# An Exploration of Vocational Skills and Knowledge Systems in Mbare – Magaba Informal Metal Industries: Demystifying Perceptions on Informal Training System competences.

**By**


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**Abstract**

The study sought to establish the source of skills and knowledge systems as well as training strategies adopted in the informal industry Mbare-Magaba informal industry situated to the Western periphery of the city Harare was the geographical delimitation of the study. The study adopted two main approaches to data gathering and therefore had a fair balance between qualitative and quantitative methods. Although Mbare-Magaba industry has informal players of diverse trades, this study focused on informal metal industry with a population of 1 500. Using stratified random sampling and snowballing techniques, a sample of 170 participants was established. Questionnaires were self administered and data collected were processed using the SPSS. Qualitative data were sorted into emerging themes. The study established that the informal sector has decentralized the training and therefore the skill base of the industry. Consequently this has caused a vibrant group of small capitalist players to emerge with a unique culture of recruitment, training and organisation of production. In this context the 'hands on' approach through the informal apprenticeship training system emerged as the most dominant teaching strategy. Also what we see in the informal industry is a perpetuation of social networks and social responsibilities where parents are expected to pass their vocational skills to their children. The study also explored different sociological ramifications of the context in which technical skills are acquired in the informal sector.

**Dedication**

This study is dedicated to my late father Mr Gondo Muchabaiwa who sacrificed a lot for my education and my late mother, Neria Mukorera who had no chance to see her son acquiring an education she so desired.

**Acknowledgement**

The research study could not have been a success had it not been the shrewd mentorship of Dr Sadomba. I am also very grateful to wife Grace who supported financially and emotionally during the writing of this thesis. Special thanks to my dear friend Godfrey Jakachira as we always engaged in discussions concerning the constraints and feasibility of research approaches.

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## 1.1 Introduction and Background to the Study

Most economies in Africa as well as some parts of Asia have either collapsed or declined as a result of adopting Structural Adjustment Programmes (SAPS). These SAPS which are largely informed by neoliberal policies tend to adopt a (one size fits all) approach to address the economic crisis in different countries. The failure by neoliberal policies to carry out a situational or contextual analysis leads the reversal of economic industries in Zimbabwe tends to be a consequence of the economic meltdown after implementing the devastating neoliberal policies.

The adoption of the Economic Structural Adjustment Programme (ESAP) coupled with the economic sanctions imposed by the West on Zimbabwe culminated in most companies either downsizing or closing shop. Consequently most people found themselves unemployed. As a coping strategy most people in Urban centres resorted to the informal sector for self employment. The sudden growth of the informal industry was also influenced by the massive land occupations in farms in 2002 which had ripple effects in urban centres where people had to grab whatever free space to engage in various entrepreneurial ventures. In essence the industry reconfigured into small scale trading and manufacturing sectors.

This study explores the source of skills and knowledge systems used in the informal metal industry. Its thrust is to establish training methods and strategies in the informal industry so that they can be utilized in the resuscitation of economic development. It is increasingly acknowledged that people skills and capabilities, and investment in skill training are critical for growth and development. Thus the crucial role of skill training is promoting employability and improving the livelihoods of people. In this regard it becomes of critical importance to understand the sociological ramifications of the context in which vocational skills are acquired in the informal sector.

## 1.2 Statement of the Problem

The study stems from the desire to establish the sources and types of skills and knowledge used by manufacturers in the types of skills and knowledge used by manufacturers in the informal industry. It also seeks to explore the training methodology as well as the ideology behind such a training system. The reconfiguration of industry into small scale production units implies that the methods and strategies of skill training may also change so that they become compatible with the new economic dispensation. It thus becomes imperative to understand the sociological explanations of the context which the skills and knowledge are passed to the prospective informal metal industry manufacturers.

