Republic of Trinidad and Tobago

National Institute of Higher Education,
Research, Science and Technology

NIHERST

Survey of Innovation in the Information and Communication Technology Sector 2012

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Foreword

In this publication, the National Institute of Higher Education, Research, Science and Technology (NIHERST) presents the results of the Survey of Innovation in the Information and Communication Technology (ICT) Sector, 2012. This survey is the fifth of its kind to be conducted by NIHERST complementing similar studies in the Food and Beverage (2006), Chemical and Non-metallic Products (2009), Tourism (2010) and Publishing, Printing and Paper Converting (2010) industries in Trinidad and Tobago. The survey was designed to provide insights into the innovation process in the ICT industry in Trinidad and Tobago.

The enquiry focused on the various types of innovative activities undertaken in the industry, the associated obstacles to innovation and the impact of innovation on key performance indicators. A profile of the establishments surveyed which included age, ownership structure, employment and sales by sub-sector was also captured by the survey.

The results of the study are intended to assist decision - makers in developing policies to create the environment and incentives to catalyse innovation in the ICT industry.

NIHERST wishes to thank various establishments that willingly provided the data collated in this report.

Maureen Manchouck
President

Glossary

Research and Development (R&D) - comprises creative work undertaken on a systematic basis in order to increase the stock of knowledge of man, culture and society and the use of this stock of knowledge to devise new applications. *(Frascati Manual, OECD 2002)*

Innovation activities - include all scientific, technological, organisational, financial and commercial steps which actually lead, or are intended to lead, to the implementation of innovations. Some of these activities may be innovative in their own right, while others are not novel but are necessary to implementation. Innovation can be broken down into technological (product and process) and non-technological (marketing and organisational).

Product innovation - is the introduction of a good or service that is new or significantly improved with respect to its characteristics or intended uses. This includes significant improvements in technical specifications, components and materials, incorporated software, user friendliness or other functional characteristics.

Process innovation - is the implementation of a new or significantly improved production or delivery method. This includes significant changes in techniques, equipment and/or software.

Marketing innovation - is the implementation of a new marketing method involving significant changes in product design or packaging, product placement, product promotion or pricing.

Organisational innovation - is the implementation of a new organisational method in the firm's business practices, workplace organisation or external relations.
(OSLO Manual, OECD 2005)

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Methodology

Introduction

The Survey of Innovation in the Information and Communication Technology (ICT) Sector, 2012 was designed to provide insights into the innovation process in the industry in Trinidad and Tobago. This methodology describes the objectives, scope, coverage, data collection and processing of the results of the study.

Objectives of the Survey

The objective of this survey was to obtain information with respect to the innovative activities of establishments in the services industries of the ICT sector including:

- types of innovative activities undertaken and the reasons for undertaking such activities,
- impact of innovation on key performance indicators,
- role of linkages for the acquisition of information and collaboration leading to innovation,
- role of technology in the innovation process, and
- obstacles/hindrances to innovative activities.

Coverage

In planning the study reference was made to the International Standard Industrial Classification (ISIC), Revision 4 which classified ICT into three major activities as follows: manufacturing, distribution and services. After some deliberations the high knowledge intensive services sub-sector which incorporated most industrial activity was selected. The industry groups included:

- Information technology service activities including ICT repair,
- Telecommunication, and
- Information service activities.

Sample

In the absence of a statistical frame of establishments, usually compiled by economic activity, the sample was selected from the Telecommunications Services of Trinidad and Tobago (TSTT) telephone directory. This source led to the selection of establishments in services and distribution also which was intended to be excluded from the study. However, as data were collected from respondents engaged in both services and distribution they have been analysed and presented in this report. The survey was administered to fifty-nine (59) establishments and thirty-four or 58% responded representing the following sub-sectors:

- Wholesale and retail trade
- Data processing, hosting and related activities
- Computer programming, consultancy and related activities
- Repair of computers and telecommunications equipment
- Telecommunications

Data Collection

A questionnaire was designed to include the underlying objectives. Data were subsequently collected by a group of experienced interviewers who were trained in administering the survey questionnaire during the period September/October, 2012.

Data Processing

As completed questionnaires were received, data were edited for consistency and omissions. Where discrepancies were identified, questionnaires were returned to the field for verification and correction as necessary. Edited data were then captured in the Statistical Package for the Social Sciences (SPSS) version 16.0 software which was used to produce the tabulations in this report.

Results

The results of the survey are presented in the various tabulations and graphics which follow.

Executive Summary

Establishments Profiles

- Of the total establishments that responded to the survey, 15 (44%) were between 10 - 19 years of age while 14 (41%) were less than 10 years and 5 (15%) were 20 years and over.

- A half of the establishments (50%), especially establishments (67%) in operation for 10 -19 years, employed less than 10 persons while 41% employed between 10-49 persons and 9% employed 50 persons and over.

- A relatively larger proportion (35%) of establishments was in the wholesale and retail trade sub-sector compared to 29% in data processing, hosting and related activities; 15% in computer programming, consultancy and related activities; 12% in telecommunications and 9% in repair of computers and telecommunications equipment.

- Overall, 50% of the responding establishments from the industrial groupings surveyed employed less than 10 persons, 41% employed between 10 - 49 persons and 9% 50 and more persons.

- The majority of establishments, overall (79%) and in most sub-sectors, was local and privately owned while 15% were wholly owned by a foreign corporation and 6% were foreign private/local private joint venture arrangements.

- The ICT sector, in general, reported growth in employment between 2010 and 2011. Overall, a half (53%) of the establishments indicated that employment had increased between 2010 and 2011 while 15% reported a decline and 32% showed no change in employment.

- One-fifth (21%) of the respondents in ICT employed less than ten scientists and engineers while 15% employed between 10 - 49 and 6% employed 50 and over.

- Approximately two-fifths (38%) of the establishments reported sales of between $1m - $5m in 2011 while 35% recorded sales of less than $1m, and 12% reported more than $100m.

- The majority (62%) of the respondents in all sub-sectors experienced growth in sales between 2010 and 2011, while 24% recorded decreases and 15% indicated no change in sales.

- Only 15% of the establishments exported while a significant percentage (85%) provided goods and services for the domestic market only in 2011.

Innovation Activities

- Five (15%) of the establishments that participated in the survey had licensing contract for product or process technology.

- One-third (32%) of the respondents, especially in telecommunications (75%), indicated that they were sub-contracting for another establishment.

- A significant percentage (71%) of the respondents were not outsourcing while 27% stated that they were. The highest frequency of establishments outsourcing by industry was observed in telecommunications (50%) followed by wholesale and retail trade (33%).

- Overall, 68% of the establishments purchased new machinery and equipment during the period 2010 - 2011. A substantial proportion (61%) of establishments acquired new machinery and equipment from both local and foreign markets, 26% from abroad only and 13% locally.

- Over a half of the establishments in the ICT industries introduced a new product (59%) and improved an existing product (56%) while approximately a quarter (24%) reported development of a new product during the 2010-2011 reference period.

- Sixty-two percent (62%) of the establishments were engaged in technological process innovation consisting of the improvement of existing processes and introduction of new processes (50%).

- Various types of organisational innovations undertaken included the introduction/improvement of: maintenance routines and systems (62%), quality assurance systems (59%), in-house training programmes (56%), and changes in management systems and techniques (53%). Approximately a third of the establishments implemented major changes in organisational strategy and structure (35%) and introduced/improved waste management procedures (32%) while one-fifth (21%) improved plant layout.

- Marketing innovation included the implementation of marketing methods and the development of new markets at home and abroad. A substantial percentage (53%) of the establishments in the ICT sector had introduced new marketing techniques in the 2010/2011 period, while 38% and 15% developed new markets at home and abroad respectively.

Driving Forces and Obstacles to Innovation

- Improving customer satisfaction was cited as a major reason for innovating, in that 71% of the respondents indicated that it was very important. Over a half of the respondents rated increase market share (59%), improve product quality (56%) and improve productivity (53%) as very important reasons for innovating. Approximately two-fifths of the establishments rated extend product range (41%), deal with new competitors at home (41%), reduce production costs (38%) and improve working conditions (38%) as very important. Additionally, a third (35%) of the respondents indicated that developing more environmental-friendly products and processes was very important for innovating. The lowest rating was assigned to dealing with new competitors abroad, in that 44% of the respondents indicated that it was not important.

- Financing (47%) was identified as the most significant obstacle to innovation. A quarter or more of the respondents cited high cost of the innovation project (29%), domestic economic conditions (27%) and skilled/qualified personnel (24%) as very significant barriers to innovation. Additionally, 18% and 24% of the respondents rated weak customer demand as very significant and moderately significant respectively. Administrative/approval process within the firm (53%), information on technology (53%) and external technical support (47%) were not relevant/appropriate, and approximately two-fifths expressed a similar view with regards to lack of information on markets (41%) and legislation (38%).

Linkages and Collaboration

- The majority of establishments in the ICT sector identified their establishments (71%) and customers (65%) as very important sources of information on innovation. Two-fifths of the respondents cited suppliers of equipment, material and components or software (41%) and, business and industry associations (38%) as very important while a third (32%) assigned a similar rating to government or public research institutes. Fairs, exhibitions, conferences (53%), professional journals and trade publications (47%) and education and research institutes (35%) were considered mainly moderately important sources of information.

- In general, the establishment was identified as the main source of information on product, process, marketing and management innovation. Customers (56%) and suppliers of equipment, material and components or software (56%) were identified as the leading sources of product related information. The main sources of process related information were within the establishment (38%), customers (29%) and suppliers of equipment, material and components or software (27%). With respect to marketing related information on innovation, the establishment (47%) and business and industry associates (47%) were cited as key sources. Most establishments (41%) accessed management related innovation information internally.

- ❖ Over two-fifths of the establishments were engaged in co-operative and collaborative arrangements with customers (44%) and suppliers (41%) while 29% and 24% had such arrangements with government ministries, and consulting and marketing firms respectively. Accessing critical expertise (47%) and new markets (47%) were identified as the major reasons for collaboration while approximately two-fifths in each case cited accessing research and development (41%) and distribution channels (38%).

Impact of Innovation on Key Performance Indicators

- ❖ The majority of respondents indicated that innovation resulted in increased service quality (71%), productivity (65%) and competitiveness (62%). Forty-seven percent (47%) in each case recorded increases in profitability, cash flow and employment while one-third (32%) registered an increase in market share. However, a substantial percentage reported that innovation had a negative impact on diversification (59%), product differentiation (59%), compliance and regulations (41%) and the environment (38%).

Research and Development

- ❖ Overall, a quarter (27%) of the establishments had undertaken research and development activities while 62% responded negatively. Seven establishments (21%) utilised confidentiality agreements to protect their intellectual property, while four (12%) in each case utilised trademarks and trade secrets.

Information and Communication Technology (ICT)

- ❖ Almost all (97%) of the respondents, including all sub-sectors, utilised the Internet. The vast majority of establishments utilised the Internet for email (97%), searches on the world wide web (92%), advertising through a home page (82%) and e-commerce (74%).

Government Support Programmes

- ❖ Government support programmes for innovation were accessed by only two (6%) of the responding establishments.

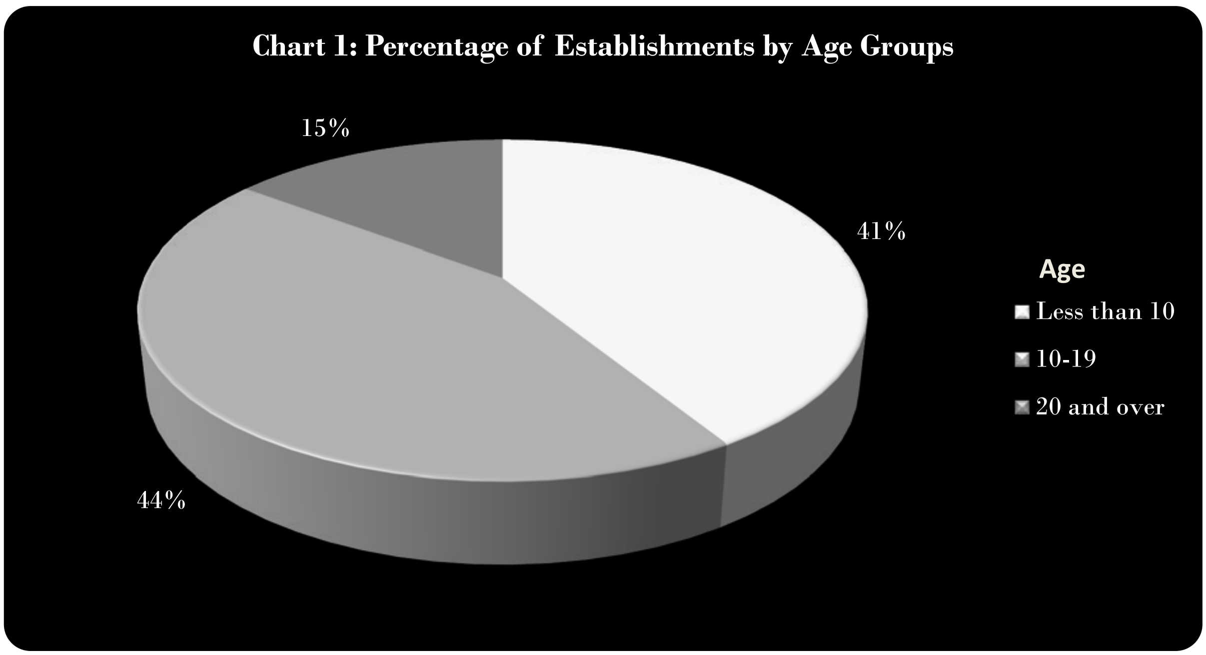
Table 1: No. of Establishments by Age Groups and Employment

Age group (years)	Employment			
	Total	Less than 10 employees	10 - 49 employees	50 and over employees
	(1)	(2)	(3)	(4)
Total	34	17	14	3
Less than 10	14	7	7	0
10-19	15	10	4	1
20 and over	5	0	3	2

Of the total establishments that responded to the survey, 15 (44%) were between 10 - 19 years of age while 14 (41%) were less than 10 years and 5 (15%) were 20 years and over (Tables 1 and 2). By employment group, a half of the establishments (50%), especially establishments (67%) in operation for 10 -19 years, employed less than 10 persons while 41% employed between 10-49 persons and 9% employed 50 persons and over (Table 3).

Table 2: Percentage of Establishments by Age Groups within Employment

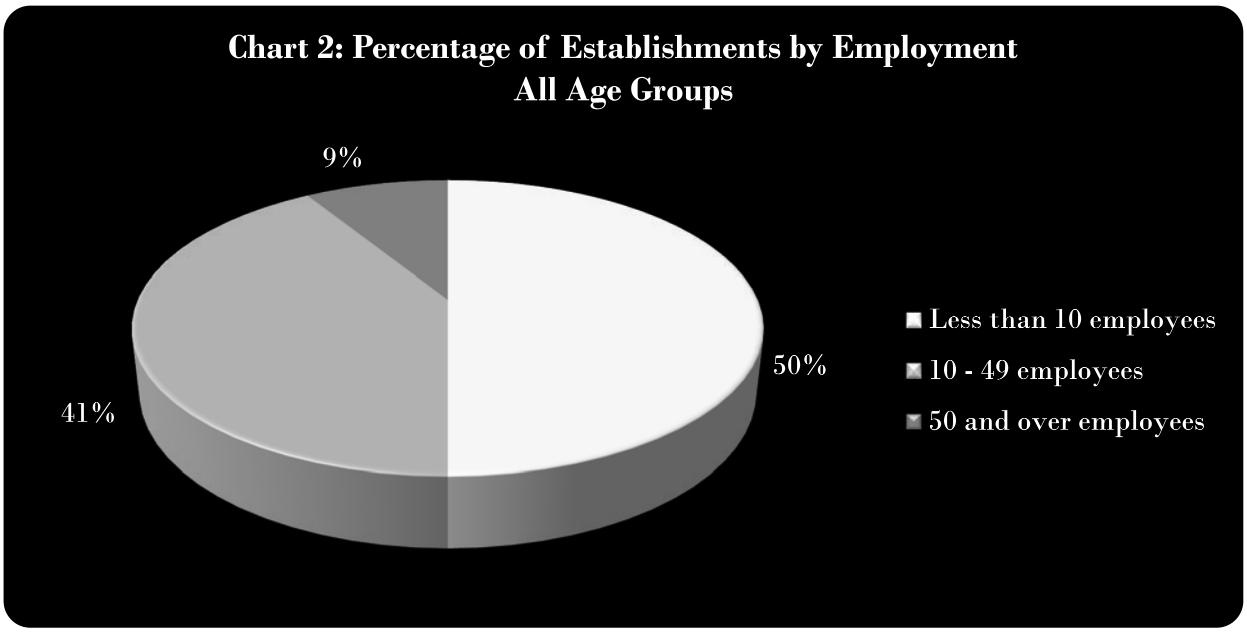
Age group (years)	Employment			
	Total	Less than 10 employees	10 - 49 employees	50 and over employees
	(1)	(2)	(3)	(4)
Total	100.0	100.0	100.0	100.0
Less than 10	41.2	41.2	50.0	0.0
10-19	44.1	58.8	28.6	33.3
20 and over	14.7	0.0	21.4	66.7



Source: Table 2

Table 3: Percentage of Establishments by Employment within Age Groups

Age group (years)	Employment			
	Total	Less than 10 employees	10 - 49 employees	50 and over employees
	(1)	(2)	(3)	(4)
Total	100.0	50.0	41.2	8.8
Less than 10	100.0	50.0	50.0	0.0
10-19	100.0	66.7	26.7	6.7
20 and over	100.0	0.0	60.0	40.0



Source: Table 3

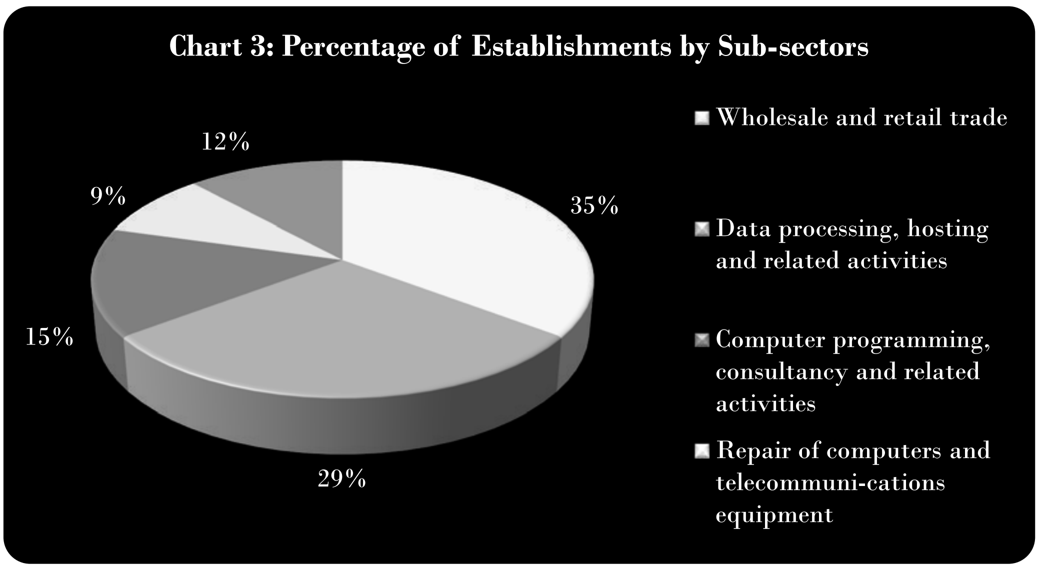
Table 4: No. of Establishments by Age Groups and Sub-sectors

Age group (years)	Sub-sector					
	Total	Wholesale and retail trade	Data processing, hosting and related activities	Computer programming, consultancy and related activities	Repair of computers and telecommunications equipment	Tele-communi-cations
	(1)	(2)	(3)	(4)	(5)	(6)
Total	34	12	10	5	3	4
Less than 10	14	5	2	1	2	4
10-19	15	6	5	3	1	0
20 and over	5	1	3	1	0	0

The survey results show that a relatively larger proportion (35%) of establishments was in the wholesale and retail trade sub-sector compared to 29% in data processing, hosting and related activities, 15% computer programming, consultancy and related activities, 12% telecommunications and 9% repair of computers and telecommunications equipment (Table 5). A further review of the data by age group reveals that over a third (36%) of the establishments less than 10 years of age was in the wholesale and retail trade industry while 29% were in telecommunications. A relatively large percentage (40%) of the establishments in operation between 10 -19 years were also in the distributive trades and one-third (33%) was engaged in data processing, hosting and related activities as did three-fifths (60%) of the establishments 20 years and over (Table 5).

Table 5: Percentage of Establishments by Sub-sectors within Age Groups

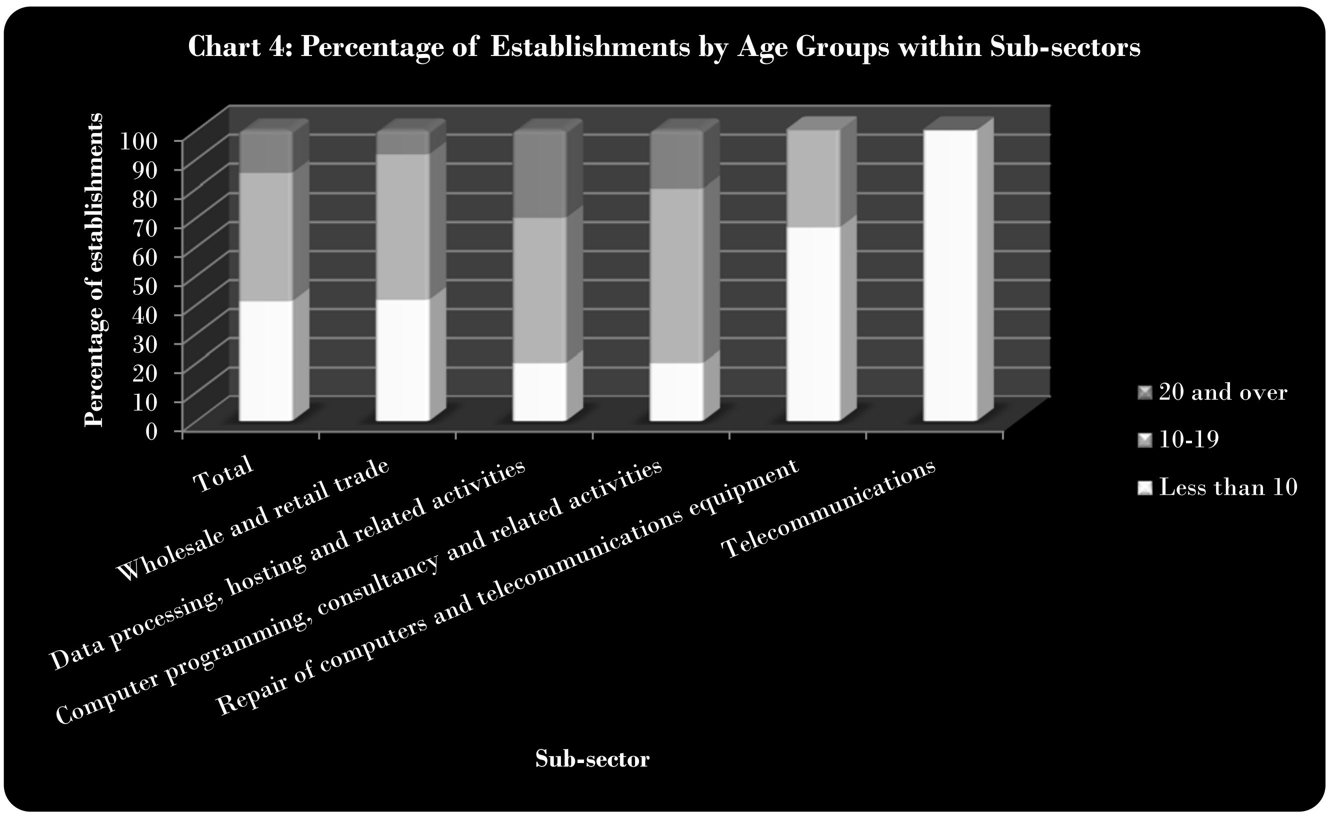
Age group (years)	Sub-sector					
	Total	Wholesale and retail trade	Data processing, hosting and related activities	Computer programming, consultancy and related activities	Repair of computers and telecommuni-cations equipment	Tele-communi-cations
	(1)	(2)	(3)	(4)	(5)	(6)
Total	100.0	35.3	29.4	14.7	8.8	11.8
Less than 10	100.0	35.7	14.3	7.1	14.3	28.6
10-19	100.0	40.0	33.3	20.0	6.7	0.0
20 and over	100.0	20.0	60.0	20.0	0.0	0.0



Source: Table 5

Table 6: Percentage of Establishments by Age Groups within Sub-sectors

Age group (years)	Sub-sector					
	Total	Wholesale and retail trade	Data processing, hosting and related activities	Computer programming, consultancy and related activities	Repair of computers and telecommuni-cations equipment	Tele-communi-cations
	(1)	(2)	(3)	(4)	(5)	(6)
Total	100.0	100.0	100.0	100.0	100.0	100.0
Less than 10	41.2	41.7	20.0	20.0	66.7	100.0
10-19	44.1	50.0	50.0	60.0	33.3	0.0
20 and over	14.7	8.3	30.0	20.0	0.0	0.0



Source: Table 6

Table 7: No. of Establishments by Employment and Sub-sectors

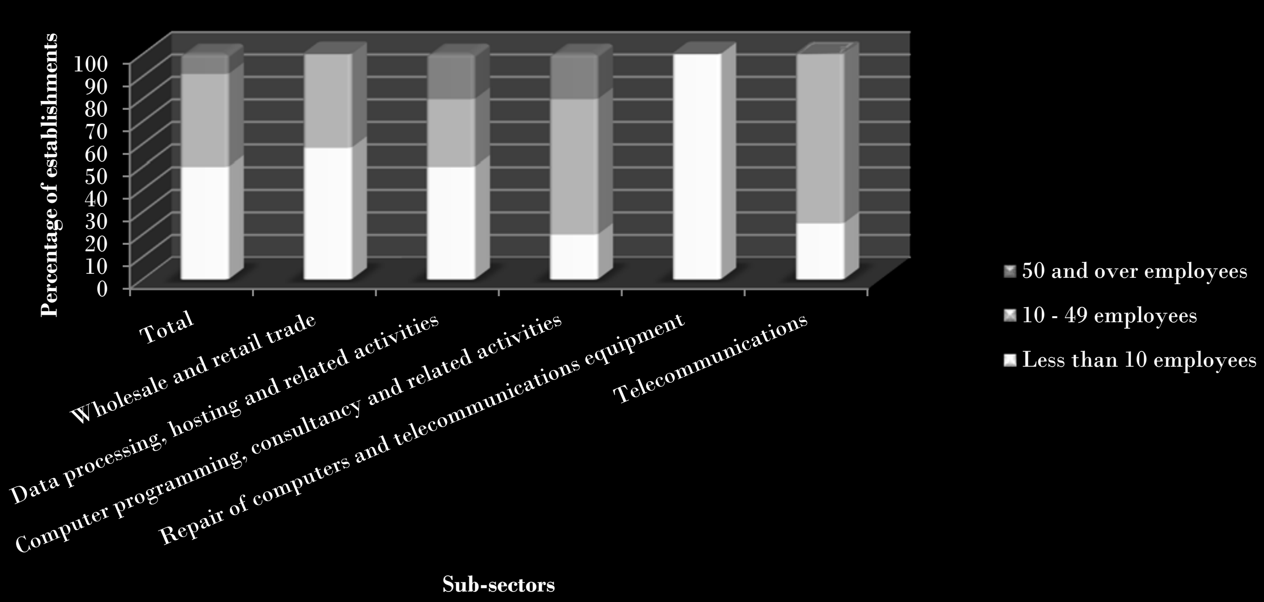
Employment	Sub-sector					
	Total	Wholesale and retail trade	Data processing, hosting and related activities	Computer programming, consultancy and related activities	Repair of computers and telecommunications equipment	Tele-communications
	(1)	(2)	(3)	(4)	(5)	(6)
Total	34	12	10	5	3	4
Less than 10 employees	17	7	5	1	3	1
10 - 49 employees	14	5	3	3	0	3
50 and over employees	3	0	2	1	0	0

Table 8: Percentage of Establishments by Employment within Sub-sectors

Employment	Sub-sector					
	Total	Wholesale and retail trade	Data processing, hosting and related activities	Computer programming, consultancy and related activities	Repair of computers and telecommuni-cations equipment	Tele-communi-cations
	(1)	(2)	(3)	(4)	(5)	(6)
Total	100.0	100.0	100.0	100.0	100.0	100.0
Less than 10 employees	50.0	58.3	50.0	20.0	100.0	25.0
10 - 49 employees	41.2	41.7	30.0	60.0	0.0	75.0
50 and over employees	8.8	0.0	20.0	20.0	0.0	0.0

Overall, 50% of the responding establishments from the industrial grouping surveyed employed less than 10 persons, 41% employed between 10 - 49 persons and 9% 50 and more persons (Table 8). All establishments in the repair of computers and telecommunications equipment (100%), 58% in the wholesale and retail trade and 50% engaged in data processing, hosting and related activities employed less than ten persons. Three-quarters (75%) of the respondents in telecommunications and 60% in computer programming, consultancy and related activities employed 10 - 49 persons. Additionally, the majority of establishments with less than 10 (41%) and 10 - 49 (36%) employees were in the wholesale and retail trade sub-sectors while two-thirds (67%) of the establishments in the 50 and over employment category were engaged in data processing, hosting and related activities (Table 9).

