

# Measuring the Capabilities of Firms to Deliver Local Content in Resource Rich Countries

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## **About KAPSARC**

The King Abdullah Petroleum Studies and Research Center (KAPSARC) is a non-profit global institution dedicated to independent research into energy economics, policy, technology and the environment across all types of energy. KAPSARC's mandate is to advance the understanding of energy challenges and opportunities facing the world today and tomorrow, through unbiased, independent, and high-caliber research for the benefit of society. KAPSARC is located in Riyadh, Saudi Arabia.

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# Key Points

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The term 'Local Content Policy' is a catch-all for ensuring that resource owners capture more value from developments than the fiscal revenues alone. KAPSARC has explained the benefits of a dynamic perspective when evaluating firms' capabilities – their entrepreneurial capacity – and proposed a tool for assessing firms in this paradigm. Here, we present an analysis based on the descriptive statistics gathered from applying the framework outlined in the previous two papers.

Uganda is on the cusp of developing its oil industry following major discoveries around Lake Albert in the northwest region of the country. It has provided a useful case study for developing insights that can be more generally applied in resource rich economies seeking to maximize the value extracted from their endowments. KAPSARC conducted a study of Ugandan firms, their capabilities and potential to serve the oil and gas industry as suppliers. The specific findings were:

- Ugandan firms demonstrate relatively good performance in some important dimensions, including absorptive capacity and innovation. However, this is curbed by low levels of linkages with the academic and industrial sectors, limited exports and poor interaction with the financial sector.
- The firms surveyed show an entrepreneurial behavior, which is encouraging for public policies promoting the private sector. Moreover, almost all the firms are privately owned.
- International standards, important in oil and gas operations, are not widely used. Plugging this gap is an opportunity that can be addressed by local content policies.
- The oil and gas industry is new in Uganda, yet 29 percent of the firms surveyed are already suppliers to the sector. The contribution to their sales represents only a small percentage. This low level of sales among a relatively high number of suppliers indicates a potentially positive impact on the local supply chain if appropriate local content policies are designed.

# Summary

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This paper is the third in a series of four that focuses on estimating the capabilities of local firms for designing local content policies (particularly in emerging economies). The first explained the benefits of incorporating a dynamic perspective when evaluating firms' capabilities. The second introduced a tool for assessing firms that captured the likelihood of these companies developing appropriate capabilities in the future to meet the needs of resource rich countries. This paper presents an analysis based on the descriptive statistics gathered in Uganda – the case study we have been using in developing a framework for analyzing the opportunities for maximizing the value extracted from natural resource developments. The final paper will include statistical tests and develop indicators for estimating firms' capabilities.

Understanding the capabilities of local firms is the first step toward developing sound local content policies (LCP). In the case of Uganda, a soon-to-be oil producer, having a good understanding of the capabilities of companies in the country based on economic concepts, managerial principles and from an oil industry perspective, can help policymakers develop the right local content policy objectives. The survey conducted and reviewed in this paper serves as an example of how to estimate these capabilities in new natural resource producing nations.

In recent years, many resource holding emerging economies have promoted local content policies as a mechanism to obtain greater economic benefits from the exploitation of their oil and mineral resources. However, countries that are new to oil and gas activities lack information regarding the potential of their local firms to participate in

the petroleum supply chain or rely on studies conducted by international oil companies (IOCs). This research adds an additional perspective by incorporating the concepts of absorptive capacity and innovation to the typical dimensions that are relevant to the oil industry. These concepts relate to the underlying attitudes and behaviors that support the performance and competitiveness of local firms. This combined perspective provides a wider array of analysis to policymakers as well as institutions or companies interested in developing local firms. This paper focuses on a high-level descriptive analysis of Ugandan firms. A future paper will complement the descriptive analysis developed here, focusing on tests and building indicators for estimating a firm's capabilities with the aim of providing more specific recommendations to policymakers.

Table 1, overleaf, provides a summary of the main results of the survey.

In the Appendix, we show how the sample was designed.

The underlying data of this study is based on a survey directed by KAPSARC in cooperation with local partners, including 263 face-to-face interviews with Ugandan firms in the field. The Economic Policy Research Center (EPRC) of Makerere University was our primary collaborator in conducting the survey while staff from the Ugandan Bureau of Statistics (UBoS) helped select the sample of relevant firms to be interviewed. The sample was randomly selected from the latest enterprise census of Uganda including 10 economic sectors that are likely to have linkages with the oil and gas industry, and are distributed geographically.

**Table 1.** Synthesis of survey results.

<b>Sample</b>	<b>263 firms</b>
Geographic regions	Kampala, Wakiso, Mukono, Jinja, Hoima, Tororo, Mbarara, Mbale, Arua, Gulu, Masindi, Kasese
Firms supplying to the oil industry	29%
Subsidiaries of foreign firms	13%
Level of annual sales	About 72% of firms have sales below \$1 million
Exports in 2015	38% of the firms. But small impact on firms' total sales (9%)
Employment distribution in firms	10% up to 5 employees
	62% between 6-49 employees
	14% between 50-100 employees
	14% over 100 employees
Average employees (permanent) in each firm	85 (total sample)
	59 (without including the three largest firms)
Perceived level of competition	High
Absorptive capacity	Relatively high (28% of employees with university degrees, but limited by linkages)
Innovation efforts	Significant
Results of innovation concerning new products	31% of sales (2015)
	Significant, but concentrated to the firm and country level
Results of innovation concerning new services	22% of sales (2015)
	Significant, but concentrated to the firm and country level
Existence of Health and Safety Plan	55% of firms
Use of ISO 9001	30% of firms (low)
Use of ISO 14001	7% of firms (low)
Use of OHSAS 18001	8% of firms (low)

Source: KAPSARC analysis.

# Introduction

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Since 2001 Uganda's efforts to promote oil exploration in the country have paid off resulting in more than 21 discoveries. With an estimated 6.5 billion barrels of oil reserves in place, the exploitation of this resource will have a significant economic impact in the country. Oil development has the potential to bring large foreign direct investments, estimated at around \$10 billion in the next three to five years. The Ugandan government's objective is to maximize the opportunities for economic development from the exploitation of these resources. One way of achieving this is through the adoption of Local Content Policies (LCP) that promote the use of Ugandan business in the oil operators supply chain.

Foreign Direct Investments (FDI) by Multinational Companies (MNCs) is generally believed to provide positive productive effects to recipient countries. However, empirical evidence is less conclusive. The two direct mechanism by which MNCs provide benefits to the host governments are payment of taxes and royalties, often described as 'the government's take,' as well as the creation of direct employment, and indirectly through the employment and business opportunities that can emerge as a result of the MNCs procurement needs.

Oil exploration and production is capital intensity and consequently, the direct jobs generated tend to

be few and highly skilled. The economic benefits of revenue from taxes and royalties are often dependent on the government's use of these funds for social and economic development. Procurement of goods and services, however, can offer an opportunity for the host country to promote an industrialization process fostering economic growth and diversification. The creation of indirect jobs can be significant. Indirect employment through local firms could be considerable if firms are able to supply the different segments of the oil and gas values chain. The impact of the oil companies' procurement on the local economy will depend on the ability of local firms to capture those opportunities. As such, the first step before designing a LCP is to understand the capabilities of these local companies.

In this paper, we present the descriptive analysis of a survey conducted by the King Abdullah Petroleum Studies and Research Center (KAPSARC) in Uganda. This document will be complemented by a future paper that builds indicators to estimate local firms' capabilities. The final objective is to provide a detailed view of local firms in Uganda, their potential to supply the oil and gas industry, and to provide policymakers with information to help in the formulation of sound local content policies.

# General Information

In this section, we focus on describing the basic characteristics of the surveyed firms. We include data on their economic area of activity, whether they are current suppliers to the oil and gas industry, their legal status, ownership structure, founding date and motivations.

## Economic sectors and IOC supplier status

Our sample included firms from 10 economic sectors based on the International Standard Industrial Classification System (ISIC), fourth revision. This system of codes is used to identify the type(s) of business that a firm undertakes. Government economic departments typically use these codes to categorize their research concerning the local economy. Figure 1 shows the distribution of ISIC code sectors included in the sample.

Manufacturing accounts for almost 26 percent of the firms surveyed, with the following four sectors representing between 10-14 percent each: professional, scientific and other technical activities

(13.7 percent); accommodation and food services (12.9 percent); construction (12.2 percent); and transportation and storage (10.3 percent).

A thriving manufacturing sector is necessary to get the most out of a local content policy. The impact of value added is greatly enhanced if the local content policies can relate engineering and other technical services to the oil and gas industry. In construction, a labor-intensive sector, one can expect an increase in the number of jobs for local workers. Transportation and storage may also see employment growth since the handling of material, equipment and personnel are essential to the oil and gas industry. Other sectors account for less than 10 percent of the sample and are expected to have a limited contribution to the oil industry.

The majority of the firms in the sample (71 percent) are not currently supplying the oil and gas industry. For a country in which the oil business is relatively new, having 29 percent of the surveyed firms declaring that they are suppliers to the oil industry is a large percentage. The segments of the industry

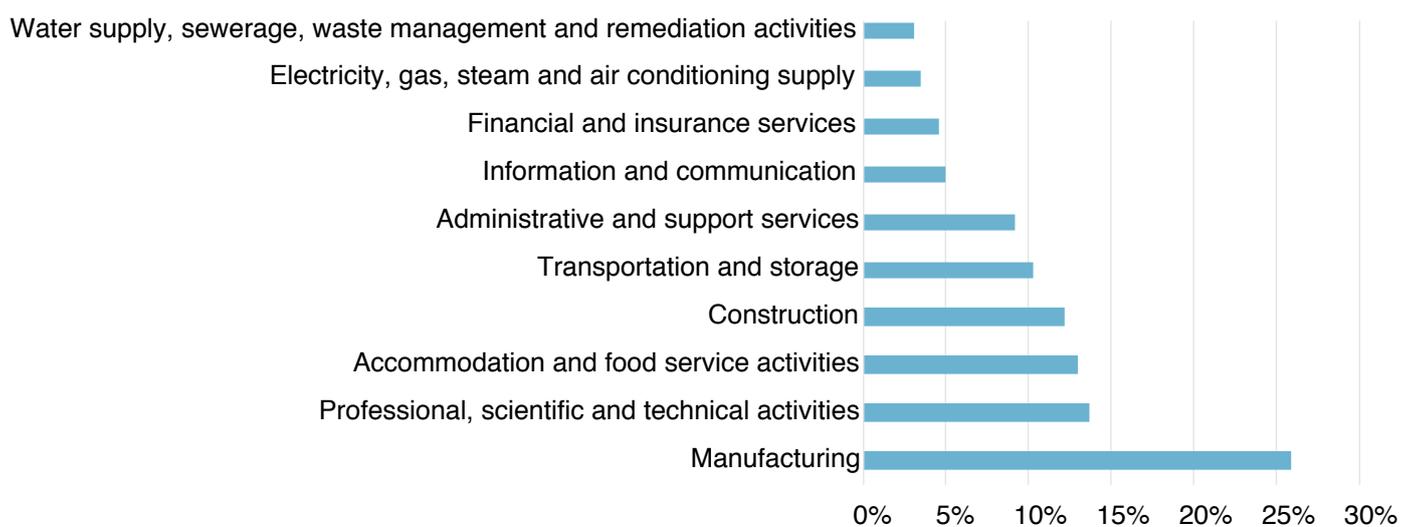


Figure 1. Distribution of ISIC code sectors included in the sample.

Source: KAPSARC.

## General Information

supplied by the local firms are in two extremes of the value chain: exploration for hydrocarbons and distribution of oil products via retail sales at gas stations as we can see in Figure 2. There are also many firms working in sectors defined as other activities, such as furniture, cell phones, photocopy machines, office computers, financial services, accommodation and others.

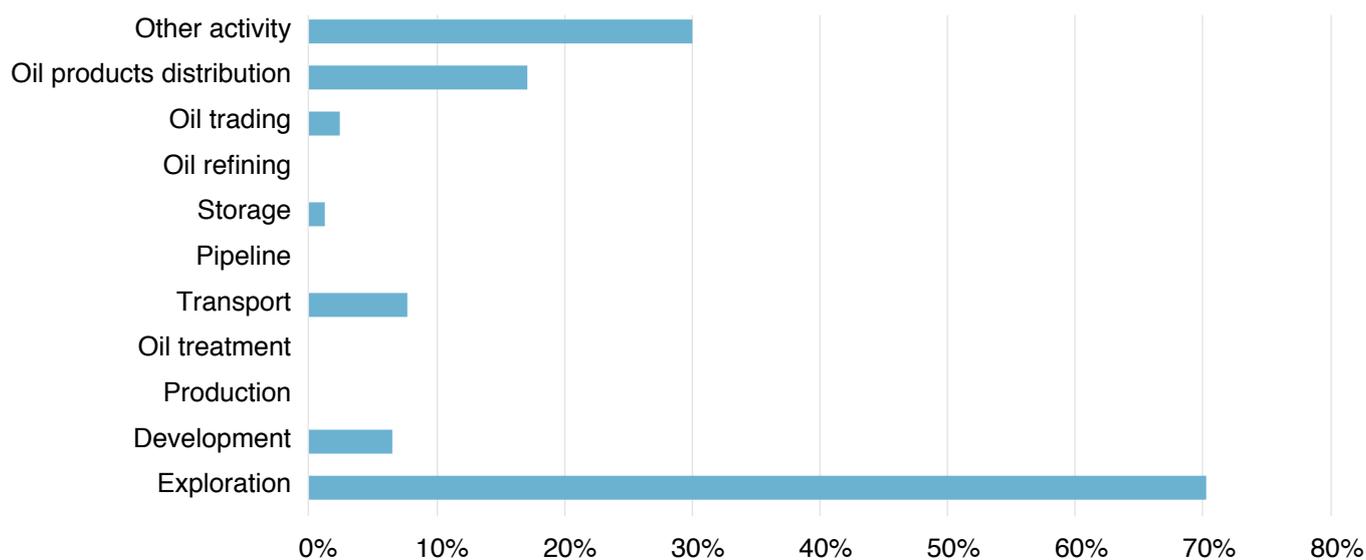
There are practically no linkages with local firms in the middle segments of the petroleum value chain, except some firms offering transportation services. These results are consistent with the current level of development of the oil industry in Uganda.

The pipeline to be built from Hoima to the coast of Tanzania offers a good opportunity to develop local firms in these middle segments, as well as the construction and servicing of a proposed local refinery.

Figure 3 shows how oil investments have already had a positive impact on local businesses. Among the 29 percent of firms currently supplying the oil industry, only 5 percent started in the 1990s, 27 percent in the 2000s and 68 percent since 2010.

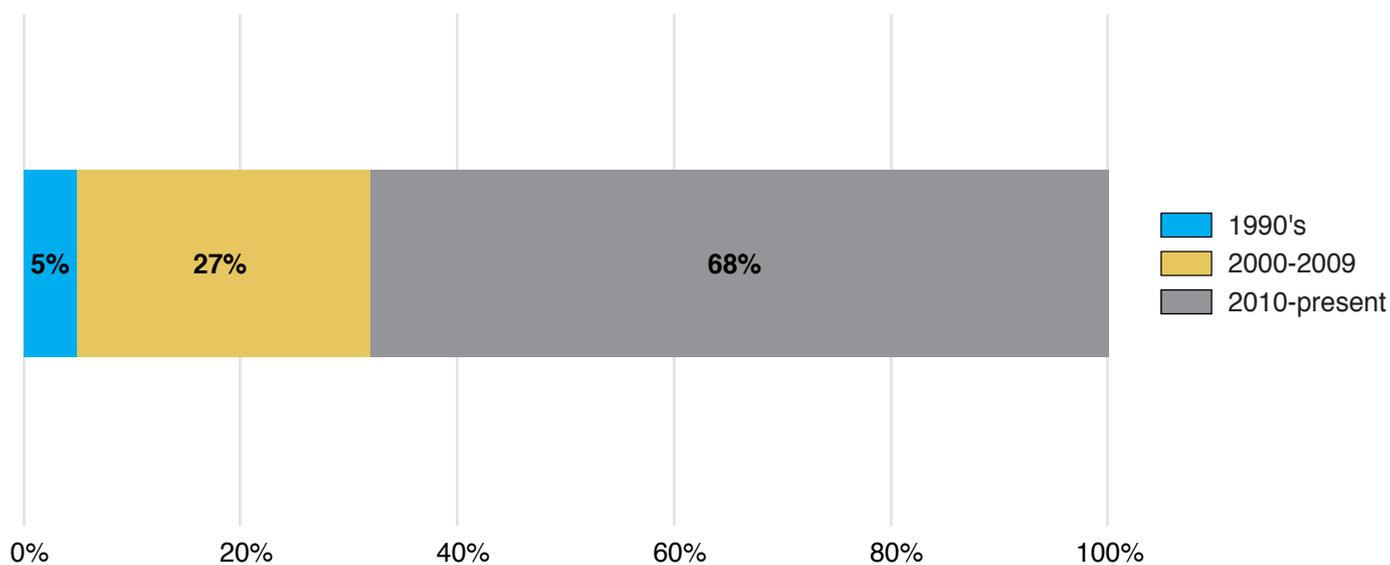
## Legal status, ownership structure, subsidiary and founding date

Almost 78 percent of the firms surveyed stated that their legal status was private limited. A private limited company, or LTD, is a firm where the owner(s) has a limited liability proportional to the shares owned, and its shares are not publicly traded. These firms are the most common form of legal structure in Sub-Saharan Africa (SSA) because they have few legal requirements. Almost 13 percent of the firms are structured as partnerships, 6.5 percent as a sole proprietor and less than 1 percent have some other form of legal status. Figure 4 shows that around two-thirds are private firms owned by Ugandans, 23 percent have foreign owners and 10 percent are joint ventures between locals and foreigners. The presence of state-owned firms is marginal in the 10 economic sectors examined in the survey, representing only 2 percent. Public policies designed to promote these sectors will mostly impact private companies.



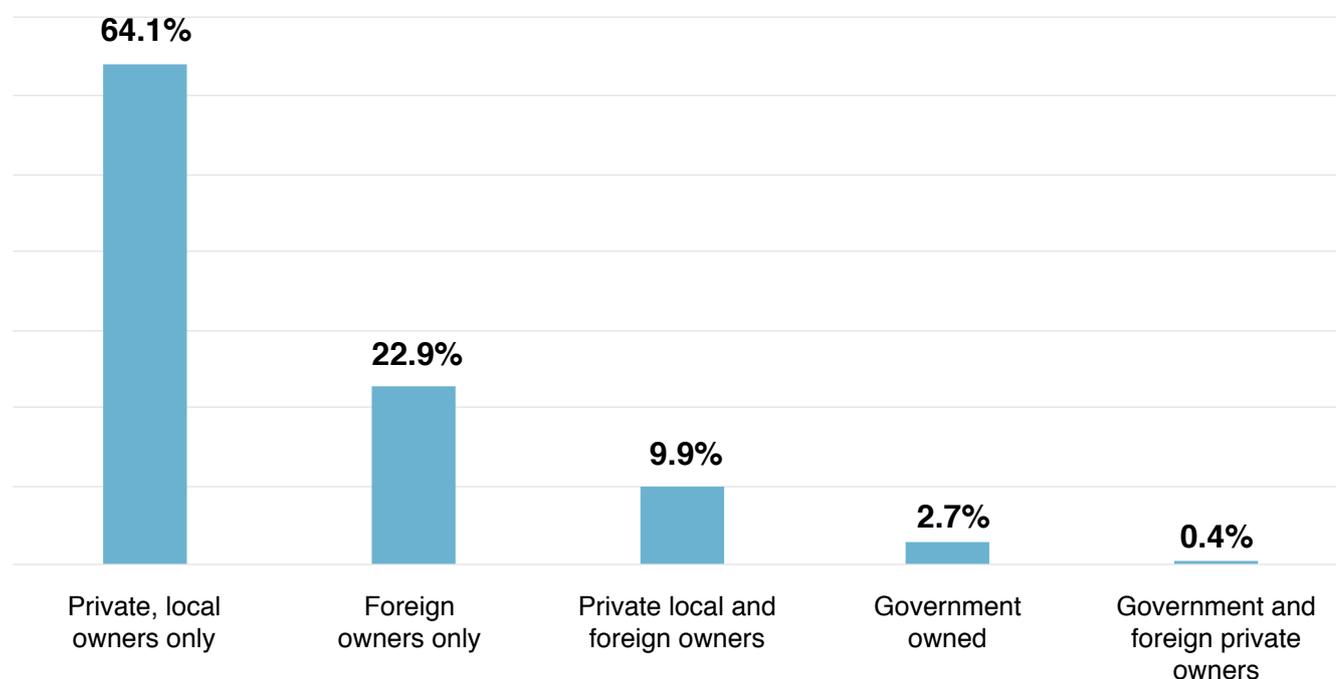
**Figure 2.** Segments of the oil industry supplied by Ugandan firms.

Source: KAPSARC.



**Figure 3.** Distribution of supplier firms by the period they began working for the oil industry.

Source: KAPSARC.



**Figure 4.** Legal status distribution.

Source: KAPSARC.

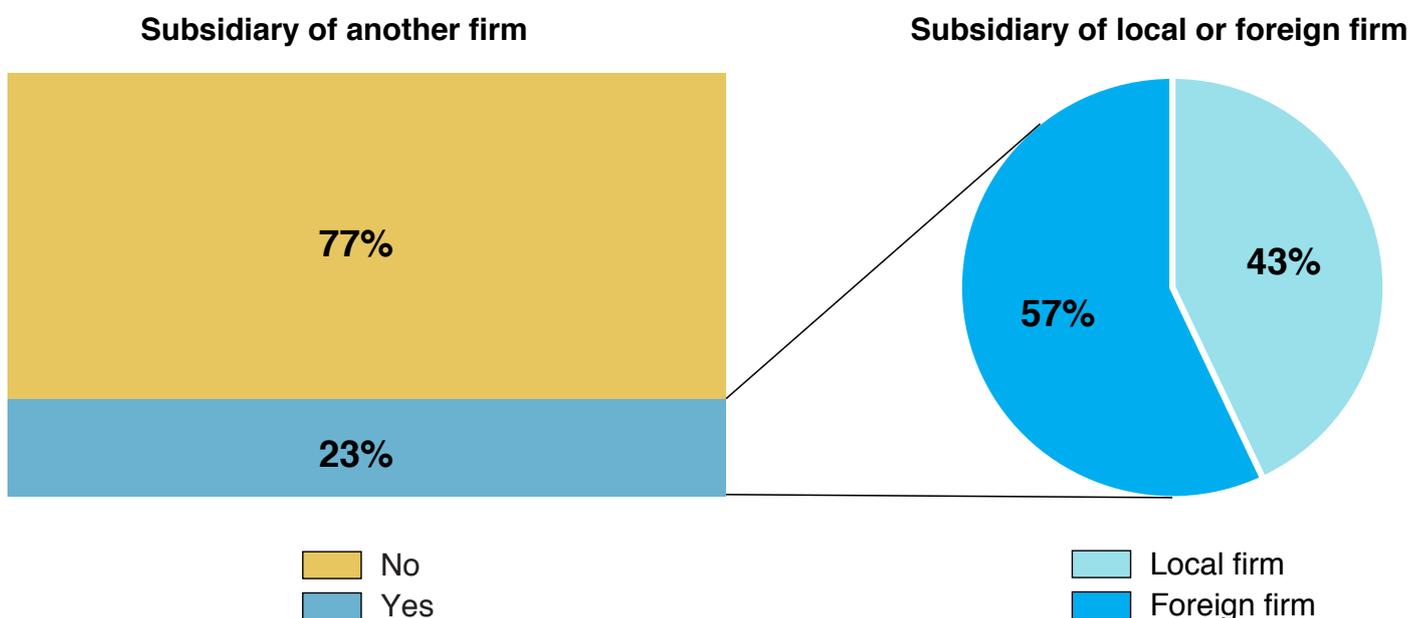
## General Information

Foreign direct investment (FDI) is an important channel for the transfer and diffusion of technology and knowledge (Aitken and Harrison 1997), (Sazali et al. 2010). Figure 4 also shows that almost 23 percent of the firms are solely foreign-owned and almost 10 percent have partial foreign ownership, indicating that FDI is already present in one-third of the firms surveyed (33 percent). Figure 5 below shows that 23 percent of these firms are subsidiaries, of which 57 percent are controlled by foreign firms and 43 percent by locals. Therefore, of the 23 percent of foreign-owned firms, 13 percent are foreign subsidiaries and 10 percent are directly owned by foreigners.

The survey showed that 90 percent of the firms in the sample were founded since 1986 under

the National Resistance Movement (NRM) administration. This stage of the country's growth called for greater economic liberalism and less state involvement in the economy. During the 1990s, the private sector led economic activity and the country signed multilateral agreements such as the Multilateral Investment Guarantee Agency (MIGA) and the International Centre for the Settlement of Investment Disputes (ICSID). In 1991, the Uganda Investment Authority (UIA) was established to promote foreign investments in the country (Obwona, Kiiza and Hisali 2013).

Only 9 percent of firms surveyed were established during the period known as the postcolonial industrial development (1962-1986). In this period the state guided and centrally planned the industrial



**Figure 5.** Subsidiary and non-subsidiary firms and origin of the parent firms.

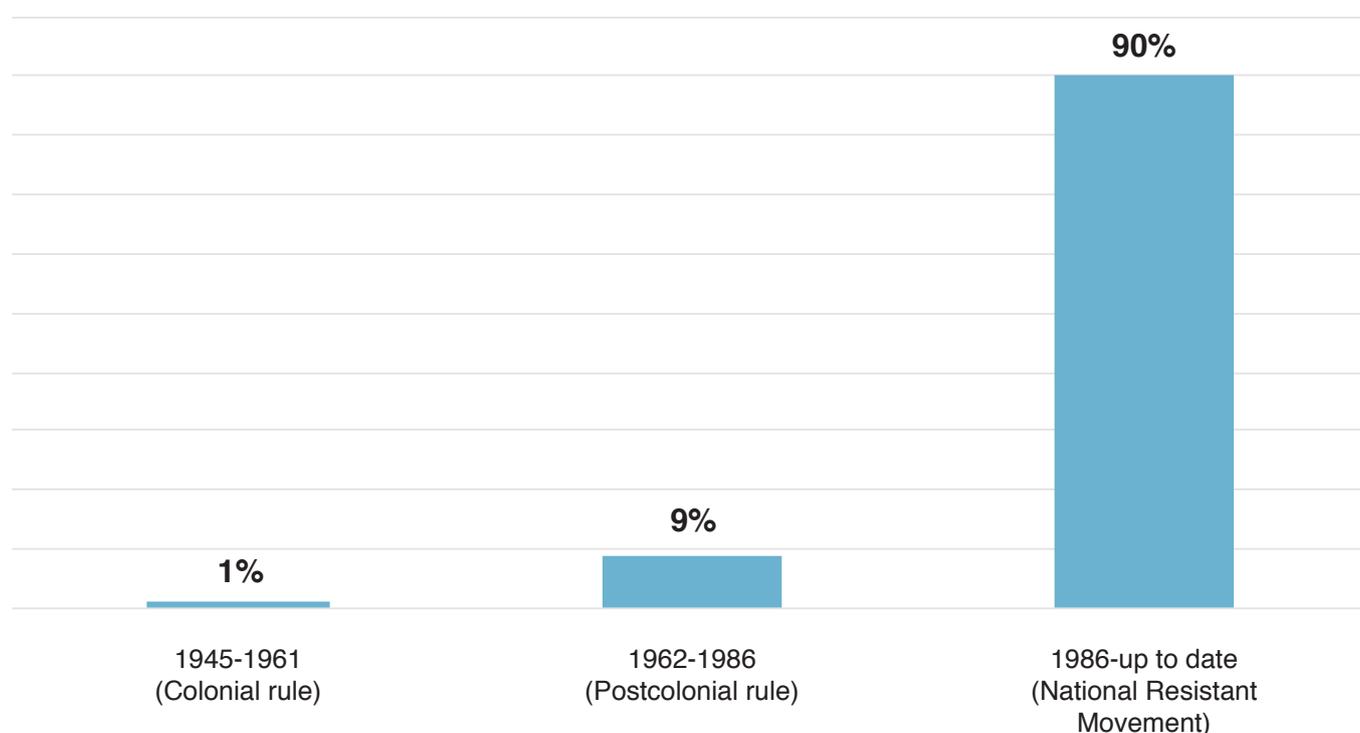
Source: KAPSARC.

economy. However, an economic crisis in the 1970s coincided with the rise to power of a regime that lasted eight years (1971-1979). This interval saw economic mismanagement and political strife, which severely affected the Ugandan economy (Obwona, Kiiza and Hisali 2013). Our survey marks the economic decline seen during this era with a notable absence of firms founded at the time.

Finally, as shown in figure 6, just 1 percent of the firms surveyed were established during colonial rule (1945-1960), where priority was given to the

export of primary commodities to generate foreign currency. Cotton, coffee and a few manufacturing firms targeting import substitution appeared during this period (Obwona, Kiiza and Hisali 2013).

When measuring the motivations for establishing a firm, figure 7 shows that the experience and skill of the owner is the most frequently cited reason, followed by personal relationships and assets owned. These results indicate that, in Uganda, knowledge is more important than your network or resources when starting a business.