## 1.3 Justification of the study

The situation in Zimbabwe currently is that the economy largely hinges on the informal industry. This study explored the knowledge systems and technical skills used in the informal industry. The diffusion of such skills to other prospective metal workers may contribute to the regeneration of economic development. It thus becomes of critical importance to build on what already exists in the informal metal industry training system. In this regard, the identified skilled manufacturers in the informal metal industry may be utilized in creating skill training centres within the informal industry so as to boost the industry and subsequently enhance economic development.

## 1.4 Objectives

This study hinges on the following objectives;

- To outline the informal sector environment and its educational impacts.
- To measure level of education and rate of training in the informal sector.
- To identify main methods of skills development and measure their effectiveness.
- To provide sociological explanation to educational and training processes in the informal sector.

## 1.5 Research Questions

The study intends to address the following questions:-

- Is there any skill development taking place in the informal sector? If so what skills are being gained?
- Do conditions in the informal sector allow skills transfer to the expanding industry? If so, how? If not, why?
- If there is skill training occurring in the informal sector who is targeted and how are they recruited?

## 1.6 The Study Area

The study focused on Mbare-Magaba informal Industry situated to the western periphery of the Central Business District of Harare. Mbare happens to be the oldest township characterized by a hive of activity which include informal trading, vegetable marketing, carpentry, fabrication as well as metal product manufacturing. The Central Business District and the Mbare-Magaba Informal Industry are separated by the railway line 'flyover' and the informal industry stretches for more than a kilometer approaching Mbare-Musika bus terminus. The name Magaba derives from the extensive use of old scrap metal to manufacture various hardwares. This study was interested in those involved in manufacturing metal hardwares and machines only.

## 1.7 Theoretical Framework

### The Marxist Conception of Society

This study adopted the Marxist conception of society to help us best understand the theoretical explanations of what happening in the Mbare-Magaba informal industry. According to Marx society is characterized by class conflict, class struggle and divisiveness over the scarce resources in society (Sanderson, 1988) Basically there are two main economic classes; the bourgeoisie (the haves) and the proletarist (the have nots).

From the Marxian point of analysis, the bourgeoisie wield the economic and political power hence they constitute the ruling class. On the other hand, the

proletariat are largely powerless as they have no access to the scarce resources. They constitute a working class because they survive by selling their labour to the ruling class who pay them very little for their effort. Consequently the working class lives in dire poverty. If we look at the composition of the people in the Mbare-Magaba informal industry, one can argue that they are typically a working class described by Marx. This is so because most of them are former workers of the formal industry who were retrenched because of the neoliberal policies adopted in Zimbabwe under the banner of ESAP. They were retrenched because as workers they did not own the means of production. Furthermore, a close analysis of their working environment (overcrowded) and the old fashioned tools they are using depicts a class that is struggling against poverty. More specifically, because they have no access to land, no capital and no access to technologically advanced tools, the people in Mbare-Magaba informal industry resemble a class typically described by Marx as a working class.

The main thrust of this study was to explore the education and source of skills in the informal industry. In this regard the views of Althuser a neo-marxist were used to analyse the education and training strategies in the informal industry. According to Althusser, education in a capitalist society is an ideological state apparatus (Giddens, 2001). In other words education is a propagation of the ruling to maintain their dominance. Thus technical skill training in a capitalist society is meant to serve the interests of the rulling class. Instrumental education is made inaccessible to the working class. The education level of the people in Mbare-Magaba informal industry confirms that they hail from a working class background. Most of them failed to attain tertiary education because of poverty hence they resorted the informal apprenticeship training. In other words, the traditional apprenticeship training in the informal industry can be viewed as what Freire (a neo-marxist) referred to as the ‘pedagogy of the appressed’ which has a liberating effect (Njobe, 1990). It can therefore be argued that the traditional apprenticeship training adopted in Mbare-Magaba informal industry is an alternative to the formal vocational training system. This participatory or ‘hands

on' approach is largely emancipator because it promotes employability, enhances productivity and reduces poverty.

## 2.0 Literature Review

Most research studies tend to focus on the emergence of the informal industries, the importance of self employment and how most economies have reconfigured into small scale production units. It seems these is very little research on sources of skills and knowledge use din both the production process and management of the manufacturing enterprise hence this becomes the area of interest in this study.

