SOURCES AND CONSTRAINTS TO TECHNOLOGICAL INNOVATION IN TANZANIA: A CASE STUDY OF THE WOOD FURNITURE INDUSTRY IN DAR ES SALAAM

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By

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A Dissertation Submitted in Partial Fulfillment of the Requirements for the Degree of Master of Arts (Development Studies) of the University of Dar es Salaam

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CERTIFICATION

The undersigned certifies that he has read and hereby recommends for acceptance by the University of Dar Es Salaam a dissertation entitled: ***Sources and Constraints to Technological Innovation in Tanzania: A Case Study of the Wood Furniture Industry in Dar es Salaam,*** in fulfillment of the requirements for the degree of Master of Arts in Development Studies of the University of Dar Es Salaam.

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Dr. Adalgot A. Komba

(Supervisor)

Date…….

DECLARATION

AND

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I, **Musambya Mutambala**, declare that this dissertation is my own original work and that it has not been presented and will not be presented to any other University for a similar or any other degree award.

Signature ……..……

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DEDICATION

To my wife Grace Neema Apendeki Msambya for her patience, and to our lovely son Gaston Mtambala Msambya who missed the fatherly affection throughout my studies.

ABSTRACT

The main purpose of this study was to investigate the sources and constraints to technological innovation among SMEs focussing on the wood furniture enterprises. The study was carried out in Ilala, Kinondoni and Temeke districts of Dar es Salaam region. A sample size of fifty-nine (59) respondents participated in this study. Fifty (50) of them consisted of owners of furniture enterprises, and nine (9) furniture users (customers). Both quantitative and qualitative methods of data collection and analysis were used, whereby questionnaires, unstructured interviews and observation were employed.

The study findings reveal that small entrepreneurs in furniture making have some capabilities of adopting innovation from outside their firms and make changes in-house. They reached an incremental innovation in making quality furniture, while adopting design and size of furniture. However, they seem to be less innovative in production techniques, work organization, and marketing strategies. To effect the changes, they rely on a number of sources such as customers, photographs, competitors, catalogues and brochures, and imported furniture. Ability to innovate is being constrained by various factors such as insufficient and outdated equipment, inadequate technical expertise, high cost of timber, and threat from imported furniture. Yet, others include shortages and inconsistency of orders from customers, and high cost of marketing strategies. All these factors are largely contributed by limited capital most small enterprises are faced with.

In order to respond effectively to these constraints to technological innovation and make the furniture industry more competitive, the government should facilitate small entrepreneurs to acquire various machines and technical expertise. In addition, the government should teach people to value locally made furniture so as to expand market for local enterprises.

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LIST OF ABBREVIATIONS AND ACRONYMS

BEST	Business Environment Strengthening for Tanzania
BET	Board of External Trade
BRELA	Business Registration and Licensing Agency
CAMARTEC	Centre for Agricultural Mechanisation and Rural Technology
CoET	College of Engineering and Technology
COSTECH	Tanzania Commission for Science and Technology
GDP	Gross Domestic Product
ICT	Information Communication and Technology
IP	Intellectual Property
ISOs	Industrial Support Organisations
MDF	Medium Density Fibreboard
MIT	Ministry of Industry and Trade
MSMEs	Micro, Small and Medium Enterprises
NGOs	Non-Governmental Organisations
OECD	Organisation for Economic Cooperation and Development
R&D	Research and Development
SIDO	Small Industries Development Organisation
SIDP	Sustainable Industrial Development Policy
SMEs	Small and Medium Enterprises
SPSS	Statistical Package for Social Sciences
TBS	Tanzania Bureau of Standards
TDTC	Technology Development and Transfer Centre
TIRDO	Tanzania Industrial Research Development Organisation
TRA	Tanzania Revenue Authority
UDEC	University of Dar es Salaam Entrepreneurship Centre
URT	United Republic of Tanzania
VETA	Vocational Education and Training Authority

CHAPTER ONE

INTRODUCTION

1.0 Background to the Problem

Small and Medium Enterprises (SMEs) are recognised as engines of economic growth worldwide. In developing countries, most particularly in Tanzania, SME sector plays a significant role of fostering the development of the country due to its contribution to economic growth and poverty alleviation. The share of the SME sector to the gross domestic products (GDP) is estimated at 35%, while contributing 20% of the total labour force in Tanzania (Mwamila & Temu, 2006:4). The sector is labour-intensive in nature and covers a wide range of enterprises dealing with a great variety of businesses that provide multiple jobs, a fact that makes them more geographically dispersed than large enterprises. The structure of SMEs sector in Tanzania is composed of several sub-sectors. Woodwork is the largest one constituting about 30% of SME activities, followed by metalwork with 23%. Food processing is the next in line at 18% followed closely by textile having 14%. All other sub-sectors (construction, shoe-making, pottery, handcrafts, fishing and fishing boat making) have a total share of 15% (Mwamila & Temu, ibid).

The dominance of the woodwork industry has thus been attributed to continued expansion of cities and towns that demand bigger supply of construction materials as well as furniture. SMEs provide basic goods and services, which are less costly and

hence responding to the needs of the local population. Due to their flexibility and bias in favour of domestic resource needs, they are easily accessible to local entrepreneurs and facilitate the development of indigenous technological capabilities (Bagachwa, 1983). They utilise and add value to local resources as innovation in their technology is easier to acquire, transfer and adopt even for people with limited education and training.

Access to innovation enhances SMEs sustainability and growth. For the technological innovation to take place, the fundamental factors are skills, exchange of knowledge and opportunities as part of interaction between businesses, research institutions and government agencies. Among enterprises, technological innovation is a continuous learning process done in different ways of adding to the stock of knowledge. The ways include research and development (R&D), learning-by-doing and learning-by-using. Small entrepreneurs lack intensive investment in R&D; their major sources of innovation derive mainly from inter-firm and user-producer interactions. From a theoretical perspective, three models explain the factors that facilitate technological innovation among enterprises. They are technology push, demand pull and interactive models. With technology push model, innovation is based on new technological possibilities such as R&D activities creating a host of product for the market. Discoveries in basic science eventually lead to technological development, which results in the flow of new products and processes to the market place (Malecki, 1991). On the other hand, demand-pull model puts emphasis on innovation to come from social needs and market requirements. The needs and requirements are influenced by increasing need

in consumption by the populations as well as mechanisms for the flow of goods and services. With interactive model, innovation is becoming a complex interaction between the supply and demand sides or technology push and the demand pull. The supply side includes R&D laboratories, scientific and technical institutions, while the demand side includes potential and actual users, and marketing organisations.

In Tanzania, there is both demand from an increasing population and trade in luxury goods. These factors motivate entrepreneurs to introduce or improve products and techniques in order to respond to an ever-increasing need of people. This motivation is moreover fuelled by the profit provided by the market economy policy, and trend such as greater competition, product commoditisation and technology transfer have also added to this importance.

To effect technological innovation, the main efforts are from within the enterprises, which engage in changes, most often, of different degrees such as adoption, incremental and radical innovation. Adoption of innovation implies imitation of transferred technology. With radical innovation, technology is completely new but realised within the same techno-economic paradigm, while incremental innovation consists of small modifications of existing technology, mostly achieved through learning-by-doing. According to Rosenberg (1982), cumulative effects of these small changes can be as large and bring productivity growth that major innovations are capable of generating. Components of technologies that are conceived as the main interactive variables, namely

knowledge, technique, organisation and products, are thus in focus when it comes, not only to analysing, but also to effect the changes.

Although the success in technological innovation is from within the enterprises, regulatory and institutional environment within which these enterprises operate is largely important. More often, government and non-governmental organisations help the SMEs to emerge, survive and grow. The economic efficiency and overall performance of the SMEs are considerably dependent upon macroeconomic policy environment and specific policies adopted for their benefit. Policies such as the 2002 SME Development Policy and Sustainable Industrial Development Policy aim at meeting the Tanzania Development Vision 2025 policy that seeks to transform the country from a low productivity agricultural economy to semi-industrialised one, led by modernised and highly productive agricultural activities. Through these policies, the government commits to facilitate acquisition and adaptation of technologies as well as enhance networking between R&D institutions and SMEs in a bid to upgrade technologies to raise the productivity and competitiveness of the sector. Adoption of the government policies has facilitated various institutions to establish programmes such as extension services, financial and physical support that aimed at promoting the SMEs sector.

However, although the SMEs sector is important to the socio-economic development of Tanzania, studies have revealed that it is largely informal and very much under-performing due to a multitude of constraints facing it. These include financial barriers whereby small entrepreneurs finance themselves out of their own funds and find it

difficult getting access to loan facilities from financial institutions (Kiraiya, 1996; Chao, 1988) they have poor management and labour techniques (Yoshida, 1980; Omari, 1976). More important, however, SMEs also lack innovative capabilities, which would promote competitiveness among themselves and with imported products.

1.1 Statement of the Problem

In Tanzania, the contribution of SMEs sector to economic growth is significant. However, studies reveal that there has not been much innovation in recent years (Aubert and Wanga, 2007:751). Inability to innovate is the hindering factor to the development and sustainability of enterprises in the sector. Studies have revealed that the sector is underperforming and there is lack of significant changes in the quality of products, production processes, work organisation and marketing of the products. As a result, there is low productivity and businesses in the sector fail to respond positively to intense competitiveness in the market and forced to close down shop. This study attempted to assess and show ways of strengthening ability of SMEs to innovate, identifying the sources of innovation and constraints faced in the innovative activities.

1.2 Research Objectives

This study aimed at investigating the sources and constraints to technological innovation in small enterprises in Tanzania focussing on the wood furniture industry.

Specifically:

1. To assess the degrees of innovativeness in SMEs

2. To examine the sources of information for technological innovation among SMEs
3. To identify the constraints to technological innovation among SMEs

1.3 Research Questions

This study was guided by the following questions:

a) To what extent are SMEs innovative?

b) What are the sources of information for innovative activities among SMEs?

c) What are the constraints SMEs face in innovativeness?

1.4 Significance of the Study

The study adds to what other previous studies have already done. It reveals the degree of innovativeness in furniture enterprises through assessing the sources and constraints to design, production, work organisation and marketing of furniture. In addition, it was to help small entrepreneurs, policy makers and other stakeholders design and set mechanisms that would facilitate acquisition of new technology for the development of this sector.

