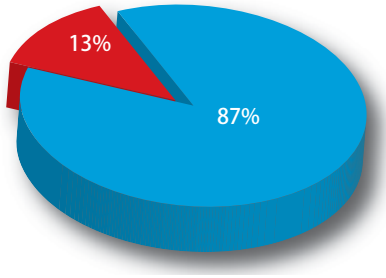
With employees with basic computer skills
Without employees with basic computer skills

Figure 6.4: Employees with basic computer skills - Health facilities



With employees with basic computer skills
Without employees with basic computer skills

Figure 6.4: Employees with basic computer skills - Accommodation establishments



With employees with basic computer skills
Without employees with basic computer skills

Figure 6.5 Internet connectivity

Figure 6.5: Internet connectivity - Businesses

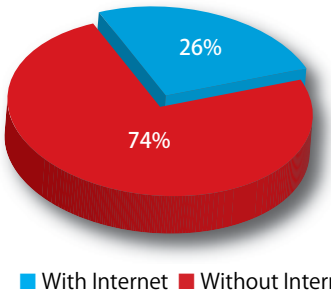


Figure 6.5: Internet connectivity - Schools

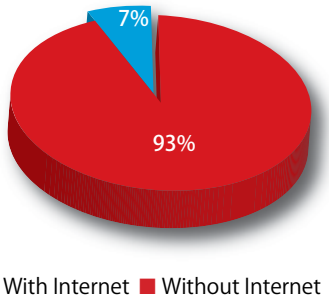


Figure 6.5: Internet connectivity - Health facilities

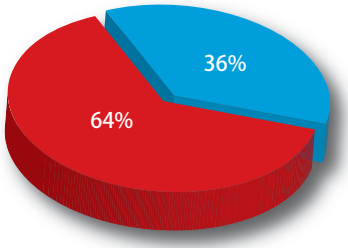
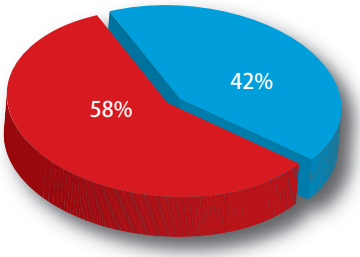


Figure 6.5: Internet connectivity - Accommodation establishments



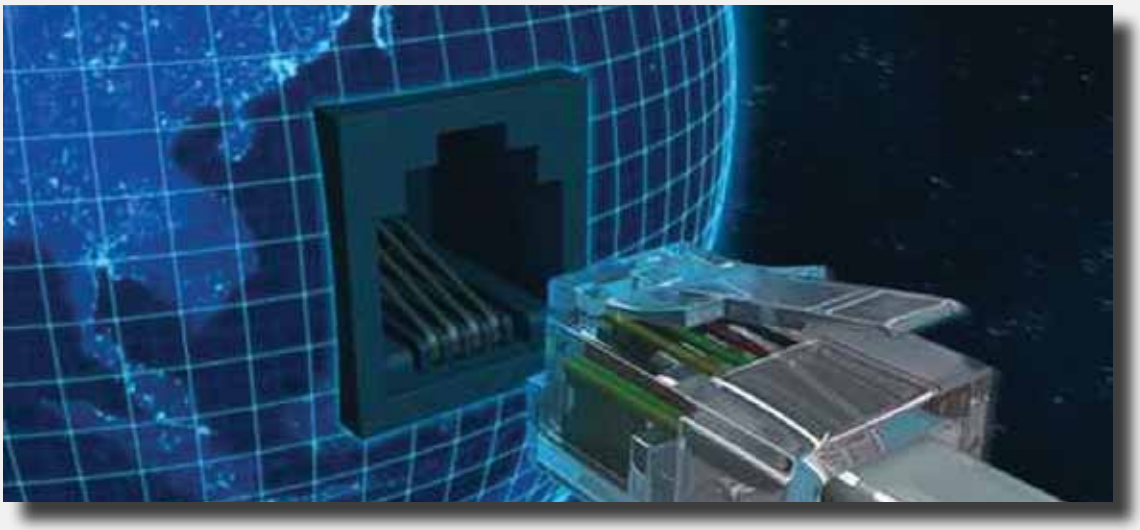
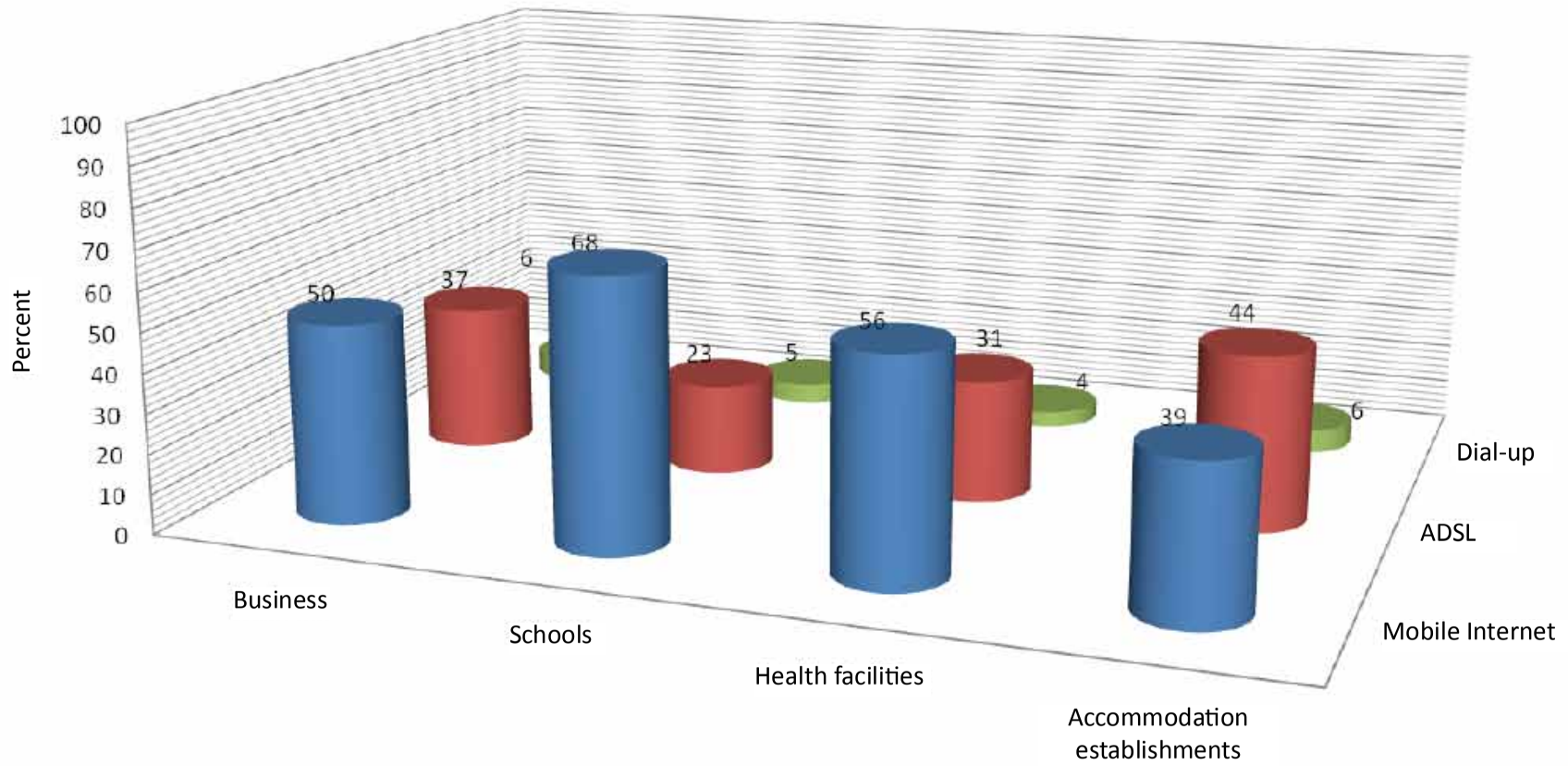


Figure 6.6 Modes of Internet connectivity



	Business	Schools	Health facilities	Accommodation establishments
Mobile Internet	50	68	56	39
ADSL	37	23	31	44
Dial-up	6	5	4	6