The opening of Zimbabwe market through the liberation agenda of ESAP made it difficult for local producers to compete with imports (Kanyenze, Chitambara and Martens, 2011). This resulted in most companies closing down and redundancy in the manufacturing sector. Kanyenze et al, (2011) study is very critical because it points out how the demise of the formal industry becomes a springboard for the growth of the informal sector. Similarly a study by Mwanza (1992) points out the employment levels declined sharply leaving many people without sources of livelihood. This is quite in tandem with the focus of this study as it sought to explore the characterisation of the informal sector.

A study by Sadomba (2011) reveals that the massive land occupations of 2002 had ripple effects in urban centres where people grabbed whatever free space to engage in either informal trading or informal manufacturing. However, this study goes further to explore how these people who engaged in the informal metal industry acquired the technical skills and how the skills are cascaded to other prospective metal industry manufacturers.

While Fafunwa and Aisiku (1992) argue that the skills and education of any one given society should be instrumental to its socio-economic requirements, this study went further to analyse the context in which such skill are trained or cascaded to prospective informal metal industry manufacturers. However, the training strategies explored by the study are largely in tandem with the ideas and ideology of traditional education which combines production and training.

Another study of the informal sector in India by Shinder (2001) reveals that technical skills in the informal manufacturing industry may be acquired outside the formal education system. In the same vein, this study explored the informal training system to appraise its relevance and instrumentality in the production of informal metal hardware. It further explored the synergies between traditional vocational training system and the informal apprenticeship training system in the informal industry.

Kundu and Sharma (2001) took a drastic trajectory in their study to argue that effective skill acquisition should always be informed by some kind of theory, by so doing marrying theory and practice would help trainees to master the requisite skills. Thus the assumption here is that a certain level of formal education is a prerequisite for skill acquisition in any training system. In this regard, this study sought to establish the level of education of the manufacturers in Mbare – Magaba informal metal industry and assess whether the level of education had any bearing in skill acquisition.

Quite a number of studies seem to acknowledge the importance of education and skill training in the manufacturing industry hence this study sought to explore ways and the extent such knowledge and skills are passed to prospective metal products manufacturers. In the same vein, Kanyenze et al (2011:298) argue "…new technological developments are meaningless if skills are in short supply." This implies that there are significant synergies between new knowledge and

human capital. Thus the framework connecting growth to poverty reduction emphasizes the importance of education and training and of skills formation.

A study by Francks (2000) revealed that small scale enterprises were the magic behind the East Asian Economic miracle which led to the industrialization of South Korea, Taiwana and Japan. Similarly the formal industry of Zimbabwe has reconfigured into small scale informal manufacturing industries, hence this study explored the characterization of the informal sector and its subsequent link with production. Thus most studies tend to leave a wide gap and grey area of methods and strategies, source of knowledge and skills, as well as sociological explanations of the context in which skills are acquired in the informal sector.

## 3.0 Research Methodology

This research involved the two main approaches to data gathering and therefore had a fair balance between qualitative and quantitative methods. This was important because metal manufacturing in the informal sector has remained a grey area hitherto and therefore its need to have comprehensive way of studying it. The field demanded both depth and extent.

I started by carrying out a survey where I administered three questionnaires with diverse questions to cover education, demographic issues and consumer information. The survey managed to provide explorative data that gave me good appreciation of the skills development forming a solid foundation for a more detailed and focused high quality investigation. The survey involved 5 steps including designing the instrument, training enumerators, administering the questionnaires, data inputting and analysis using the SPSS and family interpretation.

The qualitative approach involved obtrusive observation, interviews, discourse analysis as well as content analysis. I frequented Magaba on different occasions assessing how the informal apprentices are taught the requisite skills, measuring

some manufactured articles as well as the working space. I also observed how finished goods are disposed. I then held interviews with 20 manufacturers; 19 men and 1 woman. 20 more interviews with consumers 15 men and 5 women were held. This reveals otherwise very difficult issues about curricular and content of the informal training as will be explained in the relevant chapter.

