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The first Innovation survey report was developed under the supervision of Dr Eino Mvula, the then CEO of NCRST.

The report was prepared and coordinated by the core team of the following persons in alphabetical order:

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## FOREWORD



The National Commission on Research, Science and Technology (NCRST), an agency of the government carried out the first Innovation Indicator Survey of Namibia in response to a need for information on the importance of innovation for national economic growth. The survey focused on the business sector of our economy to explore the value of the businesses in Namibia's innovation landscape, based on the notion that innovation most of the times happens in business. The report is the first ever comprehensive set of indicators based on the Namibian Innovation Survey (2012 to 2014 fiscal years).

The NCRST is responsible for providing for the promotion, coordination and development of research, science, technology in Namibia, and is mandated in terms of section 5 of the Research, Science and Technology (RST) Act of 2004, to collect, disseminate and promote any research, science and technology results, statistics, reports, literature, data, services or any other information. This report, thus, represents one of the objectives of the RST Act in that it provides direction and policy guidance to research, science and technology development.

During the development of the National Programme on Research, Science, Technology and Innovation for 2014/15 to 2016/17, efforts were made to obtain information on the research, development and innovation landscape in Namibia in terms of input and output data. This was necessary to understand where we were as a country, for us to formulate appropriate targets and initiatives. Unfortunately, it was difficult to find quality data on innovation. It is against this backdrop that the establishment of Science, Technology and Innovation (STI) indicators was made a key priority both in the NCRST Strategic Plan (2014/15 to 2018/19) and the National Programme on Research, Science, Technology and Innovation (2014/15 to 2016/17).

The data contained in this report is important as it helps in understanding the size and shape of Namibia's innovation landscape. Moreover, this data is very useful for system-level planning, monitoring and evaluation. For the first time, Namibia now has reliable data ready to be used in formulating evidence based policies and interventions that can stimulate economic growth. A project of this magnitude requires close cooperation between the various stakeholders especially in light of the resource constraints we are facing, not only on the financial side, but also on the human resource side. We thank all stakeholders, especially business entities that responded to the survey, for their support and cooperation.

## STATEMENT



The Namibian Statistics Agency (NSA) is established by Section 6 of the Statistics Act No 9 of 2011 as the central repository for all statistics produced in Namibia. The NSA also acts as a custodian for statistics in Namibia through the collection, production, analysis and dissemination of official and other statistics in Namibia.

The National Commission on Research, Science and Technology (NCRST) and NSA signed a memorandum of understanding (MoU) which laid the basis for collaborative and strategic partnership between the two institutions, aimed at establishing a formal position for cooperation in areas of Research & Experimental Development and Innovation Surveys. Such studies and surveys aim to support the development of evidence-based policy, and the public policy debate which provides constructive feedback to government departments, as well as to other institutions of the society, such as policy research institutions, universities and various industries.

As part of the implementation plan of the NSA/NCRST agreement, the NSA has been part of the process from the development and adoption of survey instruments, training of enumerators as well as respondents in preparation for the Innovation Survey for the 2012-2014 period. Following the completion of this Innovation Survey which was conducted during the financial year 2015/16, the report and other relevant documents were submitted by the NCRST to the NSA for clearance in terms of the Statistics Act No 9 of 2011. An assessment performed on the data, documentation and materials submitted revealed that these data met the set national standards as well as regional and international best practices in terms of quality. In future, this will allow the design of very specific targets as well as the conduct of benchmarking studies for comparing Namibia's Science, Technology and Innovation (STI) policies and performance with those of other countries.

I hereby confirm that the quality of these Innovation Survey results have been assured by the NSA and I encourage its use by stakeholders across all sectors.

## PREFACE



I am pleased to present Namibia's first official Innovation Survey Report for the 2012-2014 period. This is particularly a noteworthy achievement. This Innovation Survey Report is particularly important as it can act as a reference on Namibia's innovation as well as an 'action tool' for decision makers. The Ministry of Higher Education, Training and Innovation is delighted with the advancement made in the establishment and strengthening of our national system of innovation.

A programme level intervention has been developed in the form of the National Programme on Research, Science, Technology and Innovation (NPRSTI) for 2014/15 to 2016/17, in terms of Section 18 of Research, Science and Technology Act, 2004 (Act 23 of 2004) with the aim of providing a comprehensive framework for realising Namibia's Science, Technology and Innovation (STI) development aspirations. In order for us to assess whether our efforts are yielding desired outcomes, we continue to establish systems that allow for reliable collection of Science, Technology and Innovation data, in order to populate indicators that must inform policy and the necessary strategic interventions.

The fifth National Development Plan (NDP5) has set the target for increasing Research and Development (R&D) and Innovation expenditure from 0.35 to 1.0% of GDP during the NDP5 period (2017-2022). This first Innovation Survey has revealed important information regarding the size and composition of innovation active companies and human capital devoted to innovation activities. The new information can, therefore, be used to facilitate targeted policy interventions that will assist us in achieving the NDP objectives. Additionally, the data obtained from this survey provides the key results that need to be improved for us to climb the Global Innovation Index ladder of which the NDP5 target is to improve from the current position of 97 to 91.

The National Commission on Research, Science and Technology (NCRST) in collaboration with the Namibia Statistics Agency (NSA) and the University of Namibia (UNAM) worked together to conduct this important Survey aimed at identifying core Innovation Indicators. This effort is in line with the initiative of the New Partnership for Africa's Development (NEPAD) for Africa's Science and Technology Consolidated Plan of Action (CPA), which identifies Science, Technology and Innovation indicators for African countries. Namibia joined this initiative in 2008 after it was launched in 2007.

I trust that the collaborative efforts of innovation actors and decision makers who use this report will stimulate a dialogue to inform policy reviews in the future. Additionally, I am confident that the business fraternity will find the report informative to their strategic plans and provide some direction for future innovation investments. I would like to take this opportunity to congratulate the NCRST for leading the team that produced this very important report. In the same vein, I would like to thank all stakeholders from the private and public enterprises for their cooperation with the Innovation Survey team which led to the success of this survey.



DR. YTAH KANDJI-MURANGI,  
Minister of Higher Education, Training and Innovation

08 APR 2019

## LIST OF ABBREVIATIONS

AOSTI	Africa Organisation of Science, Technology and Innovation
ASTII	Africa Science, Technology and Innovation Indicators Initiative
CeSTII	Centre for Science, Technology and Innovation Indicators
DST	South African Department of Science and Technology
FoS	Field of Science
HSRC	Human Sciences Research Council
JTC	Joint Technical Committee
MHETI	Ministry of Higher Education, Training and Innovation
MRC	Multidisciplinary Research Centre
NBC	Namibian Broadcasting Corporation
NCRST	National Commission on Research, Science and Technology
NEPAD	New Partnership for Africa's Development
NSA	Namibia Statistics Agency
NSI	National System of Innovation
OECD	Organisation for Economic Co-operation and Development
SPSS	Statistical Package for the Social Sciences (software)
STI	Science, Technology and Innovation
UIS	UNESCO Institute for Statistics
UNAM	University of Namibia
UNCST	Ugandan National Council for Science & Technology
UNESCO	United Nations Educational, Scientific and Cultural Organization
RST	Research, Science and Technology
R&D	Research and Experimental Development

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## EXECUTIVE SUMMARY

This report presents the main findings of the innovation survey conducted in 2015 covering the financial year 2012-2014 for Namibian business enterprises. The survey was conducted by NCRST in collaboration with the Namibian Statistics Agency (NSA) and the University of Namibia (UNAM) in parallel with the Research and Experimental Data (R&D) survey.

Innovation, according to the Organisation for Economic Co-operation and Development (OECD) refers to the implementation of new or significant improved product (good and services), process, marketing methods or organisation methods in business practices, workplace organisation or external relation.

The innovation survey, just like the R&D survey is a valuable source of information that facilitates effective planning and policy formulation with respect to science, technology and innovation (STI) by both public and private sectors. The role of innovation as a driver of economic growth, competitiveness and better quality of life has gained acceptance among policy makers. Innovation takes place within and is supported by a country's national system of innovation (NSI) through its components including government, industry and finance, academic and research institutions, civil society and their environment. The strength of the NSI depends on the relationship between linkages and interactions between the components.

There are many types of innovation that can be developed by enterprises in industrial and services sectors where changed or improved versions of products or processes are introduced to the market. Innovation comprises of several types of activities and expenditure. A firm can make many types of changes in its methods of work, its use of factors of production and the types of output that improve its productivity and/or commercial performance. As per the Oslo Manual, there are four types of innovations that encompass a wide range of changes in firms' activities: product innovations, process innovations, organisational innovations and marketing innovations.

Many countries in the world have several public programmes and support programmes for R&D and innovation in place with the aim of stimulating the development of high-level human resources, as well as research output and innovation, which in turn grow and diversify the economy.

The indicators provided in this report describe the activities and patterns of innovation in the business sector of Namibia, including resources provided for innovation in enterprises; the type of innovation activities carried out; the level of novelty of innovation (new to an enterprise, new to the market and/or new to the country); sources of information for innovation; and factors hampering innovation. The report also consists of the main subset of innovation indicators; and data tables specified for innovation surveys by the OECD.

## METHODOLOGY

The 2012-2014 innovation survey was conducted as per the OECD guidelines presented in the Oslo Manual. The survey targeted business enterprises. The innovation survey covered the business enterprise only as defined in the Oslo manual. The survey was conducted during the period of October-November 2015.

The innovation survey relied on a census approach for data collection due to the population size of the business enterprises in the country. The data was collected using the standardised questionnaire for the business sector. The questionnaire was piloted on selected entities for consistency, chronology and clarity of questions. The questionnaires were administered to respondents by a team of trained enumerators. Press releases and telephone calls were made to respondents to publicise the survey. Field supervision visits were undertaken to support the enumeration exercise.

The survey achieved an overall 48.6% response rate from a sample of 68 enterprises. This was the first innovation survey conducted in Namibia.

## RESULTS

The results of the Namibia innovation survey indicated that 52.9% of enterprises were engaged in innovation activities. Out of all the innovative enterprises, 47.1% had successful innovation, meaning that they completed product and/or process innovation during the period covered by the survey.

There are four types of innovation that are recognised in terms of the methodology used in the survey, namely; product, process, marketing and organisation innovation. The enterprises with successful innovation comprised of 1.5% with product only innovation, 7.4% with process only innovation and 38.2% with both process and product innovations and 5.9% had abandoned and/or ongoing innovation activities. Enterprises with organisational innovation were 66.2% as compared to enterprises with marketing innovation which was only 57.4%.

The survey also distinguished between innovative enterprise and the age of the enterprises and 38.9% of innovative enterprises were those that were from 0-9 years old while 13.9% were in business for more than 30 years, which shows that younger enterprises were more innovation-active than the older enterprises.

The total turnover of the 68 Namibia surveyed enterprises was recorded at N\$ 10,671 billion. Enterprises with innovation activities accounted for 59% of the turnover. About 11,204 or 61.2% of total employees of the enterprises included in the survey worked in the enterprises with innovation activities. Enterprises with innovation activities had a high percentage of employees with degrees and diplomas. There were 1,481 or 13.2% of employees with degrees in the enterprises with innovation activities in 2012-2014. Innovation enterprises appeared to be more export-oriented than non-innovative enterprises.

About 61.8% of enterprises in the population were stand-alone enterprises and not part of a larger group. Those that stated that they were part of larger group, 11.8% were those with their head offices located in Namibia, followed by those with their head offices located in South Africa at 4.4%.

Approximately 26% of the turnover for product innovation in 2014 was generated by products that were new to the market, representing a turnover of about N\$ 989 million. Product innovations by innovative enterprises that were developed in-house by the enterprise itself were at 14%. Collaboration with other enterprises or institutions was the main source of development for product

innovation for 6% of the enterprises. The survey shows that the 36 innovative enterprises, about 85% of innovation originated within Namibia and only 7% originated from the rest of Africa.

Innovative enterprises spent N\$ 502 million on innovation activities, which represent about 14.7% of the turnover of all enterprises. The bulk of innovation expenditure (N\$ 188 million) was spent on acquisition of machinery, equipment and software. About 52.8% of enterprises indicated having conducted in-house R&D with 30.6% of enterprises indicating that they had conducted occasional R&D while innovative enterprises undertaking R&D on a continuous basis were 22.2%.

About 50% of Namibian innovation-active enterprises received funding for innovation activities from the government including 5.6% of abandoned and/or ongoing innovations. The national government was the major source of funding for innovation activities in Namibia at 16.7%.

About 58.3% of all innovative enterprises rated sources of information within the enterprises as "highly important" for innovation activities. Suppliers of materials and equipment as external market sources were rated as "highly important" by 47.2% of innovation enterprises, followed by clients and customers at 33.3%, consultants, commercial labs 25.0% and competitors (22.2%). The survey shows that government, public research institutions and universities were rated lowest as the "highly important" source of information for innovation activities in Namibia during the 2012 to 2014 period.

The results show that Namibian enterprises relied more on their suppliers of equipment and machinery as their most valuable collaborative partners for innovation activities at 80.6%. The survey shows that there is little effort in terms of collaboration between enterprises, universities, and government or public research institutions which stood at only 38.9%. The results show that innovative enterprises in Namibia were collaborating mostly with partners located in Namibia, suppliers of equipment and materials (25%), clients and customers (30.6%), other enterprises within their enterprises group (13.9%) and consultants, commercial labs or private R&D institutes (22.2%).

Both innovation enterprises and non-innovative enterprises indicated that the development of innovation activities within their enterprises was hampered by cost factors, where lack of funds within the enterprises or group top the list, followed by lack of finance from sources outside the enterprises. High cost of innovation and lack of qualified personnel also stand out as hampering factors for innovation activities.

With regards to intellectual property rights, about 16.2% of enterprises with innovation registered a trademark between 2012 and 2014, while about 5.9% claimed a copyright. There were about six enterprises with both innovation active and non-innovation active that secured a patent in Namibia. The innovation active enterprises secured the most patents at 5.9% while enterprises without innovation secured only 2.9%.

## CONCLUSION AND RECOMMENDATIONS

The innovation survey 2012-2014 was Namibia's first innovation survey based on a census survey of the business sector. The registry of the survey population was compiled by NCRST, as the country did not have a business registry.

The innovation survey was conducted using the standardised questionnaire. A model questionnaire by UNESCO Institute for Statistics was adapted to the Namibian context. Therefore, the survey findings are useful in understanding the relative innovation performance and the impact on various policies in different settings.

The main reason for conducting innovation surveys is to provide statistical information for policy makers seeking information on how to further stimulate economic growth. It is widely known and accepted by policy makers that innovation is a driver of long-term economic growth, competitiveness and a better quality of life. Innovation is seen from the enterprises perspective as a way of increasing sales from the production of new products (goods and services) and of developing industries. In essence, innovation is a powerful economic force and driver of both development and prosperity.

This survey found that, despite government support to stimulate innovation with public funding, the rate of innovation is relatively low, with only 52.9% of enterprises engaged in innovation activities. Only one enterprise had product innovation new to the market and new to the firm. Perhaps current public funding programmes need to be better coordinated and intensified to target the kinds of innovations that have been demonstrated to lead to economic growth.

The focus of policies for an NSI is linkage between institutions, particularly universities, public research institutes and industry. Findings of this survey show that the most important links and collaborations for business enterprises are with suppliers of equipment, materials, components or software, their clients or customers and consultants, commercial labs or private R&D institutes. It is difficult for government to stimulate those linkages which form part of the market-driven business environment of the enterprise. However, public institutions and universities may be part of highly important initial source of information, as they play a role through scientific research and publications.

Through innovation surveys, business and government need to be made aware of tangible benefits of innovation to the country for government to create an enabling and regulatory environment for innovation than simply seeking to boost innovation entirely through funding programmes.

To develop policies that support innovation appropriately, it is necessary to better understand several critical aspects of the innovation process, such as innovation activities other than R&D, interactions among actors and the relevant knowledge flows. Policy development requires further advances in the analysis of innovation, which in turn requires obtaining better information.

# CHAPTER 1

## BACKGROUND AND INTRODUCTION

This report presents the main findings of the Innovation Survey which was conducted in 2015 in parallel with the Research and Experimental Data (R&D) survey in 2015, covering the financial years 2012-2014 for Namibian business enterprises. The survey was conducted by NCRST in collaboration with the Namibian Statistics Agency (NSA) and the University of Namibia (UNAM).

Innovation, according to the Organisation for Economic Co-operation and Development (OECD), refers to the implementation of a new or significantly improved product (good and service), process, marketing methods or organisation methods in business practices, workplace organisation or external relation. A common feature of an innovation is that it must have been *implemented*. A new or improved product is implemented when it is introduced to the market. New processes, marketing methods or organisational methods are implemented when they are brought into actual use in the firm's operations.

The innovation survey, just like the R&D survey is a valuable source of information that facilitates effective planning and policy formulation with respect to science, technology and innovation (STI) by both public and private sectors. The role of innovation as a driver of economic growth, competitiveness and better quality of life has gained acceptance among policy makers. With the implementation of innovation, we expect creation of jobs and increased income resulting from the production of new products, processes and services and the development of new industries.