1.5 Conceptual Framework

This section deals with innovativeness, a manner in which it is generated and acquired. Much of the technological knowledge required by small and medium enterprises is incremental and could often be acquired through what Lall (1985) described as ‘elementary learning’. Innovation systems emphasise the importance of interactive

learning, acquired through flow of knowledge and information across enterprises together with the institutions and organisations that support them. This is critical to the process of bringing new products, processes and forms of organisations into economic use (Nelson & Winter, 1982; Lundvall, 1988). The nature of interaction is, however, complex and defined by the nature of knowledge exchange, and established a priori by the rules, the forces of history (path-dependence), and the capacity for action or inaction on the part of the actors involved (Oyeyinka, 2004). With regard to firm interaction with other actors, two sources to technological innovation, namely, endogenous and exogenous, are applicable. Endogenous source means that innovation starts from within the enterprise and exogenous source suggests that the source of innovation is external to the enterprise.

For an endogenous source, an enterprise is a learning organisation because it facilitates innovation to start from within it. Such enterprise is characterised by a certain level of technical and organisational knowledge base. Through the knowledge it accumulates, an enterprise continually transforms its knowledge assets to operate at higher orders of operations (Malerba, 1992; Lundvall *et al*., 2002). Within an enterprise, there are different modes of learning, and the widely known are learning-by-doing and learning-by-studying through R&D. Learning does not take place in a vacuum and enterprises do not innovate in isolation they rather innovate with the help from an exogenous source.

External actors with which enterprises interact are crucial to learning by the entrepreneurs. From this source, an enterprise sets a wide range of knowledge of sources that may be within its local and often outside the national boundary (Lundvall, 1988; Von Hippel, 1988). These sources are generally institutions and organisations, customers, sub-contractors, and suppliers from within or outside the national boundaries. They are dependent, conceptually and in practice on each other, hence being useful in upgrading technologies by providing training, standard, financial support, policy and political coordination. If external sources are relied upon, the successful integration of new ideas and techniques, demand an internal capability to assimilate external knowledge (Malecki, 1991:114).

The significance of this conceptual framework is to show how the knowledge of technological innovation can be acquired. It indicates that innovation within a firm is an interactive learning process following a flow of knowledge between firms through knowledge exchange, or a knowledge, which starts from within a firm itself. For wood furniture enterprises to be innovative, this framework provides guidance. They can, for instance, learn both from their experiences or acquire from external sources of knowledge and at the same time may face constraints throughout the learning process.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This section consists of other studies the researcher consulted in order to understand the problem under study. The aim was to get detailed knowledge of achievements that have already been done, and know the gaps as regard to the objectives of the study. The section covers general concepts, factors facilitating technological innovation, degrees of innovation and sources and constraints to technological innovation. It ends up by looking at the role of regulatory and institutional structure for the promotion of innovativeness in small enterprises in Tanzania.

2.1 Definition of Key Concepts

The aim of this section is to understand 'small and medium enterprises' in the Tanzanian settings as well as the concept of 'technological innovation'.

2.1.1 Small and Medium Enterprises in Tanzania

Generally, there is no universally accepted definition of small and medium enterprises. Different countries use various measures of size depending on their level of development. The commonly used criteria are total number of employees, total investment and sales turnover. In the context of Tanzania, SMEs nomenclature is sometimes referred to as micro, small and medium enterprises (MSMEs). The enterprises cover non-farm economic activities mainly manufacturing, mining,

commerce and services (URT, 2002). In terms of categorisation, micro enterprises are those engaging up to four people, in most cases family members or employing capital amounting up to Tshs 5 million. The majority of micro enterprises fall under the informal sector. Small enterprises are mostly formalised undertakings engaging between five and forty-nine employees or with capital investment from Tshs 5 million to Tshs 200 million. Medium enterprises employ between fifty and ninety-nine people or use capital investment from Tshs 200 million to Tshs 800 million. These categories of SMEs are summarised in the following table:

Table 2.1: **Table 2. 1: Categories of SMEs in Tanzania**

Categories	**Employees**	**Capital Investment in Machinery (Tshs)**
Micro enterprise	1-4	Up to 5 million
Small enterprise	5-49	Above 5 million to 200 million
Medium enterprise	50-99	Above 200 million to 800 million
Large enterprise	100+	Above 800 million

Source: 2002, SME Development Policy.

Following the categorisation above, the advantages in the innovation process appear to lie strongly on the side of large enterprises, which have the resources to afford both R&D and informal learning and to absorb the risks inherent in innovation (Ettlie & Rubenstein, 1987 cited in Malecki, 1991:159). Small firms, however, possess a natural flexibility and informality that can enhance innovation (Malecki, 1977). Before

understanding such flexibility in small firms, it is better to understand the meaning of technology, innovation and technological innovation and their importance for the growth of enterprises.

2.1.2 Technology

The concept 'technology' has been defined in various ways as it has found its way in every aspect of our life today. Technology is one of the means by which humankind reproduces and expands its living conditions (Müller, 2003). It is useful for improving quality, creation of new market and extension of the product range, reduced labour costs, improved production processes, reduced environmental damage, replacement of products and services, and reduced energy consumption. These contributions vary between improvements to products, processes, and services. Technology differs between disciplines and cultures. With regard to business enterprises, technology refers to the theoretical and practical knowledge, skills, and artefacts that can be used to develop products and services as well as their production and delivery systems. Technology is tools, devices and knowledge that mediate between inputs and outputs and/or that create products or services (Eris & Saatcioglu, 2006:3). Therefore, it can be referred to as a spectrum of things, rather than one thing. The technology spectrum has ideas at one end, design in the middle, and techniques and products at the end (Diyamett, 2007:3).

Explicitly, technology embraces a combination of four constituents that are conceived as its main interactive variables. First, constituent of technology is technique, which is a

special ability or way in which the basics of something are treated. It is a transformation and consumption process set in motion by physical labour. Müller (2003) argues that the structure of technique is made up of all the physical means of production or implements, hardware, involved in the process in question. To this structure come the raw materials, components and energy inputs that are transformed or consumed in the same process.

Second, is knowledge, which is a component or software structured according to the empirically acquired skills, tacit knowledge and intuition of the direct producers, and the scientific insight and creativity of the technology designers (Müller, 2003). An increasing portion of the software is being built into the hardware as embodied knowledge. According to Müller there is involvement of psychical labour processes and searching-learning processes, which include all kinds of information input processing.

Third, is work organisation, which consists of the internal division of labour and pattern of specialisation. It requires management and coordination and involves at the same time all kind of communication processes which can also be embodied in the implements (hard-ware) and/or knowledge (soft-ware) or disembodied, i.e. person bound (Müller, 2003). Fourth is product, which stands for the immediate result of the combination of all other components. It is anything that can be offered to a market for attention, acquisition, use, or consumption that might satisfy a need or want (Kottler, 1999). Thus, a product may be a physical good, retail store, person, organisation, place or idea, and its structure takes indefinitely different kinds of shapes. A product is an integral component

of technology, and there he gives three main arguments (Müller, 2003). First of all the product is not an end itself. The choice of product is often made before that leads to the combined choice of technique, knowledge and organisation. Chakrabarti (1988:47) asserts that new products may also indicate new process developments. In addition, the product, the result of a preceding production process, supposedly has a use-value that eventually enters a consumption process. Lastly, most products, including service products, are also commodities. Besides the use-value, the product carries exchange-value. This has become a dominating purpose of application of technology and it adds an economic-surplus-generation process to the process perspective of technology. According to Müller (2003:4), without a clear perception of the exchange-value attribute of the product, the specific formation of most technologies becomes incomprehensible.

2.1.3 Technological Innovation

Innovation is typically understood as the process of introducing something new and useful (Luecke & Kartz, 2003; Diyamett & Mabala, 2007). In arts, economics, business, sociology, engineering, technology, and government policy, something new must be substantially different be innovative, not an insignificant change. The goal of innovation is positive change, to make someone or something better. For instance, in economies, some of the innovations have become successful because of the way people look at things. Such change must increase value, customer value or producer value. Bail and Chakrabarti (1988:47) argue that innovation is considered as a major driver of the economy, especially when it leads to increasing productivity. Technological innovation

becomes the most important source of structural change in an economy, because it alerts the mix of products, industry and jobs, which make up an economy.

While innovation refers to the economic application of new ideas, technological innovation is described as a process, which transforms ideas into commerce (Subrahmanya, 2006:269; Diyamett & Mabala, 2007). Technological innovation refers to newly introduced technologies, whether in terms of skills, process or equipment. It is a successful creation, development, and marketing of new goods or successful application of new techniques or ways of working that improves the effectiveness of an individual and organisation (Archibugi *et al.,* (1994). Innovation creates commercially successful products, processes, or services that contribute to sustainable growth of organisation. At the origin of the technological innovation, processes are inventions or discoveries. The criteria for success regarding inventions are technical rather than commercial, and then technological innovation proceeds with the development of the invention and results in introduction of a new product, process, or service to the marketplace (Bail & Chakrabarti, 1988:47; Burgelman *et al*., 1996:3).

Technological innovation characterises as a change in technology manifest itself in the development of new products (Eris & Saatcioglu, 2006:3). From technological innovation, enterprises largely gain their competitive advantage and economic benefits. The role of technological innovation in this point is for business success and in many industries technological innovation is now the most important driver of competitive

success and the basis for development (Juma & Yee-Cheong, 2005:55; Schilling, 2005:1). Davila *et al.* (2006:6) add that enterprises cannot grow through cost reduction and reengineering alone, technological innovation is the key element in providing aggressive top-line growth and for increasing bottom-line results.

Technological innovation usually involves risk. Cooper and Schendel (1976:61) argue that technological innovation can create new industries and transform or destroy existing ones. Innovation typically not only adds value, it may also have a negative or destructive effect as new developments clear away or change old organisational forms and practices. Organisations that do not innovate effectively may be destroyed by those that do. With regard to that experience the four components of technology, namely, technique, knowledge, organisation, and product are inseparable and in focus when it comes to analysing, and effect technological innovation (Müller, 2003). In addition, of the four components, marketing innovation is of significance. Marketing innovation refers to the new knowledge embodied in distribution channels, products, applications, as well as customer expectations, preferences, and needs. It consists of creating a new customer base or developing a new market. The contribution of this study was to investigate innovation manifestation in an enterprise through changes in its product, process, knowledge, work organisation and marketing strategies.

