

The Use of Design Process in the Production of Goods and Services by the Informal Sector in Kenya

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Abstract

Informal sector plays an important role at all levels of a global economy (ILO, 1986). It's a seedbed for indigenous entrepreneurship and national development since it energizes technological capacity building, innovation diffusion, and capital mobilization, which would not otherwise be generated. The sector is essential in economic growth and development of the nation. Design process is crucial in any production of goods and services required by the citizens of any country. This paper examines the results of the study that investigated the production process in the Informal (Jua Kali) sector on the premise that design technology impacts on the quality of the goods and services produced. A sample survey design was used in this study. Data was collected using questionnaires and interview schedules and was analyzed using descriptive statistics. The findings indicated that use of the design process in the Jua Kali production was limited, being hampered mainly by entrepreneurs' low levels of formal education, professional training and limited experience in the design process. This lowered quality and performance of their products and services thus wastage and quick obsolescence exhibited. I recommend that frequent training through seminars and workshops of the Jua Kali producers on design technology is important for sustainable use of design process in the Jua kali sector production.

Key words: Design process; quality of products and services; Informal sector (Jua Kali)

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Introduction

Informal sector plays an important role at all levels of a global economy (ILO, 1986). It's a seedbed for indigenous entrepreneurship and national development since it energizes technological capacity building, innovation diffusion, and capital mobilization, which would not otherwise be generated. The Government of Kenya has emphasized the key role of informal sector through various national development plans, sessional and strategy papers (Republic of Kenya, 1984; 1995; 1996; 1998 ;)

Penetrating the global market has been the main challenge of entrepreneurs from the developing world, a fact attributed to limited design process and technological capability (Kerre, 2000). Design is a process of converting an idea into instructions from which a new product can be made (Roy & Wield, 1986). It's the activity in which ideas or market requirements are given specific physical form, starting from the initial sketches or conceptual designs, through prototype development, to the detailed drawings and specifications needed to make the product. It affects the ultimate functionality and usage of the product and service. Any slight malfunctioning of a product due to poor design is therefore likely to pose a disaster risk for instance in construction industry buildings are collapsing due to structural failure arising from poor designs or no structural designs at all.

The Micro and Small Enterprises (MSEs) which constitute a larger percentage of players in the informal sector are not exposed to the modern technology (a body of knowledge of techniques, methods and processes) hence majority of them, especially the micro entrepreneurs, use inappropriate design technology in their production process which impacts negatively on the quality and performance of their products and services. Given their strategic role in individual country's economies, exposure of the informal sector players to suitable design technology will improve the quality and performance of their products. Further, entrepreneurs will gain knowledge and skills

that empower them to contribute towards the country's economic, social and ecological future through packaging their products in user and environmental friendly formats (Wamalwa, 2003)

Vision 2030 which proposes an intensified application of Science, Technology and Innovation is now a key road map for Kenya to achieve its development goals. The Vision recognizes the critical role played by research and development in the acceleration of economic development in all the newly industrializing countries of the world. The Government of Kenya is committed to creating and implementing a Science, Technology and Innovation Policy Framework to support Vision 2030. It is hoped that such a policy can underscore the importance of design in the economic development of the country (Amollo &Osanjo, 2010)

Informal sector contributes 75% of the total employment creation in Kenya that is well distributed throughout her rural and urban areas (Republic of Kenya, 2007). This reflects a high scale of operations and human resource engagements within an economy whose impact in terms of quality cannot be ignored. Studies (Roy & Wield, 1986; Kerre, 2000) have shown that the design technology influences the quality of the products and services, ensures that required standard and precision are achieved even during mass production which is likely to minimize wastage and obsolescence from product failures to scales of a disaster. Increasing number of accidents on Kenyan roads to horrifying proportions, epidemics, collapsing buildings and fire out breaks in business premises are some of the emerging disasters associated with poor design technology. Issues of poor quality, lack of standardization and precision of the Jua kali products and services have been persistent. However, literature reviewed for this study revealed that limited empirical evidence is available on how design process can reverse this trend among informal sector players in Kenya. Furthermore, few research studies in Kenya have attempted to analyze how caliber of human resources in the Jua Kali Sector could be a barrier to utilization of available design technology to improve quality and performance of informal sector entrepreneurs in spite of their immense economic contribution. This

study investigated the design process used in the informal (Jua Kali sector) sector production taking a case study of Western Kenya.

The main objective of this study was to examine the production process in the informal sector in relation to the design process. In addition study examined the effects of the formal education of the entrepreneurs on the use of design process in the Jua Kali production and the professional training of the entrepreneur on the use of design process in the Jua Kali production.

On the basis of the above objectives, the study tested the following research hypotheses.