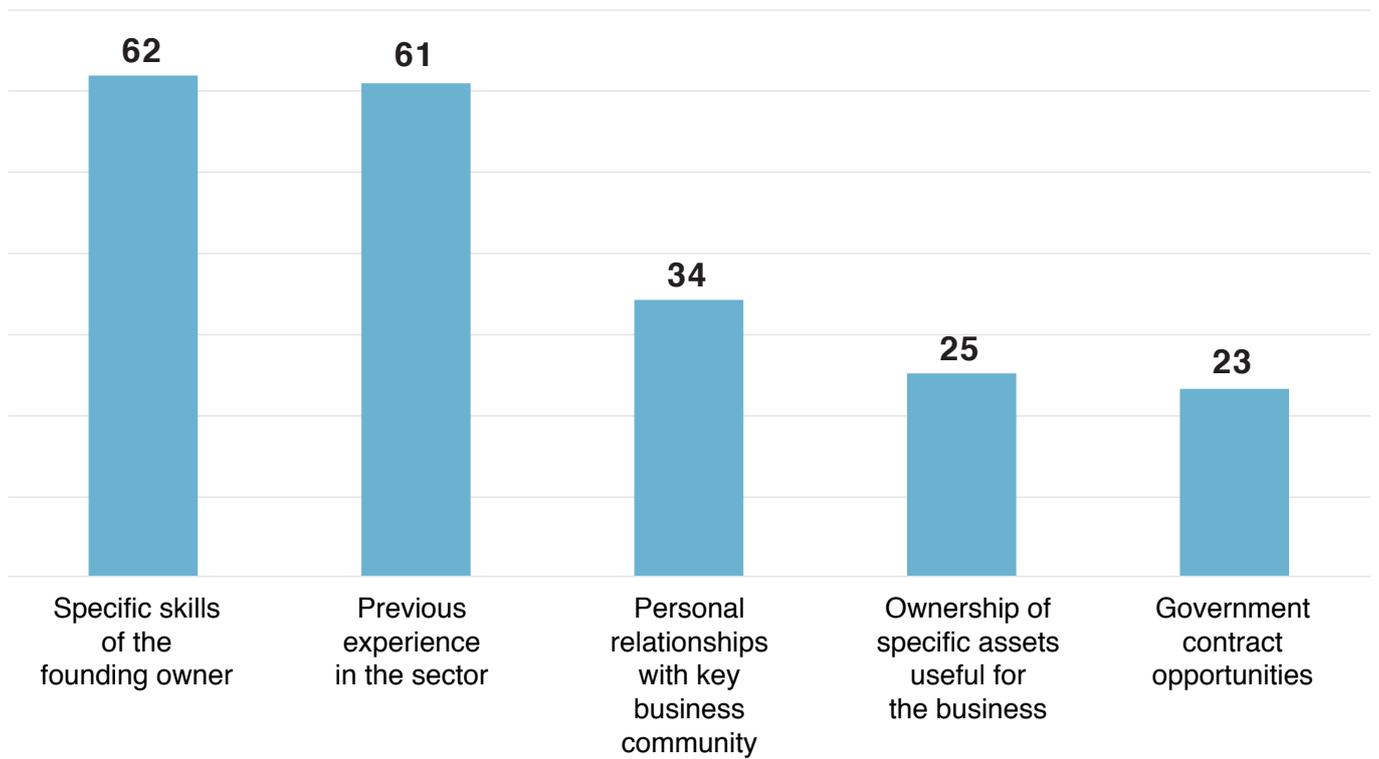


**Figure 6.** Firm founding dates by economic era.

Source: KAPSARC.

## General Information

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**Figure 7.** Motivations to start a business.

Source: KAPSARC.

# Sales, Market Structure, Type of Activity and Employment

This section explores and analyzes the market structure of firms such as their sales, competition, exports, products and number of employees. For employment, we include an analysis of the gender makeup, and for competition, we also consider the impact of informal firms.

In this study, when we refer to 'products' we include both goods and services.

## Sales

The largest single category of firms, corresponding to 22 percent of the sample, can be described as

small companies based on annual sales of less than \$40,000. In Figure 8 we can observe that the other five categories of firms according to sales, consisting of 72 percent of firms from the survey, have annual sales of around \$1 million. This level of revenue would qualify them as small and medium enterprises (SMEs) in other countries, but in Uganda many of these would be considered as large firms. The highest category, representing more than \$15.625 million in sales, is the smallest group, accounting for only 3.1 percent of our sample. The sales categories were developed by EPRC in Uganda and show a roughly even distribution of firms except for the highest earners.

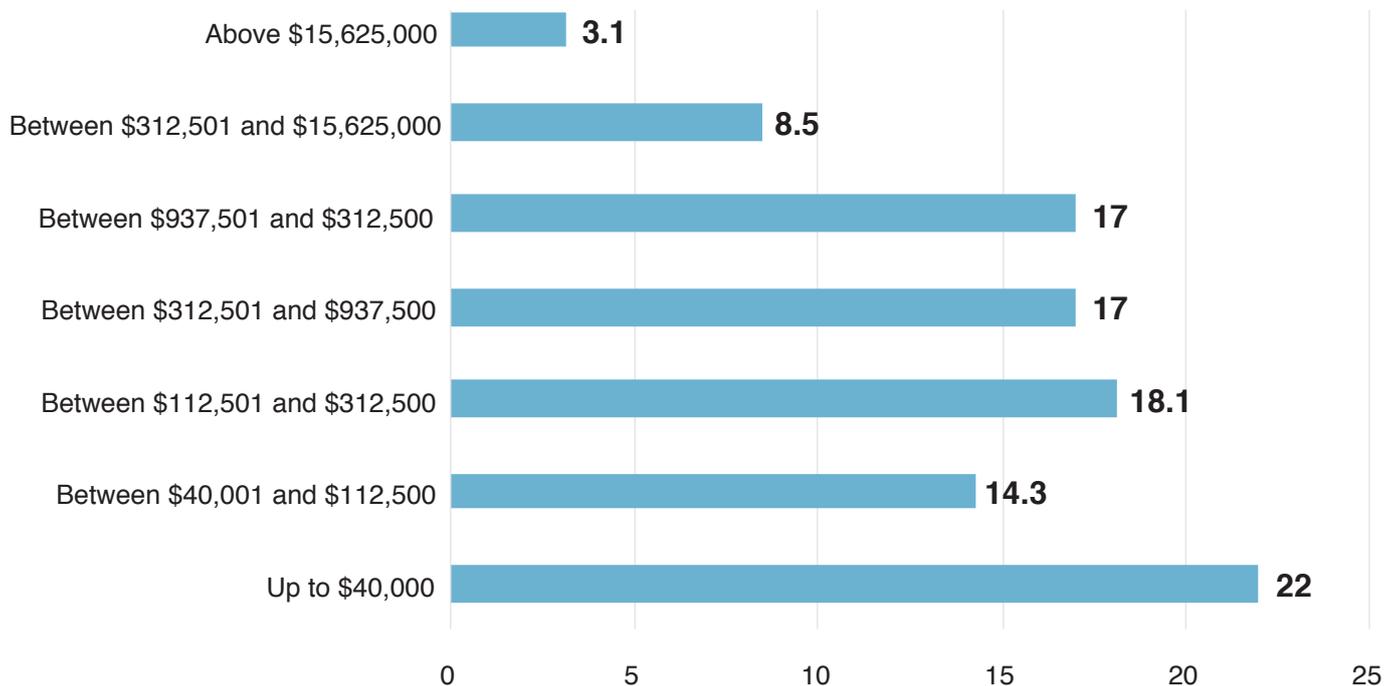


Figure 8. Sales in ranges of USD, 2015.

Source: KAPSARC.

## Sales, Market Structure, Type of Activity and Employment

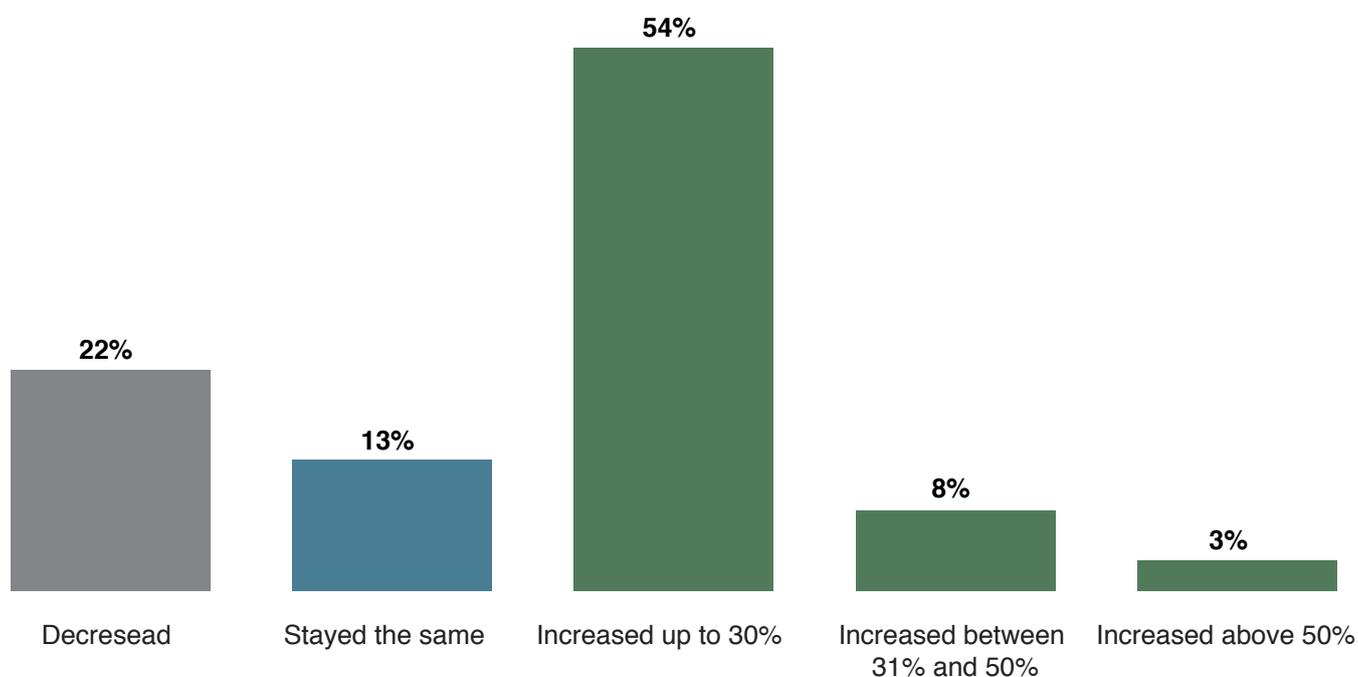
Figure 9 shows sales performance for the years 2013-2015. Among the firms, 65 percent claimed an increase in sales, 22 percent indicated a decline and 13 percent stated no change. From the 65 percent of firms that indicated an increase in sales, 54 percent saw growth of less than 30 percent, 8 percent between 31 percent and 50 percent and 3 percent specified an increase of more than 50 percent.

Figure 10 shows the evolution of sales over the last three years (2013-2015) by firm size, categorized by turnover. The dotted boxes on the bars indicate the percentage of firms for whom sales decreased or stayed the same during this period. For around 50 percent of the smallest firms, those with turnover of up to \$112,500, their sales decreased or stayed the same. These are firms defined as micro small and medium enterprises (MSMEs) per Ugandan parameters. Among the larger firms, those with sales of more than \$112,500, the percentage with stagnant or decreasing sales is generally below 50

percent. For the largest firms (above \$15.625 million) the flat or decreasing sales percentage is zero.

Alternately, in firms with sales of over \$112,500, more than 50 percent of them show an increase. We observe that the degree of increment is different in each category of sales. The most frequent increments are up to 10 percent and between 11 percent and 30 percent. We also see a trend where larger firms show higher growth in sales. However, there is an exception where the third category has experienced a greater increase of sales than the following two.

Based on these observations, we can see that in Uganda there has been a slight concentration of the economy where larger firms are capturing most of the sales growth. This is a trend observed in other SSA countries where larger well-established firms benefit from market dominant positions while small and medium firms suffer from high costs of doing business.



**Figure 9.** Sales performance 2013-2015.

Source: KAPSARC.

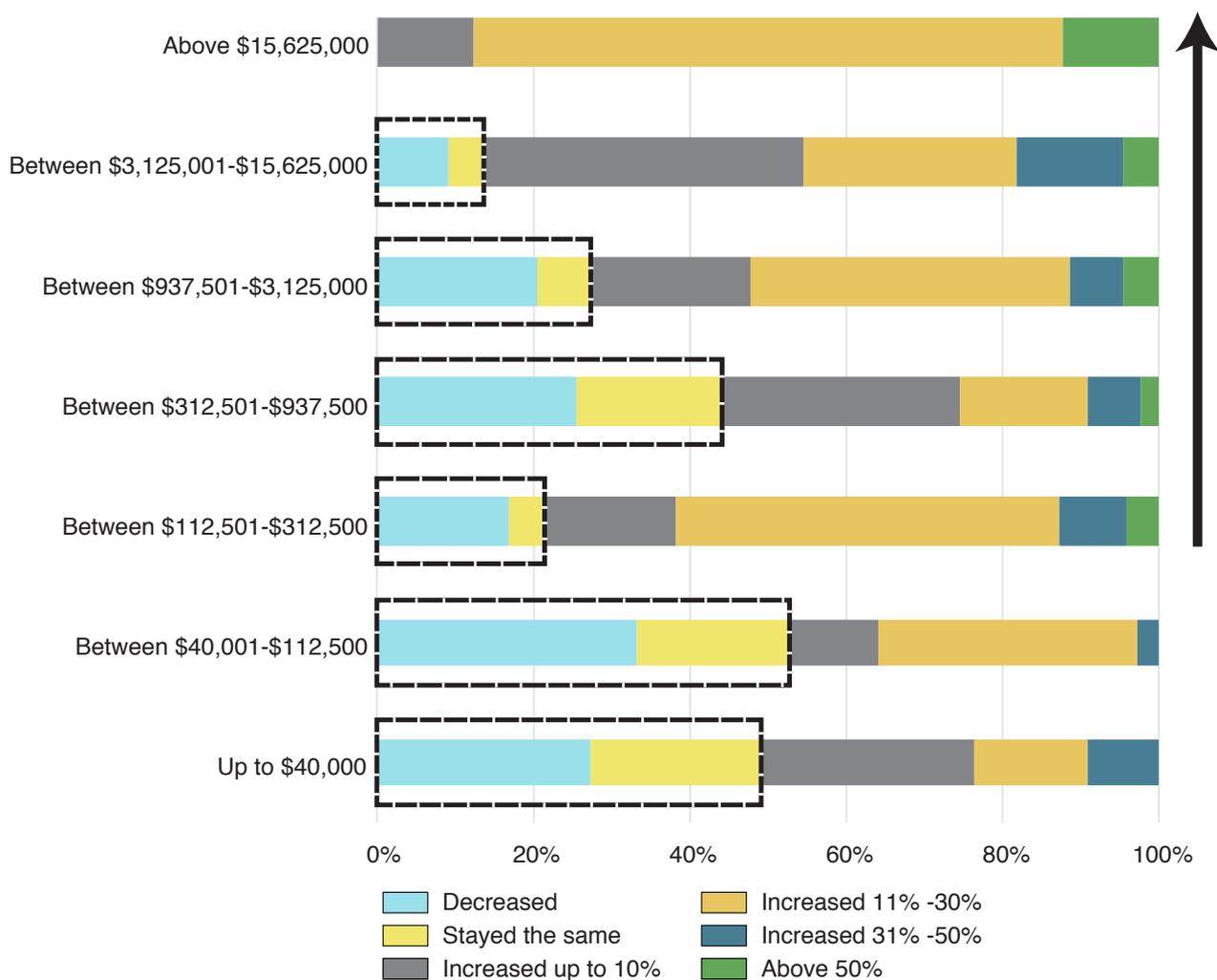


Figure 10. Sales performance by firm's size considered by sales 2013-2015.

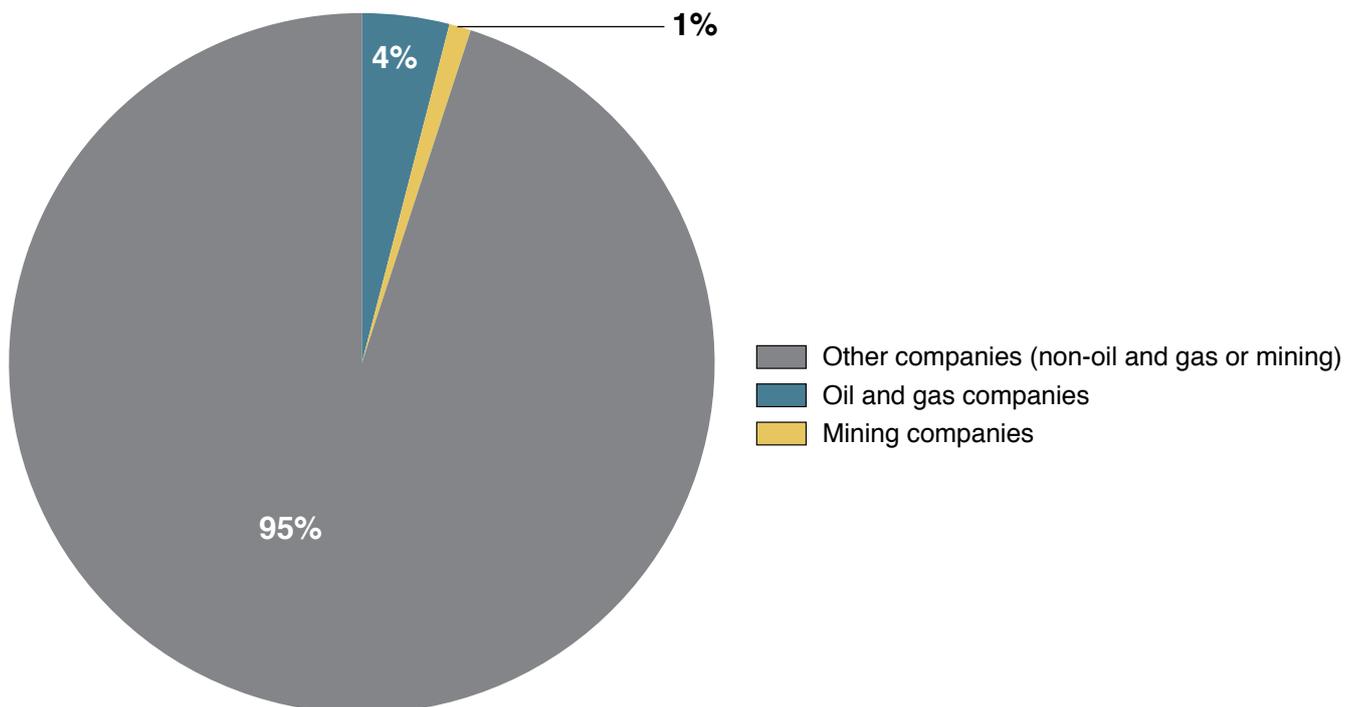
Source: KAPSARC.

## Markets

Considering the market by type of client, an overwhelming 95 percent of 2015 sales targeted companies that are not involved in the extractive industries, with only 4 percent of sales going to oil and gas and 1 percent to mining as we can see in Figure 11. It is interesting to note that, although 29 percent of the firms in the sample are currently supplying the oil and gas companies, only 4 percent of sales went to this industry. This implies that of local firms supplying the oil and gas industry in

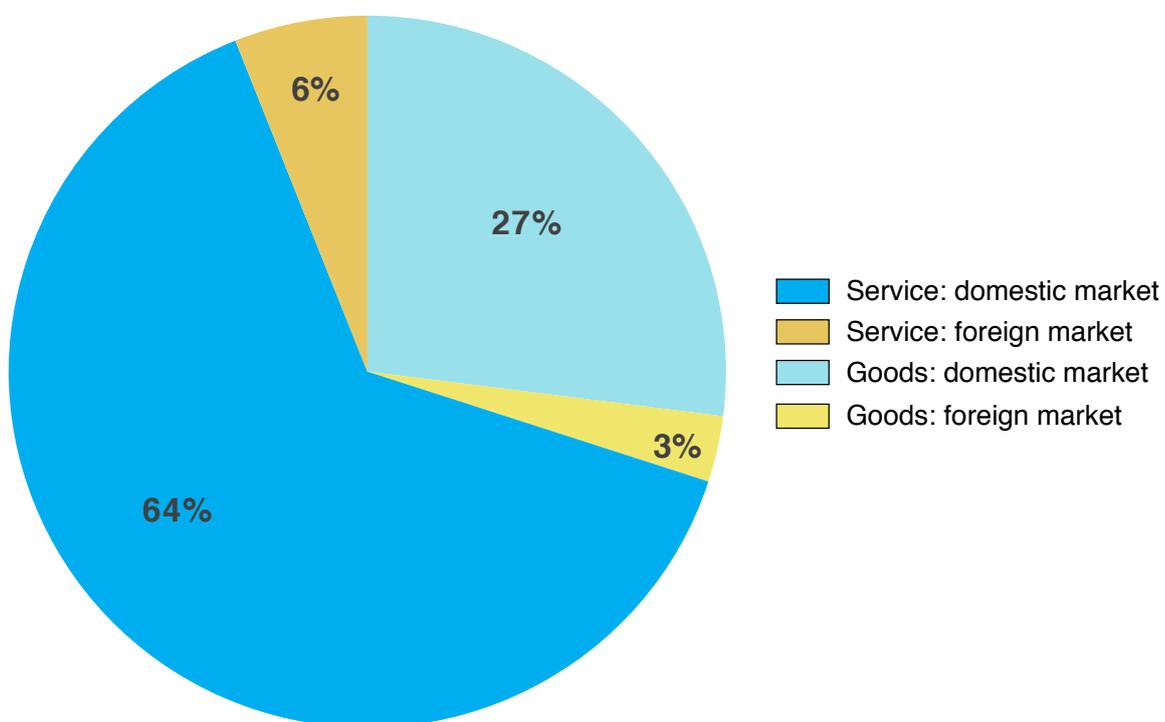
Uganda, only a small percentage of their sales efforts is directly to the sector even if they consider themselves current suppliers. This low level of sales and relatively high level of suppliers indicates that the procurement function of the oil and gas companies has not had much impact on the local economy. Figure 12 shows the sales distribution by product and market type; 70 percent of products sold in 2015 are services and 30 percent are goods. Only 6 percent of the services and 3 percent of the goods were sold abroad during 2015.

## Sales, Market Structure, Type of Activity and Employment



**Figure 11.** Sales distribution by client type, 2015.

Source: KAPSARC.



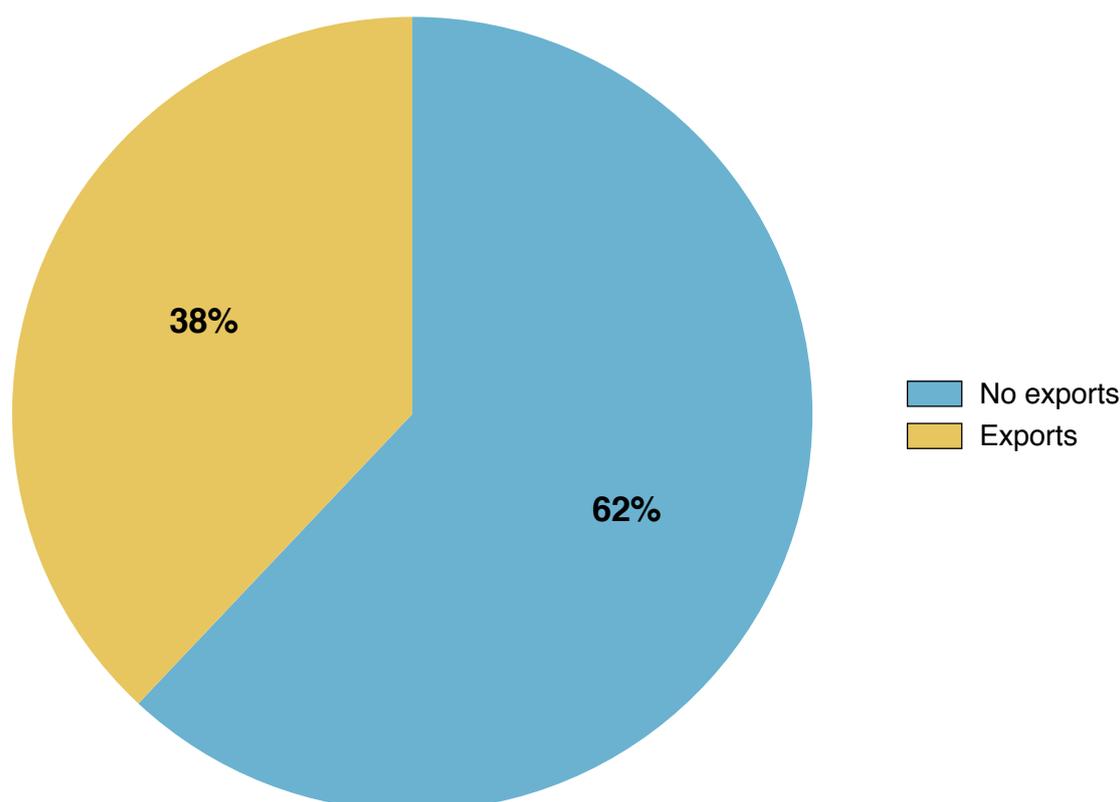
**Figure 12.** Sales distribution by market type, 2015.

Source: KAPSARC.

Regarding market offerings, on average, 76 percent of sales were from the companies' main product and 30 percent of firms relied on a single product for 100 percent of their sales. These figures show a limited diversification of products.

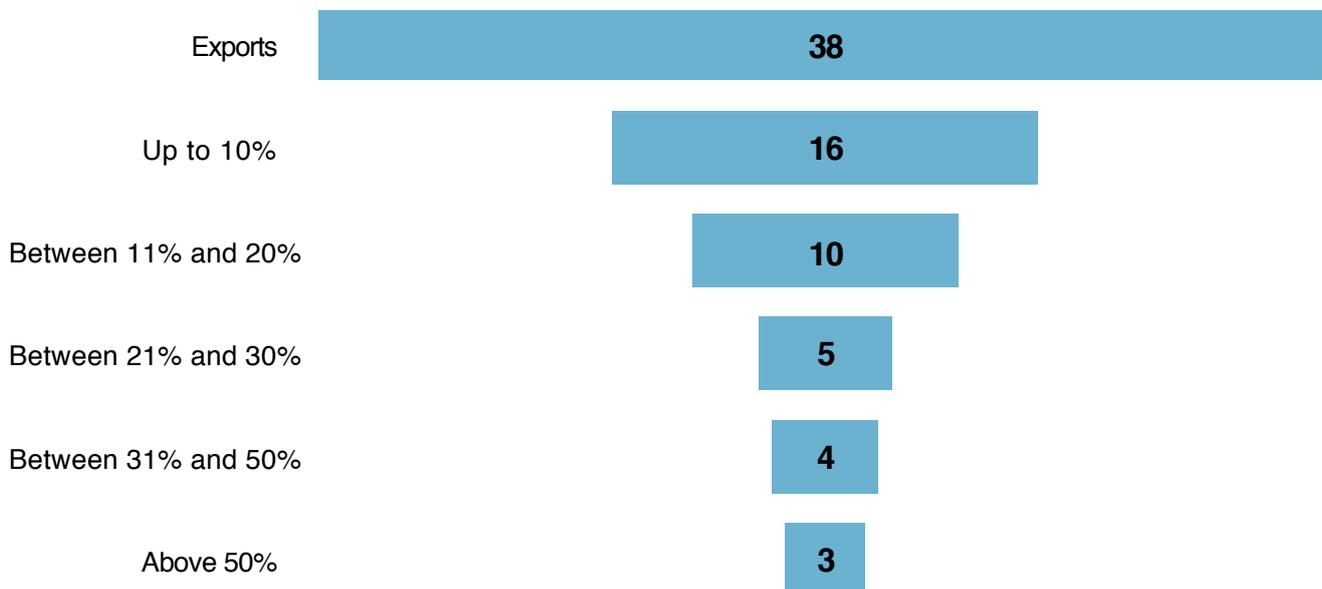
Exports are considered a key dimension for assessing firms' capabilities since it indicates an objective measure of competitiveness internationally. Figure 13 shows that 38 percent of the firms had some level of exports during 2015, but the average percentage of sales for export was only about 8 percent. Figure 14 shows the breakdown of firms with exports by their level of overseas sales.

A central aspect of the exports is whether they are at sporadic or regular intervals. Sporadic exports do not develop sustainable capabilities in the firms, although they may be a starting point to develop competencies. However, when these exports are on a regular basis, it shows that the company can retain international clients. Research suggests there are underlying management and technical skills or capabilities in firms that can develop and maintain foreign clients (Morgan, Kaleka and Katsikeas 2004; Enjolras, Camargo and Schmitt 2016; and Escudero-Torres et al. 2011). The characteristics of foreign markets, regarding how demanding they are, also



**Figure 13.** Distribution of firms by exports.

Source: KAPSARC.



**Figure 14.** Distribution of firms by export levels.

Source: KAPSARC.

influence the kind of capabilities that are developed by the firm.

Figure 15 shows that sporadic and regular exporters are divided almost equally. Just over three-quarters of the exports are directed to the East African Common Market, which includes Uganda, Kenya, Tanzania, Rwanda, Burundi and South Sudan (Figure 16). An overwhelming 92 percent of exports are directed to Africa, with very few shipments heading to Europe (5 percent), Asia (2 percent) or North America (1 percent).

### Type of activity

Figure 17 shows that 70 percent of the firms surveyed primarily provide services while 30 percent provide goods. Within the goods suppliers, we split them into three categories based on their levels of value-added, as shown in Figure 18.

When considering value addition in goods, it is important to observe how much of the production process is done in the country. Among the goods suppliers, 75 percent stated that they sell their own manufactured goods. The other 25 percent is divided between firms that resell goods manufactured by others (18 percent of the total sample) and firms that adapt goods manufactured by others (7 percent of the total sample).