Chart 5: Percentage of Establishments by Employment within Sub-sectors



Source: Table 8

Table 9: Percentage of Establishments by Sub-sectors within Employment

Employment	Sub-sector					
	Total	Wholesale and retail trade	Data processing, hosting and related activities	Computer programming, consultancy and related activities	Repair of computers and telecommunications equipment	Tele-communications
	(1)	(2)	(3)	(4)	(5)	(6)
Total	100.0	35.3	29.4	14.7	8.8	11.8
Less than 10 employees	100.0	41.2	29.4	5.9	17.6	5.9
10 - 49 employees	100.0	35.7	21.4	21.4	0.0	21.4
50 and over employees	100.0	0.0	66.7	33.3	0.0	0.0

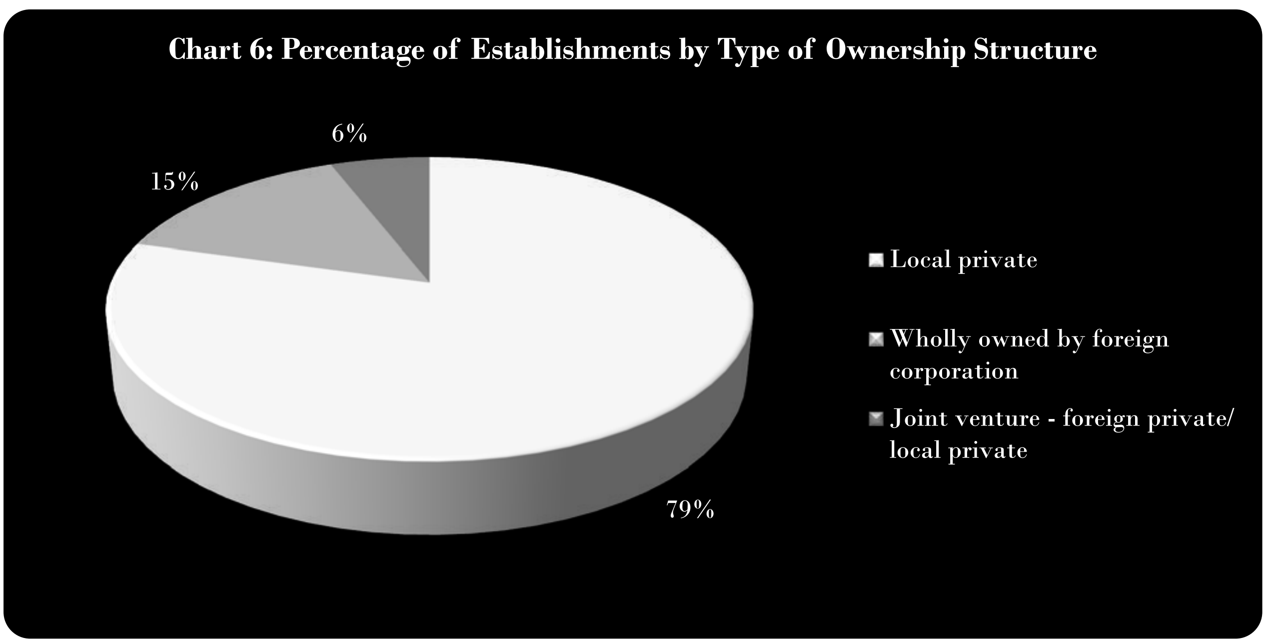
Table 10: No. of Establishments by Sub-sectors and Type of Ownership Structure

Sub-sector	Ownership structure			
	Total	Local private	Wholly owned by foreign corporation	Joint venture - foreign private/local private
	(1)	(2)	(3)	(4)
Total	34	27	5	2
Wholesale and retail trade	12	12	0	0
Data processing, hosting and related activities	10	8	1	1
Computer programming, consultancy and related activities	5	2	3	0
Repair of computers and telecommunications equipment	3	3	0	0
Telecommunications	4	2	1	1

Table 11: Percentage of Establishments by Sub-sectors and Type of Ownership Structure

Sub-sector	Ownership structure			
	Total	Local private	Wholly owned by foreign corporation	Joint venture - foreign private/ local private
	(1)	(2)	(3)	(4)
Total	100.0	79.4	14.7	5.9
Wholesale and retail trade	100.0	100.0	0.0	0.0
Data processing, hosting and related activities	100.0	80.0	10.0	10.0
Computer programming, consultancy and related activities	100.0	40.0	60.0	0.0
Repair of computers and telecommunications equipment	100.0	100.0	0.0	0.0
Telecommunications	100.0	50.0	25.0	25.0

The majority of establishments, overall (79%) and in most sub-sectors was local and privately owned while 15% were wholly owned by a foreign corporation and 6% were foreign private/local private joint venture arrangements. A substantial foreign participation (60%) was observed in computer programming, consultancy and related activities, and telecommunications to a lesser extent.



Source: Table 11

Table 12: No. of Establishments by Sub-sectors and Change in Employment, 2010 - 2011

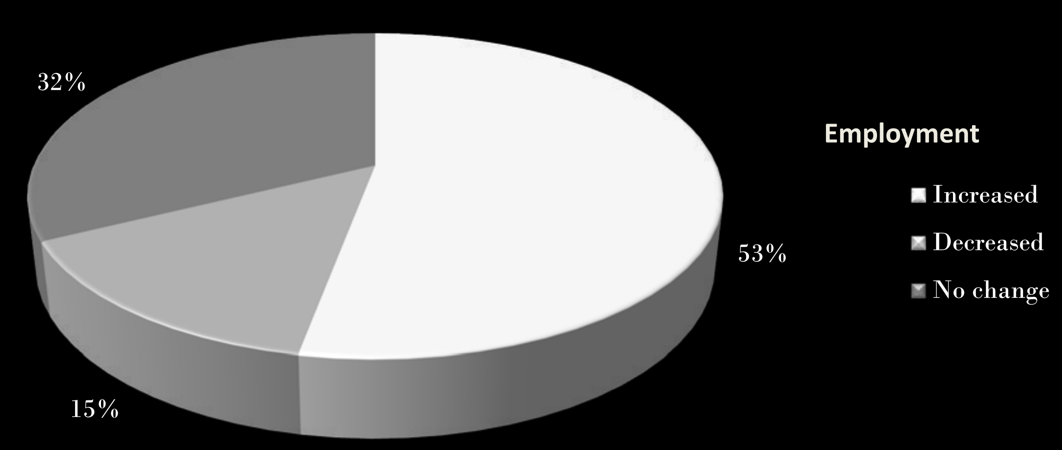
Sub-sector	Change in employment			
	Total	Increased	Decreased	No change
	(1)	(2)	(3)	(4)
Total	34	18	5	11
Wholesale and retail trade	12	5	2	5
Data processing, hosting and related activities	10	7	0	3
Computer programming, consultancy and related activities	5	3	1	1
Repair of computers and telecommunications equipment	3	0	2	1
Telecommunications	4	3	0	1

Table 13: Percentage of Establishments by Sub-sectors and Change in Employment, 2010 - 2011

Sub-sector	Change in employment			
	Total	Increased	Decreased	No change
	(1)	(2)	(3)	(4)
Total	100.0	52.9	14.7	32.4
Wholesale and retail trade	100.0	41.7	16.7	41.7
Data processing, hosting and related activities	100.0	70.0	0.0	30.0
Computer programming, consultancy and related activities	100.0	60.0	20.0	20.0
Repair of computers and telecommunications equipment	100.0	0.0	66.7	33.3
Telecommunications	100.0	75.0	0.0	25.0

The ICT sector, in general, reported growth in employment between 2010 and 2011. Overall, a half (53%) of the establishments, especially those in telecommunications (75%), data processing, hosting and related activities (70%) and computer programming, consultancy and related activities (60%) (Table 13), and amongst those with 10 employees and more (Table 15), indicated that employment had increased between 2010 and 2011 while 15% reported a decline and 32% showed no change in employment. A substantial percentage (67%) of the establishments in the repair of computers and telecommunications equipment industrial grouping reported a decline in employment over the reference period.

Chart 7: Percentage of Establishments by Change in Employment 2010 -2011 All Sub-sectors



Source: Table 13

Table 14: No. of Establishments by Employment and Change in Employment, 2010 - 2011

Employment	Change in employment			
	Total	Increased	Decreased	No change
	(1)	(2)	(3)	(4)
Total	34	18	5	11
Less than 10 employees	17	5	5	7
10 - 49 employees	14	11	0	3
50 and over employees	3	2	0	1

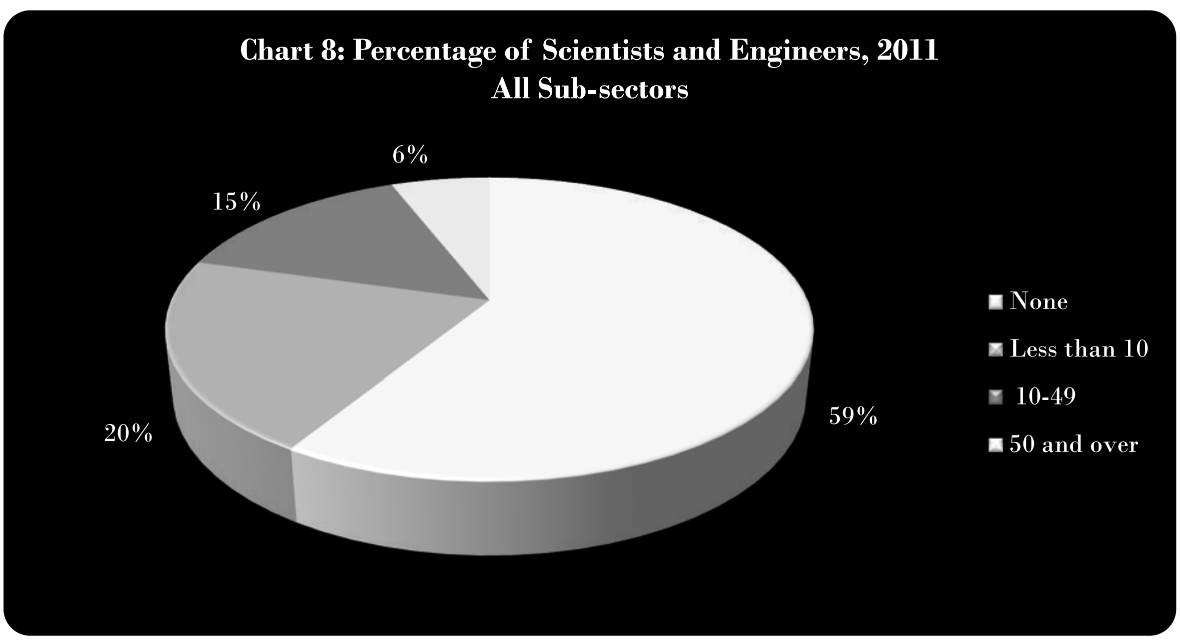
Table 15: Percentage of Establishments by Employment Size and Change in Employment, 2010 - 2011

Employment	Change in employment			
	Total	Increased	Decreased	No change
	(1)	(2)	(3)	(4)
Total	100.0	52.9	14.7	32.4
Less than 10 employees	100.0	29.4	29.4	41.2
10 - 49 employees	100.0	78.6	0.0	21.4
50 and over employees	100.0	66.7	0.0	33.3

Table 16: Distribution of Establishments by Sub-sectors and No. of Scientists and Engineers Employed, 2011

Sub-sector	No. of scientists and engineers									
	Total		None		Less than 10		10-49		50 and over	
	No.	%	No.	%	No.	%	No.	%	No.	%
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	No. and percentage of establishments									
Total	34	100	20	58.8	7	20.6	5	14.7	2	5.9
Wholesale and retail trade	12	100	9	75.0	3	25.0	0	0.0	0	0.0
Data processing, hosting and related activities	10	100	6	60.0	1	10.0	2	20.0	1	10.0
Computer programming, consultancy and related activities	5	100	1	20.0	1	20.0	2	40.0	1	20.0
Repair of computers and telecommunications equipment	3	100	3	100.0	0	0.0	0	0.0	0	0.0
Telecommunications	4	100	1	25.0	2	50.0	1	25.0	0	0.0

Overall, three-fifths (59%) of the establishments, mainly in repair of computers and telecommunications equipment (100%), wholesale and retail (75%) and data processing, hosting and related activities (60%), employed no scientists or engineers. One-fifth (21%) of the respondents employed less than ten scientists and engineers while 15% employed between 10 - 49 and 6% employed 50 and over. The highest percentage of establishments that employed scientists and engineers was observed in the computer programming, consultancy and related activities (80%) and telecommunications (75%) sub-sectors.



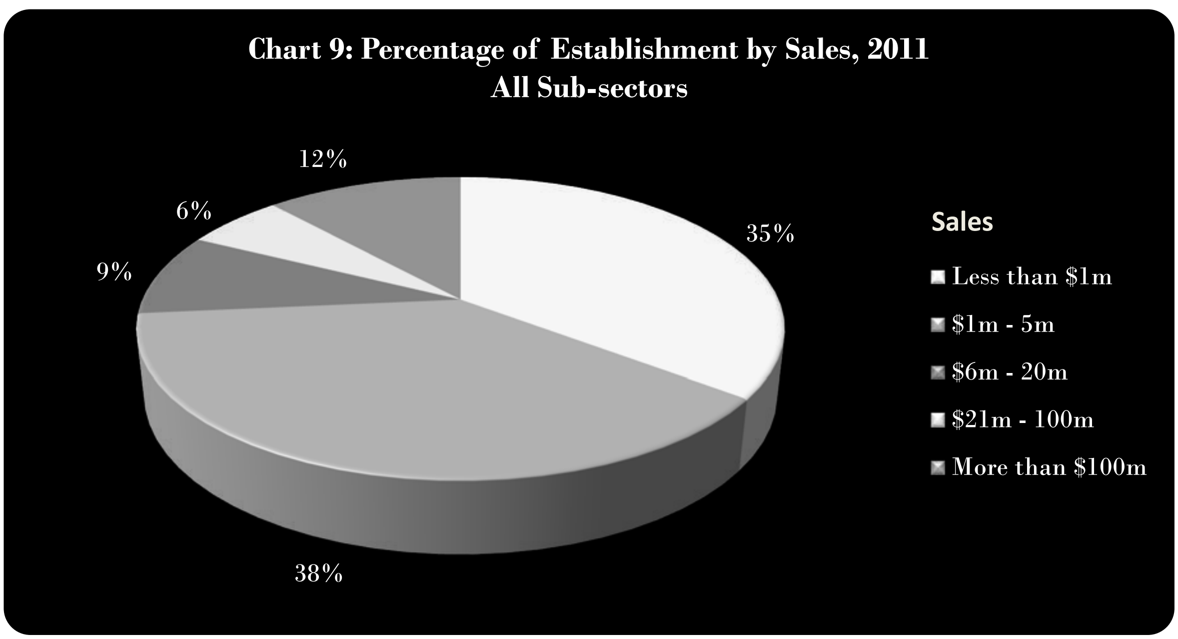
Source: Table 16

Table 17: No. of Establishments by Sub-sectors and Sales, 2011						
Sales	Sub-sector					
	Total	Wholesale and retail trade	Data processing, hosting and related activities	Computer programming, consultancy and related activities	Repair of computers and telecom-munications equipment	Tele-communi-cations
	(1)	(2)	(3)	(4)	(5)	(6)
Total	34	12	10	5	3	4
Less than $1m	12	6	2	0	3	1
$1m - 5m	13	4	5	2	0	2
$6m - 20m	3	1	0	2	0	0
$21m - 100m	2	1	1	0	0	0
More than $100m	4	0	2	1	0	1

Table 18: Percentage of Establishments by Sub-sectors and Sales, 2011

Sales	Sub-sector					
	Total	Wholesale and retail trade	Data processing, hosting and related activities	Computer programming, consultancy and related activities	Repair of computers and telecom-munications equipment	Tele-communi-cations
	(1)	(2)	(3)	(4)	(5)	(6)
Total	100.0	100.0	100.0	100.0	100.0	100.0
Less than $1m	35.3	50.0	20.0	0.0	100.0	25.0
$1m - 5m	38.2	33.3	50.0	40.0	0.0	50.0
$6m - 20m	8.8	8.3	0.0	40.0	0.0	0.0
$21m - 100m	5.9	8.3	10.0	0.0	0.0	0.0
More than $100m	11.8	0.0	20.0	20.0	0.0	25.0

Approximately two-fifths (38%) of the establishments reported sales of between $1m - $5m in 2011 while 35% recorded sales of less than $1m, and 12% reported more than $100m. By industry, the data show that a quarter (25%) of respondents in telecommunications and one-fifth (20%) in each case of data processing, hosting and related activities, and computer programming, consultancy and related activities generated more than $100m in sales revenue in 2011. Additionally, 50% of the establishments in wholesale and retail trade, and in data processing, hosting and related activities recorded sales of less than $1m and between $1m - $5m respectively.



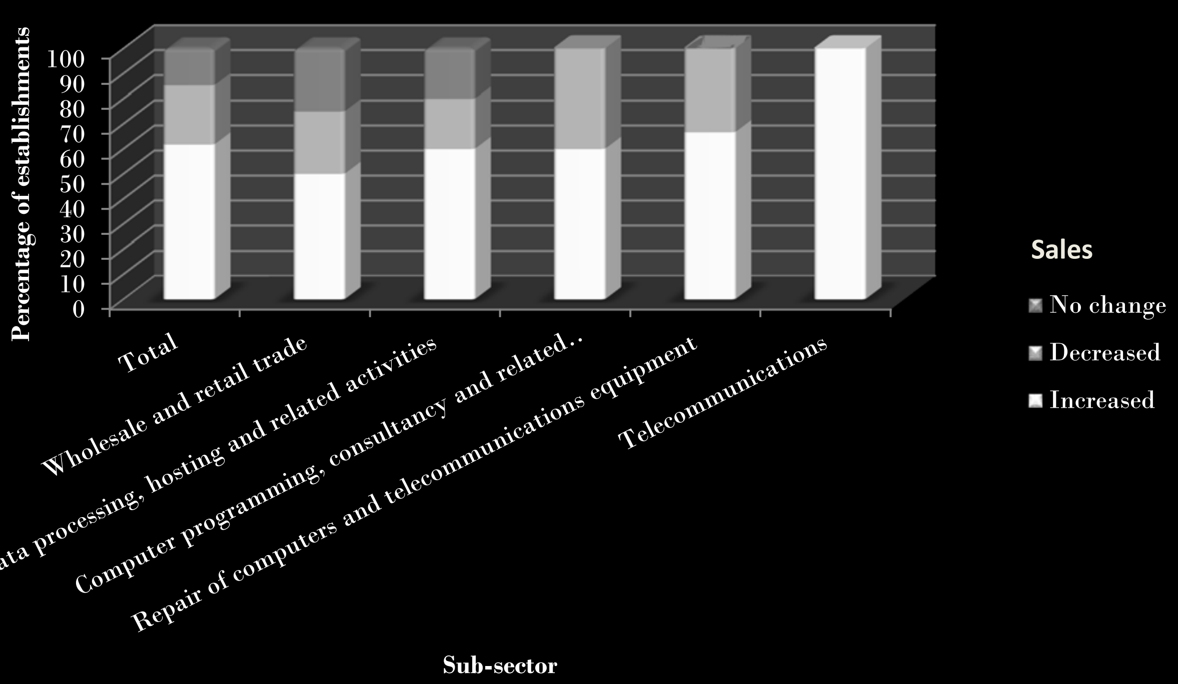
Source: Table 18

Sub-sector	Change in sales							
	Total		Increased		Decreased		No change	
	No.	%	No.	%	No.	%	No.	%
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Total	34	100.0	21	61.8	8	23.5	5	14.7
Wholesale and retail trade	12	100.0	6	50.0	3	25.0	3	25.0
Data processing, hosting and related activities	10	100.0	6	60.0	2	20.0	2	20.0
Computer programming, consultancy and related activities	5	100.0	3	60.0	2	40.0	0	0.0
Repair of computers and telecommunications equipment	3	100.0	2	66.7	1	33.3	0	0.0
Telecommunications	4	100.0	4	100.0	0	0.0	0	0.0

Table 19: Distribution of Establishments by Sub-sectors and Change in Sales, 2010 - 2011

The majority (62%) of the respondents in all sub-sectors experienced growth in sales between 2010 and 2011, while 24% recorded decreases and 15%, comprising of establishments in wholesale and retail trade (20%), and data processing, hosting and related activities (20%), indicated no change in sales.

Chart 10: Percentage of Establishment by Sub-sectors and Change in Sales, 2010 - 2011

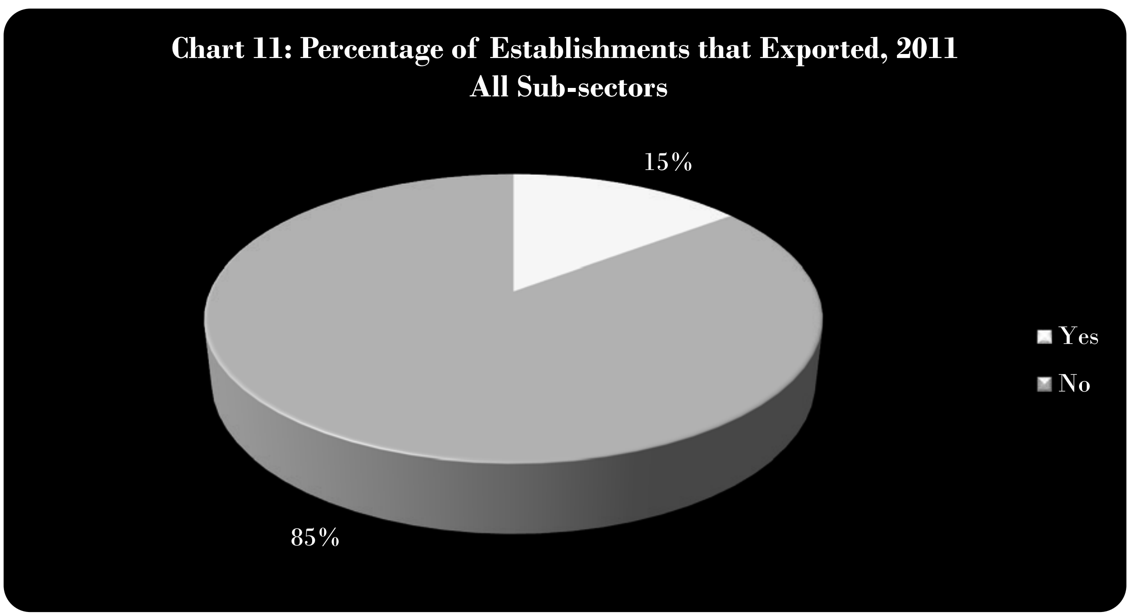


Source: Table 19

Table 20: Distribution of Establishments by Sub-sectors that Exported, 2011

Sub-sector	Establishments that exported					
	Total		Yes		No	
	No.	%	No.	%	No.	%
	(1)	(2)	(3)	(4)	(5)	(6)
Total	34	100.0	5	14.7	29	85.3
Wholesale and retail trade	12	100.0	0	0.0	12	100.0
Data processing, hosting and related activities	10	100.0	3	30.0	7	70.0
Computer programming, consultancy and related activities	5	100.0	2	40.0	3	60.0
Repair of computers and telecommunications equipment	3	100.0	0	0.0	3	100.0
Telecommunications	4	100.0	0	0.0	4	100.0

The table above shows that only 15% of the establishments, comprising 40% and 30% in computer programming, consultancy and related activities, and data processing, hosting and related activities respectively, exported while a significant percentage (85%) provided goods and services for the domestic market only in 2011. In addition, of the five establishments that exported, four (80%) exported less than $1m while one (20%) did not state the value of export sales (Table 21).



Source: Table 20

Table 21: No. of Establishments by Sub-sectors and Export Sales, 2011

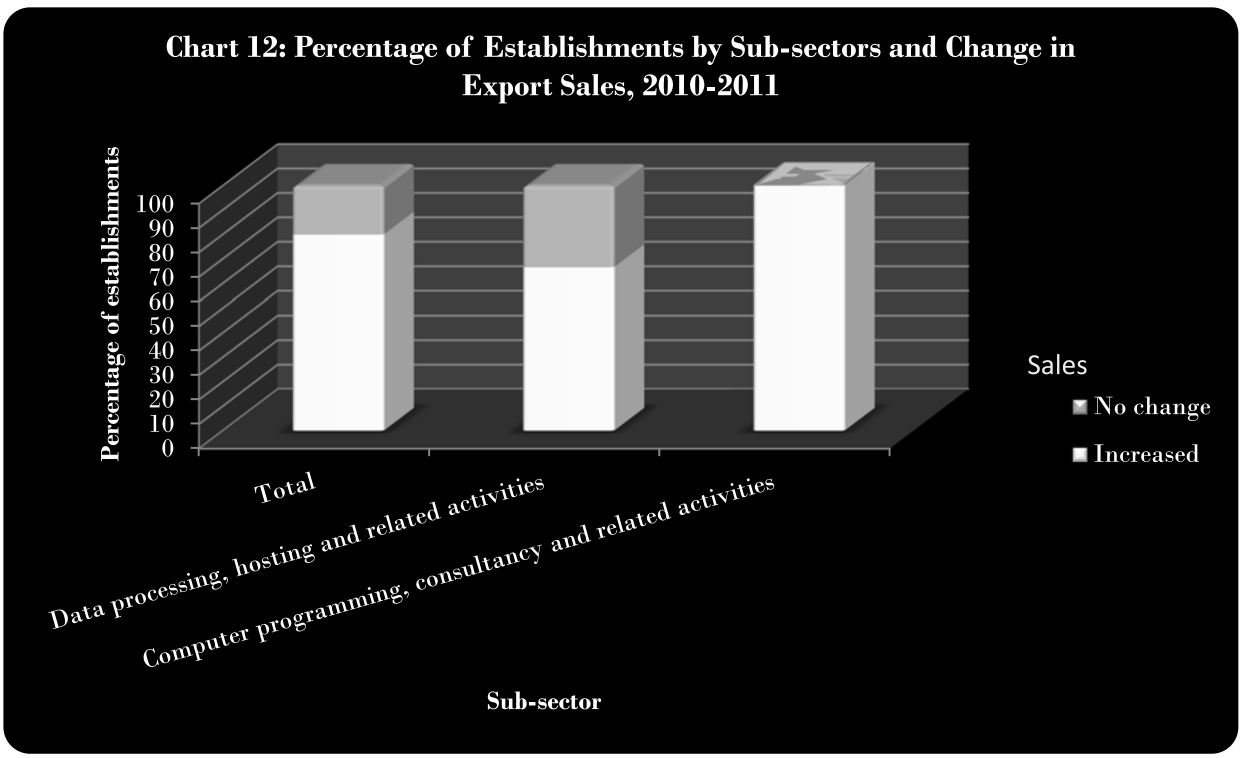
Export sales	Sub-sector					
	Total	Wholesale and retail trade	Data processing, hosting and related activities	Computer programming, consultancy and related activities	Repair of computers and telecom-munications equipment	Tele-communi-cations
	(1)	(2)	(3)	(4)	(5)	(6)
Total	34	12	10	5	3	4
Less than $1m	4	0	3	1	0	0
Not stated	1	0	0	1	0	0
Not applicable	29	12	7	3	3	4

Table 22: Percentage of Establishments by Sub-sectors and Export Sales, 2011

Export sales	Sub-sector					
	Total	Wholesale and retail trade	Data processing, hosting and related activities	Computer programming, consultancy and related activities	Repair of computers and telecom-munications equipment	Tele-communi-cations
	(1)	(2)	(3)	(4)	(5)	(6)
Total	100.0	100.0	100.0	100.0	100.0	100.0
Less than $1m	11.8	0.0	30.0	20.0	0.0	0.0
Not stated	2.9	0.0	0.0	20.0	0.0	0.0
Not applicable	85.3	100.0	70.0	60.0	100.0	100.0

Table 23: Distribution of Establishments by Sub-sectors and Change in Export Sales, 2010 - 2011						
Sub-sector	Change in export sales, 2010 - 2011					
	Total		Increased		No change	
	No.	%	No.	%	No.	%
	(1)	(2)	(3)	(4)	(5)	(6)
Total	5	100.0	4	80.0	1	20.0
Data processing, hosting and related activities	3	100.0	2	66.7	1	33.3
Computer programming, consultancy and related activities	2	100.0	2	100.0	0	0.0

Four-fifths (80%) of the establishments that exported showed increases in export sales over the period 2010-2011 while a fifth (20%) registered no change. Both establishments (100%) that exported in computer programming, consultancy and related activities experienced growth in export sales while two-thirds (67%) in data processing, hosting and related activities registered increases and one-third (33%) reported no change.

