



National Institute
for Science, Technology & Innovation

What is Innovation?

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Table of Content

Acronyms	2
Note to Reader	3
Introduction	4
Definition of Innovation	5
Product Innovation	6
Business Process Innovation	7
Schumpeter's Model of Innovation	9
Informal Innovation	10
Frequently asked Questions	13
Terms and Definitions	18
References	19
Contact Us	20

Acronyms

ICT	Information and communications technology
NGO	Non-Governmental Organization
NIS	National Innovation System
NISTI	National Institute for Science Technology and Innovation
OECD	Organization for Economic Co-operation and Development
UNIDO	United Nation Industrial Development Organization

Note to Reader

This booklet is published in an effort to educate the public in general on the meaning of innovation. In recent years innovation has become the buzzword in every sector of the population. For these reasons alone NISTI has seen it important to publish this booklet to provide clear concise information.

A quick *Google* search will generate 2 billion one hundred and forty million hits (at the time of printing) showing the user that there are multiple definitions and meanings of innovation depending on the context. The purpose of this booklet is to, therefore, help bring more understanding of this buzzword of the current economic landscape.

Most of the information regarding definitions and the different types of information are from different sources; notably “The OECD Manual, Oslo Manual Guidelines for Collecting and Interpreting of Innovation Data.”

The lists provided in the booklet intend to illustrate and should not by any means be considered exhaustive. However, they are intended to better understand each innovation type. It is also worthwhile emphasizing that two central criteria for innovations are that they represent ***significant changes*** and that they are ***new to the organization or the market***. Thus, a change can be an innovation for one organization and not for another, or innovative to one country but not another.

Introduction

We live in a very dynamic world where things are changing every minute. Global competition, rising customers' expectations, accelerated complexity and advancement in technology now make innovation a business imperative. Innovation should be seen as a new tool for competitive advantage, and not just a word used to describe new concepts and ideas.

In the private sector innovation is being adopted for accelerated economic performance, while in the public sector innovative ideas are introduced for more efficient public service delivery. Innovation is being used as criterion in different competitions ranging from poem, and drawing competitions at school level to judging entrepreneurs on a product or service they would like to commercialize. It is also one of the five pillars of a Knowledge-Based Economy. As Seychelles transitions to this economic model in the next five years, there is a need for more economic transformation and diversification, from small-scale businesses and tourism to innovative organizations, public sector, NGOs and businesses that would provide significant impact to ensure greater socio-economic development while diversifying the economic and business landscape of Seychelles in a sustainable manner.

It is widely accepted that innovation is central to the growth of output and productivity. However, the understanding of innovation and innovative activities, products and their economic impact is still greatly lacking in Seychelles. While the word innovation is widely used and has become a daily jargon, there is no clear understanding of the real meaning of the word.

In order to develop policies that support innovation, it is imperative to understand critical aspects of the innovation process, such as innovation activities and the interactions among different partners.

Definition of Innovation

Innovation can mean different things to different people/context situations and applications, but it can be generally agreed that for innovation to take place there must have been a “new idea” that has been developed into a service, process, and product for the market.

Below are some of the definitions of innovation from a literature review done by Tan Su Omar for his book entitled “STI Policy Development”

“.....innovation to bring positive change, novelty, improvement and enhancement spans methods, systems, service offerings, sales and marketing techniques, accounting and numerous aspects of understanding and caring for customers” Barrell, Herriot and Mitchell, 1992;

“Innovation is the result of creativity in R & D which can be in the form of new products, new services and productivity increases.” Omar Abdul Rahman and Yew Kam Keong, 2005;

“.....innovation is coming up with ideas and bringing them to life. Hatching ideas is the creative part, bringing them to life successfully in the form of a new product or service or management method is what makes a new idea an innovation.” Robert B. Tucker, 2008;

Technology can lead to an invention, a new (hitherto unknown) device, process or algorithm that has been shown to work. Not all inventions are based on scientific reasoning, many are ideas developed by trial and error. An innovation is the successful application of something new.”

“An idea is nothing, an invention is something, and an innovation is the real thing” J.E Wissema, 2009; and

“Innovation is a strategic change that creates value. The change can be a change in design, technology, process, thinking and mindset or any combination of these.” Azim Pawanchik and Suraya Sulaiman, 2010.

