

Kenya Institute for Public Policy Research and Analysis

Drivers of Firms' Innovation in Kenya

presentation made First International Symposium on
Intellectual Property Protection and Enforcement

Date: 14th June 2023

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Introduction

- Innovation is the exploitation of opportunities through the introduction of a new or improved product, process or service to meet the needs of individuals, society, or commercial entity to address a market or societal need.
- 2018 Oslo Manual “a new or improved product or process (or combination thereof) that differs significantly from the unit’s previous products or processes and that has been made available to potential users (product) or brought into use by the unit (process)”
- It is amongst the pillars of Competitiveness
 - “set of institutions, policies, and factors determining the level of a country’s productivity”
- Innovation contributes to improved production, improved sales, enhanced welfare through provision of education, healthcare and mobility.

Introduction

- The process of innovation is complex and involves several players (innovation system), the private sector firms or entrepreneurs are the core.
 - Process innovation refers to improvements in technique which reduce average costs per unit of output
 - Product innovation is defined as the introduction of new or improved goods and services
- Entrepreneurs obtain their ability/capability to innovate or generate knowledge through firm level activities, institutions & other interactions with third party.



Introduction

- OECD countries are increasingly investing in knowledge compared to machinery and equipment evidenced by fiscal incentives directed to the private sector & policies on innovation.
 - Countries like Japan, Republic of Korea and Finland for instance utilised public policy to support research & commercialisation.
 - They have invested in innovation system thus enhancing capabilities through research and training
 - innovation policy adopted in the Korea and Japan was aimed at generating knowledge from internal or external sources
- Kenya is amongst the top three countries in Africa with respect to Global Innovation Index (GII), after Mauritius and South Africa.
- African countries have recognised innovation as an enabler, AU 2063 & EAC 2030

Introduction



Target 9.5: Enhance scientific research, upgrade the technological capabilities of industrial sectors in all countries, in particular developing countries, including, by 2030, encouraging innovation and substantially increasing the number of research and development workers per 1 million people and public and private research and development spending



Aspiration 1: A Prosperous Africa Based on Inclusive Growth and Sustainable Development, recognizes that to achieve economic growth and enhance competitiveness of Africa private sector through the use of Science, Technology and Innovation.

