ECONOMIC AND SOCIAL RESEARCH FOUNDATION (ESRF)

Connectivity and E-commerce

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TABLE OF CONTENTS

Acronyms

ESRF	Economic and Social Research Foundation
ICT	Information and Communication Technology
IDRC	International Development Research Centre
ISPs	Information Service Providers
LAN	Local Area Network
PCs	Personal Computers
SMEs	Small and Medium Enterprises
TTCL	Tanzania Telecommunications Company limited
UDSM	University of Dar es Salaam
URT	United Republic of Tanzania
WAN	Wide Area Network

1.0 INTRODUCTION AND BACKGROUND

1.1 Introduction

Information and Communication Technology (ICT) revolution has significantly changed the way we relate to each other and the way we work. Today's ICT applications were only a dream a few years ago; yet, there seems to be no limit to the changes that this revolution can bring into our private and public lives.

The way we do business or trade has not been spared by the ICT revolution. Individuals and organisations are cutting down the cost of transactions by using the Internet in what is generally termed e-commerce. E-commerce includes advertising products and services offered, exchanging information (such as product/service specifications and prices) between the "shopper" and the "seller", submission of quotations/invoices and the actual purchase of goods and services.

For e-commerce to flourish a number of bottlenecks must be overcome, especially in developing countries like Tanzania. One such bottleneck is non-availability of a knowledgeable community large enough to create a credible market. Other issues that need to be addressed include the creation of secure payment systems and the building of powerful web sites and other information systems to cater for e-commerce.

In many parts of the world many businesses and individuals are now trading on the 'net', a sure sign that e-commerce has been well received. The volume of trading is higher in developed countries than it is in the developing world. Various efforts have been made in Tanzania to create awareness of the potential benefits of e-commerce and to promote e-business. Specific efforts include organising e-commerce workshops and seminars for the business community, technical people working in the Internet service provision, and the general public.

Recent research shows that the number of small businesses engaged in e-commerce will triple to 2.8 million by the end of 2003. While those figures may seem staggering, some analysts believe many small businesses won't be completely comfortable in the virtual space until all the right tools and services are available. Large numbers of small businesses are already turning to **Intranets.com** to gain access to powerful applications that enable group communication and collaboration. In addition, **Intranets.com** recently expanded its offer to three additional tools for businesses: **Business Services,** a "do-it-yourself" service; **Business agency,** an exchange that connects buyers and sellers; and. **Online Shopping,** an extensive market place that allows users to create a list of favourite stores, compare products and availability, and identify stores with the best consumer ratings.

1.2 Definition of E-commerce

Electronic commerce (E-commerce) relates to commercial transactions of goods and services conducted electronically between parties, mainly through the open international network systems - i.e. the parties interact electronically rather than by physical exchange or contact. A wide range of communication technologies including e-mail, Internet, Intranet and extra-net can be used to support electronic commerce. E-commerce includes commercial transactions such as electronic trading of goods and services, on-line delivery of digital contents, electronic fund transfers, electronic share trading, electronic bills of lading, collaborative design and engineering, public procurement, direct and consumer market. The potential for the application of electronic commerce will continue to expand.

1.3 Background

In trying to find the best way of accelerating connectivity and diffusion of internet services in East African countries, an awareness campaign was launched in Tanzania and Uganda to promote E-commerce, and to demonstrate the kind of business that can be done by using E-commerce. This study was therefore done as a follow-up of the awareness campaign in Tanzania, and it was commissioned to ESRF by IDRC.

1.4 Justification of the study

After the completion of the awareness campaign, it was necessary to study its impact on stakeholder, draw lessons from the exercise and make recommendations on the methodology used.

1.5 Study Objectives

The objectives of the study are:

(a) to assess the impact of previous promotional efforts on individuals, ISPs and SMEs

(b) to identify bottlenecks to e-commerce in Tanzania

(c) to establish the way forward in accelerating the development of e-commerce in Tanzania.

1.6 Research Assumptions

Following the sensitisation process we assumed that the awareness gap would be reduced as far as the E-commerce issues are concerned. The research assumption was therefore that more people are now aware of e-commerce and are actively exploiting the available limited ICT resources.

2.0 METHODOLOGY

The study approached the problem by using both empirical and qualitative methods that involved collection of information about the perception of E-commerce and Internet diffusion. Three types of questionnaires were developed and sent to the three groups as follows:

(i) Individuals (including the people who attended workshops and seminars) - **90** questionnaires
(ii) SMEs - **34** questionnaires
(iii) ISPs - **5** questionnaires

These questionnaires, **129** in total are attached to this report (**Appendix 1)**.

The questionnaires were designed to in such a way that would minimise the time required to complete them. This involved the use of short, closed questions capturing various issues. Undoubtedly this limits the extent of qualitative analysis that can be made from the study.

The team also reviewed literature and other related materials covering similar previous studies on the subject. This was followed by collection of secondary data from various sources relevant to the study.

2.1 Scope and Coverage

The United Republic of Tanzania (URT) comprises mainland Tanzania (formerly Tanganyika) and Zanzibar Islands. For practical convenience this study is limited to one region of mainland Tanzania that has a lot of activities in E-commerce. Resource and time constraints have not made it possible to cover other areas in the country, such as Arusha, Mwanza, Zanzibar, which also have potential growth of E-commerce activities.

3.0 DISCUSSION OF RESULTS

As stated above the questionnaires were divided into three parts; discussion of the results will therefore follow the same sequence – i.e. we will begin with ISPs, followed by Individuals and finishing with SMEs.