Where as the Oslo Manual 4th Edition 2018 refers to two different types of innovation that happens in the private sector:

Product Innovation

Product innovation is new or improved goods or services that differ significantly from the organization's previous goods or services that have been introduced on the market. For example a new or improved product or service that a company has introduced to the market in Seychelles, and there are no other products such as this one in this market (Seychelles). That company would have an innovation.

A product can be an innovation in, for example, Seychelles but not innovative in Mauritius as Mauritius may already have that product on the market.

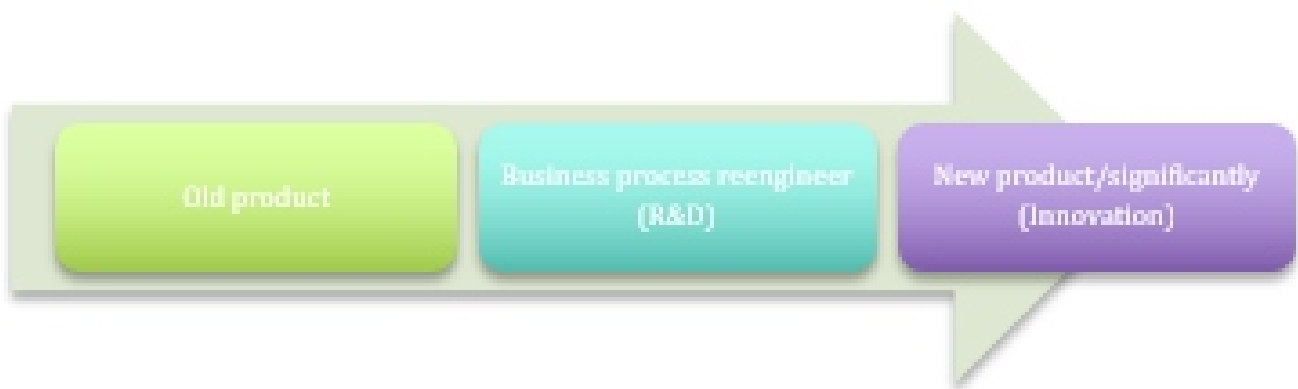


Figure 1: The processes that a product goes through for innovation

Figure 1 above illustrates the concept where a company takes an existing product and turns it into an innovation product. The company takes the old product and through research and development (business process reengineer) ends up with a new product. The new product is an innovative product.

Business Process Innovation

Business process innovation is a new or improved business process for one or more business functions that is significantly different from the previous business processes such as new payment facilities for customers.