Innovation can be a confusing term if not properly explained in the business context. There are many types of innovation that can be developed by enterprises in industrial and services sectors where changed or improved versions of products or processes are introduced to the market. Innovation comprises of several types of activities and expenditure. A firm can make many types of changes in its methods of work, its use of factors of production and the types of output that improve its productivity and/or commercial performance. According to the Oslo Manual, there are four types of innovation that encompasses a wide range of changes in firm's activities namely; product innovations, process innovations, organisation innovations and market innovations.

**Product innovation** relates to significant changes in the capability of goods and services and includes 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.

A **product/process innovative** firm is one that has implemented a new or significantly improved product or process during the period under review.

**Market innovation** is the implementation of a new marketing method involving significant changes in product design or packaging, product placement, product promotion or pricing. Marketing innovations are aimed at better addressing customer needs, opening new markets, or newly positioning a firm's product on the market, with the objective of increasing the firm's sales.

The innovation (new or improved) must be new to the enterprise, but it does not need to be new to the industry sector or market.

**Organisational innovation** is the implementation of a new organisational method in the firm's business practices, workplace organisation or external relations. Organisational innovations can be intended to increase a firm's performance by reducing administrative costs or transaction costs, improving workplace satisfaction (and thus labour productivity), gaining access to non-tradable assets (such as non-codified external knowledge) or reducing costs of supplies.

Innovation takes place within and is supported by a country's NSI through its components which include government, industry and finance, academic and research institutions, civil society and their environment. Innovation in the private sector is important in boosting economic growth and contributes to the quality of life. While some innovations are a result of R&D, many innovations by the enterprises also happen without R&D activities aimed at producing new or improved products and/or processes. The strength of the NSI depends on the relationship between and linkages and interactions between players and stakeholders.

Many countries in the world have several public programmes and support programmes for R&D and innovation in place with the aim of stimulating the development of high-level human resources, as well as research output and innovation, which in turn grow and diversify the economy.

The indicators provided in the report describe the activities and patterns of innovation in the business sector in Namibia, including resources provided for innovation in enterprises: the type of innovation activities carried out; the level of novelty of innovation (new to an enterprise, new to the market and or new to the country); sources of information for innovation; and factors hampering innovation. The report also consists of the main subset of innovation indicators; and data tables specified for innovation surveys by the OECD.



## BOX 1: DEFINITION OF INNOVATION, BASED ON THE OECD, OSLO MANUAL.

An **innovation** is the implementation of a new or significantly improved product (good or service), or process, new marketing method, or a new organisational method in business practices, workplace organisation or external relations. This definition encompasses a wide range of possible innovations, the minimum requirement being that the product, process, marketing method or organisational method must be *new (or significantly improved) to the firm*. This includes products, processes and methods that firms are the first to develop and those that have been adopted from other firms or organisations.

**Innovation activities** are all scientific, technological, organisational, financial and commercial steps which actually, or are intended to lead to the implementation of innovations. Some innovation activities are themselves innovative, others are not novel activities but are necessary for the implementation of innovations. Innovation activities also include R&D that is not directly related to the development of a specific innovation.

An **innovative firm** is one that has implemented an innovation during the period under review. The broad definition of an innovative firm may not be appropriate for all policy and research needs. More narrow definitions can be useful in many cases, particularly for comparisons of innovation across sectors, firm size categories or countries. An example of a narrower definition is a product or process innovator.

## BOX 2: IMPACT OF INNOVATION

Impacts of innovations on firm performance range from effects on sales and market share to changes in the productivity and efficiency.

Important impacts at industry and national levels are changes in international competitiveness and in total factor productivity, knowledge spill overs from firm-level innovations, and an increase in the amount of knowledge flowing through networks.

## CHAPTER 2

### METHODOLOGY

#### 2.1 INTRODUCTION

The innovation survey was conducted in parallel with the R&D survey and followed a similar methodology as outlined below. Unlike the R&D survey, which covered the four sectors; business, higher education, not for profit organisations and government; the Innovation survey covered only the business sector. Unlike the R&D survey which used the Frascati Manual to conduct the survey, the Innovation survey was conducted using the OECD guidelines presented in the Oslo Manual.

The Oslo Manual was first published in 1992 by the Organisation for Economic Co-operation and Development (OECD) and the European Commission (EC) in response to the need for a systematic and internationally standardised methodology for collecting data on innovation. It provides guidelines on data collection for technological and non-technological innovations. The objectives of the Oslo Manual are two-fold: (i) to provide a framework within which existing surveys can evolve towards comparability; and (ii) to assist newcomers to collect and analyse innovation data.

The Innovation survey targeted business enterprises. However, due to unavailability of a business registry, a purposive sample of the innovation enterprises was surveyed for business sector. On the onset of the survey, more than 140 entities were identified as potential innovators in the business sector but only 68 entities were covered in the survey as sample.

The survey was conducted during the period of October to November 2015. The response rate for the survey was 48.6%.

#### 2.2 USERS AND USES

The results of the innovation survey are relevant to direct the development agenda of Namibia. Governments in Africa have noted the importance of conducting R&D and Innovation surveys to obtain basic/core indicators to formulate policies based on research evidence and allow benchmark policies based on engines of economic growth.

Key users of the R&D and Innovation surveys are policy makers. These are generally government officials who need trustworthy indicators to benchmark and monitor these policies. Researchers in the sectors of business, higher education, non-profit organisations and government also need indicators to monitor investments in research and development and to measure the research outputs in terms of publications and creation of new knowledge.

At an international level, the STI indicators are used for international comparisons. NEPAD and ASTII compare Namibia's performance in STI with the rest of Africa and globally UNESCO compares Namibia's level of R&D and Innovation performance with the rest of the world.

##### **Strengths and limitations**

The studies provide baseline national indicators for innovation. The list of enterprises and institutions provided in the database may not be exhaustive. There was a need to consider allocating more time to the data collection process.

## 2.3 ORGANIZATION AND PREPARATION

The National Innovation Survey 2012-2014 was conducted by NCRST under the RST Act, 2004 (Act No. 23 of 2004), which mandated the Commission, among others, to develop a National Programme on Research, Science, Technology and Innovation to review the state of research, science and technology in Namibia for the period 2012 to 2014.

Before the commencement of the R&D and Innovation surveys, NCRST and NSA signed a memorandum of understanding for NSA to conduct the survey on behalf of NCRST. During the 2012-2014 survey, a Joint Technical Committee (JTC) was established to oversee the execution of the surveys. Regular meetings of the JTC with minutes were convened to coordinate and facilitate the activities of the surveys. And, to have public confidence and trust in official statistics of surveys, the Namibia Statistics Act, 2011 (Act No. 9 of 2011) was used as the basis of authority for the survey. The survey was carried out under confines of the Namibia Statistics Act 2011, specifically following its code of practice requirements (Section 34 thereof). Through this collaboration, all information collected that could be linked to specific organisations was kept strictly confidential as per the Statistical Act, 2011 (Act No. 9 of 2011).

The survey was conducted in close collaboration with the following key stakeholders:

- NEPAD/ASTII and UNESCO UIS to ensure that the results of the survey are used for international comparability.
- In collaboration with the University of Namibia (UNAM) for data collection, data analysis and writing of the statistical report.

The field operation was preceded by various stakeholder workshops with resource persons and facilitators from both the NEPAD Agency STI Hub and from the Centre of STI indicators at the South African Human Sciences Research Council (CeSTII/HSRC).

The first workshop was conducted on the 11-14 August 2014. It targeted government officials who are the users of STI indicators in terms of policy development. The aim of the in-country training workshop was to impart skills for conducting R&D and Innovation surveys among government officials dealing with scientific research and innovation programmatic activities and experts who are actively involved in STI matter.

The second workshop was conducted on the 2-4 December 2014 as a training for trainers' workshop which targeted officials from NCRST and NSA to build human and institutional capacities to support the national implementation of sustainable and coordinated data gathering methodologies as well as development and using STI indicators. The training aimed to impart skills and acquire knowledge on conducting R&D and Innovation surveys among NCRST/NSA officials who were actively involved in conducting the surveys in Namibia. The training also addressed potential trainers who were expected to conduct trainings on STI matters and national surveys.

The third stakeholder workshop was conducted on the 14-17 July 2015 targeting the enumerators and stakeholders from the business, not for profit, higher education and government who were the target population on the surveys.

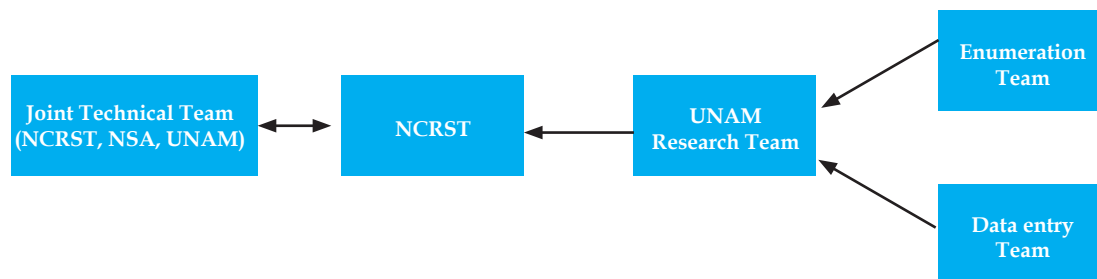
The training of enumerators, stakeholders and trainers of trainers was conducted by NEPAD resource persons. The Frascati and Oslo Manuals were used for training. In terms of localizing the manuals, the AOSTI and NEPAD Agency (ASTII) had put in place a harmonised mechanism that would support African Members States to collect standardized data to enable international

comparability and for the indicators to be based on common standards across the continent. UNAM received a copy of the manuals for references.

Stakeholders who were directly involved in the surveys were trained in R&D and Innovation survey procedures and methodology instruments as per international standards. The training was also aimed to gather inputs from stakeholders to improve the surveys instruments and share experience from other African countries that have successfully conducted the R&D and Innovation surveys such as South Africa and Uganda and obtain a buy in from stakeholders on the surveys. In addition, the workshops created awareness on the importance of participating in the R&D and Innovation surveys for economic development.

Overall all workshops were well attended. The approaches used during the workshops involved presentations and discussions. Proceedings of the workshops were also made available to the participants after the workshops.

### Field Survey supervisory structure



Ten enumerators were recruited to participate in the pilot survey and the actual surveys. Together with the researchers, they received training from a team of international consultants from the African Union Office (NEPAD) as well as from Uganda (UNCST) and South Africa (CeSTII) on data collection using the Frascati and Oslo Manuals as well as on data analysis and report writing. The pilot survey was completed within two weeks and was useful in finalizing the questionnaires and preparing for the roll-out of the R&D and Innovation surveys.

It was during the pilot survey review meeting between NSA, NCRST and UNAM that a decision was made to target all the institutions in the database as a sample survey was not possible due to the small size of the total population.

## 2.4 PUBLICITY AND COMMUNITY MOBILIZATION

At the onset of the R&D and Innovation surveys, an advertisement was placed in various medias to call on R&D performers (government, institutions of higher learning, non-profit organisations, and businesses) to register with NCRST from November 2014 to January 2015 for inclusion in the survey. Additionally, individual letters were sent to various organizations/institutions to register. These letters clearly explained the objectives of the survey, when it was to be conducted, the survey methodology, and organisation unit that was expected to provide information.

A media announcement was also placed in the media to invite stakeholders, R&D performers and innovators to attend the training workshop where the survey instruments were reviewed with the respondents.

The surveys were launched by Honourable Dr Itah Kandjii-Murangi, Minister of Higher Education,

Training and Innovation who delivered a keynote speech which was reported on Namibian Broadcasting Corporation (NBC) and One Africa Television to roll out the data collection process. Furthermore, during the data collection period, an advertisement was aired for two weeks on television where Dr Itah Kandjii-Murangi called on the stakeholders to participate in the surveys and emphasised the importance of developing STI indicators for the country.

## 2.5 FIELD ORGANIZATION AND SUPERVISION

Field organization plays a crucial role in any survey. A research team consisting of two senior researchers and a team leader worked together to ensure that field operations started and ended without bottlenecks. Some of the processes addressed during planning included:

- Establishing contacts with focal persons in institutions and enterprises
- Recruitment and remuneration of enumerators
- Logistical arrangements in terms of transport and communication
- Overall coordination of all other functions associated with fieldwork such as continuous monitoring of enumerators progress and challenges

Enumerators were trained to probe until they were satisfied with the response given by respondents before they recorded them on the questionnaire. Questionnaires that required further clarification were identified and handed back to enumerators for follow-up.

**Field data capture and transcription:** The R&D and Innovation surveys used the traditional method of recording respondents' answers on the questionnaire. Enumerators were also trained on reconciling collected information especially percentages and headcount.

Data collection commenced in Windhoek based on logistical and operational arrangements. Each enumerator was assigned a specified number of enterprises to interview in Windhoek. This ensured oversight by supervisors and effective communication with respondents especially at the beginning of the two surveys. The enumerators made appointments and developed a time schedule for face-to-face interviews at participating enterprises. During interviews, the purpose of the survey was explained as well as the questionnaires with guidance on how to complete them. In instances where interviews were not completed, questionnaires were left with the focal persons in the organizations, to collect and verify information required. Focal persons requesting electronic questionnaires were sent the forms via email. Whenever necessary, weekly follow ups were made with focal persons to further explain the questionnaire. Researchers intervened where enumerators were not able to contact the focal persons to facilitate the interviews or where responses were not forthcoming by further explaining the importance of the survey data in national planning.

## 2.6 DATA PROCESSING AND QUALITY ASSURANCE

Each enumerator was assigned to a supervisor who manually checked for consistency and completeness of entries before the specific interview is recorded as complete. Supervisors also reconciled the number of questionnaires dispatched the records to the office. Incomplete questionnaires due to refusals were also retained for accountability. Questionnaires which were completed electronically were printed, checked for consistency and completeness. All completed questionnaires were sorted according to sectors and kept in a safe private office.

Data capture involves the transformation of data from the hard copies (questionnaires) to an electronic format. A data entry template was designed using Microsoft access for each interview tool (for each sector on R&D survey and for Innovation survey). Ten data entry clerks were trained

to capture information from the questionnaires and they entered all data under the supervision of the researchers. Microsoft Access data sets were then transferred to SPSS and merged per sector. The entered data was cleaned and analysed using SPSS. The data cleaning process involved mainly consistency edit checks. Errors were corrected through a verification process and data verification was mainly done during data analysis.

Analysis involved the creation of new variables, with some variables being computed from existing variables. Data were presented in the form of tables and graphs with frequencies, averages and percentages expressed as shown in the statistical report (see chapter 3). Once complete, the cleaned data sets were saved in SPSS.

The main purpose of data validation process was to ensure that data was error-free, valid and useful for analysis. Data validation included checking against missing data values and incorrect and / or unusual data values. All these checks were done manually and data were corrected before the consistency checks process. All the data values were checked for validity and accuracy before analysis and tabulation.

To maintain data security, all data entry clerks were given unique usernames and passwords for computers which they were using in the Multi-disciplinary Centre (MRC) data entry room. Access to the data entry room was limited to authorised personnel.

Data quality assurance is one of the cornerstones of a good statistical data system. In this survey, efforts were made during the conduct of the survey to minimize the non-responses, incompleteness and inaccuracy that may affect the quality of data. In addition, raw data were submitted to NEPAD and UNESCO -UIS for further quality check and consistency.

Training and financial support was given by the NEPAD and ASTII who provided training on data collection and financial contribution towards the surveys. The training provided technical skills to NCRST, NSA and UNAM staff. The training covered the following aspects:

- Understanding of R&D and Innovation definitions and concepts in relation to STI Indicators
- Methodology and procedures for data collection
- Methodologies and frameworks for the measurement of Research and Experimental Development (R&D) and Innovation
- R&D and Innovation Survey instruments: Standard questionnaires
- Processing R&D and Innovation survey data and analysis and dissemination

The Centre for Science, Technology and Innovation Indicators (CeSTII), South Africa, provided training on data analysis and report writing and assisted NCRST in writing up of the innovation analysis report using the raw data and making comparison with survey results produced by UNAM and verified by NEPAD.