3.1 ISPs

Out of seven ISPs found in Dar es Salaam only five responded to our questionnaire. The other two refrained from the participation because they feared our study would expose their business secrets to their competitors. However, the ISPs who responded have given us enough information to make realistic conclusions on the state of e-commerce in Tanzania.

Table *ISP 1* Legal Status

Legal status of ISP	Frequency	Percent
Private Company	4	80.0
Parastatal	1	20.0
Total	5	100.0

The Internet industry in Tanzania is dominated by the private sector, which owns 80% of the Internet service provision business. This is in line with the global trend, as the private sector is known to be the driving force behind developments especially in new technologies like the Internet.

Table *ISP 2* Internet Connectivity

Supplier	Frequency	Percent
Datel	2	40.0
Wilkens	1	20.0
TTCL	1	20.0
Other	1	20.0
Total	5	100.0

As shown above, four companies provide the international connectivity to ISPs, which have data communication licence in Tanzania, and also by the national telecommunication company (TTCL). The problem is that the cost of the bandwidth they provide to ISPs is a bit on the higher side thus making the whole sector very expensive. If the number of data providers increases it might probably reduce connectivity costs. Data/bandwidth providers play a very big role in this sector so the government has to take steps to streamline this sector by increasing competition and reducing licence costs.

Table *ISP 3* Connectivity Capacity – Up link

Capacity	Frequency	Percent
64 - 128 Kbit/Sec	1	20.0
256 – 512 Kbit/Sec	3	60.0
1 - 2 Mbit/Sec	1	20.0
Total	5	100.0

Table *ISP 4* Connectivity Capacity - Down link

Capacity	Frequency	Percent
256 – 512 Kbit/Sec	3	60.0
512 - 1 Mbit/Sec	1	20.0
1 - 2 Mbit/Sec	1	20.0
Total	5	100.0

ISP respondents were asked to indicate how they get Internet connectivity and the size of their international link. Responses revealed that 40 % get connectivity from DATEL (one of the first data communication companies in the country), 20 % from Wilkens, 20% from TTCL while the remaining 20% (only one ISP) has its own international link (tables ISP 3 and ISP 4).

It is clear that local data companies serve almost all ISPs; as such, they don't benefit from low costs offered by international link service providers. Since there is no local Internet exchange, it also means that mail/traffic destined for individuals serviced by a different service provider has to go via the international hub, say in Europe or USA. This definitely has effect on access speed of local content, which may discourage local e-business transactions.

Majority (60%) of ISPs has link capacities of between 256 to 512 Kbps for both up link and down link. Only one ISP has high international link of 1 Mbps (down link). This shows clearly that access capacity is a very serious problem and definitely impacts negatively on the current and potential e–business.

Table *ISP 5a* Number of Telephones Lines for Dial-up Clients

Telephones Lines	Frequency	Percent
21 - 40	1	20.0
Over 40	4	80.0
Total	5	100.0

Table *ISP 5b* Number of Dial-Up Clients

Clients	Frequency	Percent
101 – 250	1	20.0
251 – 500	1	20.0
OVER 1000	3	60.0
Total	5	100.0

Table *ISP 5c* Number of Leased Lines/Wireless Clients

Clients	Frequency	Percent
1 - 25	1	20.0
26 - 50	3	60.0
Over 100	1	20.0
Total	5	100.0

The clients who are hooked up to the ISPs are mainly those of dialup accounts compared to other type of connections like leased lines, wireless connection, etc. This is because that is the cheapest method and affordable by many people. Most of ISPs have over 40 telephone lines serving dial-up clients as shown on table ISP 5a. Among the ISPs, it's only one ISP who has good number of clients (*over 100 clients*) while majority of ISPs has between 26 and 50 leased lines/wireless clients. The low number of leased/wireless clients indicates that by and large the Internet is still used mainly for communication (e-mail). Web use would require a higher capacity link than dial-up, and a permanent link to ISPs.

Table *ISP 7* Frequency of Updating Company Website

Updating	Frequency	Percent
Everyday	1	20.0
Every Week	2	40.0
Often	1	20.0
Irregular	1	20.0
Total	5	100.0

Table *ISP 8* Sites that Have Advertisements

	Frequency	Percent
Yes	2	40.0
No	3	60.0
Total	5	100.0

Table ISP 8 clearly shows that there is an improvement on E-commerce activities: about 40 percent of firms are now carrying adverts on their websites; the sites are not dormant as 60 % of ISPs update their sites weekly. A web site is very important, and for it to be e-commerce ready it has to carry advertisements and regular updating (Table ISP 7). Since ISPs are the major players in the e-commerce industry, efforts should be made to ensure that all sites carry advertisements.

Table *ISP 9* Requirements for E-commerce Development

Rank – 1	Frequency	Percent
Improve Public Access To The Internet	3	37.5
Lower Connecting Cost	2	25
Awareness Campaign	2	25
Streamline Consumer Protection Law	1	12.5

ISP respondents were also asked what they think has to be done in order to accelerate the development of e-commerce in Tanzania. A list of 5 areas was given for their choice. The top three priority areas identified are:

(i) Improve public access to the Internet 37.5%
(ii) Awareness campaigns 25.0%
(iii) Lower connectivity costs 25.0%

ISPs view increased penetration of the Internet to be the focus area if e-commerce is to be promoted in the country. This means more people have to get the right access capacity to the Internet, at an affordable cost to encourage e-business applications.

Considering that all ISPs have their clients based in the city of Dar Es Salaam and a few other towns, and noting that majority of the population live in rural areas, one cannot fail to see the need for increased client base and the need to promote public access, rather than private /individual access, as a way of cost effectively increasing user base.