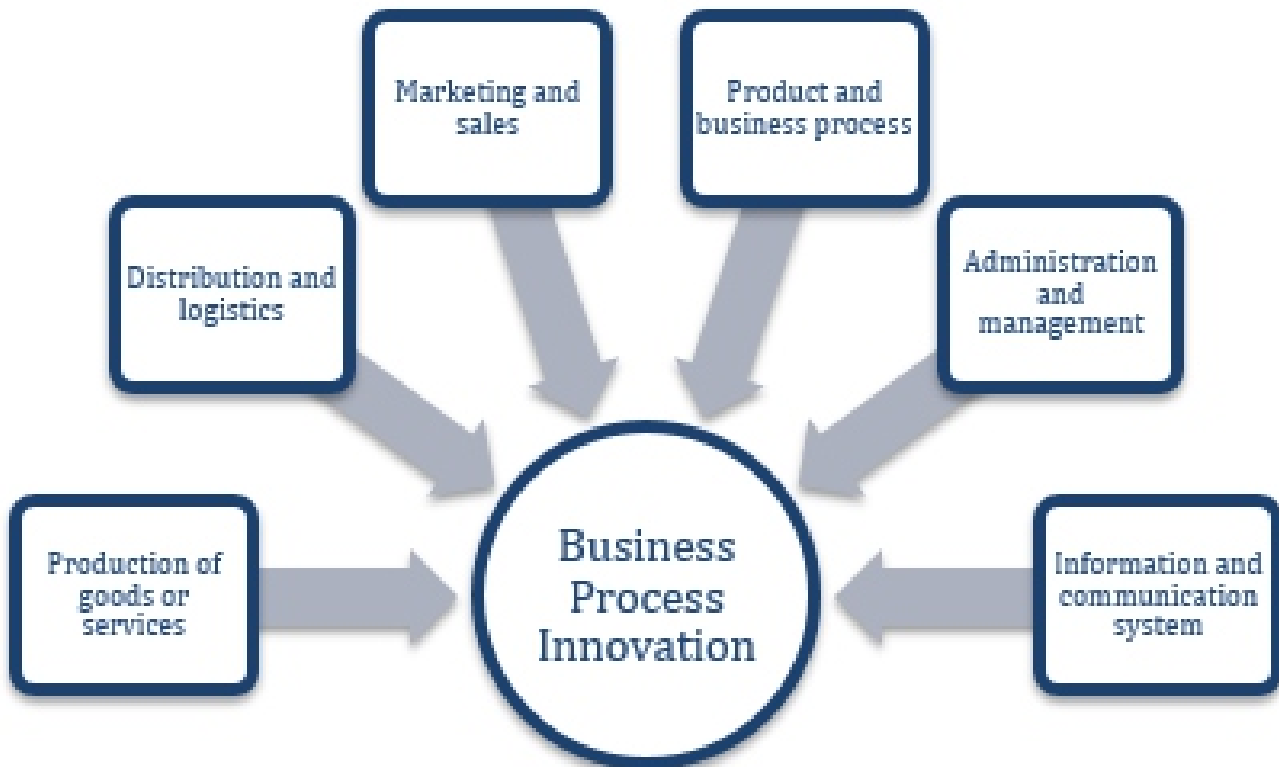


Figure 2: 6 Different categories of business process innovations

Production of goods or services

Activities that transform raw materials (inputs) into goods or services. This includes engineering, related technical testing, analysis and certification activities to support the production of the goods.

Distribution and logistics: Any activities related to

- o Transportation and service delivery for example Google Form Order and home delivery services;
- o Warehousing; and
- o Order processing.

Marketing and Sales

- o Marketing methods
 - Advertising (product promotion and placement, packaging of products),
 - direct marketing (telemarketing),
 - exhibitions and fairs,
 - market research and other activities to develop new markets;
- o Pricing strategies and methods; and
- o Sales and after-sales activities, including help desks other customer support and customer relationship activities.

Information and communication system. The maintenance and provision of information and communication systems, including:

- o Hardware and software;
- o Data processing and database;
- o Maintenance and repair; and
- o Web-hosting and other computer-related information activities.

Administration and management

- o Strategic and general business management (cross-functional decision-making), including organizing work responsibilities;
- o Corporate governance (legal, planning and public relations);
- o Accounting, book-keeping, auditing, payments and other financial or insurance activities;
- o Human resources management (training and education, staff recruitment, workplace organization, provision of temporary personnel, payroll management, health and medical support);
- o Procurement; and
- o Managing external relationships with suppliers, alliances, etc.

Product and business process development

- o Activities to scope, identify, develop, or adapt products or a firm's business processes. This function can be undertaken in a systematic fashion or on an ad hoc basis, and be conducted within the firm or obtained from external sources. Responsibility for these activities can lie within a separate division or in divisions responsible for other functions, e.g. production of goods or services. Source: Adapted from Oslo Manual 2018 page 75

There are different model of innovation. Below we look at Schumpeter's Model.

A Scholar on innovation, Joseph Alois Schumpeter, came up with his own model of innovation: Schumpeter's Innovation and Economic Development Model. The model shows economic growth as the result of innovation. According to Schumpeter's model, therefore it is imperative for companies to innovate to yield more for the company, which will in turn facilitate economic growth and development of the country.