# CHAPTER 3

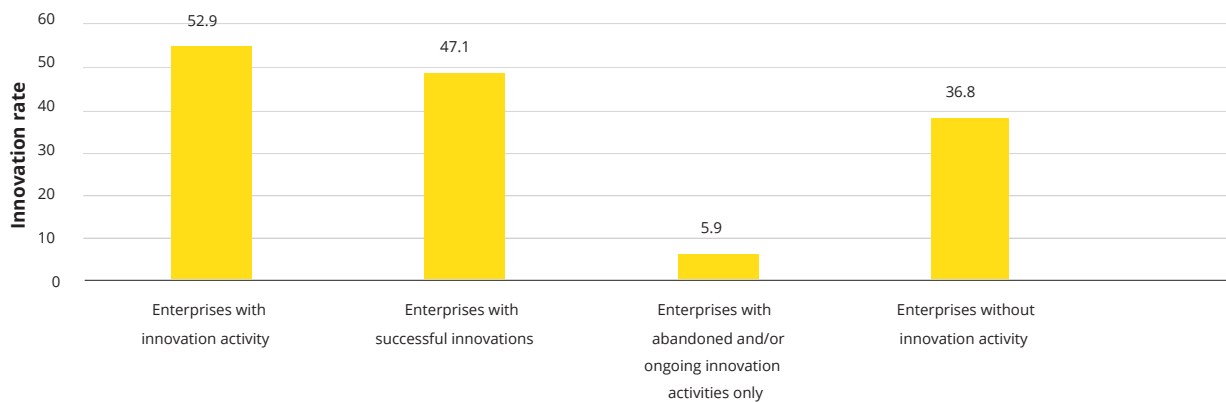
## RESULTS AND DISCUSSIONS

### 3.1 RATE OF INNOVATION

Innovation activities include the acquisition of machinery, equipment, software, licences, engineering and development work, training, marketing and R&D. Those activities can only be counted as innovation when they are specifically undertaken to develop a new product and/or significantly improve an existing product or process. The 2012-2014 innovation survey results represent the activities of 68 enterprises in Namibia and Figure 3.1 shows that 52.9% of enterprises were engaged in innovation activities. Out of all the innovative enterprises, 47.2% had successful innovation, meaning that they completed product and/or process innovation during the period covered by the survey. A further 5.9% indicated that they had ongoing and/or abandoned innovation activities.

The rate of 52.9% found in this survey is in line with findings of the African Innovation Outlook II of 2014. In this report the innovation rate for African countries that participated in that survey was found to be generally high, ranging between 40.1% and 77.0%

**Figure 3.1: Innovation rate: Percentage innovation for innovation and non-innovation enterprises, Namibia, 2012-2014.**



**Figure 3.2: Percentage of enterprises with successful innovation, Namibia, 2012-2014**

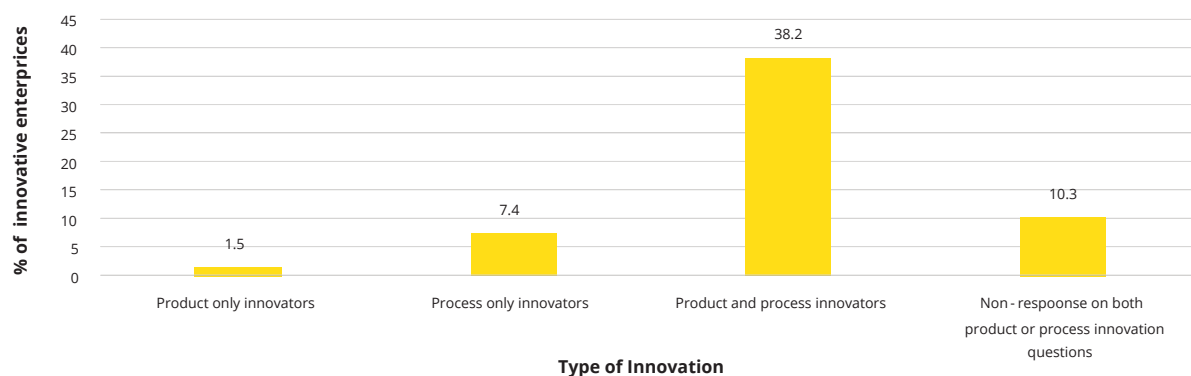


Figure 3.2 shows that the enterprises with successful innovation comprised of 1.5% with product only innovation, 7.4% with process only innovation and 38.2% with both process and product innovations.

### 3.2 CHARACTERISTICS OF ENTERPRISES COVERED BY THE SURVEY

Table 3.1 shows the comparison between the age of the enterprise and innovation activities. In general, the enterprises that have been in existence for a longer period are more likely to be innovative. Table 3.1 shows that 38.9% of innovative enterprises were those that were from 0-9 years old, and 13.9% were in business for more than 30 years. This shows that the younger enterprises were more innovation active than the older enterprises in Namibia.

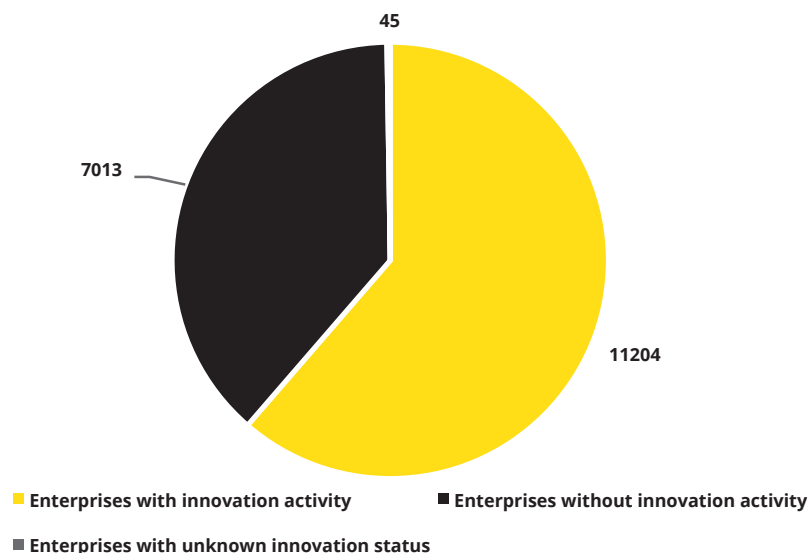
**Table 3.1: Age of enterprise in relation to innovation activities, Namibia, 2012-2014**

Number of years since enterprise was established	Number of enterprises	Percentage of enterprises
<b>Enterprises with innovation activity</b>		
0-9	14	38.9
10-19	8	22.2
20-29	7	19.4
30 and above	5	13.9
Non-response	2	5.6
<b>Enterprises without innovation activity</b>		
0-9	7	19.4
10-19	5	13.9
20-29	8	22.2
30 and above	4	11.1
Non-response	1	2.8

The 68 surveyed enterprises employed 18,682 people. Of these, 11,204 or 61.2% worked in the enterprises without innovation activities.

The survey also revealed that, enterprises with innovation activities had a high percentage of employees with degrees and diplomas and there was 1,481 or 13.2% (Table 3.2) of employees with degrees in the enterprises with innovation activities in 2012-2014. This indicates that innovation activities are undertaken by enterprises with high skilled employees.

**Figure 3.3: Total number of employees in enterprises with innovation activities, 2012-2014**



Total turnover of the 68 Namibia surveyed enterprises was recorded at N\$ 10,671 billion. Enterprises with innovation activities accounted for 59% of the turnover (Table 3.2).



Figure 3.4 shows the turnover for enterprises with innovation activities and enterprises without innovation activities for 2012 and 2014. The trends were that the turnover for enterprises with innovation activities was low in 2012 at 23.9% in comparison to enterprises without innovation activities which was at 76.1%. However, the turnover for enterprises with innovation activities grew from 23.9% in 2013 to 59.5% an increase with more 100% in 2014, while the turnover for enterprises without innovation activities dropped by 60.2% from 2012 to 2014.

**Table 3.2: Total enterprises, number of employees and turnover: comparison of enterprises with innovation activities, Namibia, 2012-2014**

Total enterprises, number of employees and turnover (\$ millions)	2012-2014)	%
All enterprises	68	100
Enterprises with innovation activity	36	52
Number of employees	18262	100
Number of employees in enterprises with innovation activities	11204	61
Turnover (N\$ millions)	10 671	100
Turnover (N\$ millions of enterprises with innovation activities)	6345	59
Number of employees with a degree or diploma in enterprises with innovation activities	1481	13.2

**Figure 3.4: Enterprises turnover (percentage), 2012 and 2014**

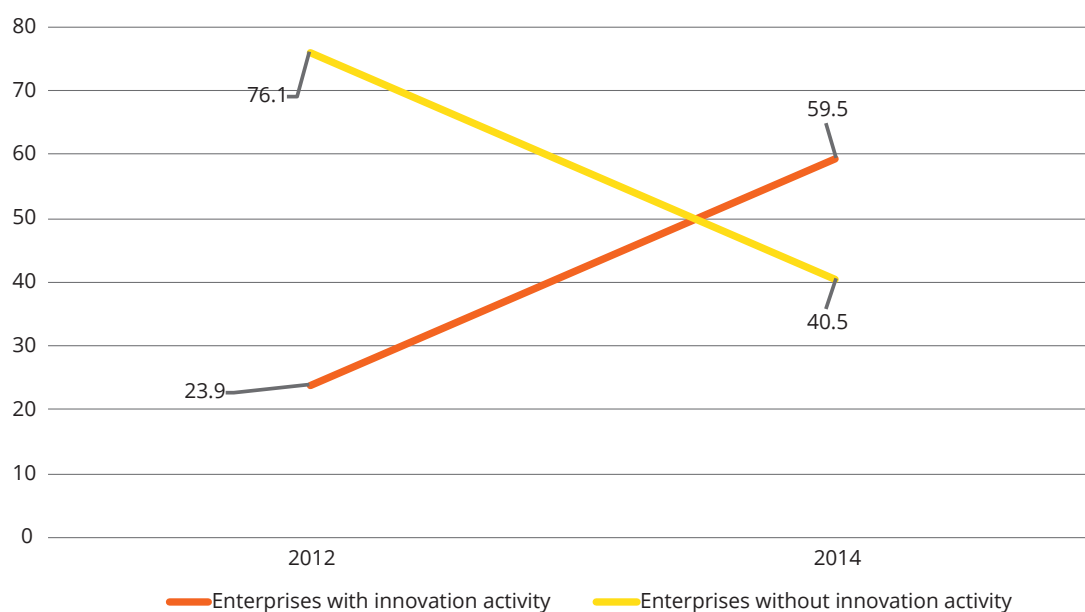
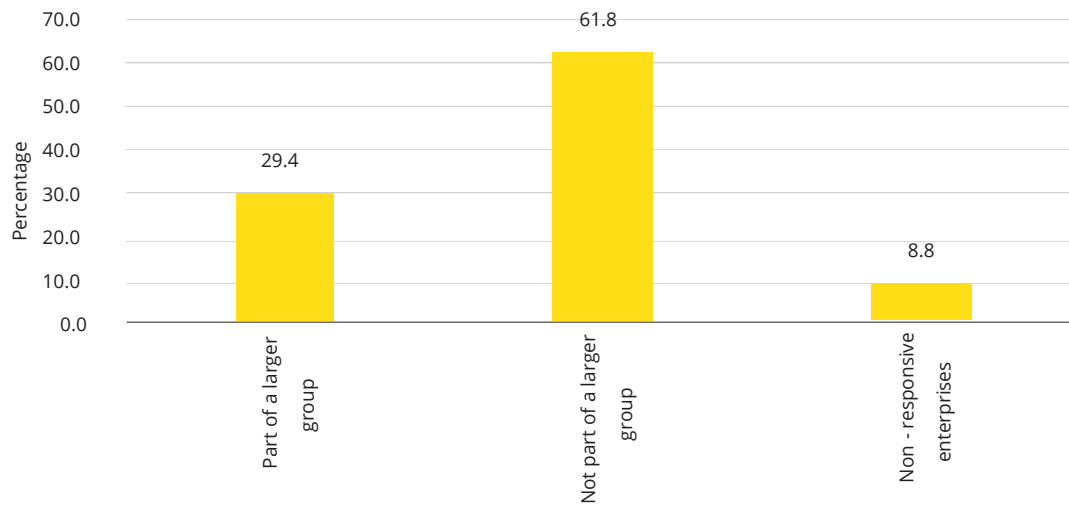


Figure 3.5 shows that 61.8% of innovation enterprises were not subsidiaries of other companies or group of enterprises. Many of the enterprises were stand-alone enterprises and not part of a larger group. Only 29.4% of enterprises were part of the larger group. Those that stated that they were part of larger group, 11.8% stated that their head office was in Namibia followed by those with the head office in South Africa (4.4%).

**Figure 3.5: Enterprises that are part of a large group, 2012-2014**



**Table 3.3: Location of head office for enterprises stating that they were part of larger group, Namibia, 2012-2014**

If part of a larger group, head office location:	Number of enterprises	Percentage
Australia	1	1.5
Canada	2	2.9
China	1	1.5
Namibia	8	11.8
South Africa	3	4.4
Spain	1	1.5
Switzerland	1	1.5

Table 3.4 shows that innovation enterprises appeared to be more export-oriented than non-innovative enterprises. Among the non-innovation enterprises, about 36% sold goods and services only in some regions of Namibia compared to 27.8% of innovative enterprises. Other African countries were an important destination for goods and services produced by innovative enterprises (33.3%) the same as goods and services that go to Europe (33.3%). Asia and the United States were the lowest recipients of goods and services from innovative enterprises with 19.4% and 13.9% respectively.

**Table 3.4: Percentage of geographic distribution of goods and services sold by innovation-active and non-innovation enterprises, 2012-2014**

Geographical distribution	All enterprises (%)	Enterprises with innovation activity (%)	Enterprises without innovation activity (%)
Namibia (Only some regions)	27.9	27.8	36.0
Namibia (National)	41.2	63.9	20.0
Rest of Africa	23.5	33.3	16.0
Europe	22.1	33.3	12.0
United States	7.4	13.9	0.0
Asia	13.2	19.4	8.0
Other countries	16.2	25.0	8.0

### 3.3 TYPES OF INNOVATION

The 3<sup>rd</sup> edition of the Oslo Manual (OECD, 2005) defines four types of innovation namely product, process, organisation and market innovation. The rate of innovation for each type is shown in Figure 3.6. Few enterprises have product only innovation at 1.5% or process only innovation at 7.4%, while 38.2% had both process and product innovations. The remaining 5.9% reported having abandoned or ongoing innovation activities for the period 2012-2014. The overall innovation rate for technological (product only, process, abandoned or ongoing) innovation activities was 52.9%. The overall innovation rate for organisational and marketing innovation activities was 51% and 49% respectively.

**Figure 3.6: Innovation rate by type of innovation, Namibia, 2012-2014**

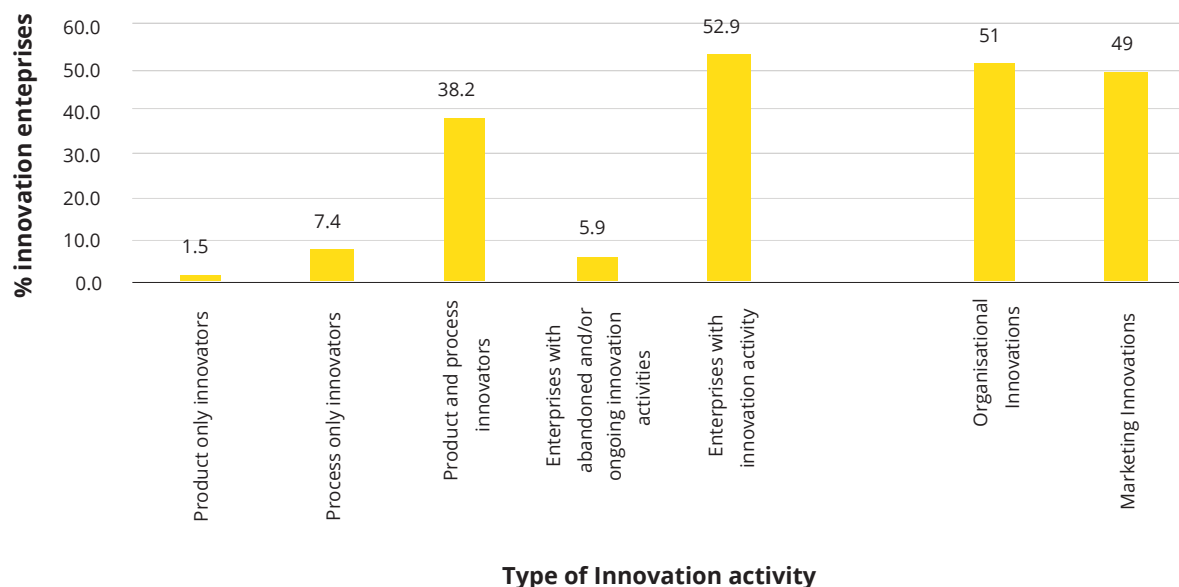


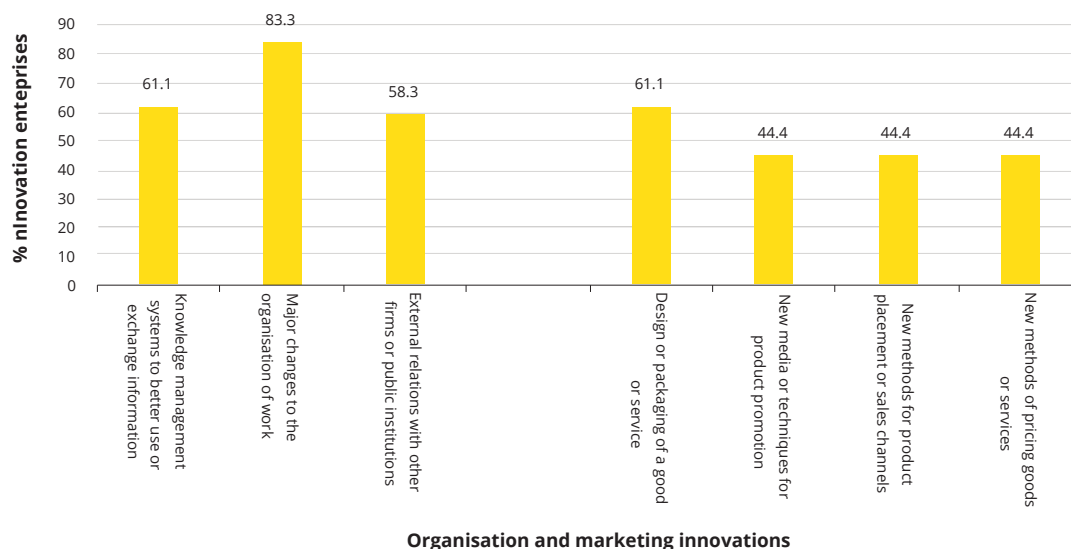
Table 3.5 shows that enterprises that had organisational innovation were proportionally more at 66.2% than enterprises with marketing innovation at 57.4%, followed by enterprises with both organisation and marketing innovation at 50%.