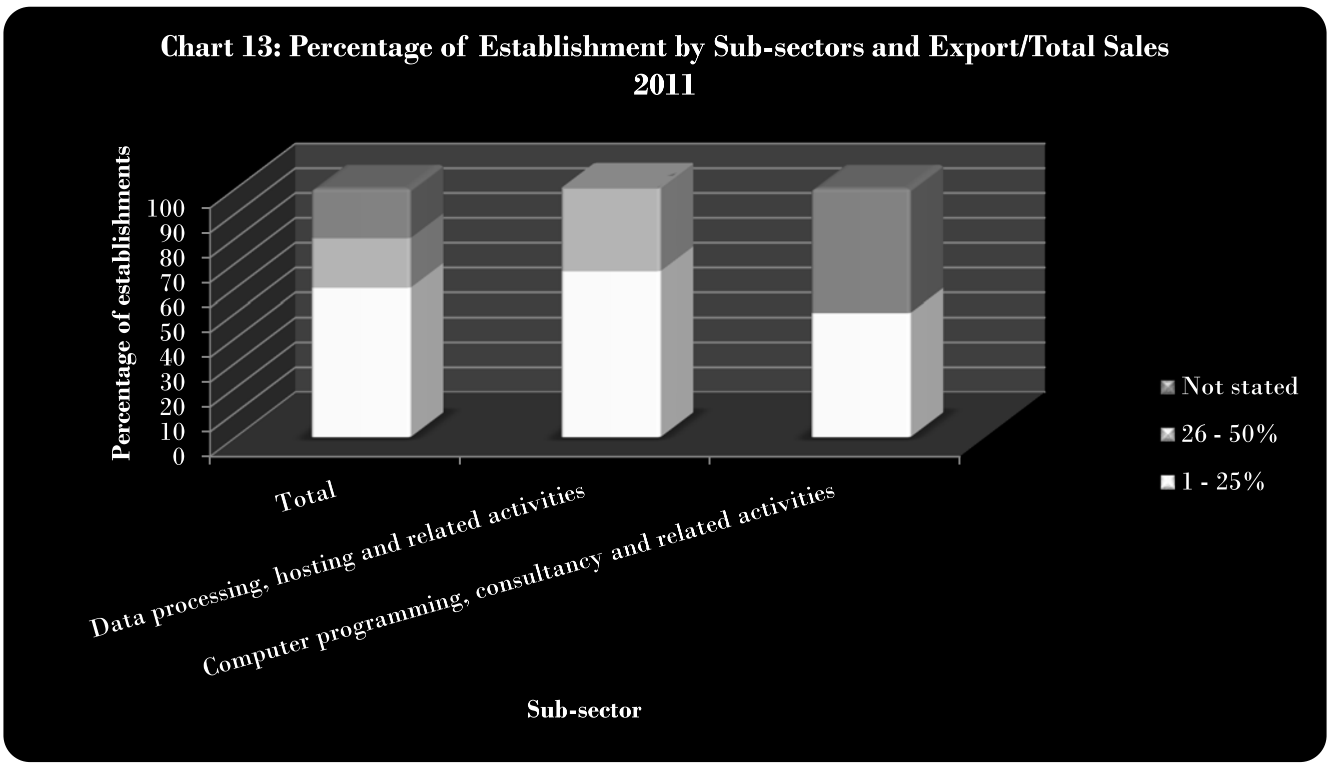


Source: Table 23

Table 24: Distribution of Establishments by Sub-sectors and Export/Total Sales, 2011

Sub-sector	Export/Total Sales							
	Total		1 - 25%		26 - 50%		Not stated	
	No.	%	No.	%	No.	%	No.	%
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Total	5	100.0	3	60.0	1	20.0	1	20.0
Data processing, hosting and related activities	3	100.0	2	66.7	1	33.3	0	0.0
Computer programming, consultancy and related activities	2	100.0	1	50.0	0	0.0	1	50.0

Three-fifths (60%) of the establishments that exported, comprising establishments in data processing, hosting and related activities (67%) and computer programming, consultancy and related activities (50%), reported exports of 25% and less of total sales. In addition, one establishment (33%) in the data processing, hosting and related activities sub-sector reported exports to total sales in the range of 26 - 50%.

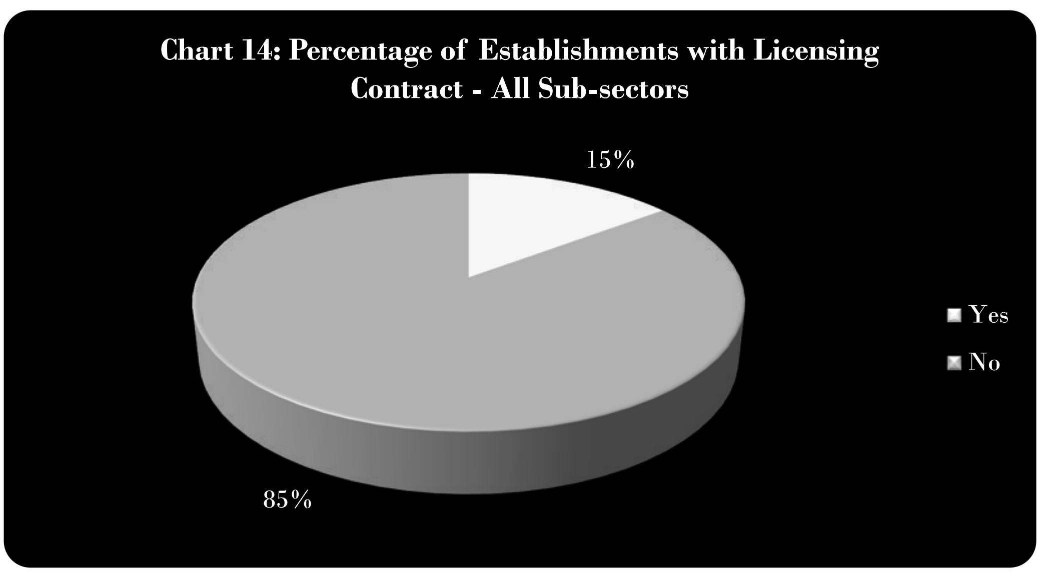


Source: Table 24

Table 25: Distribution of Establishments by Sub-sectors and Licensing Contract for Product or Process Technology

Sub-sector	Licensing contract					
	Total		Yes		No	
	No.	%	No.	%	No.	%
	(1)	(2)	(3)	(4)	(5)	(6)
Total	34	100.0	5	14.7	29	85.3
Wholesale and retail trade	12	100.0	1	8.3	11	91.7
Data processing, hosting and related activities	10	100.0	2	20.0	8	80.0
Computer programming, consultancy and related activities	5	100.0	1	20.0	4	80.0
Repair of computers and telecommunications equipment	3	100.0	0	0.0	3	100.0
Telecommunications	4	100.0	1	25.0	3	75.0

Tables 25 to 27 provide some insight into diffusion through licensing contract, sub-contracting and outsourcing in the ICT sector. The table above shows that five (15%) of the establishments that participated in the survey had licensing contract for product or process technology. A further review of the data by industry reveals that a quarter (25%) of the establishments in telecommunications had licensing contract for product or process technology along with a fifth (20%) in each case of data processing, hosting and related activities, and computer programming, consultancy and related activities.

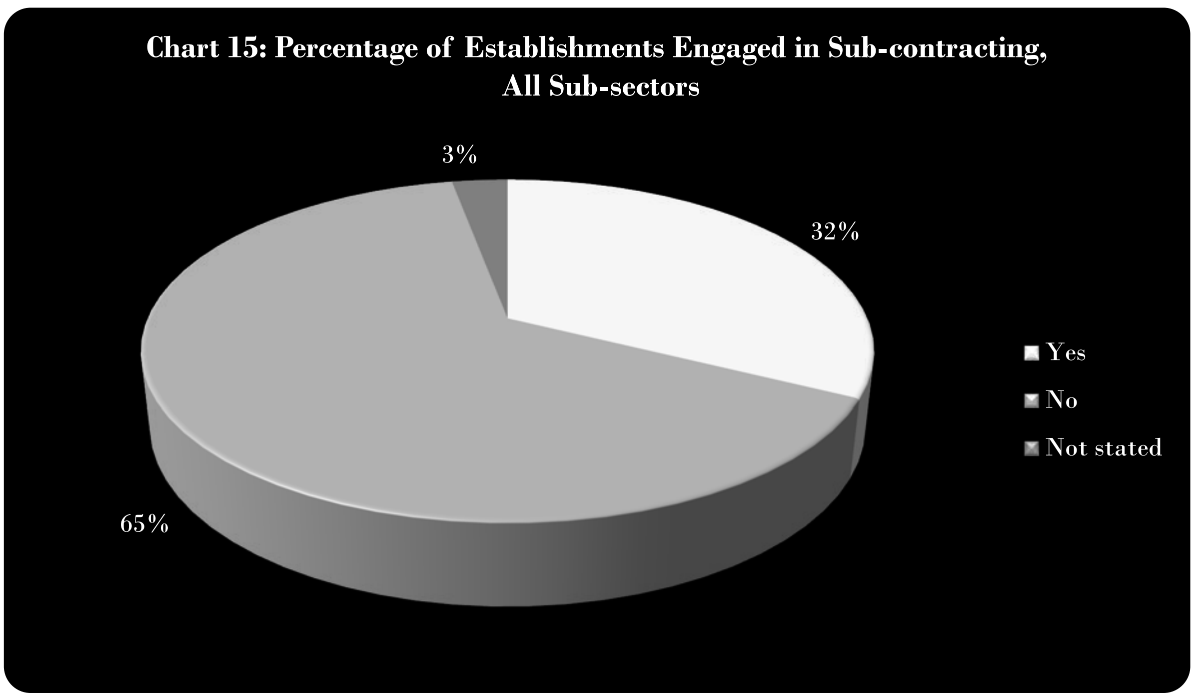


Source: Table 25

Table 26: Distribution of Establishments Engaged in Sub-contracting by Sub-sectors

Sub-sector	Engaged in Sub-contracting							
	Total		Yes		No		Not stated	
	No.	%	No.	%	No.	%	No.	%
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Total	34	100.0	11	32.4	22	64.7	1	2.9
Wholesale and retail trade	12	100.0	4	33.3	8	66.7	0	0.0
Data processing, hosting and related activities	10	100.0	3	30.0	7	70.0	0	0.0
Computer programming, consultancy and related activities	5	100.0	0	0.0	4	80.0	1	20.0
Repair of computers and telecommunications equipment	3	100.0	1	33.3	2	66.7	0	0.0
Telecommunications	4	100.0	3	75.0	1	25.0	0	0.0

One-third (32%) of the respondents, especially in telecommunications (75%), indicated that they were sub-contracting for another establishment while two-thirds (65%) were not engaged in such activities.



Source: Table 26

Table 27: Establishments Outsourcing for Another by Sub-sectors

Sub-sector	Outsourcing for another							
	Total		Yes		No		Not stated	
	No.	%	No.	%	No.	%	No.	%
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Total	34	100.0	9	26.5	24	70.6	1	2.9
Wholesale and retail trade	12	100.0	4	33.3	8	66.7	0	0.0
Data processing, hosting and related activities	10	100.0	2	20.0	8	80.0	0	0.0
Computer programming, consultancy and related activities	5	100.0	1	20.0	3	60.0	1	20.0
Repair of computers and telecommunications equipment	3	100.0	0	0.0	3	100.0	0	0.0
Telecommunications	4	100.0	2	50.0	2	50.0	0	0.0

The data show that a significant percentage (71%) of the respondents indicated that they were not outsourcing while 27% stated that they were. The highest frequency of establishments outsourcing by industry was observed in telecommunications (50%) followed by wholesale and retail trade (33%). Additionally, a similar percentage of respondents in data processing, hosting and related activities (20%), and computer programming, consultancy and related activities (20%) was engaged in outsourcing.

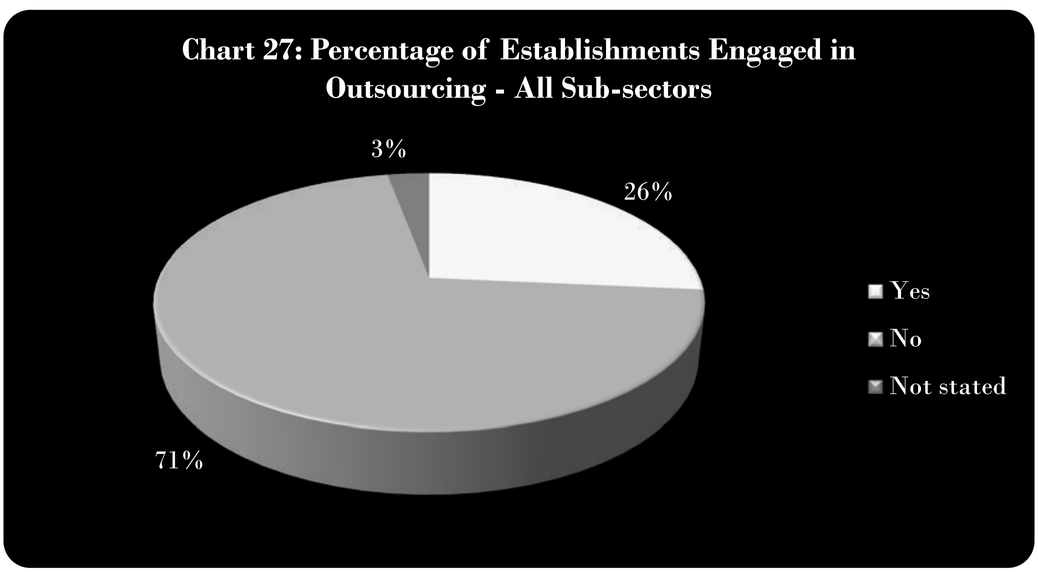


Chart 27: Percentage of Establishments Engaged in Outsourcing - All Sub-sectors

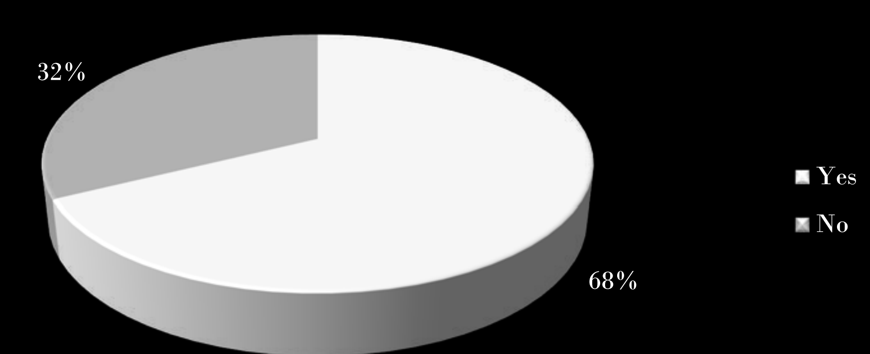
Source: Table 27

Table 28: Distribution of Establishments by Sub-sectors and Purchase of New Machinery and Equipment 2010-2011

Sub-sector	Purchase of new machinery and equipment					
	Total		Yes		No	
	No.	%	No.	%	No.	%
	(1)	(2)	(3)	(4)	(5)	(6)
Total	34	100.0	23	67.6	11	32.4
Wholesale and retail trade	12	100.0	6	50.0	6	50.0
Data processing, hosting and related activities	10	100.0	8	80.0	2	20.0
Computer programming, consultancy and related activities	5	100.0	4	80.0	1	20.0
Repair of computers and telecommunications equipment	3	100.0	2	66.7	1	33.3
Telecommunications	4	100.0	3	75.0	1	25.0

Overall (68%), including a half or more of the establishments in all sub-sectors reported that they had purchased new machinery and equipment during the period, 2010 - 2011 (Table 28). The data also reveal that a substantial proportion (61%) of establishments, especially those in computer programming, consultancy and related activities (100%), data processing, hosting and related activities (75%), and wholesale and retail trade (50%), acquired new machinery and equipment from both local and foreign markets (Table 29). A quarter (26%) of the respondents purchased new machinery and equipment from abroad only and 13% purchased locally.

Chart 17: Percentage of Establishments that Purchased New Machinery and Equipment - All Sub-sectors

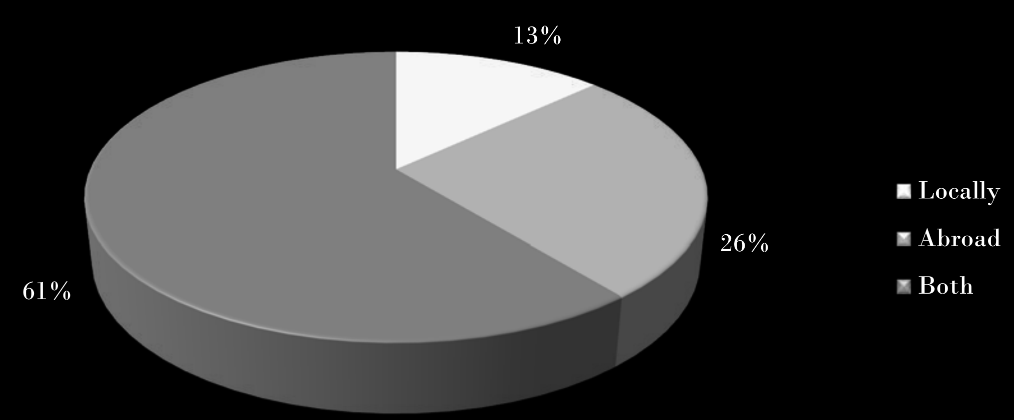


Source: Table 28

Table 29: Distribution of Establishments by Sub-sectors and Purchase of New Machinery and Equipment Locally or Abroad, 2010 - 2011

Sub-sector	Where purchased							
	Total		Locally		Abroad		Both	
	No.	%	No.	%	No.	%	No.	%
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Total	23	100.0	3	13.0	6	26.1	14	60.9
Wholesale and retail trade	6	100.0	1	16.7	2	33.3	3	50.0
Data processing, hosting and related activities	8	100.0	0	0.0	2	25.0	6	75.0
Computer programming, consultancy and related activities	4	100.0	0	0.0	0	0.0	4	100.0
Repair of computers and telecommunications equipment	2	100.0	1	50.0	1	50.0	0	0.0
Telecommunications	3	100.0	1	33.3	1	33.3	1	33.3

Chart 18: Percentage of Establishments that Purchased New Machinery Locally/Abroad - All Sub-sectors



Source: Table 29

Table 30: Distribution of Establishments by Sub-sectors and Value of New Machinery and Equipment Purchased, 2010-2011

Sub-sector	Value of new machinery and equipment purchased ($)											
	Total		Less than 50,000		50,000 - 100,000		101,000 - 500,000		More than		Not stated	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Total	23	100.0	9	39.1	2	8.7	5	21.7	6	26.1	1	4.3
Wholesale and retail trade	6	100.0	1	16.7	2	33.3	3	50.0	0	0.0	0	0.0
Data processing, hosting and related activities	8	100.0	5	62.5	0	0.0	0	0.0	3	37.5	0	0.0
Computer programming, consultancy and related activities	4	100.0	1	25.0	0	0.0	1	25.0	1	25.0	1	25.0
Repair of computers and telecommunications equipment	2	100.0	2	100.0	0	0.0	0	0.0	0	0.0	0	0.0
Telecommunications	3	100.0	0	0.0	0	0.0	1	33.3	2	66.7	0	0.0

The table above shows that two-fifths (39%) of the respondents , especially those in repair of computers and telecommunications equipment (100%) and data processing, hosting and related activities (63%), purchased new machinery and equipment valued less than $50,000 in 2010 - 2011. A quarter (26%) of the establishments, mainly those in telecommunications (67%), made purchases of over $500,000 while 22% acquired new machinery and equipment valued between $101,000 - $500,000.

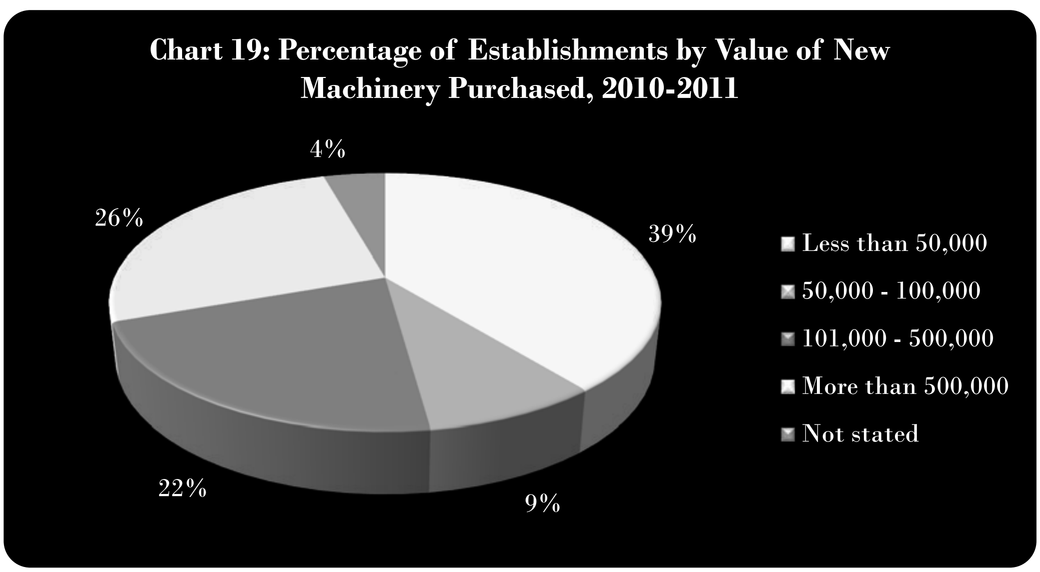


Chart 19: Percentage of Establishments by Value of New Machinery Purchased, 2010-2011

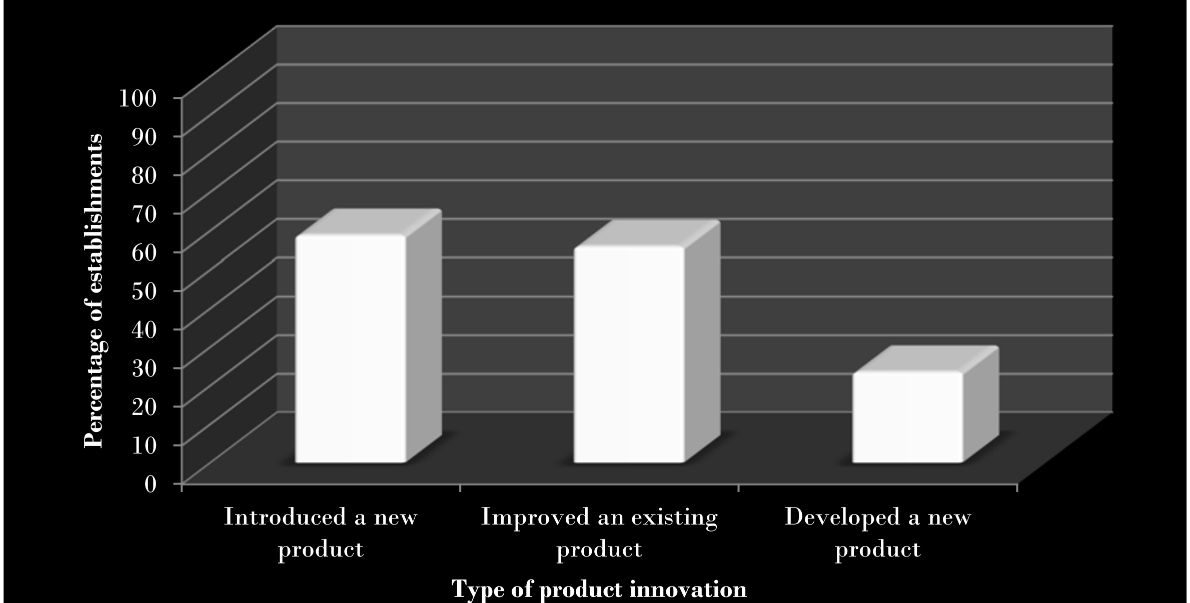
Source: Table 30

Table 31: Distribution of Establishments by Type of Product Innovation, 2010 - 2011

Type of product innovation	Total		Yes		No	
	No.	%	No.	%	No.	%
	(1)	(2)	(3)	(4)	(5)	(6)
Introduced a new product	34	100.0	20	58.8	14	41.2
Improved an existing product	34	100.0	19	55.9	15	44.1
Developed a new product	34	100.0	8	23.5	26	76.5

Over a half of the establishments in the ICT industries that responded to the survey, was engaged in product innovation including introduction of a new product (59%) and improvement of an existing product (56%) while approximately a quarter (24%) reported development of a new product during the 2010-2011 reference period.

Chart 20: Establishments by Type of Product Innovation, 2010-2011

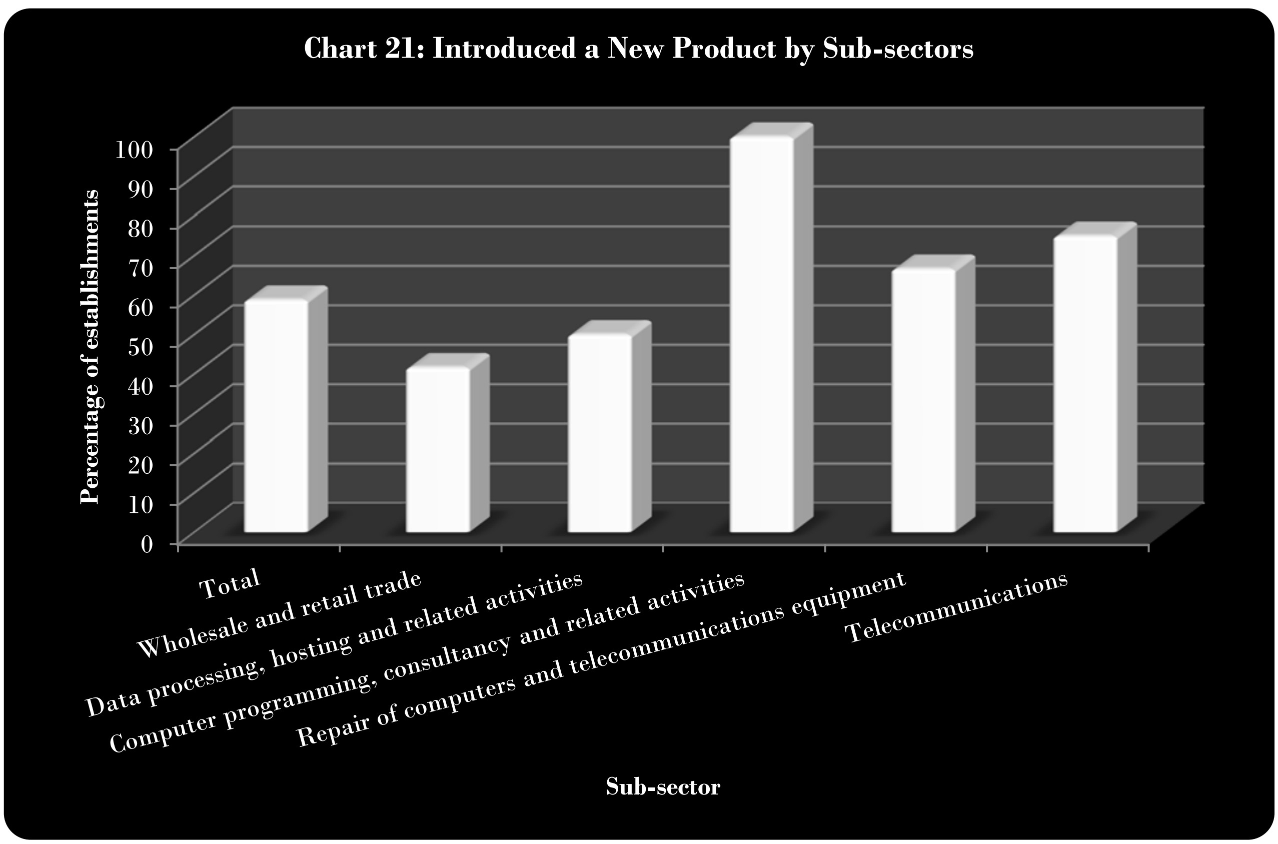


Source: Table 31

Table 32: Distribution of Establishments that Introduced a New Product by Sub-sectors

Sub-sector	Introduced a new product					
	Total		Yes		No	
	No.	%	No.	%	No.	%
	(1)	(2)	(3)	(4)	(5)	(6)
Total	34	100.0	20	58.8	14	41.2
Wholesale and retail trade	12	100.0	5	41.7	7	58.3
Data processing, hosting and related activities	10	100.0	5	50.0	5	50.0
Computer programming, consultancy and related activities	5	100.0	5	100.0	0	0.0
Repair of computers and telecommunications equipment	3	100.0	2	66.7	1	33.3
Telecommunications	4	100.0	3	75.0	1	25.0

By industrial grouping, the highest percentage of establishments that introduced a new product was observed in computer programming, consultancy and related activities (100%), followed by telecommunications (75%) and repair of computers and telecommunications equipment (67%).