I selected the research participants on the basis of the kind of metal goods they produced. In other words I focused on manufacturers of building materials and equipment, household wares, farming implements and processing machines. By so doing manufacturers of different metal products were represented in the sample. This procedure of selecting participants is also known as random sampling technique. Mbare –Magaba is a politically volatile area, hence I had to ask my initial respondent to introduce me to the next manufacturers (snowballing sampling technique, Leedy 1993). Consumers were also selected on the basis of the metal products they brought or intended to buy. Manufacturers who were selected for observation were picked on the basis of their trades as well. By so doing the sample became quite representative.

On the whole, 70 questionnaires were administered to informal metal products manufacturers, 50 more questionnaire to the trainees in the informal metal industry. 20 manufacturers and 20 consumers were selected for interviews. 10 more manufacturers of different metal products were selected for observation. Thus the sample of the study consisted of 170 participants.

Questionnaires were first tested in a small pilot study that involved three informal metal industry manufacturers. Similarly the interview guide and observation grid were tested prior to the actual study. This led to the modifications of the instruments to increase clarity, and improve content. The initial questionnaire did not capture the number of successfully trained metal workers by the informal metal industry manufacturers as evidence of their competence. The interview guide was adjusted as well to include the perceptions of the manufacturers on

the future of the informal sector. The observation grid was also adjusted to include observation on the working space and environment.

### 3.1 Ethical Consideration

I sought informed consent from the research participants by explaining the nature, purpose of the study and confidentiality.

### 3.2 Data Analysis

Data were analysed using both a specialised computer programme for the quantitative data and a ‘manual’ process for qualitative data. An SPSS specialist was contracted to input the data, followed by an analysis of frequencies and cross tabulations. Tables, graphs and pictorial graphs were developed for analysis. Qualitative data were sorted into different themes involving a process of deeply studying interviews and observation notes and cutting and pasting these into their relevant themes.

### 3.3 Limitations of the study

Mbare-Magaba informal industry is a politically volatile area, so gaining entry was quite a great challenge. I had to seek permission from the respective chairpersons of the cooperative sin the informal industry. At times interviews would be interrupted by someone asking me to produce a card of my political affiliation. Interviews would only resume after explaining to them that what I was doing had nothing to do with politics. Another challenge was on financial resources. Everytime we went to administer questionnaires, I had to meet all food and transport costs from Chitungwiza to Mbare for seven people; the 6 research assistants and myself. I had to seek a bank loan to meet all the research costs.

## 4.0 Research findings

This section presents both quantitative and qualitative data.

### 4.1 Growth of Informal Metal Manufacturing Sector

Qualitative data revealed that the growth of the informal industry in Zimbabwe tends to be a consequence of the Economic Structural Adjustment Programme, massive land occupations and sanctions. Survey respondents and interviewees were is agreement on this. The table below is a summary of reasons why people joined the informal industry.

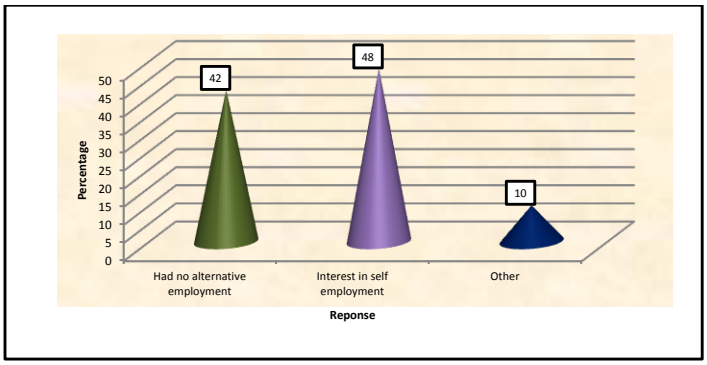
**Table 1: Causes for high gravitation of labour from formal to informal industry.**

| **Reason for mobility** | **Percent (%)** |
|---|---|
| Could not secure formal employment | 27.1 |
| Retrenched | 47.1 |
| Interest in self employment | 22.9 |
| Other | 2.9 |
| **Total** | **100** |

**N=70**

The table shows percentage distribution of informal sector players based on reasons for joining the industry. Almost 75% of the sector was forced out of formal employment and only 23% joined willingly.