Figure 3.7 provides more details on the organisational and marketing innovations undertaken by innovative Namibian enterprises. Enterprises in Namibia were predominant with organisational innovation at 67.6% on average than marketing innovations. This means that enterprises implemented new organisational methods in the enterprises’ business practices, workplace or external relations. In terms of organisational innovations, 83.3% enterprises introduced changes to the organisation of work and while 61.1% introduced knowledge management systems to better use or exchange information. In terms of marketing innovation, 61.1% of enterprises introduced design or packaging of a goods or services.

**Table 3.5: Percentage of enterprises with organizational and/ or marketing innovations, Namibia, 2012-2014**

Innovation enterprises	%
Enterprises with organisational innovation	66.2
Enterprises with marketing innovation	57.4
Innovative enterprises with organisational and/or marketing innovation	50.0
Product Only Innovative enterprises with organisational and/or marketing innovation	1.5
Process Only Innovative enterprises with organisational and/or marketing innovation	7.4
Product and Process Innovative enterprises with organisational and/or marketing innovation	36.8

**Figure 3.7: Percentage of innovation enterprises that introduced organisational or marketing innovations, Namibia, 2012-2014.**



### 3.4 PRODUCT AND PROCESS (GOODS AND SERVICES) INNOVATION

#### 3.4.1 PRODUCT (GOODS AND SERVICES) INNOVATION

Table 3.6 gives the turnover and number of enterprises for product innovation. Approximately 26.3% of the turnover for product innovation in 2014 was generated by products that were new to the market, representing a turnover of about N\$ 989 million. Table 3.6 also shows the number of enterprises that were engaged in product innovations and 29.6% of product innovations were new to the market.

**Table 3.6: Product (goods and services) innovations: number breakdown of turnover to type of product innovations and number of enterprises, Namibia, 2014.**

Type of products	Turnover generated (N\$ million)	Percentage turnover	Number of enterprises by product type	Percentage enterprises by product type
<b>Type of product innovation</b>	3 756	100.0	27	100.0
Innovations new to the market	989	26.3	8	29.6
Innovations new to the firm	409	10.9	7	25.9
Unchanged or marginally modified	2 342	62.3	9	33.3
Unclassified	17	0.4		0.0

Figure 3.8 shows that product innovations by innovation-active enterprises were developed mainly in-house by the enterprises at 14%. Collaboration with other enterprises or institutions was the source of development of product innovation for 6% of innovators, while 5% modified or adapted goods and services developed by other institutions.

**Figure 3.8: Responsibility for the development of product innovations in innovative enterprises**

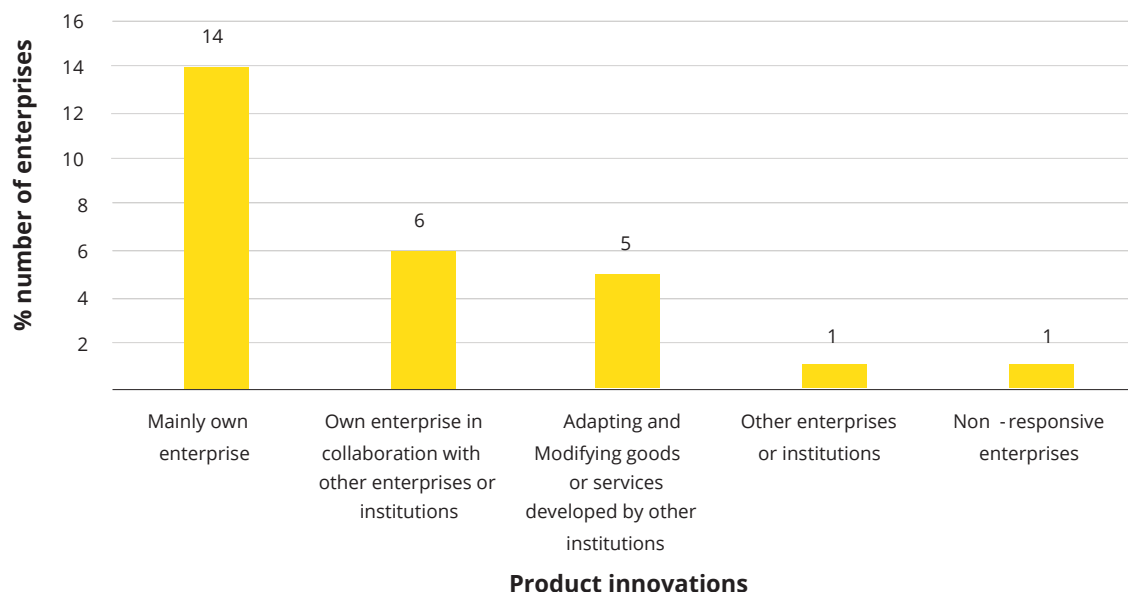


Table 3.7 shows the origin of the innovation and revealed that 85% of innovation originated within Namibia and only 7 % originated from the rest of Africa.

**Table 3.7: Origin of product innovations, Namibia, 2012-2014**

Origin of innovation	Number enterprises	Percentage of innovation origin (%)
All product Innovators	27	100
Namibia	23	85
Rest of Africa	2	7
Europe	0	0
United States	0	0
Asia	0	0
Other countries	1	4
Non-responsive enterprises	1	4

### 3.4.2 PROCESS INNOVATION

Process innovation is the use of new or significantly improved methods for the production or supply of goods and services. Process innovation is very important because it leads to better quality control, greater efficiency, compliances with new regulations and lesser wastage. Process innovation is less tangible than the development and sales of new innovative products and services, but it nevertheless benefits enterprises through improved quality or cost-saving in the production of goods and services.

As indicated in Table 3.8, new or significantly improved supporting activities for processing goods and services were reported by 56% of process innovators, followed by new or significantly improved logistics, delivery or distribution methods for inputs, goods or services at 47%.

**Table 3.8 Innovation-active Namibian enterprises performing specific process innovations, Namibia, 2012 - 2014**

Type of innovation process	Total	Percentage process innovators
New or significantly improved methods of manufacturing or producing goods or services	20	56
New or significantly improved logistics, delivery or distribution methods for inputs, goods or services	17	47
New or significantly improved supporting activities for processes such as maintenance and operating systems for purchasing, accounting or computing	16	44

The survey asked a question to establish if any of -the enterprises new or significantly improved specific products or services were first in Namibia, first in the world or new of significant changes in external relations with other firms or public institutions, such as through alliances, partnerships, outsourcing or sub-contracting. As shown in Table 3.9, 46.9% of enterprises with successful product and process innovations were a first in Namibia.

**Table 3.9: Specific innovations by enterprises, Namibia, 2012-2014**

Enterprises with successful product and process innovations	Number of enterprises	Percentage of enterprises
A first in Namibia	15	46.9
A world first	7	21.9
New or significant changes in enterprise external relations with other enterprises or public institutions	9	28.1
Non-response	12	37.5

### 3.5 INNOVATION ACTIVITIES AND EXPENDITURES

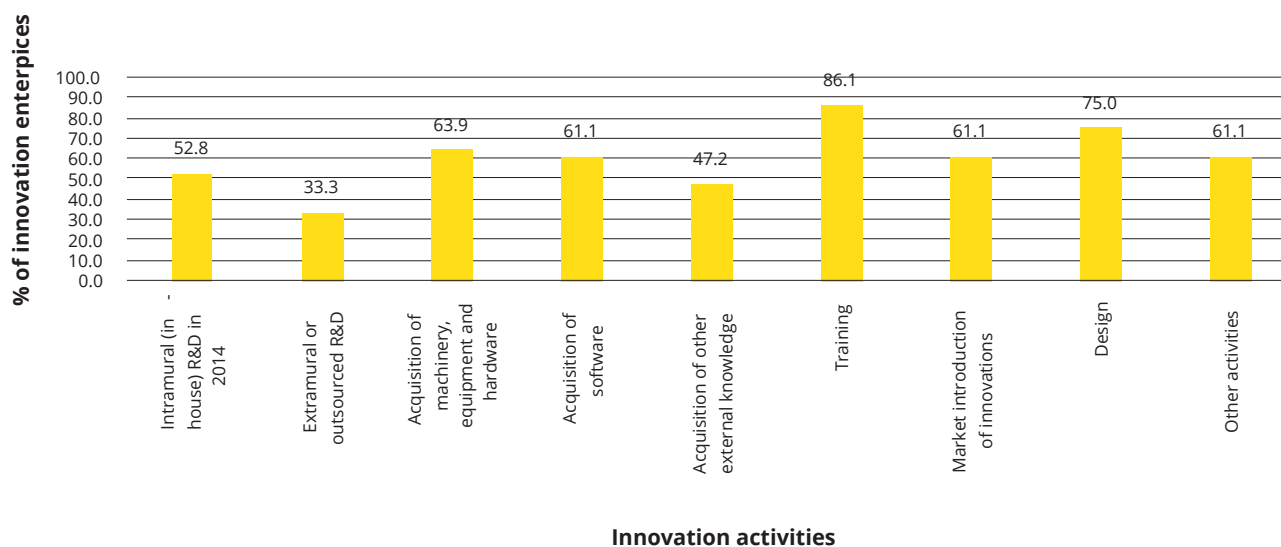
Innovation activities may be related to any scientific, technological, organisational, financial and commercial steps which lead to the implementation of innovations. Activities of product and process innovation measured in the survey include acquisition of machinery, equipment and software, training, in-house and outsourced R&D, and acquisition of other external knowledge.

Figure 3.9 shows that the most important innovative activity was training (86.1%) followed by design (75.0%) and (63.9%) acquisition of new machinery, equipment or software as part of their innovation processes. The R&D expenditure for both in-house and outsourced R&D accounted for 86.1%.

Innovative enterprises spent N\$ 502 million (Table 3.10) on innovation activities. Many of the Namibian enterprises did not disclose their innovation expenditure (Table 4.1). Expenditure on innovation activities as a percentage of the turnover of innovative enterprises in 2012-2014 was 14.7% overall.

Of note is that acquiring machinery and intramural R&D tends to account for the largest share of expenditure on innovation in most African countries as reported in the African Innovation Outlook for 2014 (Table 3.11).

**Figure 3.9: Type of innovation activities among innovative enterprises, Namibia, 2012-2014.**



**Table 3.10 Enterprises that declared innovation expenditure, Namibia, 2012-2014.**

Type of expenditure	Expenditure (N\$ millions)	% of proportion of innovation expenditure
Intramural (in-house) R&D in 2014	131.1	26.1
Extramural or outsourced R&D	134.8	26.8
Acquisition of machinery, equipment and software	188.2	37.5
Acquisition of other external knowledge	48.0	9.6
Total Expenditure	502.0	100.0

**Table 3.11: Share of expenditure for the four categories of innovating activities firm engaged in for reporting period, Selected SADC countries, 2008-2011.**

	Intramural (in-house) R&D	Extramural (outsourced) R&D	Acquisition of machinery or Acquisition of software	Acquisition of another external Knowledge	TOTAL
Lesotho	16.4	0.9	81.2	1.4	100.0
South Africa	21.2	11.4	59.6	7.8	100.0
Tanzania	7.2	4.1	87.3	1.4	100.0
Zambia	73.9	1.2	23.0	1.9	100.0

Sources: Africa Innovation Outlook II. 2014. 2008-2010 for Tanzania and Zambia and 2010-2012 for Lesotho and 2005 -2011 for South Africa.

Namibian enterprises spent about N\$ 188 million on acquisition of machinery, equipment and software, taking up the bulk of innovation expenditure for innovative enterprises.

Figure 3.10 shows the level of expenditure on intramural R&D, which was carried out either continuously or occasionally. About 52.8% of enterprises indicated that they conducted in-house

R&D. The results also show that Namibia had a high number of innovative enterprises undertaking occasionally innovation R&D at 30.6% whereas 22.2% of innovative enterprises undertook R&D on a continuously basis.

**Figure 3.10: Share of innovation enterprises (percentages) engaged in intramural R&D continuously or occasionally, Namibia, 2012-2014**

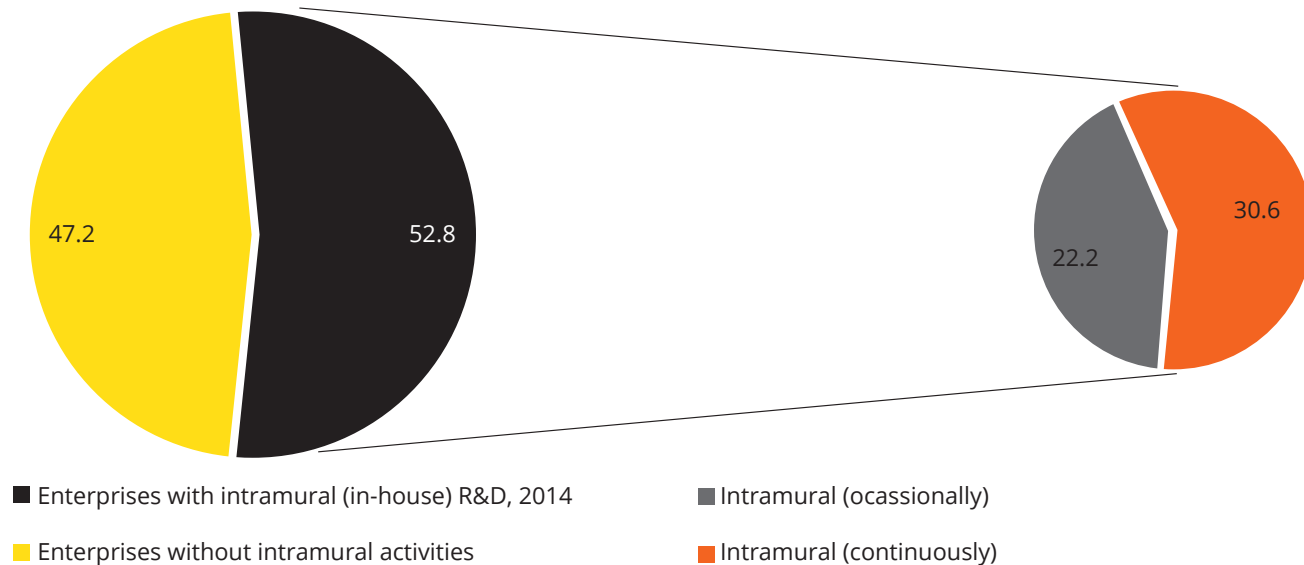


Table 3.12 shows that 88.9% of innovative enterprises were engaged in successful innovations in 2014 while 44.4% were engaged in successful innovation and intramural R&D. On the other hand, 44.4% of innovative enterprises engaged in innovation without R&D. Further investigation is required to establish how the innovative enterprises were engaged in innovation without R&D.

**Table 3.12: Number and percentage of enterprises with successful innovations and performed R&D, Namibia, 2014**

Type of expenditure	Number of innovative enterprises	Proportion of innovative enterprises (%)
Enterprises with successful innovations	32	88.9
Enterprises that engaged in intramural R&D in 2014	19	52.8
Enterprises with successful innovations and engaged in intramural R&D in 2014	16	44.4

### 3.6 FINANCIAL SUPPORT FOR INNOVATION ACTIVITIES

Table 3.13 shows that 9 enterprises, which represents 25% of innovative-active enterprises received funding from government, and 19.4% of the total were from successful innovators. Overall, 50% of Namibian innovation-active enterprises received funding for innovation activities from the government, including 5.6% that had abandoned and/or ongoing innovation activities.