Table *ISP 10* The Importance of E-commerce in Tanzania

Importance	Frequency	Percent
Little	1	20
Medium	1	20
High	1	**20**
Very High	2	**40**
Total	5	100

When ISPs were asked about the importance of e-commerce in Tanzania, 60 % of them rated the importance to be **high/very high** (Table ISP 10). Given this outlook, ISPs are likely to continue developments in this area if they are able to solve the current problem of lack of technical expertise especially in web design and low level of client base.

Table *ISP 11* Staff Category - Technical Staff/Programmers

Number of Staff	Frequency	Percent	Cumulative %
4	2	40.0	40.0
6	2	40.0	80.0
22	1	20.0	100.0
Total	5	100.0	

Table *ISP 12* Staff Category - Network Experts

Number of Staff	Frequency	Percent	Cumulative %
2	1	25.0	25.0
4	1	25.0	50.0
5	2	50.0	100.0
Total	4	100.0	

Table *ISP 13* Staff Category -Web Designers

Number of Staff	Frequency	Percent	Cumulative %
1	1	25.0	25.0
3	2	50.0	75.0
5	1	25.0	100.0
Total	4	100.0	

60% of the ISPs employ less than 20 people, who are grouped in the categories as shown on the table 13a

Table 13a: Categories by Number of people

Categories	0 - 2	3 - 5	5 - 10	Over 10
Technical/Programmers	0	2	2	1
Networks Experts	1	1	2	0
Web Designers	1	3	0	0
Marketing	4	1	0	0
General Administration	3	0	1	0

Results in tables *ISP11, ISP12, & ISP13* reveal that ISPs are relatively small companies and not well endowed with technical expertise. 75 % of the companies employ 3 staff or less who have skills in web designing, and most of the companies employ 5 staff or less in network operation. One company have good number of expertise compared to the other companies this is due to the type of bandwidth they have which convince customers to take service from them, otherwise the number range between 4 to 6.

Table *ISP 14* Average Number of Hosted & Designed Websites/Visits

	Minimum	Maximum	Mean
Web Sites Hosting	10	120	36
Web In-house Designed	5	84	27
Visitors Per Month	-	600,000	143,000

Out of the surveyed ISPs it was found that on average each ISP hosts an average of 36 web sites, and that 27 out of the hosted sites are designed by the ISPs themselves. The number of visitors to the various ISP sites was an average of 143,000 visitors per month, which is a good number indicating awareness growth. The number of hosted accounts and the number of hosted by ISPs themselves indicate the growth of the industry in Tanzania.

Table *ISP 15* Website Designing

	Frequency	Percent
in-house	4	80.0
Out-Sourced	1	20.0
Total	5	100.0

Most of the ISPs have the capacity for designing and maintaining their own web sites. This is very good, since the same capacity may be used for creating sites for other companies for e-business.

Table *ISP 16* Problem Regarding E-commerce - First Rank

Problem	Count	Responses
Policy	3	33.3
Unreliable telephone lines	1	11.1
Unreliable power supply	2	22.2
High cost of telephone service	2	22.2
Other	1	11.1

ISPs were asked to identify issues that they consider to be retarding development of e-commerce in Tanzania. The following three issues were identified as the most deterring factors:

(i) Policy 33.3
(ii) Unreliable power supply 22.2
(iii) High cost of telephone service 22.2

The policy framework is seen as the main bottleneck for e-commerce development. Therefore to accelerate the development of e-commerce the government, in consultation with the private sector, must improve the policy environment. It is expected that the cost

of telephone service will fall as the market is liberalised further and more competition is introduced into the sector.

3.2 Individuals

A total of 90 individuals responded to the questionnaire, out of which 14.1% was self-employed and 85.9% employed. One individual was employed as a web designer, another was working full time as a webmaster, and about 26% were working in IT area. 19.3% were working as researchers and the remaining 51.8% working in other sectors. Of all respondents, 86.7% had an e-mail address and about 27.8 % had attended at least one e-commerce workshop.

Respondents who had attended the workshop on e-commerce were asked to comment on how the workshop had affected their attitude on e-commerce: 14.2% commented that the workshop had very little or little impact. The rest 85.8% indicated medium to very high impact on their attitude to e-commerce. It can be concluded therefore that the majority of the people were significantly mobilised by the awareness workshops conducted by ESRF and the UDSM Computing Centre.

About 49.3% of the respondents indicated that they have access to the Internet through a dial-up connection, 28.8% through a wireless link and 20.5% through a LAN environment (Table IN 1).

Table *IN 1* **Connecting to the Internet**

Type of Connection	Frequency	Percent	Cumulative %
Dial-up	36	49.3	49.3
Wireless	21	28.8	78.1
Leased lines	1	1.4	79.5
LAN/WAN	15	20.5	100.0
Total	**73**	**100.0**	

The questionnaire listed ***four*** different ways of accessing into the Internet:

i) Home computer
ii) Office computer (own workstation)
iii) Office computer (public access)
iv) Internet café (public access)

Respondents were requested to rank the access means they use from 1 (means used frequently) to 5 (means used rarely). Table IN 2 shows the results for the means that is used frequently by individuals. Most of the respondents access the Internet through their office computers (71.4%) followed by the use of Internet cafés (11.9%). Table IN 2 also shows that few people access the Internet from home using their own home computers (7.1%) as their main means of accessing the net.

TABLE *IN 2* First Rank for Internet Access (Rank 1)

Internet access	Count	%
Home Computer	6	7.1
Office Computer - Own workstation	60	71.4
Public Access - Office Computer	8	9.5
Public Access - Internet Café	10	12.0

From this study, it is clear that not many people (only 9.5%) access the net through a public access point at their place of work. In our opinion, public awareness campaigns will have more impact for this corporate users group. It should be very easy to show that an office or corporate public Internet access point is feasible and convenient as a company letter box.