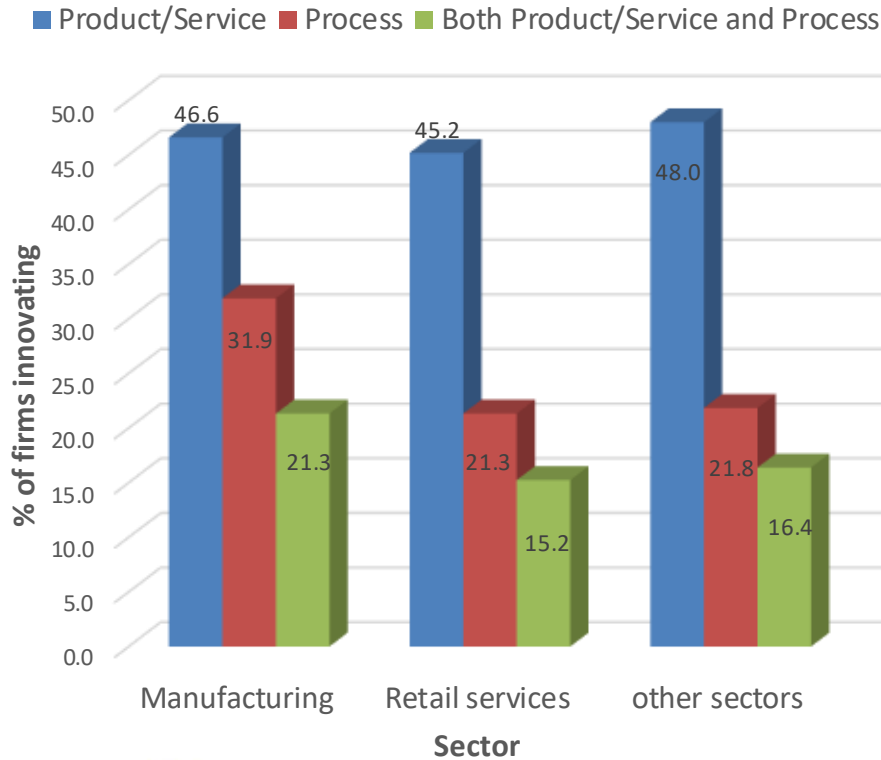
Innovation in Kenya

- Innovation in Kenya is largely by MSEs
 - Carried out by one in every 10 MSMEs; majority of whom are small
 - Product innovation leads to competitive products & service
 - Process innovation relates to adopted improvement in technique which reduced average costs per unit of output
 - Process innovations contribute to lowering costs & increasing efficiency thus productivity at the firm level.