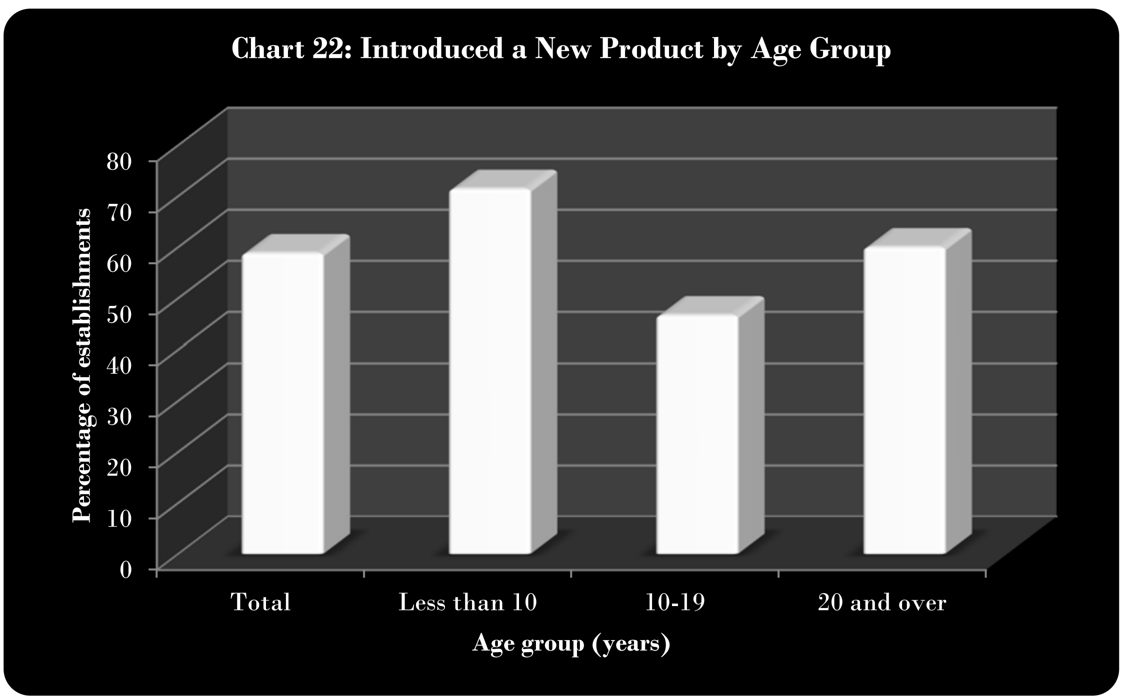


Source: Table 32

Table 33: Distribution of Establishments that Introduced a New Product by Age Group

Age group (years)	Introduced a new product					
	Total		Yes		No	
	No.	%	No.	%	No.	%
	(1)	(2)	(3)	(4)	(5)	(6)
Total	34	100.0	20	58.8	14	41.2
Less than 10	14	100.0	10	71.4	4	28.6
10-19	15	100.0	7	46.7	8	53.3
20 and over	5	100.0	3	60.0	2	40.0

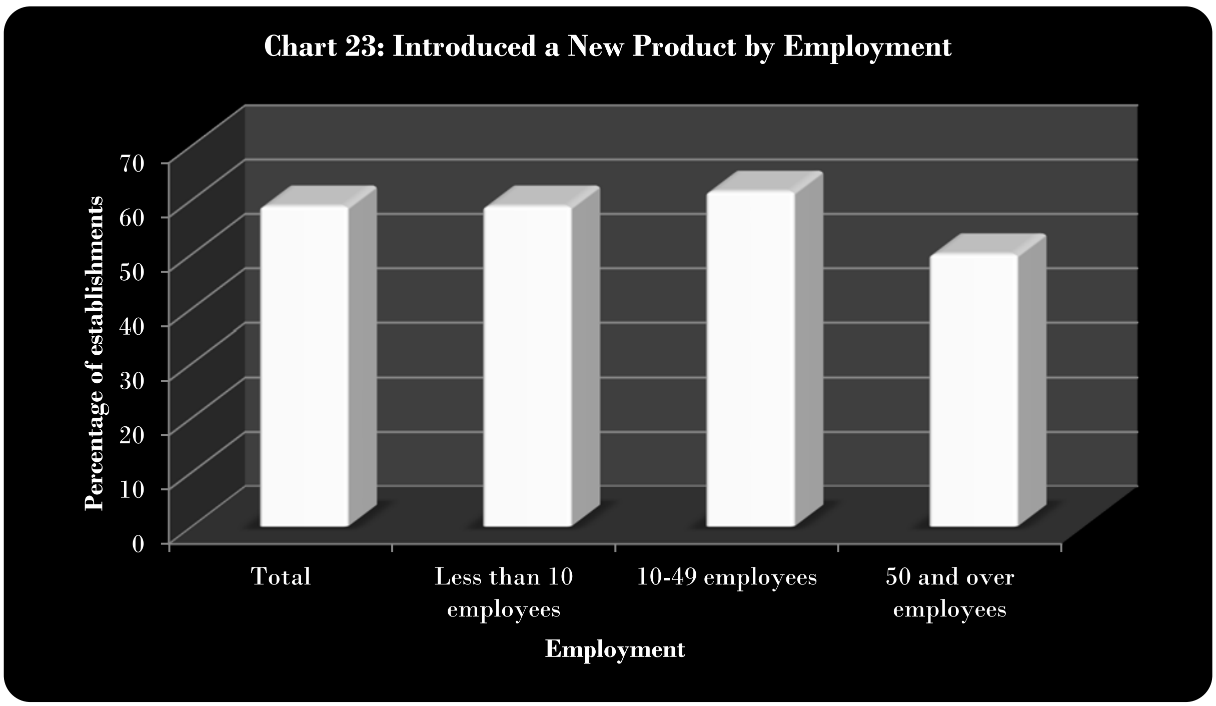
A substantial percentage (71%) of the establishments less than ten years in operation introduced a new product compared to 60% and 47% in the case of the older establishments in the 20 years and over, and 10-19 age categories respectively (Table 33). In addition, approximately three-fifths of the establishments with less than ten (59%) and between 10 - 49 (62%) employees introduced a new product compared to a half (50%) of the larger establishments with employment size of 50 and over (Table 34).



Source: Table 33

Table 34: Distribution of Establishments that Introduced a New Product by Employment

Employment group	Introduced a new product					
	Total		Yes		No	
	No.	%	No.	%	No.	%
	(1)	(2)	(3)	(4)	(5)	(6)
Total	34	100.0	20	58.8	14	41.2
Less than 10 employees	17	100.0	10	58.8	7	41.2
10-49 employees	13	100.0	8	61.5	5	38.5
50 and over employees	4	100.0	2	50.0	2	50.0

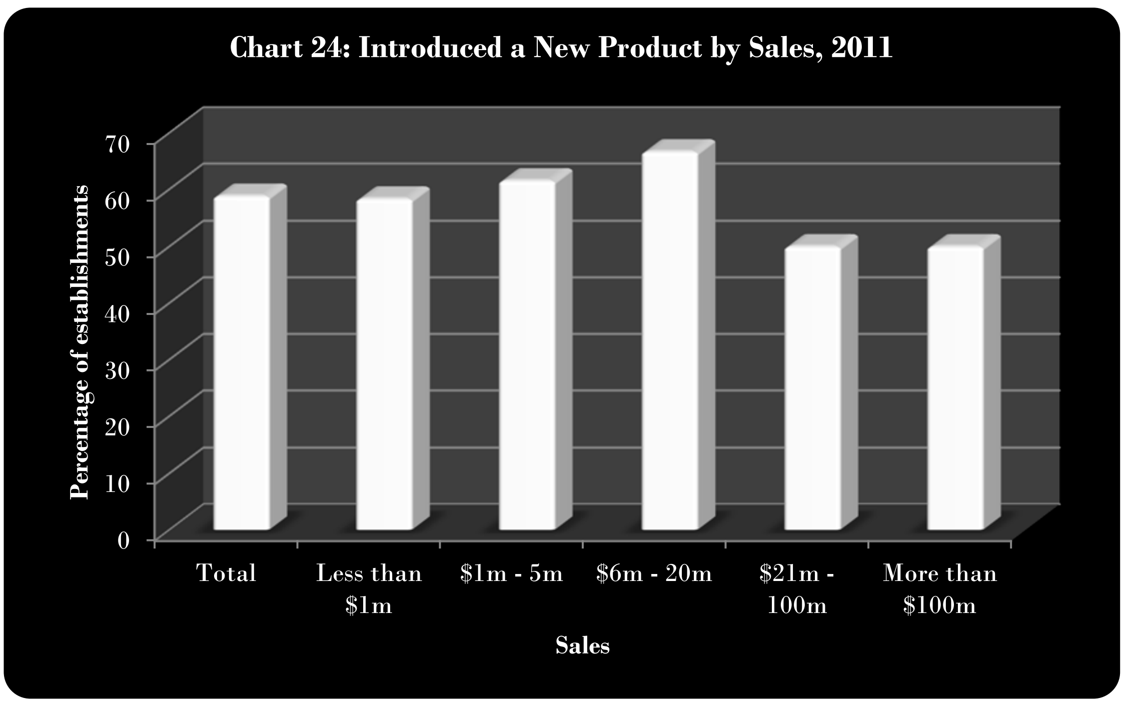


Source: Table 34

Table 35: Distribution of Establishments that Introduced a New Product by Sales, 2011

Sales	Introduced a new product					
	Total		Yes		No	
	No.	%	No.	%	No.	%
	(1)	(2)	(3)	(4)	(5)	(6)
Total	34	100.0	20	58.8	14	41.2
Less than $1m	12	100.0	7	58.3	5	41.7
$1m - 5m	13	100.0	8	61.5	5	38.5
$6m - 20m	3	100.0	2	66.7	1	33.3
$21m - 100m	2	100.0	1	50.0	1	50.0
More than $100m	4	100.0	2	50.0	2	50.0

The table above shows that a half or more of the establishments in each sales category introduced a new product. Two-thirds (67%) of the respondents that generated $6m - $20m in sales revenue in 2011 introduced a new product while three-fifths in the $1m - $5m (62%) and less than $1m (58%) sales categories did likewise. Additionally, a similar percentage (50%) of establishments in the higher sales groups of $21m - $100m and more than $100m also introduced a new product.

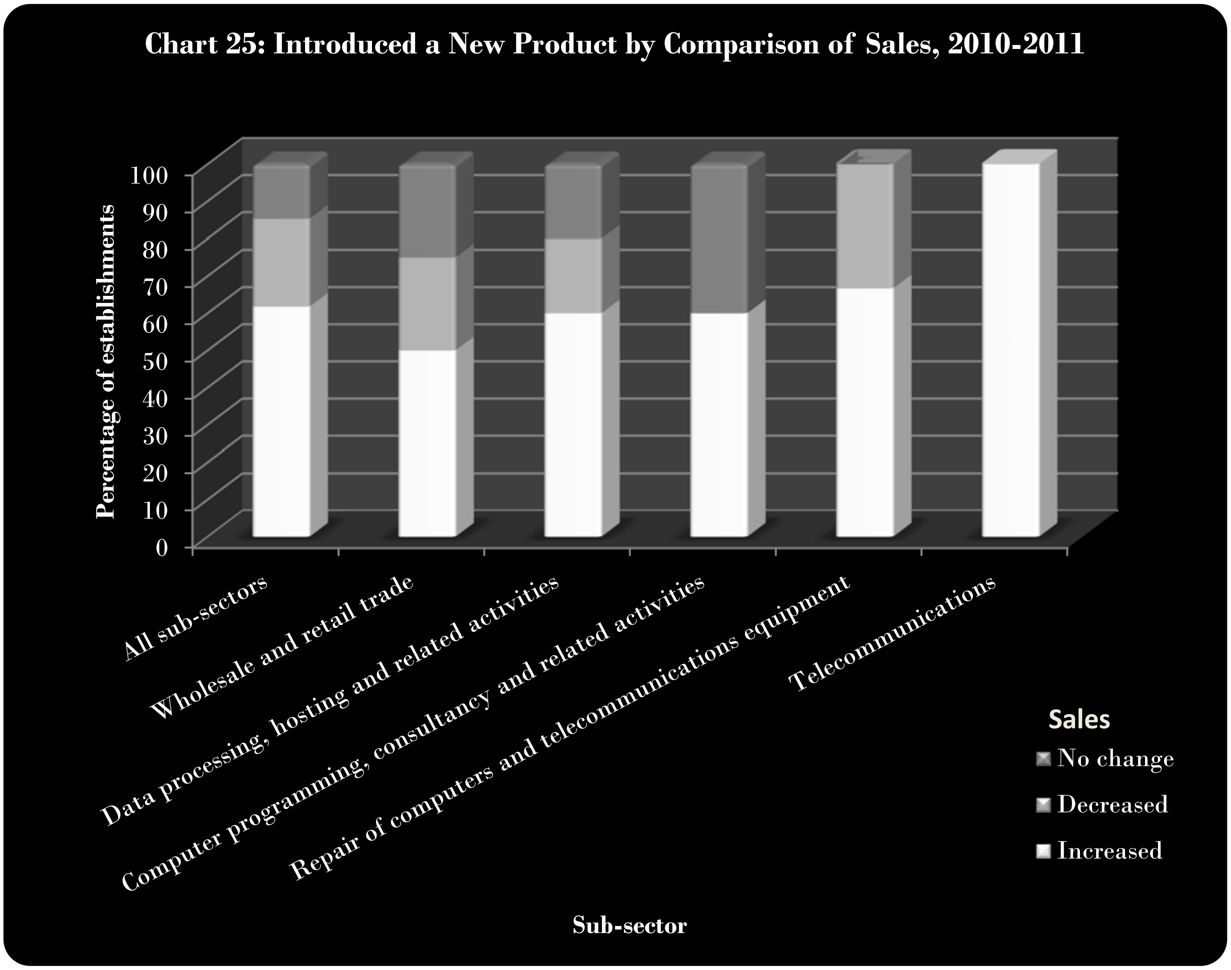


Source: Table 24

Table 36: Percentage of Establishments that Introduced a New Product by Sub-sectors and Comparison of Sales, 2010-2011

Sub-sector	Introduced a new product	Comparison of sales, 2010-2011			
		Total	Increased	Decreased	No change
		(1)	(2)	(3)	(4)
All sub-sectors	Total	100.0	61.8	23.5	14.7
	Yes	100.0	65.0	30.0	5.0
	No	100.0	57.1	14.3	28.6
Wholesale and retail trade	Total	100.0	50.0	25.0	25.0
	Yes	100.0	60.0	20.0	20.0
	No	100.0	42.9	28.6	28.6
Data processing, hosting and related activities	Total	100.0	60.0	20.0	20.0
	Yes	100.0	60.0	40.0	0.0
	No	100.0	60.0	0.0	40.0
Computer programming, consultancy and related activities	Total	100.0	60.0	0.0	40.0
	Yes	100.0	60.0	0.0	40.0
	No	0.0	0.0	0.0	0.0
Repair of computers and telecommunications equipment	Total	100.0	66.7	33.3	0.0
	Yes	100.0	50.0	50.0	0.0
	No	100.0	100.0	0.0	0.0
Telecommunications	Total	100.0	100.0	0.0	0.0
	Yes	100.0	100.0	0.0	0.0
	No	100.0	100.0	0.0	0.0

Overall, the data reveal that of the establishments that introduced a new product, a larger proportion (65%) stated that sales increased from 2010 to 2011 compared to 30% and 5% that recorded a decline and no change respectively. Of the establishments that did not introduce a new product, 57% also showed an increase in sales over the reference period while 14% registered a decrease and 29% recorded no change. A further review of the data by sub-sector shows that most establishments that did and did not introduce a new product experienced growth in sales over the period 2010-2011. However, a relatively large proportion of establishments in data processing, hosting and related activities (40%) and repair of computers and telecommunications equipment (50%) reported a decline in sales despite the introduction of a new product.



Source: Table 36

Table 37: Distribution of Establishments that Introduced a New Product by Exports, 2011

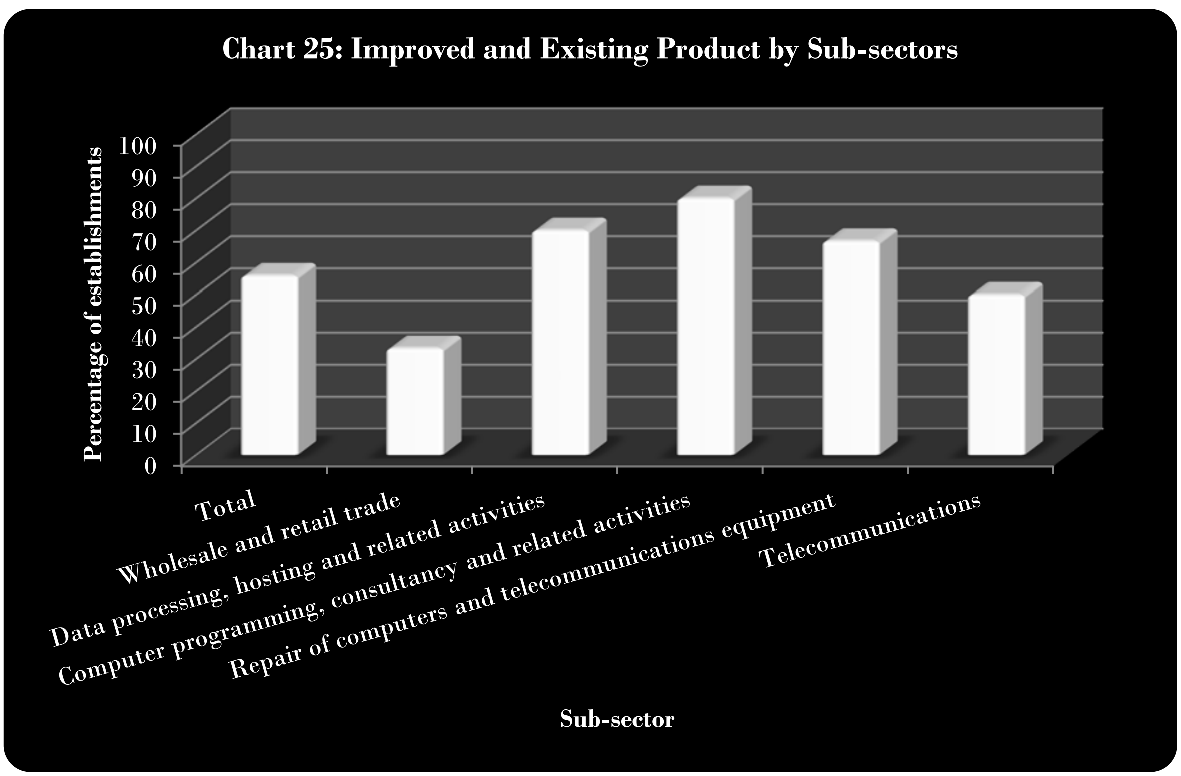
Exports	Introduced a new product					
	Total		Yes		No	
	No.	%	No.	%	No.	%
	(1)	(2)	(3)	(4)	(5)	(6)
Total	34	100.0	20	58.8	14	41.2
Less than $1m	4	100.0	3	75.0	1	25.0
Not stated	1	100.0	1	100.0	0	0.0
Not applicable	29	100.0	16	55.2	13	44.8

In terms of exports, new products were introduced by four (80%) exporting establishments, especially amongst those with exports valued less than $1m.

Table 38: Distribution of Establishments that Improved an Existing Product by Sub-sectors

Sub-sector	Improved an existing product					
	Total		Yes		No	
	No.	%	No.	%	No.	%
	(1)	(2)	(3)	(4)	(5)	(6)
Total	34	100.0	19	55.9	15	44.1
Wholesale and retail trade	12	100.0	4	33.3	8	66.7
Data processing, hosting and related activities	10	100.0	7	70.0	3	30.0
Computer programming, consultancy and related activities	5	100.0	4	80.0	1	20.0
Repair of computers and telecommunications equipment	3	100.0	2	66.7	1	33.3
Telecommunications	4	100.0	2	50.0	2	50.0

The largest proportion of establishments that improved an existing product was observed in computer programming, consultancy and related activities (80%) followed by data processing, hosting and related activities (70%), and repair of computers and telecommunications equipment (67%). A half (50%) of the establishments in telecommunications and a third (33%) in wholesale and retail trade had improved an existing product.

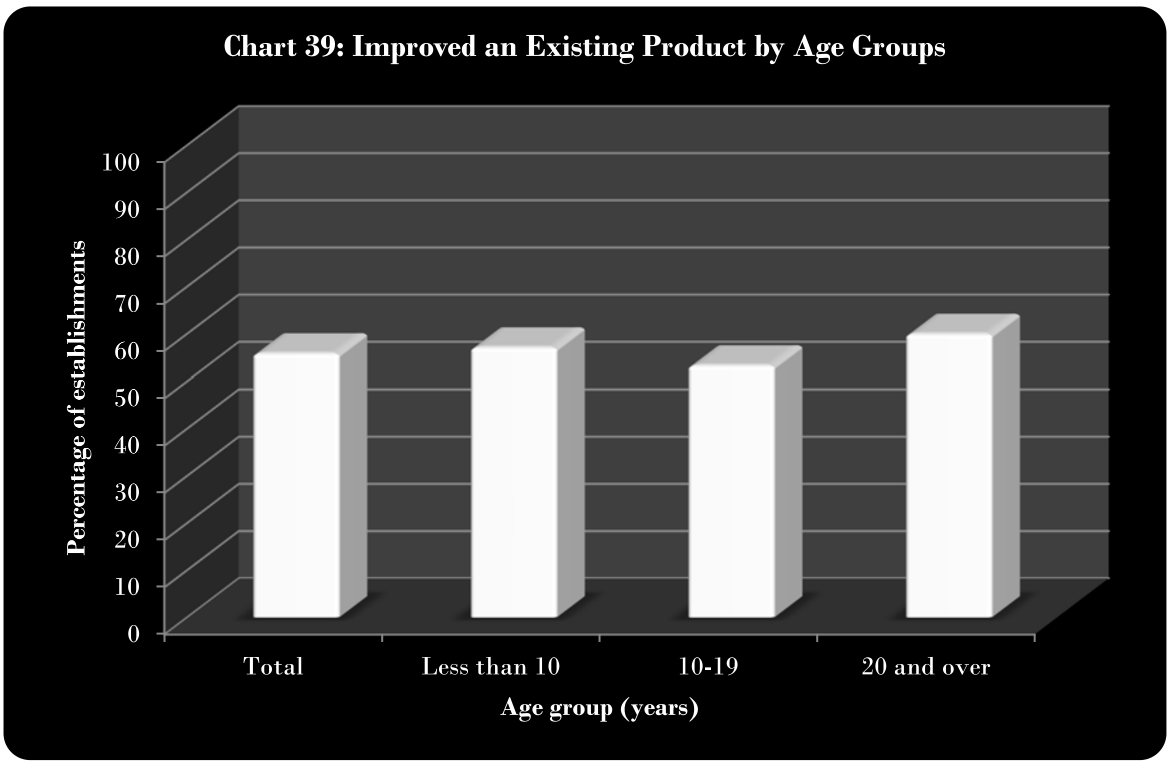


Source: Table 38

Table 39: Distribution of Establishments that Improved an Existing Product by Age Groups

Age group (years)	Improved an existing product					
	Total		Yes		No	
	No.	%	No.	%	No.	%
	(1)	(2)	(3)	(4)	(5)	(6)
Total	34	100.0	19	55.9	15	44.1
Less than 10	14	100.0	8	57.1	6	42.9
10-19	15	100.0	8	53.3	7	46.7
20 and over	5	100.0	3	60.0	2	40.0

Over a half of the establishments in each age group had improved an existing product.

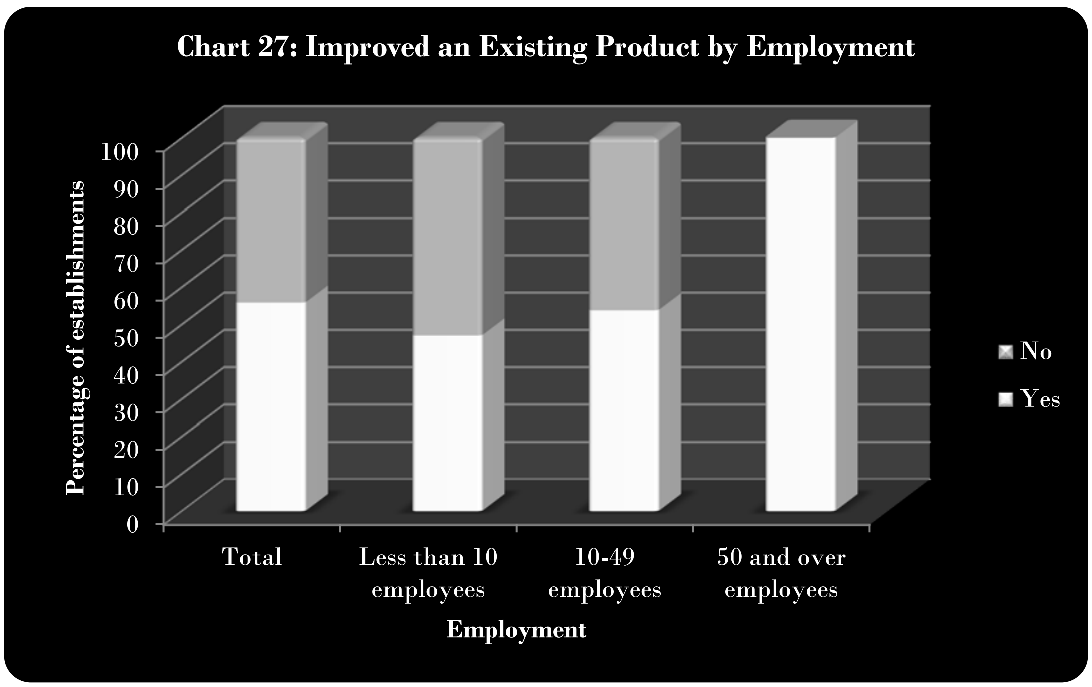


Source: Table 39

Table 40: Distribution of Establishments that Improved an Existing Product by Employment

Employment	Improved an existing product					
	Total		Yes		No	
	No.	%	No.	%	No.	%
	(1)	(2)	(3)	(4)	(5)	(6)
Total	34	100.0	19	55.9	15	44.1
Less than 10 employees	17	100.0	8	47.1	9	52.9
10-49 employees	13	100.0	7	53.8	6	46.2
50 and over employees	4	100.0	4	100.0	0	0.0

All (100%) of the responding establishments with 50 and over employees stated that they had improved an existing product compared to 54% and 47% in the 10 - 49 and less than ten employment groups respectively.