2.2 Factors Facilitating Technological Innovation

Forces behind innovative activities are still debated topics among scholars of technological innovation. Three models, namely, technology push, demand-pull and interactive models, however, have described these activities.

2.2.1 The Technology Push Model

With regard to the technology push model, innovations are believed to be triggered because of basic research in science resulting into wide spread marketing of new products or widespread use of new processes (Diyamett, 2007:4). Diyamett adds that it is not always possible to attribute an innovation to specific demands, but demands have to be created after a new product has successfully been created. Innovation is necessary for developing market where demand is unknown. The role of the market here is a passive recipient of innovation, and there is linear progression from basic research to production and marketing and by implication to economic success. According to Diyamett and Mabala (2007), market plays a minimal role in the innovation process and only acts as a repository for R&D results, only entrepreneurs occupy a central position.

The model underlines the inventive genius of an entrepreneur who has been given a decisive role in the innovation process. Schumpeter (1934) asserts that the drive to innovate comes from the work of an entrepreneur who discovers, often in the existing pool of knowledge, commercially untried ideas, which he or she introduces into commercial life. An entrepreneur presses new products and processes technologies to

the market even if there is no guarantee of sufficient demand. He adds that the entrepreneur encounters barriers during the process of innovation. These barriers are caused by old techniques, existing habits and institutions, but the entrepreneur runs the risk inherent as he or she is motivated by a number of things such as being the first to introduce new idea, expecting to gain large profit from a temporary monopoly, getting recognition, providing service to the community, and so forth. However, according to Diyamett (2007:5), the model has been criticised as an oversimplification of the reality. It assumes some kind of technological determinism where technology determines innovation, ignoring the mental, social, cultural and institutional factors that influence the development and diffusion of innovations.

2.2.2 The Demand Pull Model

The demand-pull model emphasises that innovations are in some sense called forth or triggered in response to demand for new products and services (Rosenberg, 1982). The changing market potential guides innovative activities to most profitable areas. The demand-pull model is very appealing to social scientists as it works against the concept of 'technological determinism' and stresses the social shaping of technological progress (Diyamett, 2007:5).

According to the model, innovation arises out of perceived and often clearly articulated market needs; this process leads to focussed R&D activities creating a host of products for the market (Rothwell & Zegveld, 1985). The rationale behind the theory is that

production units within the markets recognises customer needs and direct their efforts to fulfil those needs through technological activities (Dosi, 1984). Bollier (cited in Diyamett, 2007) argues that there is danger in assuming that people will constantly pull because it is assumed that consumers already know what they want. However, consumer knowledge may exist only through participation in a push model, which defines and socially situates the product in the first place. According to Coombs *et al.* (1987), technology push tends to be relatively important in the early stages of development of an industry while demand-pull tends to increase in relative importance in the mature stage of the product cycle.

2.2.3 The Interactive Model

Although there are examples where the technology push and demand pull models work individually, there seem to be some consensus among scholars that the two extreme models of innovation, though very important and basic, on their own are inadequate (Diyamett, 2007). Recent theoretical work moves beyond this simple dualistic problem, and shows that innovation does not just happen within the industrial supply-side, or because of the articulation of user demand, but through a complex set of processes that links many different players together. There has to be some interaction or coupling between the two processes, hence the interactive model. In relation to this, Rothwell and Zegveld (1985) argue that innovation is a complex interaction between the 'supply' (R&D laboratories, scientific and technical institutions) and the 'demand' (potential and actual users, and marketing organisations). Much of the most successful innovation

occurs at the boundaries of organisations and industries where the problems and needs of users and the potential of technologies can be linked together in a creative process that challenges both. In conducting this study, the attempt was to look at whether innovation in small firms in Tanzania is pushed by advances in technology, pulled by the market needs or because of interaction between technology and market.

2.3 The Degree of Innovation

Innovation is a new way of doing something or new stuff that is made useful hence, it may refer to changes in knowledge, products, processes, or organisation. By so doing we can categorise different degrees or levels of innovations.

2.3.1 Adoption of Innovation

Once innovation occurs, it may be spread from the innovator to other individuals and groups. Adoption is described as the low level of innovation and it is referred to as imitation or diffusion of innovation. Malecki (1991:119) shows that in less industrialised countries, much if not most technological change consists of the adaptation of imported technology to the local environment and factor supply. Diffusion of an innovation occurs through a series of communication channels over a period among the members of a similar social system. Rogers (1962) indicates that adoption of an innovation occurs through a five-step process.

The five steps or stages are knowledge, persuasion, decision, implementation, and confirmation. In the stage of knowledge, individual is first exposed to an innovation but lacks information about the innovation and he or she has not been inspired to find more information about it. Now follows the persuasion stage in which the individual is interested in the innovation and actively seeks details about the innovation. In the next stage of decision, the individual takes the concept of the innovation, weighs the advantages as well as disadvantages of using it, and decides whether to adopt or reject the innovation. Implementation stage follows whereby the individual employs the innovation to a varying degree depending on the situation and determines the usefulness of the innovation and may search for further information about it. Last stage is confirmation. During this stage, the individual determines to continue using the innovation and may use it to its fullest potential. Simple and attractive findings suggest that largest firms adopt earliest (Baldwin & Scott, 1987:129). However, Ray (1969) sees no such clear pattern. He notes that there is no definitive evidence that large companies have always been 'leaders in innovation and in the adoption of new techniques. The leading role which large companies often play in R&D, their generally more sophisticated management set-up, and their easier access to new capital are likely to give them a lead over small firm; in other cases it has been the opposite way round'.

Rather than size of firm, Ray attributes differences in 'the attitude of management' that is likely to have the greatest impact on the application of new techniques. Innovative companies will typically be working on innovations that will eventually replace older

ones. In the early stage of particular innovation, growth is relatively slow as the new product establishes itself. At some point, customers begin to demand and the product growth increases more rapidly.

2.3.2 Incremental Innovation

Incremental innovation is described as a small, gradual improvement or modification to a current technology (Slocum & Rubin, 2008:16). Moreover, Incremental modifications of an original product, process or system may have vastly greater economic or social importance than the original product. For example, it was not until incremental advances in breakthrough microcomputer technology led to the personal computer revolution in the 1980s and beyond that, the social and economic implications of the original invention began to be realised. Incremental innovation involves technical modifications of an existing product, process or system that results in some improvement.

2.3.3 Radical Innovation

Radical innovation, on the other hand, is described as a total different technology, process, or methodology (Slocum & Rubin, 2008:13). It may be understood as a new product, process or system that results from a technological breakthrough, or the application of a technology having a far-reaching impact. According to Dewar and Dutton (1986:1422), radical innovations are fundamental changes that represent revolutionary changes in technology… they represent clear departures from existing practice. They often result from many, smaller improvements carried out by different

individuals and organisations over time. For instance, electric light - a paradigmatic radical innovation - was the product of an attempt to provide a form of lighting that improved on existing methods for lighting the home, gas light. The previous form of lighting was too dazzling for domestic use and suffered from control and maintenance problems. Despite the tendency to think of radical and incremental innovation as two fundamentally different types of innovation, it is important to recognise that they are often interrelated and depend on one other.

2.4 Sources and Constraints to Technological Innovation

Technological innovation is neither fixed nor permanent. It is a continuous learning process, since both technology and the ability of firms are constantly changing (Malecki, 1991:26). Innovation being a specific tool of entrepreneurs, the means by which they exploit change as an opportunity for a different business or a different service, is capable of being presented as a discipline, capable of being learned and capable of being practiced (Drucker, 1985:17). It is a learning process and knowledge creation through which new problems are defined and new knowledge is developed to solve them (Rosenberg, 1982; Lam, 2004:15). Malecki (1991:146) mentions that there are several learning processes of new technology, one being formal R&D. Organisation for Economic Cooperation and Development [OECD], (2008) defines R&D as creative work undertaken on a systematic basis in order to increase the stock of knowledge to devise new applications. R&D is of special importance in the field of marketing where firms keep an eagle eye on competitors and customers in order to keep pace with modern

trends and analyse the needs, demands and desires of their customers. Malecki (1991:154) adds that R&D is essential to the improvement and innovativeness of technologies over the long run.

However, R&D is costly and poses barriers to entry for new and small firms. Within the small firms, important informal learning processes take place through the monitoring of information and technological capabilities, publications, technical associations, watch-and-learn processes, and personnel mobility. In addition, technically progressive firms obtain knowledge from customers and suppliers as well and generate it internally (Fransman, 1984:54). A customer may request the imitation of an imported product but simplified and improved in various ways. Furthermore, learning by doing and learning by using provide major opportunities for technological improvements and represent 'externalities internalised within each firm' (Dutton & Thomas, 1985; Dosi, 1988:1125). Taken together, these mechanisms broaden considerably the scope of information-gathering activities required of firms. As informal activities, they are difficult to measure, if not to identify, and they are largely embodied in people and in organisations.

In Tanzania, on the other hand, there are a number of constraints to technological innovation. One constraint is a problematic governance and business environment. This is explained by a number of factors such as lack of effectiveness and implementation in government actions in spite of a number of policy plans; this has affected many policy areas and slowed down the reform process; also, the infrastructure is inadequate. Aubert

and Wanga (2007:752) show that Tanzania is compromised on innovation because of poor regional and feeder roads, frequent power cuts and on insufficient telecommunication network; and there is weak banking system notably for providing credit to business. Capital markets are almost nonexistent.

The second constraint is lack of innovative dynamism. Tanzania has benefited from a strong economic growth in recent years contributed by the increase in Foreign Direct Investment (FDI). In Tanzania, according to Aubert and Wanga (2007:753), FDI is relatively high, as compared to neighbouring countries, but the impact on the technology and on innovation capabilities is modest. A very low R&D/GDP ratio of about 0.25% is a reflection of this lack of innovative dynamism. No specific mechanisms seem to be in place for promoting the transfer of knowledge and technology facilitated by the FDI.

The third constraint is concerned with inadequate innovative policies. The deliberate policy, inspired by the principles of liberalisation and privatisation, that seeks a complete hands-off stand from the government has pushed the public R&D institutes to market their competencies and technologies. According to Aubert and Wanga (2007:753), resources for science and technology (S&T) were cut without providing any needed incentives to entrepreneurs to put in greater innovative effort. They were also cut without making any investment in public goods or setting down any appropriate regulations for ensuring and encouraging a climate of stimulating innovation in terms of competition, quality promotion, and protection of property rights.