**Figure 1: Determinants of joining the informal industry.**




**N=50**

The graph shows that choice of alternative employment is limited with a big as 42% having no choice but to join the informal metal manufacturing industry. Only 105 indicated that they had been persuaded by parents.

A 20 year old manufacturer in this informal industry supported the survey outcome saying:

> *I was retrenched in 1994 after the introduction of ESAP*
>
> *I went home to farm, I only came back after my friend persuaded me to form a joint venture in manufacturing ox-drawn carts.*

This evidence was collaborated by many interviewees and further supported by the discourse of various books and journal articles that were analysed in this study. Shinder (2001) noted that there was an influx of people into the informal sector after the demise of the formal industry.

It is therefore quite evident that the adoption economic liberalisation policies under the banner of ESAP contributed to the growth of the informal metal industry. As the firms completely closed down citing viability challenges the formal industry Shrunk significantly. According to a survey by confederation of Zimbabwe Industries CZI (2007), company closures increased significantly owing to the harsh economic environment faced in 1997. As observed by Kanyenze et al (2011:141) "…a total of 838 companies closed down between 2000 and 2004."

This consequently caused massive and intensive retrenchments of labour that flowed and relocated to the informal industry. This occupational mobility was expressed by a water pump manufacturer who narrated:-

> *I used to work in the heavy industries as a fitter and turner. The company closed down in 2008 citing viability challenges because of sanctions. So I decided to be self employed right here in the informal industry.*

Occupational mobility was not just confirmed to movement within industries it also involved movement across the economic spectrum. For example farm workers who were affected by the land occupations and did not secure land of their own, found their way into the urban centres where they were quickly absorbed into the informal sector. An interview with one window frame manufacturer reveals:-

> *When I came into the informal industry, I was coming from commercial farms where our previous employer had lost his farm due to the land occupations by the blacks. At the farm I was working as a welder and that is what I am doing here.*

This quotation shows that movement also related to concentration of relevant skills as skilled workers moved from industries which were not core business of their trades.

Recruitment into the informal metal manufacturing sector was not however limited to labour with relevant skills for the industry. On the contrary it intensively involved absorption of unskilled unemployed labour. The recruitment criteria and methods changed drastically as informality dominated the industry. From bureaucratic standards of the formal sector where recruitment emphasized paper qualifications and impersonality among other things, the informal sector recruitment based on connections and social relations. Thus the composition and structure of the industry changed with the extended family structures and

friendship becoming prominent of getting employment. For example, one meshwire manufacturer said:-

> *I was invited by my brother whilst I was at our rural home. He wanted an assistant in the manufacturing of meshwire.*

Another manufacturer of oxdrawn ploughs shared the same sentiments:-

> *I cam here in 2001 after my uncle had reserved an employment opportunity for me in the informal metal industry.*

Metal manufacturing which is significantly made dominated, started to change in its gender composition. It reconstituted to include women. The table below shows that women are now penetrating.

**Table 2: Gender distribution of informal sector metal manufacturers**

| **Sex** | **Frequency** | **Percent%** |
|---|---|---|
| Male | 68 | 97.1% |
| Female | 2 | 2.9% |

Although women still constitute an insignificant 8% of the manufacturers in the Mbare-Magaba informal metal industry, this is evidence of penetrating the once male dominated field. I observed that a lot more women tend to be engaged in informal trading within the informal industry than in manufacturing.