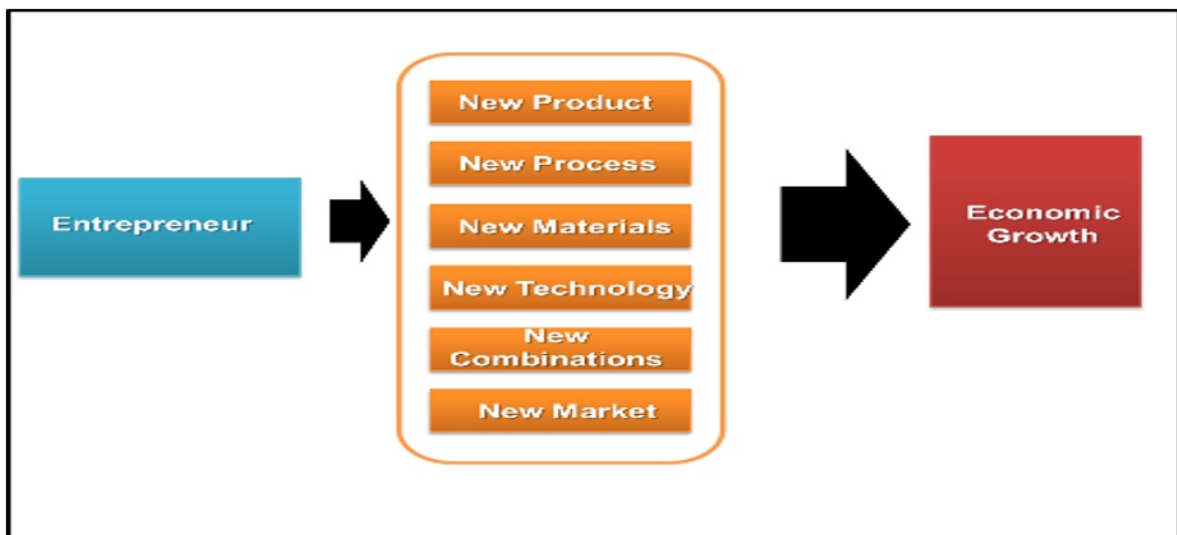
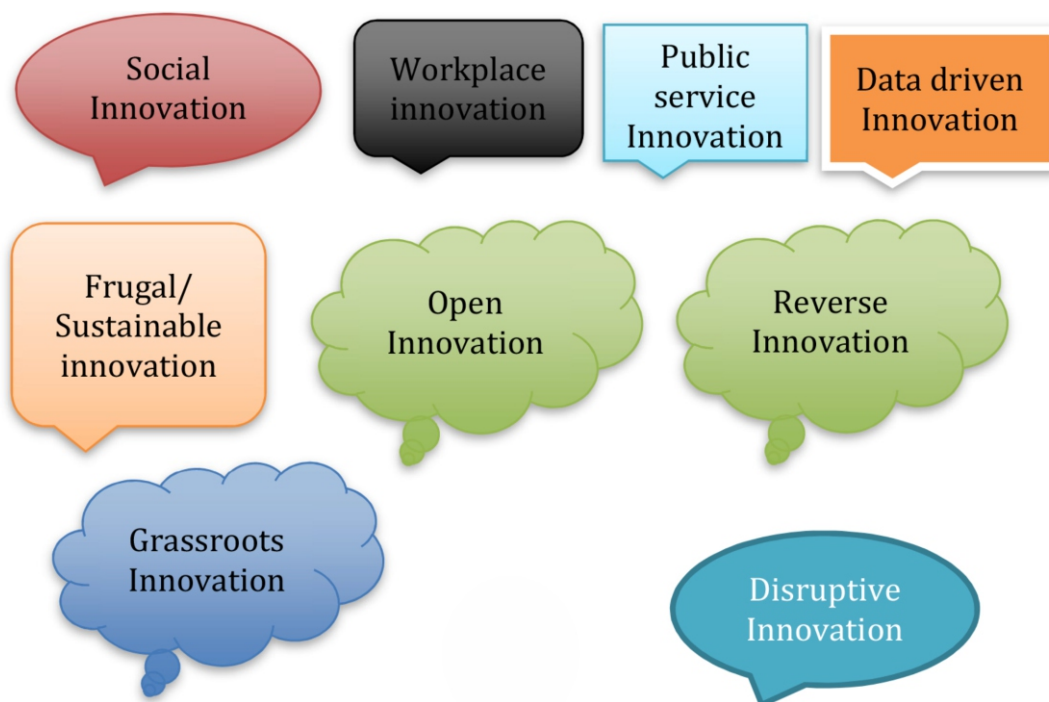


Figure 6: Joseph Schumpeter Model of Innovation

Informal Innovation



The following innovation definitions, while not measured by the formal Innovation survey and Oslo manual, are equally important in today's landscape. They offer a mean to define innovative aspects in the workplace and community setting. Their output while not necessarily profit making, do offer positive change in their respective settings and ease the life of citizens.