Figure 6.7 Wireless Internet connectivity

Figure 6.7: Wireless Internet connectivity - Businesses

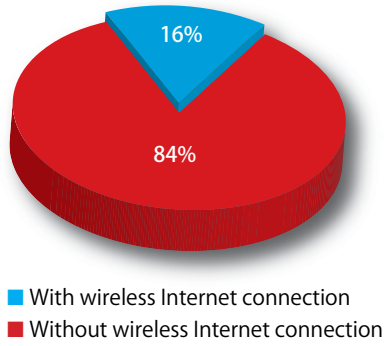


Figure 6.7: Wireless Internet connectivity - Schools

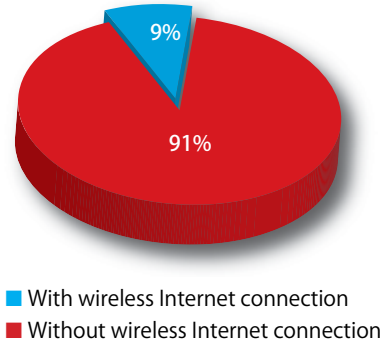


Figure 6.7: Wireless Internet connectivity - Health facilities

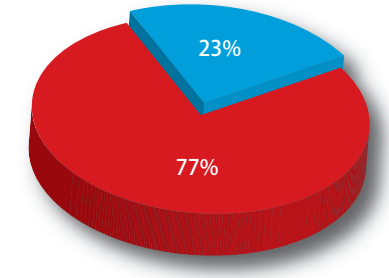


Figure 6.7: Wireless Internet connectivity - Accommodation establishments

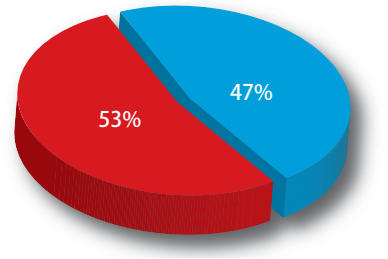


Figure 6.8 Presence of an e-mail address

Figure 6.8: E-mail address - Businesses

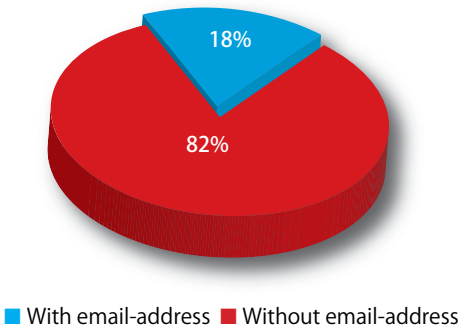


Figure 6.8: E-mail address - Schools

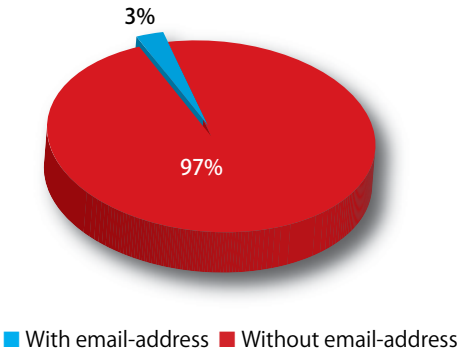


Figure 6.8: E-mail address - Health facilities

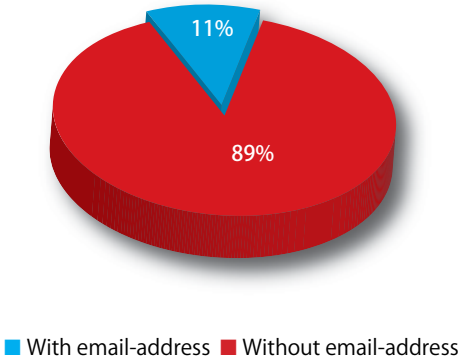


Figure 6.8: E-mail address - Accommodation establishments

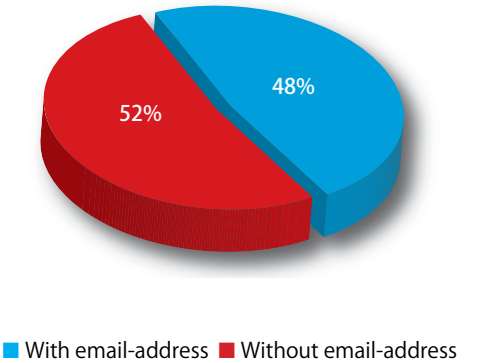


Figure 6.9 Internet café in the locality

Figure 6.9: Internet cafés in the locality - Businesses

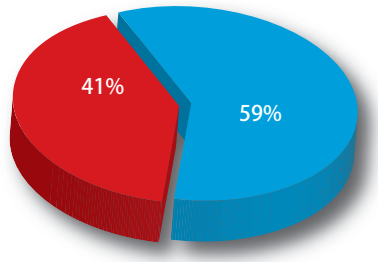


Figure 6.9: Internet cafés in the locality - Schools

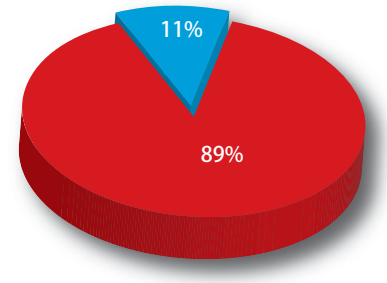


Figure 6.9: Internet cafés in the locality - Health facilities

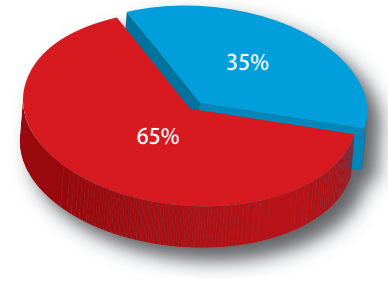


Figure 6.9: Internet cafés in the locality - Accommodation establishments

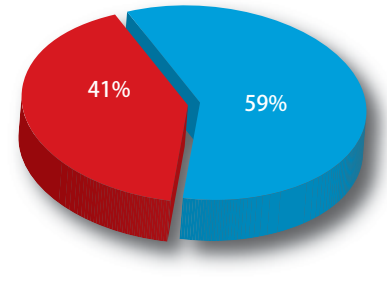


Figure 6.10 Web presence

Figure 6.10: Web presence - Businesses

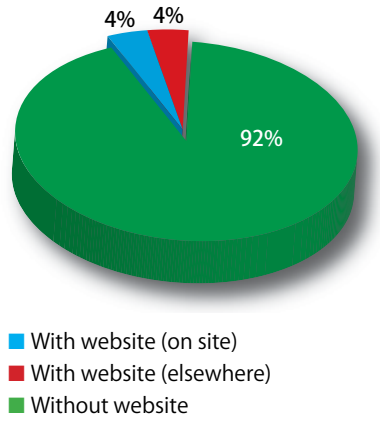


Figure 6.10: Web presence - Schools

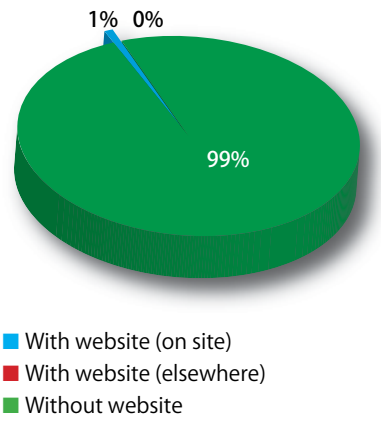


Figure 6.10: Web presence - Health facilities

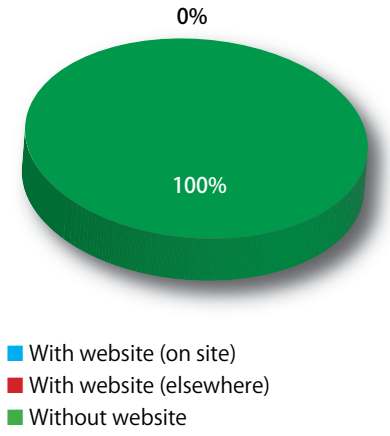


Figure 6.10: Web presence - Accommodation establishments

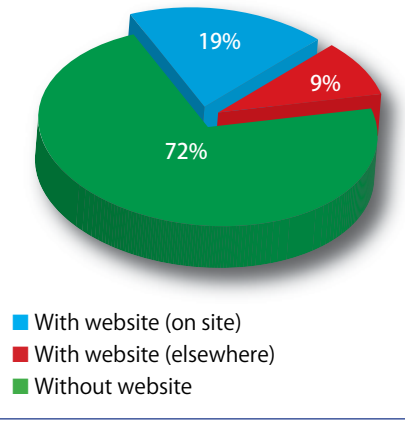


Figure 6.11 Presence of mobile phone

Figure 6.11: Mobile phones - Businesses

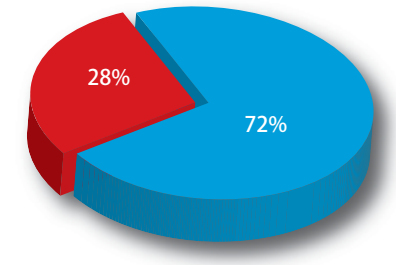


Figure 6.11: Mobile phones - Schools

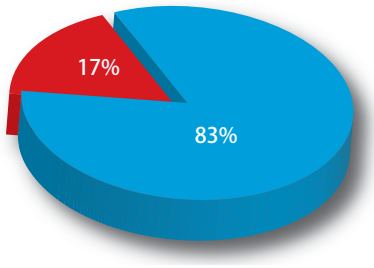


Figure 6.11: Mobile phones - Health facilities

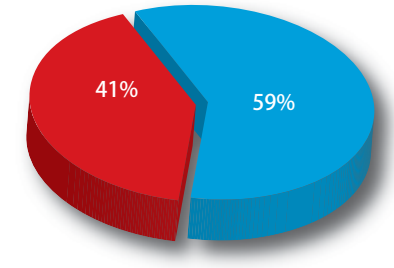


Figure 6.11: Mobile phones - Accommodation establishments

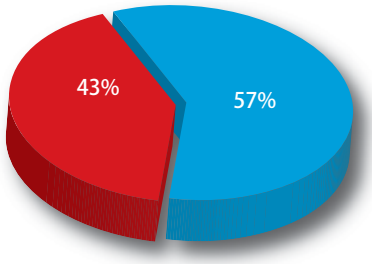


Figure 6.12 Presence of fixed telephone

Figure 6.12: Fixed telephone lines - Businesses

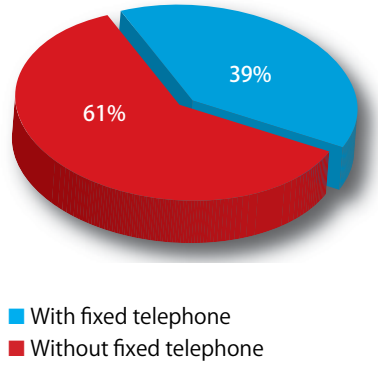


Figure 6.12: Fixed telephone lines - Schools

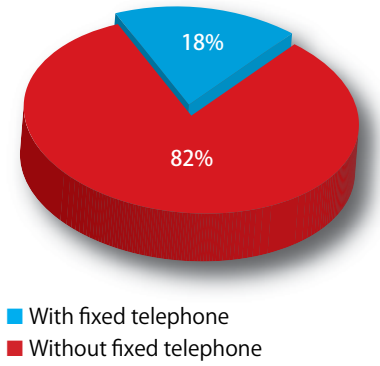


Figure 6.12: Fixed telephone lines - Health facilities

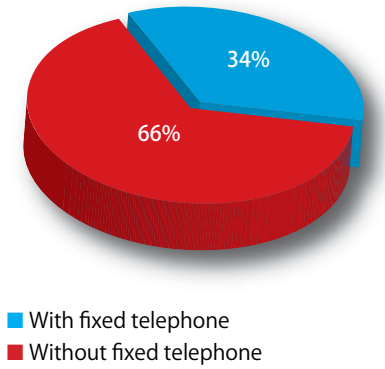


Figure 6.12: Fixed telephone lines - Accommodation establishments

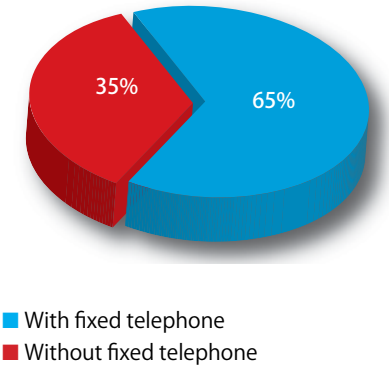