For simplicity, the questionnaire grouped the use of the Internet as follows:

- ? e-mail
- ? searching for products/services
- ? Others.

Respondents were requested to rank the above services of the Internet from 1 (service frequently used by them) to 3 (service rarely used). As expected, respondents indicated that most people (58.5%) use the Internet for e-mail as shown in Table IN 3. This conforms to world trends; however, the use of Internet for serious web searches and research in Tanzania is discouraged by the tariff system set by TTCL, which metres all calls including local ones.

Table *IN 3* Internet Use (Rank 1)

Internet Use	Count	%
E-Mail	62	58.5
Searching For Products/Services	38	35.8
Others	6	5.7
		100.0

Few individuals (only 19.5 %) have indicated that they have ever bought anything on the net, as shown in Table IN 4, it is just a small percentage of people who ever bought items over the internet.

Table *IN 4* Have You Ever bought anything Over the Internet?

	Frequency	Percent	Cumulative %
Yes	17	19.5	19.5
No	70	80.5	100.0
Total	87	100.0	

Respondents were requested to identify what, in their opinion, they consider to be the main problem hindering e-commerce in Tanzania. The following list of problems was presented to respondents and they were asked to rank them from 1 (major problem) to 5 (minor problem):

- ? lack of means of payment
- ? lack of public awareness
- ? individual attitude towards e-commerce
- ? poor infrastructure
- ? Others.

Results (Table IN 5) show that 33.6% of respondents consider the lack of public awareness to be the major problem followed by the lack of means of payments (32.8%).

Table *IN 5* Problems for Internet Business – (Rank 1)

Problems	**Count**	**%**
Means Of Payment	38	32.8
ICT Awareness	39	33.6
Individual Attitude To Ward E-Commerce	8	6.9
Poor Infrastructure	30	25.9
Other	1	0.8

It is clear from this study that more public awareness efforts have to be made and that such efforts have to be sustained for some time. Public awareness should focus more on the use of available infrastructure and the existing means of payments. It is the increased use of the existing limited resources that will convince new players to enter the market with more advanced products and infrastructure.

Respondents who attended the workshops on e-commerce were asked to indicate whether the workshops helped them in their day-to-day activities, by ticking 1 for the workshops being very much useful and 5 for not at all useful. Table IN 6 below gives the results.

Table *IN 6* Has the Workshop Helped You in Your day-to-day Activities?

	Frequency	**%**	**Cumulative %**
1 - Very Much	6	27.3	27.3
2	3	13.6	40.9
3	7	31.8	72.7
4	1	4.5	77.3
5 - Not Much	5	22.7	100.0
Total	22	100.0	

About 72.7% of the respondents indicated that the workshops were very useful to **(mark 1-3)** to their daily activities. When asked weather they think similar workshops would help to improve e-commerce in Tanzania, 82.6% (mark 1-3) was positive. (**Table** *IN 7*).

Table *IN 7* **Would Similar Workshop Help to Improve E-Commerce in Tanzania?**

	Frequency	Percent	Cumulative %
1 - Very Much	11	47.8	47.8
2	5	21.7	69.5
3	3	13.0	82.5
5 - Not Much	4	17.5	100.0
Total	23	100.0	

It may therefore be concluded that the workshops were very useful in terms of transferring knowledge and hands-on expertise. It is also clear that organising similar workshops is achieving desired results for ICT awareness campaign.

Asked to indicate what they did after attending the e-commerce workshops, 2 respondents indicated that they started e-business, 4 said that they did some business over the net and 15 said they developed some e-business idea. That is to say, about 84% of the workshop participants were mobilised to the level of doing something related to e-commerce. This is an indication that the workshops were indeed effective

3.3 Small and Medium Enterprises (SMEs)

Thirty-four (33) SMEs responded to the questionnaire, of which 84.8% were private companies, 3.0% owned by NGOs, 3.0% owned by Government and 9.1% were parastatal organisations (Table *SM1*).

Table *SM 1* **Legal Status**

	Frequency	Percent	Cumulative %
Government	1	3.0	3.0
Private Company	28	84.8	87.9
NGO	1	3.0	90.9
Parastatal	3	9.1	100.0
Total	33	100.0	

The companies who responded represented a mixture of old and new companies, with the oldest established in 1925 and about 18.8% established in 2000. The lines of business are shown in Table *SM2*.

Table *SM 2* Main Line of Business

Line of business	Frequency	Percent	Cumulative %
Manufacturing	2	6.1	6.1
Processing	1	3.0	9.1
Construction	1	3.0	12.1
Trading	7	21.2	33.3
Transport	4	12.1	45.5
Services Financial, Insurance etc.	7	21.2	66.7
Other	11	33.3	100.0
Total	33	100.0	

Most of the companies (60.9%) have only one or two IT staff on their payroll, 13% have more than 5 IT staff and about 32.4% have no IT person on their staff (Table *SM3*).

Table *SM 3* IT Staff

Staff	Frequency	Percent	Cumulative %
1	9	39.1	39.1
2	5	21.7	60.9
3	3	13.0	73.9
4	1	4.3	78.3
5	2	8.7	87.0
6	1	4.3	91.3
10	1	4.3	95.7
28	1	4.3	100.0
Total	23	100.0	

Companies were asked to indicate the avenues they use often to market their products or services. They were given a list of five marketing avenues and requested to rank them from 1(most used avenue) to 6 (not used at all). The results are as shown in Tables *SM4*, *SM5*, *SM6*, *SM7*, and *SM8*.

Types of Marketing Avenues

Table SM4 to SM8 shows details of different types of Marketing avenues that are normally applied.