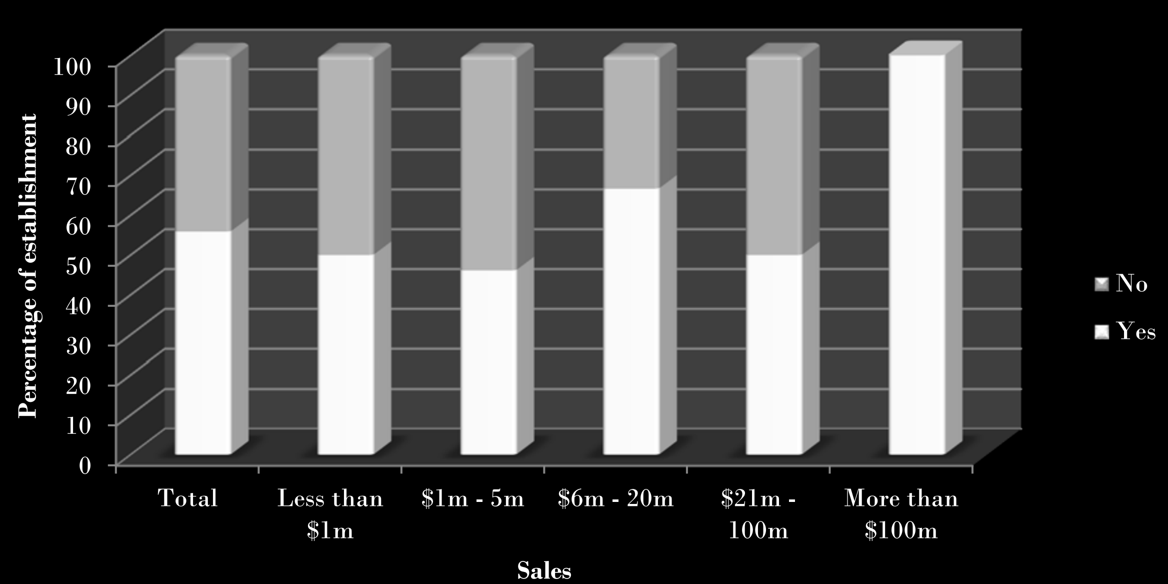
Sourced: Table 40

Table 41: Distribution of Establishments that Improved an Existing Product by Sales, 2011

Sales	Improved an existing product					
	Total		Yes		No	
	No.	%	No.	%	No.	%
	(1)	(2)	(3)	(4)	(5)	(6)
Total	34	100.0	19	55.9	15	44.1
Less than $1m	12	100.0	6	50.0	6	50.0
$1m - 5m	13	100.0	6	46.2	7	53.8
$6m - 20m	3	100.0	2	66.7	1	33.3
$21m - 100m	2	100.0	1	50.0	1	50.0
More than $100m	4	100.0	4	100.0	0	0.0

The survey results show that all (100%) the establishments that reported sales revenue of more than $100m were engaged in improvement of an existing product. Two-thirds (67%) of the respondents that generated $6m - $20m in sales along with a half (50%) in the less than $1m, and $21m - $100m sales categories improved an existing product (Table 41). In addition, of the establishments that improved an existing product a substantial percentage (63%) stated that sales increased from 2010 to 2011 while a quarter (26%) recorded a decline (Table 42). Of the establishments that did not improve an existing product, 60% showed a growth in sales over the reference period while 20% registered a decrease and no change in each case. By industry, three-quarters (75%) of the establishments in computer programming, consultancy and related activities that had improved an existing product reported an increase in sales in the 2010-2011 period compared to a larger proportion (100%) that did not engage in such activities and showed a decrease.

Chart 28: Improved an Existing Product by Sales, 2011

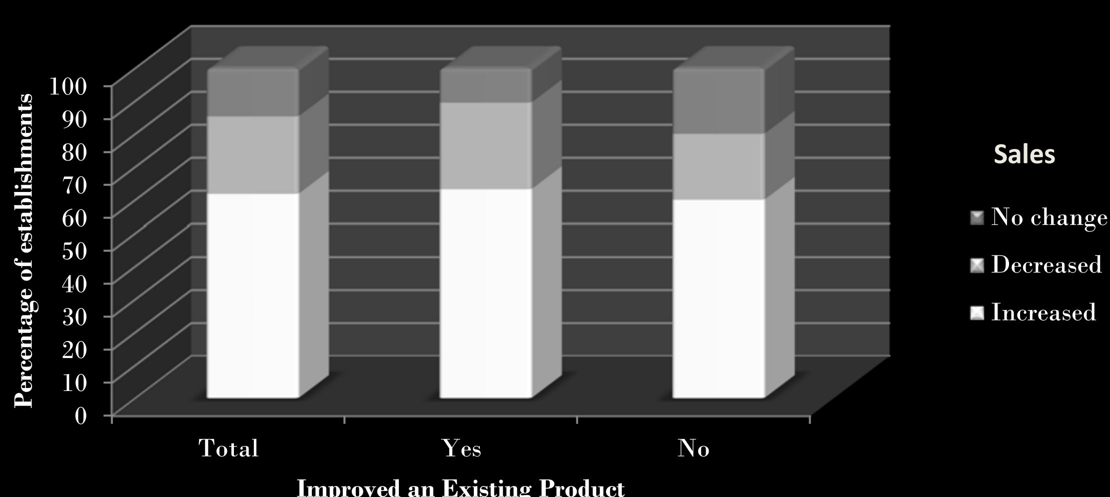


Source: Table 41

Table 42: Percentage of Establishments that Improved an Existing Product by Sub-sectors and Comparison of Sales, 2010 - 2011

Sub-sector	Improved an existing	Comparison of sales, 2010 - 2011			
		Total	Increased	Decreased	No change
		(1)	(2)	(3)	(4)
All sub-sectors	Total	100.0	61.8	23.5	14.7
	Yes	100.0	63.2	26.3	10.5
	No	100.0	60.0	20.0	20.0
Wholesale and retail trade	Total	100.0	50.0	25.0	25.0
	Yes	100.0	50.0	25.0	25.0
	No	100.0	50.0	25.0	25.0
Data processing, hosting and related activities	Total	100.0	60.0	20.0	20.0
	Yes	100.0	57.1	28.6	14.3
	No	100.0	66.7	0.0	33.3
Computer programming, consultancy and related activities	Total	100.0	60.0	40.0	0.0
	Yes	100.0	75.0	25.0	0.0
	No	100.0	0.0	100.0	0.0
Repair of computers and telecommunications equipment	Total	100.0	66.7	33.3	0.0
	Yes	100.0	50.0	50.0	0.0
	No	100.0	100.0	0.0	0.0
Telecommunications	Total	100.0	100.0	0.0	0.0
	Yes	100.0	100.0	0.0	0.0
	No	100.0	100.0	0.0	0.0

Chart 29: Improved an Existing Product by Comparison of Sales 2010-2011 All Sub-sectors

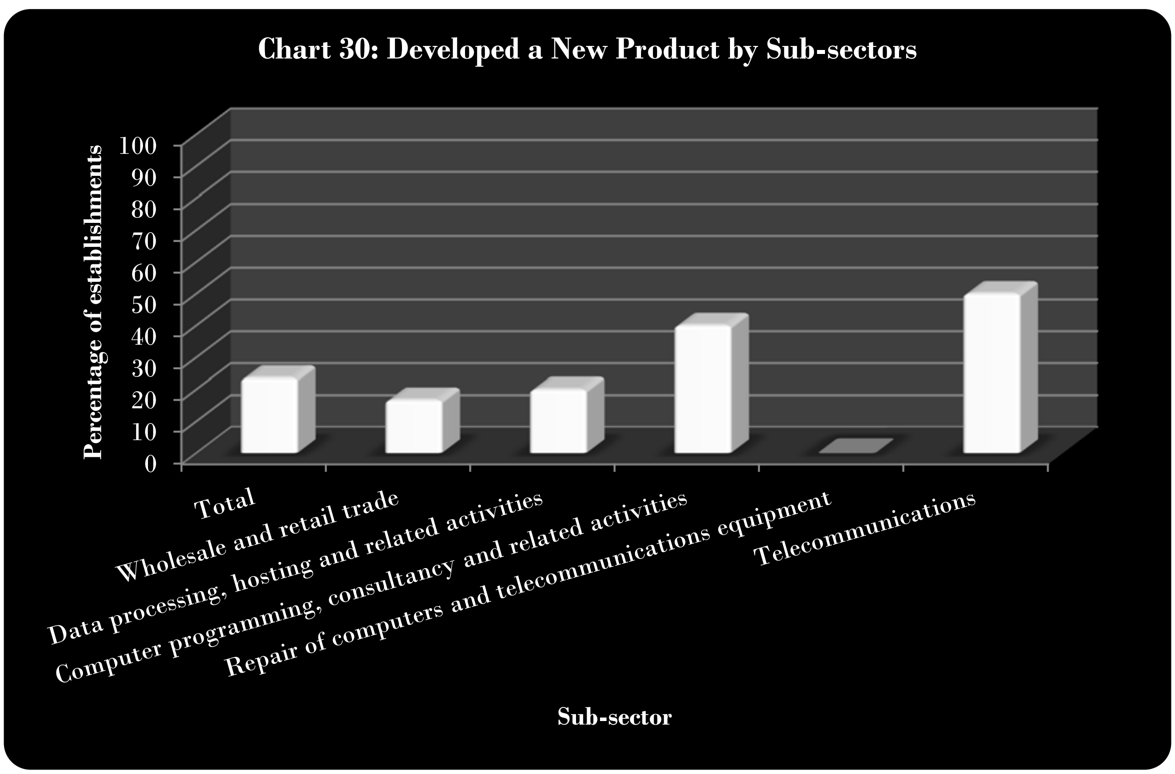


Source: Table 42

Table 43: Distribution of Establishments that Developed a New Product by Sub-sectors

Sub-sector	Developed a new product					
	Total		Yes		No	
	No.	%	No.	%	No.	%
	(1)	(2)	(3)	(4)	(5)	(6)
Total	34	100.0	8	23.5	26	76.5
Wholesale and retail trade	12	100.0	2	16.7	10	83.3
Data processing, hosting and related activities	10	100.0	2	20.0	8	80.0
Computer programming, consultancy and related activities	5	100.0	2	40.0	3	60.0
Repair of computers and telecommunications equipment	3	100.0	0	0.0	3	100.0
Telecommunications	4	100.0	2	50.0	2	50.0

Overall, the majority (77%) of establishments in the ICT sector was not engaged in new product development. By sub-sector, the highest percentage (50%) of establishments that developed a new product was in telecommunications followed by computer programming, consultancy and related activities (40%).

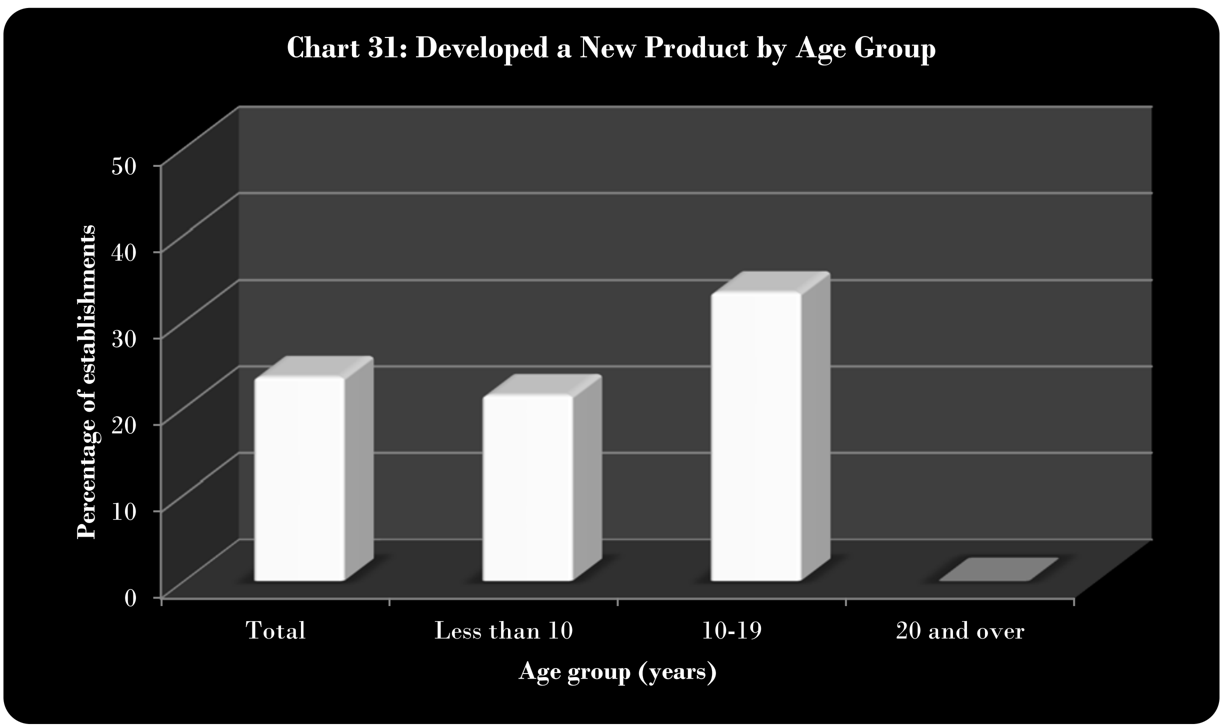


Source: Table 43

Table 44: Distribution of Establishments that Developed a New Product by Age Group

Age group (years)	Developed a new product					
	Total		Yes		No	
	No.	%	No.	%	No.	%
	(1)	(2)	(3)	(4)	(5)	(6)
Total	34	100.0	8	23.5	26	76.5
Less than 10	14	100.0	3	21.4	11	78.6
10-19	15	100.0	5	33.3	10	66.7
20 and over	5	100.0	0	0.0	5	100.0

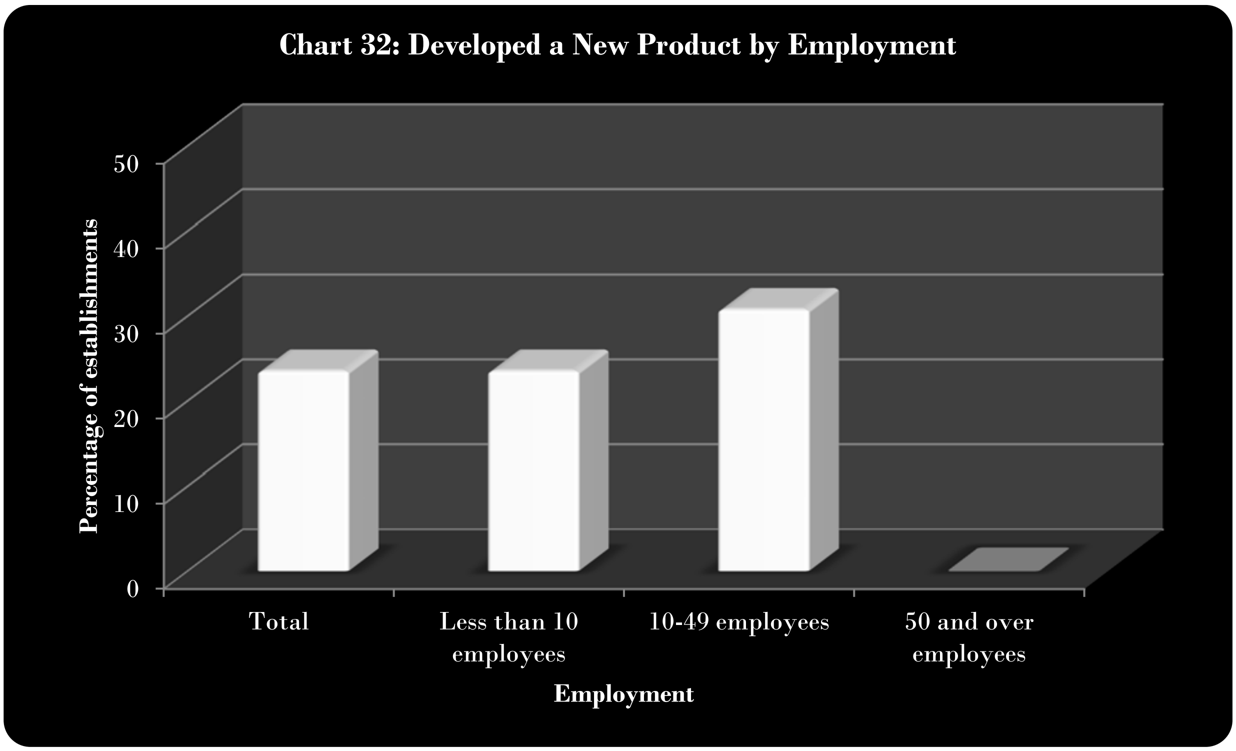
The data show that none of the older establishments 20 years and over, and the larger ones with 50 and more employees had developed a new product (Tables 44 and 45). However, product development innovation was reported by establishments aged 10 - 19 (33%) and under 10 (21%), and among those with 10 - 49 employees (31%) and less than 10 employees (24%).



Source: Table 44

Table 45: Distribution of Establishments that Developed a New Product by Employment

Employment	Developed a new product					
	Total		Yes		No	
	No.	%	No.	%	No.	%
	(1)	(2)	(3)	(4)	(5)	(6)
Total	34	100.0	8	23.5	26	76.5
Less than 10 employees	17	100.0	4	23.5	13	76.5
10-49 employees	13	100.0	4	30.8	9	69.2
50 and over employees	4	100.0	0	0.0	4	100.0

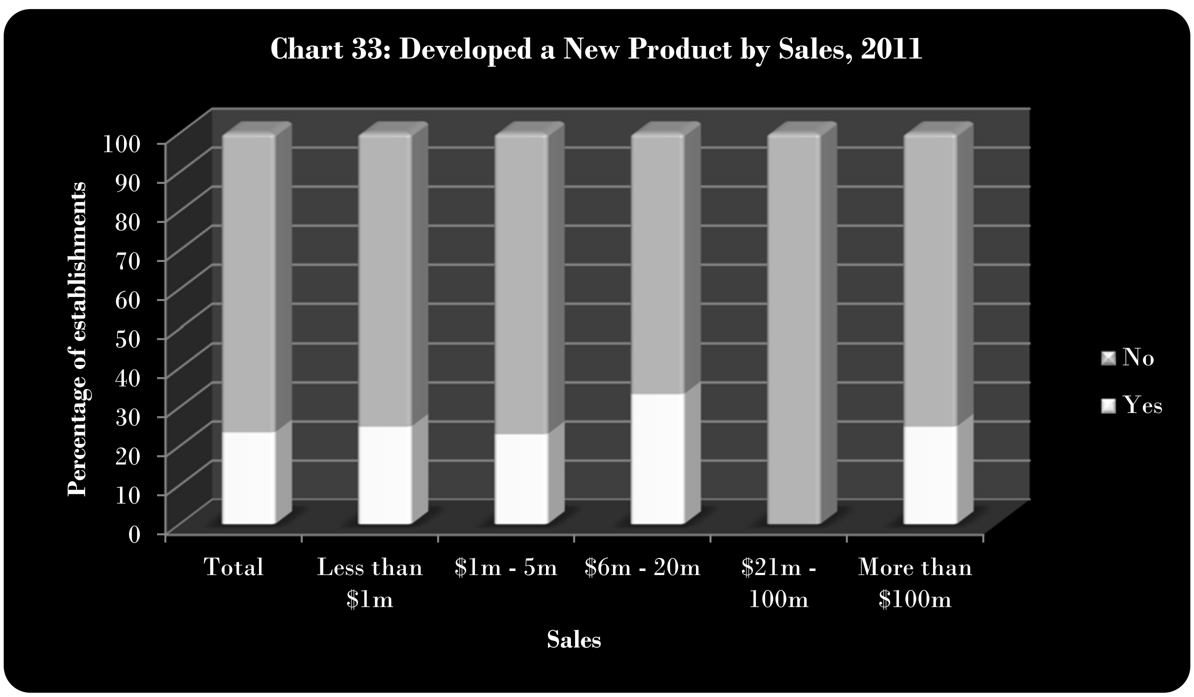


Source: Table 45

Table 46: Distribution of Establishments that Developed a New Product by Sales, 2011

Sales	Developed a new product					
	Total		Yes		No	
	No.	%	No.	%	No.	%
	(1)	(2)	(3)	(4)	(5)	(6)
Total	34	100.0	8	23.5	26	76.5
Less than $1m	12	100.0	3	25.0	9	75.0
$1m - 5m	13	100.0	3	23.1	10	76.9
$6m - 20m	3	100.0	1	33.3	2	66.7
$21m - 100m	2	100.0	0	0.0	2	100.0
More than $100m	4	100.0	1	25.0	3	75.0

A third (33%) of the establishments that generated between $6m - $20m in sales in 2011 developed a new product while a similar proportion of respondents in the less than $1m (25%), more than $100m (25%) and $1m - $5m (23%) sales categories did likewise (Table 46). All of the establishments (100%) that reported sales revenue in the range of $21m - $100m had not developed a new product. In addition, of the establishments that developed a new product, three-quarters (75%) stated that sales increased from 2010 to 2011 while a quarter (25%) recorded a decline (Table 47). Of the establishments that did not develop a new product, 58% showed a growth in sales over the reference period while 23% registered a decrease and 19% experienced no change.

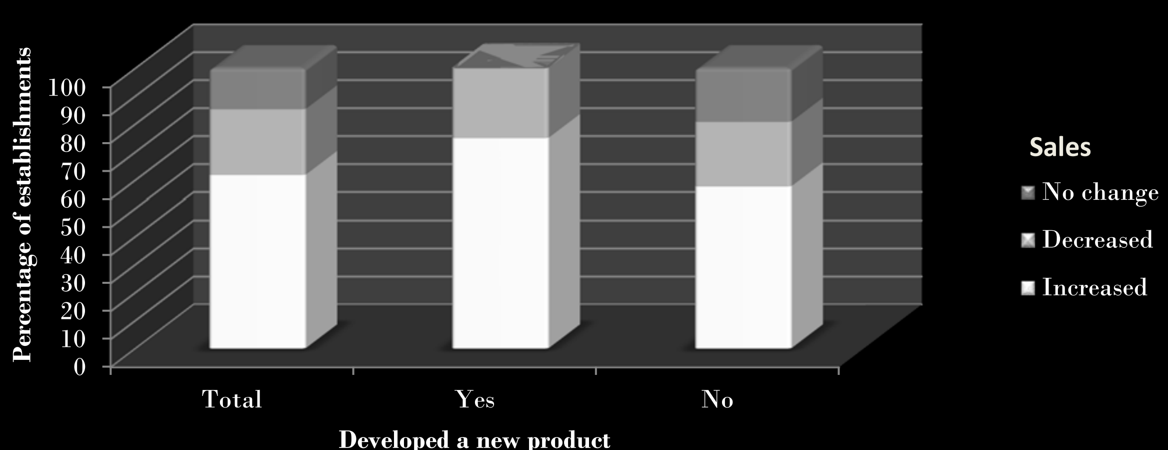


Source: Table 46

Table 47: Percentage of Establishments that Developed a New Product by Sub-sectors and Comparison of Sales, 2010 - 2011

Sub-sector	Developed a new product	Comparison of sales, 2010 - 2011			
		Total	Increased	Decreased	No change
		(1)	(2)	(3)	(4)
All sub-sectors	Total	100.0	61.8	23.5	14.7
	Yes	100.0	75.0	25.0	0.0
	No	100.0	57.7	23.1	19.2
Wholesale and retail trade	Total	100.0	50.0	25.0	25.0
	Yes	100.0	50.0	50.0	0.0
	No	100.0	50.0	20.0	30.0
Data processing, hosting and related activities	Total	100.0	60.0	20.0	20.0
	Yes	100.0	100.0	0.0	0.0
	No	100.0	50.0	25.0	25.0
Computer programming, consultancy and related activities	Total	100.0	60.0	40.0	0.0
	Yes	100.0	50.0	50.0	0.0
	No	100.0	66.7	33.3	0.0
Repair of computers and telecommunications equipment	Total	100.0	66.7	33.3	0.0
	Yes	0.0	0.0	0.0	0.0
	No	100.0	66.7	33.3	0.0
Telecommunications	Total	100.0	100.0	0.0	0.0
	Yes	100.0	100.0	0.0	0.0
	No	100.0	100.0	0	0.0

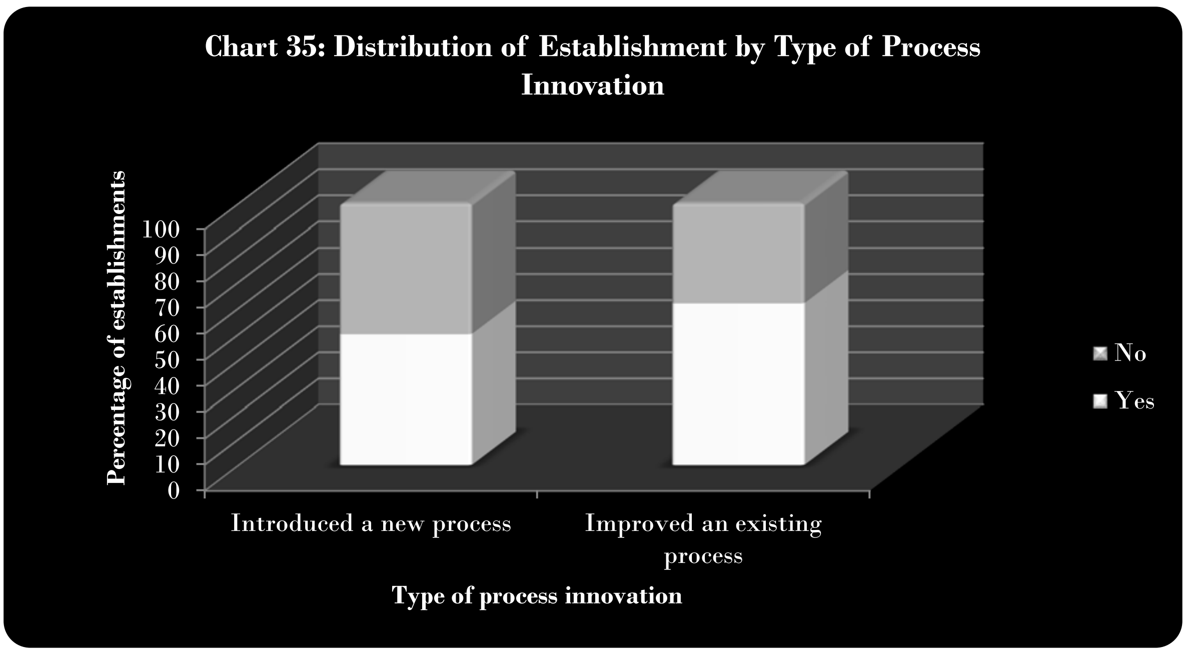
Chart 34: Developed a New Product by Sub-sectors and Comparison of Sales, 2010-2011
All Sub-sectors



Source: Table 47

Table 48: Distribution of Establishments by Type of Process Innovation						
	Total		Yes		No	
Type of process innovation	No.	%	No.	%	No.	%
	(1)	(2)	(3)	(4)	(5)	(6)
Introduced a new process	34	100.0	17	50.0	17	50.0
Improved an existing process	34	100.0	21	61.8	13	38.2

Table 48 reveals that of the 34 establishments of the ICT sector that responded to the survey, a substantial percentage indicated that they were engaged in innovation of improving an existing process (62%) and introducing a new process (50%) during the period 2010-2011.

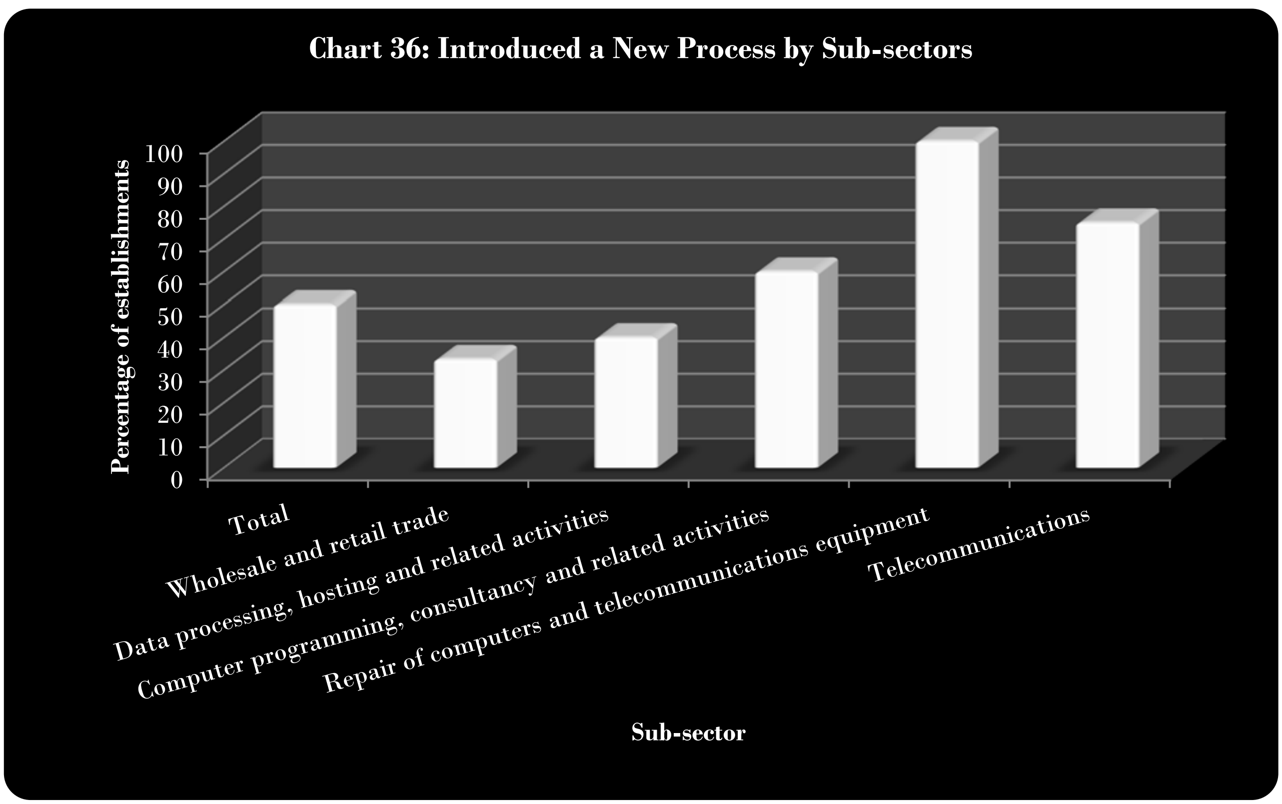


Source: Table 48

Table 49: Distribution of Establishments that Introduced a New Process by Sub-sectors

Sub-sector	Introduced a new process					
	Total		Yes		No	
	No.	%	No.	%	No.	%
	(1)	(2)	(3)	(4)	(5)	(6)
Total	34	100.0	17	50.0	17	50.0
Wholesale and retail trade	12	100.0	4	33.3	8	66.7
Data processing, hosting and related activities	10	100.0	4	40.0	6	60.0
Computer programming, consultancy and related activities	5	100.0	3	60.0	2	40.0
Repair of computers and telecommunications equipment	3	100.0	3	100.0	0	0.0
Telecommunications	4	100.0	3	75.0	1	25.0

The highest percentage (100%) of establishments that introduced a new process was observed in the repair of computers and telecommunications equipment sub-sector followed by telecommunications (75%) and computer programming, consultancy and related activities (60%). A substantial percentage of respondents in wholesale and retail trade (67%) and data processing, hosting and related activities (60%) indicated that they did not introduce new processes.