Social Innovation

Social innovations are new ideas that meet social needs, create social relationships and form new collaborations. These innovations can be products, services or models addressing unmet needs of the community more effectively for example (insert)

Public sector Innovation

The public sector plays a key economic role as a regulator, service provider, and employer. Jobs provided by public sector account for more than 40% of total employment in Seychelles. An efficient and productive public sector can be a strong driver of private sector growth. Nowadays, there is a strong justification for efficiency gains, better governance, faster delivery, and more citizens' involvement in public sector.

Workplace innovation

This can mean many things such as a change in business structure, Human Resources management, relationships with clients and suppliers, or in the work environment itself. It improves motivation and working conditions for employees, which leads to increase labour productivity, innovation capability, market resilience, and overall business competitiveness. All workplaces, no matter their size, can benefit from workplace innovation.

Some benefits of workplace innovation

- improves performance and working lives, and encourages the creativity of employees through positive organizational changes;
- combines leadership with hands-on, practical knowledge of frontline employees; and
- engages all stakeholders in the process of change.

Frugal innovation

Another term for frugal innovation is “low-cost innovation”. Meaning that frugal Innovation is when the needs and the circumstances of citizens in the developing world are put first in order to develop appropriate, adaptable, affordable, and accessible services and products for emerging markets. Frugal innovations are products and services mostly derived from basic raw materials and needs in the community.

Disruptive innovation

A product or service that takes root initially in simple applications at the bottom of a market chain and then relentlessly move up the market eventually replacing all established competitions. It is mainly doing something completely different from the usual way of doing things

Grassroots/ Sustainable innovation

This is defined as the development of new products, processes, services and technologies that contribute to the development and well-being of human needs and institutions while respecting the worlds' natural resources and regenerative capacity. Most of these types of innovations are not for their commercial value, but for the sustainable development of a community.

Reverse Innovation

Reverse innovation is developing and selling new products in emerging markets as a first step and then modifying these products for sale in economically developed countries.

Open inclusive innovation

Innovation in which the whole community has come together to develop for the betterment of the community can be economically viable but not necessarily so.

Data-driven innovation

According to the OECD data-driven innovation is one of the economic pillars of the growth of the 21st century economy. This concept refers to the development of the economy through the use of real-time big data, making use of data available to develop policies and make decisions for the benefit of the population.

Frequently Asked Questions about Innovation



How do I know if a product is innovative or not



The minimum requirement for an innovation is that

- o The product or business process must have one or more characteristics that are significantly different from those contained in the products or business processes previously offered by or used by the business for example the company might drastically change the packaging of its product to attract more customers.
- o These characteristics must be relevant to the business or to external users. For example, the company may expect the new or improved characteristics of a product (or business process) to increase utility for users or to enhance its own competitive position in the market.

An innovation can also result from a series of minor improvements made during the observation period.

The requirement for significantly different characteristics applies to product and business process innovations that a business develops itself and innovations first developed by other companies, organisations or individuals, with little or no additional modification.



The United Nation Industrial Development Organization (UNIDO) (2019), described innovation as an idea that is taken to commercialization, going through a system of innovation that supports the process. The system is being referred to the National Innovation System (NIS) that can be mapped and measured to support policies and strategies that create a conducive environment for the innovation to thrive.

“A national system of innovation is the system of interacting private and public firms (either large or small), universities, and government agencies aiming at the production of science and technology within national borders. Interaction among these units may be technical, commercial, legal, social, and financial, in as much as the goal of the interaction is the development, protection, financing or regulation of new science and technology” (Niosi et al., 1993)

According to UNIDO, (2019), every country has an innovation system but depends how functional the system is, based on the interactions between government, industry, knowledge-based institution as per the Triple Helix Model. In recent years the importance of the arbitrageurs (venture capitalists, business angels, professional associations and NGOs) has been highlighted in literature making the triple helix more of a quadruple helix.



