



NO. 2, 2012

STIPRO Policy Brief

Science, Technology and Innovation Policy Research Organisation

DISTANT NEIGHBOURS 2

Foreign Direct Investment (FDI) and local technological capabilities in the manufacturing sector in Tanzania.

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Introduction

Foreign Direct Investment (FDI) has been identified as a key factor in the economic development of host countries. Among other reasons, they are a channel for international diffusion of technological, organizational and managerial practices thereby building the technological capabilities of local companies. This should, in the long run, lead to higher technological capabilities, and innovation. FDI is thus an important channel for integration of underdeveloped countries into the globalization process, as shown by late entrants into globalised systems such as Malaysia, Mexico and Costa Rica. However, although Multi-national Enterprises (MNEs) have proved instrumental in building local technological capacities in other countries, very little is known about their impact on local technological capabilities here in Tanzania. The few studies that exist look more at intra-firm technology transfer through acquisition of parastatal companies¹ by MNEs in which technology transfer includes upgrading of production and marketing processes at the acquired firms as a result of the greater technological strengths that

¹ The concepts Companies, Enterprises, and Firms are used interchangeably.

The Science, Technology and Innovation Policy Research Organisation (STIPRO) (formerly ATPS-Tanzania) is an NGO engaged in policy research in science, technology and innovation (STI) in Tanzania with a view to contributing to the resolution of contemporary issues in STI for the purpose of informing STI policies in the country. Under the current organizational structure STIPRO acts as a think tank for the network of other individuals and organisations interested in STI policy issues in the country.

In 2010-2011, STIPRO carried out a study on the impact of foreign direct investment (FDI) on local technological capabilities in the Manufacturing Sector in Tanzania. 139 firms were randomly selected from Dar es Salaam, Arusha, Morogoro, Kilimanjaro and Tanga regions and both qualitative and quantitative methodologies were used to consider whether and how knowledge spillovers occurred as a result of FDI. The study also sought to understand the motives behind multinational enterprises (MNE) locating their business in Tanzania as these motives were considered to be important in promoting knowledge exchange between MNEs and local firms

foreign investors

potentially bring in. However, in relation to local firms, the questions that need to be answered are:

- To what extent is FDI contributing to technological capabilities of local firms
- Is Tanzania attracting the right kind of FDI to promote technological capabilities?
- What policy steps need to be taken to ensure that FDI gives the maximum benefit to Tanzania's technological development?

Technological capability is the ability to make effective use of technological knowledge through assimilating and using new technologies, adapting or changing existing technologies and generating new technology. In brief therefore, technological capability can be defined as the ability to innovate at different levels.

Technological capability is categorized at three levels, basic, intermediate and advanced and refers to both product and process technologies.

a) Basic:

Product: introduction of minor adaptations to product technology, quality control and maintenance of standards and modification of designs.

Process: minor adaptations of process technology, maintenance of machinery and equipment, introduction of planning and control of production and improved efficiency.

Are our policies attracting the most appropriate and beneficial MNEs?

b) Intermediate:

Product: introduce new designs and improve product quality.

Process: manufacture of components, introduction of automation and selection of technology.

c) Advanced:

Product: research and development into production of new products or components.

Process: introduction of major improvements to machinery, development of new equipment and production process, introduction of radical innovations.

FDI is believed to be the easiest way to build local technological capabilities in developing countries through transfer of technological, organizational and managerial practices. Experience elsewhere has indicated that it is easier for developing countries to attract and build on FDI than to develop local capabilities independently.

However, the positive impact of FDI is not automatic and depends largely on the motives for FDI. Additionally, FDI may result in negative spillovers if indigenous firms have to close down, as they cannot compete in upgrading their technologies. Furthermore, no spillovers may occur if there are institutional obstacles, or the difference in technological

capabilities is very small, or local firms have insufficient absorptive capacity. Strengthening the positive impact of FDIs on local technological capability through policies therefore requires in-depth knowledge of local conditions.

Channels through which FDI can help develop technological capabilities of local firms
FDI enable technology transfer and associated innovation/technological capability building either directly through linkage or indirectly through spillovers².