From this 25 percent of firms that resell or adapt goods, the survey showed that 89 percent use imported goods and 11 percent use goods produced in Uganda. As such, from the 263 firms surveyed we can observe that 23 percent (61 firms) include manufacturing process from within Uganda: 59 firms sell their own manufactured goods and two adapt or resell goods manufactured by other Ugandan firms. This is a relatively high number for a country with this level of manufacturing development.

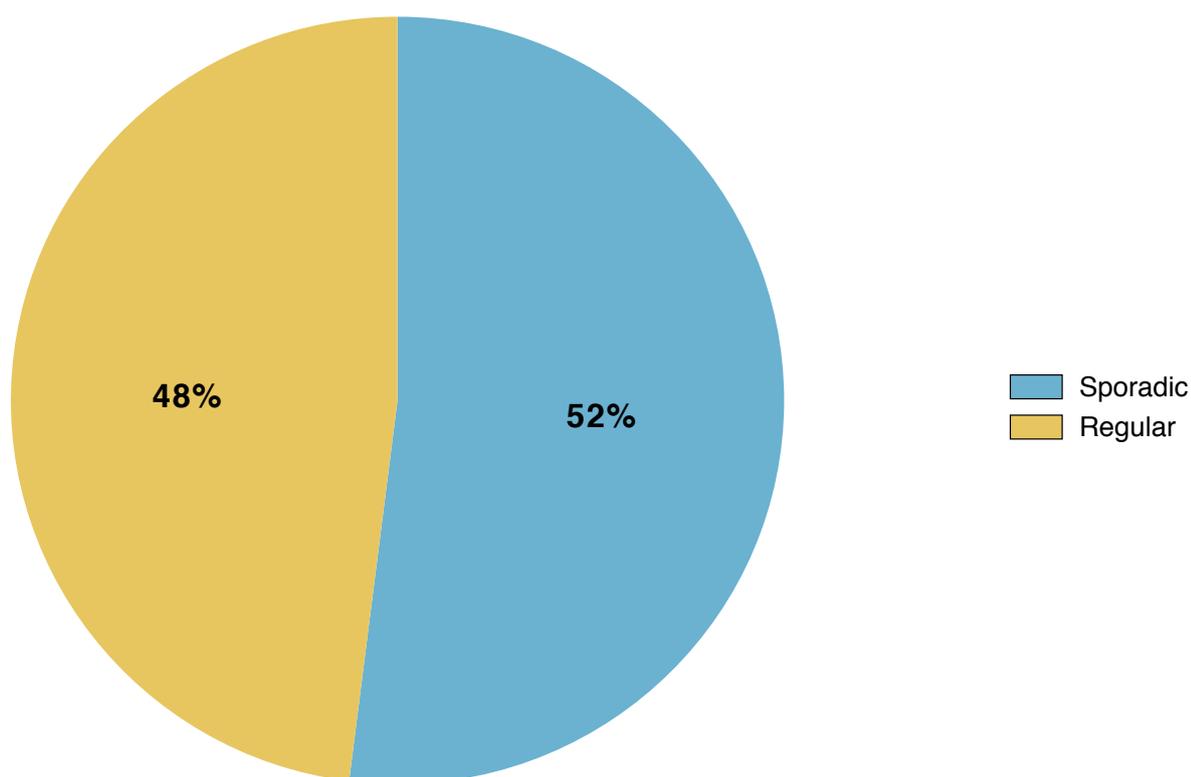


Figure 15. Sporadic and regular exports.

Source: KAPSARC.

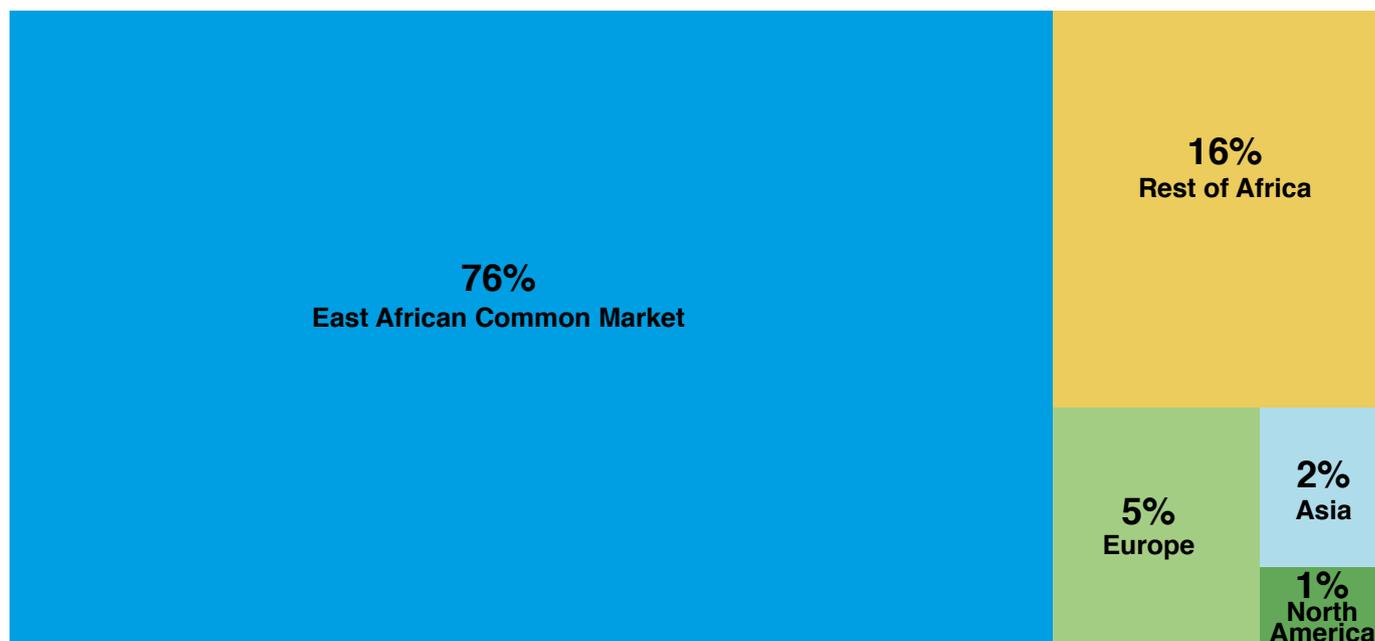
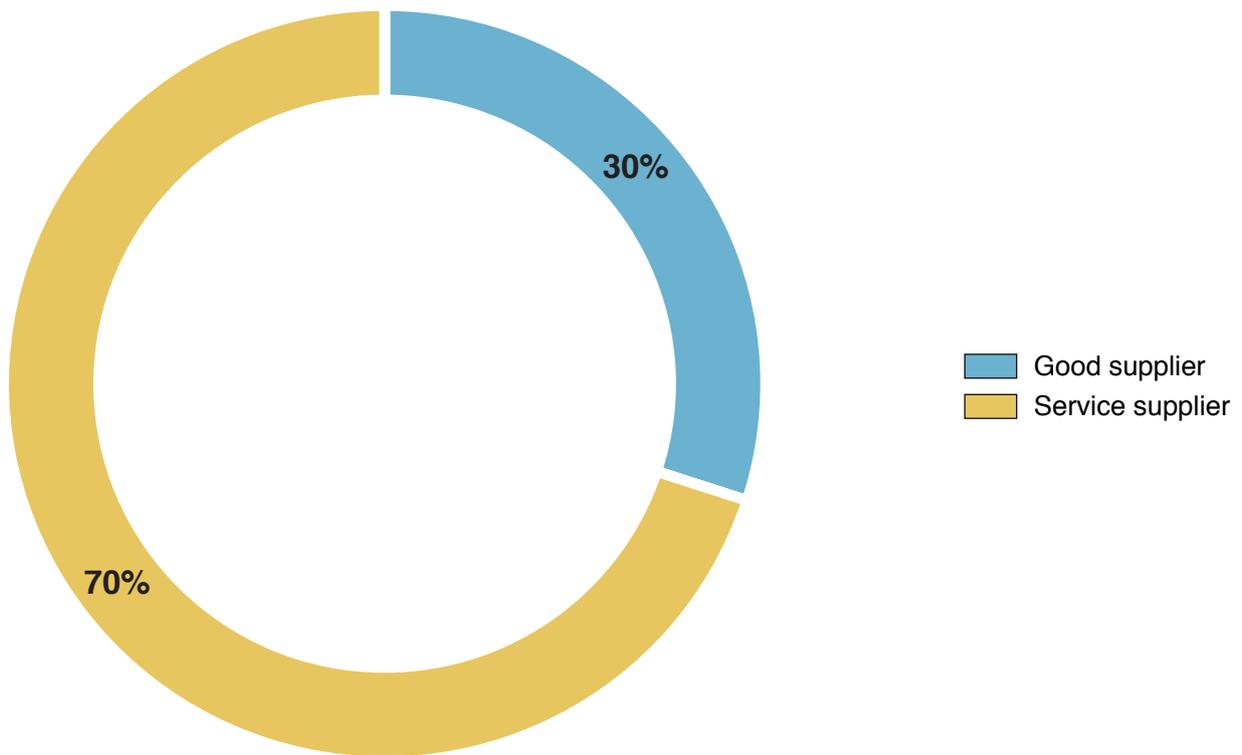


Figure 16. Destination of exports.

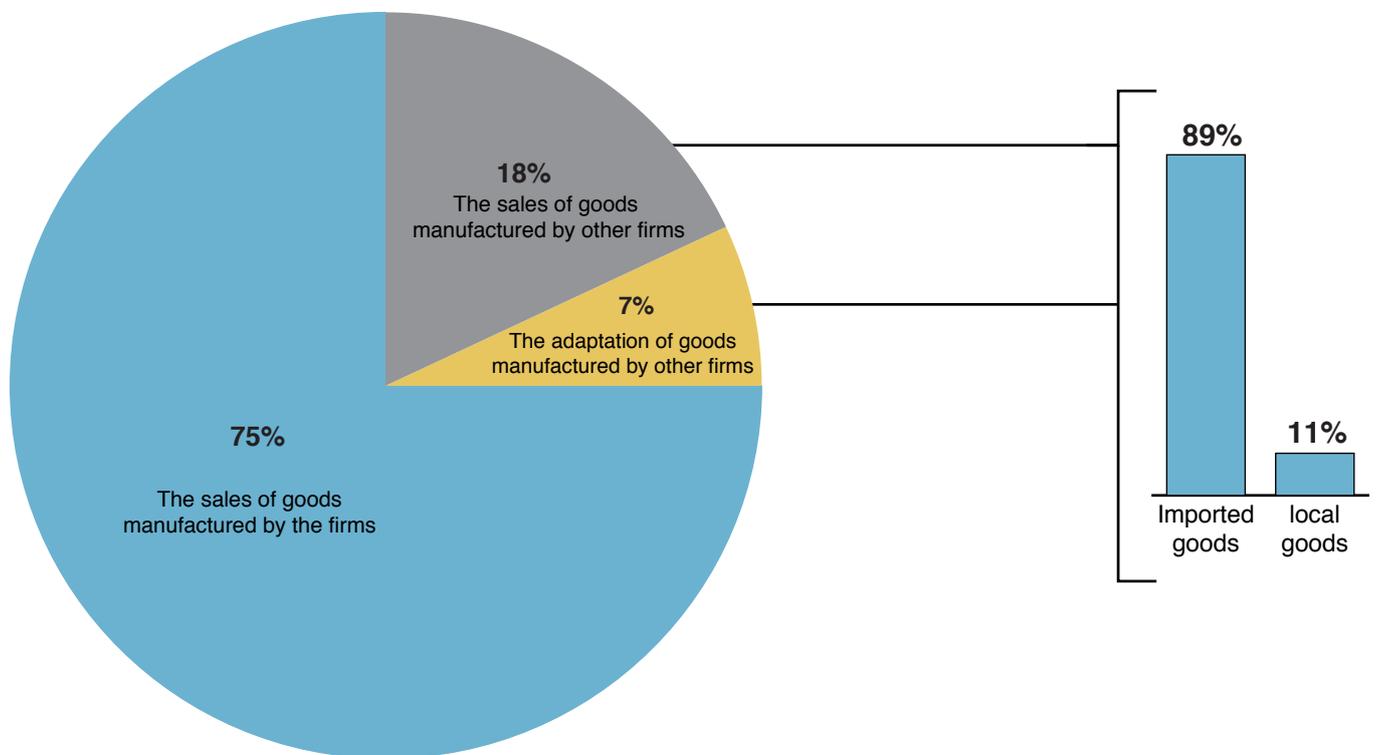
Source: KAPSARC.

## Sales, Market Structure, Type of Activity and Employment



**Figure 17.** Distribution of firms by product.

Source: KAPSARC.



**Figure 18.** Distribution of goods suppliers by level of value-added.

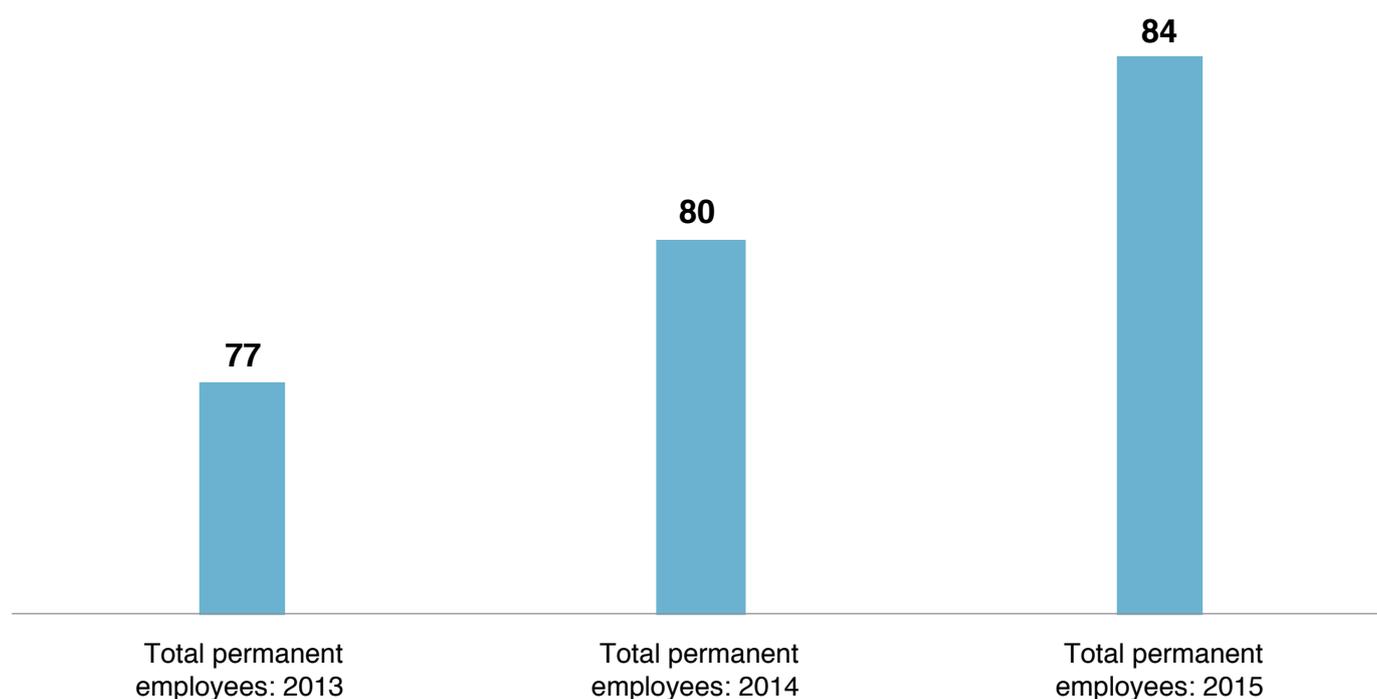
Source: KAPSARC.

## Employment

In Figure 19 we can see the total and average number of permanent employees from 2013-2015 for the firms examined. The total and average number of employees increased during this period, with around 4 percent growth from 2013 to 2014 and 5 percent from 2014 to 2015. These results are to be expected since sales also increased during the same period. The firms surveyed use a large number of temporary workers. In 2015, the total temporary workforce was 11,842 out of approximately 34,000 jobs, representing about 35 percent of all workers.

From the sample surveyed, we observed that three firms had far more employees than the others. Two of them have around 2,500 permanent employees while the third has about 1,800. If we remove these three firms from the analysis, the average and total number of employees drops considerably (Figure 20). Regardless, we still see increases in the number of permanent jobs — by 6 percent from 2013 to 2014 and almost 9 percent from 2014 to 2015.

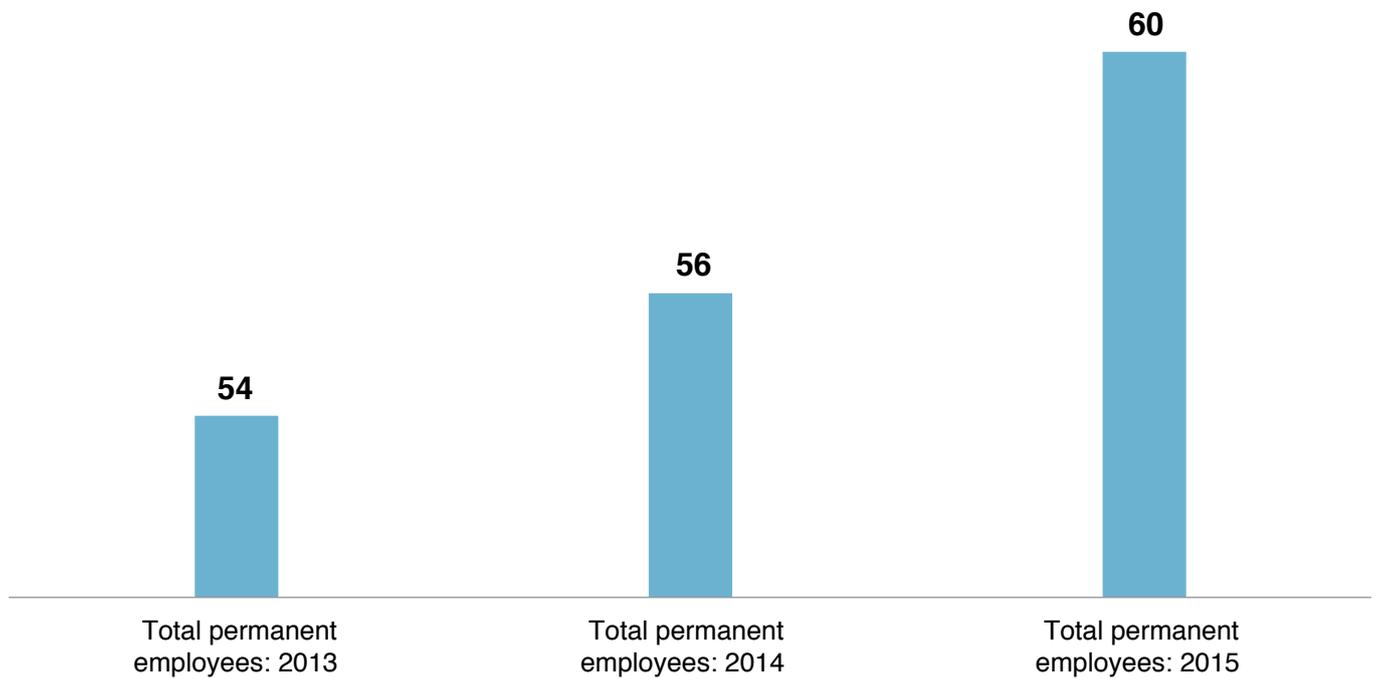
Female employees represent around 23 percent of permanent jobs in this period. Females also took up 16 percent of the total temporary workforce. Finally, foreign employees are not significant in Uganda, representing less than 4 percent (Figure 21).



**Figure 19.** Total and average permanent employees, 2013-2015.

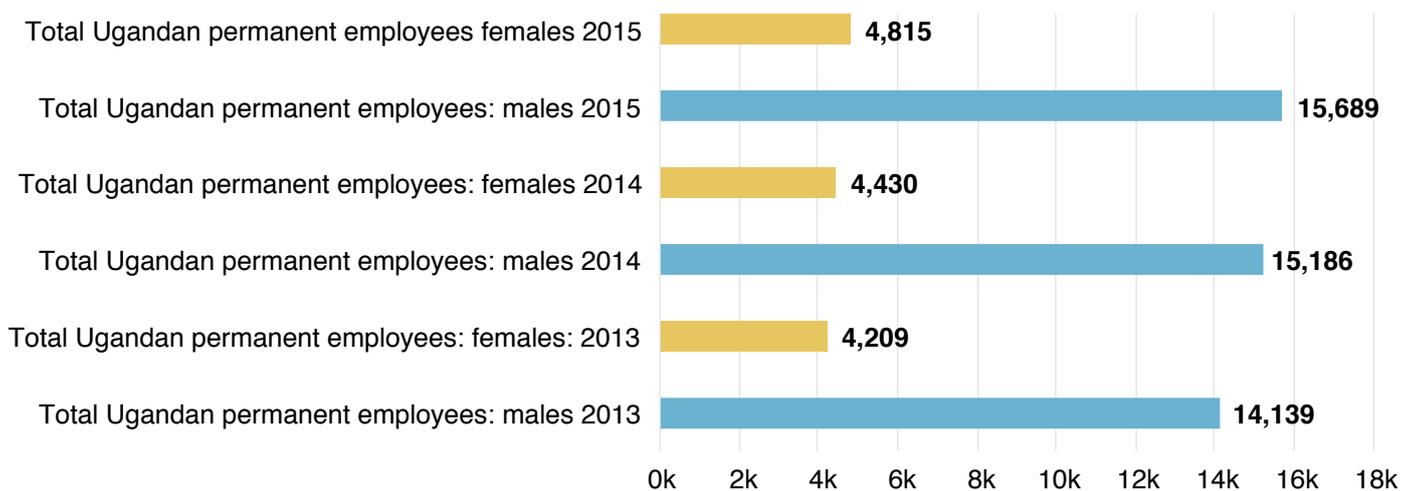
Source: KAPSARC.

## Sales, Market Structure, Type of Activity and Employment



**Figure 20.** Total and average permanent employees, (excluding the three largest firms).

Source: KAPSARC.

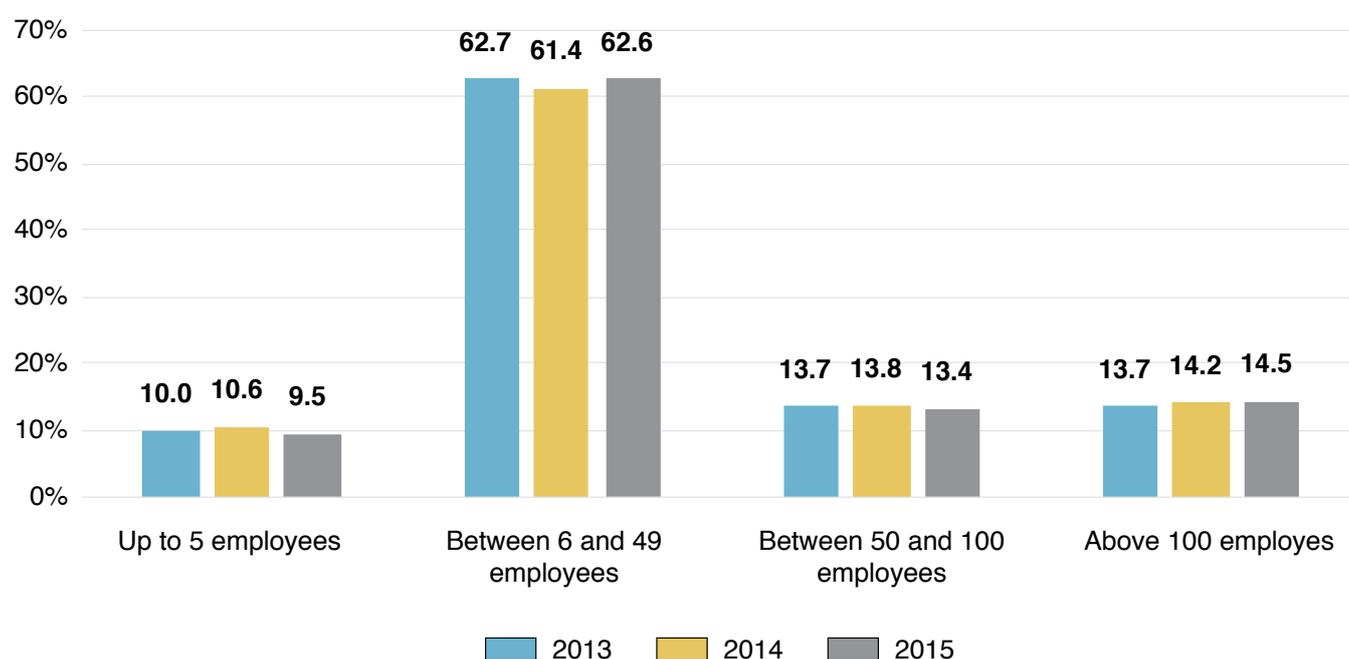


**Figure 21.** Total permanent employees by gender, 2013-2015.

Source: KAPSARC.

In Figure 22 we can see that the number of firms in each size category, as defined by Uganda's MSME guidelines, stay relatively constant over the period examined. We observe a stable distribution of firm sizes across the years examined, with approximately a 2 percent variance. Therefore,

we can state that approximately 10 percent of the firms surveyed are micro enterprises, 62 percent are small and 13 percent are medium enterprises. This means that 85.5 percent of the firms qualify as MSMEs while the remaining 14.5 percent are large firms.



**Figure 22.** Distribution of total permanent employees, 2013-2015.

Source: KAPSARC.

# Competition Context

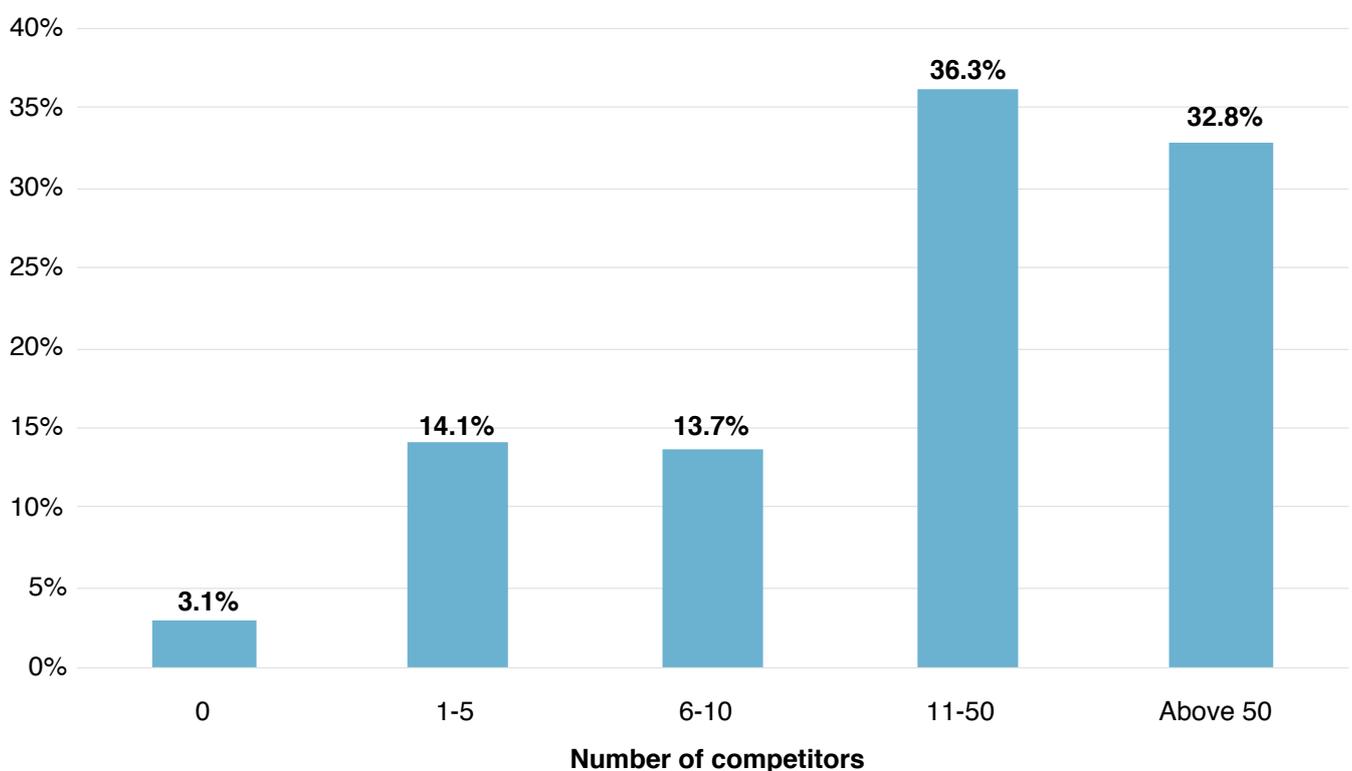
Competition among the firms surveyed is intense. In terms of the number of competitors, Figure 23 below shows that 36 percent of firms indicated that they have between 11 and 50 competitors and 33 percent claimed that they have more than 50 competitors. The rest of the firms, around 30 percent, have between 0 and 10 competitors. By considering the number of competitors, together with the intensity of competition we acquire a better picture of the competition in the sample.

Based on Figure 24, we can observe that the degree of competition increases as the number of competitors grows. Only 11.1 percent of firms with 1 to 5 competitors experience a very high level of competition, while 65.1 percent of firms with over 50 competitors see the same level of competition.

Across the categories, the trend is very notable with more competitors leading to higher degrees of competition.