Table *SM 4* **Newspapers**

1=Highly used 5=Least used 6=Not used	**Frequency**	**Percent**	**Cumulative %**
1	12	44.4	44.4
2	5	18.5	63.0
3	5	18.5	81.5
4	1	3.7	85.2
6	4	14.8	100.0
Total	**27**	**100.0**	

Table *SM 5* **Radio/Television**

1=Highly used 5=Least used 6=Not used	**Frequency**	**Percent**	**Cumulative %**
1	4	16.0	16.0
2	3	12.0	28.0
3	1	4.0	32.0
4	4	16.0	48.0
5	3	12.0	60.0
6	10	40.0	100.0
Total	**25**	**100.0**	

Table *SM 6* **The Internet**

1=Highly used 5=Least used 6=Not used	**Frequency**	**%**	**Cumulative %**
1	5	20.0	20.0
2	4	16.0	36.0
3	6	24.0	60.0
4	1	4.0	64.0
5	3	12.0	76.0
6	6	24.0	100.0
Total	**25**	**100.0**	

Table *SM 7* **Bill-boards**

1=Highly used 5=Least used 6=Not used	**Frequency**	**Percent**	**Cumulative %**
1	6	25.0	25.0
2	2	8.3	33.3
3	2	8.3	41.7
4	1	4.2	45.8
5	4	16.7	62.5
6	9	37.5	100.0
Total	**24**	**100.0**	

Table *SM 8* **Fliers**

1=Highly used 5=Least used 6=Not used	**Frequency**	**Percent**	**Cumulative %**
1	5	18.5	18.5
2	6	22.2	40.7
3	2	7.4	48.1
4	2	7.4	55.6
5	4	14.8	70.4
6	8	29.6	100.0
Total	**27**	**100.0**	

Results show that the most used marketing avenue is the newspaper (**Table** *SM9*). This shows that the use of the Internet for marketing purposes is ahead of radio/TV and is rising. Given the short time of Internet usage in Tanzania compared to radio/TV, this is a significant growth.

Table *SM 9* **Avenues** (**Rank 1 – 2)**

	Count	**%**
Newspaper	17	32.7
Radio TV	7	13.5
Internet	9	17.3
Bill-boards	8	15.4
Filters	11	21.2

91.2% of all companies have e-mail addresses. This shows that the Internet is used very much for communication purposes (**Table** *SM10*). 45.5% of the companies connects to the net through a dial-up link and 39.4% through a leased line/wireless link.

Table *SM 10* Does Your Firm Have E-mail Facility?

	Frequency	Percent	Cumulative %
Yes	31	91.2	91.2
No	3	8.8	100.0
Total	**34**	**100.0**	

The use of the Internet follows the same trends as that shown by the type of link, where 96.9% of the responding companies use it for e-mail and 32.1% only for searching the web as well. Usage of the Internet was listed in the following 9 groups:

i) e-mail
ii) knowledge searching
iii) look for products
iv) look for supplies
v) look for current market prices for various products/services
vi) look for market opportunities
vii) check on your competitors
viii) advertise your products
ix) Others (specify).

Responding SMEs were requested to rank their usage of Internet from 1(highly used) to 9(least used). Tables SM11 to SM13 shows the ranking of usage of the Internet in the three groups: mostly used (rank 1-3), moderately used (rank 4-6) and least used (rank 7-9).

Table *SM 11* Internet Usage (Rank1 - 3)

Internet Usage	Count	%
E-mail	32	29.6
Searching	21	19.4
Look for Products	12	11.1
Look for Suppliers	10	9.3
Current Market Prices of Various Product	12	11.1
Look for Market Opportunities	7	6.5
Check On Your Competitors	7	6.5
Advertise Your Products/Services	7	6.5

Table *SM 12* Internet Usage (Rank 4 - 6)

Internet Usage	Count	%
Searching	3	7.5
Look for Products	8	20.0
Look for Suppliers	9	22.5
Current Market Prices of Various Product	8	20.0

Look for Market Opportunities	4	10.0
Check On Your Competitors	4	10.0
Advertise Your Products/Services	4	10.0
Total Responses	**40**	**100.0**

Table *SM 13* **Internet Usage (Rank 7 - 9)**

Internet Usage	**Count**	**%**
Searching	4	8.2
Look For Products	4	8.2
Look For Suppliers	4	8.2
Current Market Prices Of Various Product	3	6.1
Look For Market Opportunities	10	14.3
Check On Your Competitors	10	20.4
Advertise Your Products/Services	12	24.5
Others (Specify)	5	10.2

Over seventy-five percent (75.7%) of SMEs consider e-commerce to be very important, as shown in **Table** *SM14.*

Table *SM 14* **Importance of E-Commerce**

	%	**Cumulative %**
Very Little	9.1	9.1
Little	15.2	24.3
Medium	33.3	57.6
High	30.3	87.9
Very High	12.1	100.0
Total	**100.0**	

Almost all SMEs who responded had computers: 51.5% of them have between 1-14 computers each. Computer usage by SMEs was grouped in the following categories:

i) secretarial
ii) accounting
iii) internal communication
iv) e-mail
v) internet
vi) others (specify)

The respondents were asked to rank the usage of their computers from 1 (highly used) to 6 (least used) for particular functions. The results are as shown below (**Tables** *SM15* – *SM17*).