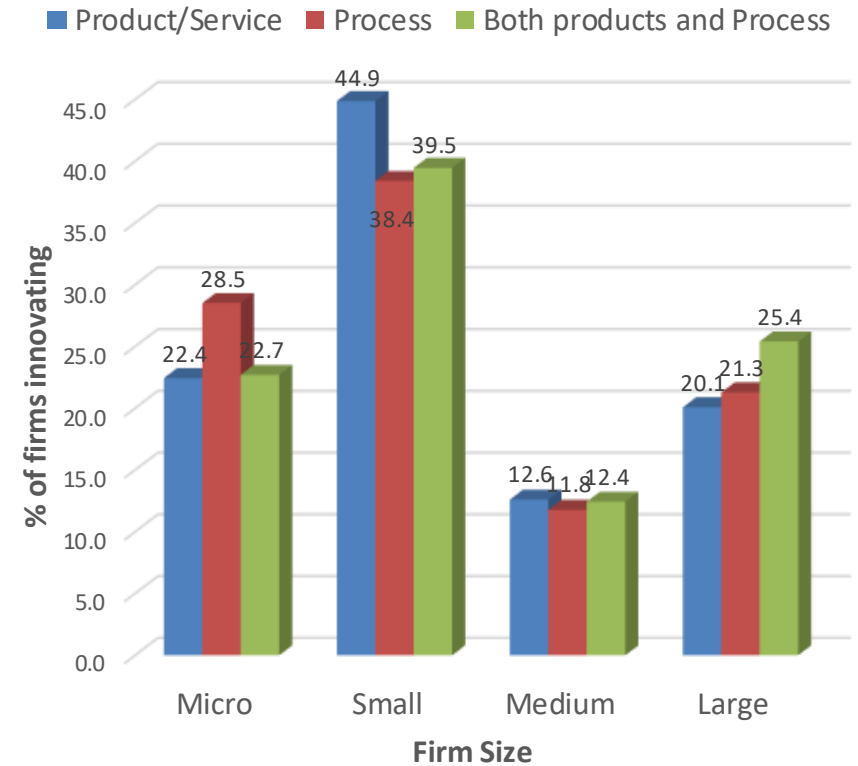


Innovation in Kenya

Industrial sectors

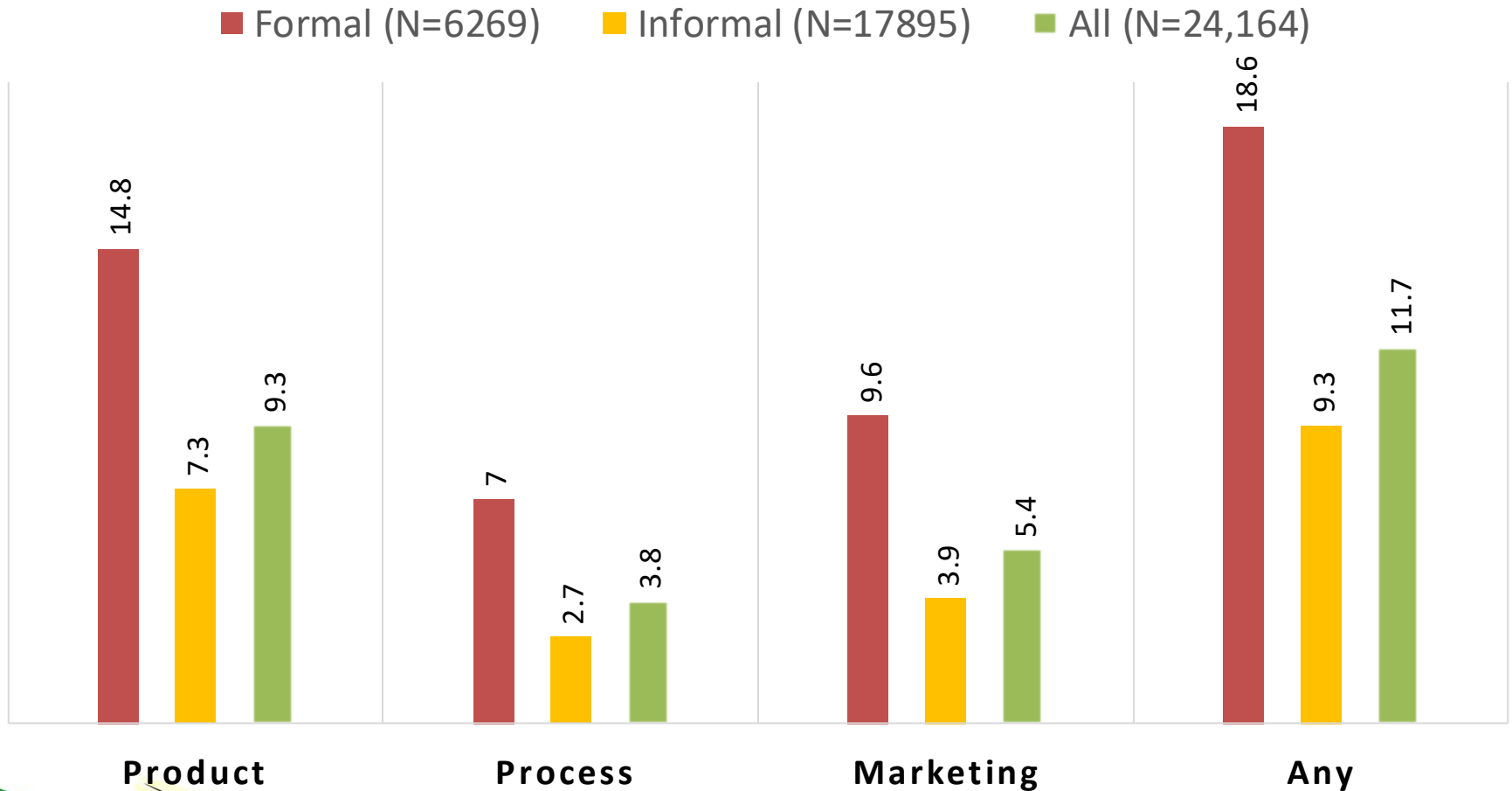


Firm size



Data Source: 2018 World Bank Enterprise Survey

Innovation in Kenya



Data Source: 2016 MSME Survey

Policy Issue

- Policy makers have been focused on enhancing productivity and competitiveness to promote economic growth whilst also enhancing societal welfare.
 - Innovation is a driver of economic growth & development and a pillar of competitiveness.
 - Counterfeit trade innovation.
- Kenya's MSME are an important source of employment, goods and services however innovation is low.
 - Firms need to innovate to maintain a competitive edge and enhance value addition activities.
- It is therefore important to accelerate innovation in the country to achieve Kenya's development vision of a globally competitive and prosperous upper middle-income country by enabling productivity & efficiency.
- The findings will inform Kenya's policy agenda..