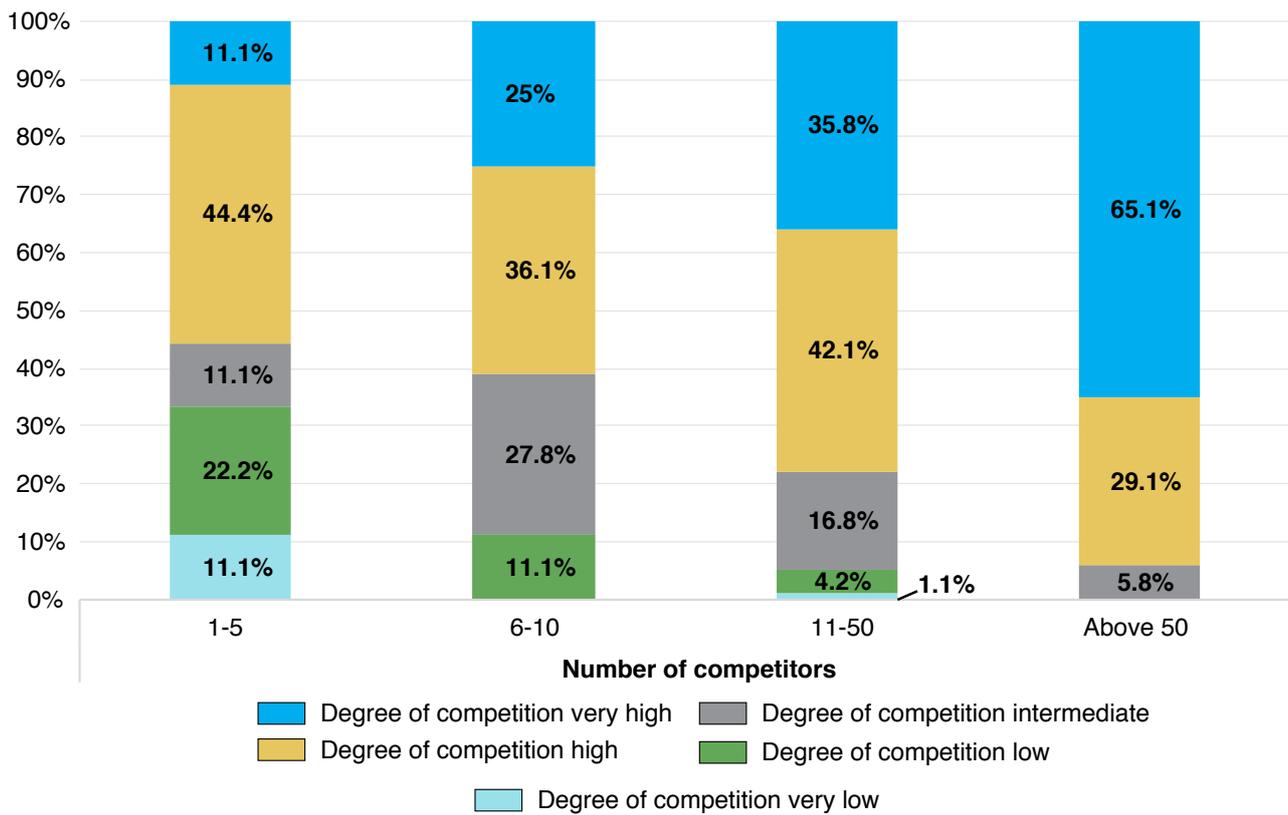
Competition is further analyzed by considering informal competition, imports and how the firms perceived themselves in several dimensions with respect to competitors. The following figures 25 and 26 show the results.

About 64 percent of the firms stated that they face competition from informal firms and of those, 51 percent characterized this competition as high or very high (Figure 27). Competition from imports appear similar to the results for informal firms, with 60 percent facing competition from imports and of those, 65.4 percent define this competition as high or very high (Figure 28).



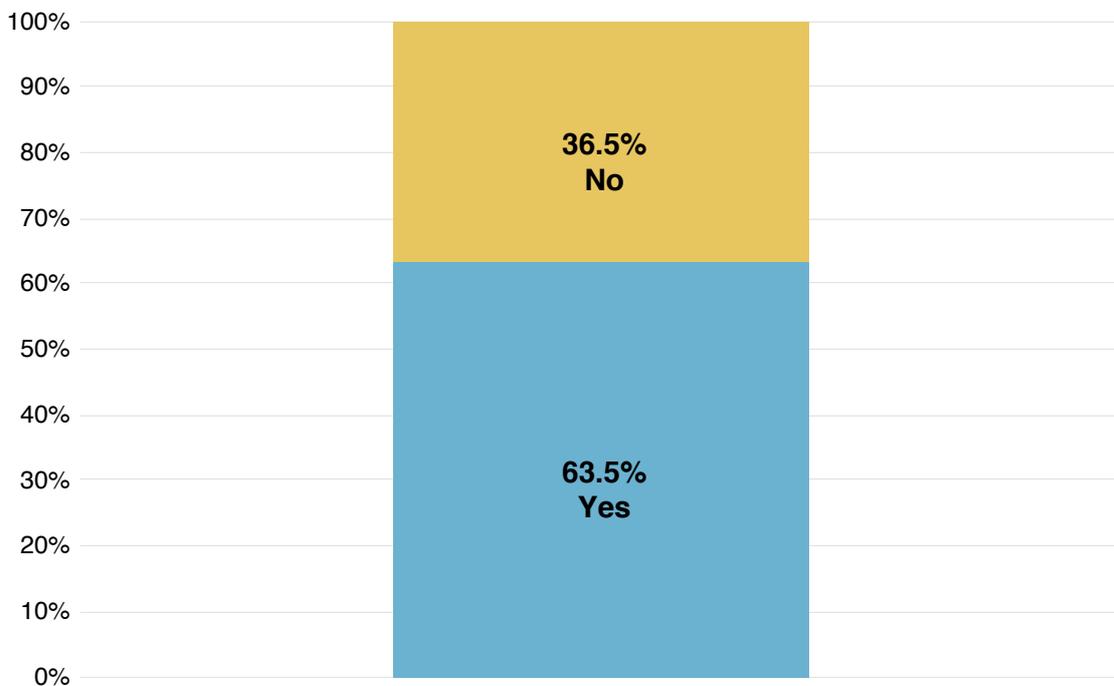
**Figure 23.** Distribution of firms by number of competitors.

Source: KAPSARC.



**Figure 24.** Number of competitors and degree of competition.

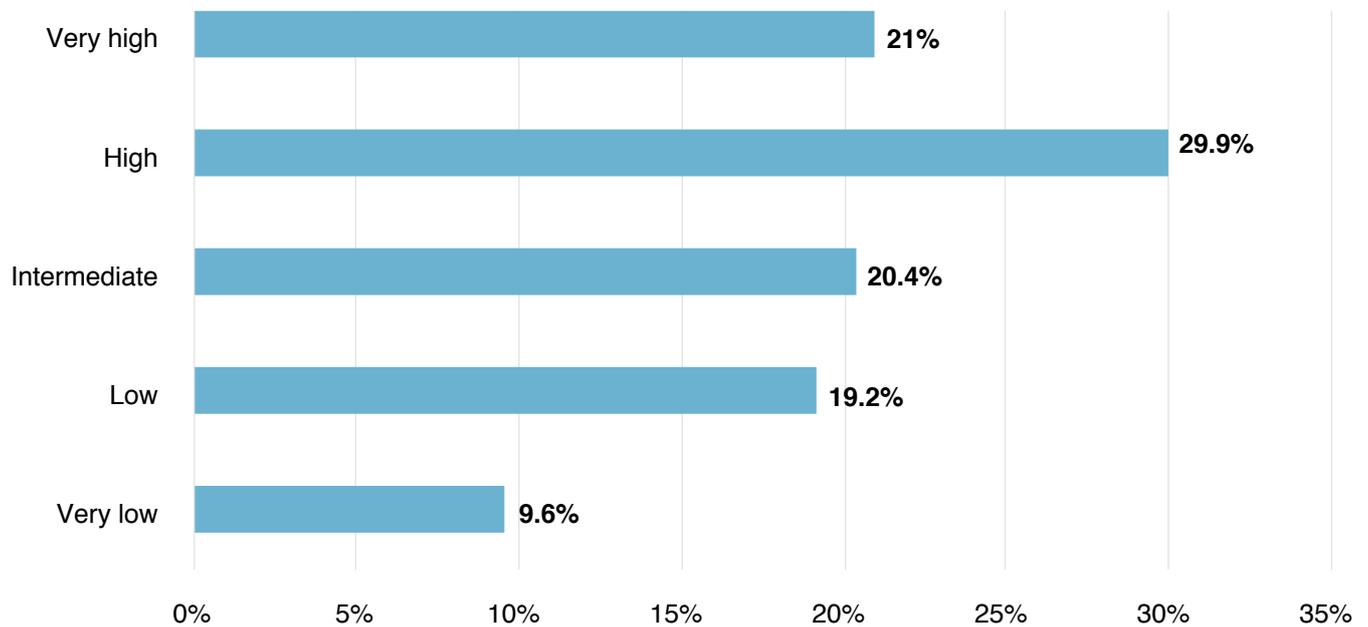
Source: KAPSARC.



**Figure 25.** Informal competition.

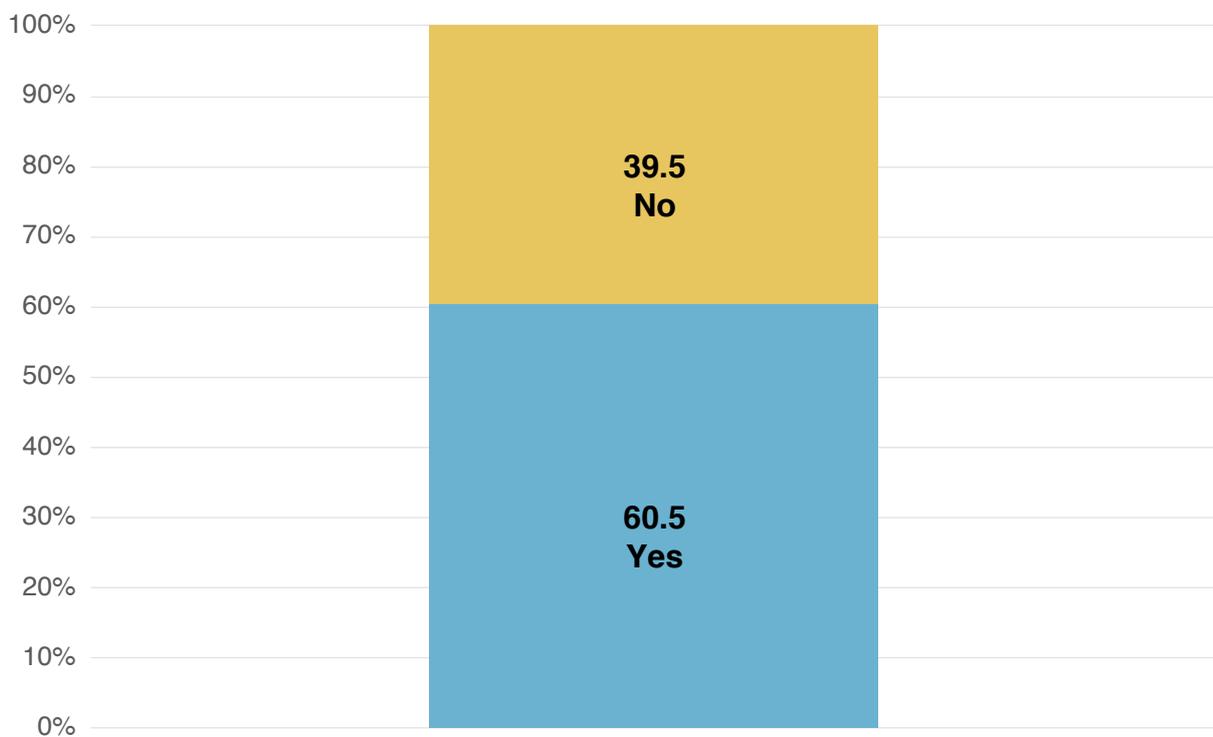
Source: KAPSARC.

## Competition Context



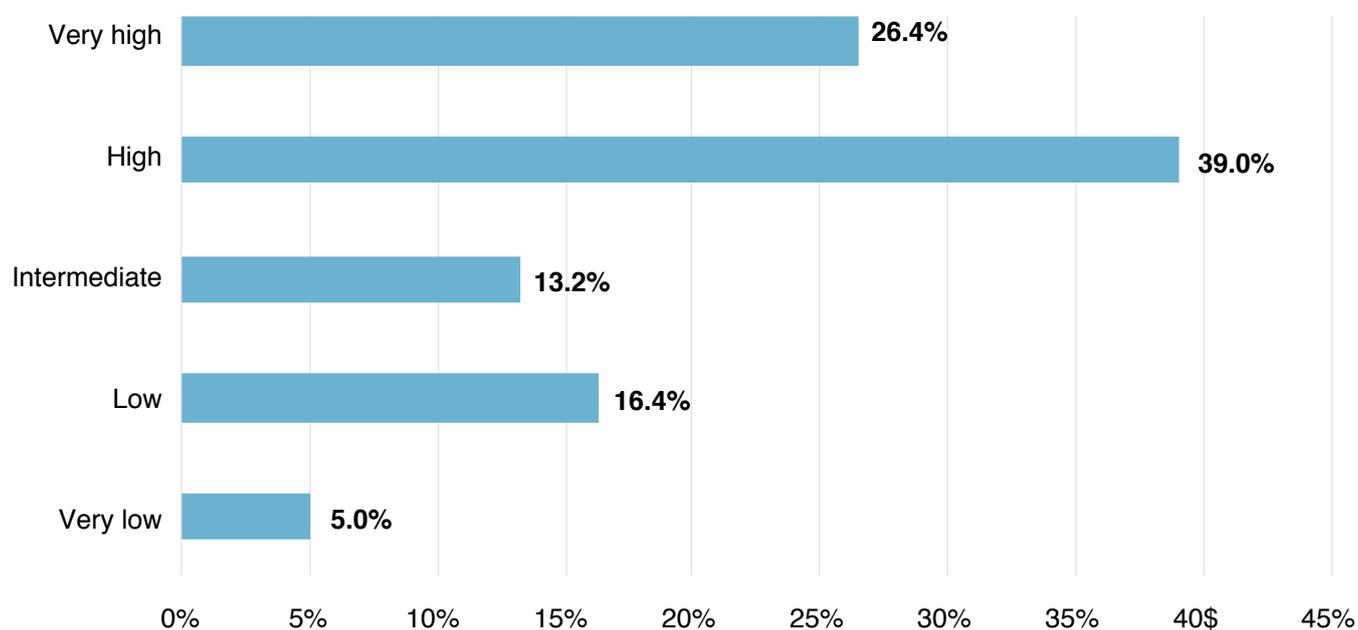
**Figure 26.** Degree of competition from informal firms.

Source: KAPSARC.



**Figure 27.** Competition from imports.

Source: KAPSARC.



**Figure 28.** Degree of competition from imports.

Source: KAPSARC.

Competition, in all its forms, is very relevant to the firms we surveyed in Uganda. Normally, informal competition interferes with the opportunities of formal firms, but informal firms tend not to be selected as suppliers to the oil industry. While this would be a benefit to the formal firms, we must remember that informal firms employ a large portion of the workforce and efforts to formalize them should be taken where possible.

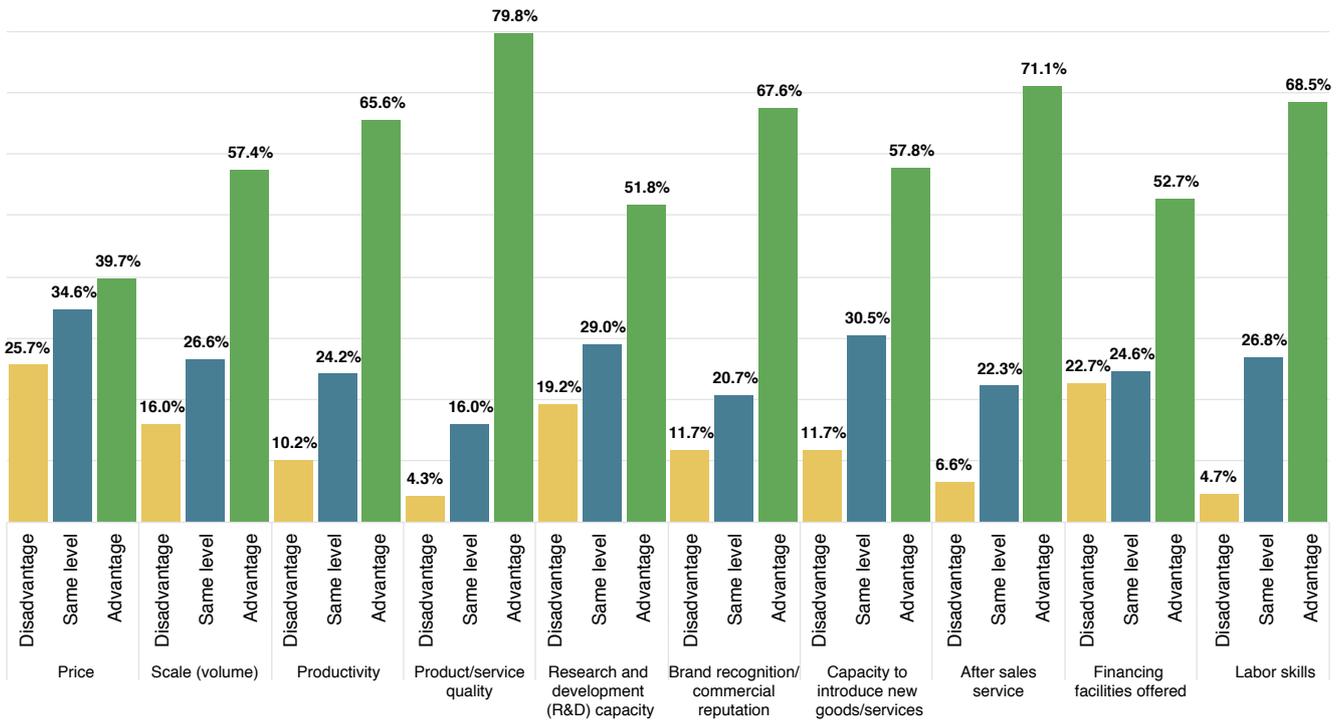
Similar decisions must be made for imports. The open versus closed nature of a developing economy to imports can have an impact on growth and local firms, an area that is still very much a topic for debate. We state that import competition

is currently high and we expect it to increase with the growth of oil and gas activities.

To finalize the analysis of competition, Figure 29 below shows the results of how the firms surveyed compare themselves with their competitors across several different competitive dimensions.

The survey shows that Ugandan firms perceived themselves performing very positively compared with their competitors. In all dimensions except price, where only 40 percent of firms claim an advantage, more than 50 percent argued that they were superior to their competitors. In descending order, 80 percent considered that they have the

## Competition Context



**Figure 29.** Competitive dimensions.

Source: KAPSARC.

edge in product and service quality, 71 percent in after-sales service, almost 69 percent in labor skills, around 68 percent in brand recognition or commercial reputation and almost 66 percent in productivity. Conversely, when considering

disadvantages with competitors, they are quite low except for price, where almost 26 percent estimate that they are worse off, and availability of financial facilities, where around 23 percent of the firms specified that they have disadvantages.

# Capabilities

In this section, we analyze the firms' capabilities related to aspects such as absorptive capacity, innovation and industry standards. Industry standards are essential for the oil and gas sector, and they are also important benchmarks for estimating the firms' management and operational skills. The analysis here combines two features: dimensions that are relevant to the oil and gas industry and dimensions that help estimate the firms' capabilities from a microeconomic perspective.

## Absorptive capacity

In 1990, the concept of absorptive capacity was introduced in economic literature. Since then, a large amount of research has been carried out to estimate absorptive capacity at the firm level. Absorptive capacity refers to a firm's capability to recognize external knowledge, assimilate it,

transform it and apply it to commercial ends. One method to estimate absorptive capacity at the firm level is by the percentage of employees with higher education, since more qualified personnel typically have a better chance to identify and apply external knowledge. The method of estimating absorptive capacity by qualified personnel has been used by several researchers including Castellacci and Natera 2013; Escribano, Fosfuri and Tribó 2009; Keller 1996; and Mowery and Oxley 1995.

The survey used the formal education system in Uganda to classify employees (Figure 30). The results show that only 9 percent of staff have primary education or less (3 percent incomplete and 6 percent complete), a low percentage for a developing nation. As for further education, 62 percent of the employees have a secondary degree, with 31 percent attaining lower secondary education (referred to as 'O-levels') and the other

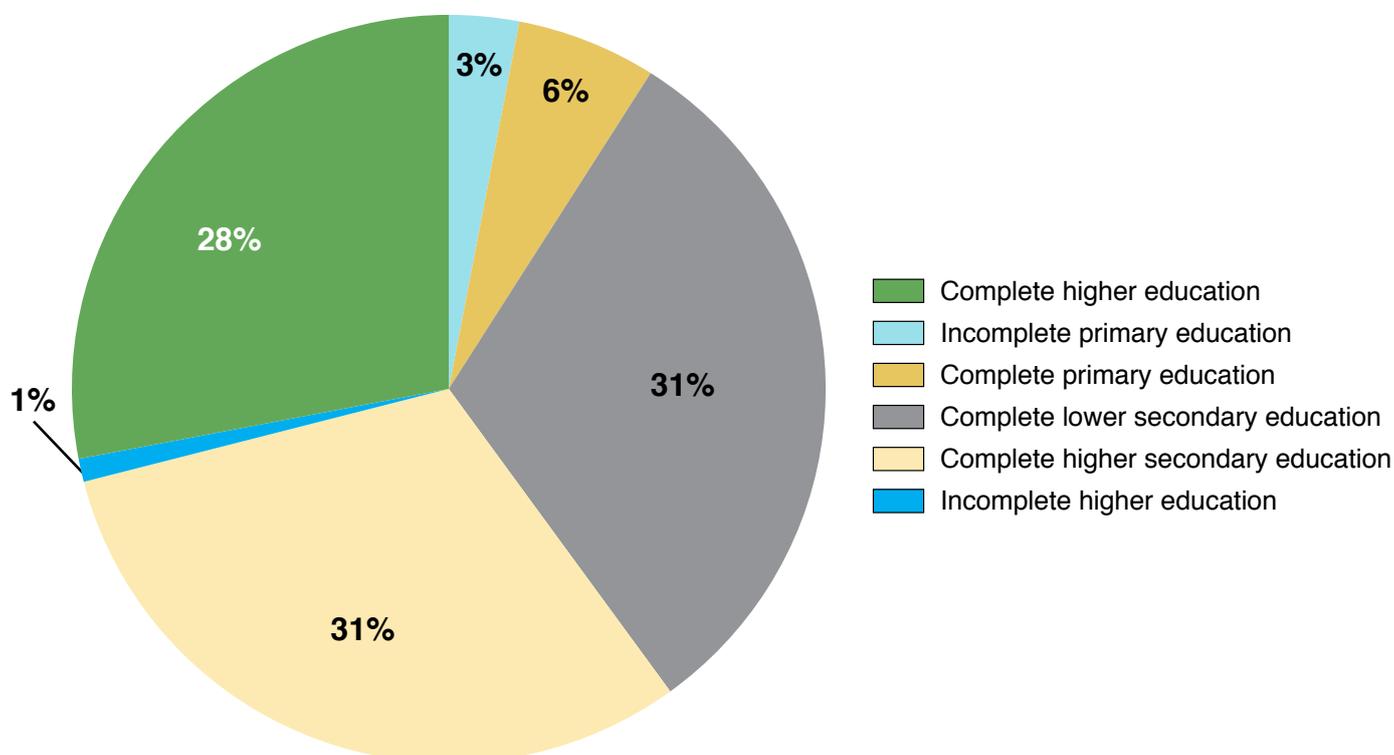


Figure 30. Distribution of permanent employees by education level, 2015.

Source: KAPSARC.

## Capabilities

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31 percent completing higher secondary education (known as 'A-levels' or the equivalent of a diploma). At the university level, the firms show a relatively high percentage with 28 percent holding university degrees and 1 percent with some exposure to university education without completing a degree.

The number of employees with university degrees, at 28 percent, can be considered as having a high potential absorptive capacity. A firm-level survey conducted in Argentina for the suppliers of the oil and gas industry from 2008 to 2010 showed that 24 percent of employees had university degrees. The Argentine and Ugandan surveys are not completely comparable since in Uganda we included large firms and some service sectors, which usually have a significant number of professionals in their payroll. The survey in Argentina, on the other hand, included only SMEs in the manufacturing and industrial service sector. However, it allows some level of comparison that permits us to state that the firms surveyed in Uganda have potential absorptive capacity. This characteristic is encouraging since higher rates of absorptive capacity favor rapid learning, a positive aspect for engaging in the oil and gas business and raises the potential to take advantage of future investments in this field.

Although absorptive capacity seems to be a positive indicator, this dimension is better estimated when it is split into economic sectors and by size of firms. In our sample, we have a very large firm which stated that just over 50 percent of its employees, 1179 individuals, have completed higher education, biasing the estimation of absorptive capacity in the sample. Removing this firm, the percentage of employees with higher education drops from 28 percent to 25 percent, which is still relatively high.

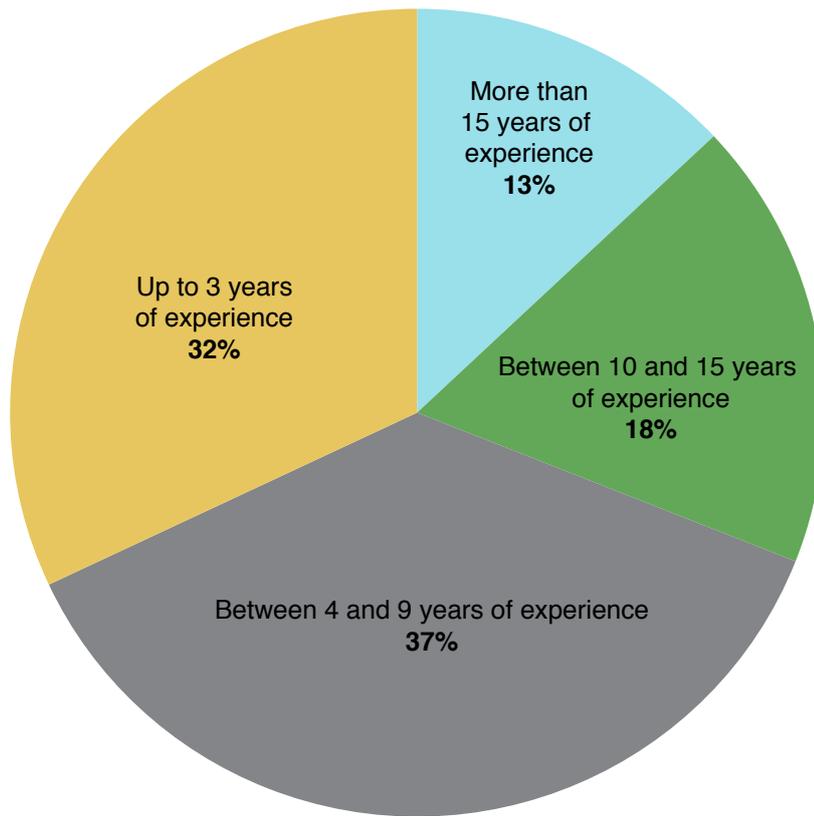
When considering the economic sectors, we observe that four sectors have over 50 percent of firms with

half of their employees having completed higher education (finance and insurance, information and communication, professional, scientific and technical services, and water, gas, steam and air conditioning supply). These sectors provide technical services requiring qualified personnel with university degrees, impacting the measurement of absorptive capacity in the sample. If we only consider the manufacturing sector, the results show that only 19 percent of firms have more than 50 percent of employees with higher education degrees. This is still a large percentage but more consistent with what would be expected in manufacturing.

Another important aspect that influences absorptive capacity is the prior related knowledge of the employee, usually estimated by the experience of the workforce and management. Almost 70 percent of total employees surveyed have up to nine years of experience, 18 percent have between 10 and 15 years and 13 percent have more than 15 years' experience (Figure 31). Figure 32 displays the total average number of employees according to their years of experience. Overall, the figures show the presence of an experienced workforce in our sample.

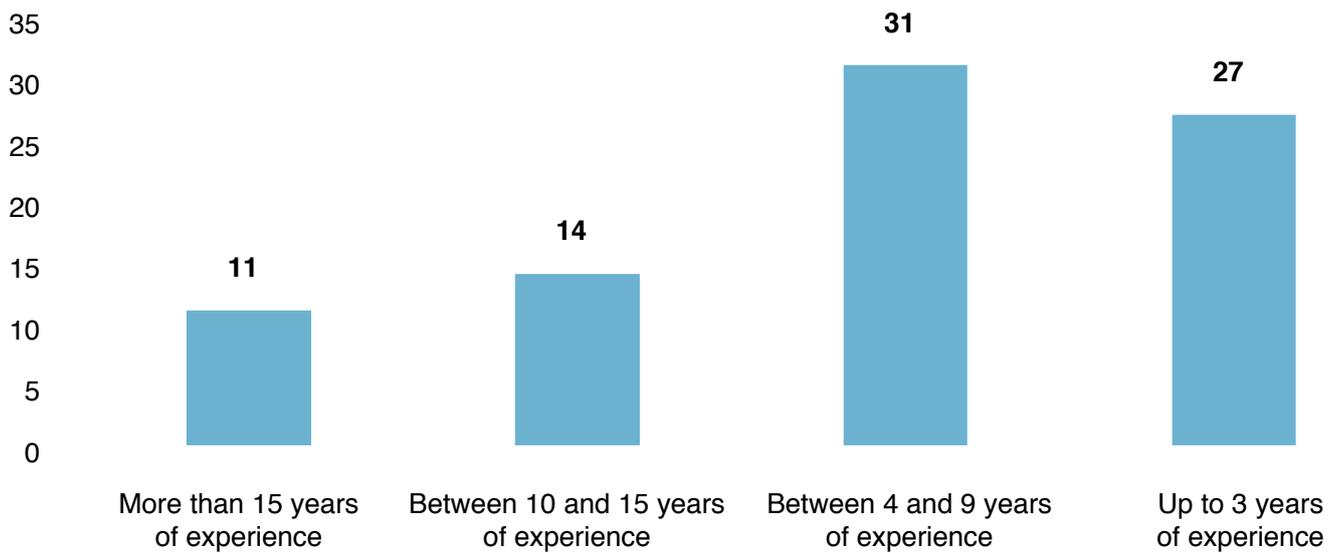
The prior related knowledge varies across firms based on their economic sector, whether they are already suppliers to the oil industry and the products they offer. From this standpoint, we argue that the firms surveyed have an experienced workforce, which supports a faster learning process that is beneficial to participation in the supply chain.