Figure 6.13 Presence of fax machine

Figure 6.13: Fax machine - Businesses

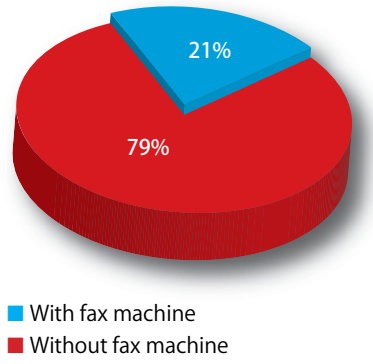


Figure 6.13: Fax machine - Schools

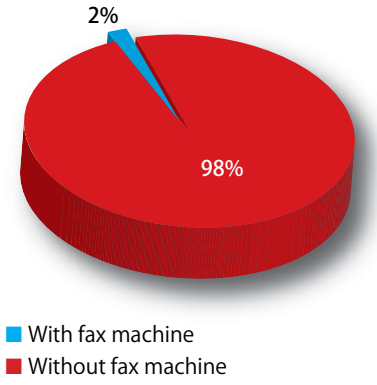


Figure 6.13: Fax machine - Health facilities

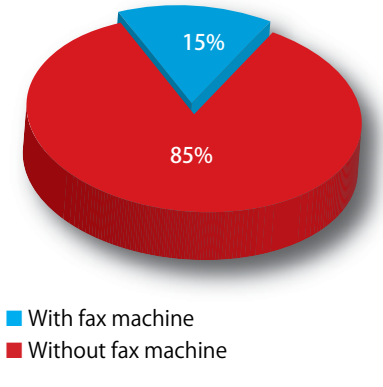


Figure 6.13: Fax machine - Accommodation establishments

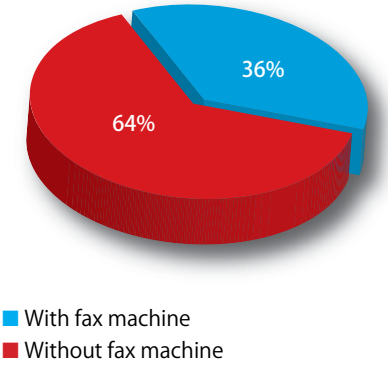


Figure 6.14 Presence of two-way-radio

Figure 6.14: Two-way-radios - Businesses

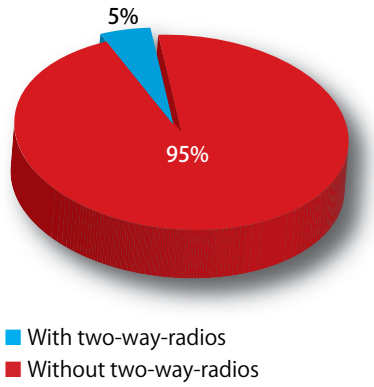


Figure 6.14: Two-way-radios - Schools

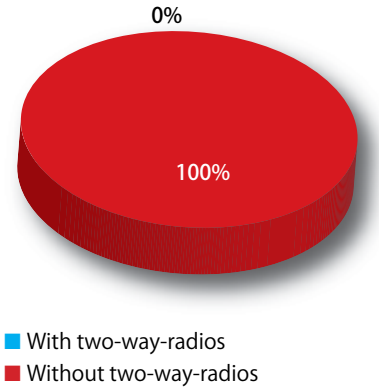


Figure 6.14: Two-way-radios - Health facilities

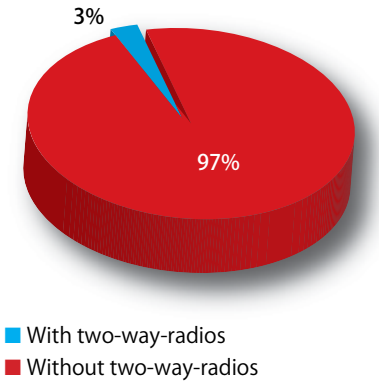


Figure 6.14: Two-way-radios - Accommodation establishments

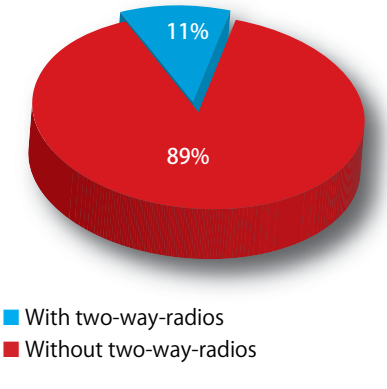


Figure 6.15 Public phone in the locality

Figure 6.15: Public phones in the locality - Businesses

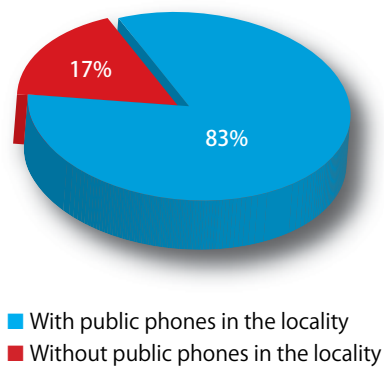


Figure 6.15: Public phones in the locality - Schools

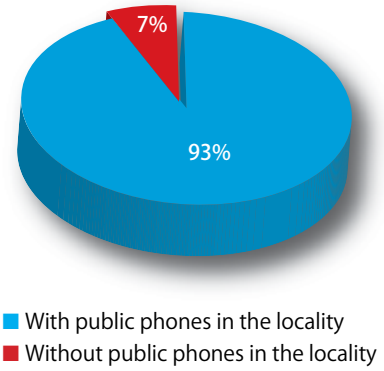


Figure 6.15: Public phones in the locality - Health facilities

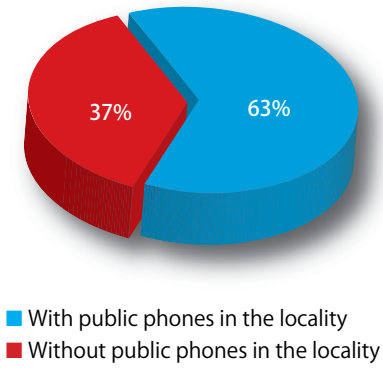


Figure 6.15: Public phones in the locality - Accommodation establishments

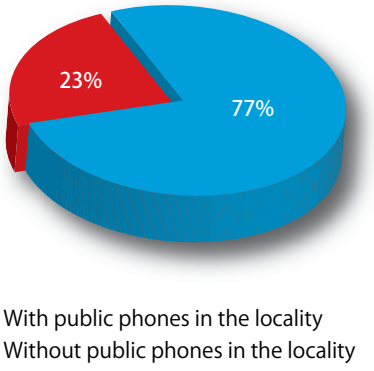


Figure 6.16 Presence of television sets

Figure 6.16: Television sets - Businesses

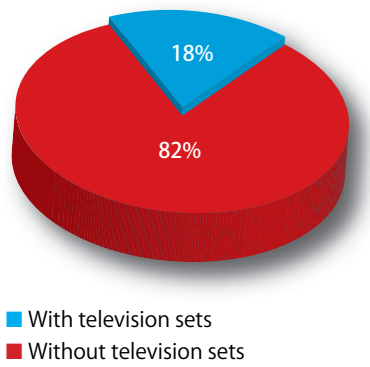


Figure 6.16: Television sets - Schools

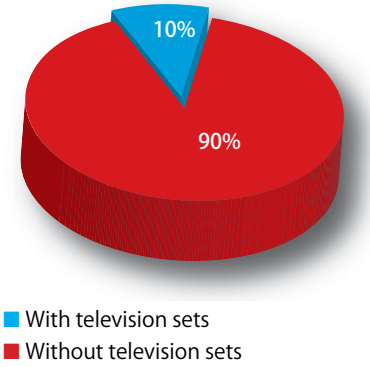


Figure 6.16: Television sets - Health facilities

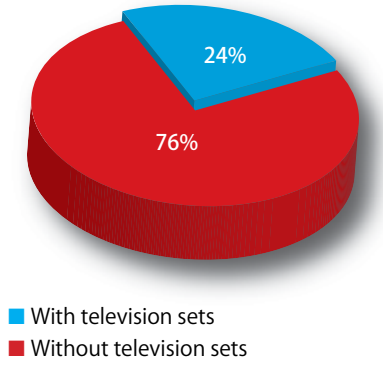


Figure 6.16: Television sets - Accommodation establishments

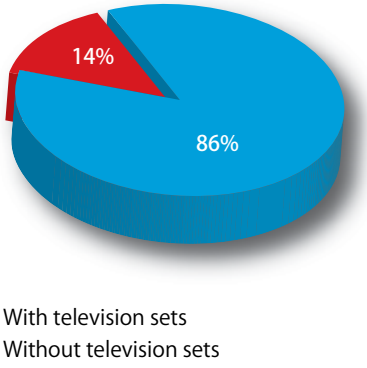
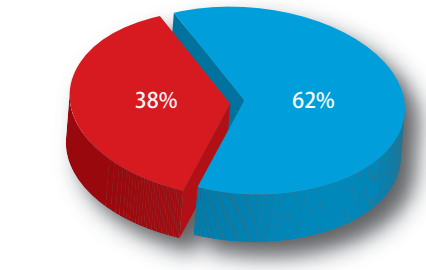


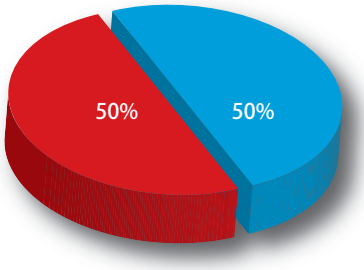
Figure 6.17 Presence of satellite dish

Figure 6.17: Satellite dishes connected to the television - Businesses



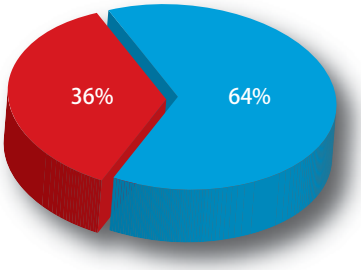
With televisions connected to satellite dish
Without televisions connected to satellite dish

Figure 6.17: Satellite dishes connected to the television - Schools



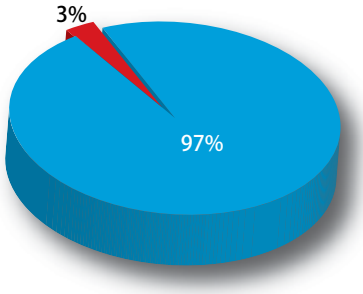
With televisions connected to satellite dish
Without televisions connected to satellite dish

Figure 6.17: Satellite dishes connected to the television - Health facilities



With televisions connected to satellite dish
Without televisions connected to satellite dish

Figure 6.17: Satellite dishes connected to the television - Accommodation establishments



With televisions connected to satellite dish
Without televisions connected to satellite dish