Table *SM 15* **Use of Computers (Rank 1 – 2)**

	Count	Percentage
Secretarial Works	18	19.4
Accounting /Salaries	17	18.3
Internal Communication	7	7.5
E-mail	27	29.0
Internet	18	19.4
Others (Specify)	6	6.5
Total Responses	**93**	**100.0**

Table *SM 16* Use of Computers (Rank 3 - 4)

	Count	Percentage
Secretarial Work	4	14.3
Accounting/Salaries	4	14.3
Internal Communication	10	35.7
E-Mail	2	7.1
Internet	8	28.6
Total Response	**28**	**100.0**

Table *SM 17* Use of Computers (Rank 5 - 6)

	Count	Percentage
Secretarial Work	4	21.1
Accounting/Salaries	3	15.8
Internal Communication	6	31.6
Internet	4	21.1
Others, Specify	2	10.5
Total Responses	**19**	**100.0**

Companies indicated that they mostly use (rank 1-2) PCs for e-mail, secretarial work, Internet and accounting in that order as shown in Table SM15. Although this result may reflect the bias of the individuals completing the questionnaire, it is indicative that companies are starting to use computers more than just as electronic typewriters.

Given the fact that SMEs have computers, one realises the potential for diversified use of this technology if a concerted effort in training and awareness raising campaigns is undertaken. This effort must of course be accompanied by addressing other identified problems to the usage of the ICT highway.

67.6% of the SMEs who responded indicated that they have a company web site, and 50 % of those with web sites said that the designs were done in-house while said their web site were 27.3% designed by a third party. This shows that the business for third party web design is yet to be exploited. In addition this gives the indication that the majority of the company sites are likely to be simple sites, as most companies do not have IT experts in-house. Most of the companies (71.4 %) host their sites in-house and therefore they maintain and update their own sites. This again shows the immaturity of the web design/web site hosting as a business in the country. This may be associated with, among other things, the lack of adequate ICT infrastructure such as Tanzania Internet Exchange (TIX). 83.3% of the companies that do not have a company web site have indicated that they are planing to have one soon.

SMEs were requested to indicate the target market for their products or services. About 53.9% indicated the target market to be within Tanzania and another 25.6.3% indicated

the target market to be worldwide, as shown in Table SM18. A lower percentage (7.7% and 12.8%) indicated East Africa and SADC regions respectively as target markets for their business. Reasons for this and the potential for e-commerce changing this scenario have to be investigated further. As expected, companies who own web sites are mainly targeting worldwide markets (**Table** *SM19*).

Table *SM 18* **Target Market for Your Products/Services**

Market Place	Frequency	%
Within Tanzania	21	53.9
Within East Africa	5	12.8
Within SADC	3	7.7
World-wide	10	25.6
Total	**33**	**100.00**

Table *SM 19* **Target Market Place versus Web Site Ownership**

	Do You Have a Web site?	
Market Place	**Yes**	**No**
Within Tanzania	5	7
Within East Africa	5	2
Within SADC	3	0
World-wide	9	1

Companies were also requested to indicate if they have ever done any business transactions on the Internet: **85.3%** said no and **14.7%** said yes.

In the questionnaire, the following were listed as problems hindering e-commerce in Tanzania:

i) lack of means of payment
ii) lack of public awareness
iii) individual attitude towards e-commerce
iv) poor infrastructure
v) others (specify)

Responding companies were requested to rank the above problems on the 1-5 scale, with 1 representing what is considered as the major problem and 5 a minor problem. The major problems (rank 1-2) were identified as public awareness (65.6%), poor infrastructure (62.5%) and lack of means of payment (56.3%), as shown in **Tables** *SM20 –SM22*.

Table *SM 20* Major Problem (Rank 1 - 2)

Problems	Count	Percentage
Means Of Payment	18	26.1
Public Awareness	21	30.4
Individual Attitude Toward E-Commerce	10	14.5
Poor Infrastructure	20	29.0
Total Responses	**69**	**100.0**

Table *SM 21* Major Problem (Rank 3 - 4)

Problems	Count	Percentage
Means of Payment	7	20.6
Public Awareness	6	17.6
Individual Attitude Toward E-Commerce	13	38.2
Poor Infrastructure	8	23.5
Total Responses	**34**	**100.0**

Table *SM 22* Major Problems (Rank 5)

Problems	Count	Percentage
Means Of Payment	4	36.4
Public Awareness	3	27.3
Individual Attitude Toward E-Commerce	3	27.3
Poor Infrastructure	1	9.1
Total Responses	**11**	**100.0**

3.4 Study Limitations

- Some of the ISPs refused to reveal information concerning their firms claiming that it is a business threat to give out such kind of information.
- The budget did not allow us to cover some of the ISPs, SMEs and individuals living far away from Dar es Salaam.
- The time between sensitisation activities and when we did the survey was not enough as some of the people were just in the process of initiating business ideas.
- We could not have more people during sensitisation/promotion workshops due to financial constraints.

4.0 CONCLUSION AND RECOMMENDATION

4.1 Increased E-Commerce Awareness

In this work the status of e-commerce in Tanzania has been studied. All indicators have shown that e-commerce is at its infancy and there is still a big room for improvement and development of new services in the sector. It also has been shown that the efforts invested by both ESRF and UDSM in creating awareness for e-commerce have had a significant impact. Awareness of the potential use of ICT in client-to-business and business-to-business transactions has improved significantly for all the people who attended the workshops. Furthermore, some participants have started business or engaged in activities that have further raised the awareness of e-commerce for the general public.

4.2 Use of Existing ICT Resources

Increased use of existing resources and infrastructure for e-commerce is a good indicator for increased awareness. The study has shown that computers are used more and more for communications despite limited capacity for an international Internet link. Some web hosting and Internet services are being offered limited expertise that exist in a few start-up companies which are used effectively, for example in designing web sites. Apart from putting local products and services on the net, very limited e-commerce transactions have been observed in Tanzania.