Finally, regarding the education of the workforce, we asked the firms to state the percentage of skilled versus unskilled total permanent employees. According to the results, 90 percent of total permanent employees are skilled workers and only 10 percent are unskilled, certainly a high percentage that seems to be in line with the education levels mentioned earlier.



**Figure 31.** Distribution of employees by years of experience.

Source: KAPSARC.



**Figure 32.** Average employees by years of experience.

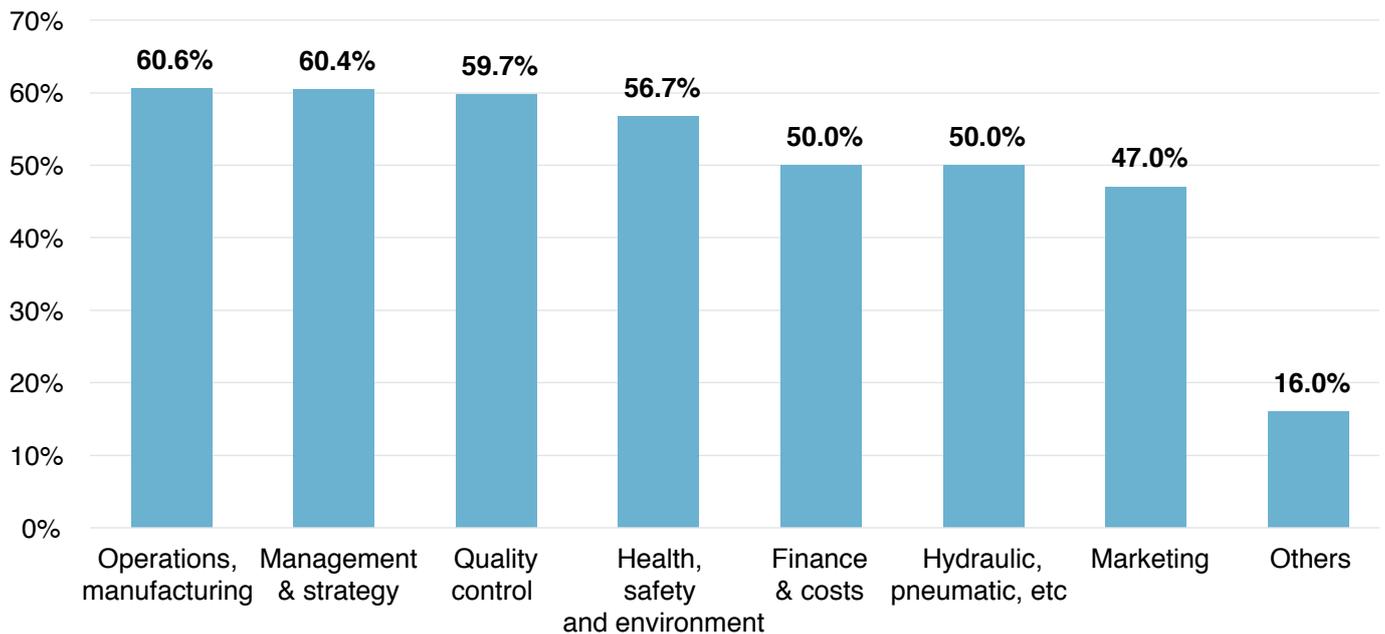
Source: KAPSARC.

# Training

A key factor for evaluating the technological and organizational capabilities of firms is related to the training of their employees and the intensity of this training. In our sample, 77 percent of firms indicated that they provided formal training activities for their permanent employees during the period 2013-2015. The average percentage of permanent employees that received formal training was relatively constant: 54.50 percent in 2013, 53.80 percent in 2014 and 56.40 percent in 2015. Organization and planning reveal the degree of importance that firms assign to training, with 77 percent indicating that they have a unit or person responsible for directing and organizing these activities. It appears that training is an important area for Ugandan firms.

Figure 33 shows the distribution of the 77 percent of firms (around 202) claiming to provide formal training to their employees during the period 2013-2015. Operations and manufacturing, management and strategy and quality control were the three most frequent training topics, as indicated by around 60 percent of firms. Health, safety and environment training was provided by almost 57 percent of the firms while finance and cost and hydraulics/pneumatics were covered by 50 percent of the firms. The sum total is above 100 percent because the respondents were able to select more than one training topic.

The most frequent type of training is local, conducted either internally or externally. This



**Figure 33.** Percentage of firms by training topic.

Source: KAPSARC.

means that most of the training is carried out by Ugandan entities or consultants. Within local training, internal training developed by the firm's personnel is the most frequent except for finance, health and safety and environment where external training is most common. Finally, international external training was not found to be relevant in the firms surveyed (Figure 34).

Consulting firms or consultants are indicated as the most frequent entities or individuals in charge

of external training, representing 78 percent of all external providers. This is followed by government agencies with 31.3 percent. Inter-business linkages for training (suppliers and customers) are quite low with 20.1 percent and 12.4 percent, respectively. The training provided by universities or research institutes is not relevant (Figure 35).

This provides us with some insights about public policy options. Training programs conducted by large firms for their MSMEs suppliers or for their

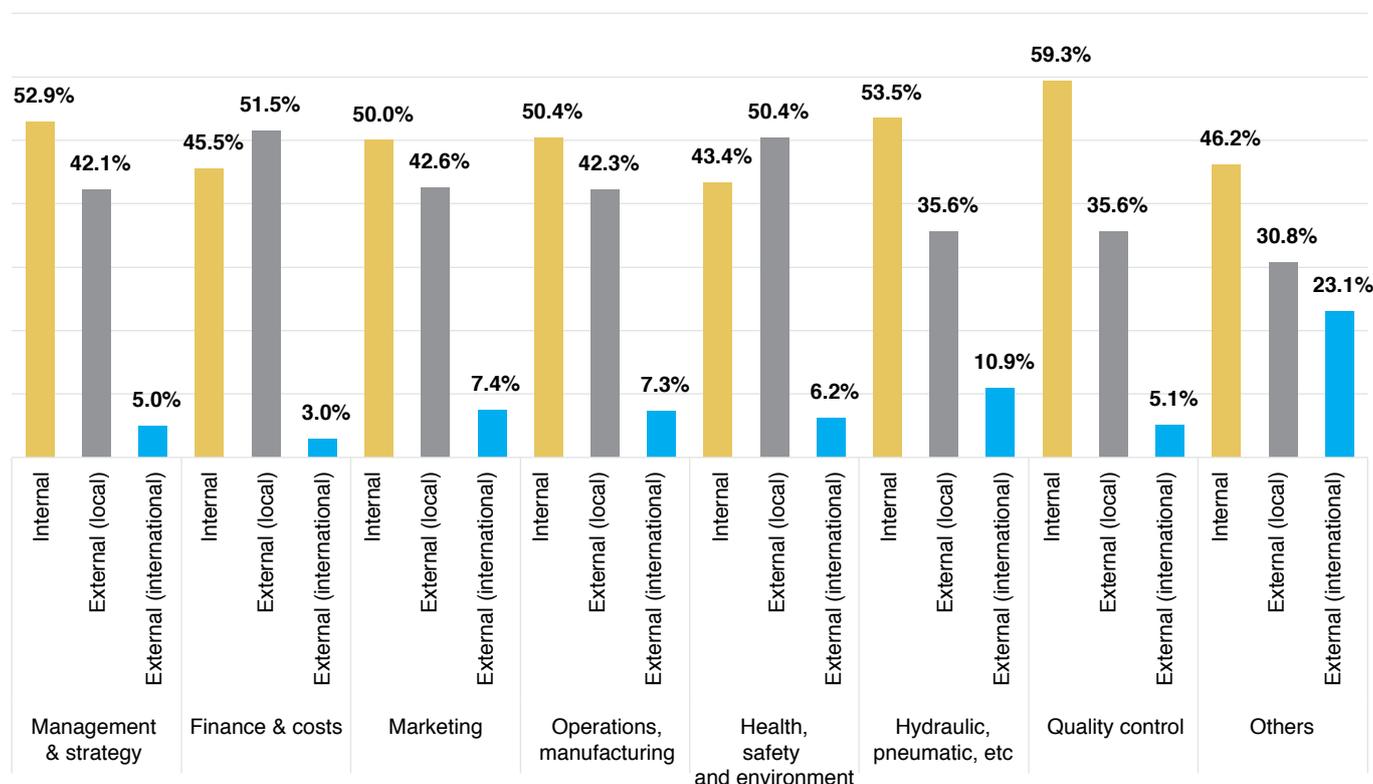
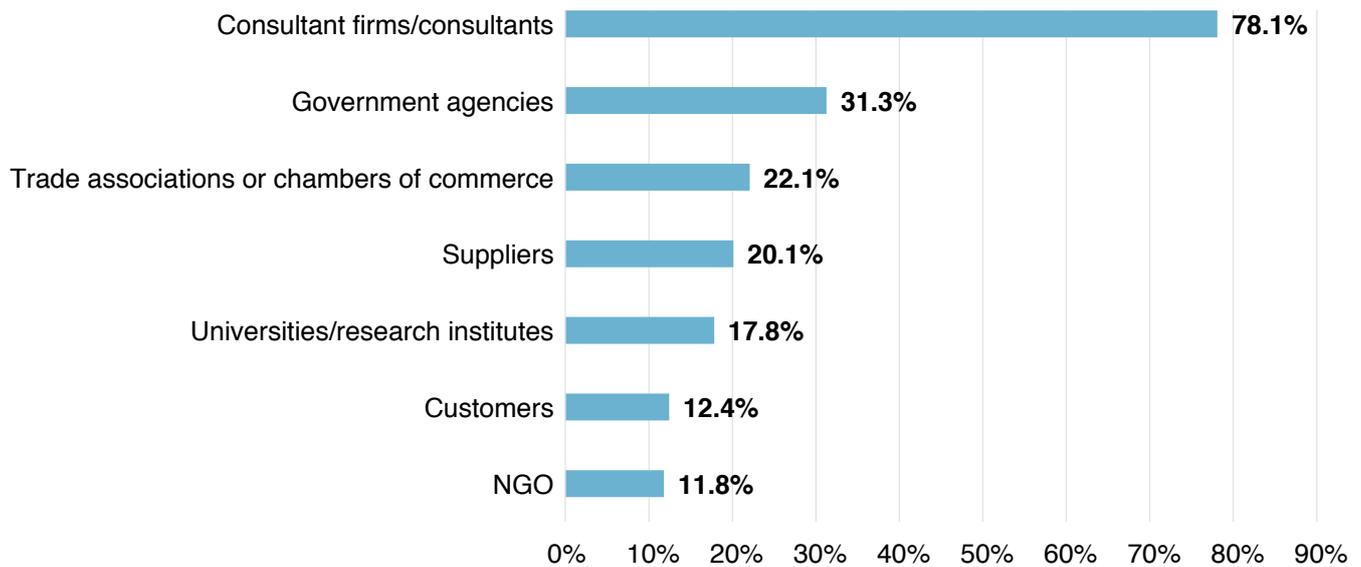


Figure 34. Type of training by topic.

Source: KAPSARC.

## Training

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**Figure 35.** External training by provider.

Source: KAPSARC.

MSMEs clients are not significant in Uganda. However, these programs should be encouraged. The implementation of training and supplier development programs by MNCs for local MSMEs raises the circulation of information and knowledge in the network, thus increasing the stock of

knowledge and competencies of the local firms. Linkages between firms and universities and research institutes should also be fostered for the same reason; knowledge and innovation in the firms leads to more value-added activities in the industries.

# Investments and Innovation

## Investments

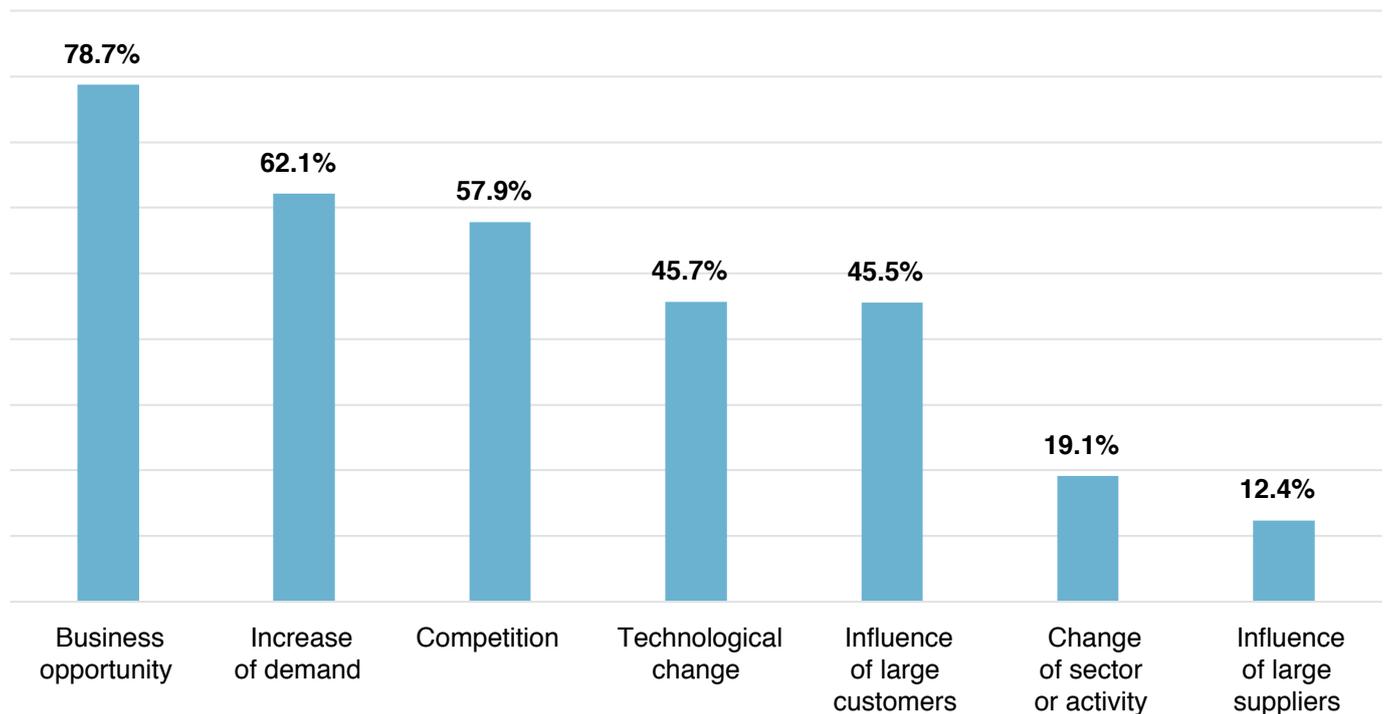
The average investment by the firms for 2013-2015 was equivalent to around 38 percent of sales. We used this as an approximate estimation of investment due to the challenges of reviewing actual financial statements in a survey. Thirty-eight percent is quite high and should be considered only as an approximation of the total investments.

Business opportunities, an increase in demand and competition are the most frequently cited factors by the firms for undertaking investments. This information seems to be consistent with the 5 percent annual growth of Uganda's economy in

the last three years. Technological change and the influence of large suppliers are next with about 45 percent of firms citing these as reasons for investments (Figure 36).

Poor market growth and lack of financial resources were the main reasons indicated by firms that did not invest during this period. These reasons were followed by small market size and by firms that said they had spent before 2013 making it unnecessary to invest again (Figure 37).

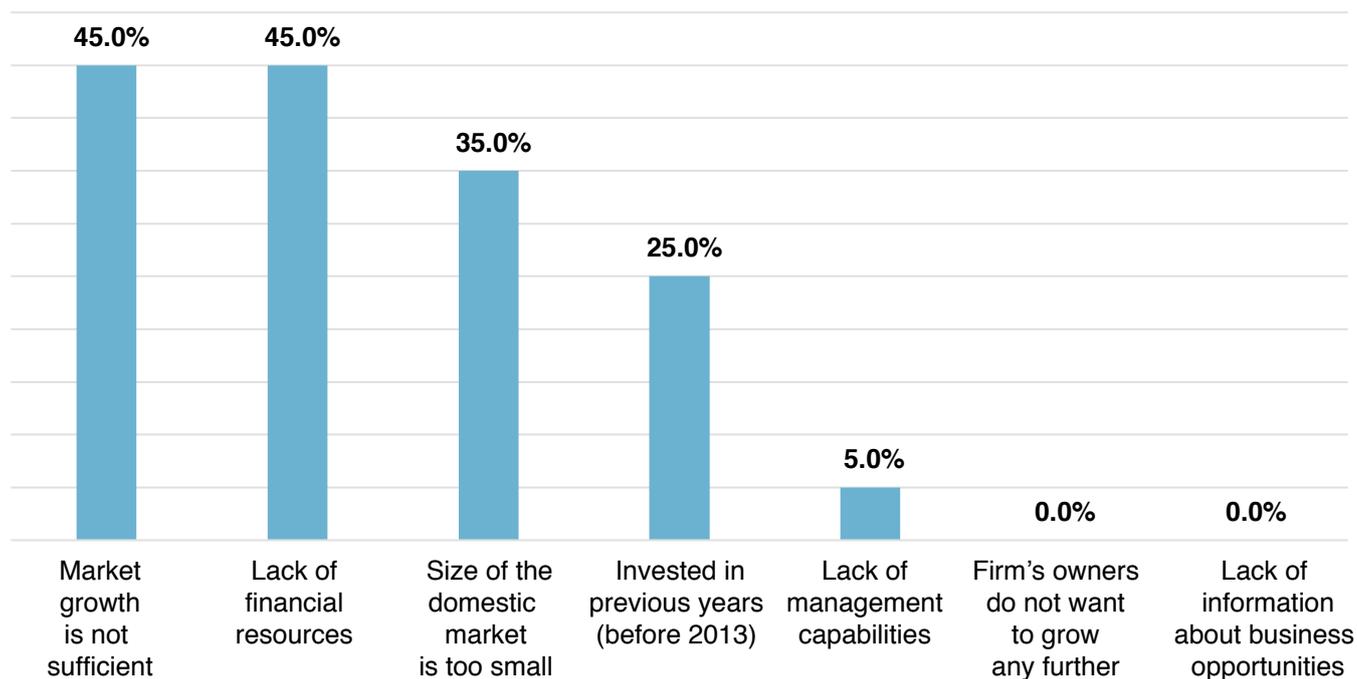
Although the economy has grown, for some firms this was not sufficient to encourage investments. None of the firms stated that their owners did not want to grow any further or that information



**Figure 36.** Incentives for investing.

Source: KAPSARC.

## Investments and Innovation



**Figure 37.** Investment deterrents.

Source: KAPSARC.

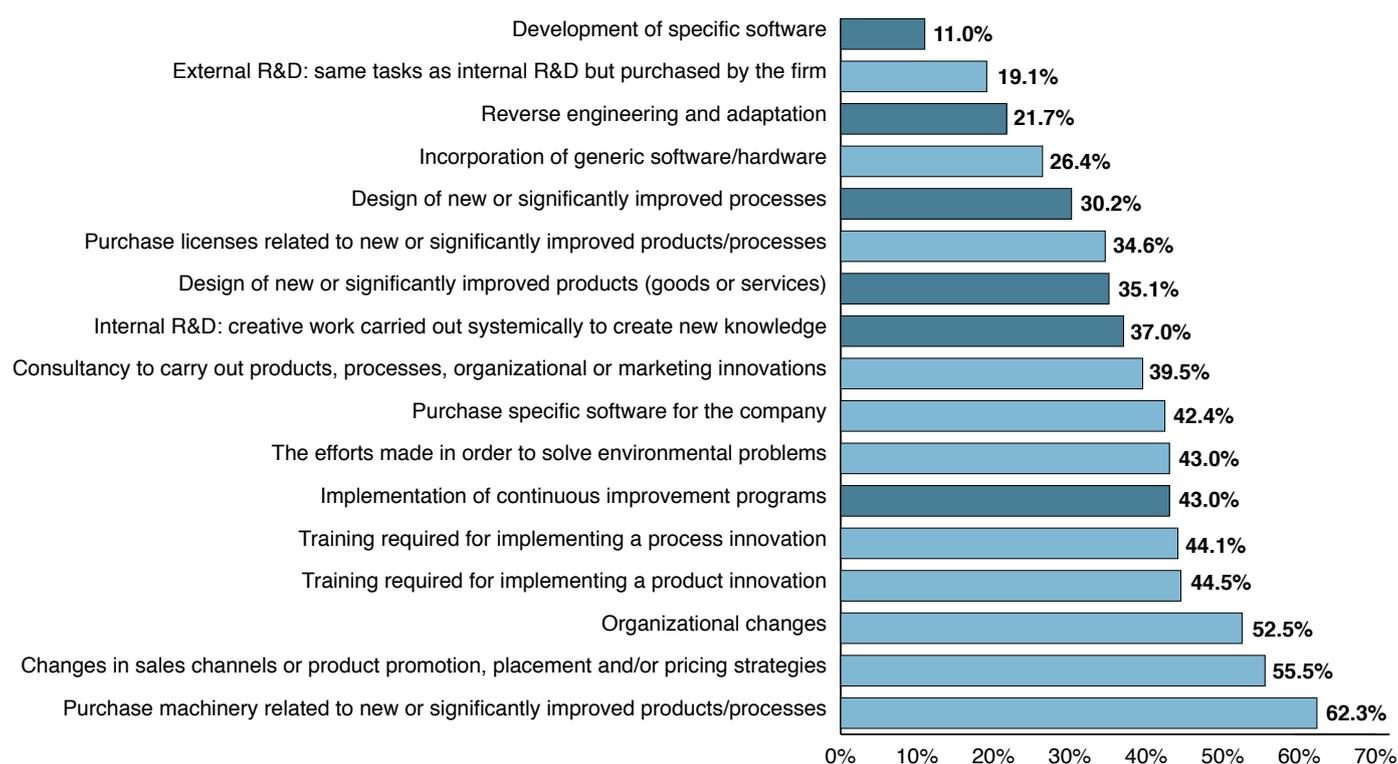
about business opportunities was not available as reasons for not investing. The first factor could imply that there is an interesting entrepreneurial behavior in Uganda in these economic sectors, an intangible asset important for economic growth. The second implies that the firms are aware of economic opportunities that are available.

## Innovation

Innovation capability is a key factor for sustaining competitiveness in the long term. The concept of innovation has largely evolved to encompass a series of specific activities that are central to developing the competitiveness of the firms. Figure 38 shows the frequency of different innovation

activities, also named efforts, developed by the firms surveyed.

The purchase of machinery, related to new or significantly improved products or processes, is the most frequent innovation activity (62.3 percent) developed by the firms in the sample. This innovation effort is followed by changes in the sales channels or product promotion, placement and pricing strategy (55.5 percent) and by organizational changes (52.5 percent). The three least frequent innovation activities are reverse engineering and adaptation (21.7 percent), external research and development (R&D) (19.1 percent) and development of specific software (11 percent). The purchase of machinery related to new or significantly improved



**Figure 38.** Innovation efforts developed by the firms.

Source: KAPSARC.

products or processes consists of acquiring imported technology from more advanced countries. Regularly, when developing countries are immersed in an economic growth period, the imports of machinery from more developed countries is common, and part of these imports include machinery to introduce new or significantly improved products. Not surprisingly, the Ugandan firms in the sample show this innovation activity as the most frequent one.

A relevant factor for innovation is the level of qualification of the personnel executing the internal innovation activities and the frequency of these activities. Internal innovation activities are highlighted in dark blue in Figure 38.

The most frequent internal innovation activity is the implementation of continuous improvement programs (43 percent), followed by internal R&D (37 percent) and the design of new or significantly improved products (35.21 percent), while the least frequent is the development of specific software (11 percent). Forty-six percent of the firms indicated that a specific group or person in the firm was responsible for these innovation activities and the average number of people in the group is eight. On average, this group of eight persons is composed according to their education level with three technicians (professionals), two non-technicians (professionals), one technician with no university education and two operational personnel. Sixty-two percent of the firms that have a specific group or

## Investments and Innovation

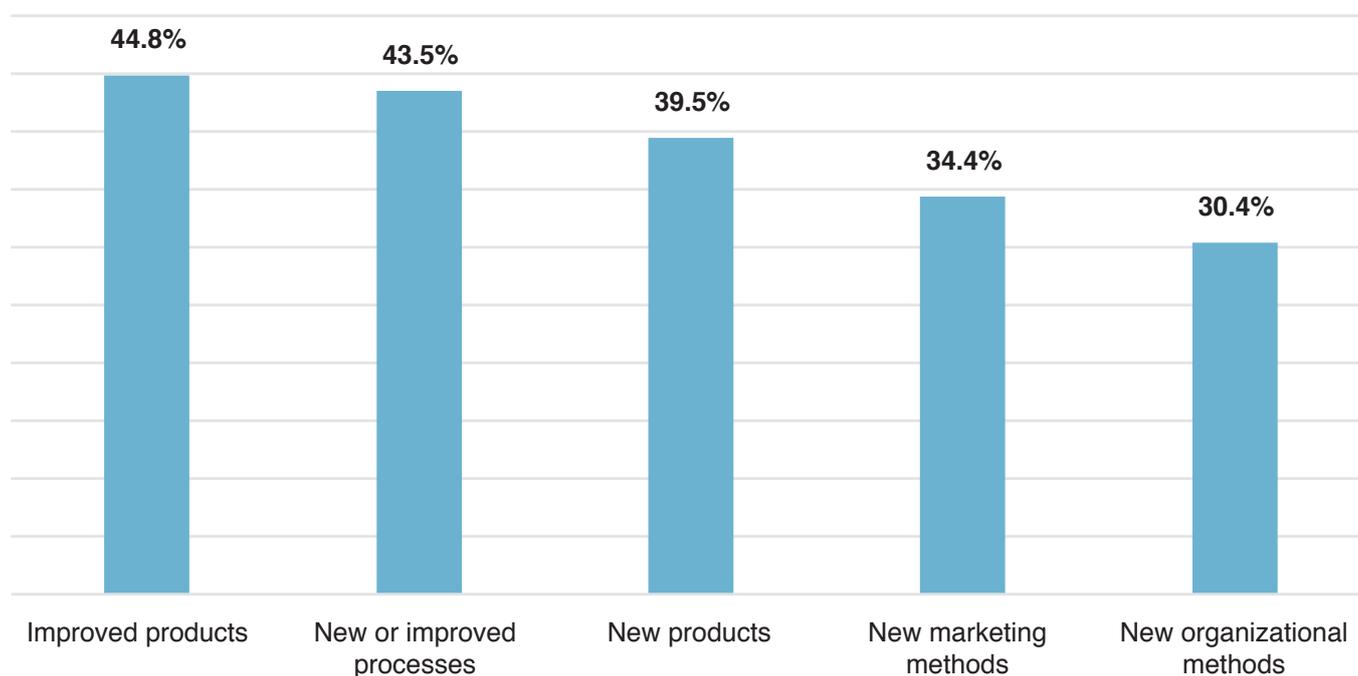
person responsible for internal innovation activities claimed that they were frequently performed, indicating that 28.5 percent of our sample is developing their internal innovations regularly.

The numbers displayed above indicate the important innovation activities in these firms. This aspect supports what we have described concerning absorptive capacity since innovation and absorptive capacity are usually positively associated. To acquire a better picture of innovation, we must also focus on the results of the innovation activities.