The fourth constraint is concerned with lack of dissemination of new technologies throughout the country. People lack awareness of new technologies that are either imported or developed within the country. Aubert and Wanga (2007) show for instance, that a technology of interlocking bricks has been designed and successfully tested to make bricks with local materials and compressed without cement. It originated in South Africa and has been perfected by several inventors in Tanzania, notably by the Housing R&D centre. However, no scheme exists to help interested individuals or communities to either use or buy the machine, and there is no mechanism to inform and familiarise potential users with the technology. Lack of information about inputs, markets, technology availability and cost makes small entrepreneurs fail to select, acquire and apply appropriate technology that could develop expertise.

Lastly, there is lack of sustainability of services that are oriented to upgrade technologies from institutions that support SMEs due to lack of funds. Aubert and Wanga (2007) report that at the establishment SMEs support institutions (institute, centre and organisation) initially provided workshops spread out in Tanzania where local entrepreneurs could come, test their ideas, repair their machinery, and check out new technologies, but these workshops have gradually disappeared due to lack of funds, and insufficient interest on the part of the government (p.755).

2.5 Promotion of Technology: Role of Regulatory and Institutional Structure

Innovation upgrading is facilitated by regulatory and institutional structure within which firms must operate (Malecki, 1991:155). This structure promotes these firms by making appropriate policies and providing updated technologies in terms of trainings and equipments. In Tanzania, the government and non-governmental institutions help firms to learn and use new technologies. Juma and Yee-Cheong (2005:62) point out three ways about which a government involves in promoting technological learning. First way is to create market mechanism that will deal with the supply and demand of technological development; such mechanism must be expressed in appropriate policies. Second way is to create the environment for technology flows in terms of transfers of foreign technologies, domestic diffusion of foreign technologies, or indigenous R&D efforts to innovate. Last way is to strengthen a diversity of learning institutions.

Tanzania has adopted several policies that provide directions and guide decisions and actions in the area of technology upgrading. The Tanzania Vision 2025 policy envisages creating a strong, diversified, resilient and competitive economy which can effectively cope with the challenges of development and which can easily adapt to the challenging market and technological conditions in the regional and global economy. For technology advancement and transfer, the Sustainable Industrial Development Policy and SME Development Policy emphasise that the success of the industrial sector will in future depend largely upon the degree to which the country shall develop, consolidate and strengthen basic scientific research, technology and R&D activities. Following such

recognition, the government commits to facilitate acquisition and adaptation of technologies as well as enhance networking between R&D institutions- technology providers and SMEs in a bid to upgrade technologies to raise the productivity and competitiveness of the sector.

With regard to the implementation of these policies, a number of institutions have established support programmes to SMEs. For instance, Small Industries Development Organisation (SIDO) provides financial, equipment as well as technical assistance to small industries. Banks normally hesitate to open up their credit facilities believing that dealing with SME is a risky business since SMEs have no collaterals for their loans and are not well prepared to do credible businesses. SIDO liaise with particular financial institutions in order to register and familiarise with their available facilities, terms and conditions and use the information to counsel and link entrepreneurs as a result. During the period ranging between 2005 and 2008, SIDO has approved and disbursed 10,342 loan applications worth Tsh 6.7 Billion. Along with credit provision, 12,257 entrepreneurs were provided financial advisory services (SIDO, 2008:15). During the period between 2005 and 2008, SIDO provided SMEs with repair and maintenance services that ensured breakdowns did not affect smooth operations. In so doing, 1,887 complete machine components and 6,919 spares were manufactured and supplied (SIDO, 2008:27).

In terms of production process skills development SIDO trained 117 artisans that included carpenters, blacksmiths, tinsmiths, potters, and weavers and strengthened their capacity for provision of services, and technical advisory services were extended to 133 SMEs during the period between 2002 and 2005 (SIDO, 2005). Other businesses included food processing units, chalk and soap making enterprises. Access to land, infrastructure, and markets are some of the operational obstacles being faced by SMEs. SIDO played a facilitative role and identified 106 areas for SMEs use. It successfully liaised with local government authorities to set aside suitable public land for SMEs activities. Some of the identified areas were developed for SMEs use as a result. These areas include Songea general market, Mchikichini (Ilala), Kawe (Kinondoni) and Rangitatu (Temeke) vendors markets (SIDO, 2005). In order to promote the innovative habit among small entrepreneurs, various programmes have been established. These include the incubator centres, exhibitions and trade fairs establishment. The establishment of the incubator centres aims at providing support to entrepreneurs with technical expertise to refine the technology and introduce new products for marketing. SIDO facilitates work premises for product development; it provides technical advices, loans to start commercial production and trainings (Olomi & Gichohi, 2009:98). This initiative fosters innovation through development of new products and processes.

The products exhibitions and trade fair events expose SME goods and services to potential customers, and give them an opportunity to share experiences, learn from each other, enhance their chances to enter into new markets and sharpen their competitive

edge. SIDO not only established but also ran quarterly zonal exhibitions. From July 2005 to June 2008, SIDO organised 19 zonal exhibitions countrywide for which 6050 entrepreneurs participated. Their participation enabled them to make sales of their goods and services worth Tsh. 1.68 billion (SIDO, 2008). In addition, SIDO has financed SMEs to attend international trade exhibitions in Kampala and Nairobi in an annual trade fairs with the aim of international exposure and marketing skills acquisition to the benefit of the local entrepreneurship (Musonda, 2004:440).

2.6 The Research Gap

The literature review has revealed that studies on technological innovation in SMEs focussed on understanding the innovative capabilities in SMEs. In addition, the literature shows that SMEs support institutions not only have helped industries to start, grow and survive but also have established programmes to stimulate and promote technological innovation among SMEs. However, lack of detailed information on degrees of innovation, sources and constraints to technological innovation in SMEs in Tanzania has aggravated the problem for these enterprises to innovate. This work aimed at bridging this knowledge gap.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This section presents the research design and methodology used in the study. It includes the research design, area of the study, population, sample size and sampling procedure, data collection method and data analysis techniques.

3.2 Research Approach

This study used a case study of the wood furniture industry to get a deeper insight and understand the challenges faced by furniture enterprises. Wood furniture industry is one of woodwork sector that holds 30% of SME activities (Mwamila and Temu, 2006), and it presents potentialities for growth in the SME sector in Tanzania. Its activities influence the day-to-day life of the population and make use of 80% of local raw material (Chao, 1988:102).

3.3 Area of the Study and Population

The study was carried out in Ilala, Kinondoni and Temeke districts of Dar es Salaam region, where trade, manufacturing and other services have a high concentration as compared to other parts of Tanzania. It provides market potential to products due to an increasing population and institutions. In 2002, Dar es Salaam had a population of 2,497,940 with an annual average growth rate of 4.3% and 596,264 households (URT, 2002), a potential customers of furniture.

The target population comprised owners and head technicians of the wood furniture enterprises. In most case for SMES, owners of enterprises are also head technicians. Due to their experience, they are in a position to explain the state of technological change in their enterprises. In addition, SMEs support institutions were included in the study so as to assess their contribution in the technology development and dissemination. Also, customers of furniture were involved to get their views on preferences over imported and locally made furniture.

3.4 Sample Size and Sampling Procedures

The study involved a sample of 59 respondents, including 50 owners and head technicians of furniture enterprises, and 9 customers from cafeterias and bars, institutions, and home users were included in the study to provide relevant information in assessing imported and locally made furniture, three from each group. In order to get data from furniture enterprises, the researcher purposely selected furniture making clusters and non-clusters. In terms of clusters, the researcher selected Keko furniture making cluster and other small clusters in Temeke, Mwenge, Manzese, Buguruni, Vingunguti, and Kawe wards, and for non-clusters, convenience sampling was then used as many of the target population were working informally, so the researcher found it difficult to rely on national statistics.

3.5 Data Collection Methods

Both primary and secondary sources were used to collect data. Primary source used questionnaire, observation and interviews, and secondary source consisted of obtaining related data from written sources both published and unpublished reports, books, journals, articles at various documentation centers in Dar es Salaam, including the University of Dar es Salaam (UDSM) library, and Institute of Development Studies (IDS) documentation room. Questionnaires with both closed-ended and open-ended questions were administered to the owners and head technicians of wood furniture industries as well as furniture end-users.

The second technique was observation whereby furniture enterprises were physically visited to see the quality, labour, nature of equipments, marketing and teamwork. The last technique involved was unstructured interviews, which was conducted to owners of furniture enterprises to gather detailed explanations to the questions on the activities carried out and the challenges they faced in the development of technological innovation.

3.6 Data Analysis Techniques

Before being presented and analysed through quantitative and qualitative methods, raw data collected from the respondents were first processed by identifying and correcting errors, coding and arranging in appropriate form. The Statistical Package for Social

Sciences (SPSS) was used in analysing quantitative data, while qualitative data were compiled, presented and incorporated in the general analysis.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND DISCUSSIONS

4.0 Introduction

This chapter is organised in two parts: first, provides key information about the enterprises, and second presents, analyses and discusses the findings collected through questionnaires, unstructured interviews and observations. Data presented, analysed, and discussed focus on three research objectives and questions.

4.1 Information About Furniture Enterprises

Innovative activities generally require innovators to have attended formal education or training, have expertise and commitment in related activities. This part gives a general overview depicting crucial factors for innovativeness. It looks at owners' education qualifications, experiences in the furniture enterprises and years in which enterprises were established as summarised on Table 4.1.

Table 4. 1: Information about Furniture Enterprises (N=50)

Category	Items	Frequency	Percentage
Years of establishment of enterprises	2001-2010	21	42
	1991-2000	16	32
	1981-1990	10	20
	1970-1980	3	6
Education qualifications of owners of enterprises	Primary school	43	86
	Secondary school	7	14
	High school	-	-
Owners' experiences in furniture enterprises	1-5 years	35	70
	6-10 years	8	16
	11-15 years	5	10
	16 years and above	2	4
Forms of business	Sole proprietorship	34	68
	Joint ventures	16	32

Source: Survey data, 2010.