Figure 6.18 Presence of radio sets

Figure 6.18: Radio sets - Businesses

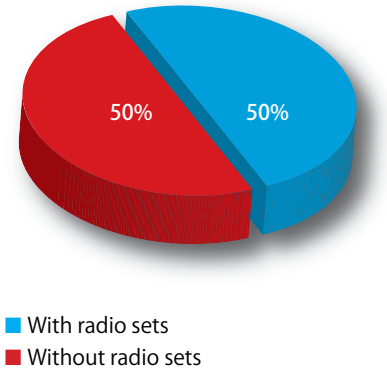


Figure 6.18: Radio sets - Schools

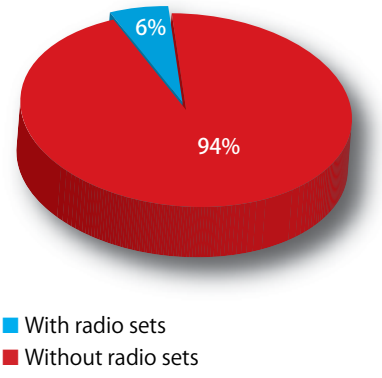


Figure 6.18: Radio sets - Health facilities

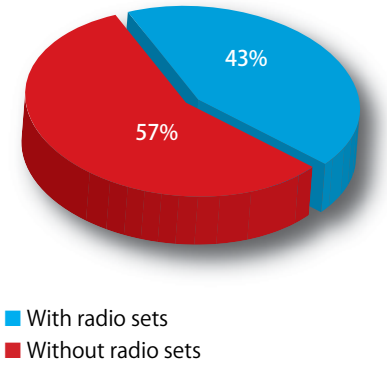
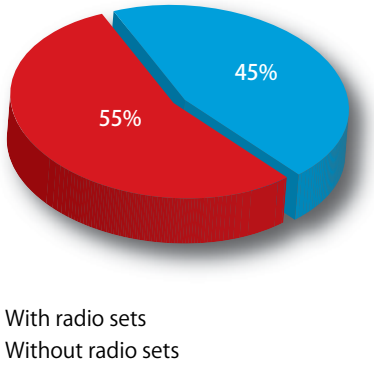


Figure 6.18: Radio sets - Accommodation establishments



CHAPTER 7 - COMPARATIVE STATISTICS BETWEEN 2009 AND 2013 SURVEYS

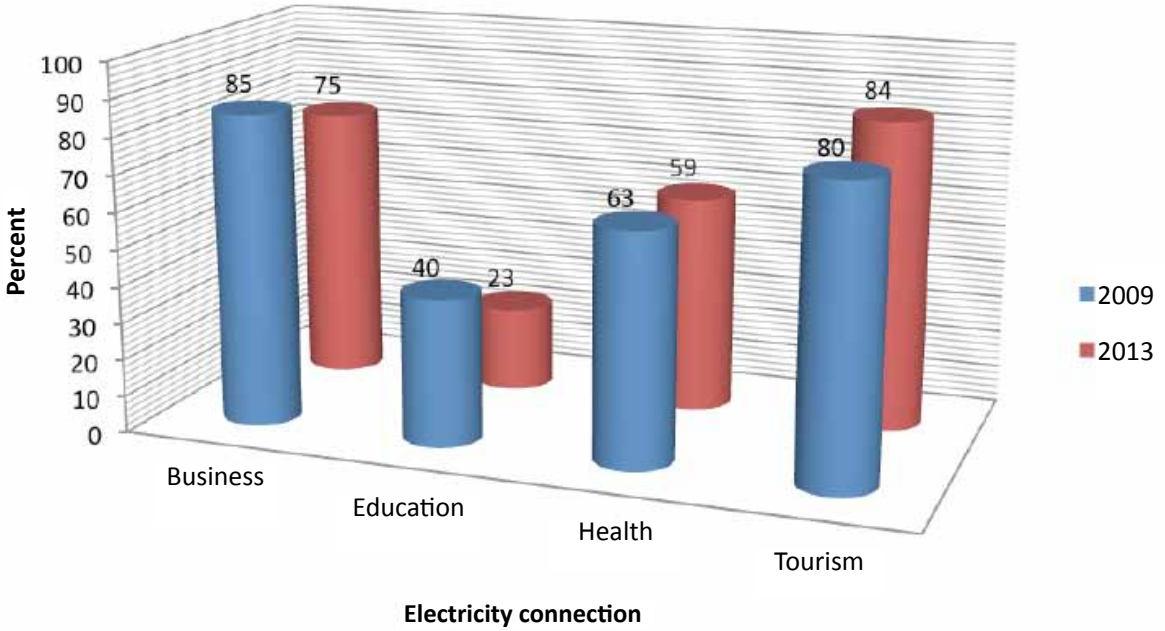
This chapter presents a brief comparison of the selected key ICT indicators for the two surveys, 2009 and 2013 in the four sectors. ICT indicators compared include among others presence of computers, mobile and fixed telephones, Internet, radio sets, television sets, e-mail address. Much as these studies focused on the same indicators, the 2013 study had additional indicators due to new developments in the communications sector. It should be noted that for the tourism sector, all the registered accommodation establishments were covered in the 2009 study (census) because they were limited in number, but in 2013 a sample was used.

7.1 Presence of electricity

A successful integration of ICTs requires a reliable source of electricity. In both surveys, more than half of the entities had access to electricity with exception of schools where less than half had electricity (Figure 7.1). Comparing the 2009 and 2013 results, there were minor differences in all sectors except in education where there was a difference of 17 percentage points in favour of the 2009 survey. This can be explained by the differences in the samples in the two phases; the 2009 survey had a higher number of schools in urban and peri-urban areas than in rural areas while the reverse was true in the 2013 survey. With this indicator (presence of electricity), the 2013 sample of schools was more representative of the entire population of schools since the proportion of schools connected to the electricity grid in the sample (22%) was similar to that of all schools (20%) with electricity in 2013[3] throughout the country. To this end, the results presented in this chapter for education are likely to suggest a negative growth with some of the ICT indicators, which in actual fact will just be a reflection of the differences in the two samples.

[3] MOET, 2014.

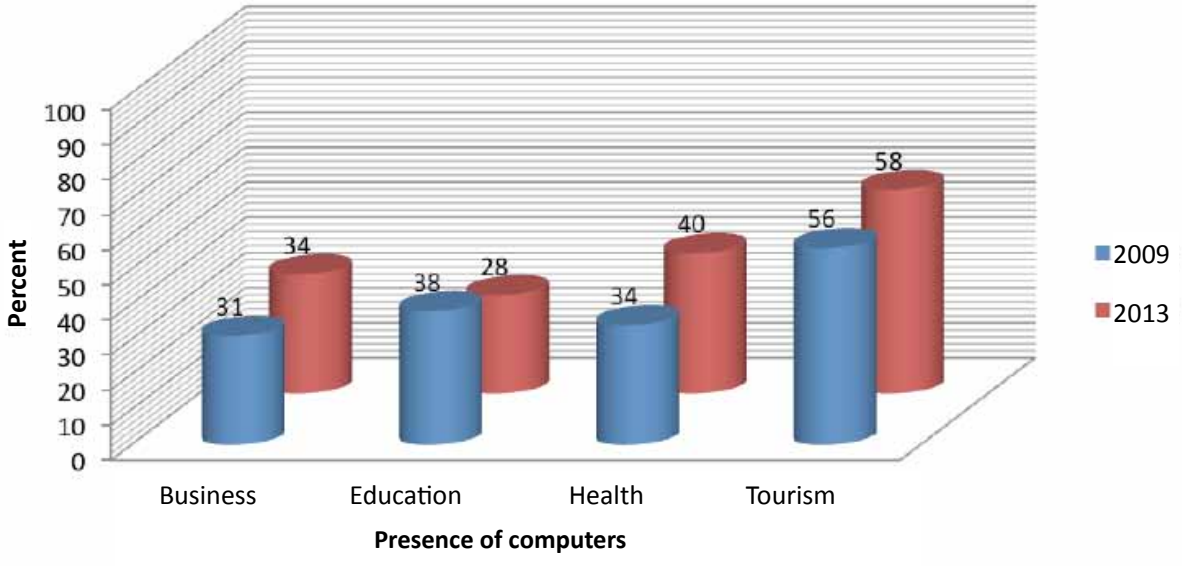
Figure 7.1 Entities connected to electricity grid in 2009 and 2013



7.2 Presence of computers

With regard to the number of entities that had a least one computer, there was a slight improvement from 2009 to 2013 in all sectors except in education (Figure 7.2). Amongst the four sectors, the tourism sector was the only one that had more than half of entities with one computer at the minimum, both in 2009 and 2013.

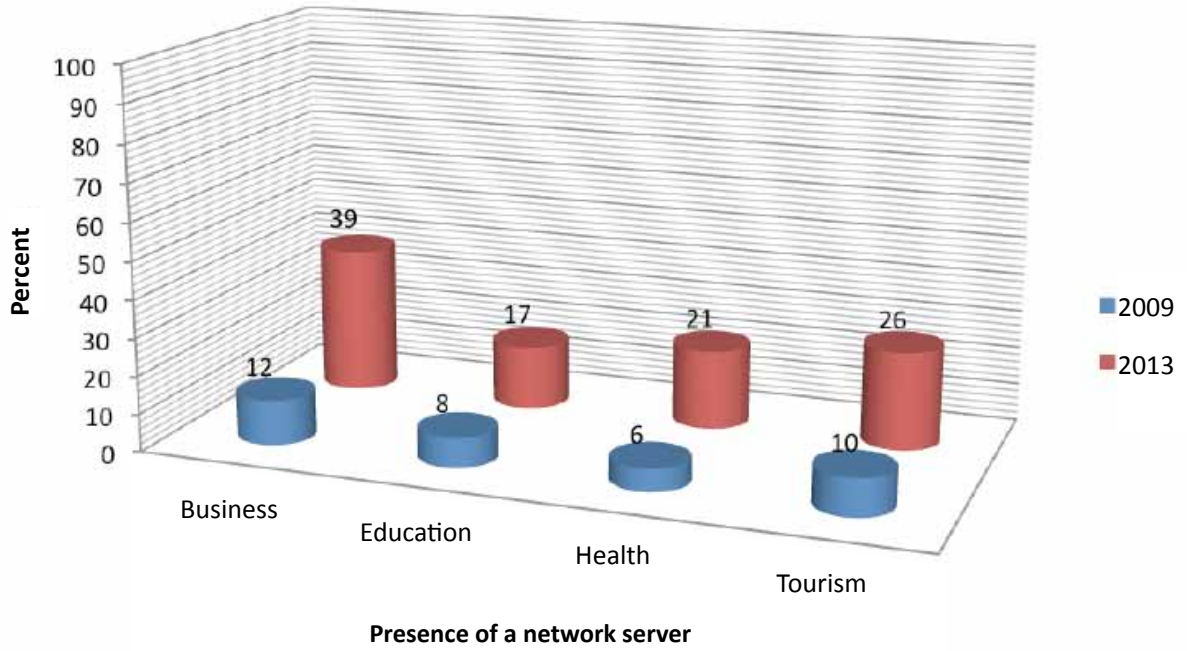
Figure 7.2 Entities with at least one computer in 2009 and 2013



7.3 Presence of network servers amongst entities with computers

Figure 7.3 depicts the proportion of entities with at least one network server amongst those that had computers. While there was a considerable improvement in the number of entities with a network server in all the sectors from 2009 to 2013, the proportion of entities that owned a server remains very low in all the sectors.