Vertical linkage with buyers and suppliers

MNEs may benefit the host country through backward and forward linkages.

a) Backward linkages are relations with suppliers of parts, components, materials and services. The effect of such linkages on local companies depends on the quantity and quality of inputs supplied and the willingness of MNEs to transfer knowledge and build a long-term relationship with local companies³. MNEs can also help to raise the productivity of their suppliers through providing technical assistance or information to raise the quality of the products or to facilitate innovations. Many MNEs train their local suppliers given the importance of quality if exporting to world markets⁴. However, on the negative side, if suppliers are forced to meet higher standards of quality, reliability and frequency and speed of delivery required by the MNE without any training or assistance, this could lead to them failing to meet the necessary requirements, could cause them to failures and job losses.

MNEs can also contribute through assisting suppliers in purchasing raw materials and intermediary goods, setting up production facilities and diversifying (through finding additional customers), as well as providing training in management and organisation.

b) Forward linkages refer to relations with buyers – either consumers or other firms using the MNEs intermediate products in their own processes. Downstream firms in particular can use higher quality and/or lower priced intermediate goods in their own processes which then benefit consumers through cheaper final products.

However, such linkages are not automatic. They depend on the size of the host market and existing technological capabilities of local suppliers, as well as the quality of local intermediate goods which encourage MNEs to use them. Government can also promote linkage creation through policies requiring a minimum of local content.

Horizontal linkages through demonstration and competition

Horizontal linkages refer to the diffusion of technology to competitors of the MNE affiliates, through demonstration or competition. The demonstration effect occurs when local companies see the superior technology of the MNE and therefore update their own⁵, or imitate new technologies used by the MNE. Since most developing countries, are not well integrated into the world economy, technology transfer through demonstration effect is extremely difficult without MNEs operating in their own countries.

Are our policies creating the right linkages?

Demonstration and competition effects reinforce one another. The entry of an MNE encourages local firms to upgrade their technologies leading to further competition and an even faster rate of adaptation of the new technology⁶. The greater the competition, the more the MNE will then have to bring in new technology to retain their competitive advantage, leading to greater potential spillovers⁷. If however, local firms are not developed enough to compete, the superior technology of the MNEs can crowd them out.

Labour migration

Technology may also be transferred through workers employed by MNE affiliates acquiring knowledge of its technology and management practices, after which they move to local firms or set up their own firms.

Survey findings

Characteristics of Surveyed firms

- 72% were local private firms and 19% were private MNEs. The rest (3% each) were state run enterprises, local joint ventures between government and private and joint ventures with MNEs
- The vast majority were set up in the last 20 years after the economy was liberalised
- The highest number were involved in food, beverages and tobacco (32.4%), followed by basic metals and metal products (15.8%) and textiles and leather (14.4%)
- The majority (more than 50%) could be classified as small enterprises (between 5 and 49 employees) followed by medium enterprises (18%). Only 15% employed more than 100 employees

1. Why MNEs come to Tanzania

The major part of FDI goes to the setting up of new firms

Most of the companies (70.4%) were newly established firms (Greenfield). Only 8 (29.6%) entered Tanzania through Merger and Acquisition. This is important for employment generation and linkage formation.

MNEs come in search of markets and cheap labour

17 Out of the 25 firms that responded to the question on motives (68%) came in search of markets, while 8 (32%) were motivated more by cheaper labour costs. Manufacturing in country is the cheapest method of market access and the larger the market the better. For this reason, one expects to see more market-seeking MNEs locating in Tanzania due to market expansion as a result of the establishment of the East African Community (EAC) Common Market in 2010 which has led to the removal of tariffs within the region and the imposition of common external tariffs for goods and services from outside the block.

Tanzania is in danger of losing out to other member states of the EAC as a location for market seeking MNEs unless it markedly improves its production environment to become more competitive. MNEs need adaptable labour skills, effective supplier networks and business services and flexible institutions

However, MNEs wishing to access the East African market can locate in any of the five member states of Tanzania, Uganda, Kenya, Rwanda and Burundi. Thus, the key issue is the nature of the investment climate in each of these countries, especially those aspects that improve efficiency and competitiveness of production. Such a competitive production environment requires adaptable labour skills, sophisticated supplier networks, efficient business services, and flexible institutions). The study shows that such factors are in short supply in Tanzania. Therefore, Tanzania is in danger of losing out as market seeking MNEs will locate in other member states and access Tanzanian markets from there.

2. Impact of MNEs on technological development of local firms

Linkages between MNEs and Local Firms are tenuous.

Most local firms (74.1%) source their material inputs from other local firms, while 37.4% import them. Only 14.3% source them from MNEs. Thus, local firms have very limited backward linkages with MNEs. MNEs sourced more than half of their inputs from local firms but relied more on imports (75%) for these inputs.