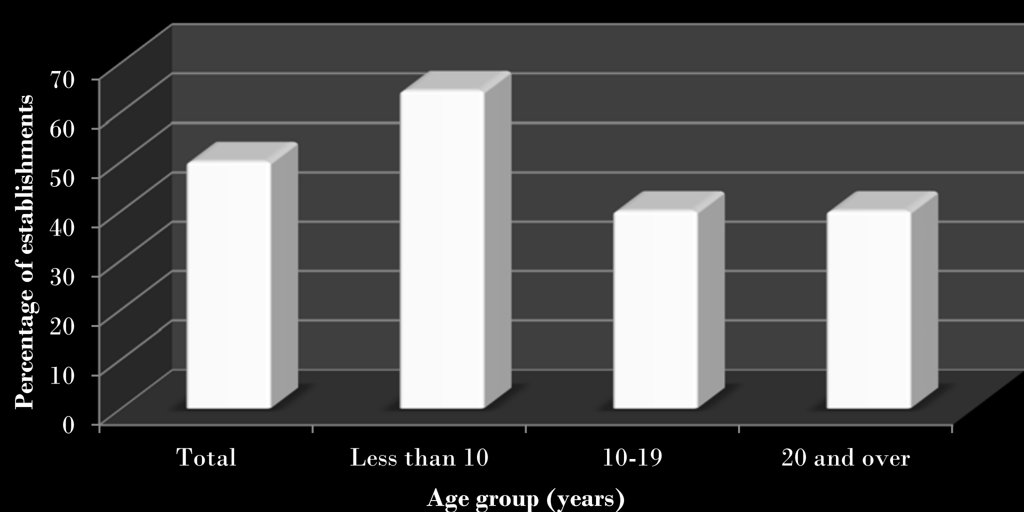
Source: Table 49

Table 50: Distribution of Establishments that Introduced a New Process by Age Group

Age group (years)	Introduced a new process					
	Total		Yes		No	
	No.	%	No.	%	No.	%
	(1)	(2)	(3)	(4)	(5)	(6)
Total	34	100.0	17	50.0	17	50.0
Less than 10	14	100.0	9	64.3	5	35.7
10-19	15	100.0	6	40.0	9	60.0
20 and over	5	100.0	2	40.0	3	60.0

A larger proportion (64%) of establishments that introduced a new process was observed among those in operation for less than 10 years compared to 40% in both the 10 - 19 and 20 and over age cohorts (Table 50). A half of the establishment in each case with less than ten employees (53%) and 10 - 49 employees (50%) introduced a new process compared to one-third (33%) of the larger establishments with 50 and more employees (Table 51).

Chart 37: Introduced a New Process by Age Group

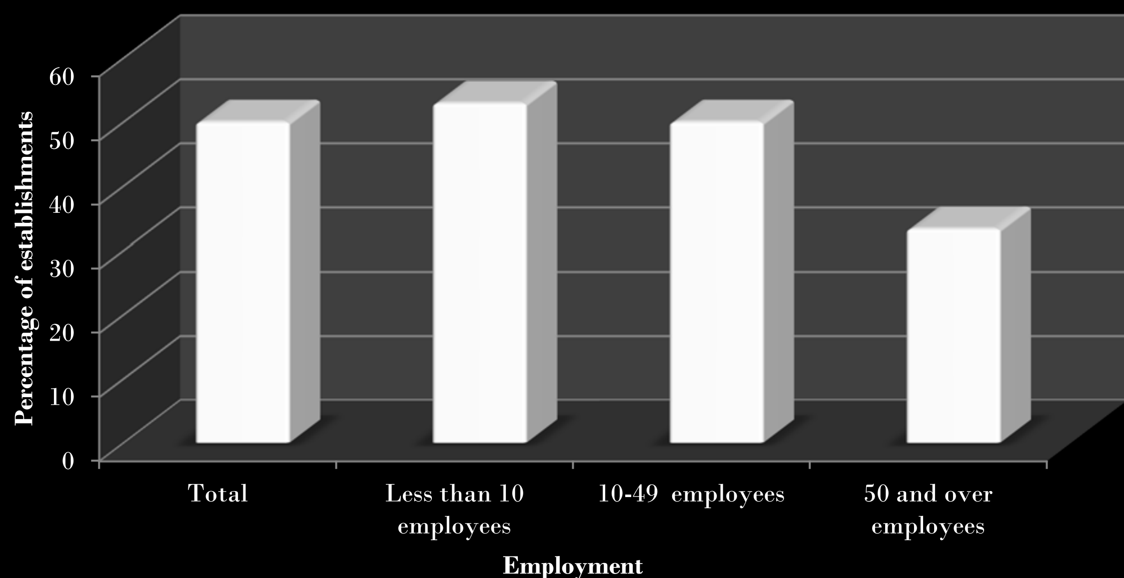


Source: Table 50

Table 51: Distribution of Establishments that Introduced a New Process by Employment

Employment	Introduced a new process					
	Total		Yes		No	
	No.	%	No.	%	No.	%
	(1)	(2)	(3)	(4)	(5)	(6)
Total	34	100.0	17	50.0	17	50.0
Less than 10 employees	17	100.0	9	52.9	8	47.1
10-49 employees	14	100.0	7	50.0	7	50.0
50 and over employees	3	100.0	1	33.3	2	66.7

Chart 38: Introduced a New Process by Employment

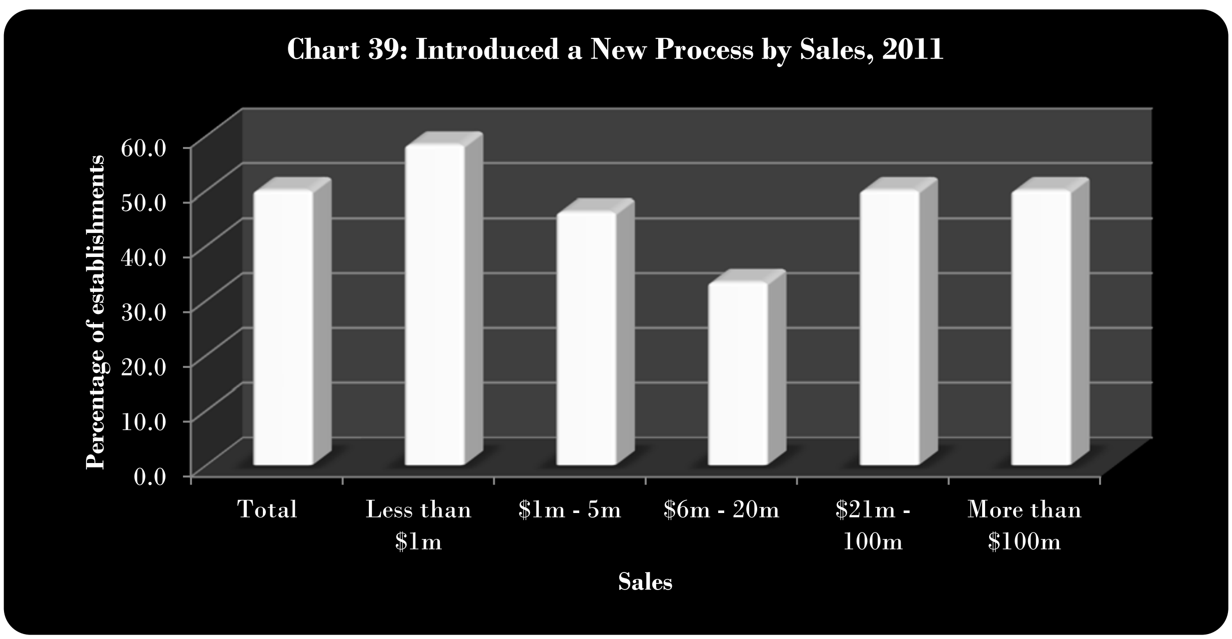


Source: Table 51

Table 52: Distribution of Establishments that Introduced a New Process by Sales, 2011

Sales	Introduced a new process					
	Total		Yes		No	
	No.	%	No.	%	No.	%
	(1)	(2)	(3)	(4)	(5)	(6)
Total	34	100.0	17	50.0	17	50.0
Less than $1m	12	100.0	7	58.3	5	41.7
$1m - 5m	13	100.0	6	46.2	7	53.8
$6m - 20m	3	100.0	1	33.3	2	66.7
$21m - 100m	2	100.0	1	50.0	1	50.0
More than $100m	4	100.0	2	50.0	2	50.0

The highest percentage (58%) of the respondents that introduced a new product recorded less than $1m in sales in 2011. A half (50%) of the establishments in each case of the higher sales ranges, $21m - $100m, and more than $100m had introduced a new process (Table 52). Of the 17 establishments that introduced a new process, two-thirds (65%) indicated that sales had increased over the period 2010-2011 while a quarter (24%) reported decreases and 12% experienced no change (Table 53). Three-fifths (59%) of the establishments that did not introduced a new process also recorded growth in sales over the reference period while 24% and 18% experienced declines and no change in sales respectively.

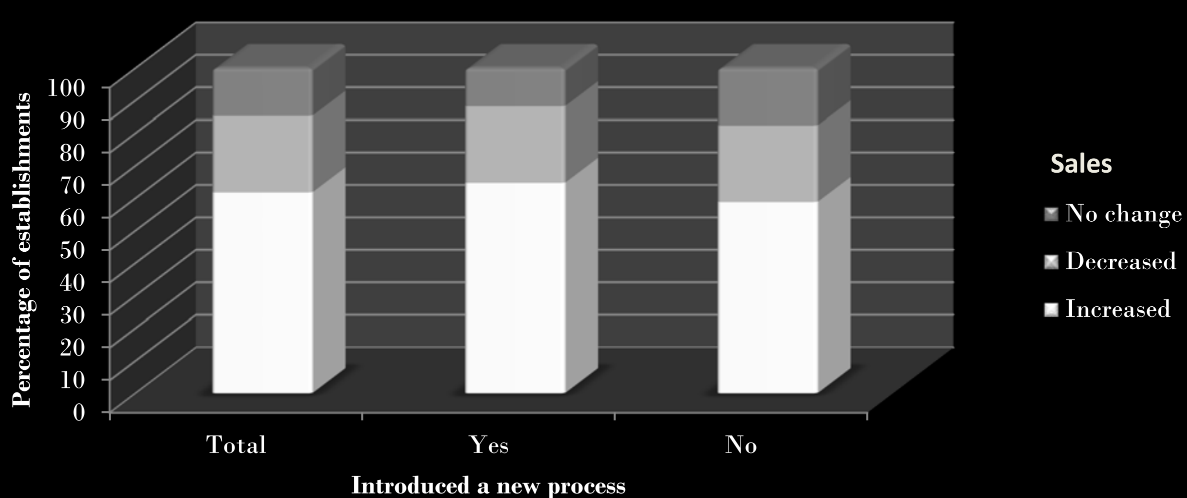


Source: Table 52

Table 53: Percentage of Establishments that Introduced a New Process by Sub-sectors and Comparison of Sales, 2010 - 2011

Sub-sector	Introduced a new	Comparison of sales, 2010 - 2011			
		Total	Increased	Decreased	No change
		(1)	(2)	(3)	(4)
All sub-sectors	Total	100.0	61.8	23.5	14.7
	Yes	100.0	64.7	23.5	11.8
	No	100.0	58.8	23.5	17.6
Wholesale and retail trade	Total	100.0	50.0	25.0	25.0
	Yes	100.0	25.0	25.0	50.0
	No	100.0	62.5	25.0	12.5
Data processing, hosting and related activities	Total	100.0	60.0	20.0	20.0
	Yes	100.0	75.0	25.0	0.0
	No	100.0	50.0	16.7	33.3
Computer programming, consultancy and related activities	Total	100.0	60.0	40.0	0.0
	Yes	100.0	66.7	33.3	0.0
	No	100.0	50.0	50.0	0.0
Repair of computers and telecommunications equipment	Total	100.0	66.7	33.3	0.0
	Yes	100.0	66.7	33.3	0.0
	No	0.0	0.0	0.0	0.0
Telecommunications	Total	100.0	100.0	0.0	0.0
	Yes	100.0	100.0	0.0	0.0
	No	100.0	100.0	0.0	0.0

Chart 40: Introduced a New Process by Comparison of Sales, 2010-2011
All Sub-sectors



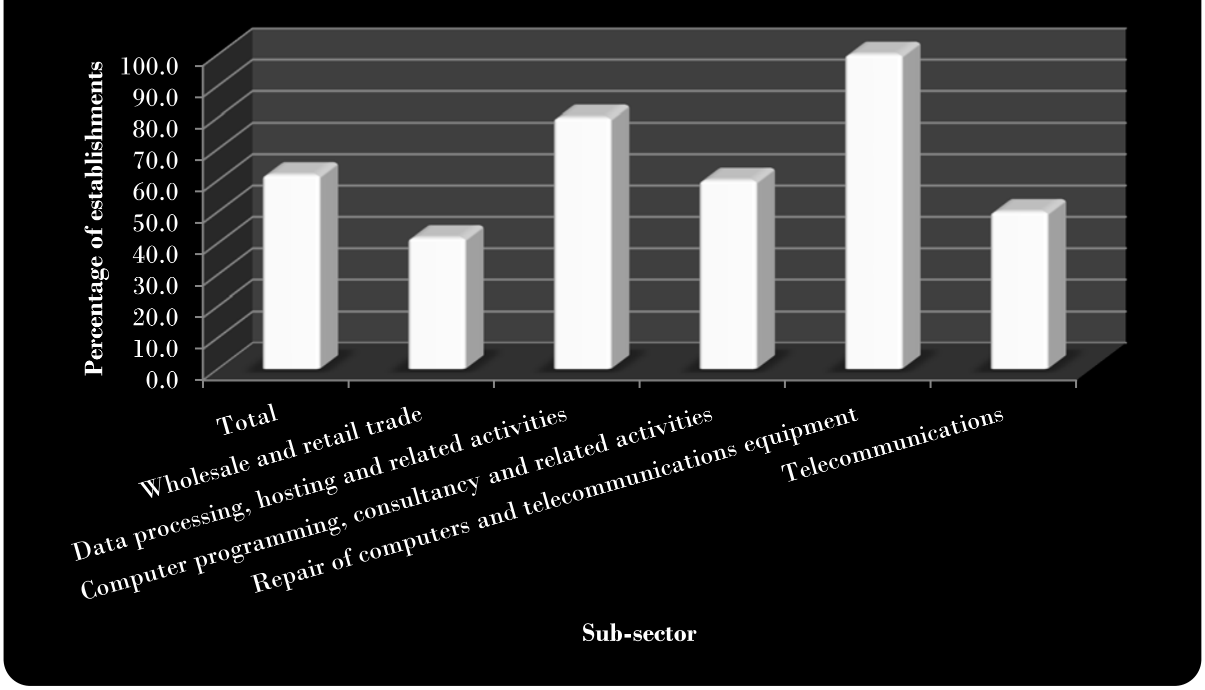
Source: Table 53

Table 54: Distribution of Establishments that Improved an Existing Process by Sub-sectors

Sub-sector	Improved an existing process					
	Total		Yes		No	
	No.	%	No.	%	No.	%
	(1)	(2)	(3)	(4)	(5)	(6)
Total	34	100.0	21	61.8	13	38.2
Wholesale and retail trade	12	100.0	5	41.7	7	58.3
Data processing, hosting and related activities	10	100.0	8	80.0	2	20.0
Computer programming, consultancy and related activities	5	100.0	3	60.0	2	40.0
Repair of computers and telecommunications equipment	3	100.0	3	100.0	0	0.0
Telecommunications	4	100.0	2	50.0	2	50.0

A half or more of the establishments in all sub-sectors except wholesale and retail trade had improved an existing product.

Chart 41: Improved an Existing Process by Sub-sectors

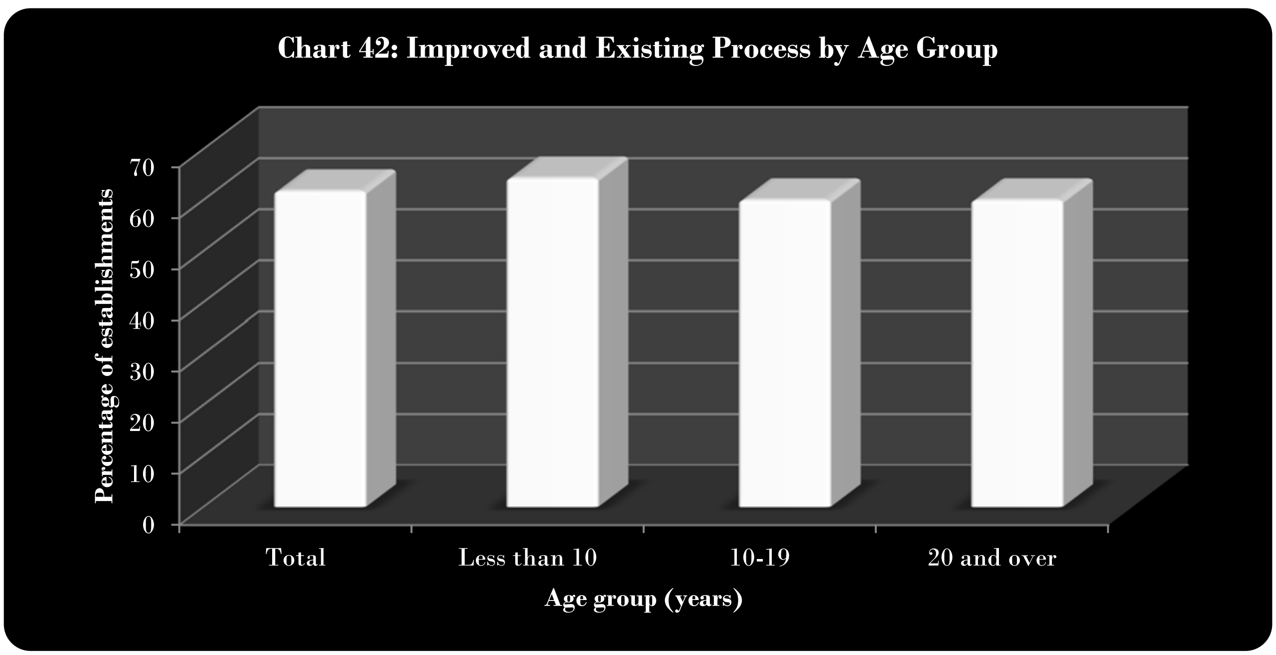


Source: Table 54

Table 55: Distribution of Establishments that Improved an Existing Process by Age Group

Age group (years)	Improved an existing process					
	Total		Yes		No	
	No.	%	No.	%	No.	%
	(1)	(2)	(3)	(4)	(5)	(6)
Total	34	100.0	21	61.8	13	38.2
Less than 10	14	100.0	9	64.3	5	35.7
10-19	15	100.0	9	60.0	6	40.0
20 and over	5	100.0	3	60.0	2	40.0

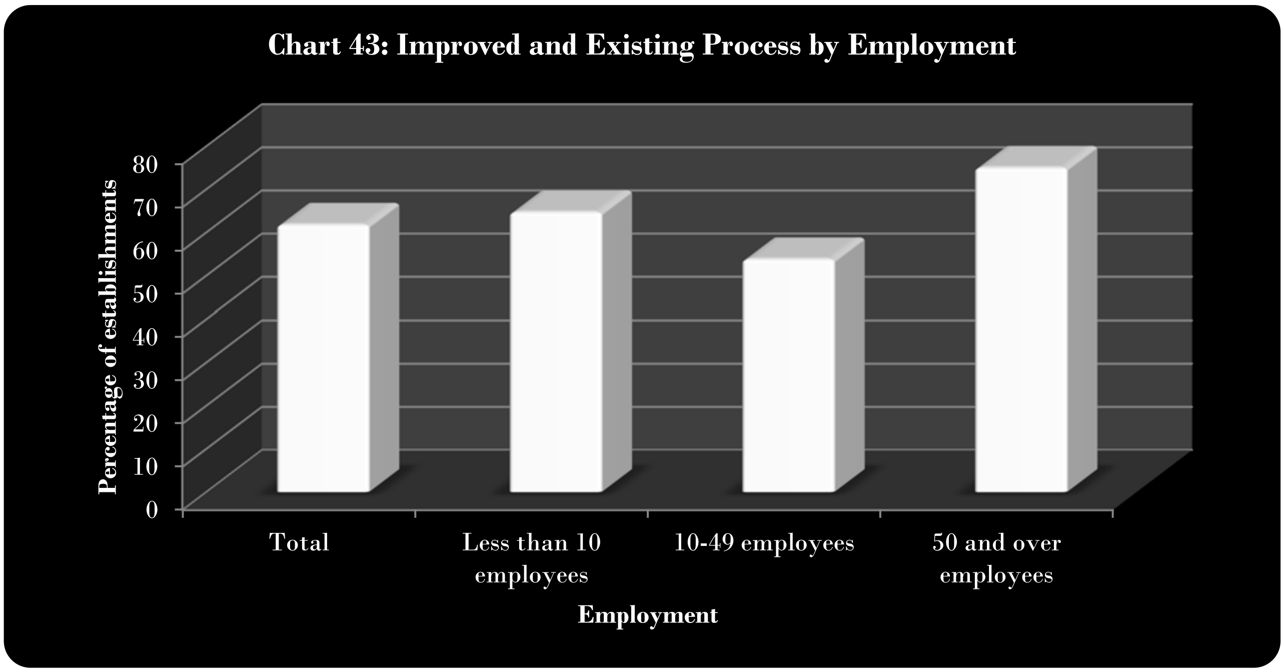
Overall (62%), and by the various periods in operation a similar proportion of establishments had improved an existing product (Table 55). However, stratification of the data by employment group reveals that a higher percentage (75%) of larger establishments with 50 and over employees was engaged in this type of process innovation compared to respondents in the other employment categories (Table 56).



Source: Table 55

Table 56: Distribution of Establishments that Improved an Existing Process by Employment

Employment	Improved an existing process					
	Total		Yes		No	
	No.	%	No.	%	No.	%
	(1)	(2)	(3)	(4)	(5)	(6)
Total	34	100.0	21	61.8	13	38.2
Less than 10 employees	17	100.0	11	64.7	6	35.3
10-49 employees	13	100.0	7	53.8	6	46.2
50 and over employees	4	100.0	3	75.0	1	25.0

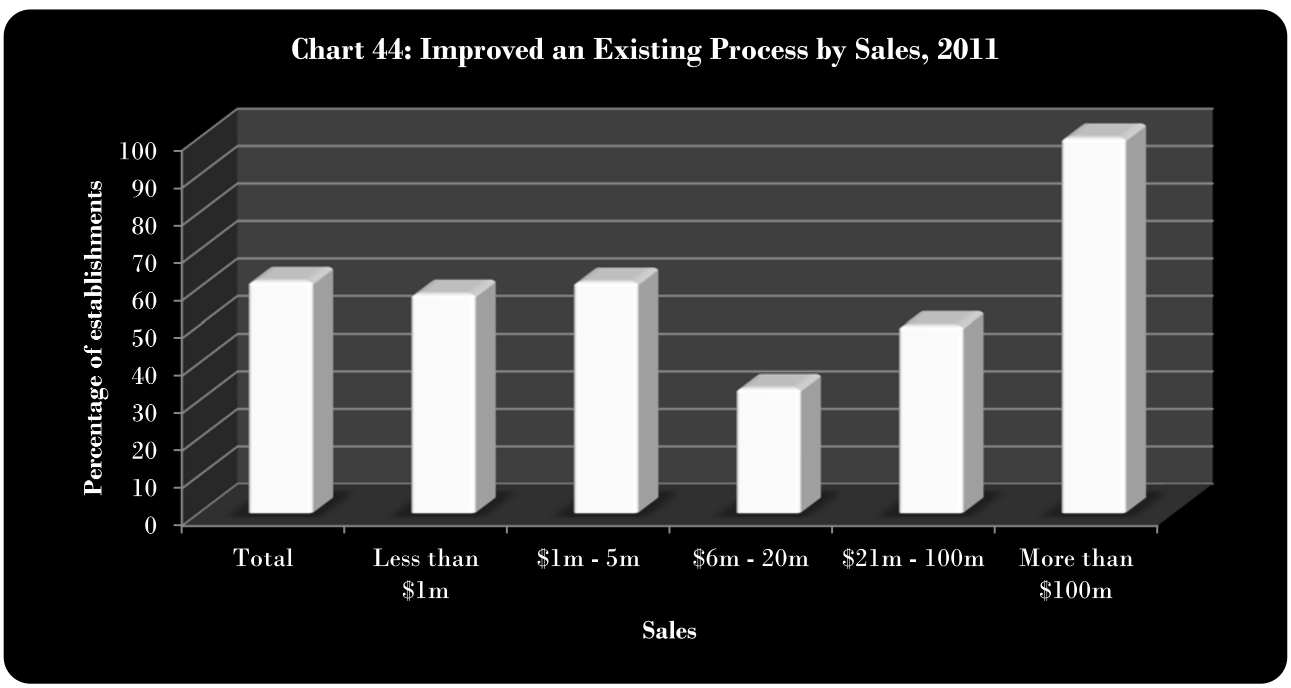


Source: Table 56

Table 57: Distribution of Establishments that Improved an Existing Process by Sales, 2011

Sales	Improved an existing process					
	Total		Yes		No	
	No.	%	No.	%	No.	%
	(1)	(2)	(3)	(4)	(5)	(6)
Total	34	100.0	21	61.8	13	38.2
Less than $1m	12	100.0	7	58.3	5	41.7
$1m - 5m	13	100.0	8	61.5	5	38.5
$6m - 20m	3	100.0	1	33.3	2	66.7
$21m - 100m	2	100.0	1	50.0	1	50.0
More than $100m	4	100.0	4	100.0	0	0.0

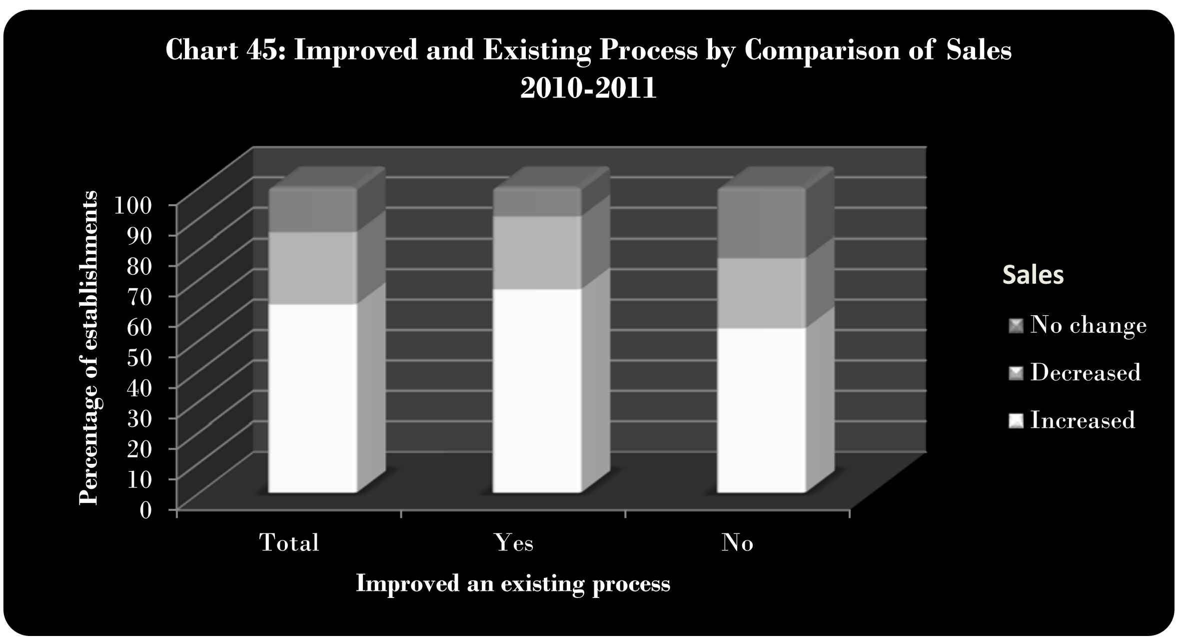
Overall, in terms of sales, a half or more of the establishments in each sales categories, except $6m - $20m improved existing processes in 2011 (Table 57). All (100%) of the establishments in the highest sales group of more than $100m had improved an existing process. Two-thirds (67%) of the establishments that improved existing processes showed a growth in sales over the period 2010-2011 while a quarter (24%) recorded a decline and 10% experienced no change (Table 58). Of the establishments that did not improved an existing process, over a half (54%) registered increases in sales over the reference period while 23% in each case reported a decline and no change. A further review of the data by sub-sector shows that three-fifths (60%) or more of the establishments in each sub-sector that improved existing processes also experienced growth in sales.