Figures 39 and 40 shows the percentage of firms that claimed they had introduced innovations in the past three years and their degree of novelty. We consider the four types of innovations: product (goods and

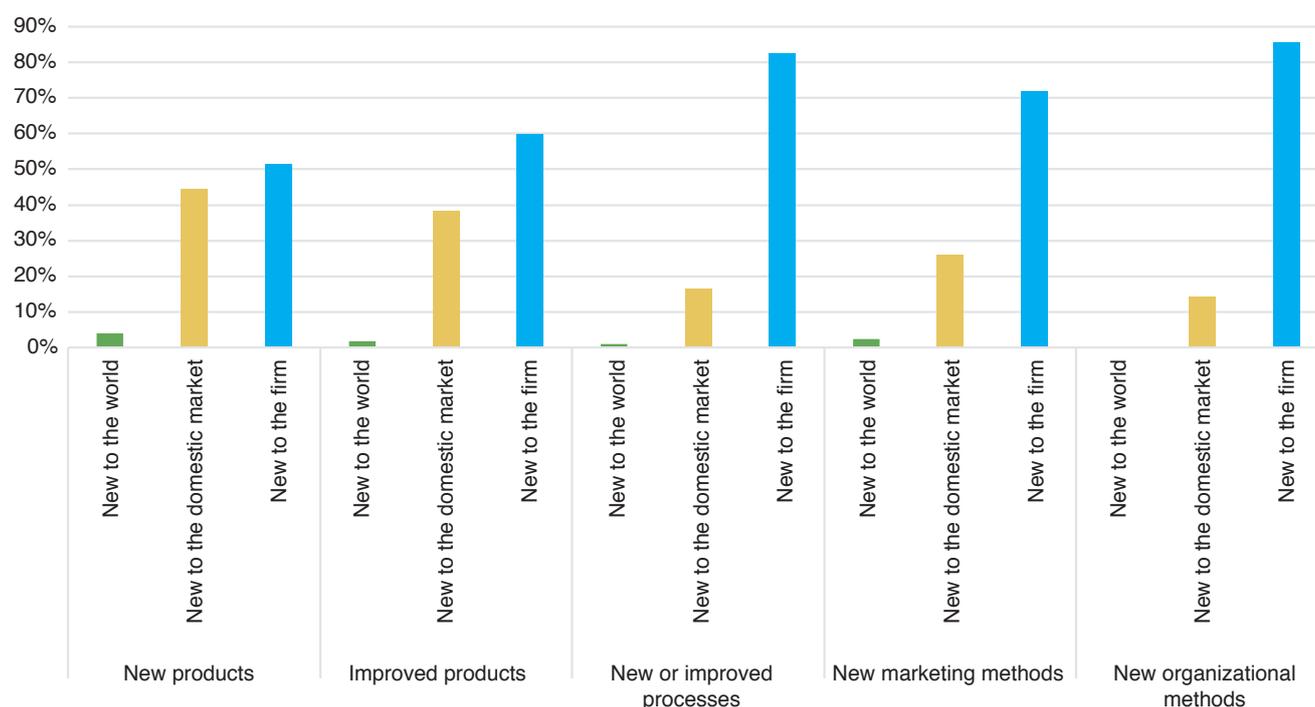
services), process, marketing and organizational innovations.

Measuring the impact of innovation activities can be quite difficult, especially in SMEs and in developing countries. To estimate it, we have to assess the impact of these innovations on sales or cost reductions. For some activities, such as organizational changes and process innovations, measuring this impact can be a challenge. This survey is not focused exclusively on innovation, and it would require a great deal of time to estimate the impact of all innovation activities carried out. Due to this, we approximated the impact of innovation on economic performance by considering only product innovation, which is usually the easiest to estimate as a percentage of sales by the respondents.



**Figure 39.** Innovation types introduced, 2013-2015.

Source: KAPSARC.



**Figure 40.** Degree of novelty by type of innovation, 2013-2015.

Source: KAPSARC.

The three figures that follow (41-43) show the impact of product innovation (goods and services) for the most relevant product introduced into the market in the period 2013-2015 as a percentage of sales in 2015.

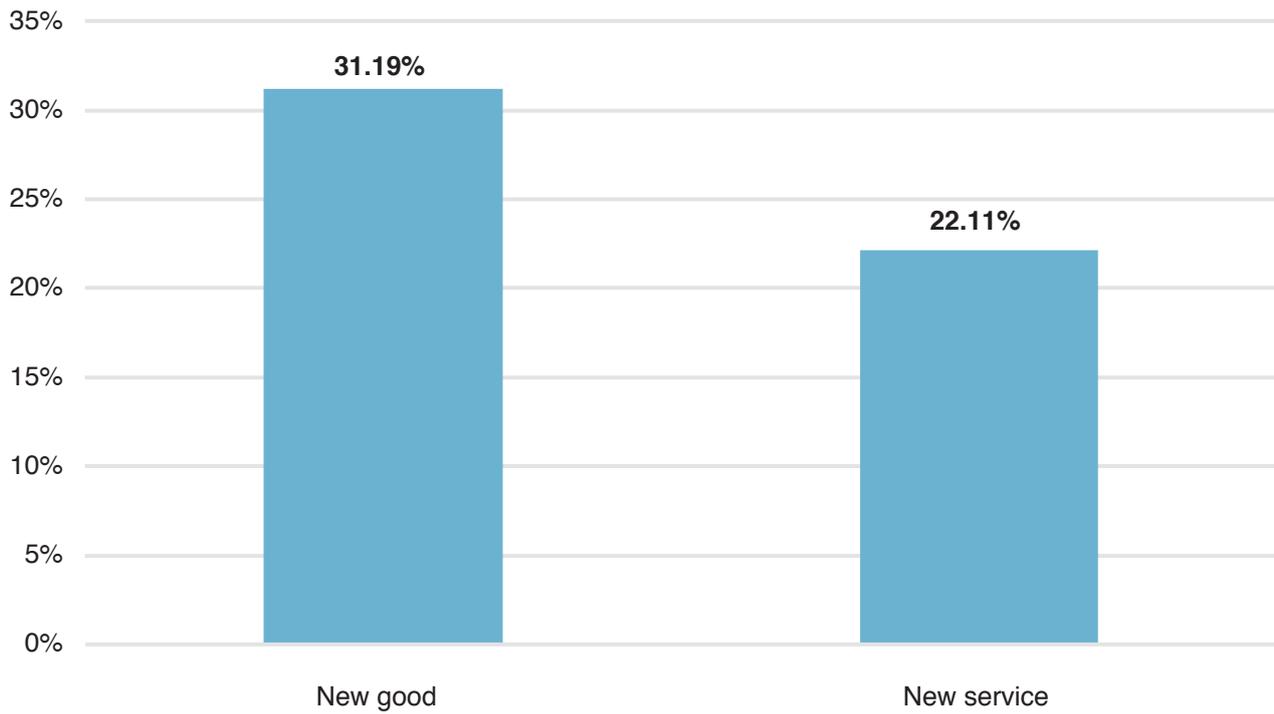
On average, the share of total sales in 2015 of the most important goods innovations introduced into the market is around 31 percent and around 22 percent for the most important service innovations. These figures show the impact of innovation activities in the firms. From the pie charts, we can see that for goods, almost 15 percent of the firms have introduced an innovation and the degree of novelty is split in half between the firm and the domestic market. For services, we observe that around 30 percent of the firms introduced an

innovation; for 16 percent of them it was new to the firm, for 13 percent of them it was new to the domestic market and for less than 1 percent it was new to the world.

Based on the results, we can infer that innovation is an important activity in Uganda and the firms have significant innovation capabilities. However, these innovations are limited to the firm or the domestic market with practically no penetration into the international market. Nevertheless, the innovative behavior of the Ugandan firms is a positive asset and should be further encouraged with appropriate public policies. To complete the picture of innovation, we investigated the most important linkages for developing innovation activities.

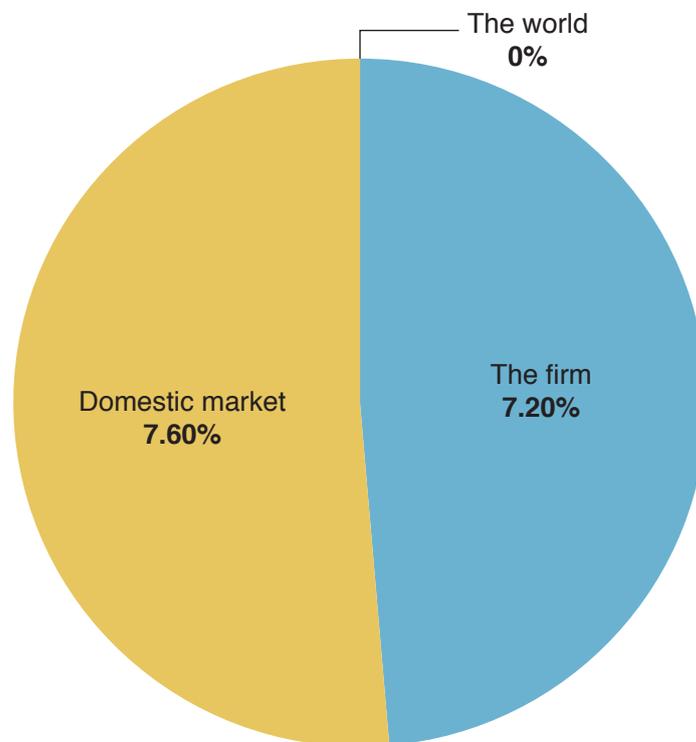
## Investments and Innovation

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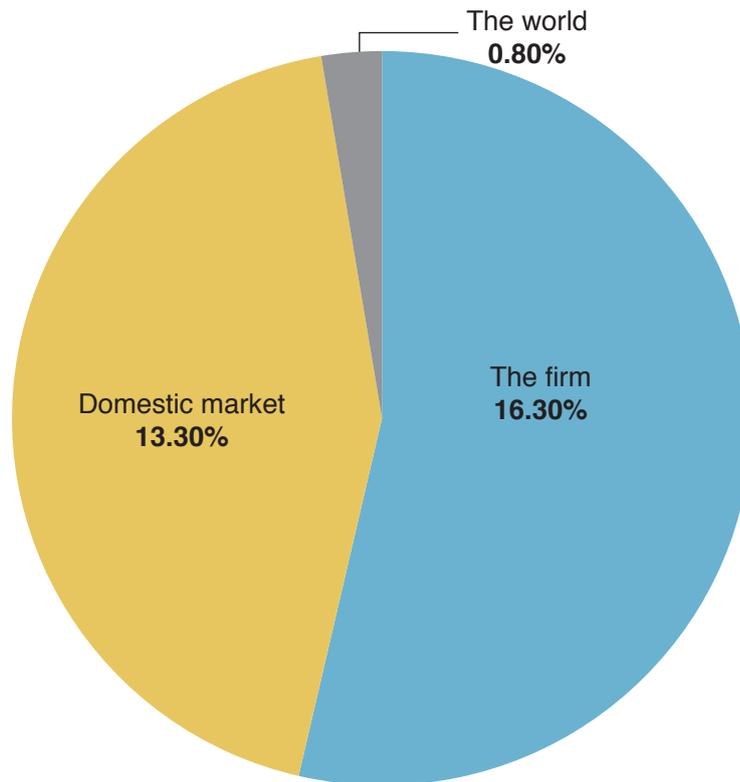
**Figure 41.** Product innovation as percentage of sales, 2015.

Source: KAPSARC.



**Figure 42.** Degree of novelty, goods.

Source: KAPSARC.



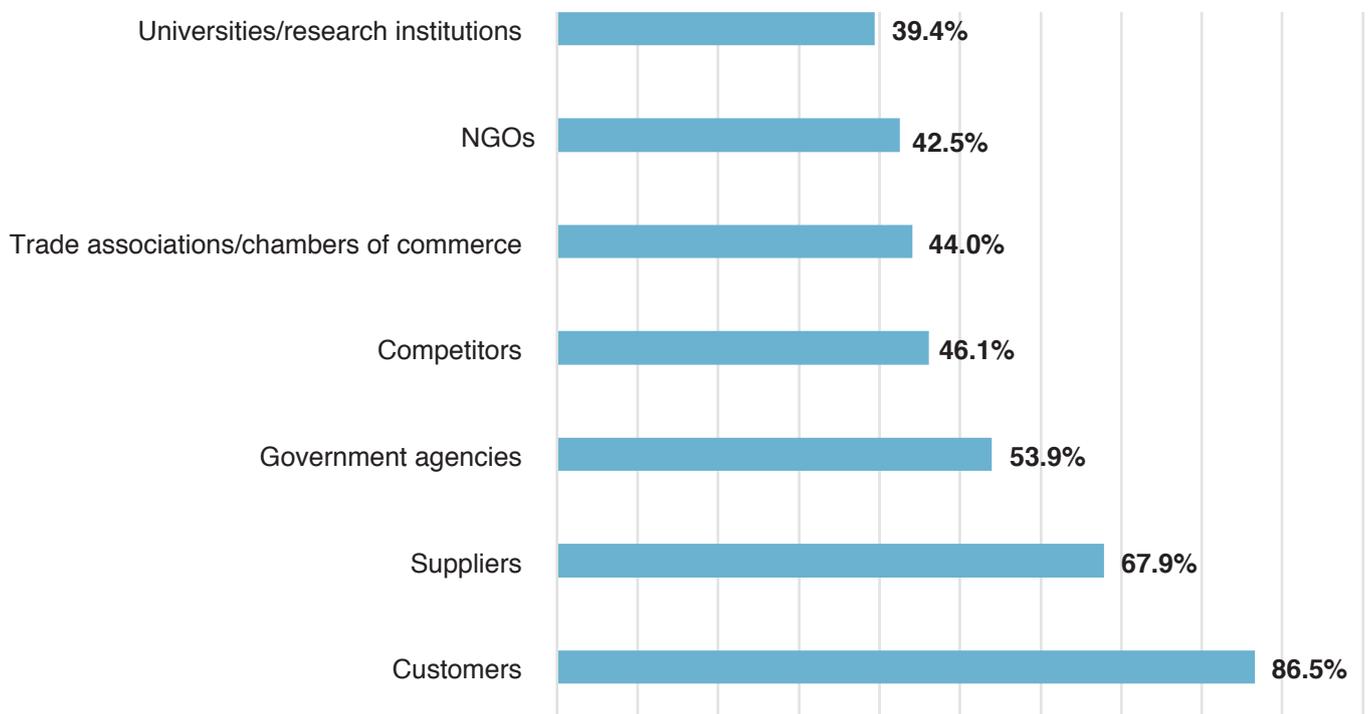
**Figure 43.** Degree of novelty, services.

Source: KAPSARC.

Seventy-three percent of the firms stated that they developed linkages to implement innovation activities and 27 percent stated that they did not. Figure 44 shows the linkages developed to carry out innovation activities. We observe that linkages with customers (86.5 percent) and suppliers (68 percent) are the most frequent. These results could seem inconsistent when considering that the inter-industry linkages are relatively weak for training activities as mentioned earlier. However, it is possible to cooperate with firms to improve and innovate in certain aspects while at the same time have very few formal training activities.

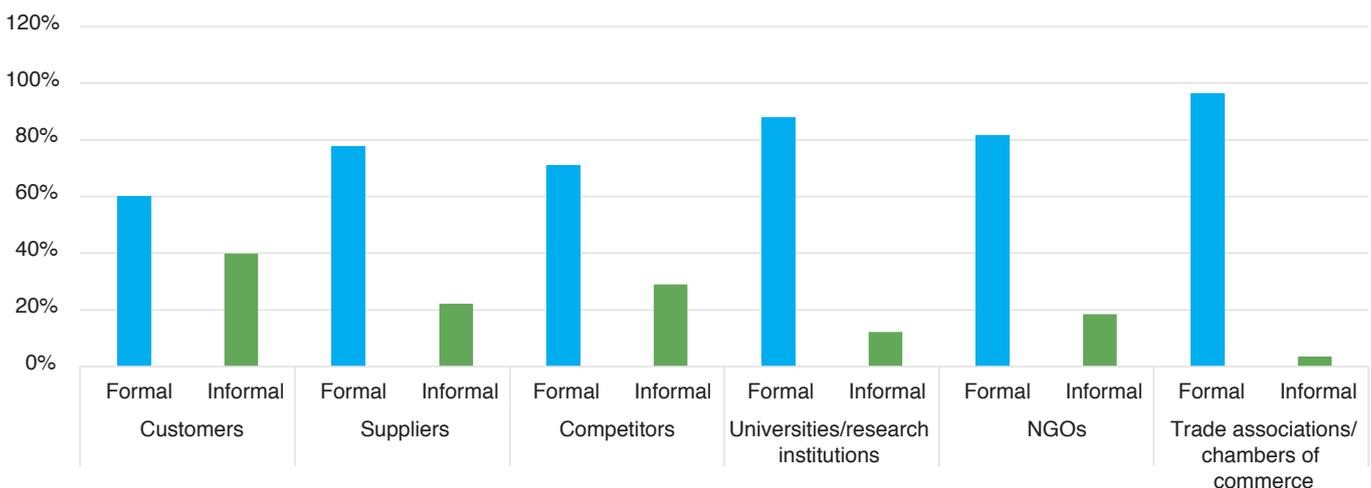
Consequently, the inter-industry relationships within the value chain are significant when developing innovation tasks. Government agencies provide 54 percent of linkages for innovation activities, while universities and research institutes are the least frequent linkage (39.4 percent). Fostering the relationship between the academic and scientific sector with the productive sector is an interesting way to promote more value-added activities in the firms as we have mentioned. Regarding the type of linkages, Figure 45 shows that the most common type is formal, where a signed agreement between the firm and other institutions already exist.

## Investments and Innovation



**Figure 44.** Frequency of linkages between firms and other entities for developing innovation activities

Source: KAPSARC.



**Figure 45.** Type of linkages.

Source: KAPSARC.

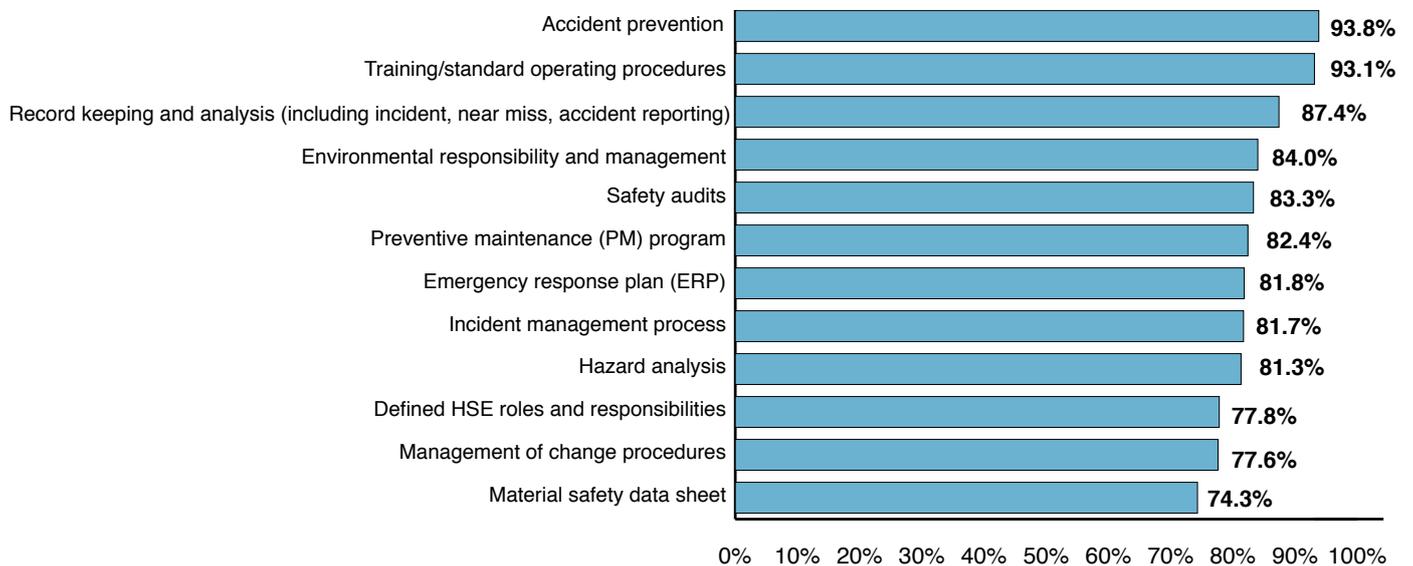
# Quality Management, Standards and HSE Policy

Here we focus on management capabilities based on standards and policies recognized as good business practices. Suppliers to the oil and gas industry are usually expected to comply with these policies.

## Health, safety and environmental

Almost 70 percent of the firms stated that they have an health, safety and environmental (HSE) policy, but only 55 percent indicated that they have a health and safety plan or manual. Firms with a health and safety plan have different levels of development in the diverse range of activities that are included in their plans as we can see in Figure 46.

Figure 46 shows that for firms that have developed health and safety plans or manuals, there is very good coverage of the topics we surveyed. More than 90 percent of them cover accident prevention and training/standard operating procedures. More than 80 percent have record keeping and analysis (including incident, near miss, accident reporting), environmental responsibility, safety audits, preventative maintenance, emergency response plans, incident management and hazard analysis. Almost 70 percent of the firms indicated that their manuals cover the topics of defined HSE roles and responsibilities, change management procedures and material safety and data sheets. The high level of compliance among these firms is an encouraging indicator for supplying the oil and gas industry.



**Figure 46.** Frequency of activities included in the health and safety plan or manual.

Source: KAPSARC.

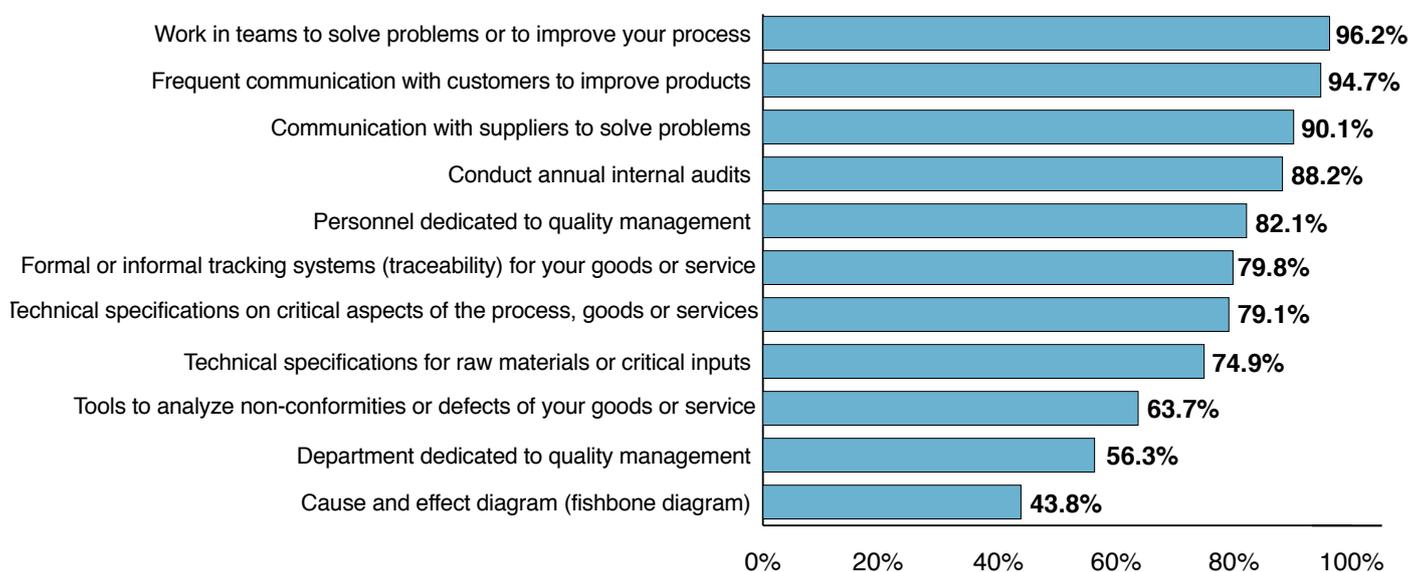
## Quality management, culture of quality and standards

Quality control mechanisms and a culture of quality consciousness are important aspects for multinationals when evaluating potential suppliers. In the oil and gas industry, this aspect is emphasized when they evaluate local suppliers. Quality management and quality standards become more important as the criticality of the inputs supplied increases, becoming essential in many industry-related supplies, i.e., goods and services associated with specific oil and gas activities.

Suppliers of goods and services for the oil and gas industry can either provide specific industry related or non-industry related products. Specific products are directly for use in the upstream and downstream operations, while non-specific products

are more general and can be used in almost any type of business. For the specifically industry-related products, the need to meet certain quality standards becomes much more important as the criticality of the products increases. For example, the downhole tubing may need to meet an extremely high standard to withstand the temperature and pressure of downhole conditions. For these reasons, having an appropriate quality management system and culture of delivering quality products is very important for potential suppliers to the oil and gas industry. Owing to the importance of these standards, we took our analysis one step further by distinguishing between firms that are currently supplying or not supplying the oil and gas industry (see Figures 49-52).

Figure 47 shows how firms perform across a series of activities related to quality management and process control.



**Figure 47.** Frequency of quality management activities and tools used.

Source: KAPSARC.

Continuous improvement teams (96.2 percent), communication with customers (94.7 percent) and suppliers (90.1 percent) are the most frequent activities, immediately followed by conducting annual internal audits (88.2 percent). Personnel dedicated to quality management, a tracking system for their goods and services, and technical specifications on critical aspects of processes, goods and services all have a frequency of around 80 percent. Finally, we have technical specifications for raw materials or critical inputs with 74.9 percent compliance, analysis for nonconformities or defects in their goods or services with 63.7 percent, the existence of an area or department dedicated to quality management with 56.3 percent and the utilization of a cause and effect diagram with 43.8 percent. The firms examined have an encouraging level of performance in quality management activities and the utilization of quality control tools.

## Quality, environmental and occupational health and safety standards

We evaluated the quality, environmental and occupational health and safety criteria using globally accepted standards for the oil and gas industry. That is ISO 9000, ISO 14000 and OHSAS 18000, which are central to operations in the two main segments of the oil and gas industry – upstream and downstream. The standards that are required for these suppliers depend largely on the goods or services they are supplying, but it is assumed that meeting these standards is desirable for the IOCs.

ISO 9000 is a quality management system that provides organizations with a systematic approach for meeting customer objectives. ISO 14000 is an environmental management system, which

gives a method for measuring and improving an organization's environmental impact. OHSAS 18000 is an occupational health and safety management system, which provides a method for measuring and improving an organization's health and safety impact. These standards are not specific to the oil and gas industry, particularly ISO 9000, which is widespread in many economic activities. Nevertheless, due to the complexity and, in many cases, hazardous activities of oil and gas operations, this industry has been a major driver for the utilization of these standards.

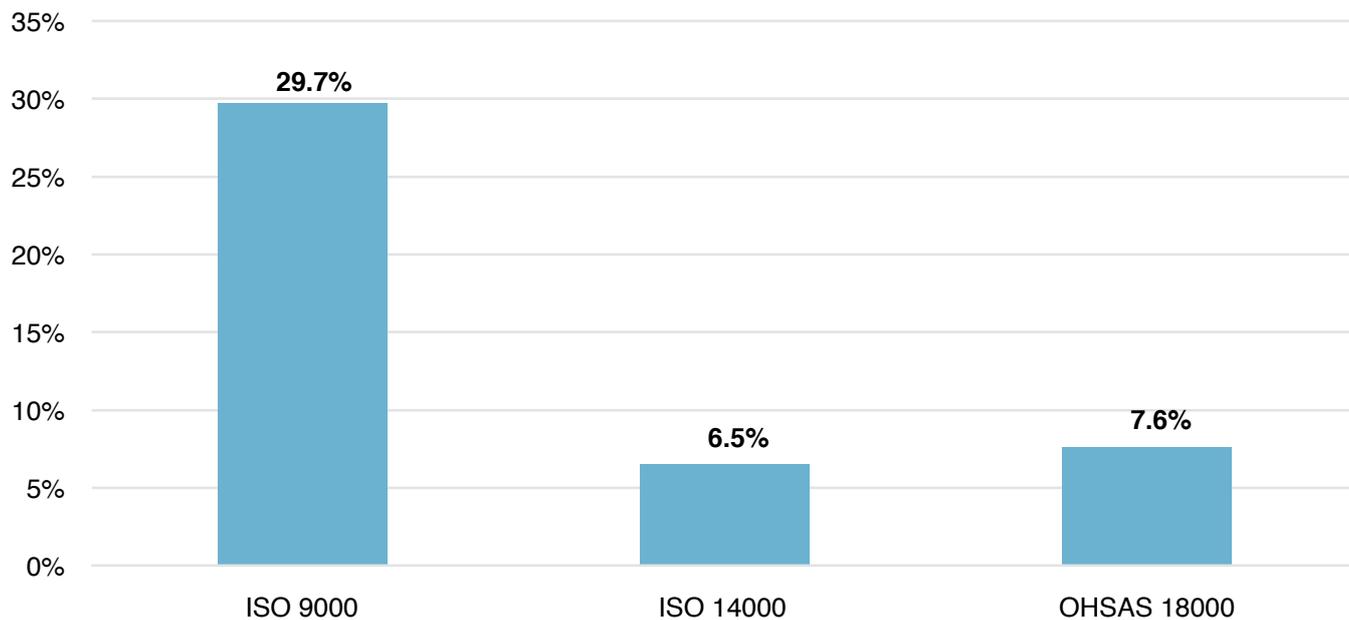
When analyzing the ISO 9000, ISO 14000 and OHSAS 18000 standards we also distinguish between supplier and non-supplier firms.

Only 37 percent of the firms in the sample indicated that they have implemented or started to implement international management standards. Figure 48 shows the distribution of firms meeting the three standards considered by the survey. We observe that almost 30 percent of the firms claimed that they use ISO 9000 to some extent, roughly 7 percent use ISO 14000 and around 8 percent use OHSAS 18000.

Of the 37 percent of firms that started to implement or have implemented international management standards, 57 percent do not supply the oil and gas industry and the remaining 43 percent are supplier firms.