- (i) There is no significant difference in the design process of Jua Kali products and services compared to that in the formal sector.
- (ii) The level of formal education of the entrepreneurs does not significantly affect the design process in the production of Jua Kali products and services.
- (iii) The level of professional training of entrepreneurs does not significantly affect the design process in the production of Jua Kali products and services.

This study was founded on the theoretical formations of the integrated and revolutionary approaches to product/service design which are essential in the provision of quality user- friendly output (Warren, 1988; Brecknon, 1990). Research evidence suggests that a thorough understanding and application of resources through design technology is necessary to ensure a high quality product/service (Garratt, 1998). Entrepreneurs producing Jua Kali products and services in this study were analyzed in terms of how they designed their products consistent with universally accepted design process as the case in the formal sector production. This theoretical approach was relevant to this study in the sense that it emphasizes the need for design process in the production of products and services that are standardized and of the required precision. According to the integrated approach, producers who produce goods and services without design technology are ill advised as they will never achieve the required standards and precision to match the competitive global market. All aspects of the

society's existence should be integrated in the product/service design technology for entrepreneurs to fill societal need gaps. That design is an integration of several stages to a physical end product to meet the society's need or want (Warren, 1988; Brecknon, 1990). The revolution approach on its part emphasizes the positive change in design technology as part of adopting to the dynamics of business environment by the Jua Kali entrepreneurs. Furthermore, one requires changing design techniques to meet the dynamic societal needs.

Philosophical perspective conceives design as a decision-making process achieved through the translation of the scientific theories or principles into the practical solutions to human needs (Warren, 1988). Entrepreneurs see design as media of translation of scientists' visions into practical solutions to human needs. Design bridges scientific theories and environmental realities that the entrepreneur has to address for self/societal gain. From sociological perspective, the products and services are designed to fill need gaps of consumers hence the view that designed solutions are for solving societal problems. However, products/ services have both beneficial and detrimental effects upon people, wildlife and their environment hence design technology process should seek to minimize the detrimental effects from degenerating into disaster risk (Garratt, 1998). Shepard (1989) further observes that design is needed to improve our general quality of life and preserve the natural resources at our disposal. Since the quality of products and services is a key factor on the global market, the design process needs to be followed in the production of such products (Wamalwa, 2003). This study purposed to establish the use of design process in the production of goods and services by the informal sector in Kenya.

As a process, design involves application of technology for the transformation of resources to create a product that will satisfy a need or want in a society. The product must perform its function in most efficient and economic manner within various constraints that may be imposed. Such includes, cost, safety, pollution, and legal requirements (Garratt, 1998; Shepard, 1989). A Republic of Kenya (2000) study found

that some Jua Kali entrepreneurs select low quality materials with hope of reducing the production cost but this yields low quality products. However Daniels & Steve (2010) argues that; the nature of the Jua Kali design process has been a point of contention among scholars. When one applies Western standards of design to the sector, it might appear as if many of the artisans are not employing a design process at all. Most copy designs from other artisans, who in turn copy designs from catalogs or imported goods—a process known as import substitution. But even if designs are copied, they are chosen for a reason and adapted to the local context according to a number of constraints. And that is a design process.

The production skills determine the quality and durability of the product. A highly skilled entrepreneur and/or employee will make products that are as good (if not better) as the mass-produced products. The informal sector has been constrained by shortage of technically trained personnel (Lundvall and Battese, 1999), perhaps as a result of absence of formal training programmes targeting the Jua-Kali sector. Some entrepreneurs in this sector initially learned their skills while working in the formal sector (Bigsten *et al.*, 2000). The voucher-training program has been the only elaborate attempt in the sector whose coverage was however limited. In spite of this handicap, it's a fact that education and training plays a crucial role in developing an individual's capacity to plan, organize resources, network with customers and suppliers, control situations and coordinate activities (ESAURP, 1993; Republic of Kenya, 2000). I therefore assert that this trend is likely to affect quality of design technology and its adoption in the Jua Kali sector with negative implications on users emanating from product failures.

Design technology entails a systematic and detailed evaluation of problems, alternatives, and solutions which is similar to an entrepreneurial process (Ray, 1985). Design awareness and abilities are fundamental capacities of all entrepreneurs mostly developed through education. Good design technology should fulfill its functional purpose and maximize economic benefits to both the producer and user. Design

technology can be applied at three levels: low (basic design), middle (modified design) and high (innovative design) (Ray, 1985). The low level involves copying skills, e. g reproducing a product through pure copying of an existing one. The middle level involves modifying other design works and demands reasoning out the modification to be applied on an already existing product. The highest level involves creativity of a totally new product and requires the proper understanding of all properties of materials, scientific theories and principles required for creation of a solution.