4.3 Emerging Business Opportunities

The study has also thrown some light on emerging business, for example web site designing and hosting by a third party. The study has shown that demand for high quality designs of web sites and other multimedia services would increase in the near future. Linked to this demand would be the demand for training in these skills and the need for an enabling infrastructure such as Tanzania Internet Exchange (TIX). Increased awareness of the potential of ICT to leverage developments in other sectors of the economy will also open up more and more e-commerce opportunities in these sectors. Immediate candidates include tourism, education and governance.

4.4 Bottlenecks for E-commerce

A number of bottlenecks for the flourishing of e-commerce in Tanzania have been identified in this study. They include:

i) Poor communication infrastructure which is able to support mainly e-mail only.
ii) Unfavourable tariffs by communication services and communication infrastructure providers.
iii) Lack of awareness, especially for Government and business leaders.

iv) Lack of relevant skills and expertise within companies.
v) Absence of enabling infrastructure such as Internet exchanges, credit card systems or other means of payment schemes.
vi) Unfavourable and/or unclear policy framework

4.5 The Way Forward

In order to accelerate the development of an e-commerce sector in Tanzania, a sustained strategy for promotion and creating awareness must be developed. In our opinion, this should include creation of a network of all stakeholders which will carry on awareness campaigns, organise ICT demonstrations and sharing of best practices, plan and conduct skills development seminars and technology transfer schemes. A key role of such a network would be to act as a forum for discussion of issues of policy and regulations impacting on the sector. To start with, national coverage of such a network is recommended. However, regional co-operation should be planned right form the beginning so as to initiate the building of a sizeable market.

5.0 APPENDICES

5.1 Appendix 1: Questionnaire for Internet Service Providers

1 Name of the firm _____

2 Legal Status

ID	Status	Tick
A	Government	
B	Private Company	
C	Education	
D	NGO	
E	Parastatal	
H	Other (specify)	

3 Address _____

A. Email _____

B. P O Box _____

C. Telephone _____

D. Fax _____

4 Give total number of employees _____

5 Number of employees in each category

ID	Category	Number
A	Technical staff/programmers	
B	Network Experts	
C	Web designers	
D	Marketing	
E	General administration	
F	Other (specify)	

6 Where do you get your connectivity?

ID		Tick
A	Datel	
B	Wilkens	
C	SITA	
D	TTCL	
E	Other (specify)_____	

7 What is your connectivity capacity? (International link)

ID	Link	Up link	Down link
A	64 – 128 Kbit/sec		
B	128 – 256 Kbit/sec		
C	256 – 512 Kbit/sec		
D	512 – 1 Mbit/sec		
E	1– 2 Mbit/sec		
F	Other (specify)		

8 How many telephone lines for dial-up clients do you own?

ID	Lines	Tick
A	1 – 10	
B	11 – 20	
C	21 – 40	
D	Over 40	

9 How many clients in the following categories do you have?

(a) Dial-up clients

ID	Clients	Tick
1	1 - 100	
2	101 - 250	
3	251 - 500	
4	501 - 750	
5	751 -1000	
6	Over 1000	

(b) Leased lines/wireless clients

ID	Client	Tick
1	1-25	
2	26-50	
3	51-75	
4	76-100	
5	Over 100	

10 What are your future plans for E-Commerce?

11 In your opinion, what has to be done to accelerate development of E-Commerce in Tanzania (Rank)

(1) Very important (6) Least important

ID	To be done	Rank
A	Improve Public access to the internet	
B	Lower connecting cost	
C	Awareness campaign	
D	More business offering in the net	
E	Streamline consumer protection law	
F	Other (specify) _____	

12 Who designs your web site?

		Tick
A	In-house	
B	Out-sourced	

13 Who does maintenance for your web site?

		Tick
A	In-house	
B	Out-sourced	

14 How frequently do you update your company's web site?

ID		Tick
A	Everyday	
B	Every week	
C	Often	
D	Irregular	

15 How many web sites do you host?

16 Out of these, how many were designed by you?

17 Do you carry adverts on your web site?

		Tick
1	Yes	
2	No	

18 If yes, how many clients are advertising in your site?

19 Out of hosted web sites how many carry advertisements?

20 On average, how many visits to your site do you get per month?

21 What problems do you face? (Rank)

(1) Highly (8) Least

ID		Rank
A	Policy Procedures/	
B	High Tax	
C	Unreliable telephone lines	
D	Low bandwidth	
E	Limited market	
F	Unreliable power supply	
G	High Cost of Telephone	
H	Other (specify)_____	

22 What, in your opinion, retards development of E-Commerce in Tanzania?

(1) Highly disturbing Problem (5) Least disturbing problem

ID		Rank
A	Means of payment	
B	Public awareness	
C	Individual attitude toward E-Commerce	
D	Poor infrastructure	
E	Other (specify)_____	

23 What do you think of the importance of e-commerce in Tanzania

		Tick
1	Very little	
2	Little	
3	Medium	
4	High	
5	Very high	

24 How many Internet business offerings are you hosting (possibly including yourself)? Which?

25 How many Internet business offering have you created (possibly including your own site)? Which?

26 List Internet business offerings for Tanzania that you know

A. _____

B. _____

C. _____

D. _____

E. _____

5.2 Appendix 2: Questionnaire For Small and Medium Enterprises

1 Name _____

2 Legal Status _____

ID	Status	Tick
A	Government	
B	Private Company	
C	Education	
D	NGO	
E	Parastatal	

3 Address_____

4 Phone_____

5 E-mail _____

6 Fax_____

7 Year of establishment _____

8 Main line of business

ID	Status	Tick
A	Manufacturing	
B	Processing	
C	Construction	
D	Repair/Maintenance work	
E	Trading	
F	Transport	
G	Services financial, insurance, etc	
H	Tourism	
I	Research	
K	Other (state)	