Source: Table 57

Table 58: Percentage of Establishments that Improved an Existing Process by Sub-sectors and Comparison of Sales, 2010 - 2011

Sub-sector	Improved an existing process	Comparison of sales, 2010 - 2011			
		Total	Increased	Decreased	No change
		(1)	(2)	(3)	(4)
All sub-sectors	Total	100.0	61.8	23.5	14.7
	Yes	100.0	66.7	23.8	9.5
	No	100.0	53.8	23.1	23.1
Wholesale and retail trade	Total	100.0	50.0	25.0	25.0
	Yes	100.0	60.0	20.0	20.0
	No	100.0	42.9	28.6	28.6
Data processing, hosting and related activities	Total	100.0	60.0	20.0	20.0
	Yes	100.0	62.5	25.0	12.5
	No	100.0	50.0	0.0	50.0
Computer programming, consultancy and related activities	Total	100.0	60.0	40.0	0.0
	Yes	100.0	66.7	33.3	0.0
	No	100.0	50.0	50.0	0.0
Repair of computers and telecommunications equipment	Total	100.0	66.7	33.3	0.0
	Yes	100.0	66.7	33.3	0.0
	No	0.0	0.0	0.0	0.0
Telecommunications	Total	100.0	100.0	0.0	0.0
	Yes	100.0	100.0	0.0	0.0
	No	100.0	100.0	0.0	0.0



Source: Table 58

Table 59: Distribution of Exporting Establishments that Improved an Existing Process

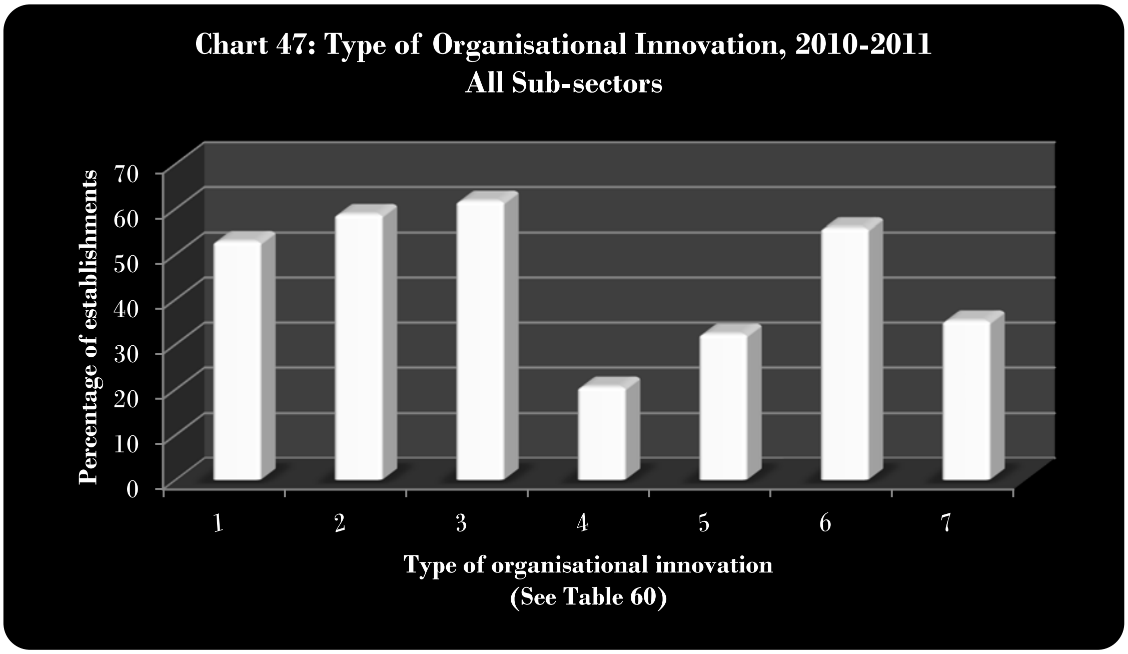
Value of exports	Improved an existing process					
	Total		Yes		No	
	No.	%	No.	%	No.	%
	(1)	(2)	(3)	(4)	(5)	(6)
Total	5	100.0	3	60.0	2	40.0
Less than $1m	4	100.0	3	75.0	1	25.0
Not stated	1	100.0	0	0.0	1	100.0

Table 59 reveals that three (60%) of the exporting establishments, mainly with the value of exports of less than $1m (75%), were engaged in the improvement of an existing process.

Table 60: Distribution of Establishments by Type of Organisational Innovation and Sub-sectors 2010-2011

Type of organisational innovation		Sub-sector											
		All sub-sectors		Whole-sale and retail trade		Data process-ing, hosting and related activities		Computer programm-ing, consultancy and related activities		Repair of computers and telecom-munications equipment		Telecom-munica-tions	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1	Introduced changes in management systems and techniques	18	52.9	6	50.0	6	60.0	2	40.0	2	66.7	2	50.0
2	Introduced/improved quality assurance systems	20	58.8	5	41.7	9	90.0	2	40.0	2	66.7	2	50.0
3	Introduced/improved maintenance routines and systems	21	61.8	5	41.7	7	70.0	3	60.0	3	100.0	3	75.0
4	Improved plant layout	7	20.6	3	25.0	0	0.0	1	20.0	1	33.3	2	50.0
5	Introduced/improved waste management procedures	11	32.4	3	25.0	4	40.0	2	40.0	1	33.3	1	25.0
6	Introduced/expanded in-house training programme	19	55.9	4	33.3	9	90.0	3	60.0	1	33.3	2	50.0
7	Implemented major changes in organisational strategy and structure	12	35.3	3	25.0	4	40.0	2	40.0	0	0.0	3	75.0

Over a half of the respondents was engaged in the following types of organisational innovation: introduced/improved maintenance routines and systems (62%); introduced/improved quality assurance systems (59%); introduced/expanded in-house training programme (56%); and introduced changes in management systems and techniques (53%). Approximately a third of the establishments implemented major changes in organisational strategy and structure (35%) and introduced/improved waste management procedures (32%) while one-fifth (21%) improved plant layout. By sub-sector, the data reveal that a significant majority of establishments in data processing, hosting and related activities (90%) had introduced, improved or expanded quality assurance systems and in-house training programme. All (100%) of the establishments in repair of computers and telecommunications equipment had introduced/improved maintenance routines and systems. The majority of respondents in the telecommunications industry had introduced/improved maintenance routines and systems (75%) and implemented major changes in organisational strategy and structure (75%).

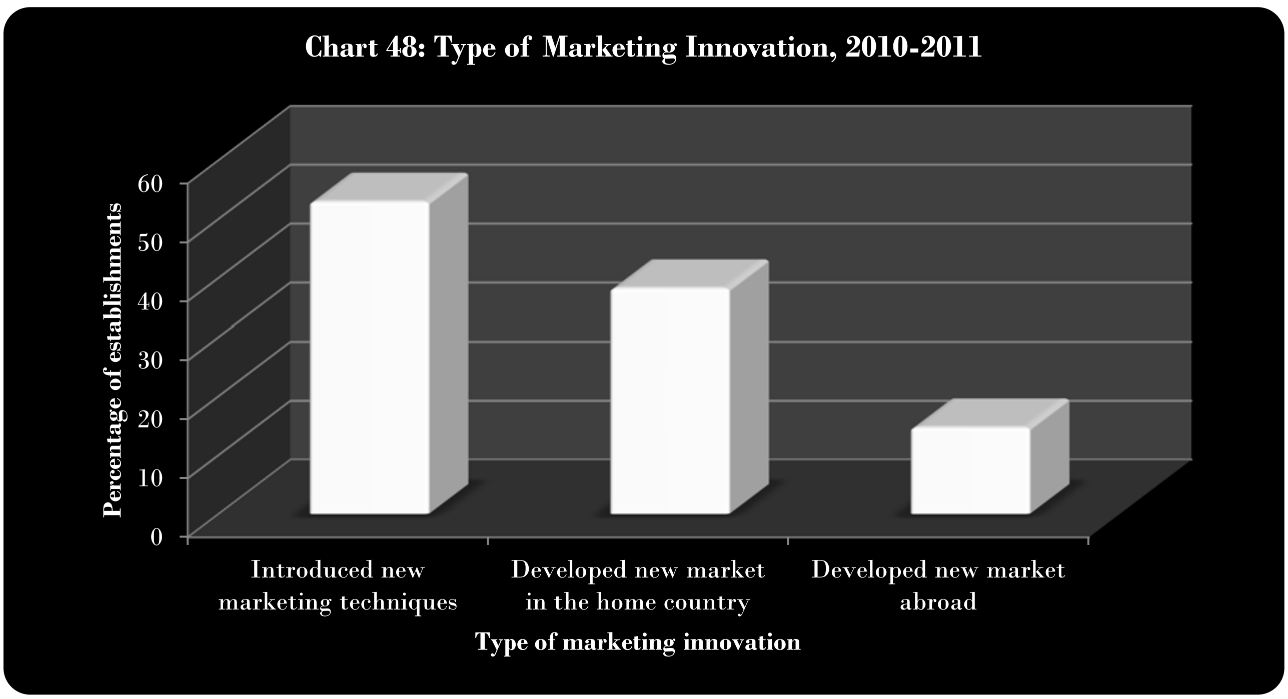


Source: Table 60

Table 61: Distribution of Establishments by Type of Marketing Innovation, 2010 - 2011

Type of marketing innovation	Total		Yes		No	
	No.	%	No.	%	No.	%
	(1)	(2)	(3)	(4)	(5)	(6)
Introduced new marketing techniques	34	100.0	18	52.9	16	47.1
Developed new market in the home country	34	100.0	13	38.2	21	61.8
Developed new market abroad	34	100.0	5	14.7	29	85.3

Marketing innovation included the implementation of marketing methods and the development of new markets at home and abroad. A substantial percentage (53%) of the establishments in the ICT sector stated that they had introduced new marketing techniques in the 2010-2011 period, while 38% and 15% developed new markets at home and abroad respectively.

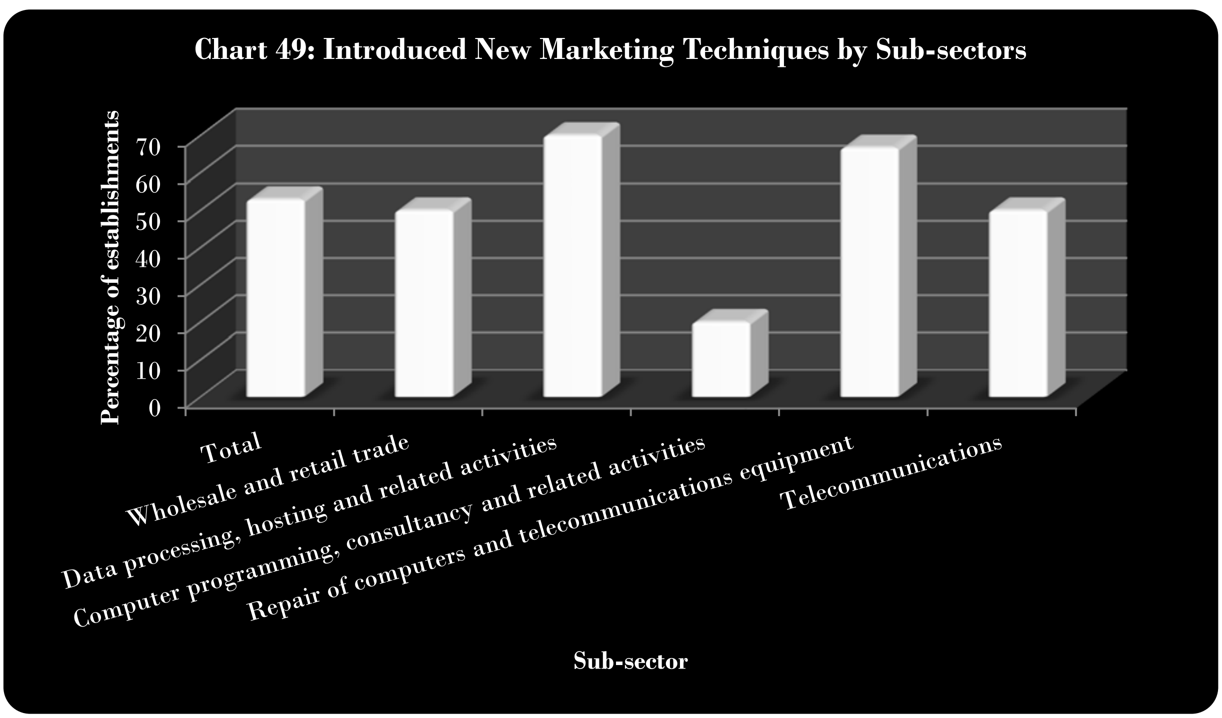


Source: Table 61

Table 62: Distribution of Establishments that Introduced New Marketing Techniques by Sub-sectors

Sub-sector	Introduced new marketing techniques					
	Total		Yes		No	
	No.	%	No.	%	No.	%
	(1)	(2)	(3)	(4)	(5)	(6)
Total	34	100	18	52.9	16	47.1
Wholesale and retail trade	12	100	6	50.0	5	41.7
Data processing, hosting and related activities	10	100	7	70.0	3	30.0
Computer programming, consultancy and related activities	5	100	1	20.0	4	80.0
Repair of computers and telecommunications equipment	3	100	2	66.7	1	33.3
Telecommunications	4	100	2	50.0	2	50.0

The highest percentage (70%) of establishments that introduced new marketing techniques was observed in the data processing, hosting and related activities industry followed by repairs of computer and telecommunication equipment (67%). A half (50%) of the establishments in each case in telecommunications and wholesale and retail trade introduced new marketing techniques while one-fifth (20%) in computer programming, consultancy and related activities did likewise.

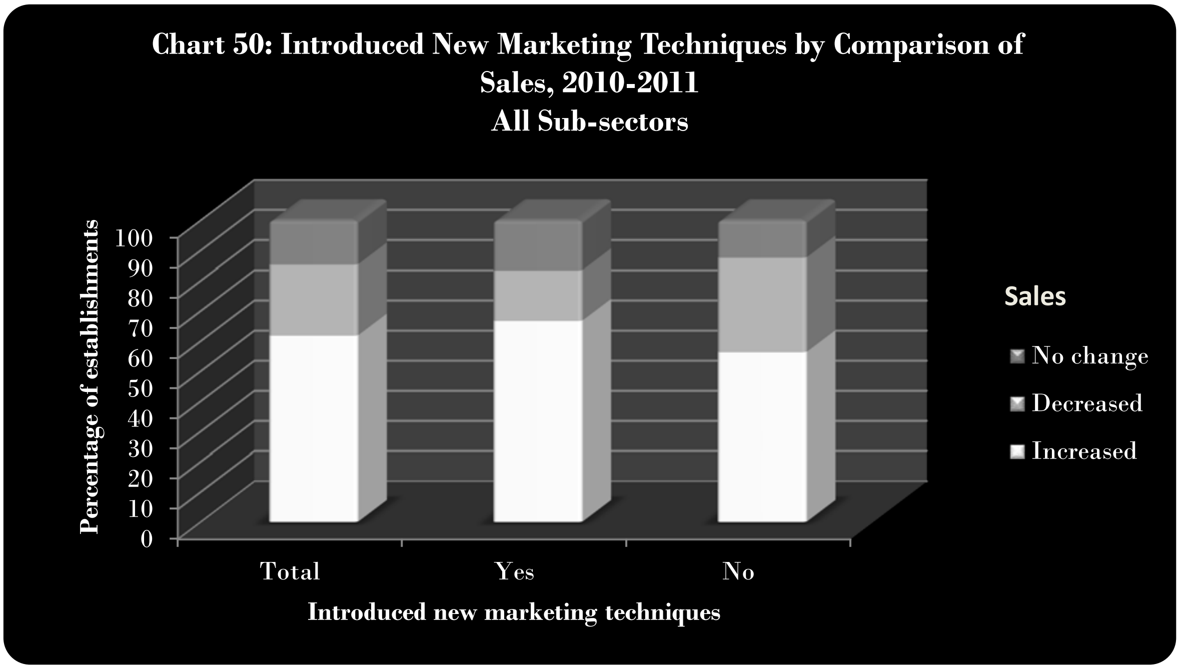


Source: Table 62

Table 63: Introduced New Marketing Techniques by Sub-sectors and Comparison of Sales, 2010 - 2011

Sub-sector	Introduced new marketing	Sales, 2010 - 2011			
		Total	Increased	Decreased	No change
		(1)	(2)	(3)	(4)
All sub-sectors	Total	100.00	61.80	23.50	14.70
	Yes	100.00	66.70	16.70	16.70
	No	100.00	56.30	31.30	12.50
Wholesale and retail trade	Total	100.00	50.00	25.00	25.00
	Yes	100.00	33.30	33.30	33.30
	No	100.00	66.70	16.70	16.70
Data processing, hosting and related activities	Total	100.00	60.00	20.00	20.00
	Yes	100.00	71.40	14.30	14.30
	No	100.00	33.30	33.30	33.30
Computer programming, consultancy and related activities	Total	100.00	60.00	40.00	0.00
	Yes	100.00	100.00	0.00	0.00
	No	100.00	50.00	50.00	0.00
Repair of computers and telecommunications equipment	Total	100.00	66.70	33.30	0.00
	Yes	100.00	100.00	0.00	0.00
	No	100.00	0.00	100.00	0.00
Telecommunications	Total	100.00	100.00	0.00	0.00
	Yes	100.00	100.00	0.00	0.00
	No	100.00	100.00	0.00	0.00

Of the establishments that introduced new marketing techniques, two-thirds (67%) recorded a growth in sales from 2010 to 2011 while 17% in each case reported a decrease or no change. Of the establishments that did not introduced new marketing techniques, 56% registered increases in sales while 31% and 13% experienced a decline and no change respectively. By industry, a significant majority of establishments that developed new marketing techniques registered increases in sales except in wholesale and retail trade where a similar percentage (33%) experienced increases, decreases and no change. All (100%) of the establishments in repair of computers and telecommunications equipment that did not engage in such marketing innovation activities recorded a decrease in sales over the reference period, 2010 to 2011.

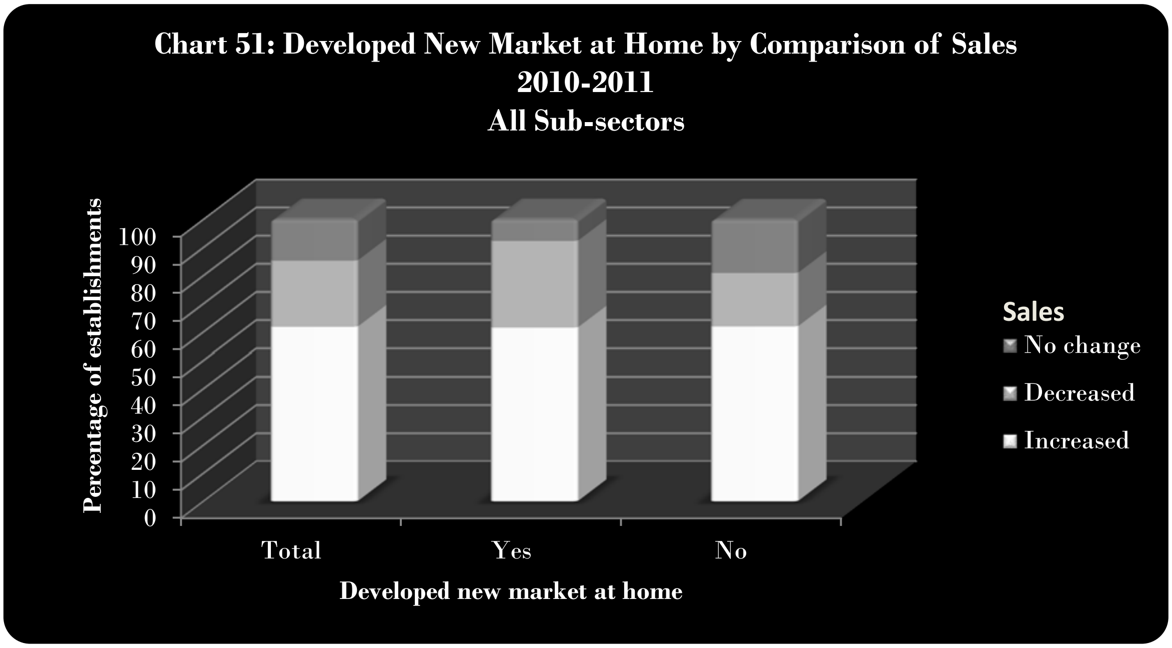


Source: Table 63

Table 64: Developed New Market at Home by Sub-sectors and Comparison of Sales, 2010 - 2011

Sub-sector	Developed new market at home	Sales, 2010 - 2011			
		Total	Increased	Decreased	No change
		(1)	(2)	(3)	(4)
All sub-sectors	Total	100.00	61.80	23.50	14.70
	Yes	100.00	61.50	30.80	7.70
	No	100.00	61.90	19.00	19.00
Wholesale and retail trade	Total	100.00	50.00	25.00	25.00
	Yes	100.00	50.00	25.00	25.00
	No	100.00	50.00	25.00	25.00
Data processing, hosting and related activities	Total	100.00	60.00	20.00	20.00
	Yes	100.00	66.70	33.30	0.00
	No	100.00	57.10	14.30	28.60
Computer programming, consultancy and related activities	Total	100.00	60.00	40.00	0.00
	Yes	100.00	50.00	50.00	0.00
	No	100.00	66.70	33.30	0.00
Repair of computers and telecommunications equipment	Total	100.00	66.70	33.30	0.00
	Yes	100.00	66.70	33.30	0.00
	No	0.0	0.0	0.0	0.00
Telecommunications	Total	100.00	100.00	0.00	0.00
	Yes	100.00	100.00	0.00	0.00
	No	100.00	100.00	0.00	0.00

Table 64 shows that three-fifths (62%) of the establishments that developed a new market at home experienced a growth in sales over the period 2010-2011 while approximately a third (31%) recorded a decline and 8% registered no change. Of the establishments that did not develop a new market at home three-fifths (62%) reported an increase in sales while one-fifth (19%) in each case experienced a decline and no change. By industry, a half (50%) or more of the establishments in all sub-sectors, especially telecommunications, that were and were not engaged in such innovation activities registered increases in sales from 2010 to 2011.

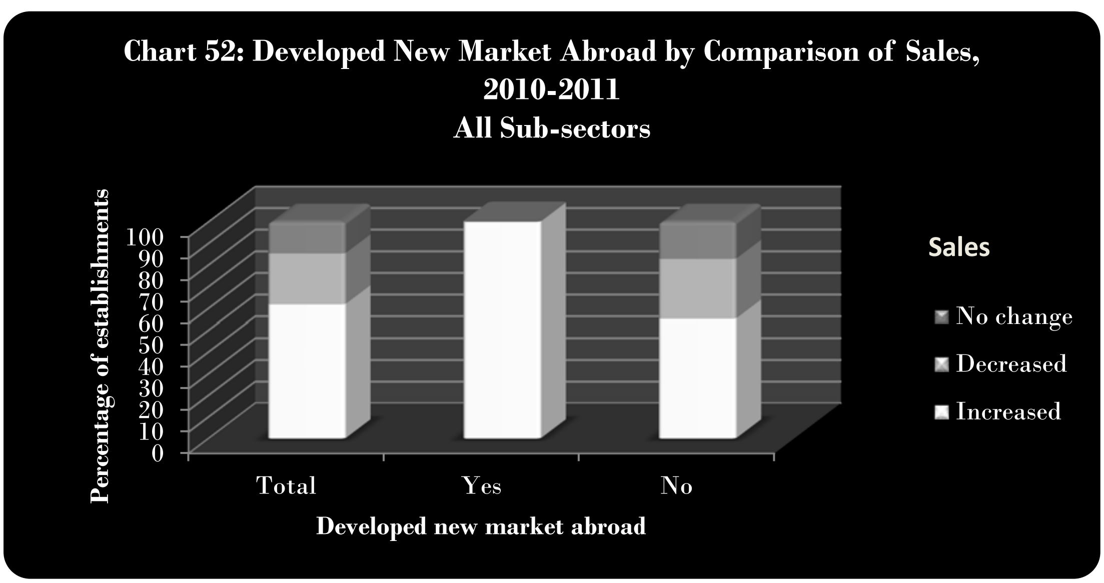


Source: Table 64

Table 65: Developed New Market Abroad by Sub-sectors and Comparison of Sales, 2010 - 2011

Sub-sector	Developed new market abroad	Sales, 2010 - 2011			
		Total	Increased	Decreased	No change
		(1)	(2)	(3)	(4)
All sub-sectors	Total	100.00	61.80	23.50	14.70
	Yes	100.00	100.00	0.00	0.00
	No	100.00	55.20	27.60	17.20
Wholesale and retail trade	Total	100.00	50.00	25.00	25.00
	Yes	0.0	0.0	0.0	0.0
	No	100.00	50.00	25.00	25.00
Data processing, hosting and related activities	Total	100.00	60.00	20.00	20.00
	Yes	100.00	100.00	0.00	0.00
	No	100.00	55.60	22.20	22.20
Computer programming, consultancy and related activities	Total	100.00	60.00	40.00	0.00
	Yes	100.00	100.00	0.00	0.00
	No	100.00	0.00	100.00	0.00
Repair of computers and telecommunications equipment	Total	100.00	66.70	33.30	0.00
	Yes	0.0	0.0	0.0	0.0
	No	100.00	66.70	33.30	0.00
Telecommunications	Total	100.00	100.00	0.00	0.00
	Yes	100.00	100.00	0.00	0.00
	No	100.00	100.00	0.00	0.00

The data reveal that all (100%) of the establishments in ICT, comprising those in data processing, hosting and related activities, computer programming, consultancy and related activities, and telecommunications, that developed new markets abroad recorded an increase in sales from 2010 to 2011. Of the establishments that did not developed a new market abroad, a substantial percentage (55%) reported an increase in sales while 28% and 17% experienced a decline and no change respectively.



Source: Table 65

Table 66: Distribution of Exporting Establishments Engaged in Marketing Innovation by Sub-sectors

Type of marketing innovation	Sub-sector					
	Total		Data processing, hosting and related activities		Computer programming, consultancy and related activities	
	No.	%	No.	%	No.	%
	(1)	(2)	(3)	(4)	(5)	(6)
Introduced new marketing techniques	2	100.0	0	0.0	2	100.0
Developed new market in the home country	2	100.0	1	50.0	1	50.0
Developed new market abroad	2	100.0	0	0.0	2	100.0

The exporting establishments that introduced new marketing techniques and developed new markets abroad were in computer programming, consultancy and related activities. Of the two establishments that developed new markets at home, one each (50%) was in data processing, hosting and related activities, and computer programming, consultancy and related activities.

Table 67: Distribution of Exporting Establishments that Introduced New Marketing Techniques

Export sales	Introduced new marketing techniques					
	Total		Yes		No	
	No.	%	No.	%	No.	%
	(1)	(2)	(3)	(4)	(5)	(6)
Total	5	100.0	2	40.0	3	60.0
Less than $1m	4	100.0	2	50.0	2	50.0
Not stated	1	100.0	0	0.0	1	100.0

The table above shows that of the five exporting establishments, two (40%) that earned less than $1m in export sales introduced new marketing techniques.

Table 68: Distribution of Exporting Establishments that Developed New Market at Home

Export sales	Developed new market at home					
	Total		Yes		No	
	No.	%	No.	%	No.	%
	(1)	(2)	(3)	(4)	(5)	(6)
Total	5	100.0	2	40.0	3	60.0
Less than $1m	4	100.0	1	25.0	3	75.0
Not stated	1	100.0	1	100.0	0	0.0

The majority (75%) of exporting establishments that generated less than $1m in export revenues did not developed a new market at home or abroad (Tables 68 and 69).