**Table 3.13: Innovation-active enterprises that received financial support for innovation activities from government sources, Namibia, 2012-2014**

	Number	Percentage
Number of innovation-active enterprises	36	100.0
Enterprises with innovation activity	9	25.0
Successful innovators	7	19.4
Enterprises with only on-going and/or abandoned innovations	2	5.6

Table 3.14 shows that government support for innovation in the country was through regional councils’ offices or local municipalities / authorities, National government, National funding agencies and foreign governments / public sources. The national government was the major source of funding for innovation activities (16.7%). Fewer enterprises with ongoing and/or abandoned innovation activities (5.6%) received funding from government.

National funding agencies such as the National Commission on Research, Science and Technology (NCRST) through its grant funding for research and innovation will have a stimulatory effect on innovation activities in the country in future.

**Table 3.14: Public financial support for innovation active enterprises from levels of Government, Namibia, 2012-2014**

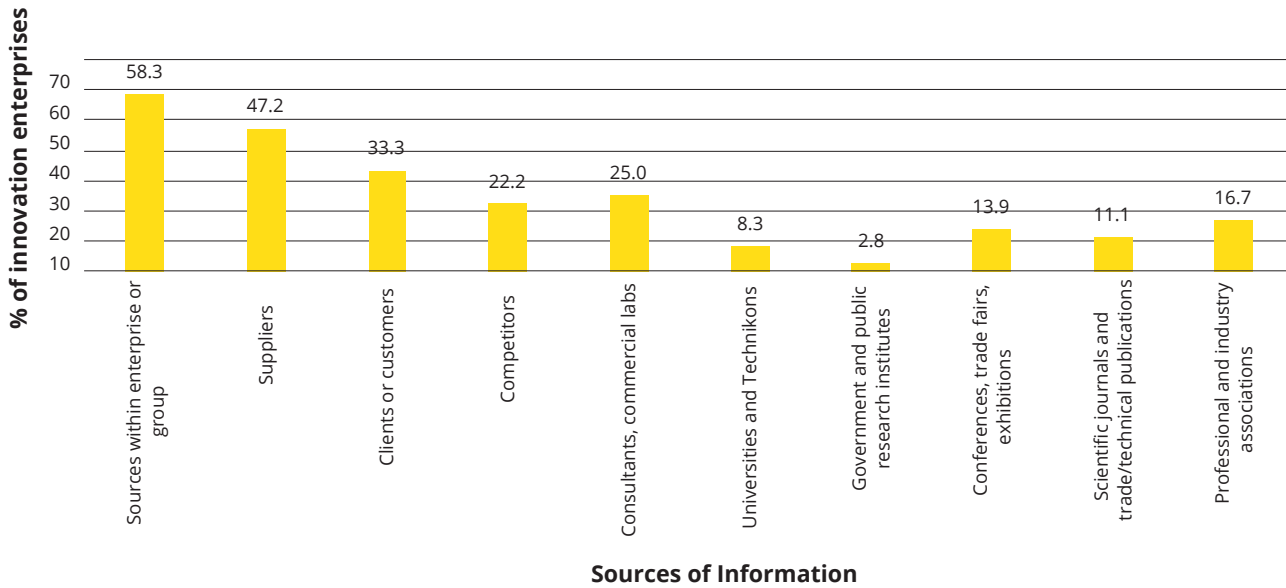
Levels of Government	Number of innovation-active enterprises	Proportion of innovation-active enterprises (%)
Regional Council Office or local municipalities or authorities	1	2.8
National government	6	16.7
National funding agencies:	3	8.3
Foreign government/public sources	3	8.3
Total	13	36

### 3.7 SOURCES OF INFORMATION AND CO-OPERATION FOR INNOVATION ACTIVITIES

About 58.3% of all innovative enterprises rated sources of information within the enterprises as “highly important” for innovation activities (Figure 3.11). Suppliers of materials and equipment as external market sources were rated as “highly important” by 47.2% of innovation enterprises, followed by clients and customers (33.3%), consultants, commercial labs 25.0% and competitors (22.2%). In Africa, besides from within the firm or enterprise group itself, enterprises primarily sought ideas about innovation from clients and customers, followed by suppliers of equipment and competitors (NPCA, 2014).

Government, public research institutes and universities received the lowest rating as the “highly important” sources of information for innovation activities in Namibia in 2012-2014.

**Figure 3.11: Sources of information for innovation rated as “highly important” by innovation-active Namibian enterprises, Namibia, 2012-2014**



### 3.8 CO-OPERATION PARTNERS FOR INNOVATION ACTIVITIES

Figure 3.12 shows that Namibian enterprises relied more on their suppliers of equipment and machinery as their most valuable collaborative partners for innovation activities (80.6%) followed by collaborative effort between enterprises and their consultants, commercial labs or private R&D institutes were (72.2%). The results show that there is little effort in terms of collaboration between enterprises, universities and government or public research institutes (38.9%).

**Figure 3.12: Collaborative partnerships for innovation activities by type of partner, Namibia, 2012-2014**

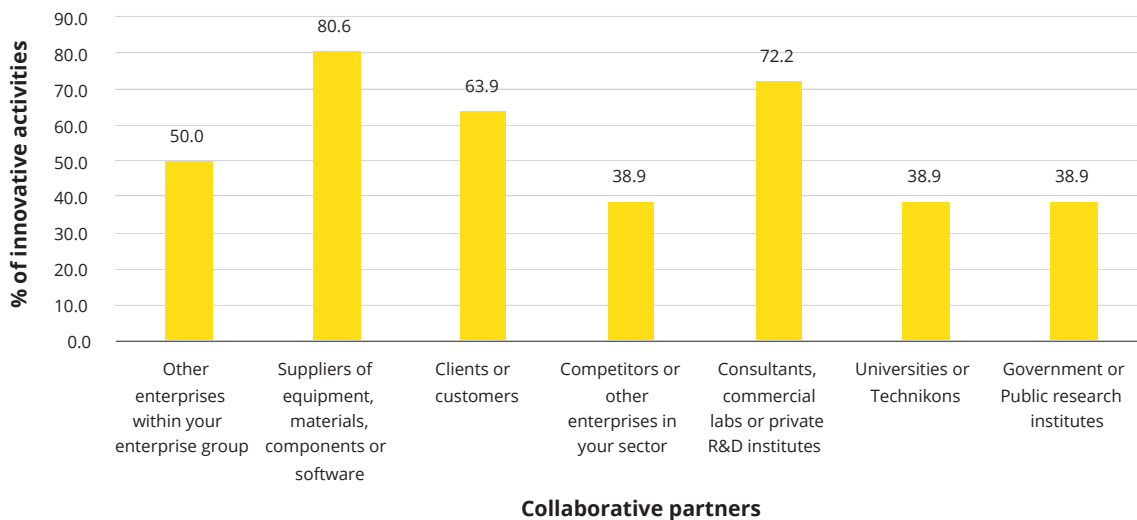


Figure 3.13 shows that suppliers of equipment, materials, components or software were the most valuable cooperation partners and together with clients or customers and consultants, commercial labs or private R&D institutes for innovation activities (11.1%). Universities, government or public research institutes and competitors or other enterprises in the sector were the least valuable cooperative partners for innovations.

**Figure 3.13: Most valuable cooperation partner for innovation activities, (Percentage), Namibia, 2012-2014**

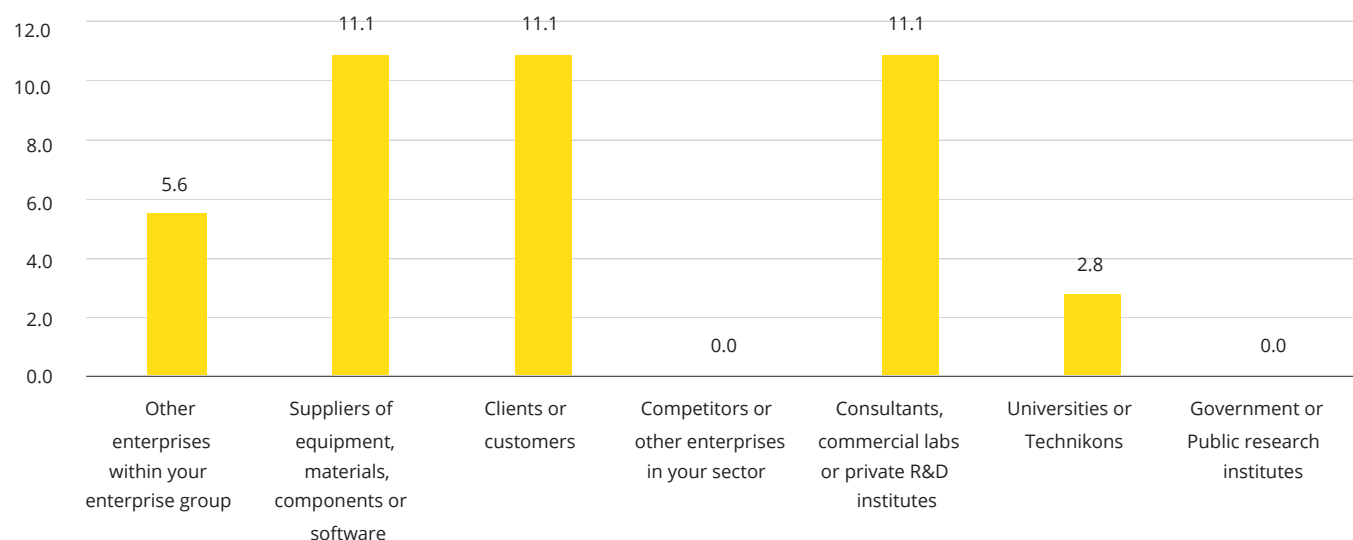


Table 3.15 shows that innovative enterprises in Namibia were collaborative with most of the partners located in Namibia, suppliers of equipment, materials within Namibia (25%), clients and customers (30.6%) and other enterprises within their enterprises group and consultants, commercial labs or private R&D institutes (22.2%).

Other highly important collaborative partners were from the rest of Africa and Europe.

**Table 3.15: Collaborative partnerships for innovation activities by type of partner and their location (number), Namibia, 2012 - 2014**

Collaborative partners' location	Other enterprises within your enterprise group	Suppliers of equipment, materials, components or software	Clients or customers	Competitors or other enterprises in your sector	Consultants, commercial labs or private R&D institutes	Universities	Government or Public research institutes
Namibia	22.2	25.0	30.6	13.9	22.2	16.7	19.4
Rest of Africa	11.1	22.2	13.9	8.3	16.7	5.6	5.6
Europe	11.1	16.7	8.3	5.6	13.9	5.6	5.6
USA	5.6	5.6	5.6	2.8	11.1	5.6	2.8
Asia	0.0	5.6	2.8	2.8	2.8	2.8	2.8
Other Countries / Regions	0.0	5.6	2.8	5.6	5.6	2.8	2.8
Total	50.0	80.6	63.9	38.9	72.2	38.9	39

### 3.9 EFFECTS ON INNOVATION

The Innovation survey included a question that required innovative enterprises to rank the importance of various market and operation outcomes resulting from both product and process innovations. In respect of product innovation, improved quality was cited as having a “highly important” effect on innovation by 50% of innovative enterprises (see Table 3.16). Increased range of goods and services was also an important outcome. Increased market share for product outcome was not seen as highly important by innovative enterprises.

In terms of process innovation, all the outcomes of innovation activities such as improved flexibility and capacity of production or services provision and reduced production costs per unit of labour, materials and energy were ranked as highly important (47.2%).

Innovation activity outcomes were also ranked as highly important in terms of improving working conditions on health and safety in the workplace. No indication was given in terms of met government regulation requirements.

**Table 3.16: “Highly important “effects of innovation on the outcomes for innovation activities, Namibia, 2012-2014**

Percentage of enterprises	Total
<b>Product Outcomes</b>	
Increased range of goods or services	38.9
Entered new markets	27.8
Increased market share	0.0
Improved quality of goods or services	50.0
<b>Process outcomes</b>	
Improved flexibility of production or service provision	47.2
Increased capacity of production or service provision	47.2
Reduced production costs per unit of labour, materials, energy	47.2
<b>Other Outcomes</b>	
Reduced environmental impacts	41.7
Improved working conditions on health and safety	44.4
Met governmental regulatory requirements	0.0

As shown in Table 3.17, enterprises were asked to rank in terms of “highly important” the objectives of product and process innovations. About 64% of innovative enterprises considered improved quality to be a highly important objective of innovation activities, followed by improved flexibility of production and services provision (56%) and increase range of goods and services.

**Table 3.17: Highly important objectives of product and process innovations for Namibian enterprises (number), Namibia, 2012 - 2014**

Enterprises with innovation activity	Total	Percentage
Increased range of goods or services	18	50
Replace outdated products and processes	13	36
Enter new markets	16	44
Increase market share	13	36
Improve quality of goods or services	23	64

Improve flexibility of production or service provision	20	56
Increase capacity of production or service provision	17	47
Reduce production costs per unit of labour, materials, energy	12	33
Improve working conditions on health and safety	15	42

### 3.10 FACTORS HAMPERING INNOVATION ACTIVITIES

Enterprises were asked to rate the degree to which several specified factors hampered their innovation activities during the period 2012-2014. Table 3.18 shows that both innovation enterprises and non-innovation enterprises indicated that the development of innovation activities within their enterprises was hampered by cost factors, where lack of funds within the enterprises or group tops the list, followed by lack of finance from sources outside the enterprises. High innovation costs and lack of qualified personnel also stood out as hampering factors for innovation activities.

**Table 3.18: Highly important factors that hampered innovation activities of all enterprises, Namibia, 2012-2014**

Hampering factors	Innovation active enterprises %	Non-Innovative enterprises %
<b>Cost Factors</b>		
Lack of funds within your enterprise or group (FG)	44	36
Lack of finance from sources outside your enterprise	33	32
Innovation costs too high	33	20
Excessive perceived economic risks	19	12
<b>Knowledge Factors</b>		
Lack of qualified personnel	22	28
Lack of information on technology	11	12
Lack of information of markets	14	8
Difficulty in finding cooperation partners	14	16
<b>Market Factors</b>		
Market dominated by established enterprises	22	16
Uncertain demand for innovative goods or services	6	16
Innovation is easy to imitate	3	12
<b>Other factors</b>		
Organisational rigidities within the enterprise	8	0
Insufficient flexibility of regulations or standards	22	4
Limitations of science and technology public policies	11	0
<b>Reasons not to innovate</b>		
No need due to prior innovations	8	4
No need because of no demand for innovations	6	0

### 3.11 INTELLECTUAL PROPERTY RIGHTS

Table 3.19 shows the percentage of innovative and non-innovative enterprises that used protection methods for intellectual property. About 16.2% of enterprises with innovation registered a trademark between 2012 and 2014, while about 5.9% claimed a copyright (Figure 3.14). About 5.9% of innovative enterprises were granted a license on any intellectual property rights generated from their own innovation activities. In comparison, innovative enterprises made use of intellectual property rights in Namibia than the non-innovative enterprises.

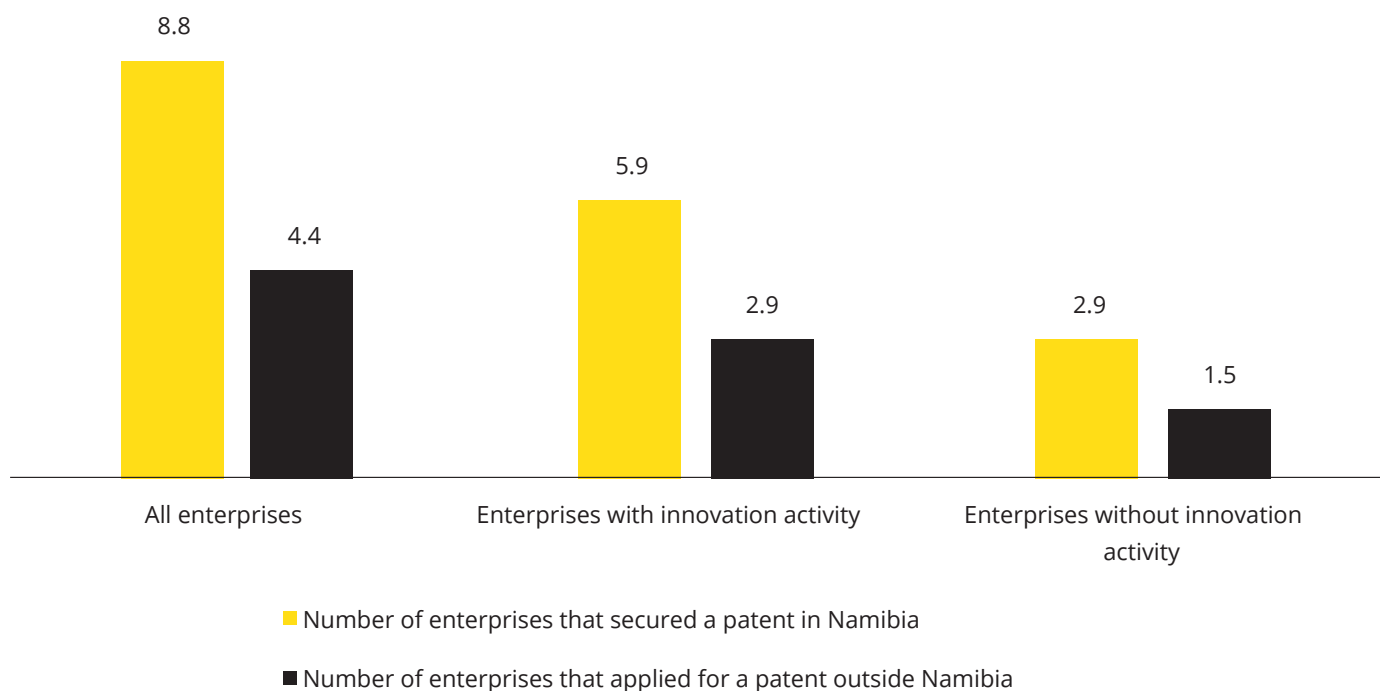
**Table 3.19: Percentage of Namibian enterprises that made use of intellectual property rights, Namibia, 2012 - 2014**

Intellectual property rights	Percentage of enterprises with Innovation activity (%)	Percentage of enterprises without innovation activity (%)
Register an industrial design	5.9	2.9
Register a trademark	16.2	4.4
Claim copyright	5.9	1.5
Grant a license on any intellectual property rights resulting from innovation	5.9	1.5

Figure 3.14 shows the percentage of innovative and non-innovative enterprises that secured patent in Namibia and/or applied for patent outside Namibia. There were 6% and 8.8% of enterprises both innovation active and non-innovation active who secured a patent in Namibia. The innovation active enterprises secured the most patent (5.9%) while enterprises without innovation secured only 2.9%.