However, the fact that more than half of MNEs bought their material inputs from local sources, imply that there are prospects for MNE to source a good part of their inputs from local sources, especially if the quality of inputs is raised. Quality is the driving force for technology transfers through backward linkages⁸. MNEs can also contribute towards upgrading of technological capabilities of local firms by providing technical assistance or information to raise the quality of the suppliers' products. When foreign affiliates want to export the products they produce, they will have to meet the quality standards of world markets. In this case, the suppliers' intermediate products will have to be of high quality as well. MNEs can be encouraged to train local suppliers through incentives or a regulatory framework that prevents/discourages MNEs from importing the inputs. In terms of forward linkages, FDI's are more connected to the local firms than other

FDIs, where about 50% of FDI actually sell their products to local firms as against 12.5% who sell to other FDIs in the country. More linkages are created when the production process of the MNEs uses intermediate goods intensively. The Government can promote linkage creation through different policies, including ensuring that there is some minimum local content.

There is no appreciable difference between the technological capabilities of local firms and those of MNEs in Tanzania. The study indicate that an appreciable proportion of the sample firms have acquired some technological capabilities, though mainly at a basic level. There was little difference between local firms and MNEs, except in two areas:

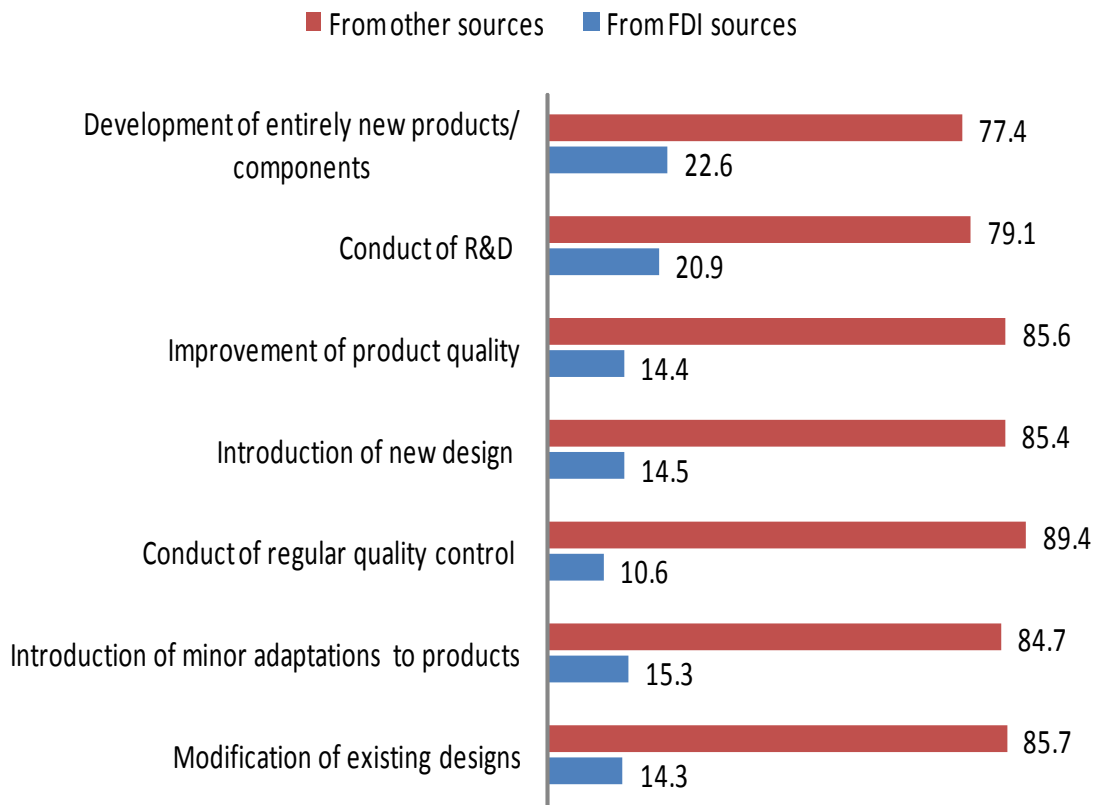
- a) At the basic level, 81% of MNEs conducted regular quality control as opposed to 64.2% of local firms.
- b) At the advanced level, 44.4% of MNEs were involved in Research and Development (R&D) compared to only 27.6% of local firms.