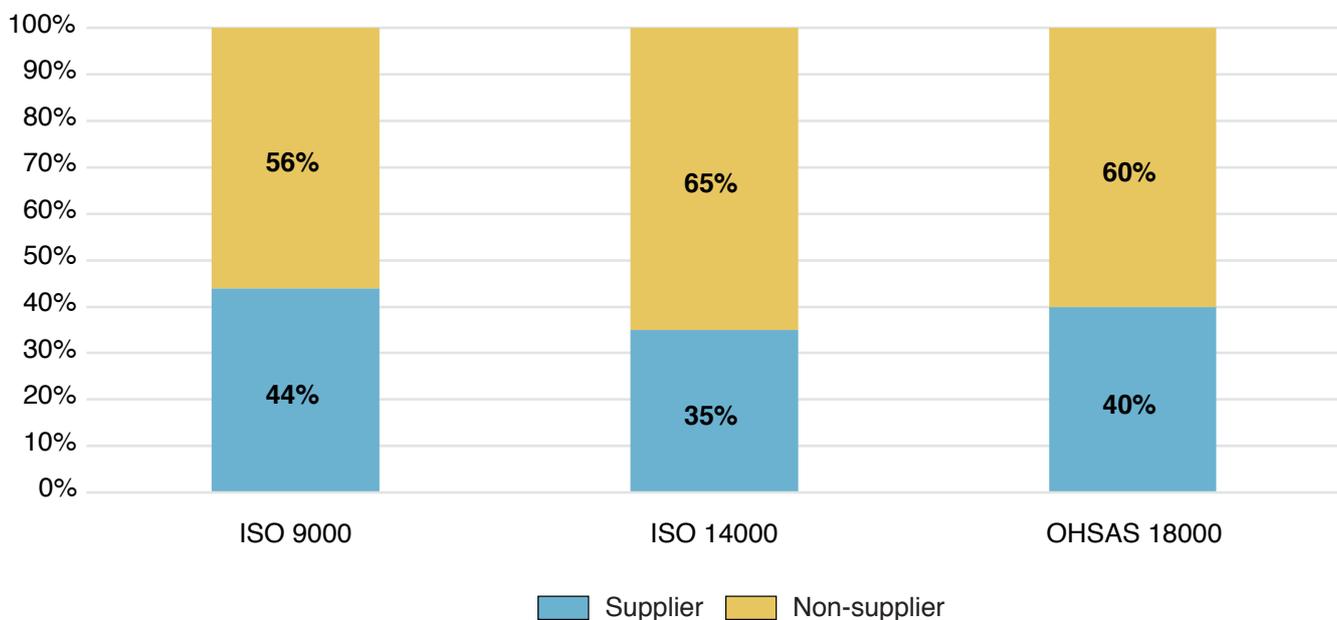
Figure 49 shows the distribution of supplier and non-supplier firms that began to implement or have implemented the three standards considered in the survey. In relative terms, there are more non-supplier firms that use the standards to some extent than supplier firms. Additional insights can be obtained if we classify the supplier and non-supplier firms by economic sectors and by whether they use the standards considered. Figure 50 shows the results of the breakdown between suppliers and non-suppliers by economic sectors.

## Quality Management, Standards and HSE Policy



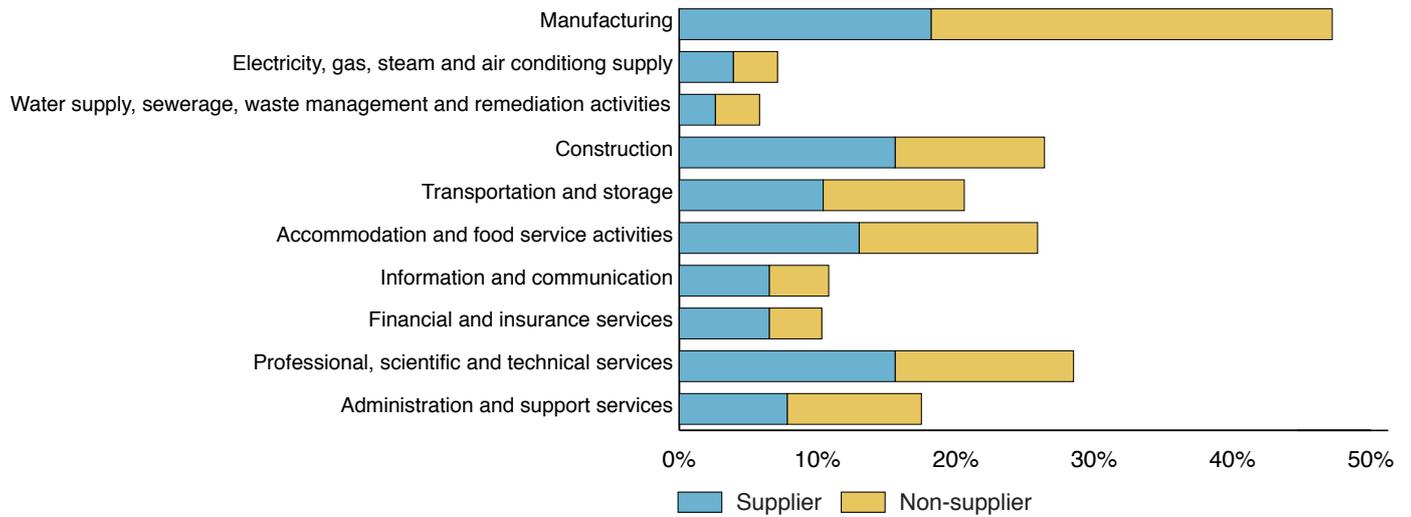
**Figure 48.** Distribution of firms that use the standards to some extent.

Source: KAPSARC.



**Figure 49.** Suppliers and non-suppliers that use standards to some extent.

Source: KAPSARC.



**Figure 50.** Suppliers and non-supplier firms by economic sector.

Source: KAPSARC.

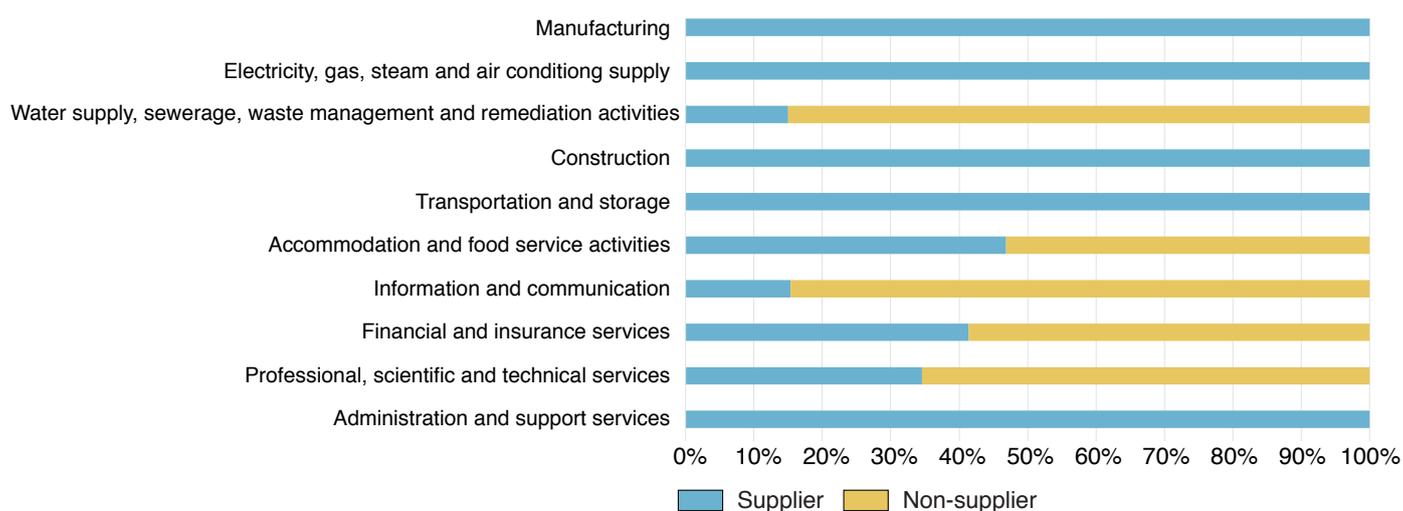
Each of the 10 sectors in the survey contain supplier and non-supplier firms. The proportion of suppliers and non-suppliers is different in each of these sectors, and each sector has a different weight in the survey. Since the standards considered do not have the same importance in all sectors, it is likely that the firms included in the first five sectors are required to comply with one or more of the standards.

The first five economic sectors include firms that are most likely to supply specific industry-related products. Most of the firms included in the remaining sectors are less likely to need to comply with these standards (although ISO 9000 can be an exception). Essentially, aspects such as reputation or alternate standards need to be used when assessing these local firms as possible suppliers. These firms provide more general products, and as such are less inclined to invest in meeting these standards.

Thus, based on the reasoning above, we can state that around half of the suppliers in the sample do not supply industry-related products where the standards considered are a requirement of the oil industry. To clarify the point, figure 51 considers all the firms that use ISO 9000 by economic sector and whether they are a supplier to the oil and gas industry.

Therefore, all firms using ISO 9000 and belonging to the manufacturing sector are suppliers of the oil and gas industry. The same observation applies to the sectors of electricity, gas, steam and air conditioning; construction; transportation and storage; and administrative and support services. This is to be expected since the sectors mentioned are more likely to deliver industry-related products. The exception is the administrative and support services where we would expect to have some firms that do not work with the ISO 9000. However, as we have mentioned, ISO 9000

## Quality Management, Standards and HSE Policy



**Figure 51.** Supplier and non-supplier firms working with ISO 9000 by economic sector.

Source: KAPSARC.

is quite widespread in many sectors, so it is not surprising that the firms' working in administrative and support services comply with ISO 9000 to some extent. Alternately, in the sectors of water supply, sewage, waste management and remediation activities; accommodation and food service activities; information and communication; financial and insurance services; and professional, scientific and technical services not all the firms working with the ISO 9000 are suppliers of the oil and gas industry.

Table 2 shows the degree of implementation for each standard in firms that use the standards considered.

Of the firms that had some compliance with the standards, the 100 percent implementation category was the largest for all, with 39 percent for ISO 9000, 47 percent for ISO 14000 and 45 percent for OHSAS 18000. Remembering that these values are only for firms that have some implementation, the actual values for all firms in the sample, including the ones that stated they do not use the standards, are: 30 percent for ISO 9000, 8 percent for ISO 14000 and 9 percent for OHSAS 18000, which is low.

Figure 52 shows the percentage of firms that have been certified in the standards considered, categorized by supplier and non-supplier firms. Surprisingly, the percentage for non-suppliers is higher than the percentage of suppliers.

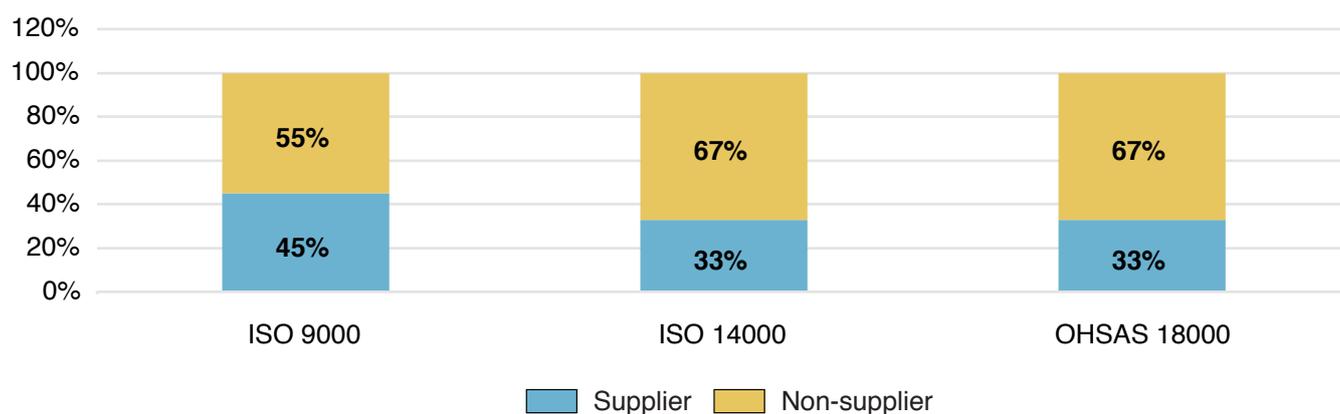
Finally, we investigated the reasons for firms starting but not completing the certification process. The main reason cited is the lack of financial resources (53 percent), followed by the lack of skilled personnel for the task (27 percent).

In conclusion, we observe that there is room for improvement in the use of standards. Firms supplying industry-related products typically need to comply with one or more of the standards considered. Alternatively, firms that do not supply industry-related products might not have to work under the standards considered, except some subsectors. Overall, fostering local businesses to work with standards is a good mechanism for adding value to the economy and pushing industries to higher levels of quality and competitiveness.

**Table 2.** Distribution of firms by degree of implementation of the three standards considered.

Degree of implementation	Percentage of firms ISO 9000	Percentage of firms ISO 14000	Percentage of firms OHSAS 18000
1%- 20%	4%	18%	10%
21%- 50%	15%	0%	15%
51%- 80%	33%	18%	25%
81%- 99%	9%	17%	5%
100%	39%	47%	45%

Source: KAPSARC.



**Figure 52.** Certification of standards in supplier and non-supplier firms.

Source: KAPSARC.

# Business Environment, Strategies and Financial Performance

This section explores the obstacles and challenges firms face and their strategies to maintain or increase their market share. The goal is to provide an understanding of the context under which firms operate. We conclude this section by analyzing their financial performance based on a set of simple financial dimensions.

## Business environment and strategies

Competition is the main obstacle that firms in

Uganda face. Limited financial capacity, a lack of stable demand and adequate technology or equipment are also important obstacles referred to by the firms surveyed with responses totaling 42 percent, 37 percent and 35 percent, respectively (Figure 53). These factors are interrelated; the lack of stable demand prevents firms from having stable sales and, therefore, stable cash-flows which, in turn, thwarts the possibility of obtaining financial aid, which makes an investment in technology more difficult.

At the other end of the scale, we find that the lack

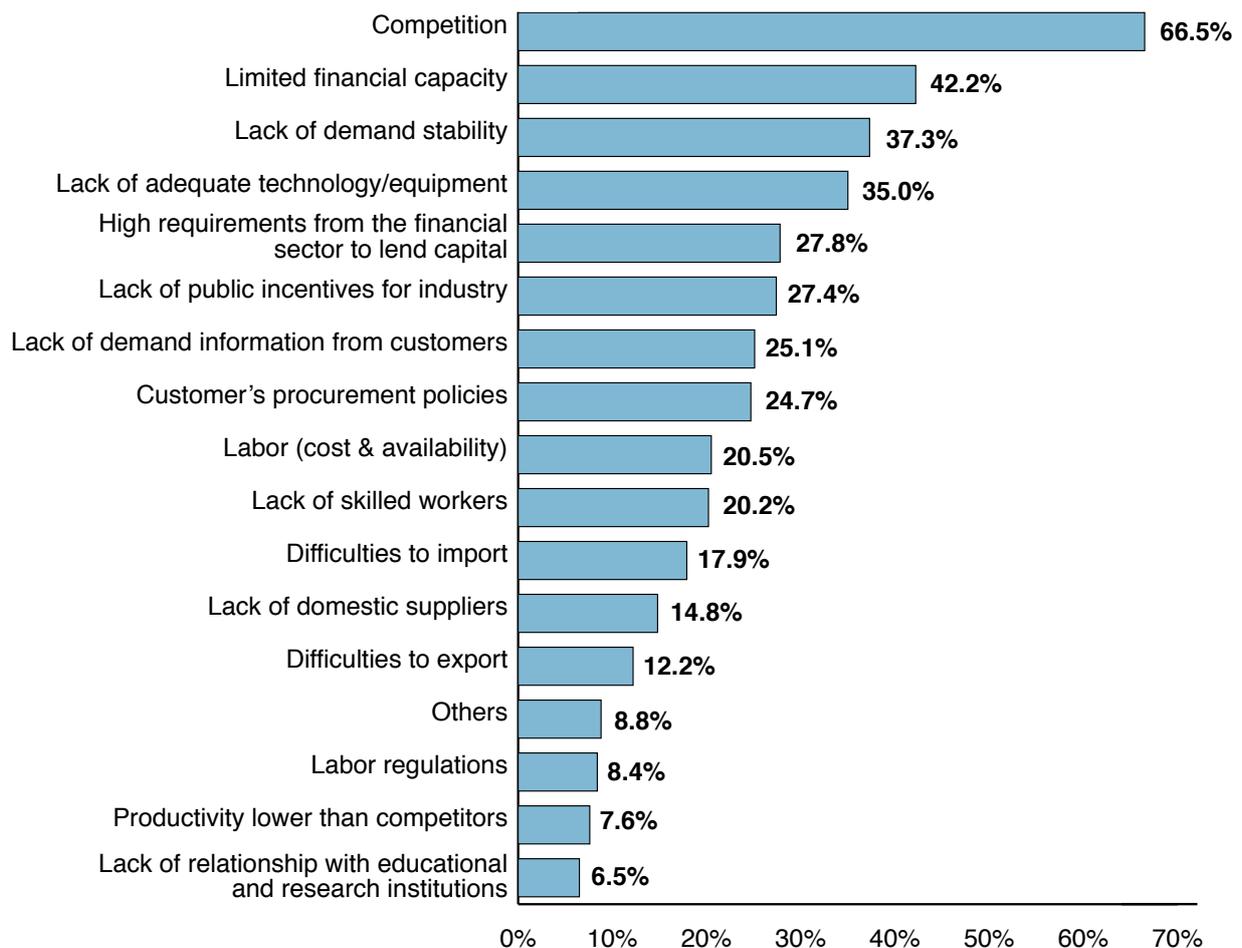


Figure 53. Main obstacles faced by the firms.

Source: KAPSARC.

of relationships with educational and research institutions is the least frequently cited factor. Firms do not consider low linkages with these institutions as an obstacle. This is congruent with our previous findings, with connections to such institutions given low importance for the development of innovation activities. This is a factor that could be important for public policy since linkages between industry and the scientific sector might foster competitiveness. The lack of skilled labor, mentioned by about 20 percent of firms, does not seem to be an obstacle, nor do labor regulations, which was cited by 8.4 percent, implying that in Uganda labor rules may be quite flexible or are poorly implemented.

We now look at obstacles related to the workforce. Most of the firms indicated that inadequate workforce is not an obstacle (41 percent), a minor obstacle (25 percent), or a moderate obstacle (20 percent); only 12 percent claimed it to be a major obstacle and 2 percent believed it to be a very severe obstacle. This implies that providing training can solve the problem in most instances since the skills required are not that complex.

We also inquired whether the firms have problems with their workforce; 62 percent of the firms answered affirmatively and the rest, 38 percent, negatively. Figure 54 illustrates the most frequent problems indicated by firms.

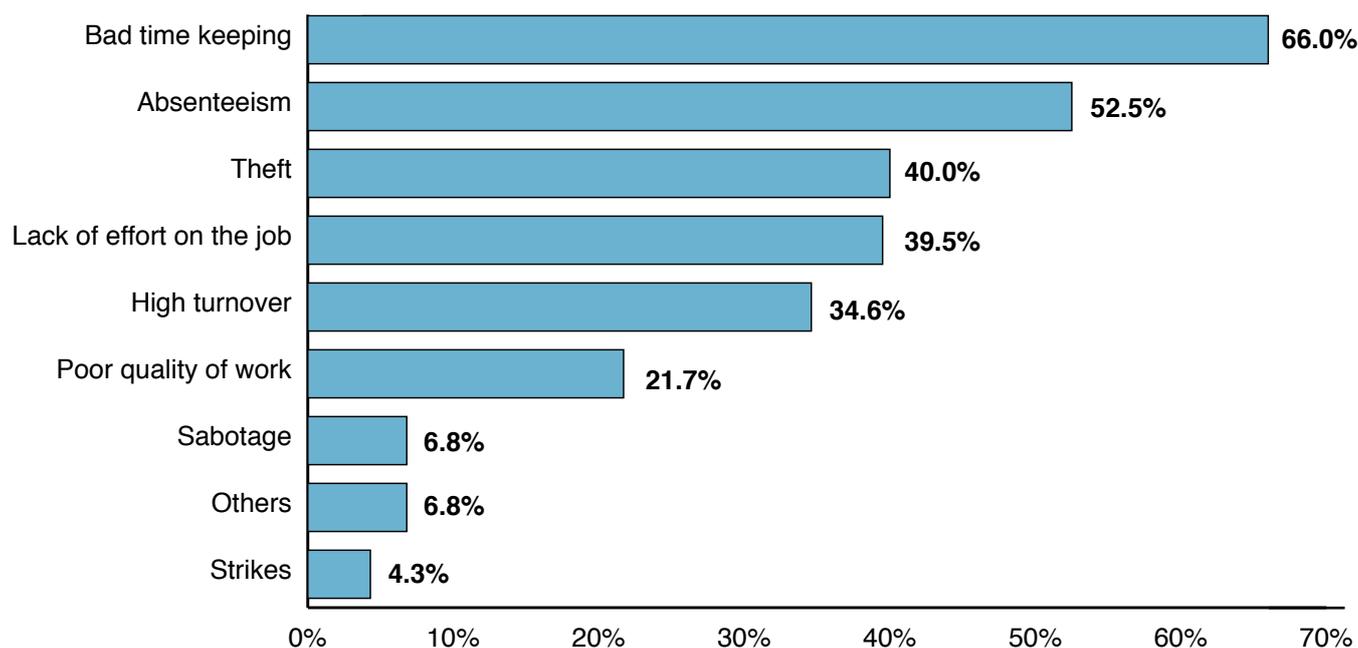


Figure 54. Workforce challenges.

Source: KAPSARC.

## Business Environment, Strategies and Financial Performance

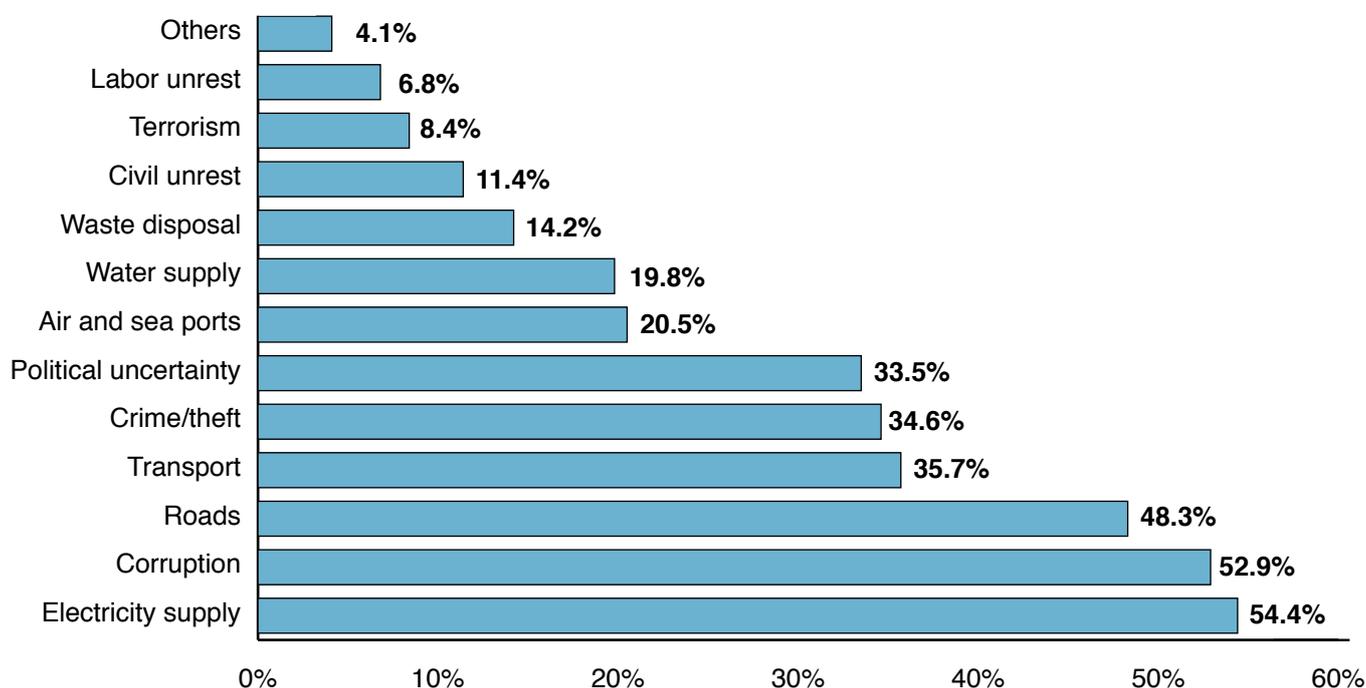
The five most notable problems relate to a lack of motivation and behavioral issues. Factors related to infrastructure issues were also investigated. Figure 55 below shows how these external factors affect performance.

The results corroborate what has already been found in the African business environment. Electricity supply is a problem with almost 55 percent of respondents, followed by corruption at 53 percent and roads with 48 percent. The second group of external factors affecting operations include transport, crime/theft and political uncertainty as reported by 35 percent of surveyed firms.

The most important challenges of the functional areas of the firm (based on market, production and finance) cited are outlined in Table 3.

Under the market category for Table 3, the most important challenge is price, which matches prior observations on the degree of competition. Concerning production, we have an overwhelming percentage of cases citing 'acquisition of technology' (172 percent) as the first choice (note that the sum can be more than 100 percent since respondents were able to choose from more than one option within each category). In a distant second, we have the specification of products. Finally, in finance, there is practically a tie between customer payment policies and expensive working capital.

To complement the analysis of context and strategy, in the following figures we lay out the main strategies developed by the firms and their main strengths. Figure 56 specifically shows the main strengths of the firms.



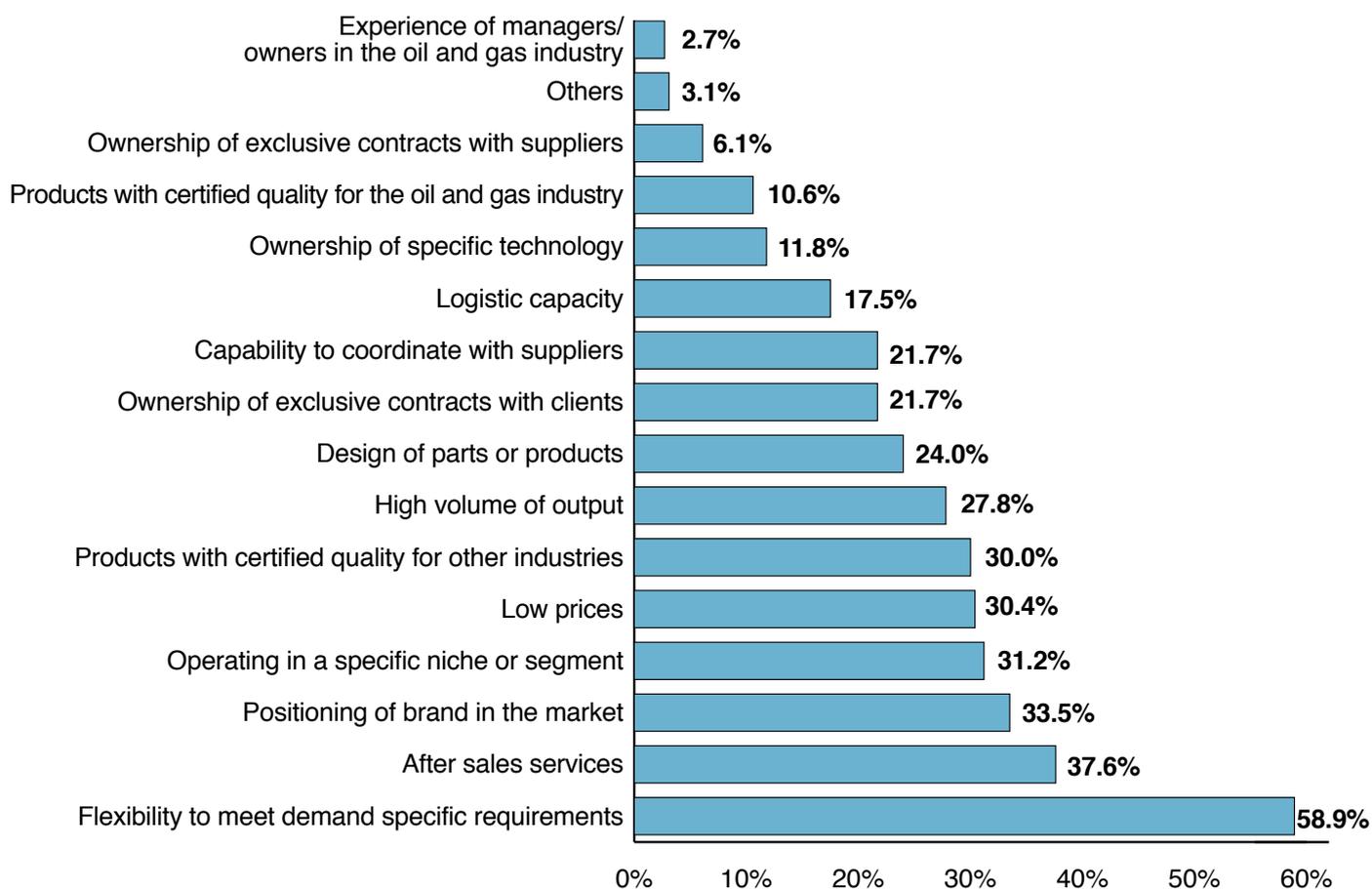
**Figure 55.** External factors affecting the firm's performance.

Source: KAPSARC.

**Table 3.** Functional challenges faced by firms.

	Market	Production	Finance
1	Price (44.5%)	Acquisition of technology (171.9%)	Customers' payment policies (48.7%)
2	Information on demand (29.7%)	Specification of products (30.8%)	Expensive working capital (48.3%)

Source: KAPSARC.



**Figure 56.** Firm strengths.

Source: KAPSARC.

The first five strengths relate to market issues, with ‘flexibility to meet demand-specific requirements’ as the first choice with almost 60 percent of the cases, followed by ‘after sales service’ with around 38 percent. The main strategies of the firms, as shown in Figure 57, highlight diversification with ‘entering new markets’ at 60 percent and ‘introducing new products’ at 55 percent of cases.