4.1.1 Years of Establishment

Assessing years when furniture enterprises were established, was one of the key questions in the questionnaire administered to 50 owners. The results on Table 4.1 show that 21 enterprises (42%) are relatively new, having been established in the last 10 years, between 2001 and 2010. Only 3 (6%) of the surveyed enterprises have long experience in furniture activities. This indicates that most of furniture enterprises are new in the sector. Emerging of more SMEs in the furniture sector shows a high degree of interest of the furniture entrepreneurs in the past ten years. However, for innovation to take effect commitment is one factor as observed by Olomi (2009:50) who noted that commitment to the career is driven by one or a combination of factors. The factors include satisfaction with past performance, belief in future potential, interest or need to use existing resources including competencies, and interest or need to perform a preferred type of activity. Professional qualifications may stimulate people to perform more in related careers in addition to mere interest.

4.1.2 Owners' Education Qualifications

The study findings show that nearly all furniture enterprise owners, 43 (86%) have completed primary education, seven (14%) have reached secondary school level. This suggests that the majority of entrepreneurs engaged in furniture making in Dar es Salaam are primary school leavers. Toroka and Wenga (1997) have noted that educated people detest the experience in SMEs. Educated people could well be suited to perform the R&D and innovative activities in Tanzania, but no college graduate was found

engaged in furniture making. Graduates show no interest in wood works as the findings imply. They could in fact join the SMEs sector and make it more efficient. In line with this, Olomi has noted that graduates in Tanzania are psychologically or functionally not prepared to start and develop SMEs because the curricula are designed to produce graduates for highly specialised white-collar jobs. Owners' educational qualifications and commitment facilitate innovation, since professionals can not only determine the types of business to do but also influence how the enterprise should be organised and run for efficiency and profitability.

4.1.3 Furniture Enterprise Owners' Experience

Study findings show that the experience of 35 (70%) enterprises owners ranged from 1 to 5 years; eight (16%) of them had worked for other enterprises from 6 to 10 years, and five (10%) from 11 to 15 years, and only 2 (4%) of them had experience ranging for more than 16 years (Table 4.1). This implies that most of the furniture owners were new to the industry and had little practical knowledge of furniture making. Their limited knowledge and skills may have an impact on innovation, which require training to develop and become creative.

4.1.4 Forms of Furniture Businesses

Study findings shows that sole proprietors dominates furniture making, and only few are in joint ventures as partners who have invested their resources in the enterprises. Sole proprietorship is a form of business where one individual takes responsibility of all the

operations and strategic planning of the business. This business is easy to set because no bureaucratic processes are needed. In addition, decision-making is fast, because the owner can simply decides what to do without consulting others. However, Olomi (2009) has found that the disadvantage of this form of business is that the owner has to find all the capital and bear the risks, a fact that applies in the furniture enterprises.

4.2 Assessing the Degree of Innovativeness

This part focuses on four factors, namely the quality of furniture, production, work organisation and marketing strategies. This was to meet the first research objective. Here data collection allowed respondents select more than one item in the questionnaire, which apply in their enterprise. To determine the degree of innovativeness, data was analysed with respect to the selected items.

4.2.1 Degree of Changes in the Quality of Furniture

The degree of changes in the quality of furniture was among the factors that determined innovativeness in the enterprises. Here, we assessed whether the enterprises introduced new quality furniture or improved from the existing furniture, or else maintained the same quality of furniture as those from the start of the business. Table 4.2 gives the details.

Table 4.2: Degree of Changes in the Quality of Furniture (N=50)

No	Degree of change	Frequency	Percentage
1	Reproducing routine quality	-	-
2	Quality improvement on existing furniture	50	100
3	Introducing new quality furniture	8	16

Source: Survey data, 2010.

Improvement on quality of furniture is shown in Table 4.2 and reflects the degree of changes that took place on the quality of furniture. This gradually occurred through small modification of furniture designs. Furniture design means a general arrangement plan; it is a draw that shows how furniture looks like. Through observation and interviews with furniture makers, it was found that qualities of sofa sets are of a variety of designs named: pons, jumbo, juliana, tofino, mupya, photopino, butterfly, internet, mchina, water guard, buffalo, swimming, kikapo, kwizera, and button-button. For beds, designs included simple, plain box, shangingi, popobawa, mtajiju, kilimanjaro, and double decker, while for chairs, the changes included office chair, maputo, gogo, fiesta, MM, miwa, high bag, nganola, mavi ya mbuzi, and majestic.

Going through different qualities of furniture indicates some degree of innovativeness in the furniture-making. The changes in the quality of furniture are on a small scale and termed as incremental innovation. This is because the quality changes are made on the

previous type of furniture. In line with these findings, Slocum and Rubin (2008:13) defined incremental innovation as small modifications on existing technology, which this study found evident among the studied enterprises. Any changes in the quality effect changes in the price of furniture, material and inputs utilisation as well as knowledge. A small modification in the furniture quality indicates innovativeness in the wood furniture industry in Dar es Salaam.

4.2.2 Production Techniques

This sub-section describes the degree of innovation in the production techniques among furniture enterprises. It evaluates equipment and raw materials that constituted the physical means and knowledge used in the production of furniture.

4.2.2.1 Equipment for Furniture Production

During the survey, it was observed that equipment in furniture enterprises comprised of hand tools and machines. The type of hand tools included handsaws, planes, drills, clamps, axes, hammers and screwdrivers, and for machines, they included circular saws for cutting timbers, planomax for surfaces smoothing, band saws for cutting rounds, spindle moulders for shaping the panels; and simple machines such as impact drills, screwdrivers, angle grinders and polishing machines. Most of these machines were observed in furniture making clusters, mostly at Keko furniture center[1]. At this centre, most of the entrepreneurs are working in joint ventures, a mechanism that facilitates

[1] Keko is a leading furniture centre in Dar es Salaam and developed into furniture making clusters from the 1990s.

business registration and transfer of tacit knowledge. It was observed that furniture makers have significantly invested in timber trade than in any other areas in Dar es Salaam and increasingly employ people who are skilled in carpentry. Technical expertise and availability of machines are an indication of a degree of innovativeness at Keko, where most quality furniture is being produced.

In other sites, hand tools, as manual technology is dominant in furniture production. Although working with manual technology presents some advantages such as low operation cost, flexibility in operation and finance, low risk and adaptability to little capital, as has been noted by Buffa and Sarin (1987:473), the disadvantages are much more prevalent as compared to enterprises that rely on machines. These include high labour cost, long time of operation, low volume of outputs, variable quality of outputs, difficult in quality control due to human error and process variation inherent in manual processes. Acquisition of machines should be of paramount importance for furniture production.

The study findings show furthermore that the furniture industry is expanding, and therefore, requiring competitive processes in making quality furniture. There is a need for resources in acquiring advanced technology that most of the small entrepreneurs failed to get. It was found that most of the furniture enterprises use to replace a tool by another one of the same type, a fact that depicts lack of innovation in equipment.

Something new must be substantially different be innovative - completely new or improved (Luecke & Kartz, 2003; Diyamett & Mabala, 2003).

4.2.2.2 Availability of Raw Materials for Furniture

To determine the degree of innovativeness, the study further assessed the availability of raw materials for furniture. It was found that raw materials for furniture production, which included logs and wood planks, are available throughout the city. Timber is of various types, notably *teak, podocarpus falcatus, pine, afzelia quanzensis, and brachystegia spiciformis*, which are identified as hard and soft timber. Hard timber such as *teak and afzelia quanzensis* is the most expensive and used to make the most durable furniture preferred by most customers.

The respondents complained of regular increase in price of timber. Most furniture makers claimed that an increase in price for hard timber is associated with the government policy for natural resources conservation. This is a strategy to reduce the volume of hard wood harvest. Such regulations include, for example, heavy taxation. Following those circumstances, the volume of hard timber in the market is low compared to the soft timber. As long as customers detest furniture made of soft timber, small entrepreneurs have started to transform soft timber (poor quality) by painting it so that it looks like the hard timber (best type) in order to attract more customers.

Also, it was observed that furniture makers have started using plywood to supplement timber. Plywood, in the form of laminated and 'medium density fibreboards' (MDF), is mainly imported from Malaysia and South Africa. The reasons for introduction of plywood are to gain the market share by replicating the appearance of imported furniture, which is an adoption of innovation. Plywood is being imported in different sizes and qualities.

In Dar es Salaam, furniture makers at Keko are leading in painting soft timber as well as using plywood. The painting of soft timber is a marketing strategy to gain market share and mimic the appearance of imported furniture. This alone indicates an innovative activity. For most of furniture makers, however, the adoption of plywood is difficult. The price of plywood is high and it requires machines for the smoothness process, which make quality furniture expensive to produce.

4.2.3 Work Organization of Furniture Enterprises

Changes in organisation of work within an enterprise may contribute to creativity and innovation. Such contribution is facilitated by factors such as the structure of the enterprise, division of labour and networks among enterprises. Though sole proprietorship is found to be the dominant form of business in the furniture industry in Dar es Salaam as shown on Table 4.1, agglomerations of enterprises producing similar types of wood furniture were observed at various areas. These are furniture-making clusters defined by Rosenfield (1997), as geographically bounded concentration of similar, related or complementary businesses, with active channels for business

transactions and communications that are faced with common opportunities and threats. Enterprises spatially agglomerate on the basis of products they are making such as beds, cupboards, chairs and tables, dressing tables or sofa, a fact that indicates some degree of specialisation in making furniture. Through these clusters, furniture makers have established informal professional networks among them, exchanged tacit knowledge and borrowed production tools from each other. Though competition among them is a threat, it motivates, however, increase in quality and production of furniture. However, such concentration into clusters, the division of labour and establishment of professional networks among furniture makers exist since the inception of the furniture enterprises and neither changes nor improvement was reported by furniture makers during the survey. In this case, there is no innovation in work organization among furniture enterprises.

4.2.4 Marketing of Furniture

Small entrepreneurs rely on various ways of presenting, advertising and selling furniture as shown on Table 4.3. An analysis was done during data collection procedure to see the difference between the activities conducted at the inception of the enterprises and those at current stage.

Table 4.3: Furniture Marketing (N=50)

No	Furniture marketing	Inception		Current stage		Variance of %
		Frequency	%	Frequency	%	
1	Word-of-mouth references	42	84	35	70	-14
2	Display sales system	41	82	48	96	+14
3	Billboards	3	6	6	12	+6
4	Discount on sales	2	4	3	6	+2
5	Saleroom and showroom	1	2	4	8	+6
6	Sales at national exhibition	1	2	3	6	+4
7	Business cards	-	-	3	6	+6
8	Provision of transport	-	-	2	4	+4
9	Any other strategy	-	-	-	-	-

Source: Survey data, 2010.