## 4.2 Trades in the Informal Metal Industry

In the Mbare-Magaba informal metal industry, quite a wide spectrum of metal products are manufactured by welders, fitter and turners, boilermakers and engineers. The products range from simple buckets to sophisticated products. The table below shows diversity of metal hardwares and machines manufactured in the informal industry.

**Table 3: Specialisation in the informal metal industry**

| | |
|---|---|
| Brick frames & pressing machines | 2.9 |
| Compressors and steel cutting machines | 1.4 |
| Door frame and window frames | 17.1 |
| Grinding mills | 4.3 |
| Harrows | 5.7 |
| Hoes, axes and metal tins | 2.9 |
| Oil pressing machines and peanut butter machines | 12.9 |
| Ploughs, plough parts and cultivators | 21.5 |
| Scotch carts | 12.9 |
| Water pumps | 12.9 |
| Wheel barrows | 2.9 |
| Wire mesh machines | 2.9 |
| **Total** | **100** |

**N=70**

The table below shows percentage distribution of manufacturers based on specialized goods production. It is clear that farming implements are the most (22%) manufactured followed by building materials (17%). This confirms the findings of Sadomba (2010) who observed that building materials and agricultural equipment were the highest produced goods.

Production of agricultural equipment and tools also includes agro-processing machines as presented by one qualified engineer with a workshop at Magaba.

> *I am a qualified engineer, I specialize in different types of machines which include grinding mills, oil press machines, maputi guns and water pumps among others (interview, Dec 2011).*

Some manufacturers in the informal metal industries specialize in farming implements like:-

> *….oxdrawn plough, cultivators, landshares, wheels, wheel excels, wheel arms and many other parts for cultivators and ploughs (interview with a metal worker at Magaba Interview, Dec 2011).*

Other manufacturers specialize in building materials and equipment used in the construction industry:-

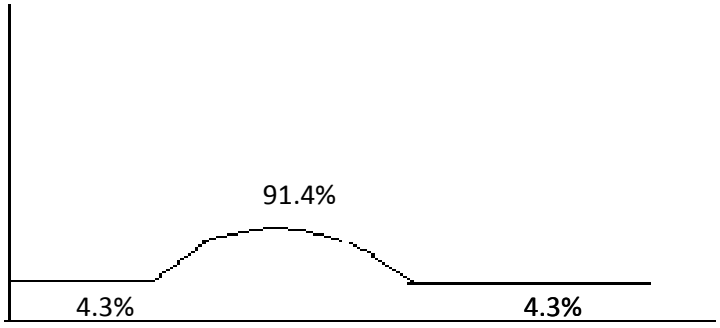
*…windowframes, doorframes, wheel barrows, trowels as well as burglar bars. We are specialists in building materials and equipment. Interview with a welder at Magaba Interview, Dec 2011)*

Generally most of the metal hardwares and machines initially manufactured in the formal industry are now produced in the informal industry.

## 4.3 Educational Attainment and Quality of Trainers in the Sector.

The findings of the study indicate that most of the manufacturers in the informal metal industry had gone through the formal education system. Also most of them went up to secondary level although some may not have 5 'O' level passed. The graph below shows the educational level of the manufacturers.

**Figure 2: Educational level of manufacturers.**




More than 91% of the artisans (Welders, fitter and turners boiler makers and engineers) in the informal metal industry have secondary education, 4.5% have primary education while another 4.5% have vocational training. This figure compares well with the national distribution of – 90% being secondary school graduates. The distribution is a perfectly normal graph with extremes of 4.3%.

Manufacturers in the informal industry are highly experienced. One doorframe manufacturer had this to say:-

*Including the six years I worked in the formal industry, I have more than 20 years of experience manufacturing doorframes and window frames.*

Many boast of more than 10 years of manufacturing experience. It is thus evident that the metal hardware and machinery manufacturers are both highly qualified and experienced. I also observed that even those manufacturers with primary education could interpret designs of window frame quite well and could interpret designs of window frames quite well and could easily measure in either the metric (cm) or empirical system (inches), depicting a good mathematical (menstruation) knowledge. They displayed competence.