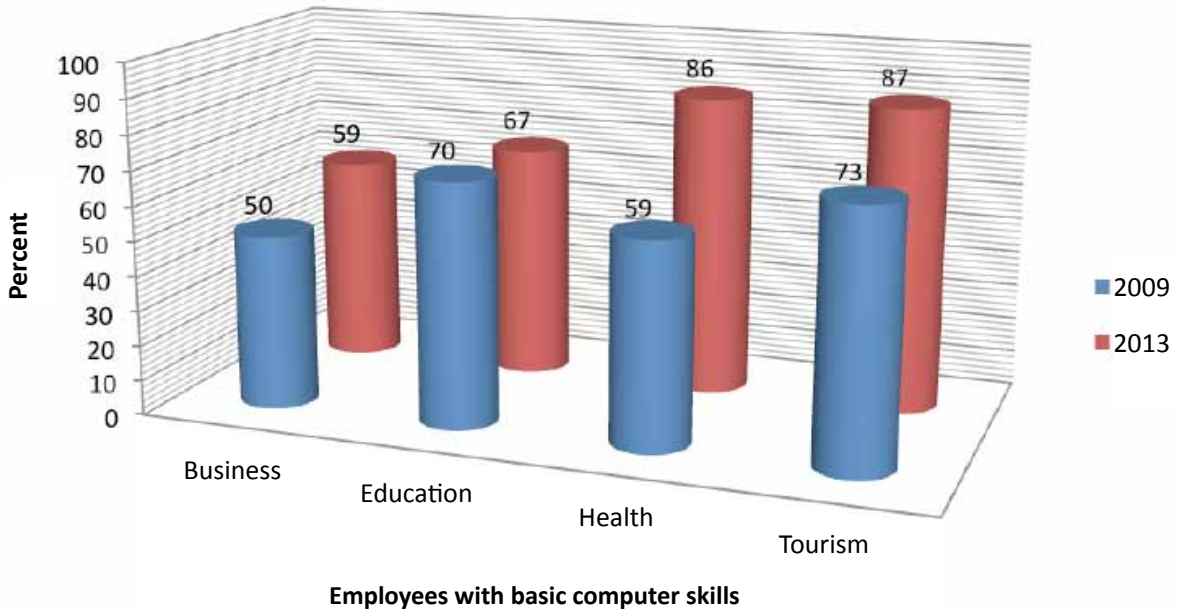
Figure 7.3 Entities with at least one network server amongst those with computers in 2009 and 2013



7.4 Employees with basic computer skills

There was an increase in the number of employees with basic computer skills from 2009 to 2013 in all the sectors except in education (Figure 7.4). In the health and tourism sectors, the proportion of staff with basic computer skills exceeded 80 percent in 2013 with a notable change of 27 percentage points from 2009 to 2013 in the health sector.

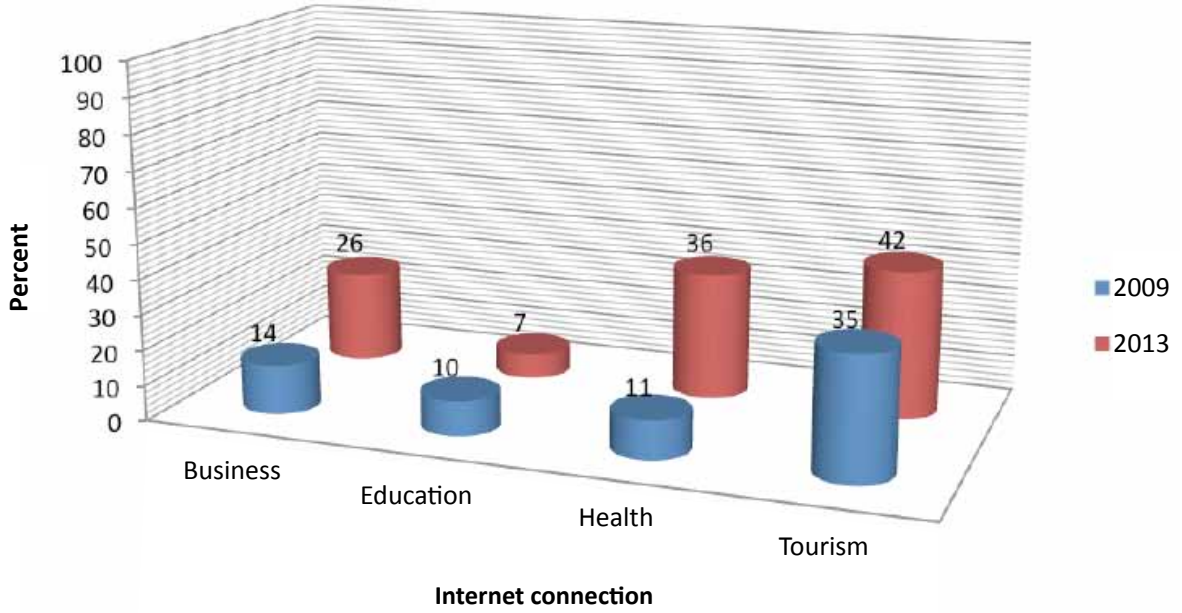
Figure 7.4 Entities with employees with basic computer skills in 2009 and 2013



7.5 Internet connectivity

From 2009 to 2013, the proportion of entities with Internet connectivity had improved significantly in all sectors except in the education sector (Figure 7.5). Between the two survey periods, the health sector experienced a remarkable increase of 25 percentage points in Internet connectivity, followed by businesses with an increase of 12 percentage points and then the tourism sector with an increase of seven percentage points. The tourism sector had the highest proportion of establishments with Internet connectivity in both 2009 and 2013.

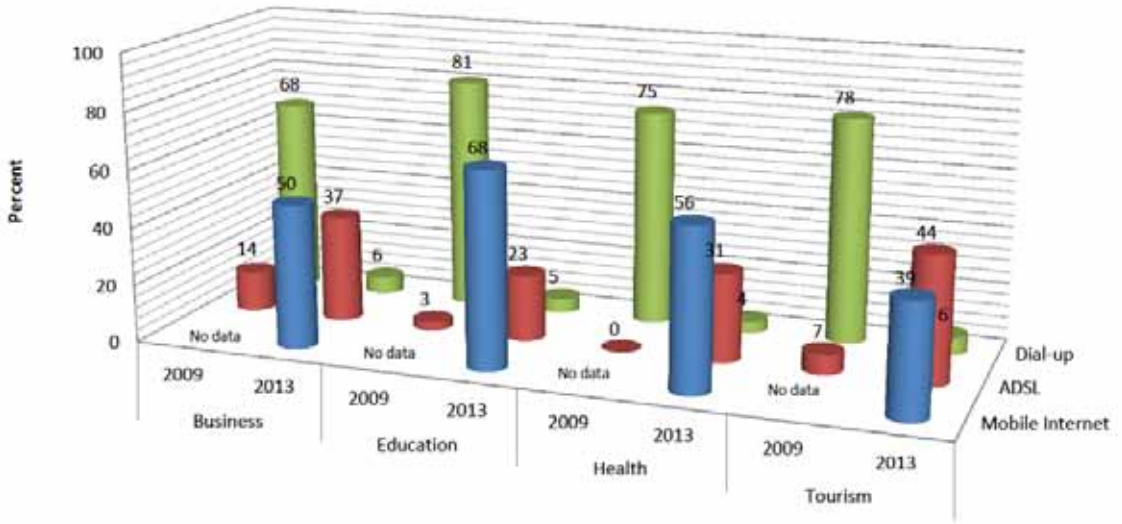
Figure 7.5 Entities with Internet connectivity in 2009 and 2013



7.6 Modes of Internet connectivity

Amongst entities with Internet, dial-up was the most commonly used mode of Internet connection in 2009 in all the sectors while in 2013, majority of entities used mobile Internet except with the tourism sector where most entities used ADSL (Figure 7.6). While the use of mobile Internet dominated in business, education and health sectors in 2013, there was a notable improvement in the Internet connection through ADSL in 2013 compared to 2009. One consistent result across the sectors was that dial-up technology is fast making way for faster technologies with more data capabilities. Indeed, this mirrors the interests of resellers who have always echoed their dislike for narrow band connectivity, but the cost for faster technologies had been a limiting factor for an earlier switch to faster technologies.

Figure 7.6 Entities with Internet by mode of Internet connectivity in 2009 and 2013

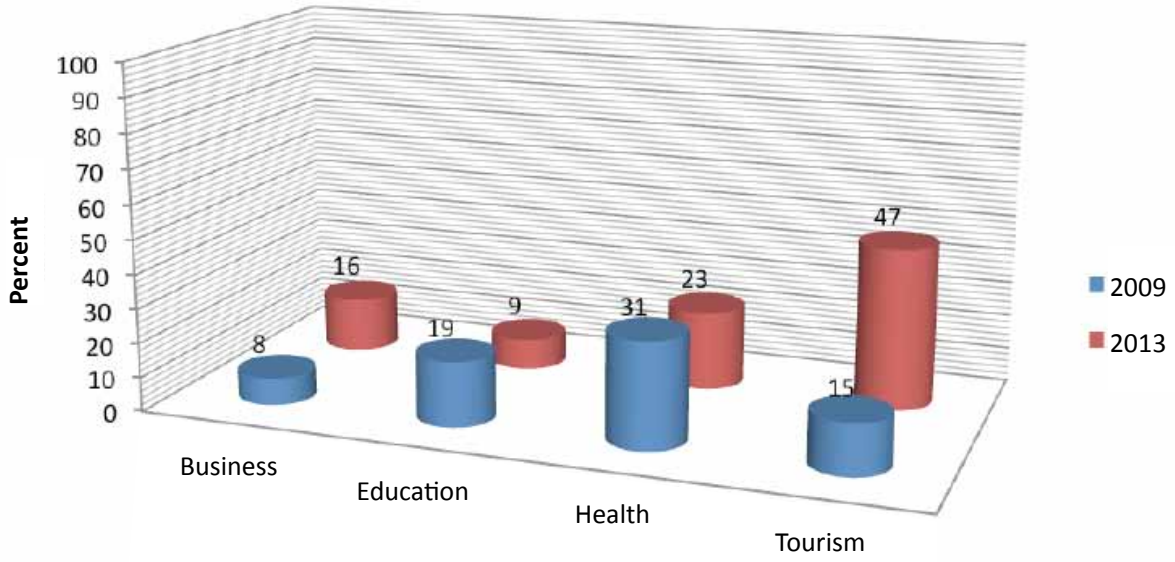


	Business		Education		Health		Tourism	
	2009	2013	2009	2013	2009	2013	2009	2013
Mobile Internet	No data	50	No data	68	No data	56	No data	39
ADSL	14	37	3	23	0	31	7	44
Dial-up	68	6	81	5	75	4	78	6

7.7 Wireless Internet connectivity

The proportion of entities that had a wireless Internet connection was less than half across all sectors in both the 2009 and 2013 surveys. It should however be noted that sectors such as tourism and business experienced a significant improvement of 32 and 16 percentage points from 2009 to 2013 respectively.