Study findings show that furniture marketing is done mainly through a word-of-mouth, that is, new customers are told about the furniture by old customers who have been satisfied with the quality. Another strategy consists of displaying furniture in open areas alongside the street and roads. Furniture makers also use though at the low rate, billboards, discount on sales, showrooms and salerooms as well as participating in national exhibitions as marketing strategies.

There is variation in product marketing. At the inception, furniture enterprises relied much on word-of-mouth to market their products but nowadays, the study findings show that furniture makers mostly display their products in open areas. Display of furniture in open areas appears to be a less expensive strategy to market furniture as compared to other marketing strategies. However, such strategy presents some disadvantages. For instance, during the survey some sofa sets were found to have been damaged by bad weather before sale. Rain, sun and wind affected wood furniture and led to owners' loss.

Opening more show rooms is preferred, however, by furniture enterprise in order to keep furniture quality standard in the market.

Other marketing strategies whose rate of use has increased include the use of billboards, discount on sales, showrooms, sales rooms and participation at the national exhibition. This shows that there are some efforts for market expansion. However, these marketing strategies are not new in the furniture making sector and the rate of adoption is low. In addition, furniture enterprises have introduced advertisement strategies, which included use of business cards and provision of transport to customers when they buy products. These are innovative strategies in those furniture enterprises. However, the furniture industry is not innovative in those strategies because the rate of adoption is low whereby only 6% adopted those strategies as compared to the entire sector. More efforts are then needed to ensure considerable adoption of the innovation.

4.3 Sources of Technological Innovation

This sub-section focuses on study findings on the sources of innovation in furniture designs, production techniques, and marketing in order to answer the second objective of the study. Respondents were asked to select more than one item that was appropriate to their enterprises. However, frequencies for each item were evaluated from the 50 respondents.

4.3.1 Sources of Furniture Designs

The following table shows frequencies of furniture enterprises on different sources of furniture designs that served as a basis for enterprises to effect changes in the quality of furniture.

Table 4.4: Sources of Furniture Designs (N=50)

No	Source of designs	Frequency	Percentage
1	Customers	36	72
2	Photographs	35	70
3	Furniture on display at other enterprises	35	70
4	Imported retail catalogues and brochures	29	58
5	Own initiation	16	32
6	Visiting showrooms	14	28
7	Recording through media and internet	4	8
8	Any other	-	-

Source: Survey data, 2010.

Results on Table 4.4 show that to effect changes in the quality of furniture, furniture makers are relying on a number of sources, which include customers (72%), photographs of ready-made furniture taken in various enterprises (70%), furniture on display at other enterprises (70%), and imported retail catalogues and brochures that depict design models (58%).

It was revealed that customers placed their orders based on certain furniture design, and furniture makers sketched the design according to customers' preferences. In line with this finding, Murphy (2005) has noted that consultation and relationship with customers are important from an innovation view point as the greater the diversity of customers links an enterprise maintains, the greater the likelihood that the enterprise may be exposed to novel design ideas and approaches. Murphy further asserted that innovation is in some sense called forth or triggered in response to market needs, which is a demand-pull factor. It is further emphasised that production units within the markets recognise and direct their efforts to fulfill those needs through technological activities (Dosi, 1984; Rosenberg, 1982). Customers are drivers of innovativeness among furniture enterprises, so the more the need of customers for specific designs of furniture, the more the degree of innovativeness. More often, customers get models of their choice from their relatives, showrooms, saleroom and other furniture enterprises.

Furniture enterprises keep photographs, catalogues and brochures that depict various furniture models and designs. According to most small entrepreneurs, the sources of catalogues and brochures include furniture sale rooms and showrooms or from other furniture makers. These responses match with the observation in one show room where various catalogues have been found. It was found that networks among themselves facilitated the acquisition of such materials, what Mbura and Olomi (2009:168) say that networks also assist to get and stimulate better ideas for the eventual effect of making the business more innovative. Photographs, catalogues and brochures serve as tools in

new designs as well as production processes. In that viewpoint, supply of new designs are pushing enterprises to innovate, which is a technology push factor, a fact that Diyamett (2007) supports by saying that demands have to be created after a new product has successfully been made.

As an innovative activity, existing designs are improved or new ones are identified through observation of previous designs or through consultation with other furniture makers. An interview with one of the furniture makers at Keko, recognised by his co-producers to have innovated the sofa design called 'water guard', has proved that furniture makers improve some furniture quality from the previous furniture designs and then disseminated through photographs. He stated:

> *"I have designed a sofa named 'water guard'. Honestly speaking, the idea was not completely new. That design resulted from a combination of parts of different existing designs whose marketability had been by then low. I have also borrowed some ideas from a retail catalogue and introduced such sofa design. I am proud of that success as the design excels in the market for me and for other furniture makers".*

In the quotation above, it is shown that some entrepreneurs have the abilities of making own designs that are disseminated among them. 'Water guard' design can be found on photographs and on display in various furniture enterprises. Moreover, the study findings show that the sources of design are exogenous to furniture enterprises. Apart from eight (16%) of initiation effected from within the enterprises, furniture enterprises mainly rely on external sources for new ideas. The sources include salesrooms and

showrooms, other furniture enterprises, and imported publications. Hence, furniture design tends to be a complex and interactive factor between the demand and supply sides.

4.3.2 Sources of Production Techniques

Production technique involves the process of converting raw materials to finished goods. As it was observed, some furniture enterprises have started to transform timber (soft timber) by over-painting to make them more attractive. The introduction of plywood and new designs has also pushed furniture makers into new production techniques. Following those changes in the production of furniture, interviews were held to find out the sources of those changes, and the following answers are summarised from two furniture makers who said that:

> *"Nowadays, furniture designs are no longer scarce as it used to be. Variety of imported catalogues and furniture found in showrooms and salerooms are the major sources. In order to replicate those designs in production, it is some times difficult to interpret the catalogues or furniture such as sofa. This type of furniture is covered by fabrics. So, some entrepreneurs buy the imported furniture and decide to untie it in order to learn about the entire technology in terms of frame, size, and paints. The design is then disseminated to other furniture makers through photographs".*

> *"Source of idea about the transformation of soft timber and use of plywood is the quality of imported furniture. You know, customers prefer more imported furniture than locally made ones. Therefore, entrepreneurs learn from the appearances of imported furniture that they replicate in their enterprises in order to attract more customers".*

It was suggested that new designs from imported furniture and publications influenced knowledge that effected changes in production. The second quotation implies that the changes in the knowledge of production respond according to the customer needs. It is apparent therefore that small entrepreneurs learn new ways by doing, and then come up with new quality furniture. Overall, the study findings reveal that changes that are happening in the production of wood furniture have a link to imported furniture. Dissemination is then facilitated by networks among furniture makers who assist and stimulate better ideas for the eventual effect of making the business more innovative. Learning-by-doing mechanism helps furniture makers to excel in production.

4.3.3 Sources of Furniture Marketing

The following table shows frequencies of reliance on different sources of idea for marketing furniture serving as the basis for furniture enterprises to gain market share.

Table 4.5: Sources of Furniture Marketing Strategies (N=50)

No	Sources	Frequency	Percentage
1	Former trainers of furniture makers	37	74
2	Other furniture enterprises	28	56
3	Attending workshop	2	4
4	Any other	-	-

Source: Survey data, 2010.

Table 4.5 shows that sources of marketing strategies applied the most by wood furniture enterprises are that adopted from their former trainers, other enterprises, and workshops on marketing skills, which are provided by some institutions. This entails that small entrepreneurs depend on external sources to initiate marketing activities of furniture. However, few enterprises use marketing strategies adopted from their colleagues. The use of business cards, for example, is a new marketing strategy that is expanding in various businesses, including furniture industry. Therefore, its adoption indicates a connectivity of the industry to other businesses. Moreover, reliance on the sources of marketing skills adopted earlier from former trainers entails that there is little change in the way furniture is marketed, and the worst of it is the low attendance rate of the entrepreneurs at trainings. The following section discusses the constraints on technological innovation in the production and marketing of the furniture.

4.4 Constraints to Technological Innovation

This section discusses the constraints that small entrepreneurs are facing in the improvement of quality, production, work organisation and marketing of furniture to meet the third objective, which is to identify the constraints to technological innovation among SMEs. The study findings reveal a number of constraints to furniture enterprises innovations. To gather data, the instructions on the questionnaires allowed respondents to select more than one item that is appropriate to their enterprises. However, frequencies for each item were evaluated out of total number of 50 respondents.

4.4.1 Constraints to Furniture Designs

Furniture makers rely on multiple sources of furniture designs, but are constrained by a number of factors as shown in the following table.

Table 4.6: Constraints to Furniture Designs (N=50)

No	Constraints	Frequency	Percentage
1	Scarcity of catalogues and brochures	15	30
2	Limited finance to buy catalogues and brochures	11	22
3	Lack of design skills	2	4
4	Any other constraint	-	-

Source: Survey data, 2010.

Given the results in Table 4.6, lack of appropriate furniture designs is attributed to the scarcity of catalogues and brochures. Where these documents are available, 11 (22%) furniture enterprises lack money to buy them, while others lack design skills. The predominant constraint is the scarcity of catalogues and brochures, mentioned by 15 (30%) owners. It was observed that catalogues and brochures portraying furniture designs are mostly found in the showrooms and sales rooms. According to small furniture enterprises, the best catalogues and brochures are scarce and expensive than those of poor quality and with outdated designs. In addition, quality designs require quality material inputs and advanced technology in the production that most small furniture enterprises claimed failing to afford. This fact is advantageous to imported

furniture to gain the share of the local market, because imported furniture is of updated designs.

Though scarcity and expensiveness of catalogues and brochures are claimed as a constraint to upgrading furniture quality, the majority of owners did not consider such situation as a challenge in the process of making furniture design. It was found that furniture makers use alternatives to get designs. They exchange catalogues, brochures, photographs and other related tools; they consult each other and visit showrooms and sales room where they grasp imported furniture designs. Despite the fact that imported furniture appears as a source to furniture designs as seen in sub-section (4.3), its dominance in the local market poses serious threat to locally made furniture.