About 4.4% of enterprises applied for a patent outside Namibia and 3.9% were from the innovation activities enterprises while 1.5% from enterprises without innovation in 2012-2014.

**Figure 3.14: Namibian enterprises that secured a patent in Namibia or applied for at least one patent outside Namibia, 2012 - 2014**



## CHAPTER 4

### CONCLUSION AND POLICY RECOMMENDATION

The innovation survey 2012-2014 was Namibia's first innovation survey based on a census survey of the business sector. The registry of the survey population was compiled by NCRST as the country did not have a business registry at the time.

The Innovation survey was conducted using the standardised questionnaire, a model questionnaire by UNESCO Institute for Statistics adapted to the Namibian context. Therefore, the survey findings are useful in understanding the relative innovation performance and impact on various policies in different settings.

Although the survey was implemented successfully, readers are urged to take extra caution in arriving at policy conclusions based solely on results of the survey without observing the broader trends in the economy. The main reason for conducting innovation surveys is for policymakers seeking information on how to further stimulate economic growth. It is widely known and accepted by policy-makers that innovation is a driver of long-term economic growth, competitiveness and a better quality of life. Innovation is seen from the enterprises perspective as a way of increasing sales from the production of new products (goods and services) and of developing industries. Innovation is a powerful economic force and driver of both development and prosperity.

Despite government support to stimulate innovation with public funding, the rate of innovation is low at 52% of enterprises engaged in innovation and only one enterprise had production innovation new to the market and new to the firm. Overall, innovation in Namibia comprises of incremental innovation which includes a series of small improvements or upgrades made to a company's existing products, services, processes or methods. The changes implemented through **incremental innovation** are usually focused on improving an existing product's development efficiency, productivity and competitive differentiation. Perhaps current public funding programmes could be intensified and better coordinated to target the kind of innovation that leads to economic growth.

R&D was not the major driver of innovation and to the main innovation activities were the acquisition of machinery, equipment and software which suggest that Namibia's enterprises are more engaged in improving methods for production or supply of product and services. The finding that acquisition of machinery is one of the leading innovation activities may imply tax incentives to encourage investment in specific categories of machinery and equipment that boost innovation.

The focus of policies for a national innovation system is linkage between institutions, particularly universities, public research institutes and industry. The survey findings show that the most important links and collaborations for business enterprises are with suppliers of equipment, materials, components or software, their clients or customers and consultants, commercial labs or private R&D institutes. It is difficult for government to stimulate those linkages which form part of the market-driven business environment of the enterprise. Public institutions and universities were expected to rate high in "highly important" category for knowledge flows among enterprises and other organisations for the development and diffusion of innovations, since they tend to play a role through scientific publication.

The importance of linkages between innovation active enterprises and universities, government and public research institutions suggest the need of a policy or strategy to support those collaborations.

Through innovation surveys, business and government needs to be made aware of tangible benefits of innovation to the country for government to create an enabling and regulatory environment for innovation than just boost innovation solely through funding programmes. Policy measures in the form of tax incentives for innovation are more appropriate and establishing a reward system to recognised innovative enterprises with press coverage of innovations appears to be a means of encouraging business enterprise innovation.

Tax incentives for innovation have a snowball effect to the overall economic growth, as innovation in the private sector are known for boosting growth and contributing to the quality of life.

To develop policies that support innovation appropriately, it is necessary to better understand several critical aspects of the innovation process, such as innovation activities other than R&D, the interactions among actors and the relevant knowledge flows. Policy development also requires further advances in the analysis of innovation, which in turn requires obtaining better information.

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# APPENDICES

## APPENDIX 1

**Table A1.1: Number and percentage of Namibian enterprises, 2012-2014**

Type of enterprise	Number of enterprises	Percentage of enterprises (%)
All enterprises	68	100.0
Enterprises with innovation activity	36	52.9
Enterprises with successful innovations	32	47.1
Product only innovators	1	1.5
Process only innovators	5	7.4
Product and process innovators	26	38.2
Enterprises with abandoned and/or ongoing innovation activities only	4	5.9
Enterprises without innovation activity	25	36.8
Non-response on both product or process innovation questions	7	10.3

**Table A1.2: Summary of number and percentage of Namibian enterprises 2012-2014**

Type of enterprise	Number of enterprises	Percentage of enterprises (%)
All enterprises	68	100.0
Enterprises with innovation activity	36	52.9
Enterprises without innovation activity	25	36.8
Enterprises with non-response	7	10.3

**Table A2: Number and percentage of employees, 2014**

Type of enterprise	Number of employees	Percentage of all employees (%)
All enterprises	18262	100.0
Enterprises with innovation activity	11204	61.4
Enterprises without innovation activity	7013	38.4
Enterprises with unknown innovation status	45	0.2

**Table A3: Turnover, 2012 & 2014**

Type of enterprise	Turnover (N\$ millions) for 2012	Percentage for 2012 (%)	Turnover (N\$ millions) for 2014	Percentage for 2014 (%)
All enterprises	14295	100.0	10671	100.0
Enterprises with innovation activity	3415	23.9	6345	59.5
Enterprises without innovation activity	10880	76.1	4326	40.5
*Note: Number of enterprises that did not disclose turnover	32		31	

**Table A4.1: Namibian enterprises with innovation activities: expenditure on innovation, 2014**

Type of expenditure	Expenditure (N\$ millions)	Proportion of innovation expenditure (%)	Note 1 number	Note 2 number
Intramural (in-house) R&D in 2014	131.1	26.1	52	2
Extramural or outsourced R&D	134.8	26.8	55	4
Acquisition of machinery, equipment and software	188.2	37.5	43	3
Acquisition of other external knowledge	48.0	9.6	51	1
Total Expenditure	502.0	100.0		

Note 1: Enterprises did not disclose expenditure

Note 2: Enterprises that indicated zero expenditure

**Table A4.2: Number and percentage of innovation-active Namibian enterprises having engaged in specific innovation activities, 2014**

Type of innovation activities	Number of innovation-active enterprises	Proportion of innovation-active enterprises (%)	Note 1	Note 2
Intramural (in-house) R&D in 2014	19	52.8	36.0	
Continuously	8	22.2		
Occasionally	11	30.6		3
Extramural or outsourced R&D	12	33.3	40.0	
Acquisition of machinery, equipment and hardware	23	63.9	36.0	
Acquisition of software	22	61.1	35.0	
Acquisition of other external knowledge	17	47.2	36.0	
Training	31	86.1	35.0	
Market introduction of innovations	22	61.1	35.0	
Design	27	75.0	36.0	
Other activities	22	61.1	38.0	

Note 1: Enterprises that did not disclose the required information

Note 2: Enterprises that indicated 'No' to the question on continuous or occasional innovation

**Table A 4.3: Number and percentage of Namibian enterprises with successful innovations and performed R&D, 2014**

Type of enterprise	Number of innovative enterprises	Proportion of innovative enterprises (%)
Enterprises with successful innovations	32	88.9
Enterprises that engaged in intramural R&D in 2014	19	52.8
Enterprises with successful innovations and engaged in intramural R&D in 2014	16	44.4

**Table A5.1: Product (goods and services) innovators: number breakdown of turnover by product type, 2014 (year specific question)**

Type of innovators	Turnover breakdown (N\$ millions)	Turnover breakdown (% of total turnover)
<b>All Product innovators</b>	3756.0	100.0
Innovations new to the market	988.5	26.3
Innovations new to the firm	409.1	10.9
Unchanged or marginally modified	2341.7	62.3
Unclassified	16.6	0.4
<b>Product only innovators</b>	0.0	0.0
Innovations new to the market	0.0	0.0
Innovations new to the firm	0.0	0.0
Unchanged or marginally modified	0.0	0.0
<b>Product and Process innovators</b>	3756.0	100.0
Innovations new to the market	988.5	26.3
Innovations new to the firm	409.1	10.9
Unchanged or marginally modified	2341.7	62.3
Unclassified	16.6	0.4

**Table A5.2: Product (goods and services) innovations by Namibian Enterprises: Number of enterprises by product type, 2014**

Type of innovators	Number of enterprises by product type	Percent of enterprises by product type
<b>All Product innovators</b>	27	100.0
Innovations new to the market only	8	29.6
Innovations new to the firm only	7	25.9
Innovation new to the market and new to the firm	9	33.3
<b>Product only innovators</b>	1	100.0
Innovations new to the market only	0	0.0
Innovations new to the firm only	0	0.0
Innovation new to the market and new to the firm	1	100.0
<b>Product and Process innovators</b>	23	100.0
Innovations new to the market only	8	34.8
Innovations new to the firm only	7	30.4
Innovation new to the market and new to the firm	8	34.8

**Table A5.3: Process innovations by Namibian enterprises: Number of enterprises, 2014**

Type of innovators	Number of enterprises	Percent of enterprises (%)
<b>All Process innovators</b>	31	100.0
Innovations new to the market	15	48.4
<b>Process only innovators</b>		
Innovations new to the market	1	3.2
<b>Process and product innovators</b>		
Innovations new to the market	14	45.2

**Table A6: Innovative Namibian enterprises: responsibility for the development of innovations, 2012 - 2014**

Type of innovators	Total number of innovative enterprises	Percentage of innovative enterprises (%)
All product Innovators	27	100.0
Mainly own enterprise	14	51.9
Own enterprise in collaboration with other enterprises or institutions	6	22.2
Adapting and Modifying goods or services developed by other institutions	5	18.5
Other enterprises or institution	1	3.7
Non-responsive enterprises	1	3.7

**Table A7: Origin of product innovations, 2012 -2014**

Origin of product	Origin of innovation	Percentage of innovation origin (%)
All product Innovators	27	100.0
Namibia	23	85.2
Rest of Africa	2	7.4
Europe	0	0.0
United States	0	0.0
Asia	0	0.0
Other countries	1	3.7
Non-responsive enterprises	1	3.7

**Table A8.1: Highly important effects of innovation on outcomes for Namibian enterprises (number), 2012 - 2014**

Important effects of innovation on outcomes for Namibian enterprises	Number Namibian enterprises	Namibian enterprises (%)
Product Outcomes		
Increased range of goods or services	14	38.9
Entered new markets	10	27.8
Increased market share	0	0.0
Improved quality of goods or services	18	50.0

Process outcomes		
Improved flexibility of production or service provision	17	47.2
Increased capacity of production or service provision	17	47.2
Reduced production costs per unit of labour, materials, energy	17	47.2
Other Outcomes		
Reduced environmental impacts	16	41.7
Improved working conditions on health and safety	15	44.4
Met governmental regulatory requirements	16	41.7

**Table A8.2: Highly important objectives of product and process innovations for Namibian enterprises (number), 2012 - 2014**

Enterprises with innovation activity	Total	Namibian enterprises (%)
Increased range of goods or services	18	50.0
Replace outdated products and processes	13	36.1
Enter new markets	16	44.4
Increase market share	13	36.1
Improve quality of goods or services	23	63.9
Improve flexibility of production or service provision	20	55.6
Increase capacity of production or service provision	17	47.2
Reduce production costs per unit of labour, materials, energy	12	33.3
Improve working conditions on health and safety	15	41.7

**Table A9: Namibian enterprises with innovation activity: number of Namibian enterprises that introduced new goods or services, 2012 - 2014**

Type of innovators	Number of enterprises	Percentage of enterprises (%)
<b>All Product Innovators</b>		
Introduced new goods	18	50.0
Introduced new services	21	58.3
<b>Product only innovators</b>		
Introduced new goods	0	0.0
Introduced new services	1	2.8
<b>Product and process innovators</b>		
Introduced new goods	18	50.0
Introduced new services	20	55.6

**Table A10: innovation-active Namibian enterprises that received financial support for innovation activities from government sources, 2012 - 2014**

Innovation-active Namibian enterprises	Number of innovation-active enterprises	Percentage of innovation-active enterprises (%)
Total Number of innovation-active enterprises	36	100
Enterprises with innovation activity	9	25
Successful innovators	7	19
Enterprises with only on-going and/or abandoned innovations	2	6

**Table A11: Sources of information for innovation rates as “highly important” by innovative Namibian enterprises (number) 2012 - 2014**

Sources of information	Number of innovation-active enterprises	Percentage of innovation-active enterprises
Sources within your enterprise or enterprise group	21	58.3
<b>External - Market Resources</b>		
Suppliers of equipment, materials, components or software	17	47.2
Clients or customers	12	33.3
Competitors or other enterprises in your sector	8	22.2
Consultants, commercial labs or private R&D institutes	9	25.0
<b>External - Institutional Sources</b>		
Universities	3	8.3
Government and public research institutes	1	2.8
<b>External - Other Sources</b>		
Conferences, trade fairs, exhibitions	5	13.9
Scientific journals and trade/technical publications	4	11.1
Professional and industry associations	6	16.7

**Table A12.1: Highly important factors that hampered innovation activities of innovation-active and non-innovative Namibian enterprises (number), 2012 -2014**

Factors hampering innovation activities	Number of innovation-active enterprises	Percentage of innovation-active enterprises (%)
<b>Cost Factors</b>		
Lack of funds within your enterprise or group (FG)	16	44.4
Lack of finance from sources outside your enterprise	12	33.3
Innovation costs too high	12	33.3
Excessive perceived economic risks	7	19.4
<b>Knowledge Factors</b>		
Lack of qualified personnel	8	22.2
Lack of information on technology	4	11.1
Lack of information of markets	5	13.9
Difficulty in finding cooperation partners	5	13.9
<b>Market Factors</b>		
Market dominated by established enterprises	8	22.2
Uncertain demand for innovative goods or services	2	5.6
Innovation is easy to imitate	1	2.8
<b>Other factors</b>		
Organisational rigidities within the enterprise	3	8.3
Insufficient flexibility of regulations or standards	8	22.2
Limitations of science and technology public policies	4	11.1
<b>Reasons not to innovate</b>		
No need due to prior innovations	3	8.3
No need because of no demand for innovations	2	0.0

**Table A12.2: Highly important factors that hampered innovation activities on non-innovation Namibian enterprises (number), 2012 – 2014**

Factors hampering innovation activities	Number of non-innovation enterprises	Percentage of non-innovation enterprises (%)
<b>Cost Factors</b>		
Lack of funds within your enterprise or group	9	36.0
Lack of finance from sources outside your enterprise	8	32.0
Innovation costs too high	5	20.0
Excessive perceived economic risks	3	16.0
<b>Knowledge Factors</b>		
Lack of qualified personnel	7	28.0
Lack of information on technology	3	16.0
Lack of information of markets	2	8.0
Difficulty in finding cooperation partners	4	16.0
<b>Market Factors</b>		
Market dominated by established enterprises	4	16.0
Uncertain demand for innovative goods or services	4	16.0
Innovation is easy to imitate	3	12.0
<b>Other factors</b>		
Organisational rigidities within the enterprise	0	0.0
Insufficient flexibility of regulations or standards	1	4.0
<b>Reasons not to innovate</b>		
No need due to prior innovations	1	4.0
No need because of no demand for innovations	0	0.0

**Table A13: Number of innovation-active and non-innovation Namibian enterprises that introduced organisational or marketing innovations, 2012 – 2014**