Objectives of the study

The main objective of this study was to identify the drivers of firms' innovation in Kenya.

Specific objectives:

- (i) Determine the factors influencing innovation by firms.
- (ii) Establish the differences in the factors influencing different types of innovation i.e. Process and product/service innovation.
- (iii) Establish the influence of firm size on innovation.
- (iv) Establish the role of gender in firm innovation.
- (v) Identify the sectoral influence on firm innovation.
- (vi) Establish the influence of innovation system infrastructure (incubations and interactions) on firm innovation.



Policy and Legislative Context

Relevant Policies

- Sessional Paper No 5 of 1982 on Science and Technology for Development.
- The Sessional Paper no 2 of 1997 on Industrial Transformation to the year 2020.
- Sessional paper no. 2 of 1992 on Small Enterprise and Jua Kali Development In Kenya.
- Sessional Paper No 2 of 2005 on Development of Micro and Small Enterprises for Wealth Creation for Poverty Reduction.
- The Sessional Paper No. 9 of 2012 on the National Industrialization Policy Framework for Kenya.
- Sessional Paper No. 05 of 2020 on Kenya Micro and Small Enterprises Policy.

Relevant laws

- Micro and Small Enterprises Act. No. 55 of 2012
- Science and Technology Act No. 28 of 2013
- Industrial Property Act. No. 3 of 2001
- Trademark Act CAP 506
- Consumer Protection Act. No. 46 of 2012

Summary of Policy Review

- The different policies established promotion of technology transfer, access to incubation services & access to relevant finance, particularly funding for research and innovation as priority.
- Inefficiencies include
 - Inadequate innovation interactions and institutions such as business linkages, subcontracting, incubation services
 - Inadequate R&D financing support- National Research Fund is not designed to facilitate R&D activities undertaken by the private sector.
 - Weak support for women innovators
- Policy gaps
 - No sub-contracting policy;
 - No innovation policy;
 - No incubation policy;
 - No anti-counterfeiting policy

Overview of literature review

- Theoretical literature reveals that the private sector play an important role in the provision of innovative products and services.
 - Schumpeter: Firms allocate resources to innovate; introduce new/ superior products and technologies to replace old
 - Endogenous growth theory: technological change is the result of efforts by researchers and entrepreneurs who respond to economic incentives
 - Industrial organization theory & Resource-based theory bring out firm level factors
 - Absorptive capacity: Firm's ability to identify, evaluate, assimilate and commercialize new and external information
 - Teece Model: Complementary assets like alliances as an additional factor that may inform firm level innovation.
- The key determinants of innovation empirically from different empirical studies include;
 - Internal: firm characteristics including firm age, size, sector, gender of business owner; R&D activities, human resource characteristics
 - External: external trade, Innovation infrastructure and interactions which include networking, corporate alliances, access to incubation services. This is however limited
 - Firm level interactions and networks enhances absorptive capacity to undertake innovation the firm.

Methodology & Data source

- The study estimates the probability that firm i chooses product/service innovation
- $Pr[y_i=1 | x_i]=x_i\beta+u$
(x_i) represents the firm i firm's attributes (internal factors) and external factors.
 $y_i=$ 1 with probability p
 0 with probability $1-p$

Data Source: 2018 World Bank Enterprise Survey. With 1001 firms of MSME and large however micro with less than 5 employees were not included.