9 Category of staff (give number in each category)

ID	Status	Numbers
A	Technical staff	
B	IT staff	
C	Production	
D	Marketing	
E	General administration	

10 How much percentage (%) to your total budget do you spend on following?

a. Marketing _____

b. IT _____

c. Training _____

11 What are your marketing avenues (Rank)

1. Highly used. **5**. Least used 6. Not used

ID	Status	Rank
A	Newspaper	
B	Radio/TV	
C	Internet	
D	Bill boards	
E	Fliers	

12 Does your firm have e-mail facility?

		Tick
1	Yes	
2	No	

13 How do you connect to the Internet?

ID	**Status**	**Tick**
A	Dialup	
B	Wireless	
C	Leased lines	
D	LAN/WAN	

14 How do you use the Internet? (Rank)
1. Highly used…….9. Least used

ID	**Status**	**Rank**
A	E-mail	
B	Searching	
C	Look for products	
D	Look for suppliers	
E	Current market prices of various products/services	
F	Look for market opportunities	
G	Check on your competitors	
H	Advertise your products/services	
I	Others (specify)	

15 What do you think is the importance of e-commerce in Tanzania?

		Tick
1	Very little	
2	Little	
3	Medium	
4	High	
5	Very high	

16 How many computers do you have? ☐

17 What are the uses of your computers (tick applicable use)
1. Highly used …….. 6. Least used

ID	**Status**	**Rank**
A	Secretarial work	
B	Accounting/Salaries	
C	Internal communication	
D	E-mail	
E	Internet	
F	Others (specify)	

18 Do you have a company web site?

		Tick
1	Yes	
2	No	

19 If you have a company web site,

(a) Who designed your web site

		Tick
i	ISP	
ii	Third Party	
iii	In-house	

(b) Where are you hosting your web site?

		Tick
i	ISP	
ii	Third Party	
iii	In-house	

(c) Who is maintaining/updating your web site?

		Tick
i	ISP	
ii	Third Party	
iii	In-house	

20 If you do not have a web site, why?

		Tick
i	Not aware	
ii	High designing cost	
iii	High hosting cost	
iv	No need	
v	Still planning	

21 What is the target market for your products/services

		Tick
i	Within region (e.g. Dar)	
ii	Within Tanzania	
iii	Within East Africa	
iv	Within SADC	
v	World-wide	

22 What is your marketing plan in the near future?

		Tick
i	Within region (e.g. Dar)	
ii	Within Tanzania	
iii	Within East Africa	
iv	Within SADC	
v	World-wide	

23 Have you ever sold/bought anything over the Internet?

		Tick
1	Yes	
2	No	

24 If you have ever sold/bought something over the Internet:

(a) What was sold as percentage (%) of total sales?

(i) _____

(ii) _____

(b) What was bought as percentage (%) of total purchases?

(i) _____

(ii) _____

25 In your opinion, what are the problems hindering doing business on the Internet in Tanzania (Rank)

1. Major problem …….. 5. Minor Problem

		Rank
1	Means of payment	
2	Public awareness	
3	Individual attitude toward E-Commerce	
4	Poor Infrastructure	
5	Other (specify)	

5.3 Appendix 3: Questionnaire for Individuals

1 Name _____

2 Address_____

3 Phone_____

4 E-mail_____

5 Nature of employment

ID	Employment	Tick
A	Self-employed	
B	Employed	

6 Occupation

ID	Occupation	Tick
A	Web designer	
B	Web master	
C	IT Personnel	
D	Researcher	
E	Other (specify)	

7 Do you have E-mail address?

		Tick
1	Yes	
2	No	

8 Have you ever attended any workshop on E-commerce?

		Tick
1	Yes	
2	No	

9 If you have, how has it changed your attitude towards E-commerce?

		Tick
1	Very little	
2	Little	
3	Medium	
4	High	
5	Very high	

10 How many times do you connect to the Internet?

		Tick
1	Once a day	
2	Twice a day	
3	Several times a day	
4	Weekly	
5	Others (specify)	

11 How do you connect to the Internet?

ID	Status	Tick
A	Dial-up	
B	Wireless	
C	Leased lines	
D	LAN/WAN	

12 How do you get Internet access? (Rank)
1. Frequently used. …….. 5. Rarely used

ID	Status	Rank
A	Home Computer	
B	Office Computer – Workstation	
C	Public access – Office	
D	Public access – Internet Café	

13 How do you use Internet? (Rank)
1. Frequently used. …….. 3. Rarely used

ID	Status	Rank
A	E-mail	
B	Searching for products/Services	
C	Others (specify)	

14 Have you ever bought anything over the Internet?

		Tick
1	Yes	
2	No	

15 If you have, what was it that you bought?

(i) _____

(ii) _____

16 In your opinion, what are the problems hindering doing business on the Internet in Tanzania?

1. Major problem. …….. 5. Minor problem

		Rank
1	Means of payment	
2	Public awareness	
3	Individual attitude toward E-Commerce	
4	Poor Infrastructure	
5	Other (specify)	

For those who attended the workshop on E-commerce in April 1999 at ESRF:

17 Did the workshop help you in your day-to-day activities?

1. Very much …….. .5. Not at all

1	2	3	4	5

18 Do you think similar workshop would help to improve E-commerce in Tanzania?

1. Very much. …….. .5. Not at all

1	2	3	4	5

19 In relation to E-commerce what have you done after the workshop?
(you may tick more than one)

	Activity	Tick
1	I have started business	
2	I have developed business idea	
3	I have done some business over the Internet	

Other _____