However, the actual number of firms involved in R&D is probably much smaller, as shown by a follow up of four firms (2 MNE and 2 local privately owned) randomly selected from those which indicated they performed R&D activities. None of the firms:

- had an R&D department, or R&D personnel
- had an annual budget for R&D. Their R&D consisted of testing their products, in line with what is required by the Tanzania Bureau of Standards (TBS) which is a very important partner in innovativeness of firms in the metalworking and engineering sub-sector of Tanzania, through the setting of standards⁹.

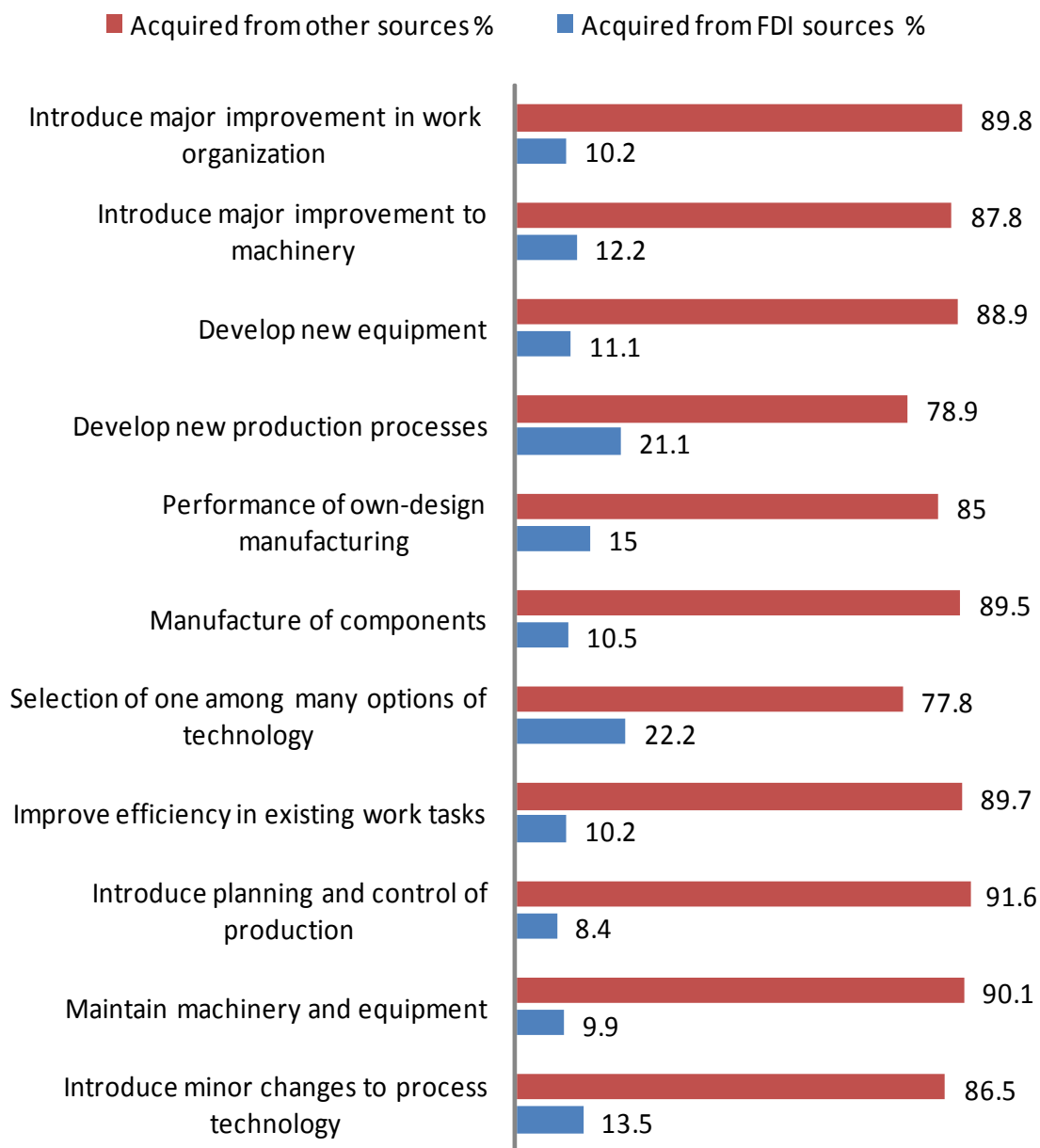
Even if MNEs have advanced technological capabilities, they may not necessarily bring these to the host countries. This depends, among other things, on relative price factors, the intensity of competition in the host country market, industrial requirements and the final customers. Given the current state of the Tanzanian economy, all these factors are unfavourable. However, in the right circumstances, it is beneficial to have MNEs with technological capabilities that are not too distant, neither too close to those of local firms. The major challenge is how to pull up local technological capabilities to be able to attract relatively high tech MNEs.