Variables

Variable	Measurement
<u>Firm level factors</u>	
Age of firm	Number of years a firm has been in operations
Firm Size	Number of permanent, full-time employees at end of last fiscal year
Female ownership	Proportion of the establishment owned by females
Sector	Categorical variable where 1 =Food, 2=Textile and garments, 3= Chemicals, pharmaceuticals and plastic, 4= Other manufacturing, 5= Retail, 6= other service
Manager's experience	Number of working years for the top manager.
R&D	Expenditure in Ksh on R&D in the last fiscal year
<u>External factors</u>	
Incubation	Dummy variable where 1 = Use of incubation labs by the government, universities, or private sector and 0= otherwise
Export	Dummy variable where 1 = if the firm exports and 0= otherwise
<u>Innovation Interactions</u>	
Co-development	Dummy variable where 1=Innovated through collaboration and co-development and 0= otherwise
Networks	Categorical variable where 1= Member of formal/networks and 0 =otherwise

Findings: Firm level factors only

Process innovation

- **R&D** has a positive effect on process innovation. (2%)
- **Sector:** Compared to food manufacturing firms in service sector and on other manufacturing has low probability in process innovation at 8% & 12 % respectively.

Product innovation

- **R&D** has a positive and statistically significant effect on product/service innovation. (2%)
- **Larger** firms have a higher probability of product/service innovation (4%)
- Firms with a larger proportion of **women as business owners** have a 0.1 % probability to undertake product/service innovation.
- Firms with **managers with experience** have a higher probability (3%) to undertake product/service innovation.
- Firms in textile and garments manufacturing, chemicals, pharmaceutical and plastics manufacturing have a higher probability product/service innovation compared to food manufacturing firms both at 15%.
- Firms in retail and other services have a higher probability (14%) in product/service innovation compared to food manufacturing firms

Findings: including external factors & interactions

Process innovation

- Compared to food manufacturing firms in service sector and on other manufacturing have a low probability in process innovation at 17% & 13 % respectively
- **R&D** has a positive and statistically significant effect on process innovation (1%)
- Firms who **export** have a higher probability (8%) of process innovation
- Firms who have **collaborations** and **co-development** have a higher probability (12%) of process innovation

Product/service innovation

- Firms in retail and other service have a higher probability in product/service innovation compared to food manufacturing firms at 17%, 18% & 18% respectively
- Firms in textile and garments manufacturing, chemicals, pharmaceutical and plastics manufacturing have a higher probability product/service innovation compared to food manufacturing firms both at 17% & 15% respectively
- **Larger firms** have a higher probability of product/service innovation. (3%)
- **R&D** has a positive and statistically significant effect on product/service innovation. (2%)
- Firms with **formal associations/networks** have a higher probability in product/service innovation (5%)

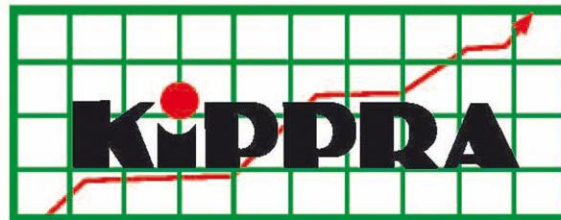
Recommendations

- **Size:** Policy interventions should be aimed at establishing resource requirements for micro enterprises
 - National Research Fund has a mandate that does not cater for the private sector. The fund should be transformed to fund R&D activities by micro enterprises that focus on product development.
 - Should be designed to support the entire process from design, production (including prototyping) to marketing new products/services
- **R&D:** the government should review and enhance fiscal incentives to the private sector and the research infrastructure
- **Sector:** government industrial clusters on textiles (MTP III) should promote networking given it promotes innovation. Clustering also enhance linkages, technology & knowledge transfer and offer opportunity for incubation services

Recommendations

- **Interactions** between MSMEs and amongst MSMEs & large and/or global enterprises can also be promoted via policy instruments.
 - Proposed policies can address this; commercialization of innovation policy, IP policy, sub-contracting policy
 - MSME associations should be strengthened to support & facilitate innovation interactions.
 - Networks and associations enhance access to information
 - Academia –industry linkages can promote skills and knowledge transfer.
 - Business networks can enhance collaborations and resources in combating counterfeiting.
 - Collaborations increase mutual trust between brand owners.
 - Partnerships include business partnerships through industry groups, as professional associations or academia to facilitate business responses to supply chain disruptions, including the introduction of counterfeits.

Thank You for Your Attention!



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