The effectiveness of any design technology depends on how well the essential information has been put forward. Some entrepreneurs in the Jua Kali Sector are keener on making quick profits and hardly engage in post-sale service yet this could reduce failure rates and therefore detrimental effects on consumers. This study explored how entrepreneurs in Jua Kali Sector packaged their design technology to minimize poor quality and quick obsolescence

Methods

This study utilized a survey design. It investigated the characteristics of Jua Kali entrepreneurs in Western Kenya and their design process without manipulating any variables. This was done by selecting a sample of the population of Jua Kali entrepreneurs in the area to participate in the study after a preliminary exploratory survey of registered enterprises. Entrepreneurs who were engaged in the manufacturing activities of the Jua Kali Sector covering furniture and metal fabricated products were targeted for study. The enterprise owner-manager of each enterprise was targeted as the principal respondent in the study. A sample of 112 enterprises (23% of the research population) was selected using stratified random sampling (N=500). Secondary data was obtained from reviewed literature that comprised relevant publications on design technology as applied in business sector while primary data collection was through standardized questionnaires, structured interviews, document analysis and direct observations.

Data analysis

Table 1 Distribution according to the levels of Formal Education

Formal Education	Frequency	Percentage (%)
Primary education	47	41.96
Secondary Education	55	49.12
Middle college Ed.	9	8.04
University education	1	0.89
Total	112	100

Source: Field Data, 2002.

The results in Table 1 show that 49.12% of the Jua Kali entrepreneurs had secondary education. 41.92% had primary education and 8.04% had middle college education. Below 1% had University education. It was realized that 91.1% of the Jua Kali entrepreneurs secondary education and below.

Table 2 Distribution according to levels of Professional Training

Professional Training	Frequency	Percentage (%)
None (on job)	25	22.32
Artisan	58	51.79
Craft	21	18.75
Dip/Technician	8	7.15
TOTAL	112	100

Source: Field Data, 2002.

Majorities (52%) of entrepreneurs were artisans. The results in Table 2 show that 22.32% had no professional training but learned on the job. Craftsmen were 18.75% of the producers. About 7% were in possession in diploma/ technician certificates. It was deduced from table 2 that above 70% of the entrepreneurs were artisans and below. The study employed the inferential statics in the analysis of data. The hypotheses were tested using One Way ANOVA.

Discussions

From Tables 1 and 2, majority of producers had formal secondary education and below. They also had professional training at artisan level and or below. The results were in agreement with the findings of Micro and Small Enterprise Training Technology project in the year 2000. The project found out that the majority of the producers lacked professional training of high levels (diploma and above) in respective Technological fields. It was noted in the project that the Kenyan youths are seeking training opportunities where they receive inadequate training as a result of unavailability of qualified trainers, lack of training facilities, lack of credible training programs and in most cases, inadequate time is available for training (Republic of Kenya, 2000).

The results showed that the production in the informal sector was not through formal design process. The results also revealed that the production in the informal sector did not follow the design process as stated by design experts. These findings indicated that the production in the Jua Kali sector lacked design. Due to lack of design, innovations were minimal in the sector. The sector operates at low level technology and as a result, the technological advancement in the sector is not realizable.

The results also showed that the level of formal education of entrepreneurs affect the design process in the production significantly. Hence producers with low level of formal education produced products and services without design process. Entrepreneurs with higher formal education used design process in their production. Since the majority of producers were of low formal education, the products and services in the Jua Kali sector exhibit poor qualities. The study findings were in agreement with the findings of Lundvall and Battese (1999) that low level formal education impacts negatively on the qualities of the products and services produced by the Jua Kali sector.

The results showed that the level of Professional Training of Entrepreneurs affect the design process in the production significantly. The results show that entrepreneurs

with low level of Professional Training, exhibit similar characteristics as those with low level of formal education. The study findings were in agreement with the findings of Kerre (1989) that there were insufficient technical personnel in Kenya. The findings concurred with Bigsten *et al* (2000) that an attempt to train the Jua kali entrepreneurs through the voucher training programming was not enough as majority could not be reached.

Conclusions and Recommendations

Majority of entrepreneurs in the informal sector and manufacturing sub-sector, have low level formal education and professional training. The study found only one respondent was a University graduate. The production in the informal sector lacks design. Therefore, I conclude that, the poor quality exhibited by the Jua Kali products and services is as a result of lack of design process in the production. Further it can be concluded that lack of precision, standardization and spare parts for the Jua Kali products and services is as a result of lack of design process in the production. The level of formal education and professional training of the entrepreneur affects the application of design process in the production of goods and services.

The producers in the informal sector should undergo training through seminars and workshops in design technology process. There should be government policies governing the production in the informal sector in relation to design technology. This will lead to standardization of Jua Kali products and services and applications of appropriate technology. Design goes along with technology and therefore high technology leads to better designs.

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