These results are encouraging for the firms and by extension to the entire economy. ‘Licensing from other firms,’ a common channel for technology transfer, is not considered an important strategy nor is the ‘substitution of imports,’ which can also be a way to increase local value-added products. Consequently, it could be important for policymakers to investigate these aspects further since for developing countries these are two

important options when designing industrial policies. Interestingly, laying off staff is not considered an important strategy for the firms.

## Financial performance

In assessing the firms’ financial performance, we focused on basic aspects that may be thresholds for potential future suppliers. Oil and gas companies usually assess the financial positions of their suppliers and require some basic financial security when developing local suppliers for their operations.

The first point to assess is the level of financial formality within the firms through two dimensions: use of bank accounts and externally audited financial statements.

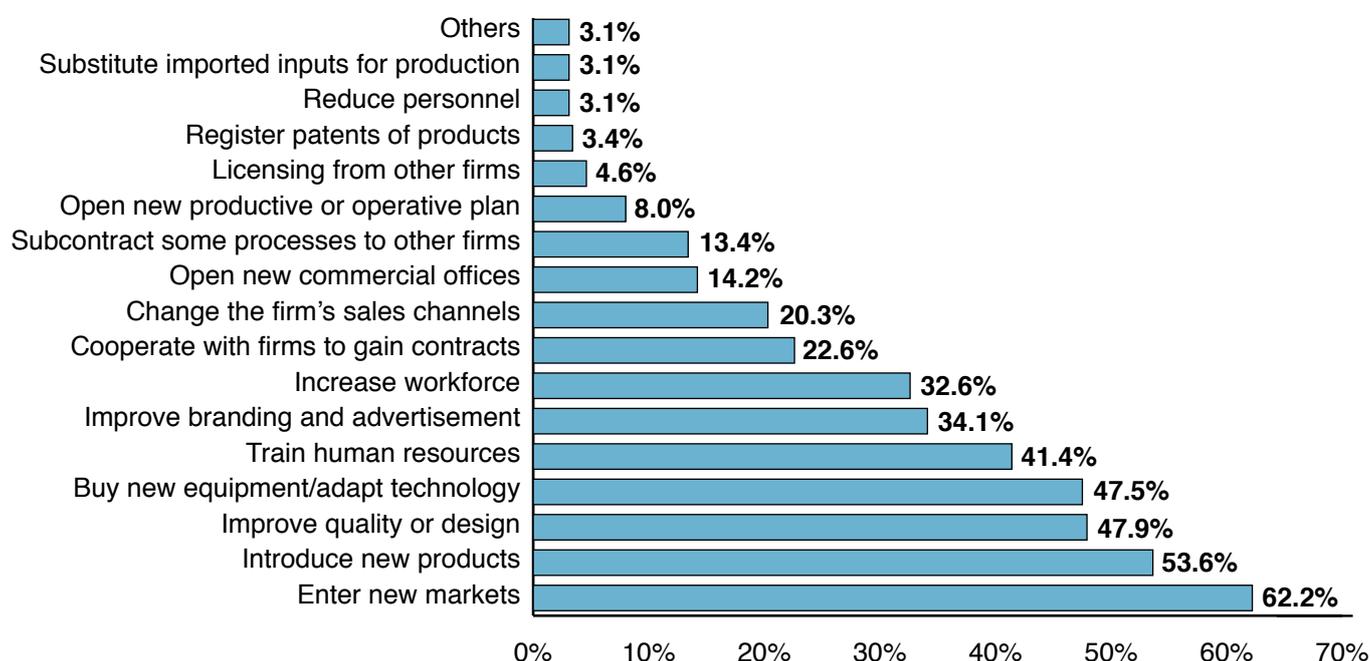


Figure 57. Firm strategies.

Source: KAPSARC.

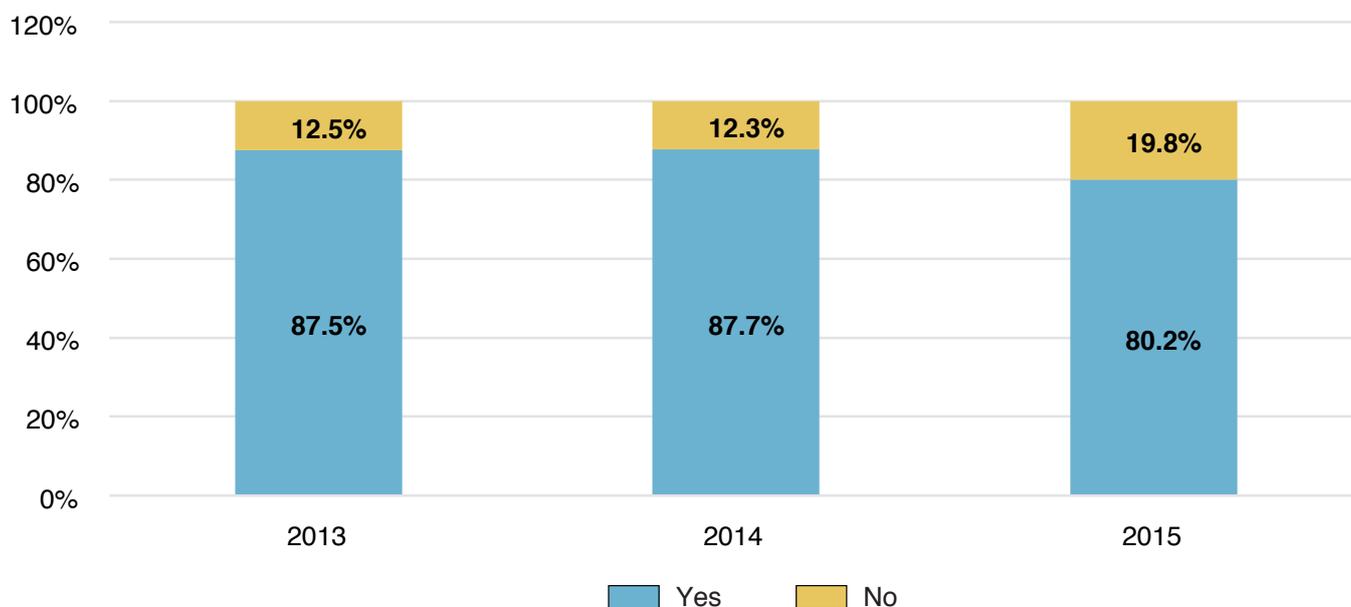
The vast majority of firms surveyed indicated that they operate through bank accounts, making up 98 percent of the sample. Most firms also stated that they had their last three financial statements certified by an external auditor. Figure 58 shows that in 2013 and 2014 the percentage of firms with certified financial statements is almost 88 percent. In 2015 we observed a drop of around 7 percent of firms with financial statements certified. However, the survey started in April 2016, and some firms may not have had their financial statements certified yet, therefore, we would expect about the same percentage for 2015 as in previous years. These results are promising for the formulation of local content policies because firms that already have some basic financial management controls would not expend additional resources on this, and would instead invest in technical assistance and promotion of activities related to oil and gas operations.

Next, we provide some insight on how the firms finance their operations. Almost three-quarters of

the firms finance their working capital with internal funds and only 12 percent use bank loans. This aspect may constitute a financial restriction to the development of the firms. Other mechanisms such as advances from customers are poorly developed in Uganda (Figure 59).

Figure 60 below shows how working capital is financed by internal funds according to the size of firms measured in terms of sales.

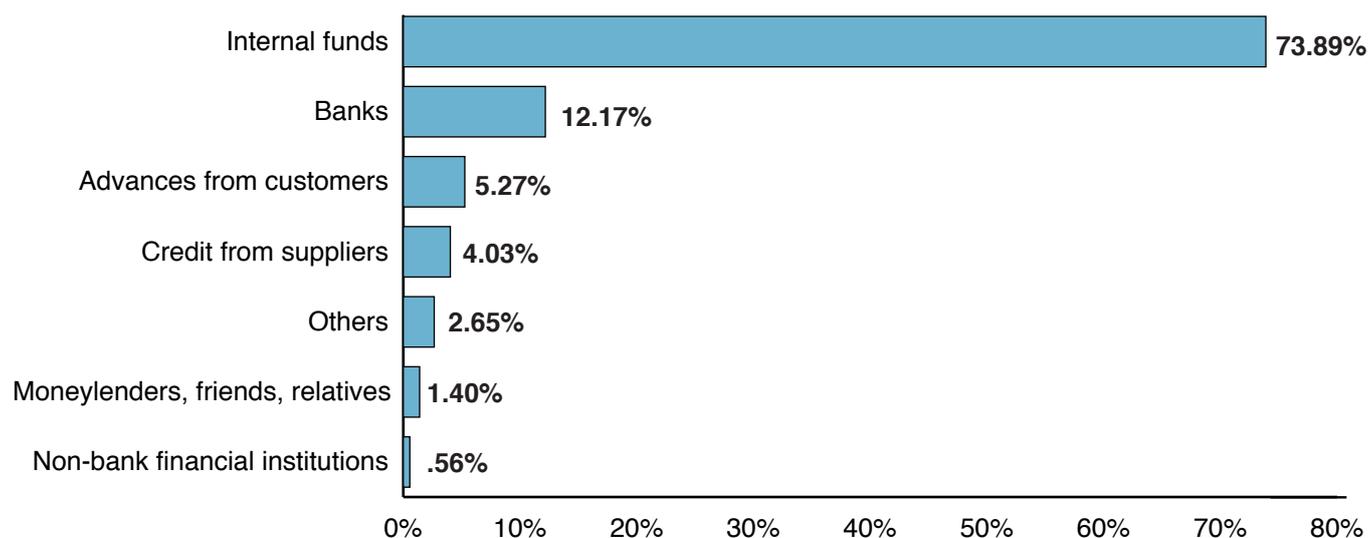
Most of the working capital is financed by internal funds in all the firms regardless of their size. For example, 73.7 percent of firms with sales of up to \$40,000 finance between 71-100 percent of their working capital with internal funds, and 69.4 percent of firms with sales between \$40,001 and \$112,500 finance between 71-100 percent of their working capital with internal funds. In the next four categories, the percentage of firms that finance 71-100 percent of their working capital is relatively constant at between 55 percent and 59 percent. For



**Figure 58.** Percentage of firms with audited financial statements.

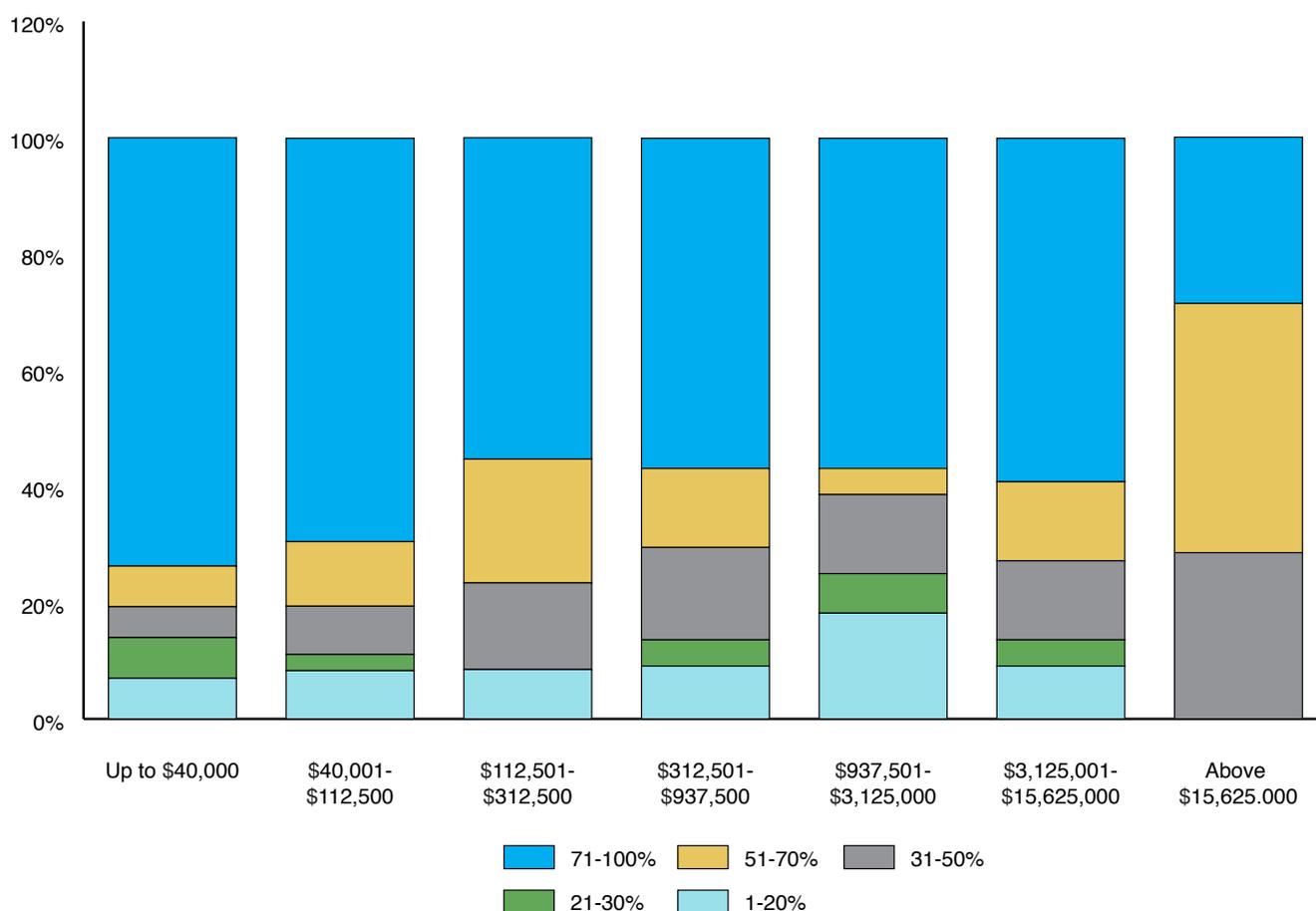
Source: KAPSARC.

## Business Environment, Strategies and Financial Performance



**Figure 59.** Financing of working capital, 2015.

Source: KAPSARC.



**Figure 60.** Internal funding percentage of working capital by sales.

Source: KAPSARC.

the largest firms in the sample, with sales above \$15.625 million, the percentage of firms that finance 71-100 percent of their working capital with internal funds drops to 28.6 percent. However, if we consider the firms that finance above 50 percent of their working capital with internal funds, the percentage of very large firms increases to 71.5 percent. Therefore, internal funds are the most frequent mechanism to finance working capital regardless of firm size.

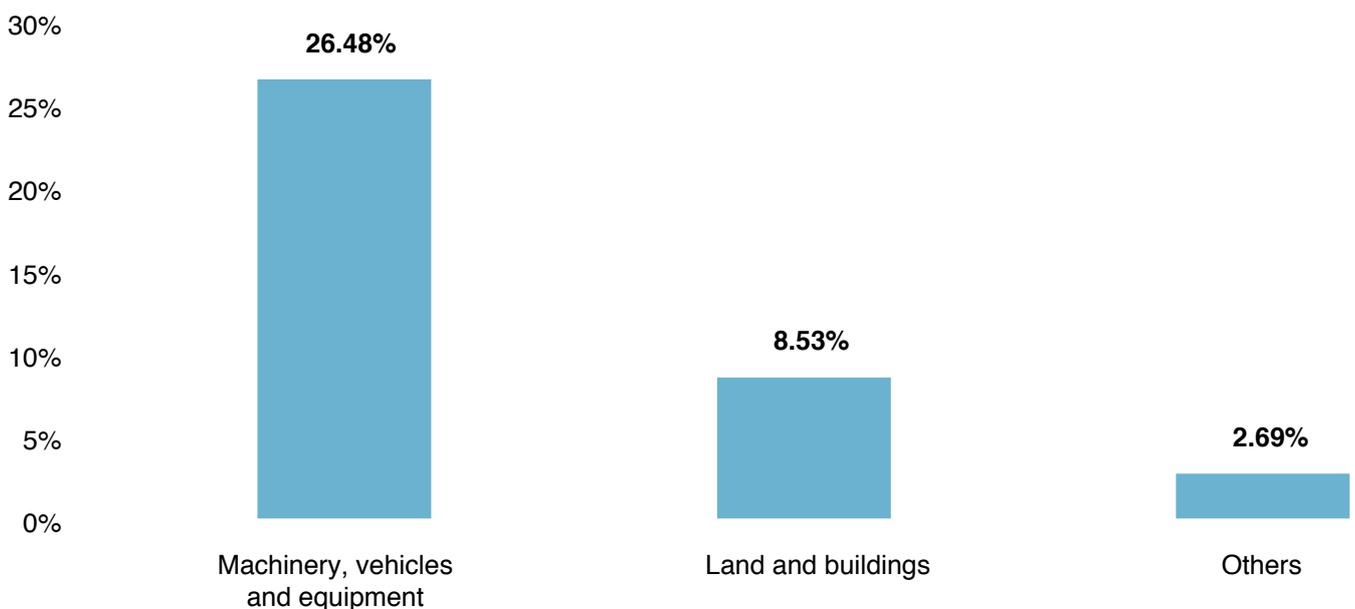
Three-quarters of firms indicated that they invested in fixed assets during 2015. Figure 61 shows the distribution of investments in fixed assets. Investments in ‘machinery, vehicles and equipment’ were seen in 27 percent of firms as the most significant category. Investments in ‘land and buildings’ were also relevant with almost 9 percent of the expenditures in 2015.

Figure 62 displays how fixed assets were financed. We can see that ‘internal funds’ is, by far, the most

important mechanism by which firms finance their fixed assets. On average, almost 80 percent of the fixed assets were financed by internal funds, even more than the percentage that financed working capital internally. Bank financing follows with 12 percent of firms. This illustrates a further restriction to boosting economic growth. In the context of a developing economy, the weak interaction between the financial and productive sectors is a constraint that hinders economic growth.

To complement the analysis on finance, we focus on bank loans applied by the firms. In 2015, 34 percent of firms applied for loans and 95 percent indicated that the loans were granted.

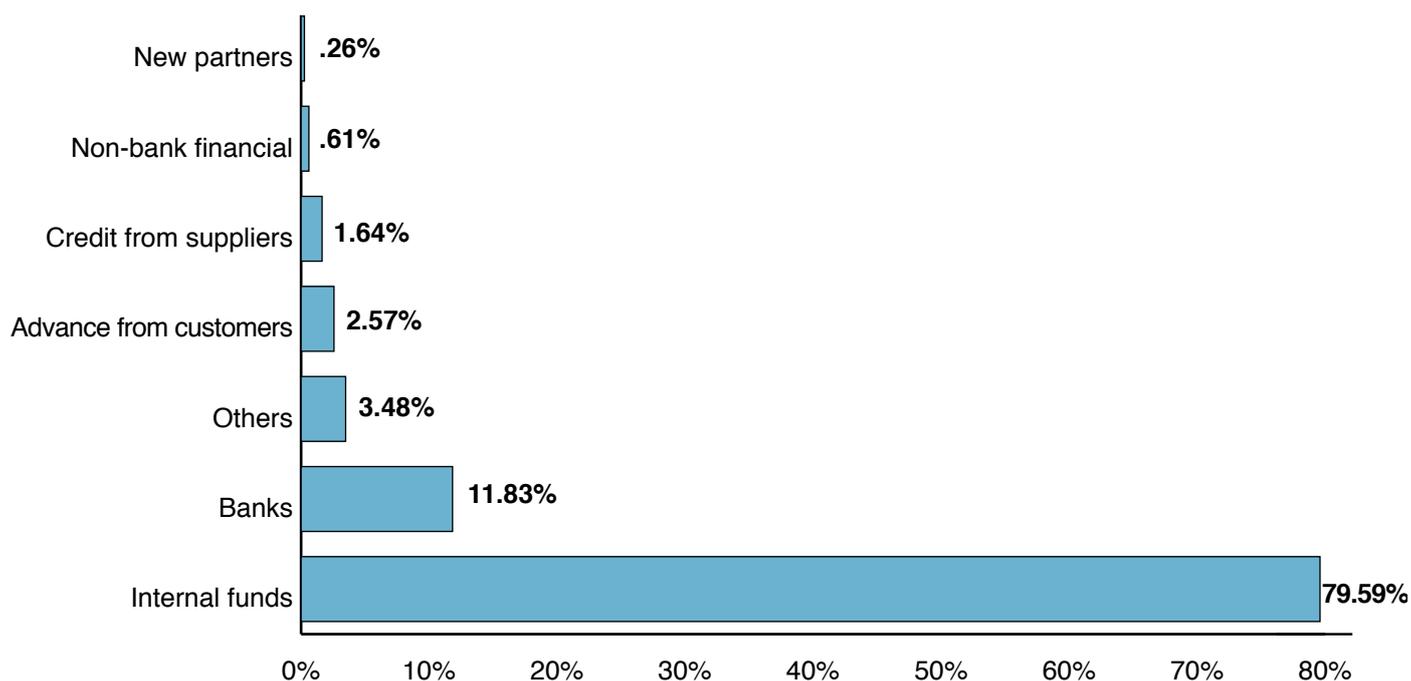
Finally, in Figure 63 below we can observe that the percentage of firms that applied for loans increases with the size of their sales in the first three categories. After this it is roughly stable at around 35-45 percent for the firms with larger sales.



**Figure 61.** Total average percent spent in fixed assets as a percentage of total expenditure, 2015.

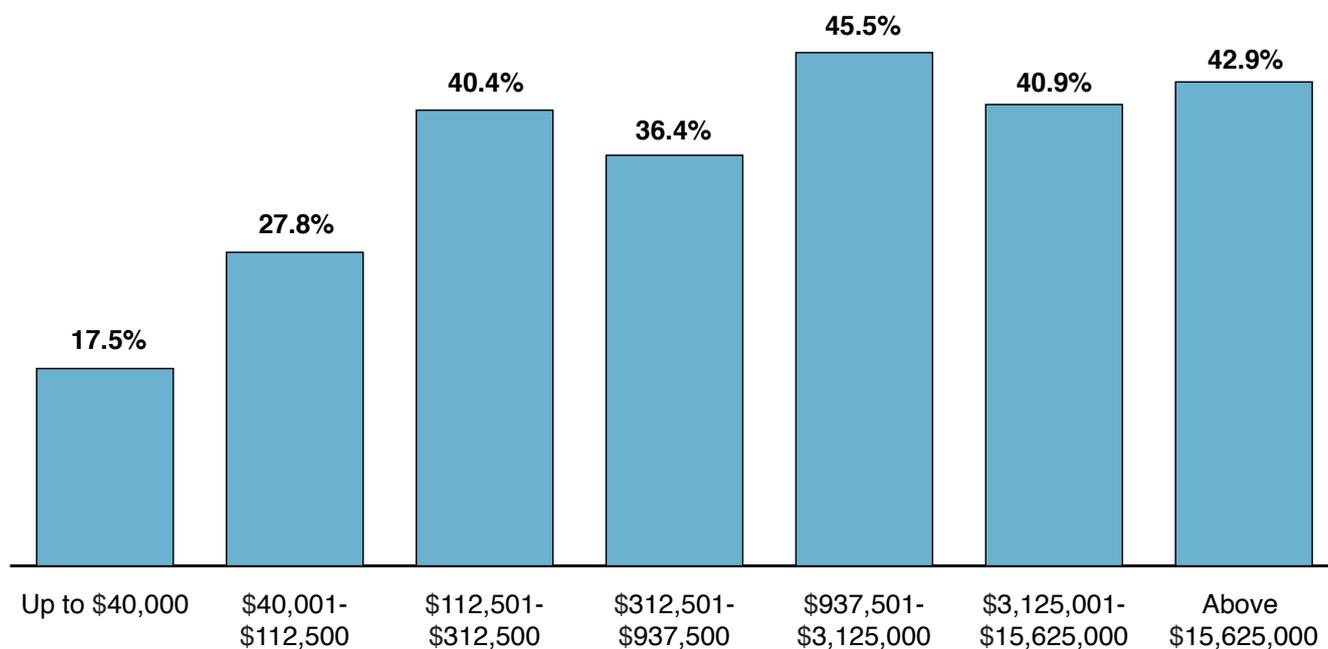
Source: KAPSARC.

## Business Environment, Strategies and Financial Performance



**Figure 62.** Financing of fixed assets, 2015.

Source: KAPSARC.



**Figure 63.** Distribution of firms applying for loans by sales, 2015.

Source: KAPSARC.

# Conclusions

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In this paper, we examined the different aggregated dimensions of the firms surveyed and provided a descriptive analysis of the general statistical results. Oil and gas companies procure a diverse list of products along their value chain, and this includes industry-related products for their operations and general products not directly related to their specialized activities.

Ugandan firms have an opportunity to leverage the investments of oil and gas companies, and increase their sales and employment. An entrepreneurial inclination together with significant absorptive and innovative capacity is an intangible asset that can be further encouraged by local content policies. The insufficient use of quality, environmental and health and safety standards is a pitfall for engaging in the most value-added sectors of the oil industry. Training, technical assistance and mentoring would help enormously in overcoming these obstacles for many firms. Therefore, it would be important to address this issue with appropriate policies.

An important feature to note is that all firms are incorporated, and almost all have a high degree of financial formality. However, a high degree of financial formality does not mean sound financial management. The fact that most of the firms finance their working capital and fixed asset purchases with internal funds presents a restriction on development, especially within the context of a growing economy. Further research could address the obstacles that prevent better interaction between the productive and financial sectors. Thus, it would be desirable that local content policies consider these financial aspects.

The survey also shows that technology transfers are important for Ugandan firms. Licensing, especially from foreign firms, is a barely used channel for technology transfer. The substitution of imports, which helps achieve high degrees of complexity by increasing the skills of the workforce, is also underutilized. The low linkage between firms and universities or research institutes is another issue that can be addressed to increase knowledge and innovation sharing.

Another interaction that has a low degree of involvement is between MNCs and large national companies with local firms. Other than a relationship based on price, there appears to be little connection between these entities. Therefore, training programs conducted by large firms for their MSME suppliers or for their MSME clients could be stimulated by appropriate policies. Overall, firms in Uganda appear to have the proper foundation to start a fast learning process if appropriate local content policies are put in place. However, infrastructure constraints, which are common to African nations, are a restricting factor to growth.

Local content policies are a vital part of a country's industrial development strategy. The more aligned a local content policy is with wider industrial development initiatives, the better its chances of success. The crucial factor is to design local content policies based on existing capabilities of local firms and what goals can be achieved under different planning horizons. Knowing their capabilities, strengths, weakness, constraints and the context under which they operate can result in the formulation of more appropriate policies for the local market. KAPSARC's work in Uganda is intended to contribute toward this endeavor.

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# Appendix: Sample Design

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The survey was designed to target firms that employ a minimum of 10 people. These constitute more than 90 percent of total employment in the sectors of interest.

Though the Uganda Bureau of Statistics (UBoS) Business Register consists of many businesses grouped by International Classification of Industry (ISIC) rev. IV, the survey only covered businesses assumed to be engaged in oil and gas related activities. The sectors were provided by KAPSARC technical staff and included 10 economic sectors: manufacturing; professional, scientific and other technical activities; accommodation and food services; construction; transportation and storage; water supply, sewage, waste management and remediation activities; electricity, gas, steam and air conditioning; and financial services.

To ensure a statistically acceptable sample, a group of 263 firms were surveyed. To account for non-response, a larger sample of firms was randomly drawn from a population of 1,908 businesses. About 10 percent of the firms selected did not agree to participate in the survey.

Though the survey was intended to generate estimates at the national level, there was a need to ensure that all sectors were represented in the sample. Therefore, the sample was not purely proportional to size i.e., under proportional allocation; the larger a sector, the larger their share of the sample will be. Although proportional

allocation is the most efficient allocation for national level estimates, the estimates for smaller sectors would be missed out completely. Therefore, the survey used a compromise allocation (power allocation with  $\lambda = 0.4$ ) for allocating the sample. The survey used 'power allocation' discussed by Bankier (1988) under which the sample is allocated proportionally to  $\chi \lambda$ , where  $\chi$  is the measure of size and the parameter  $\lambda$  can take values between zero and 1. Before the sampling was completed, EPRC carried out a validation exercise to ascertain the existence, location, economic activity and contact persons of the firms. This was intended to ensure that the sampling procedure generated a list of firms that were already in existence with operations in the desired ISIC classifications.

The following procedure was used to select the firms, i.e., the two largest firms in each stratum, which employ 50 or more people, were sampled with probability 1. This was intended to improve the sampling efficiency for large firms and ensure that firms which contribute the largest value-added were not missed. The remaining firms were allocated randomly with a power of 0.4.

The largest two firms in each stratum (ISIC classification) were selected into a separate file. There was a total of 41 of these certainty firms. The remaining (non-certainty) stratum was sorted by sampling stratum, ISIC code, region and district to provide implicit stratification by individual activity and geography.

# Notes

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## About the Project

### Natural Resource-led Development in New Producing Countries

Our project seeks to understand how natural resource extraction can drive inclusive economic growth in new producing countries. We are engaged in a multiyear, multidisciplinary study with four objectives:

- Understand the human geography of new producing countries.
- Assess the magnitude of new discoveries and estimate direct fiscal impact.
- Understand how industry can be localized to create economic growth.
- Estimate spillovers and welfare impacts to society.

We recognize that policymaking in new producing countries is a complex process, and our project also seeks to understand the interactions of actors' interests that drive energy sector policies.

Our initial focus is on four countries – Kenya, Mozambique, Tanzania and Uganda – that expect to develop significant oil and gas reserves in the next 5-7 years. Through natural resource development, these countries hope to achieve middle-income economic status by 2030-2040. This project is conducted through close collaboration with leading think tanks and NGOs in Africa.



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