Figure 3: The triple-Helix Model of the NIS with the arbitrageurs at the centre creating a quadruple Helix model

Seychelles also measures innovation in the private sector through a survey. This survey was first carried out in 2016/2017 and through a questionnaires that has been adapted from the Oslo Manual measures the amount of Innovation that a company has done and the profit margins of these innovations.

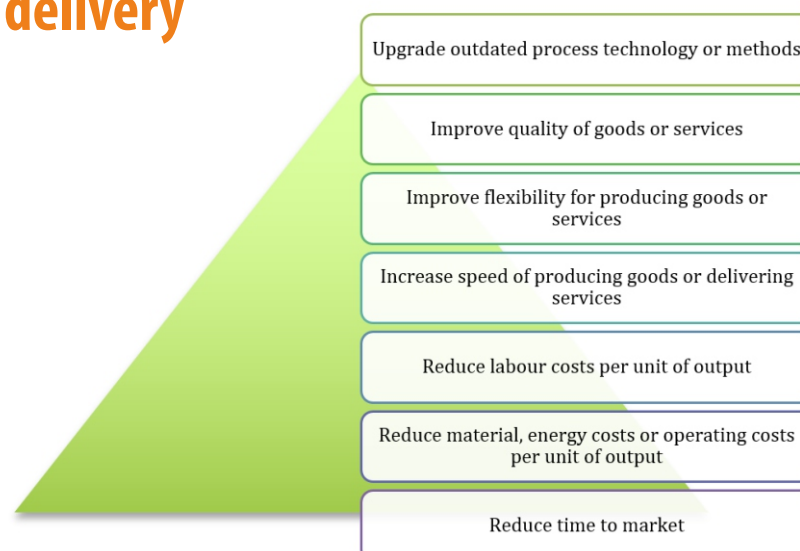


Innovation in general should be beneficial to the business, its clients and the whole ecosystem in general. Below are some benefits of innovations to any large, medium, small and even micro companies.

Markets for the products

- Upgrade goods or services and expand the range of goods or services;
- Create new markets and enter new markets or adapt existing products to new marlets;
- Increase or maintain market share;
- Increase the reputation, brand awareness or visibility of goods or services; and
- Comply with market regulations adn adopt standards and accreditation.

Production and delivery



Business Organization

Improve sharing or transfer of knowledge with other organisations;

Improve capabilities for absorbing, processing and analysing knowledge;

Improve the efficiency or function of the firm's value chain;

Improve communication within the firm;

Improve working conditions, health or safety of the firm's personnel;

Increase business resilience and adaptability to change; and

Implement a new business model.

Economy, society or environment

Reduce negative environmental impacts /deliver environmental benefits

Improve public health, safety or security

Improve social inclusion

Improve gender equality

Improve quality of life or well-being

Comply with mandatory regulations; and

Comply with voluntary standards

Terms and Definitions

Buzzword: a word or expression from a particular subject area that has become fashionable by being used a lot, especially on television and in the newspapers

Knowledge-based economy: Economy, which is directly based on the production, distribution and use of knowledge and information. This is reflected in the trend in developed and developing economies towards growth in high-technology investments, high-technology industries, more highly skilled labour and associated productivity gains.

Socio-economic development: socio-economic models can be defined as original systems of institutions and regulations that display a long lasting efficiency and support in regard of the objective (and the means) that are valued by the majority of the population.

Oslo Manual: The manual published by OECD to provide guidelines for collecting, reporting and using data on innovation.

Triple-helix model: Triple Helix systems according to the systems theory as a set of: (i) components (the institutional spheres of University, Industry and Government, with a wide array of actors; (ii) relationships between components (collaboration and conflict moderation, collaborative leadership, substitution and networking); and (iii) functions, described as processes taking place in what we label the 'Knowledge, Innovation and Consensus Spaces.

Quadruple helix model: The triple helix model with the arbitrageurs as an important component in the middle.

Arbitrageurs: someone who buys something, such as shares or currency, in one place and sells them in another where they can get a higher price at the same time. .

Venture capitalists: Venture capital companies, comprise a group of professional investors, who provides capital (money), to companies that exhibit high growth potential in exchange for an equity stake (shares in the company. Their capital will come from individuals, corporations, pension funds and foundations.

Business angels: refers to an individual who invests his or her money in an entrepreneurial company, usually and innovative technology and science start-ups.

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