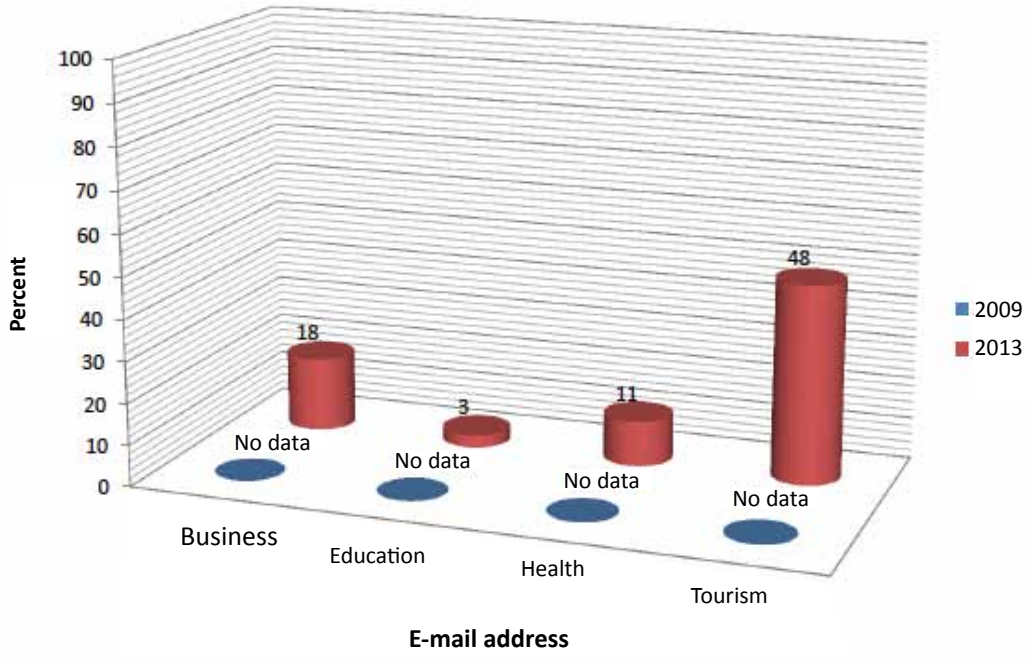
Figure 7.7 Entities with wireless Internet connection in 2009 and 2013



7.8 Presence of an e-mail address

Information on the ICT indicator relating to the presence of an e-mail address in the entities was not collected in the 2009 study. In the 2013 survey, the tourism sector had a significantly higher fraction of entities with an e-mail address compared to the other sectors (Figure 7.8).

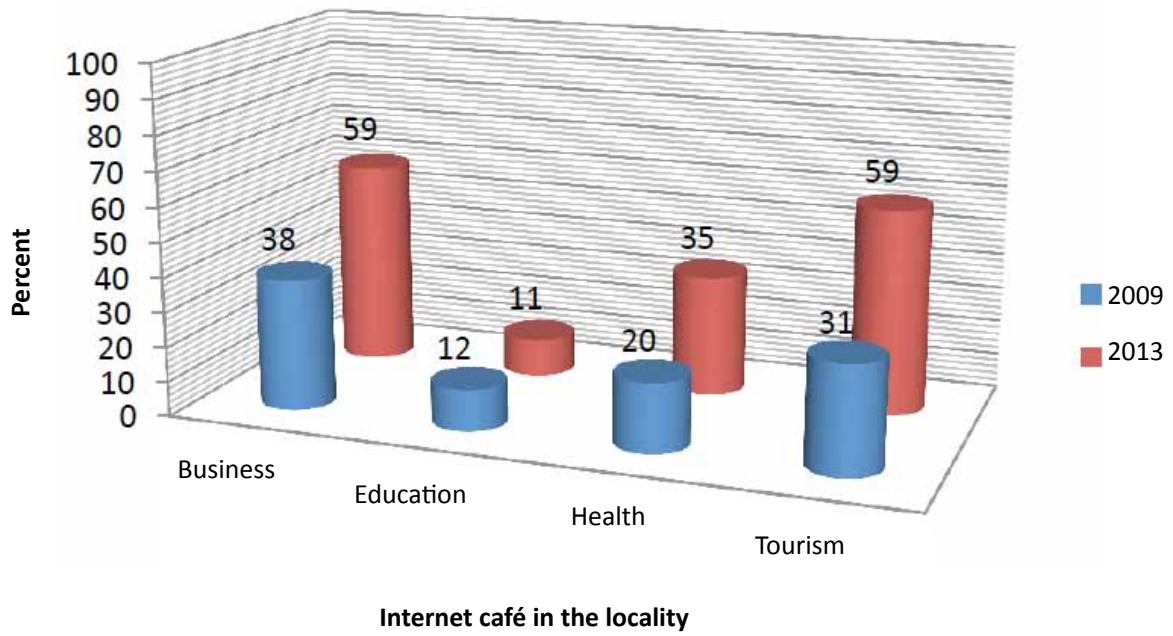
Figure 7.8 Entities with e-mail address in 2009 and 2013



7.9 Internet café in the locality

With regard to the presence of Internet café within a walking distance of entities, there was an increase in the proportion of entities with Internet café within their locality from 2009 to 2013 (Figure 7.9). An improvement in the number of entities with an Internet café in their vicinity from 2009 to 2013 was more pronounced in the sectors of tourism and business with an increase of 28 and 21 percentage points respectively.

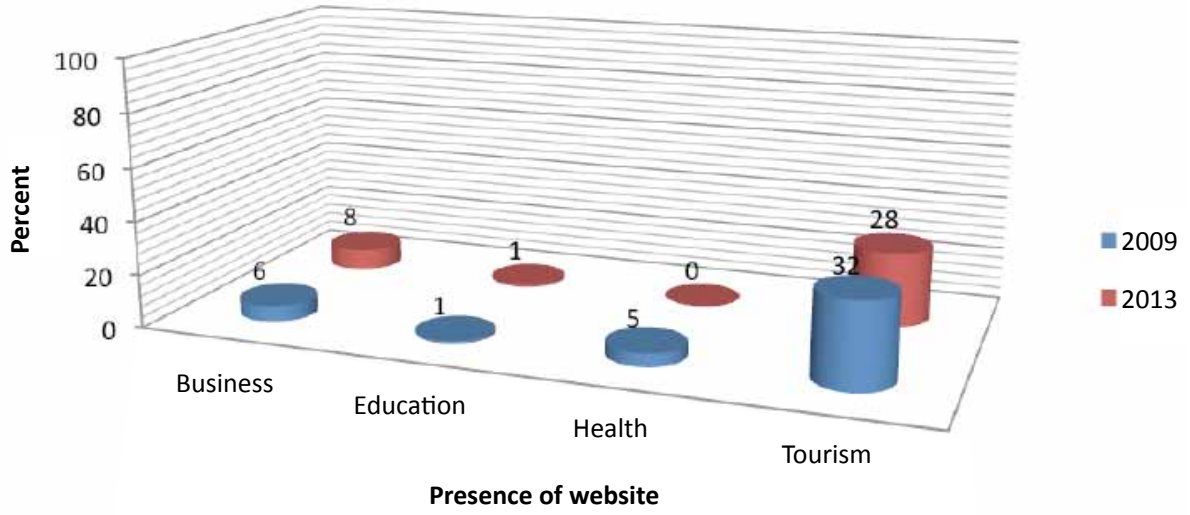
Figure 7.9 Entities with Internet cafés in their locality in 2009 and 2013



7.10 Web presence

The presence of websites remained low across all the sectors in both 2009 and 2013 (Figure 7.10). However, the tourism sector had led the way in this area in both 2009 and 2013 at around 30 percent adoption level.

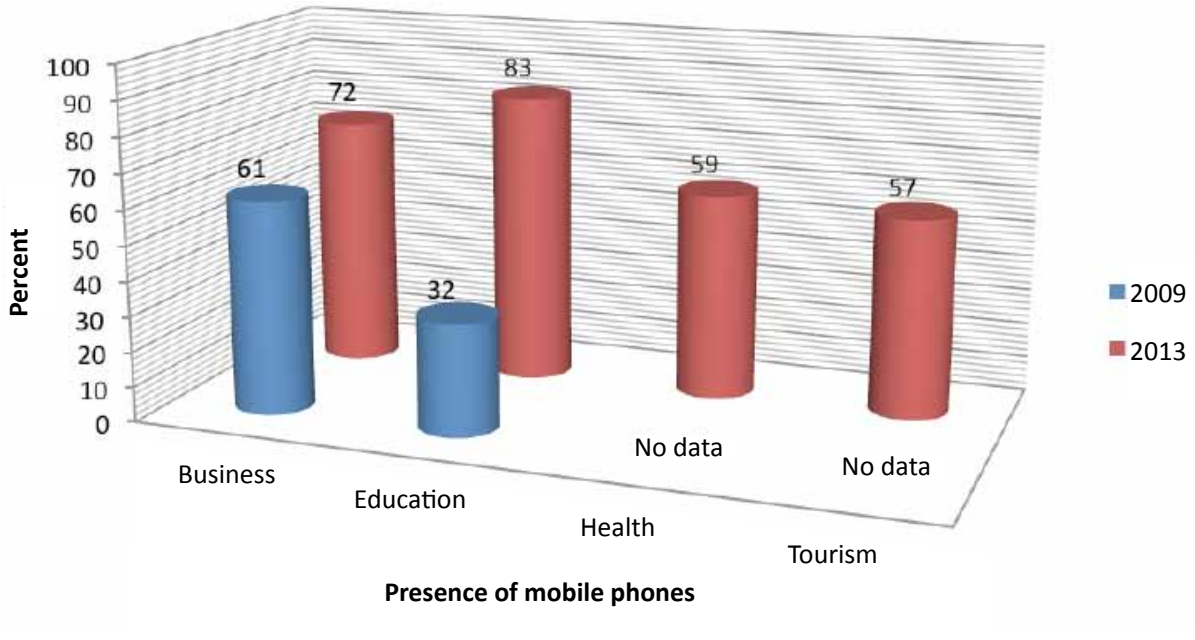
Figure 7.10 Entities with websites in 2009 and 2013



7.11 Presence of mobile phone

In 2013, more than half of the entities had mobile phones that were used for business purposes across all sectors (Figure 7.11). There was a significant improvement from 2009 to 2013 in the proportion of schools that used mobile phones for school purposes.