Table 69: Distribution of Exporting Establishments that Developed New Market Abroad

Export sales	Developed new market abroad					
	Total		Yes		No	
	No.	%	No.	%	No.	%
	(1)	(2)	(3)	(4)	(5)	(6)
Total	5	100.0	2	40.0	3	60.0
Less than $1m	4	100.0	1	25.0	3	75.0
Not stated	1	100.0	1	100.0	0	0.0

Table 70: Rating of Reasons for Innovating						
Reason	Rating - percentage of establishments					
	Total	Not important	Slightly important	Important	Very important	Not applicable
	(1)	(2)	(3)	(4)	(5)	(6)
Reduce production costs	100.0	23.5	14.7	11.8	38.2	11.8
Improve productivity	100.0	5.9	8.8	20.6	52.9	11.8
Extend product range	100.0	0.0	14.7	32.4	41.2	11.8
Improve product quality	100.0	8.8	11.8	11.8	55.9	11.8
Increase market share	100.0	2.9	11.8	14.7	58.8	11.8
Improve customer satisfaction	100.0	2.9	2.9	11.8	70.6	11.8
Deal with new competitors at home	100.0	5.9	17.6	23.5	41.2	11.8
Deal with new competitors in export markets	100.0	44.1	17.6	14.7	11.8	11.8
Improve working conditions	100.0	5.9	11.8	32.4	38.2	11.8
Develop more environmental-friendly products and processes	100.0	11.8	17.6	23.5	35.3	11.8
Other	100.0	88.2	0.0	0.0	0.0	11.8

The table above shows the percentage of establishments that rated various reasons for innovating. Improving customer satisfaction was cited as a major reason for innovating, in that 71% of the respondents indicated that it was very important. Over a half of the respondents rated increase market share (59%), improve product quality (56%) and improve productivity (53%) as very important reasons for innovating. Approximately two-fifths of the establishments rated extend product range (41%), deal with new competitors at home (41%), reduce production costs (38%) and improve working conditions (38%) as very important. Additionally, a third (35%) of the respondents indicated that developing more environmental-friendly products and processes was very important for innovating. The lowest rating was assigned to dealing with new competitors abroad, in that 44% of the respondents indicated that it was not important.

Table 71: Rating of Obstacles to Innovation

Reason	Rating - percentage of establishments					
	Total	Not relevant/ appropriate	Slightly significant	Moderately significant	Very significant	Not stated
	(1)	(2)	(3)	(4)	(5)	(6)
High cost of the innovation project	100.0	23.5	26.5	11.8	29.4	8.8
Lack of financing	100.0	20.6	5.9	20.6	47.1	5.9
Lack of skilled/qualified personnel	100.0	26.5	17.6	23.5	23.5	8.8
Long administrative/approval process within the firm	100.0	52.9	23.5	5.9	11.8	5.9
Lack of information on technology itself	100.0	52.9	23.5	11.8	2.9	8.8
Lack of information on markets	100.0	41.2	20.6	17.6	11.8	8.8
Domestic economic conditions	100.0	23.5	17.6	26.5	26.5	5.9
Legislation	100.0	38.2	26.5	14.7	14.7	5.9
Weak customer demand	100.0	29.4	17.6	23.5	17.6	11.8
Lack of marketing capability	100.0	26.5	26.5	32.4	8.8	5.9
Lack of external technical support	100.0	47.1	29.4	8.8	5.9	8.8
Other	100.0	11.8	0.0	0.0	2.9	85.3

Financing (47%) was identified as the most significant obstacle to innovation. A quarter or more of the respondents cited high cost of the innovation project (29%), domestic economic conditions (27%) and skilled/qualified personnel (24%) as very significant barriers to innovation. Additionally, 18% and 24% of the respondents rated weak customer demand as very significant and moderately significant respectively. A substantial percentage of respondents indicated that long administrative/approval process within the firm (53%), information on technology (53%) and external technical support (47%) were not relevant/appropriate and approximately two-fifths expressed a similar view with regards to lack of information on markets (41%) and legislation (38%).

Table 72: Rating of Sources of Information for Innovation

Sources of Information	Rating - percentage of establishments				
	Total	Not used	Moderately important	Very important	Not applicable
	(1)	(2)	(3)	(4)	(5)
Within your firm	100.0	8.8	8.8	70.6	11.8
Parent firm	100.0	58.8	2.9	26.5	11.8
Customers	100.0	5.9	17.6	64.7	11.8
Client firm for which the respondent is a subcontractor	100.0	41.2	20.6	26.5	11.8
Suppliers of equipment, material and components or software	100.0	8.8	38.2	41.2	11.8
Consultancy firms	100.0	35.3	35.3	17.6	11.8
Government or public research institutes	100.0	23.5	32.4	32.4	11.8
Fairs, exhibitions, conferences	100.0	14.7	52.9	20.6	11.8
Business and industry associations	100.0	11.8	38.2	38.2	11.8
Professional journals and trade publications	100.0	14.7	47.1	26.5	11.8
Education and research institutes	100.0	29.4	35.3	23.5	11.8
Other	100.0	79.4	0.0	8.8	11.8

The majority of establishments in the ICT sector identified their establishments (71%) and customers (65%) as very important sources of information on innovation. Two-fifths of the respondents cited suppliers of equipment, material and components or software (41%) and, business and industry associations (38%) as very important while a third (32%) assigned a similar rating to government or public research institutes. Parent (59%) and client firms (41%) were not used as sources of innovation by a substantial percentage of establishments. Fairs, exhibitions, conferences (53%), professional journals and trade publications (47%) and education and research institutes (35%) were considered mainly moderately important sources of information.

Table 73: Sources of Product Related Innovation Information

Sources of Information	Product information accessed - percentage				
	Total	Yes	No	Not applicable	Not stated
	(1)	(2)	(3)	(4)	(5)
Within your firm	100.0	47.1	35.3	11.8	5.9
Parent firm	100.0	20.6	61.8	11.8	5.9
Customers	100.0	55.9	26.5	11.8	5.9
Client firm for which the respondent is a subcontractor	100.0	26.5	55.9	11.8	5.9
Suppliers of equipment, material and components or software	100.0	55.9	26.5	11.8	5.9
Consultancy firms	100.0	8.8	73.5	11.8	5.9
Government or public research institutes	100.0	20.6	61.8	11.8	5.9
Fairs, exhibitions, conferences	100.0	47.1	35.3	11.8	5.9
Business and industry associations	100.0	29.4	52.9	11.8	5.9
Professional journals and trade publications	100.0	29.4	52.9	11.8	5.9
Education and research institutes	100.0	29.4	52.9	11.8	5.9
Other	100.0	5.9	76.5	11.8	5.9

In general, the establishment was identified as the main source of information on product, process marketing and management innovation. Customers (56%) and suppliers of equipment, material and components or software (56%) were identified as the leading sources of product related information followed by the establishment (47%) and fairs, exhibitions and conferences (47%) (Table 73). Table 74 shows that the main sources of process related information were within the establishment (38%), customers (29%) and suppliers of equipment, material and components or software (27%). With respect to marketing related information on innovation, the firm (47%) and business and industry associates (47%) were cited as key sources followed by professional journals and trade publications (44%), and fairs, exhibitions and conferences (38%) (Table 75). The majority (41%) of establishments accessed management related innovation information from their establishments (Table 76).

Table 74: Sources of Process Related Innovation Information

Sources of Information	Process information accessed - percentage				
	Total	Yes	No	Not applicable	Not stated
	(1)	(2)	(3)	(4)	(5)
Within your firm	100.0	38.2	44.1	11.8	5.9
Parent firm	100.0	14.7	67.6	11.8	5.9
Customers	100.0	29.4	52.9	11.8	5.9
Client firm for which the respondent is a subcontractor	100.0	17.6	64.7	11.8	5.9
Suppliers of equipment, material and components or software	100.0	26.5	55.9	11.8	5.9
Consultancy firms	100.0	11.8	70.6	11.8	5.9
Government or public research institutes	100.0	17.6	64.7	11.8	5.9
Fairs, exhibitions, conferences	100.0	8.8	73.5	11.8	5.9
Business and industry associations	100.0	20.6	61.8	11.8	5.9
Professional journals and trade publications	100.0	17.6	64.7	11.8	5.9
Education and research institutes	100.0	20.6	61.8	11.8	5.9
Other	100.0	2.9	79.4	11.8	5.9

Table 75: Sources of Marketing Related Innovation Information

Sources of information	Marketing information accessed - percentage				
	Total	Yes	No	Not applicable	Not stated
	(1)	(2)	(3)	(4)	(5)
Within your firm	100.0	47.1	35.3	11.8	5.9
Parent firm	100.0	11.8	70.6	11.8	5.9
Customers	100.0	29.4	52.9	11.8	5.9
Client firm for which the respondent is a subcontractor	100.0	8.8	73.5	11.8	5.9
Suppliers of equipment, material and components or software	100.0	20.6	61.8	11.8	5.9
Consultancy firms	100.0	26.5	55.9	11.8	5.9
Government or public research institutes	100.0	26.5	55.9	11.8	5.9
Fairs, exhibitions, conferences	100.0	38.2	44.1	11.8	5.9
Business and industry associations	100.0	47.1	35.3	11.8	5.9
Professional journals and trade publications	100.0	44.1	38.2	11.8	5.9
Education and research institutes	100.0	17.6	64.7	11.8	5.9
Other	100.0	2.9	79.4	11.8	5.9

Table 76: Sources of Management Related Innovation Information

Sources of information	Management information accessed - percentage				
	Total	Yes	No	Not applicable	Not stated
	(1)	(2)	(3)	(4)	(5)
Within your firm	100.0	41.2	41.2	11.8	5.9
Parent firm	100.0	17.6	64.7	11.8	5.9
Customers	100.0	26.5	55.9	11.8	5.9
Client firm for which the respondent is a subcontractor	100.0	8.8	73.5	11.8	5.9
Suppliers of equipment, material and components or software	100.0	8.8	73.5	11.8	5.9
Consultancy firms	100.0	17.6	64.7	11.8	5.9
Government or public research institutes	100.0	23.5	58.8	11.8	5.9
Fairs, exhibitions, conferences	100.0	5.9	76.5	11.8	5.9
Business and industry associations	100.0	20.6	61.8	11.8	5.9
Professional journals and trade publications	100.0	23.5	58.8	11.8	5.9
Education and research institutes	100.0	23.5	58.8	11.8	5.9
Other	100.0	2.9	79.4	11.8	5.9

Table 77: Sources of Co-operative and Collaborative Arrangements

Source	Co-operation and collaboration - percentage of establishments				
	Total	Yes	No	Do not know	Not applicable
	(1)	(2)	(3)	(4)	(5)
Competitor	100.0	17.6	67.6	2.9	11.8
Customers	100.0	44.1	41.2	2.9	11.8
Suppliers	100.0	41.2	41.2	5.9	11.8
Associated companies within your corporate group	100.0	14.7	67.6	5.9	11.8
Consulting and marketing firms	100.0	23.5	58.8	5.9	11.8
Private research institutes	100.0	8.8	70.6	8.8	11.8
Public research institutes	100.0	11.8	67.6	8.8	11.8
Universities or higher education institutes	100.0	14.7	70.6	2.9	11.8
Government ministry	100.0	29.4	52.9	5.9	11.8
Other	100.0	0.0	85.3	2.9	11.8

Tables 77 and 78 identify the sources and reasons for diffusion in the ICT sector. Table 77 shows that over two-fifths of the establishments were engaged in co-operative and collaborative arrangements with customers (44%) and suppliers (41%) while 29% and 24% had such arrangements with government ministries, and consulting and marketing firms respectively. Accessing critical expertise (47%) and new markets (47%) were identified as the major reasons for collaboration while approximately two-fifths in each case cited accessing research and development (41%) and distribution channels (38%) (Table 78).

Table 78: Reasons for Collaboration

Reason	Collaboration - percentage of establishments			
	Total	Yes	No	Not applicable
	(1)	(2)	(3)	(4)
Sharing costs	100.0	26.5	38.2	35.3
Spreading risks	100.0	11.8	52.9	35.3
Accessing research and development	100.0	41.2	23.5	35.3
Prototype development	100.0	17.6	47.1	35.3
Scaling-up production processess	100.0	29.4	35.3	35.3
Accessing critical expertise	100.0	47.1	17.6	35.3
Accessing new markets	100.0	47.1	17.6	35.3
Accessing distribution channels	100.0	38.2	26.5	35.3
Other	100.0	5.9	58.8	35.3

Table 79: Impact of Innovation on Performance Indicators

Indicator	Impact - percentage of establishments						
	Total	Increase	Decrease	No change	Do not know	Not stated	Not applicable
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Profitability	100.0	47.1	11.8	17.6	5.9	5.9	11.8
Market share	100.0	32.4	8.8	20.6	20.6	5.9	11.8
Export growth	100.0	8.8	0.0	2.9	0.0	2.9	85.3
Productivity	100.0	64.7	2.9	14.7	0.0	5.9	11.8
Competitiveness	100.0	61.8	5.9	14.7	0.0	5.9	11.8
Cash flow	100.0	47.1	14.7	14.7	5.9	5.9	11.8
Diversification	100.0	2.9	58.8	17.6	0.0	8.8	11.8
Product differentiation	100.0	2.9	58.8	17.6	0.0	8.8	11.8
Positive environmental impact	100.0	17.6	38.2	26.5	0.0	5.9	11.8
Compliance with regulations	100.0	5.9	41.2	35.3	0.0	5.9	11.8
Employment	100.0	47.1	8.8	29.4	0.0	2.9	11.8
Service quality	100.0	70.6	0.0	14.7	0.0	2.9	11.8
Other	100.0	5.9	0.0	2.9	0.0	79.4	11.8

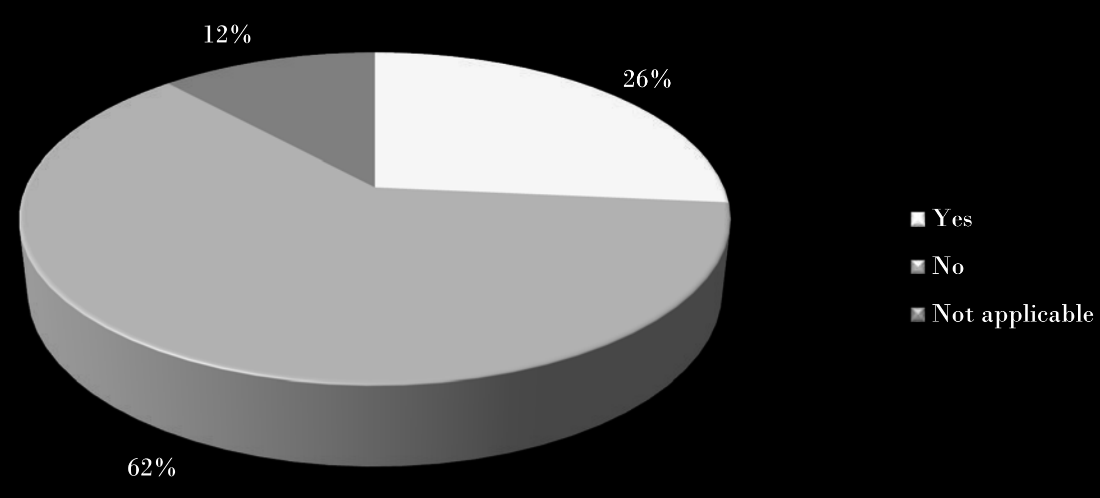
The impact of innovation on key performance indicators of the ICT sector is shown in the table above. The majority of respondents indicated that innovation resulted in increased service quality (71%), productivity (65%) and competitiveness (62%). Forty-seven percent (47%) of respondents in each case recorded increases in profitability, cash flow and employment while one-third (32%) registered an increase in market share. A substantial percentage of respondents reported that innovation had a negative impact on diversification (59%), product differentiation (59%), compliance and regulations (41%) and the environment (38%).

Sub-sector	Research and development							
	Total		Yes		No		Not applicable	
	No.	%	No.	%	No.	%	No.	%
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Total	34	100.0	9	26.5	21	61.8	4	11.8
Wholesale and retail trade	12	100.0	0	0.0	8	66.7	4	33.3
Data processing, hosting and related activities	10	100.0	4	40.0	6	60.0	0	0.0
Computer programming, consultancy and related activities	5	100.0	3	60.0	2	40.0	0	0.0
Repair of computers and telecommunications equipment	3	100.0	1	33.3	2	66.7	0	0.0
Telecommunications	4	100.0	1	25.0	3	75.0	0	0.0

Table 80: Research and Development by Sub-sector

Overall, a quarter (27%) of the establishments, especially in computer programming, consultancy and related activities (60%), stated that they had undertaken research and development activities while 62% responded negatively (Table 80). Seven establishments (21%) utilised confidentiality agreements to protect their intellectual property, while four (12%) in each case utilised trademarks and trade secrets (Table 81).

Chart 50: Percentage of Establishments Engaged in Research and Development



Source: Table 80

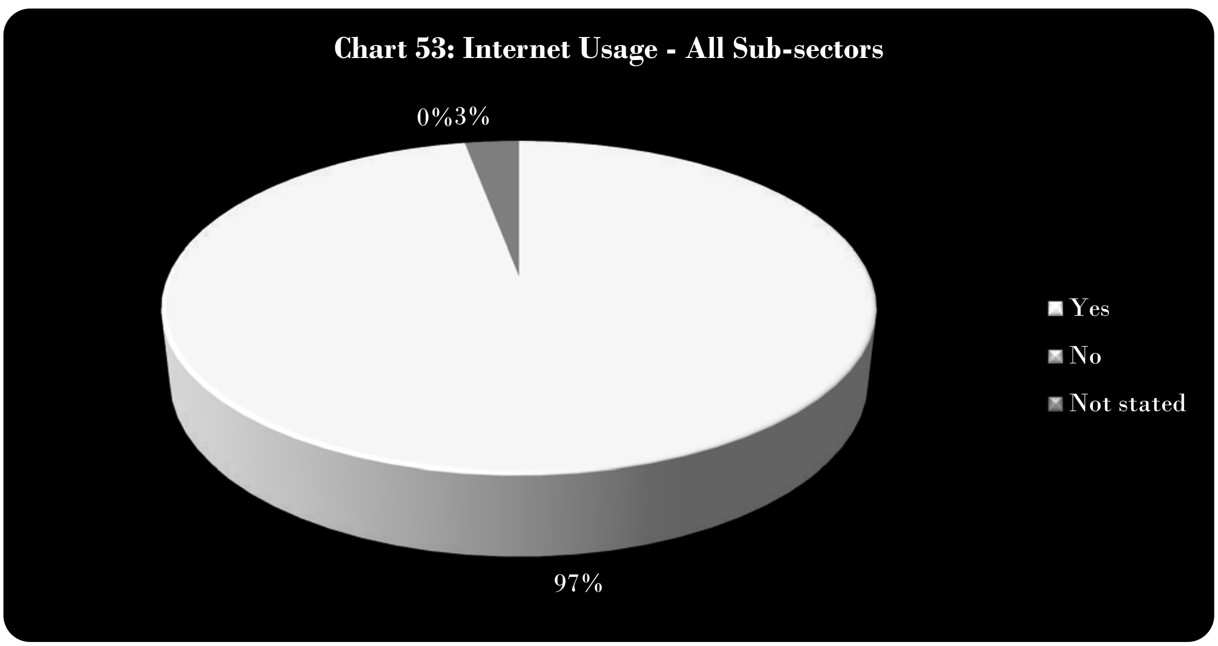
Table 81: Protection of Intellectual Property

Method to protect intellectual property	Total		Yes		No		Not applicable	
	No.	%	No.	%	No.	%	No.	%
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Patents	34	100.0	1	2.9	8	23.5	25	73.5
Trademarks	34	100.0	4	11.8	5	14.7	25	73.5
Copyrights	34	100.0	3	8.8	6	17.6	25	73.5
Confidentiality agreements	34	100.0	7	20.6	2	5.9	25	73.5
Trade secrets	34	100.0	4	11.8	5	14.7	25	73.5
Other	34	100.0	1	2.9	8	23.5	25	73.5

Table 82: Internet Usage by Sub-sector

Sub-sector	Internet usage							
	Total		Yes		No		Not stated	
	No.	%	No.	%	No.	%	No.	%
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
All sub-sectors	34	100.0	33	97.1	0	0.0	1	2.9
Wholesale and retail trade	12	100.0	11	91.7	0	0.0	1	8.3
Data processing, hosting and related activities	10	100.0	10	100.0	0	0.0	0	0.0
Computer programming, consultancy and related activities	5	100.0	5	100.0	0	0.0	0	0.0
Repair of computers and telecommunications equipment	3	100.0	3	100.0	0	0.0	0	0.0
Telecommunications	4	100.0	4	100.0	0	0.0	0	0.0

Almost all (97%) of the respondents, including all sub-sectors, utilised the Internet (Table 82). The vast majority of establishments utilised the Internet for email (97%), searches on the world wide web (92%), advertising through a home page (82%) and e-commerce (74%) (Table 83).



Source: Table 82

Table 83: Distribution of Establishments that Used the Internet by Activities and Sub-sector

Activity	Sub-sector											
	Total		Wholesale and retail trade		Data processing, hosting and related activities		Computer programming, consultancy and related activities		Repair of computers and telecom-munications equipment		Telecom-munica-tions	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(12)	(13)
	Establishments											
Email	33	97.1	11	91.7	10	100.0	5	100.0	3	100.0	4	100.0
Searches on the world wide web	11	91.7	9	90.0	5	100.0	3	100.0	4	100.0	32	94.1
Selling your products or services to customers or clients	25	73.5	7	58.3	9	90.0	4	80.0	2	66.7	3	75.0
Advertising through a home page	28	82.4	8	66.7	9	90.0	5	100.0	2	66.7	4	100.0

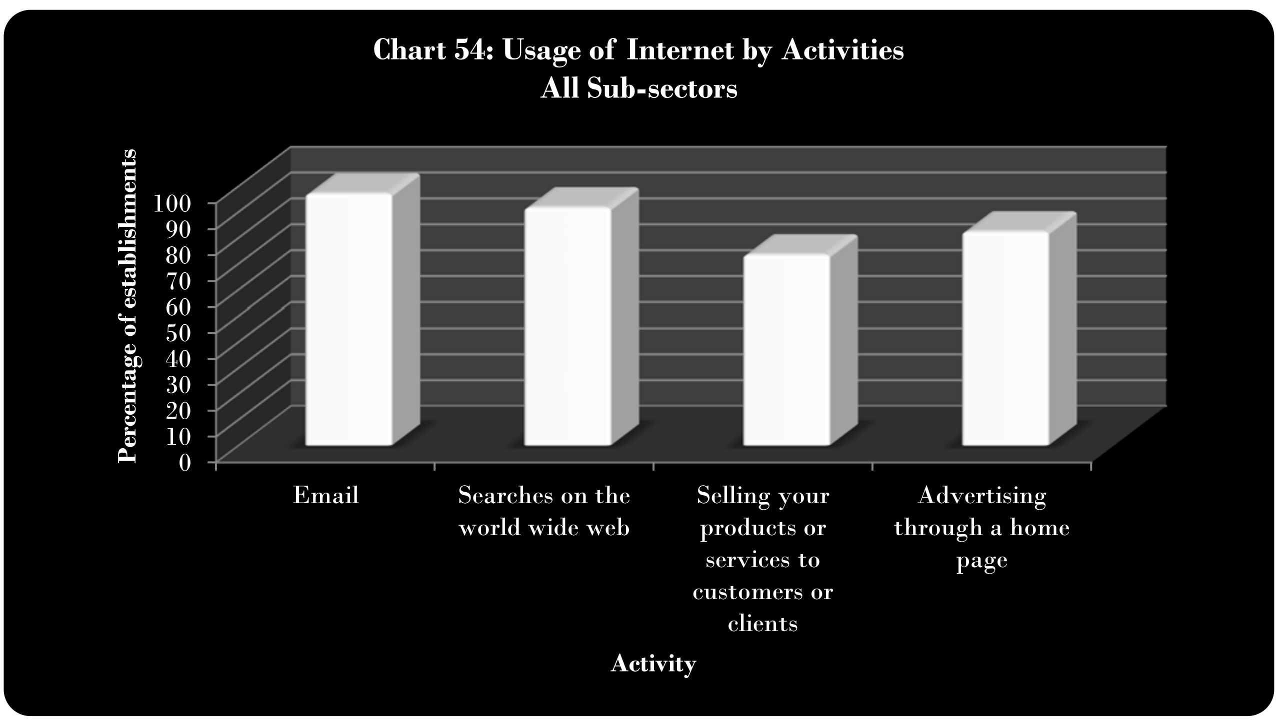


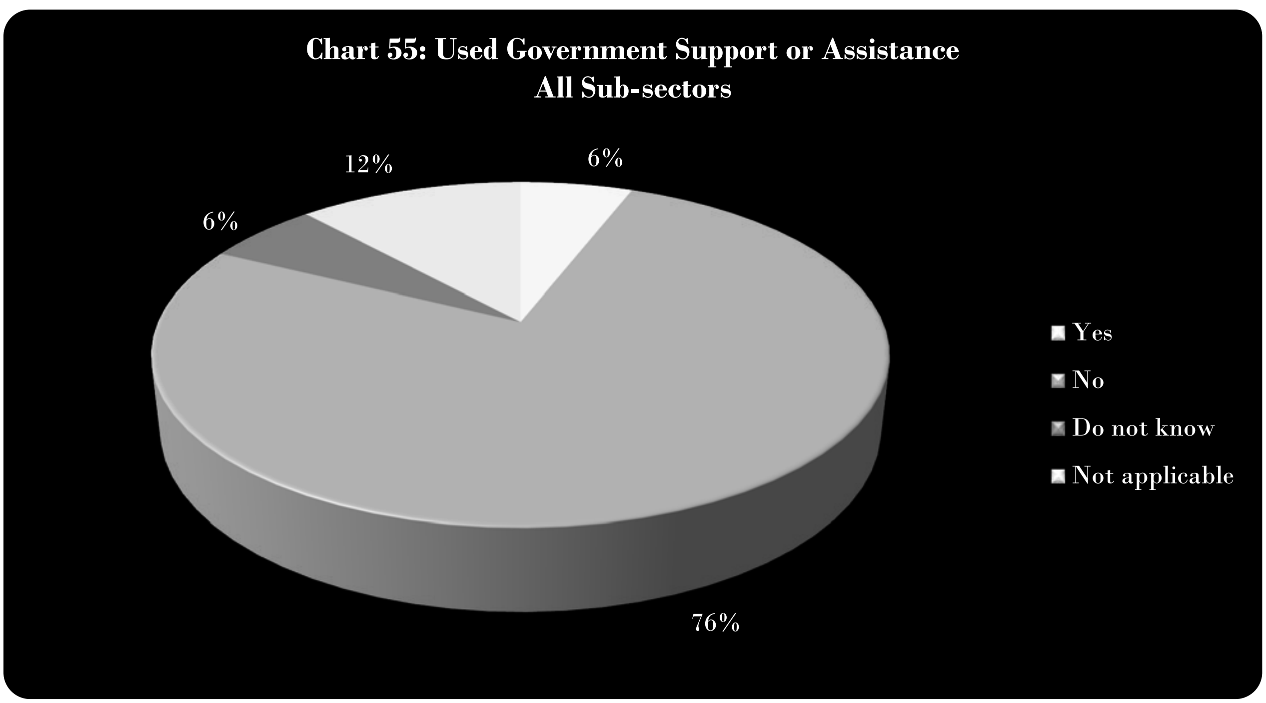
Chart 54: Usage of Internet by Activities
All Sub-sectors

Source: Table 83

Table 84: Distribution of Establishments that Used Government Support or Assistance by Sub-sector

Sub-sector	Used government support or assistance									
	Total		Yes		No		Do not know		Not applicable	
	No.	%	No.	%	No.	%	No.	%	No.	%
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
All sub-sectors	34	100.0	2	5.9	26	76.5	2	5.9	4	11.8
Wholesale and retail trade	12	100.0	1	8.3	7	58.3	0	0.0	4	33.3
Data processing, hosting and related activities	10	100.0	0	0.0	9	90.0	1	10.0	0	0.0
Computer programming, consultancy and related activities	5	100.0	1	20.0	4	80.0	0	0.0	0	0.0
Repair of computers and telecommunications equipment	3	100.0	0	0.0	3	100.0	0	0.0	0	0.0
Telecommunications	4	100.0	0	0.0	3	75.0	1	25.0	0	0.0

Government support programmes for innovation were accessed by only two (6%) of the responding establishments, one each in wholesale and retail trade, and computer programming, consultancy and related activities.



Source: Table 84