## 4.4 Source of skills and knowledge systems in the informal metal industry

Many manufacturers acquire this technical skills through the informal apprenticeship training system as the table below shows:-

**Table 4: Sources of informal metal manufacturing sector skills by trade**

| Training Institution | Type of Trade (%) | | | Total (%) |
|---|---|---|---|---|
| | Welder | Fitter & Turner | Engineer | |
| Vocational Training College | 50 | 33.3 | 16.7 | 100 |
| Formal apprenticeship | 25 | 50 | 25 | 100 |
| Informal apprenticeship | 67.3 | 21.2 | 11.5 | 100 |
| Other | 66.7 | 33.3 | - | 100 |

The table shows that 67% of welders in the informal industry claimed that they acquired their skills through informal apprenticeship demonstrating the prominence of informal skills training in the industry particularly in trades of low capital investment. Fitter and turners and engineers respectively, who trained informally were 21% and 11% - depicting limitation of capital required for such high level training. The table also demonstrates a salient point of training capital and teacher/ student ration in this sector.

For example the ratio of welders with formal vocational training to those informally trained is 50:67 or 1:1.03. This ratio is similar across the other trades of fitter and turners and engineering category. This argues a very low teacher/student ratio in the sector and illustrates that and though considered informal the industry has highly qualified trainers to pass skills and knowledge to their students. One manufacturer of different types of machines in the informal industry confirmed this assertion. He went through the formal apprenticeship training system and has churned out many artisans 'informally'. He illustrates his skills:-

> *I am a qualified engineer and I went through apprenticeship training system. I am a class 2 journeyman actually.*

A journeyman is one who undergoes both theoretical and practical training and is certified as having satisfied the requirements of the Ministry of Higher and Tertiary education. This is equivalent to the London Guides Certification and standard, a world wide recognized accreditation system. The grading ranges from class 1to class 5 with class 1 being the highest.

Qualitative data confirm these statistics. For example, an interview with one ox-drawn carts manufacturer reveals this attachment to formally trained artisans as a source of the former's skills. He said:

> *I started as an assistant to the manufacturers of oxdrawn carts until I mastered all the requisite skills for the carts manufacturing process.*

It is illustrative that the oxdrawn carts are equipment which falls in the heavy industry category.

Non participant observation revealed that same of the important skills in manufacturing ox-drawn carts include mounting the excel, fitting bearings, wheel alignment and welding involving accurate measurement.

In another interview a grinding mill manufacturer elaborates:-

*I came into the informal industry without a single idea of how grinding mills are manufactured. I acquired all the skills for manufacturing grinding mills under the mentorship of my uncle.*

In yet another interview, another grinding mill manufacturer worked as an assistant to fitter and turners in the formal industry. By so doing, he acquired skills in accurate measurement, mounting parts, wiring machines, mounting electrical motors, using a grinder as well as threading bolts and nuts. These are some of the skills he is using to manufacture grinding mill in the informal industry. The manufacturer explains:-

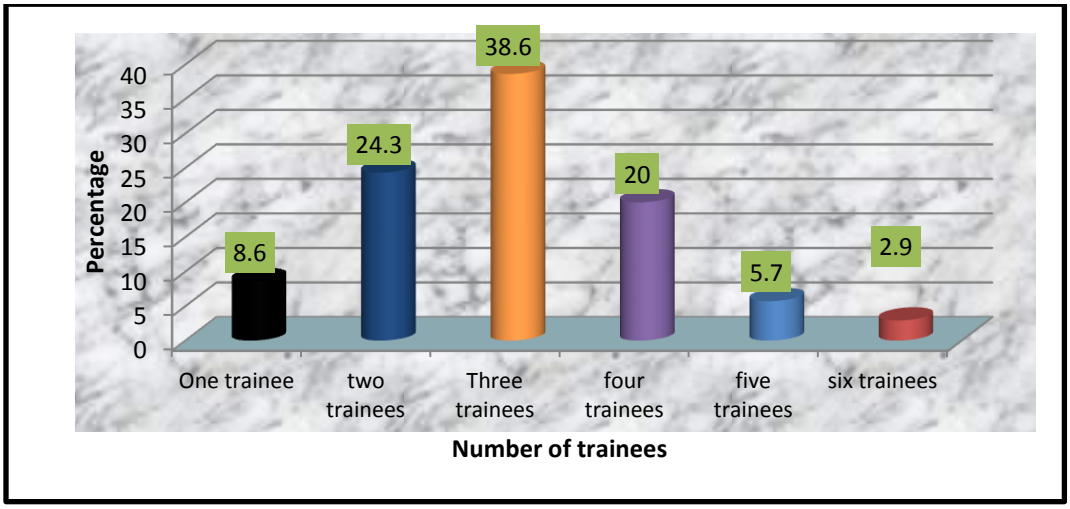
*I worked as an assistant to engineers in the formal industry. That is where I acquired all the skills in grinding mill manufacturing.*