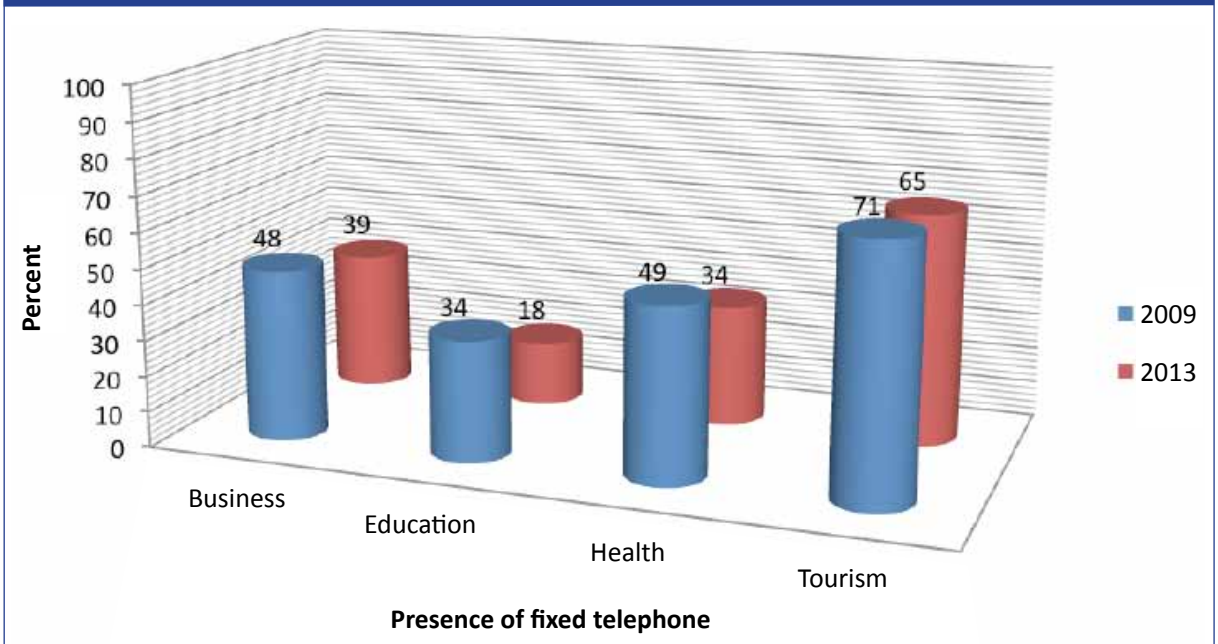
Figure 7.11 Entities with mobile phones in 2009 and 2013



7.12 Presence of fixed telephone

Figure 7.12 shows a general decline in the prevalence of fixed telephone lines across all the sectors from 2009 to 2013. Over half of the entities in the tourism sector had a fixed telephone in both 2009 and 2013 whereas in the other sectors, less than half of the entities had fixed telephone.

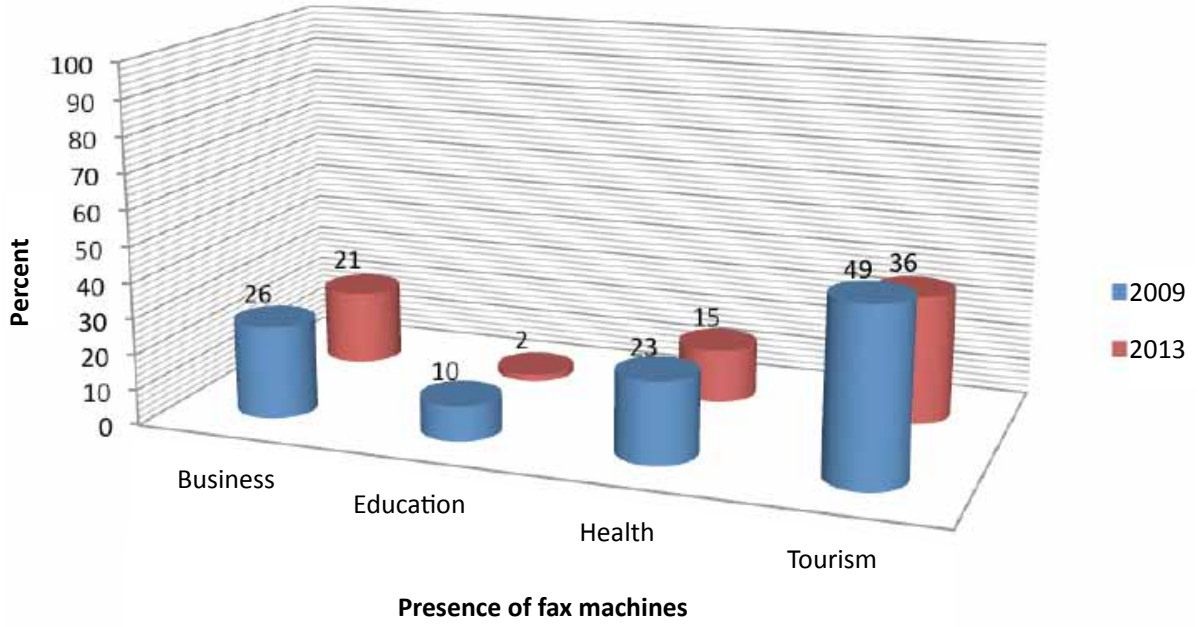
Figure 7.12 Entities with fixed telephone lines in 2009 and 2013



7.13 Presence of a fax machine

In all the sectors, the proportion of entities with a fax machine remained low, with the lowest numbers seen in schools in both 2009 and 2013 (Figure 7.13). Generally, there was a decrease in the proportion of the entities that had a fax machine between 2009 and 2013 in all the sectors.

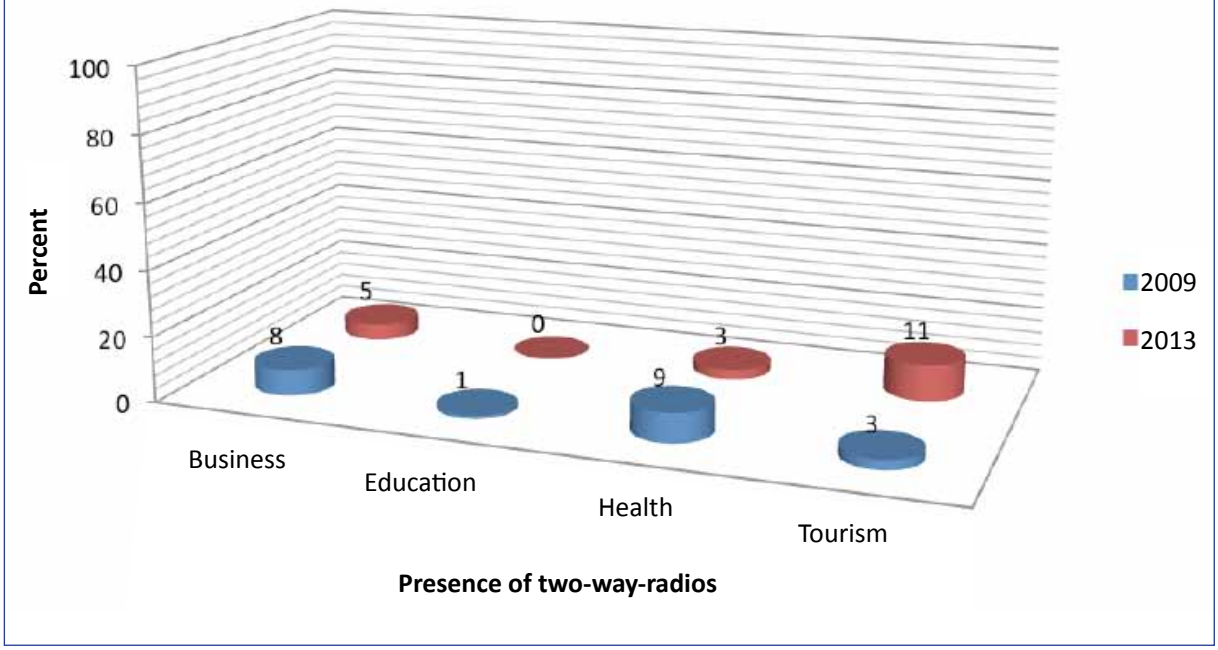
Figure 7.13 Entities with fax machine in 2009 and 2013



7.14 Presence of two-way-radios

Very few entities had two-way radios across all sectors in both 2009 and 2013 (Figure 7.14). While ownership of two-way radios remained low across all sectors, the tourism sector experienced the highest increase of eight percentage points from 2009 to 2013.

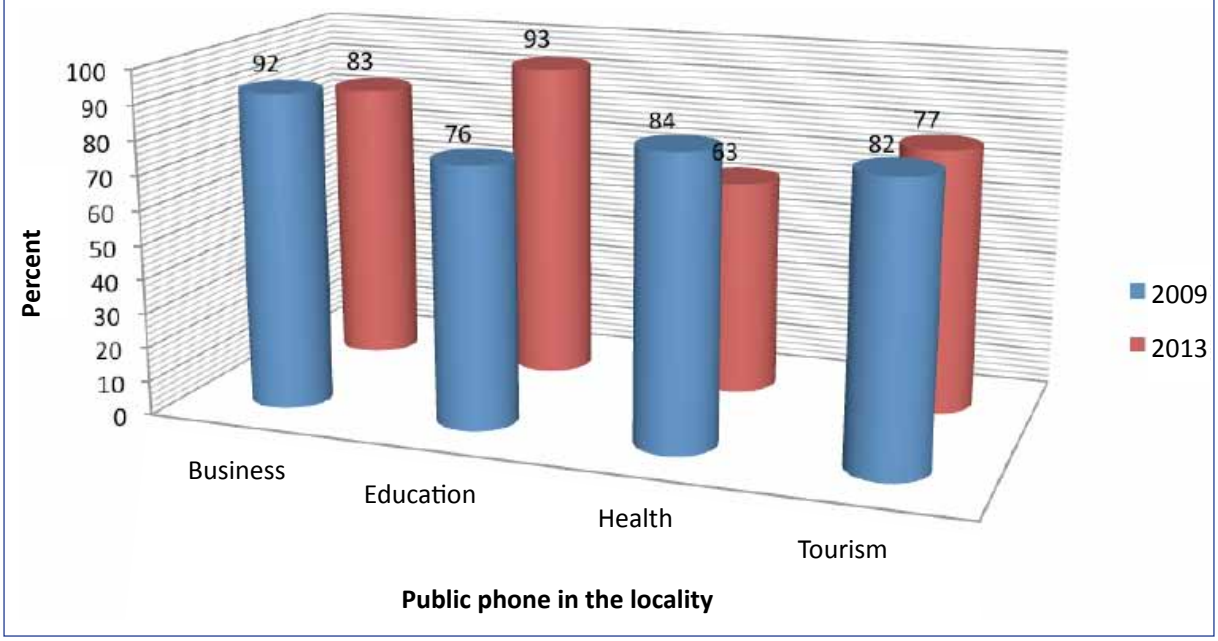
Figure 7.14 Entities with two-way-radios in 2009 and 2013



7.15 Public phone in the locality

Figure 7.15 depicts that generally, majority of entities in all the four sectors had public phones near their premises in both 2009 and 2013.