4.4.1.1 Views of Customers on Imported and Locally Made Furniture

Small furniture makers have pointed out that customers prefer more imported furniture than locally made ones, which threaten their innovativeness in furniture designs. Nine customers were requested to provide opinions about what makes the difference between locally made furniture and imported ones. Among the respondents, three (33%) were from institutions, three (33%) others were from cafeterias and bars and three (33%) more were home furniture users. Their views are presented in Table 4.7.

Table 4.7: Views of Customers on Imported and Locally Made Furniture (N=50)

No	Features	Locally made furniture		Imported furniture	
		Frequency	Percentage	Frequency	Percentage
1	Cheaper	6	67	3	33
2	More durable	6	67	3	33
3	More attractive	-	-	9	100
4	Heavier	9	100	-	-
5	More efficient in use	3	33	6	67
6	Any other attribute	-	-	-	-

Source: Survey data, 2010.

Results in Table 4.7 indicate that locally made furniture is heavier, durable and cheaper as compared to imported ones. Contrary to local furniture, imported furniture is more attractive and efficient in use. One of the reasons mostly pointed out by furniture makers was an advanced technology involved in making imported furniture. Attractiveness of imported furniture indicates sophistication in the raw material and technology used in the production. Even though imported furniture excel in the market, it was observed that for home furniture, customers prefer more locally made furniture for its durability and heaviness, while for office, cafeteria and bars they prefer attractiveness, lightness for movement and efficiency in use, which is provided in imported furniture. Customers commented that the preference varies by the context in which the furniture is to be used either for business of for home use.

Moreover, the price is a determinant factor in the course of marketing as it affects people's perceptions. Customers, particularly wage earners tend to skip cheap products assuming that they are made of low technology. This assumption and the belief that imported products are better and valuable than locally made ones constitute a barrier to local innovations.

4.4.1.2 Failure to Imitate Imported Furniture

The study findings reveal that imported furniture is competitive over locally made ones in the market because of its higher quality. It would, therefore, be a tool of reference for small enterprises to develop innovativeness by replicating the quality demanded in the market. However, the gap in terms of quality that exists reflects the inability of furniture enterprises to develop the skills due to the reasons provided below

Table 4. 8: Failure to Replicate Imported Furniture (N=50)

No	Factors for inability	Frequency	Percentage
1	Lack of appropriate equipment	37	74
2	Raw materials are expensive	33	66
3	Lack of technical expertise	13	26
4	Any other factor	-	-

Source: Survey data, 2010.

Results in Table 4.8 show that the most hindering factors for furniture enterprises to imitate the quality of imported furniture are lack of advanced equipment and high cost of raw materials. Imitating the quality of imported furniture implies innovativeness and is essential to meet the requirements for competitiveness. However, the nature of the local demand has gone hand-in-hand with the purchasing power of customers themselves.

According to furniture makers, imported furniture is made of plywood and advanced decorative material inputs, and it is processed by advanced technology. Small furniture enterprises are finding it difficult to access such technology due to financial constraints. From furniture clusters, however, it was observed that some furniture resembled the imported ones in terms of appearance, size of panel and shape. With the need to know more about the level of the quality of such locally made furniture, one furniture maker revealed that:

> *"Appearance of furniture and size of panels are adopted from imported furniture. Despite that, imported furniture is still higher in quality. The level that we have reached, however, simply indicates that we are able to do even more. We need sophisticated equipment, particularly finishing machines for shape, smoothness and decoration".*

It was suggested that the furniture makers develop different skills by adopting from imported furniture designs. The design and the making of quality furniture models show their ability to innovate. The entire sector should improve facilities and access advanced equipment that would enable good finishing. Lack of finishing machines, however, makes manufacturers to skip the finishing operations that are significant in the course of producing high quality products. This is a serious constraint to small entrepreneurs.

According to literature, newer equipment incorporates or embodies newer concepts, techniques, and knowledge, which may provide an advantage to firms that employ such technology (Cohen & Zysman, 1987; Katz, 1982; Spence & Hazard, 1988). This quotation relates with the findings in this study that furniture entrepreneurs have a limited technical expertise, and one of the reasons being lack of exposure to sophisticated equipment.

4.4.2 Constraints to Innovation in Work Organisation

Table 4.9 shows the constraints to new work organisation, factors that more or less threaten innovativeness in furniture enterprises.

Table 4.9: Constraints to Innovation in Work Organisation

No	Constraints	Frequency	Percentage
1	Shortage and inconsistence of labour	28	56
2	Insufficiency of tools compared to the number of employees	26	52
3	Lack of management skills	23	46
4	Any other constraint	-	-

Source: Survey data, 2010.

The study findings reveal that furniture enterprises are facing various challenges to their innovativeness. These include the unpredictability of furniture orders from customers, shortage of equipment and lack of managerial skills. The implication of the findings is that the furniture enterprises are facing difficulties with market, equipment and management. In regard with furniture market, two factors are common in the work

organisation: buying ready-made furniture and placing order for furniture. Beyond lack of investment capital to sustain production increase, small furniture enterprises claim that market in terms of limited demand for ready-made furniture and few and unreliable order from customers is a threat for the expansion of the enterprises. Limited demand from customers indicates labour shortage in the enterprises, and the work is done as usual, a fact that hinders entrepreneurs to organize for high performance.

Division of labour to enhance innovativeness for specific tasks is then difficult. This sets in the enterprises and provides furniture makers with little practice to focus on one specific type of work, as a result, flexible work arrangement and managerial skills lack in small furniture enterprises. This situation makes most of the furniture makers as temporary workers, that is, employed and paid on different pieces of work done whereby entrepreneurs fail to set motivational strategies to attract and keep experts for the enterprises. Skilled furniture makers then are not permanent in their work place in order to share with colleagues, implement and sustain innovative ideas, a situation that affects innovativeness in most enterprises.

In addition, lack of equipment facilities in furniture enterprises hinders furniture makers to organise themselves as expert teams. One furniture maker had this to say:

> *"I am a carpenter, but lack of band saws in this enterprise prevents experts to join and boost up the success of this enterprise. If we had our own machines, work could be organised in the manner that all of us would perform accordingly. As of now we carry logs and planks to be cut for specification by small-scale operators of saws and turning machinery. Essential equipment has to be negotiated out of our control that makes it difficult to organize".*

The quotation suggests that innovativeness needs not only skills but also appropriate and enough tools to effect changes. Lack of tools is, therefore, a hindering factor for competent and expert workers to join enterprises. Even though an enterprise has equipment required for specific tasks, the ratio between the equipment and the number of employees is also a matter of consideration. Some employees use a tool at the time when others are in need of it. For example, it has been observed in one enterprise that five employees were using two handsaws, one plane, one clamp, two hammers and three screwdrivers. This situation weakens the system of division of labour in most of the enterprises and creates employee shortage.

In addition, when making sofa sets, for example, the process involves making different components that require workers to master. It was observed that there were some workers engaged in making frames who passed then on to another process unit that was engaged in cutting mattresses that fitted the frames. The pieces of mattress were passed on to tailors of fabrics who covered the sofa. The entire process requires every process unit to be well equipped that would enable value addition. However, lack of enough tools hinders small entrepreneurs to specialise in specific tasks hence failing to set and achieve innovative goals.

4.4.3 Constraints to new Marketing Strategies

In terms of marketing, the study findings reveal that the sector is still applying the display of furniture in open areas. Table 4.10 shows factors of inability to new ways of marketing furniture.

Table 4.10: Constraints to Marketing Innovation

No	Factors	Frequency	Percentage
1	Marketing strategies are expensive	36	72
2	Lack of marketing skills	21	42
3	Fear of taxation increase from Tanzania Revenue Authority (TRA)	15	30
4	Any other factor	-	-

Source: Survey data, 2010.

Results in Table 4.10 show that entrepreneurs are facing various constraints to introduce ways of marketing furniture. The most threatening constraint is inability to pay the cost of marketing. It was observed that furniture makers prefer using advanced marketing ways than relying on displaying furniture in open areas. They wish to use media such as television broadcasting and brochures, business cards, showrooms, sales rooms, and participate in national exhibitions. These ways are so demanding in terms of money and skills.

In order to successfully promote enterprises activities, Kottler (1999) approach, the '4 Ps of marketing', puts emphasis on the importance of a mix of four elements, namely

product, price, promotion and place as measures to successfully promote industry's activities. Entrepreneurs said that they use to change the quality of furniture and they are flexible in pricing. However, the skills for competitive promotional strategies and maintenance of places for sale seem lacking among the furniture makers. This was observed as sometimes bad weather damaged the furniture displayed in open areas. Small entrepreneurs fail to maintain proper operation and marketing sites as they are constantly in fear of being evicted by local government authority. As has been noted by Musonda (2004:425), they agglomerate without formal arrangement and that they do not have title deed of the business premises. In such situation, small entrepreneurs fail to make good furniture marketing plans. The cost of advertising, lack of marketing skills, and behaviour of escaping to pay taxes hinder the development of furniture enterprises. Marketing consists of creating a new customer base or developing a new market, its promotion strategies should be maintained up-to-date.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

Introduction

This chapter presents the summary of research findings, conclusion and recommendations of the study.

5.1 Summary of the Study Findings

The findings of this study are organised into two parts. One part is concerned with key information about furniture enterprises and another part responds to specific objectives of the study. These objectives involved (i) to assess the degrees of innovativeness among furniture enterprises; (2) to examine sources of information for technological innovation among furniture enterprises, and (3) to identify the constraints affecting technological innovation among furniture enterprises.

Concerning the first part of the study, it has been revealed that:

1. Most of wood furniture enterprises are relatively new, having been established during the period between 2001 and 2010. Emergence of more enterprises indicates an increase of interest in dealing with furniture businesses.
2. In terms of education qualification, most of furniture makers are primary school leavers and only few of them have reached secondary school level.
3. The experience in furniture making of most of them before establishing their enterprises ranges between one and five, and the older among them are few who have worked for more than 16 years in the furniture industry.

4. In terms of forms of business, furniture enterprises are dominated by sole proprietorship, and some few owners agree to work in joint ventures as partners for cumulative profits.