Type of innovations	Enterprises with innovation activity	Proportion of enterprises with innovation activities (%)
<b>Organisational Innovations</b>		
Knowledge management systems to better use or exchange information	22	61.1
Major changes to the organisation of work	30	83.3
External relations with other firms or public institutions	21	58.3
<b>Marketing Innovations</b>		
Design or packaging of a good or service	22	61.1
New media or techniques for product promotion	16	44.4
New methods for product placement or sales channels	16	44.4
New methods of pricing goods or services	16	44.4
Enterprises without innovation activity		
<b>Organisational Innovations</b>		
Knowledge management systems to better use or exchange information	7	28.0
Major changes to the organisation of work	11	44.0
External relations with other firms or public institutions	8	32.0

<b>Marketing Innovations</b>		
Design or packaging of a good or service	5	20.0
New media or techniques for product promotion	6	24.0
New methods for product placement or sales channels	4	16.0
New methods of pricing goods or services	3	12.0

**Table A14: Namibian enterprises that secured a patent in Namibia or applied for at least one patent outside Namibia, 2012 - 2014**

Type of enterprise	Number of enterprises that secured a patent in Namibia	Proportion of enterprises that secured a patent in Namibia (%)
All enterprises	6	8.8
Enterprises with innovation activity	4	5.9
Enterprises without innovation activity	2	2.9
	Number of enterprises that applied for a patent outside Namibia	Proportion of enterprises that applied for a patent outside Namibia (%)
All enterprises	3	4.4
Enterprises with innovation activity	2	2.9
Enterprises without innovation activity	1	1.5

**Table A15: Namibian enterprises that made use of intellectual property rights, 2012 - 2014**

Type of intellectual property rights uses	Number of enterprises with Innovation activity	Percentage of enterprises with Innovation activity (%)
Register an industrial design	4	5.9
Register a trademark	11	16.2
Claim copyright	4	5.9
Grant a license on any intellectual property rights resulting from innovation	4	5.9
	Number of enterprises without innovation activity	Percentage of enterprises without innovation activity (%)
Register an industrial design	2	2.9
Register a trademark	3	4.4
Claim copyright	1	1.5
Grant a license on any intellectual property rights resulting from innovation	1	1.5

**Table A16: Geographic distribution of goods and services sold by innovation-active and non-innovation Namibian enterprises (number), 2012 - 2014**

All enterprises	Number of enterprises	Proportion of enterprises (%)
Namibia (Only some regions)	19	27.9
Namibia (National)	28	41.2
Rest of Africa	16	23.5
Europe	15	22.1
United States	5	7.4
Asia	9	13.2
Other Countries	11	16.2
Enterprises with innovation activity		



Namibia (Only some regions)	10	27.8
Namibia (National)	23	63.9
Rest of Africa	12	33.3
Europe	12	33.3
United States	5	13.9
Asia	7	19.4
Other Countries	9	25.0
<b>Enterprises without innovation activity</b>		
Namibia (Only some regions)	9	36.0
Namibia (National)	5	20.0
Rest of Africa	4	16.0
Europe	3	12.0
United States	0	0.0
Asia	2	8.0
Other Countries	2	8.0

**Table A17: Innovation-active Namibian enterprises that introduced organisational innovation that rated the following results as having a “high” level of importance, 2012 - 2014**

Effects of organisational innovation on enterprise	Number of innovation-active enterprises	Proportion of innovation-active enterprises (%)
Improved market share	15	41.7
Reduced time to respond to customer or supplier needs	17	47.2
Improved quality of your goods or services	20	55.6
Reduced costs per unit output	14	38.9
Improved employee satisfaction/turnover	15	41.7

**Table A18: Innovation-active Namibian enterprises that received financial support for innovation activities from government sources, 2012 - 2014**

Type of funding government source	Number of innovation-active enterprises	Proportion of innovation-active enterprises (%)
Regional Council Office or local municipalities or authorities	1	2.8
National government	6	16.7
National funding agencies:	3	8.3
Foreign government/public sources	3	8.3

**Table A19: Number and percentage of staff with a degree or diploma, 2014**

<b>Total number of staff</b>	
Enterprises with innovation activity	11204
Enterprises without innovation activity	7013
<b>Number of staff with Degree or Diploma</b>	
Enterprises with innovation activity	1481
Enterprises without innovation activity	772
<b>Proportion of staff with Degree or Diploma (%)</b>	
Enterprises with innovation activity	13.2
Enterprises without innovation activity	11.0

**Table A20: Namibian enterprises with organisational and/or marketing innovations, 2012 - 2014**

Type of enterprise	Number of enterprises	Percentage enterprises with organizational and/ or marketing innovations (%)
Enterprises with organisational innovation	45	66.2
Enterprises with marketing innovation	39	57.4
Innovative enterprises with organisational and/or marketing Innovation	34	50.0
Product Only Innovative enterprises with organisational and/or marketing innovation	1	1.5
Process Only Innovative enterprises with organisational and/or marketing innovation	5	7.4
Product and Process Innovative enterprises with organisational and/or marketing innovation	25	36.8
Non- Innovative enterprises with:	0	0.0
Organisational innovation only	3	4.4
Marketing innovation only	1	1.5
Organisational or marketing Innovation	12	17.6
Organisational and marketing Innovation	8	11.8

**Table A21.1: Collaborative partnerships for innovation activities by type of partner, 2012 - 2014**

Type of partner	Number of innovation-active enterprises	Percentage of innovation-active enterprises
Other enterprises within your enterprise group	18	50.0
Suppliers of equipment, materials, components or software	29	80.6
Clients or customers	23	63.9
Competitors or other enterprises in your sector	14	38.9
Consultants, commercial labs or private R&D institutes	26	72.2
Universities	14	38.9
Government or Public research institutes	14	38.9

**Table A21.2: Collaborative partnerships for innovation activities by type of partner and their location (number), 2012 - 2014**

Type of partner and their location	Number of innovation-active enterprises	Percentage of innovation-active enterprises (%)
<b>Other enterprises within your enterprise group</b>	18	50.0
Namibia	8	22.2
Rest of Africa	4	11.1
Europe	4	11.1
USA	2	5.6
Asia	0	0.0
Other Countries	0	0.0
<b>Suppliers of equipment, materials, components or software</b>	29	80.6
Namibia	9	25.0
Rest of Africa	8	22.2

Europe	6	16.7
USA	2	5.6
Asia	2	5.6
Other Countries	2	5.6
<b>Clients or customers</b>	<b>23</b>	<b>63.9</b>
Namibia	11	30.6
Rest of Africa	5	13.9
Europe	3	8.3
USA	2	5.6
Asia	1	2.8
Other Countries	1	2.8
<b>Competitors or other enterprises in your sector</b>	<b>14</b>	<b>38.9</b>
Namibia	5	13.9
Rest of Africa	3	8.3
Europe	2	5.6
USA	1	2.8
Asia	1	2.8
Other Countries	2	5.6
<b>Consultants, commercial labs or private R&amp;D institutes</b>	<b>26</b>	<b>72.2</b>
Namibia	8	22.2
Rest of Africa	6	16.7
Europe	5	13.9
USA	4	11.1
Asia	1	2.8
Other Countries	2	5.6
<b>Universities</b>	<b>14</b>	<b>38.9</b>
Namibia	6	16.7
Rest of Africa	2	5.6
Europe	2	5.6
USA	2	5.6
Asia	1	2.8
Other Countries	1	2.8
<b>Government or Public research institutes</b>	<b>14</b>	<b>38.9</b>
Namibia	7	19.4
Rest of Africa	2	5.6
Europe	2	5.6
USA	1	2.8
Asia	1	2.8
Other Countries	1	2.8

**Table A21.3: Most valuable cooperation partner for innovation activities, 2012 - 2014**

Type of cooperation partner	Number of innovation-active enterprises	Percentage of innovation-active enterprises
Other enterprises within your enterprise group	2	5.6
Suppliers of equipment, materials, components or software	4	11.1
Clients or customers	4	11.1
Competitors or other enterprises in your sector	0	0.0
Consultants, commercial labs or private R&D institutes	4	11.1
Universities	1	2.8
Government or Public research institutes	0	0.0

**Table A22: Innovation-active Namibian enterprises performing process innovations, 2012 - 2014**

	Number of enterprises
Number of process innovators (Includes enterprise with product and process innovation)	31
Percentage of process innovators (%)	86.1

**Table A23: Innovation-active Namibian enterprises performing specific process innovations, 2012 - 2014**

Type of innovations	Number process innovations	Percentage process innovators (%)
New or significantly improved methods of manufacturing or producing goods or services	20	55.6
New or significantly improved logistics, delivery or distribution methods for inputs, goods or services	17	47.2
New or significantly improved supporting activities for processes such as maintenance and operating systems for purchasing, accounting or computing	16	44.4

**Table A24: Responsibility for process innovations, 2012 - 2014**

Type of process innovators	Number of process innovators	Percentage process innovators
All process innovators	31	100.0
Mainly yours	17	54.8
Yours together with others	4	12.9
Yours by adapting/modifying processes by others	7	22.6
Mainly others	2	6.5
Non-responsive enterprises	1	3.2

**Table A25: Namibian enterprises which introduced new or improved products to the market as a percentage of Namibian enterprises engaged in innovation activity, 2012 - 2014**

Type of products introduced	Number of enterprises	Percentage enterprises (%)
New to the market	17	47.2
New to the firm	16	44.4

**Table A26: Number and percentage of Namibian enterprises that stated they were part of a larger group, 2012-2014**

Type of enterprise	Number of enterprises	Percentage of enterprises (%)
Part of a larger group	20	29.4
Not part of a larger group	42	61.8
Non-responsive enterprises	6	8.8
<b>If part of a larger group, head office location:</b>		
Australia	1	1.5
Canada	2	2.9
China	1	1.5
Namibia	8	11.8
South Africa	3	4.4
Spain	1	1.5
Switzerland	1	1.5

**Table A27: Age of enterprise, 2012 - 2014**

Number of years since enterprise was established	Number of enterprises	Percentage of enterprises (%)
<b>Enterprises with innovation activity</b>		
0-9	14	38.9
10-19	8	22.2
20-29	7	19.4
30 and above	5	13.9
Non-response	2	5.6
<b>Enterprises without innovation activity</b>		
0-9	7	19.4
10-19	5	13.9
20-29	8	22.2
30 and above	4	11.1
Non-response	1	2.8

**Table A28: Specific innovations by enterprise, 2012 - 2014**

Enterprises with successful product and process innovations	Number of enterprises	Percentage of enterprises (%)
A first in Namibia	15	46.9
A world first	7	21.9
New or significant changes in enterprise external relations with other enterprises or public institutions	9	28.1
Non-response	12	37.5

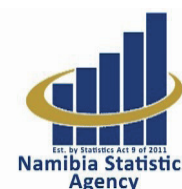
## APPENDIX 2

I-001

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### NATIONAL CENSUS ON INNOVATION

Reference period: 2012-2014 or 2011/2012 - 2013/2014 (financial year)



The purpose of this census is to collect statistics that will support the overall management and functioning of the national system of innovations as per section 5 (1) (N) of the Research, Science and Technology Act, No. 23 of 2004. This census collects information about **product and process innovation** as well as **organisational and marketing innovation** during the three-year period 2012 to 2014 inclusive.

This questionnaire is based on the AU/NEPAD STANDARD INNOVATION QUESTIONNAIRE under the African Science, Technology & Innovation Indicators (ASTII) Initiative, using the existing framework used in Organisation for Economic Co-operation and Development (OECD) member countries.

For comparison reasons, we request ALL enterprises/organisation with or without innovation activities to respond to ALL questions, unless otherwise instructed.

## PURPOSE OF THIS CENSUS

### • About this census

This CENSUS collects information about product and process innovation as well as organisational and marketing innovation during the three-year period 2012 to 2014 inclusive.

### • Scope

The statistical unit for the census is the **enterprise**. An enterprise refers to a business, company or firm and can range from a very small concern with only one or two employees to a much larger and more formal business or firm.

### • Authority

The National Commission on Research, Science and Technology (NCRST), working in collaboration with the Namibia Statistics Agency (NSA), commissioned the University of Namibia, Multidisciplinary Research Centre (MRC) to perform this CENSUS which is part of the African Science, Technology & Innovation Indicators (ASTII) Initiative. Providing of statistics is compulsory as stipulated in scheduled 1 of the Statistics Act No 9 of 2011.

• **Confidentiality**

All information gathered by this census will be held in strictest confidence. Under no circumstances will the National Commission for Research, Science, and Technology or the Namibia Statistics Agency (NSA) publish, or the University of Namibia’s Multidisciplinary Research Centre (MRC) release or disclose any information on, or identifiable with, **individual** firms or business units.

• **Assistance**

An interviewer will assist you in completing this form to meet the due date. However, please do not hesitate to contact the staff listed below for further information or assistance:

Name of Staff Member	Sector of responsibility	Telephone	E-mail
Dr. Davis Mumbengegwi	Data Collection Manager	061-206 3908	<a href="mailto:dmumbengegwi@unam.na">dmumbengegwi@unam.na</a>
Dr. Alfons Mosimane	Data Collection Manager	061-206 3286	<a href="mailto:amosimane@unam.na">amosimane@unam.na</a>
Dr. Nelago Indongo	Data Collection Manager	061-2063004	<a href="mailto:nkanime@unam.na">nkanime@unam.na</a>
<b>For general or specific enquiries please contact experts from the ASTII National Focal Point at the NCRST:</b>		<b>Telephone</b>	<b>E-mail</b>
Lovisa Immanuel	Innovation and Technology Development	061 431 7020	<a href="mailto:limmanuel@ncrst.na">limmanuel@ncrst.na</a>
Grant Balie	Innovation and Technology Development	061 431 7027	<a href="mailto:gbalie@ncrst.na">gbalie@ncrst.na</a>
Otilie Mwazi	Expert from the Namibia Statistics Agency	061 4313211	<a href="mailto:OMwazi@nsa.org.na">OMwazi@nsa.org.na</a>
Gernot Piepmeyer	Research and Development	061 4317069	<a href="mailto:gpiepmeyer@ncrst.na">gpiepmeyer@ncrst.na</a>
Loide Uahengo	Research and Development	061 431 7024	<a href="mailto:luahengo@ncrst.na">luahengo@ncrst.na</a>

## PART 1: GENERAL INFORMATION ABOUT THE ENTERPRISE, BUSINESS, COMPANY OR FIRM

1.0	<b>Name of enterprise:</b>
	<b>Address:</b>
	<b>Main activity (equivalence from ISIC):</b>
	<b>Year of establishment</b>
1.1	<b>Short description of you main business activity:</b>

Short description of you main business activity:		Yes	No
1.2	<b>Is your enterprise part of a larger group?</b> A group consists of two or more legally defined enterprises under common ownership. Each enterprise in the group may serve different markets, as with national or regional subsidiaries, or serve different product markets. The head office is also part of an enterprise group.		
		<i>If yes, in which country is the head office of your group located?</i> .....	

**If your enterprise is part of an enterprise group, please answer all further questions only for your enterprise in Namibia.**

**Do not include results for subsidiaries or parent enterprises outside of Namibia**

1.3	In which geographic markets did your enterprise sell goods or services during the three years 2012 to 2014?	Yes	No	(specify if necessary and applicable but not compulsory)
	Namibia (only some regions)			
	Namibia (national)			
	Rest of Africa			
	Europe			
	United States			
	Asia			
	Other countries			

1.4	<b>What was your enterprise's total number of employees in 2012 and 2014?</b> Annual average number of employees, both full-time and part-time. If not available, give the number of employees at the end of each year.				
	<table border="1"> <tr> <td>2012</td> <td></td> </tr> <tr> <td>2014</td> <td></td> </tr> </table>	2012		2014	
2012					
2014					

1.4.1	<b>Approximately what percentage of your total employees had a university degree or diploma in 2014?</b>	%
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1.5	<b>What was your enterprise's approximate total turnover for 2012 and 2014?</b> Turnover is defined as the market sales of goods and services (Include all taxes except VAT). Please give turnover in Thousands ('000s) of NAD e.g. One million of NAD should be entered as 1,000: 1,000,000 = NAD 1m.						
	<table border="1"> <tr> <td>2012</td> <td>NAD</td> <td>,000</td> </tr> <tr> <td>2014</td> <td>NAD</td> <td>,000</td> </tr> </table>	2012	NAD	,000	2014	NAD	,000
2012	NAD	,000					
2014	NAD	,000					



## PART 2: PRODUCT (GOODS OR SERVICES) INNOVATION

A product innovation is the introduction to market of a new or significantly improved good or service with respect to its capabilities, such as improved user-friendliness, components, software or sub-systems. The innovation (new or improved) must be new to your enterprise, but it does not need to be new to your industry sector or market. It does not matter if the innovation was originally developed by your enterprise or by other enterprises.

**Please note:** The latest terminology classifies “products” as consisting of both “goods” and “services”. For example a firm in the financial services sector may talk of a “new financial product”. The provision of innovative services is of increasing importance in competitive economies and the CENSUS aims to cover both manufacturing and services orientated firms.