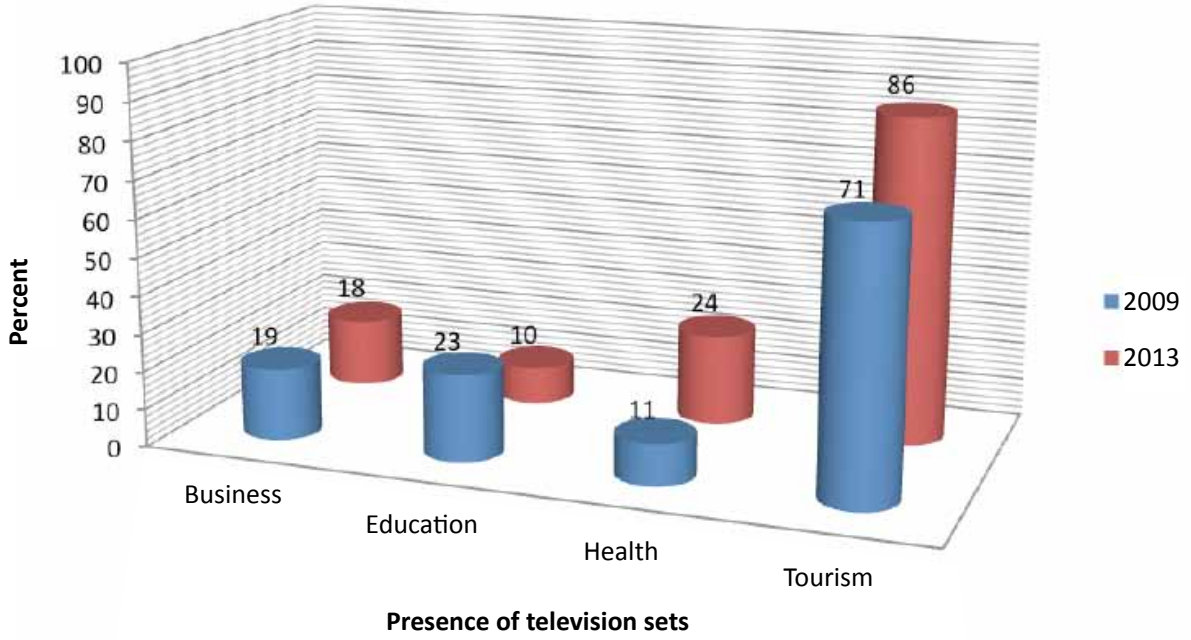
Figure 7.15 Entities with public phones in their locality in 2009 and 2013



7.16 Presence of television sets

The prevalence of the television sets was very high in the tourism sector while it remained low in the other sectors in both 2009 and 2013 (Figure 7.16). The proportion of entities that owned a television set in the tourism sector increased by 15 percentage points between 2009 and 2013.

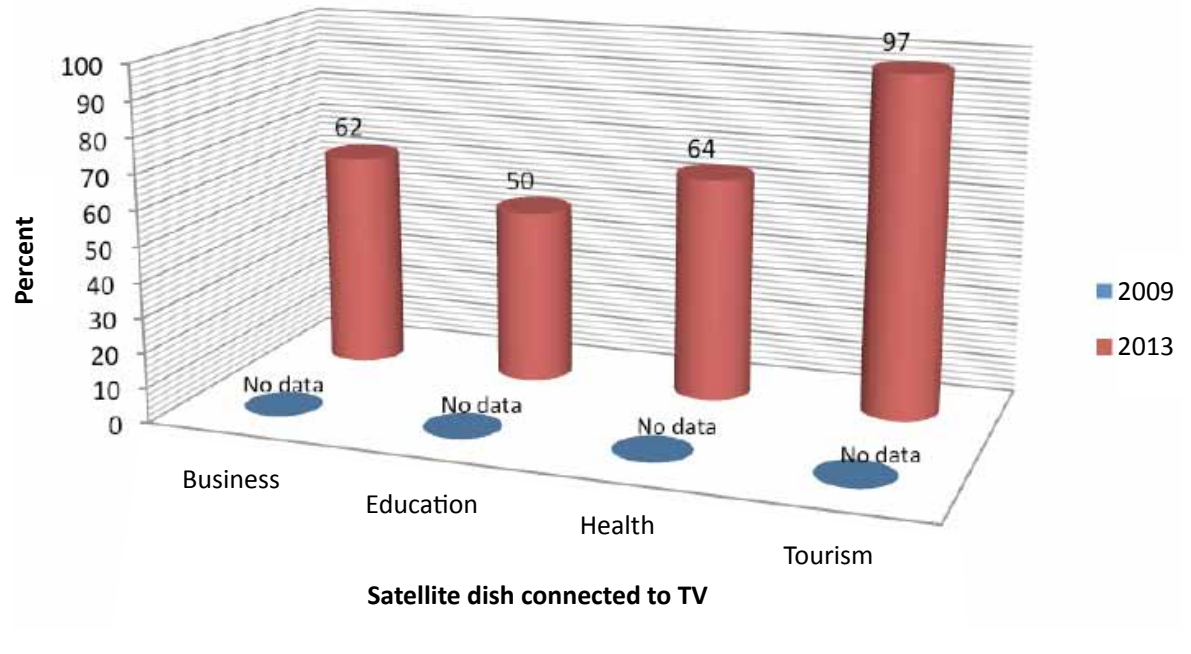
Figure 7.16 Entities with television sets in 2009 and 2013



7.17 Presence of a satellite dish

The information on the ICT indicator related to the presence of satellite dishes connected to televisions was not collected in 2009. The 2013 results showed that at least half of the entities across all sectors had satellite dishes connected to television sets, and almost all the entities in the tourism sector had a dish (Figure 7.17).

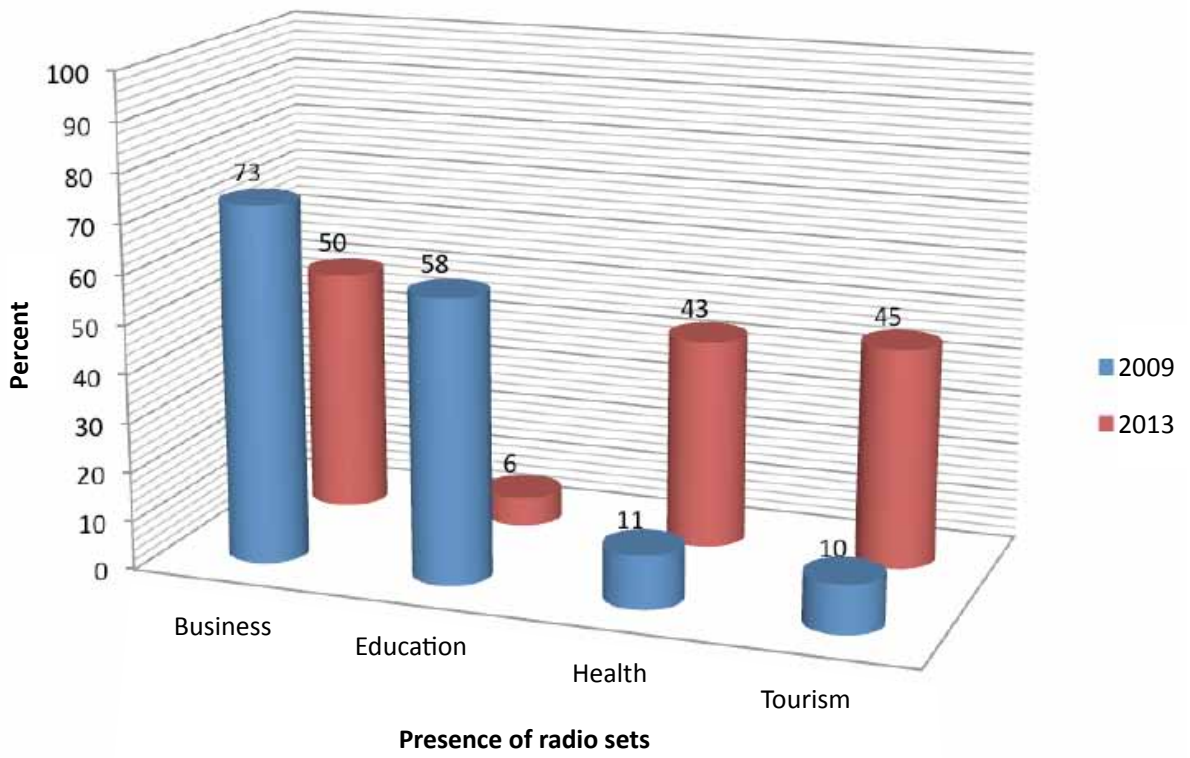
Figure 7.17 Entities with satellite dishes connected to the television in 2009 and 2013



7.18 Presence of radio sets

The proportion of entities with radio sets had improved in the tourism and health sectors between 2009 and 2013 while the reverse was true in the business and education sectors (Figure 7.18).

Figure 7.18 Entities with radio sets in 2009 and 2013



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Contact details:

Lesotho Communications Authority

Premises: 30 Princess Margaret Road, Old Europa • Maseru • Lesotho

Postal Address: P.O. Box 15896 • Maseru 100 • Lesotho • Southern Africa

Telephone: +266 222 4300/5222 1300 • Fax: +266 2231 0984/2232 6081

Email: lca@lca.org.ls • Website: www.lca.org.ls