The first objective entails the following:

1. Small entrepreneurs have been improving the quality of furniture reaching an incremental innovation. They have been passing through different furniture designs that result from the previous ones.
2. In terms of equipment, most of the wood furniture enterprises in Dar es Salaam use manual technology. For efficiency in their work, they carry out and pay for logs and planks to be cut for specification by small-scale operators of saws and turning machinery. Instead of acquiring advanced equipments most of furniture enterprises use to add or replace a tool by another one of the same type, a fact that shows deficiency in equipment, making the sector less innovative in production technique.
3. Timber is available in Dar es Salaam due to the supply from other regions, but furniture entrepreneurs claim that timber is expensive, particularly hard timber. Furniture made of hard timber is attractive to more customers due its durability. By so doing, furniture makers start painting soft timber to replicate the appearance of hard timber. In addition, they have introduced the use of plywood as raw materials to replicate imported furniture. Doing so indicates adoption of innovation.

4. Furniture enterprises show some degree of specialisation in the organisation of their work. They are organised into clusters where informal networks among them are established for exchanging tacit knowledge and borrowing tools that enhanced the quality and productivity of their work. However, they are facing challenges such as shortage of equipment, poor division of labour and little motivation to attract and keep experts for the enterprise.
5. In terms of marketing strategies, most of small entrepreneurs display furniture in open areas, and rely on old customers to praise the quality of furniture to new ones. These strategies are the ones used since the establishment of their enterprises, making the sector less innovative in terms of marketing. However, some furniture enterprises are some how innovative following the introduction of the use of business cards and provision of transport to customers.

The second objective reveals that small entrepreneurs rely on external sources of information to their technological innovation. This is achieved through:

1. relying on multiple sources of information to furniture designs. These sources are external to their enterprises. They include customers who bring their preferences. There are also photographs, catalogues and brochures that portray picture of different furniture designs, and colleagues/competitors. Obtaining designs from various sources make innovation in the quality of furniture a complex interactive factor between markets and supply sides.

2. In terms of production techniques small furniture entrepreneurs rely on the skills they got from their former trainers as they are still applying the same production techniques. In addition, furniture makers get help from their colleagues, and lastly, they observe imported furniture and get ideas of size and appearance of furniture.
3. Furthermore, two major sources are associated with marketing strategies in small enterprises. The first source is their former trainers from whom small entrepreneurs recall what they have seen during the training period, and the second source is their colleagues through networks among themselves.

The third objective reveals the following

1. Designs are generally easy to acquire due to networking mechanisms among furniture makers. However, lack of modern equipment for furniture, high cost for timber and threat from imported furniture hinder innovation in furniture enterprises.
2. Imported furniture prevail over locally made ones due to its attractiveness, lightness and efficiency in use, attributes that customers prefer the most. The imported furniture, however, are expensive and last shorter than locally made furniture. They would provide a learning material to small entrepreneurs to adopt and become competitive. However, the owners of furniture enterprises lack appropriate finishing machines, technical expertise and raw materials for prototypes in their production.

3. For the work organisation, constraints revealed among furniture enterprises include lack of enough labour and lack of equipment compared to the number of employees in the enterprises, and
4. in terms of furniture marketing, small entrepreneurs fail to introduce new strategies due to several factors. These factors include failure to afford the cost of both new marketing strategies and marketing skills whereby lack of capital appears to be the most prevailing hindering factor to the majority of small entrepreneurs.

5.2 Conclusion

This study investigated the sources and constraints to technological innovation among wood furniture enterprises and found that they reached an incremental innovation in making furniture quality, while still in adoption in design and size of furniture. Though there are some indicators of internal capabilities towards technological innovation, most of the sources are external to the enterprises. Professional networks among the furniture makers facilitate the flow of designs and technical expertise. Raw materials and market are available that serve as opportunities for furniture enterprises to grow, but lack of advanced machines hinders SMEs to provide competitive furniture in the market. Limited capital appears a major hindering factor for the enhancement of quality of furniture.

5.3 Recommendations

In order to develop and sustain innovation in small entrepreneurs the following are recommended to owners of small enterprises, SMEs support institutions and policy makers in the country as well as the government.

To the Owners of Small and Medium Enterprises

1. Owners of SMEs should build motivational mechanisms to attract and keep employees in their enterprises to develop innovativeness from their expertise;
2. they should maintain networks with institutions for R&D outputs, financial facilities, trainings and market orientations.

To SMEs Support Institutions

1. SIDO and other Non-Governmental Organisations (NGOs) should promote technical assistance programmes to enhance technical expertise among SMEs;
2. they should work mutually with the government to teach people to value locally made furniture to develop local enterprises;
3. banks in Tanzania should review and implement policies to promote SMEs by availing them with loans to improve the quality and quantity of products.

To the Government

1. The government should provide small entrepreneurs with facilities of various machines and enhance expertise through workshops;
2. it should announce exemption of import duties on finishing machines to enhance competitive furniture;

3. it should teach people to value locally made furniture to develop local enterprises.

5.4. Area Suggested for Further Studies

Related studies should be extended to other regions, rural and urban districts of Tanzania for a comparative analysis.

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APPENDICES

Appendix I: Questionnaire for owners of wood furniture enterprises.

UNIVERSITY OF DAR ES SALAAM
INSTITUTE OF DEVELOPMENT STUDIES

Research questionnaire on:
Sources and Constraints to Technological Innovation in Tanzania: A Case Study of Wood Furniture Industry in Dar es Salaam

……..……

1. KEY INFORMATION ABOUT THE INDUSTRY

a. Name of the enterprise ……
b. When was the enterprise established ……
c. What is the level of education of the owner of the enterprise? …..…….....
f. for how long the owner had been in this career before establishing this industry? .....
g. What is the form of your business (*please tick one most appropriate box*):

☐ Sole proprietorship

☐ Joint venture

2. ABOUT INNOVATIVENESS IN FURNITURE ENTERPRISES

a) Product innovation

Is the quality of furniture (*Choose only one appropriate answer*)
☐ similar to quality at the inception of the enterprise?
☐ improved from the quality at the inception of the enterprise?
☐ completely changed from the quality at the inception of the enterprise?
Please explain your answer
……
……
……..…….

b) Process innovation

Is timber available for your services?
……..……
……..……..…
……...…

c) Innovation in work organisation

1. did the structure of business allow cooperation in making furniture? ☐ Yes ☐ No
2. is there cooperation in making furniture, now? ☐ Yes ☐ No
3. was there division of labour at the inception of business? ☐ Yes ☐ No

4. is there division of labour now? ☐ Yes ☐ No
5. did you network with other furniture makers at the inception of the enterprise? ☐ Yes ☐ No
6. do you network with other furniture makers now? ☐ Yes ☐ No

d) Innovation in marketing strategies

1. What marketing strategies have you used at the inception of your business? (*Please select any appropriate to you)*

☐ Word-of-mouth reference through increasing the quality
☐ Display sales system
☐ Putting billboards
☐ Discount on sales
☐ Using sale room or showroom
☐ Participating at national exhibition
☐ Using business cards
☐ Provision of transport to customers

Any other strategies
……
……
……

2. What marketing strategies do you use now? *(Please select any appropriate to you*)

☐ Word-of-mouth reference through increasing the quality
☐ Display sales system
☐ Putting billboards
☐ Discount on sales
☐ Using sale room or showroom
☐ Participating at national exhibition
☐ Using business cards
☐ Provision of transport to customers

Any other strategies ……

2. ABOUT THE SOURCES OF TECHNOLOGICAL INNOVATION

For the following questions, please tick any sources that are appropriate to you

1. What sources of information do you use for getting furniture designs?

☐ own initiation
☐ observing furniture made by other manufactures
☐ using retail catalogues and brochures
☐ using photographs
☐ customers who bring or recommend some designs
☐ visiting showrooms
☐ recording through media and internet

Any other sources
……
……
……

2. What sources of information do you use for changes in furniture production?

……
……
……

3. What sources of information do you use for getting work organisation strategies?
……
……
……

4. What sources of information do you use for getting marketing strategies?
☐ own initiation
☐ initiation of former trainers since we get trained for this craft
☐ initiation of furniture makers out of the enterprise
☐ attending workshops and training
Any other sources
……
……
……

3. ABOUT THE CONSTRAINTS TO TECHNOLOGICAL INNOVATION

1. What constraints do you face in getting new designs? (*Please tick any*)
☐ lack of drawing and design skill
☐ limited finance to buy cataloques and brochures
☐ scarcity of catalogues and brochures
Any other constraints
……
……
……..

2. What constrains furniture makers to replicate the technology of imported furniture *(Please tick the most appropriate to you)*
☐ lack of appropriate equipment
☐ lack of technical know-how
☐ lack of both equipment and technical know-how

3. What constrains furniture makers to make changes in their work organisation?
☐ orders placed by customers are few and inconsistent
☐ tools are insufficient for the number of employees
☐ unawareness of other management mechanisms
Any other constraints
……
……
……

4. What constrains furniture makers to introduce new marketing strategies?
☐ marketing strategies are expensive to adopt
☐ lack of marketing skills
☐ fear of taxation increase from the Tanzania Revenue Authority (TRA)
Any other constraints
……

……..……
……..…

5. In your opinion, what should be done to increase innovativeness among small industrialists?
……..……
……..……
……..…….....
..……..……
……..

Thanks for your cooperation.

Appendix III: Questionnaire for Customers of furniture.

UNIVERSITY OF DAR ES SALAAM
INSTITUTE OF DEVELOPMENT STUDIES

Research Questionnaire on:
Sources and Constraints to Technological Innovation in Tanzania: A Case Study of Wood Furniture Industry in Dar es Salaam

……

Dear respondent,

This questionnaire intends to collect data concerning 'Sources and Constraints to Technological Innovation in Tanzania: A case study of Wood Furniture Industry in Dar es Salaam'. It comprises both close and open-ended questions. For the close-ended questions tick **only ONE appropriate answer in brackets**, and for the open-ended question provide your opinions by filling in the place provided. We assure you that the information you will provide will be used for academic purposes only and will be treated as confidential.

1. Between locally made furniture and imported furniture which type do you find (*Please, tick one box appropriate to you in each of the following questions*)

a. Cheaper?
   ☐ Locally made furniture
   ☐ Imported furniture

b. Durable?
   ☐ Locally made furniture
   ☐ Imported furniture

c. Attractive?
   ☐ Locally made furniture
   ☐ Imported furniture

d. Heavier?
   ☐ Locally made furniture
   ☐ Imported furniture

e. More efficient in use?
   ☐ Locally made furniture
   ☐ Imported furniture

2. In your opinion, why do local people prefer more imported furniture than locally made ones?

……
……
……
……

Thanks for your cooperation.