<b>2.1</b>	<b>During the three years 2012 to 2014, did your enterprise introduce:</b>	<b>Yes</b>	<b>No</b>
	→ <b>New or significantly improved goods.</b> <i>Exclude the simple resale of new goods purchased from other enterprises and minor changes that only alter the appearance of the product.</i>		
	→ <b>New or significantly improved services.</b>		
		<i>If no to both questions, please go to question 3.1.</i>	

<b>2.2</b>	<b>Who developed these product (goods and services) innovations?</b>	<i>Please mark by “X” the single most appropriate option only</i>
	→ Mainly your enterprise itself	
	→ Your enterprise together with <b>other enterprises*or institutions**</b> <i>(*) independent enterprises plus other part of your enterprise group (such as subsidiaries, sister enterprises, head office, etc.</i> <i>(**) universities, research institutes, non-profit, etc.</i>	
	→ Your enterprise by adapting or modifying goods or services originally developed by other enterprises or institutions	
	→ Mainly other enterprises or institutions	

<b>2.2.1</b>	<b>Did these innovations originate during the three years 2012 to 2014 mainly in Namibia or abroad?</b>	<b>Yes</b>	<b>No</b>	<b>Do not know</b>
	Namibia			
	Rest of Africa			
	Europe			
	United States			
	Asia			
	Other countries			

2.3	<b>Were any of your goods and service innovations during the three years 2012 to 2014 new to your market or new to your firm?</b>	<b>Yes</b>	<b>No</b>	
	→ <b>New to your market?</b> Your enterprise introduced a new or significantly improved good or service onto your market before your competitors (it may have already been available in other markets).			
	→ <b>Only new to your firm?</b> Your enterprise introduced a new or significantly improved good or service that was already available from your competitors in your market.			
2.4	<b>Using the definitions above, please estimate the percentage of your total turnover in 2014:</b>	<b>2014 turnover distribution</b>		
	→ Goods and service innovations introduced during 2012 to 2014 that were <b>new to your market</b>			%
	→ Goods and service innovations introduced during 2012 to 2014 that were only <b>new to your firm</b>			%
	→ Goods and services that were unchanged or only marginally modified during 2012 to 2014 <i>Include the resale of new goods or services purchased from other enterprises.</i>			%
	<b>Total turnover in 2014 = 100%</b>			%

### PART 3: PROCESS INNOVATION

Process innovation is the use or implementation of new or significantly improved process or method for the production or distribution of goods or services or supporting activity. The innovation (new or improved) must be new to your enterprise, but it does not need to be new to your industry sector or market. It does not matter if the innovation was originally developed by your enterprise or by other enterprises. Exclude purely organisational innovations such as changes in firm structure or management practice impacting on the final product- *these are covered in question 10.*

3.1	<b>During the three years 2012 to 2014, did your enterprise introduce any:</b>	<b>Yes</b>	<b>No</b>
	→ New or significantly improved methods of manufacturing or producing goods or services?		
	→ New or significantly improved logistics, delivery or distribution methods for your inputs, goods or service?		
	→ New or significantly improved supporting activities for your processes, such as maintenance and operating systems for purchasing, accounting or computing?		
		<i>if no to all questions, please go to section 4.</i>	

<b>3.2</b>	<b>Who developed these process innovations?</b>	<i>Please mark by "X" the single most appropriate option only</i>
	→ Mainly your enterprise by itself	
	→ Your enterprise together with other enterprises*or institutions** (* <i>independent enterprises plus other part of your enterprise group (such as subsidiaries, sister enterprises, head office, etc.</i> (**) <i>universities, research institutes, non-profit, etc.</i>	
	→ Your enterprise together with other enterprises or institutions	
	→ Mainly other enterprises or institutions	

<b>3.2.1</b>	<b>Were any of your process innovations introduced during the three years 2012 to 2014 new to your market?</b>
	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Do not know

## PART 4: ONGOING OR ABANDONED INNOVATION ACTIVITIES

Innovation activities include the acquisition of machinery, equipment, software and licenses; engineering and development work, training, marketing and research and experimental development (R&D) [*Basic R&D not specifically related to product and/or process innovation should be included*] when they are specifically undertaken to develop and/or implement a product or process innovation.

<b>4.1</b>	<b>During the three years 2012 to 2014 did your enterprise have any innovation activities to develop product or process innovations that were</b>	<b>Yes</b>	<b>No</b>
	→ Abandoned during 2012 to 2014 before completion		
	→ Still ongoing at the end of 2014		
		<i>If no to ALL options in questions 2.1, 3.1, and 4.1, please go to question 8.2. Otherwise, please proceed to question 4.2.</i>	

**Product or process innovator** is an enterprise that implemented at least one product or one process innovation during the period under observation.

4.2	During the reference period of 3 years, did your enterprise have been considered:	Yes	No
A	<i>Product innovator</i>		
B	<i>Process innovator</i>		
C	<i>Both Product and Process Innovator</i>		
D	<i>Having abandoned and/or ongoing activities only</i>		
		<b>If yes for (A) or (C), was the product or service only new to</b> (i) Your Firm? YES/NO..... (ii) Your Market? YES/NO..... (iii) Geographic market? YES/NO..... Please specify..... .....	

## PART 5: THE MOST IMPORTANT AND PERFORMED INNOVATION ACTIVITIES AND EXPENDITURES

5.1	During the three years 2012 to 2014, did your enterprise engage in the following innovation activities?	Yes	No
A	<b>Intramural or in-house Research and Experimental Development (R&amp;D)</b> Creative work undertaken on a systematic basis within your enterprise to increase the stock of knowledge and its use to devise new and improved products and processes (including software development in-house that meets this requirement).		
	<i>If yes, did your firm perform R&amp;D during 2012 to 2014:</i>		
	<i>Continuously?</i>		
	<i>Occasionally?</i>		
B	<b>Extramural or outsourced R&amp;D</b> Same activities as above, but purchased by your enterprise and performed by other companies (including other enterprises within your group) or by public or private research organisations.		
C	<b>1. Acquisition of machinery, equipment and hardware</b> Acquisition of advanced machinery, equipment and computer hardware to produce new or significantly improved products and processes.		
	<b>2. Acquisition of software</b> Acquisition of software to produce new or significantly improved products and processes.		
D	<b>Acquisition of other external knowledge</b> Purchase or licensing of patents and non-patented inventions, know-how, and other types of knowledge from other enterprises or organisations.		
E	<b>Training</b> Internal or external training for your personnel specifically for the development and/or introduction of new or significantly improved products and processes.		
F	<b>Market introduction of innovations</b> Activities for the market introduction of your new or significantly improved goods and services, including market research and launch advertising.		

<b>G</b>	<b>Design</b> Activities to design, improve or change the shape or appearance of new or significantly improved goods or services		
<b>H</b>	<b>Other activities</b> Implementation of new or significantly improved products and process such as feasibility studies, testing, routine software development, tooling up, industrial engineering, etc.		

*"reverse engineering" could also be considered as category*

<b>5.2</b>	<b>Please estimate the amount of expenditure in 2014 only for the first four innovation activities mentioned in 5.1 (A to D).</b> Include personnel and related costs. <i>Please provide expenditure in thousands of NAD e.g. Five hundred thousand NAD and or NAD500 000 should be entered as 500 in the box provided: 500,000 = NAD500 000.</i> <i>Please leave zeros (000) in the category box if your enterprise had no expenditure in 2014.</i>	<b>STRICTLY CONFIDENTIAL</b> <b>NAD</b>	
<b>A.</b>	<b>Intramural (in-house) R&amp;D in 2014.</b> <i>Include labour costs, capital expenditures on buildings and equipment specifically for R&amp;D.</i>		,000
<b>B.</b>	<b>Acquisition of R&amp;D.</b> <i>Extramural or outsourced R&amp;D.</i>		,000
<b>C.</b>	<b>Acquisition of machinery, equipment and software.</b> <i>Exclude expenditures on equipment for R&amp;D.</i>		,000
<b>D.</b>	<b>Acquisition of other external knowledge.</b>		,000
	<b>Total of these four innovation expenditure categories (A+B+C+D)</b>		

<b>5.3</b>	<b>During the three years 2012 to 2014, did your enterprise receive any public financial support for innovation activities from the following levels of government?</b> <i>Include financial support via tax credits or deductions, grants, subsidised loans, and loan guarantees. Exclude research and other innovation activities conducted entirely for the public sector under contract.</i>	<b>Yes</b>	<b>No</b>
	→ Regional Council office or local municipalities or authorities		
	→ National government		
	→ National funding agencies		
	→ Foreign government and/or other foreign public sources (e.g. European Commission)		

## PART 6: SOURCES OF INFORMATION AND CO-OPERATION FOR INNOVATION ACTIVITIES

<b>6.1</b>	<b>During the three years 2012 to 2014, how important to your enterprise's innovation activities were each of the following information sources?</b> <i>Please identify information sources that provided information for new innovation activities/projects or contributed to the completion of existing innovation activities/projects.</i>				
<b>Information sources</b>		<b>Degree of importance</b> <i>Tick 'not used' if no information was obtained from a source.</i>			
		<b>High</b>	<b>Medium</b>	<b>Low</b>	<b>Not used</b>
<b>Internal sources</b>	Sources within your enterprise or enterprise group	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Market resources</b>	Suppliers of equipment, materials, components or software	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Clients or customers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Competitors or other enterprises in your sector	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Consultants, commercial labs or private R&D institutes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Institutional sources</b>	Universities or other higher education institutions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Government or public research institutes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Other sources</b>	Conferences, trade fairs, exhibitions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Scientific journals and trade/technical publications	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Professional and industry associations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>6.2</b>	<b>During the three years 2012 to 2014, did your enterprise co-operate on any of your innovation activities with other enterprises or institutions?</b> Innovation co-operation is active participation with other enterprises or non-commercial institutions on innovation activities. Both partners do not need to benefit commercially. <i>Exclude pure contracting out of work with no active co-operation.</i>		<b>Yes</b> <input type="checkbox"/>	<b>No</b> <input type="checkbox"/> ↓	
			<i>If no, please go to question 7.1</i>		

6.3		Please indicate the type of co-operation partner and location.					
Type of co-operation partner	Location						
	<i>Tick all that apply.</i>						
	Namibia	Rest of Africa	Europe	United States	Asia	Other countries	
A.	Other enterprises within your enterprise group	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B.	Suppliers of equipment, materials, components or software	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C.	Clients or customers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D.	Competitors or other enterprises in your sector	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E.	Consultants, commercial labs or private R&D institutes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F.	Universities or other higher education institutions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G.	Government or public research institutes (e.g. Research councils)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6.4	Which type of co-operation partner was the most valuable for your enterprise's innovation activities? <i>Give corresponding letter from 6.3. For example, clients or customers = 'C'</i>	
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## PART 7: EFFECTS/OBJECTIVES OF INNOVATION DURING 2012–2014

7.1		How important or successful were each of the following types of outcomes for your products (goods or services) and process innovations introduced during the three years 2012 to 2014?			
Outcomes/Effects		Level of success of outcomes			
		<i>Tick "Not relevant" if there were no innovation outcomes.</i>			
High		High	Medium	Low	Not relevant
<b>Product oriented effects</b>	Increased range of goods or services	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Entered new markets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Increased market share	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Improved quality of goods or services	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Process oriented effects</b>	Improved flexibility of production or service provision	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Increased capacity of production or service provision	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Reduced production costs per unit of labour, materials, energy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Other effects</b>	Reduced environmental impacts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Improved working conditions on health and safety	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Met governmental regulatory requirements	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

7.2	How important were each of the following objectives for your products (goods or services) and process innovations introduced during the three years 2012 to 2014?	Importance of objectives			
		High	Medium	Low	Not relevant
	<b>Objectives</b>	<i>Tick "Not relevant" if there were no innovation objectives.</i>			
	Increase range of goods or services	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Replace outdated products or processes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Enter new markets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Increase market share	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Improve quality of goods or services	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Improve flexibility for producing goods or services	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Increase capacity for producing goods and services	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Reduce production (labour, materials, energy) costs per unit output	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Improve working conditions on health and safety	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## PART 8: FACTORS HAMPERING INNOVATION ACTIVITIES

8.1	During the three years 2012 to 2014, were any of your innovation activities or projects:	Yes	No
	→ Abandoned in the concept stage		
	→ Abandoned after the activity or project was begun		
	→ Seriously delayed		



**QUESTIONS 8.2, 9 and 10 TO BE ANSWERED BY ALL ENTERPRISES:**

8.2		<b>During the three years 2012 to 2014, how important were the following factors in hampering your innovation activities or projects or influencing a decision not to innovate?</b>			
<b>Hampering factors</b> <b>High</b>		<b>Degree of importance</b> <i>Please also indicate particular factors that were not experienced.</i>			
		<b>High</b>	<b>Medium</b>	<b>Low</b>	<b>Factor not experienced</b>
<b>Cost factors</b>	Lack of funds within your enterprise or group	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Lack of finance from sources outside your enterprise	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Innovation costs too high	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Excessive perceived economic risks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Knowledge factors</b>	Lack of qualified personnel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Lack of information on technology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Lack of information on markets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Difficulty in finding co-operation partners for innovation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Market factors</b>	Market dominated by established enterprises	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Uncertain demand for innovative goods or services	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Innovation is easy to imitate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Other factors</b>	Organisational rigidities within the enterprise	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Insufficient flexibility of regulations or standards	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Limitations of science and technology public policies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>No need to innovate</b>	No need due to prior innovations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	No need because of no demand for innovations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## PART 9: INTELLECTUAL PROPERTY RIGHTS

9.1	During the three years 2012 to 2014, did your enterprise	Yes	No
	→ Secure a patent in Namibia?		
	→ Apply for a patent outside of Namibia?		
	→ Register an industrial design?		
	→ Register a trademark?		
	→ Claim copyright?		
	→ Grant a licence on any intellectual property rights resulting from innovation?		

## PART 10: ORGANISATIONAL AND MARKETING INNOVATION

An organisational innovation refers to the *implementation of a new organisational method in the firm's business practices, workplace organisation or external relations (Oslo Manual., paragraph. 177)* in firm structure or management methods that are intended to improve your firm's use of knowledge, the quality of your goods and services, or the efficiency of work flows.

A marketing innovation is the *"Implementation of a new marketing method involving significant changes in product design or packaging, product placement, product promotion or pricing" (Oslo Manual., paragraph. 169)* or sales methods to increase the appeal of your goods and services or to enter new markets.

10.1	During the three years 2012 to 2014, did your enterprise introduce:	Yes	No
	<b>Organisational innovations</b>		
	→ <b>Business practices:</b> New business practices for organising procedures (i.e. supply chain management, business re-engineering, knowledge management, lean production, quality management, etc.) Exclude routine upgrades.		
	→ <b>Work responsibilities and decision making:</b> New methods of organising work responsibilities and decision making (i.e. first use of a new system of employee responsibilities, team work, decentralisation, integrating/de-integrating different departments or activities, education/training systems)		
	→ <b>External relations:</b> New methods of organising external relations with other firms or public institutions (i.e. first use of alliances, partnerships, outsourcing or sub-contracting, etc.)		

10.2	Marketing innovations	Yes	No
	→ Significant changes to the aesthetic <b>design</b> or <b>packaging</b> of a good or service (exclude changes that alter the product's functional or user characteristics - these are product innovations)		
	→ New media or techniques for <b>product promotion</b> (i.e. the first time use of a new advertising media, a new brand image, introduction of loyalty cards, etc.)		
	→ New methods for <b>product placement</b> or sales channels (i.e. first time use of franchising or distribution licenses, direct selling, exclusive retailing, new concepts for product presentation, etc.)		
	→ New methods of <b>pricing</b> goods or services (i.e. first time use of variable pricing by demand, discount systems, etc.)		

10.3	If your enterprise introduced an organisational innovation during the three years 2012 to 2014, please tick how important were each of the following results or effects?	Degree of importance			
		High	Medium	Low	No results
	Results				
	→ Increased or maintained market share				
	→ Reduced time to respond to customer or supplier needs				
	→ Improved quality of your goods or services				
	→ Reduced costs per unit output				
	→ Improved employee satisfaction and/or reduced rates of employee turnover				

## PART 11: SPECIFIC INNOVATIONS BY YOUR ENTERPRISE

11.1	During the three years 2012-2014, were any of your new or significantly improved specific products or processes:	Yes	No	Don't know
	→ A first in Namibia?			
	→ A world first?			
	→ New or significant changes in your external relations with other firms or public institutions, such as through alliances, partnerships, outsourcing or sub-contracting			

11.2 If your answer to Question 11 was yes then please give short descriptions of these innovations (or attach separate pages or promotional brochures)

11.3 Please list other significant examples of innovations in your enterprise in the last three years (or attach separate page or promotional brochures etc.)



**THANK YOU FOR YOUR PARTICIPATION. IT IS SINCERELY APPRECIATED.**

Please return your completed questionnaire to the University of Namibia interviewer who assisted you to complete the questionnaire and keep a saved copy of this questionnaire for your records and internal use, which may also be referenced if we need to follow-up with any specific issues.

Your enterprise's e-mail correspondent will be Mr Grant Balie ([gbalie@ncrst.na](mailto:gbalie@ncrst.na)).

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