Chart One: Source of innovative product activities of local firms



To gauge to what extent MNEs, regardless of their level of technological capabilities, have contributed to local capability building, the study probed for sources of knowledge for innovative activities identified, comparing MNEs with other sources.

Chart Two: Source of innovative process activities of local firms



As the two charts show, MNEs have contributed little to the technological capabilities of Tanzanian firms. Only about 16% of local firms acquired product technological capabilities from MNEs, while about 84% acquired them from other sources. Similarly, only about 13% of local firms acquired process technological capabilities from MNEs.

Thus, local firms overwhelmingly learn from other sources. These include suppliers of equipment, (57%), fairs and exhibitions (49%), buyers (46%), Chambers of Commerce and Industry Associations (43%) and fellow firms (competitors) (39%). Other less mentioned actors include R&D organisations and universities.

Local constraints hinder linkages and knowledge exchange between MNEs and local firms

According to respondents, one way of knowing and linking to each other (MNEs and local firms) is through participation in market events such as fairs and exhibitions as well as business forums. These bring together actors from the supply and demand sides of an industry at a single location and for a limited period. Such events give participants comprehensive market information and serve as a platform for business contacts.

The constraints on the surveyed firms in taking part in such events include inadequate financial resources to attend the fairs and exhibitions; inadequate presence of MNEs in some locations; poor infrastructure that hinders firms in operating in some areas in the country; unavailability of and access to ICT facilities by firms that would otherwise help local firms to get awareness of business details and exposure to local and world markets. Most local firms lacked facilities to provide their profile and avail themselves of the online opportunities to be connected to FDI.

Conclusion

In other countries, MNEs have been important channels for international diffusion of knowledge and technology and are regarded as one of the driving forces integrating underdeveloped countries into the globalization process that has characterized the world economy over the past decades.

Unfortunately, with regard to such diffusion of knowledge and technology, Tanzania has hardly benefitted at all.

- a) Most of the manufacturing MNEs in Tanzania are market seeking. Tanzania's ability to attract more such MNEs within the East African Common Market will depend largely on the efficiency of its production environment. In addition, continuing globalisation has led to lowering of tariffs world-wide and therefore less motivation to set up local branches of MNEs. Thus there will be a shift from market-seeking to efficiency-seeking MNEs. Tanzania will only benefit if it improves its environment for efficient production.
- b) The contribution of MNEs to local technological capability in the manufacturing sector in Tanzania is minimal. The main reason for this is that Tanzania has not been able to attract MNEs of sufficient quality, most of whom have only basic technological capabilities, and there is negligible technological distance between them and local firms. For local firms to benefit from MNEs technologically there has to be an appreciable technological distance between them and the MNEs. Other

reasons however, could also be attributed to limited linkages between foreign firms and local ones and the concentration of FDIs in a few locations thereby hindering technological capability spillovers through observation and demonstration effects.

Policy implications and recommendations

The major policy challenge is how to enable more local firms to enhance their innovation capabilities in order to be able to compete effectively in the global market, and how FDI can contribute to this process. Therefore:

- i) If Tanzania is to attract beneficial FDI, it has to concentrate on improving its production environment to become more competitive. This includes adaptable labour skills and effective supplier networks, infrastructure and services.
- ii) There is a need to attract MNEs that are engaged in relatively high tech sectors. This can be done through differentiated FDI incentives, including fiscal ones.
- iii) Linkages between FDIs and local firms need to be strengthened. For instance, a policy could be developed that requires MNEs to buy a certain percentage of local intermediate goods. Such a policy should go hand in hand with improvement of local supplies. MNEs should be encouraged to contribute to this upgrading through a regulatory framework that discourages/restricts MNEs from importing all their inputs.
- iv) There is also a need to coordinate information between suppliers of inputs and producers. Currently there is a serious information gap between suppliers and producers. MNEs may not know that good local supplies are available and local suppliers may not be aware of the specific needs of MNEs.
- v) Various fiscal and infrastructural incentives should be set up to attract MNEs to locate in parts of the country that are neglected thereby increasing possibilities of spreading technological capabilities across the country.

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