It is therefore apparent that the informal sector training is not only diverse but also deep producing highly qualified artisans. The industry based on highly trained artisans and engineers in the formal institution managed to replicate the formal industry skills.

## 4.5 Rate of Training

With relatively high quality of training in the sector the question is how many are then trained? To measure this two factors considered: the rate of training in the informal sector and duration. The figure below shows the rate of training by artisans in the sector.

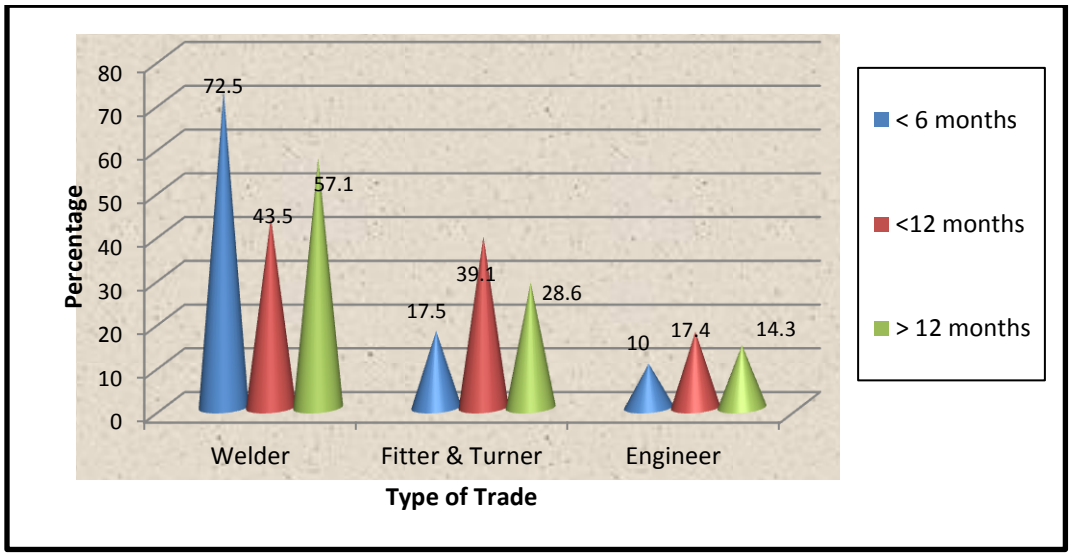
**Figure 3: Rate of training in the informal metal industry**




Quite a number of prospective fitter and turners, engineers and welders are trained in the informal metal industry. The graph above shows the rate of training metal workers in the informal industry indicating normal distribution with an apex of 39% of trainers rolling out at least 3 trainees on average of six months. The extremes are only about 9% train only 1 and about 3% train as high as 6 apprentices.

The mastering and acquisition of skills depends on individuals and their respective trades. For instance, to master skills in window frames and doorframes manufacturing may take up to six months while mastering skills in grinding mills manufacturing may take up to 12 months. The following graph shows the duration taken to acquire skills by actual trade.

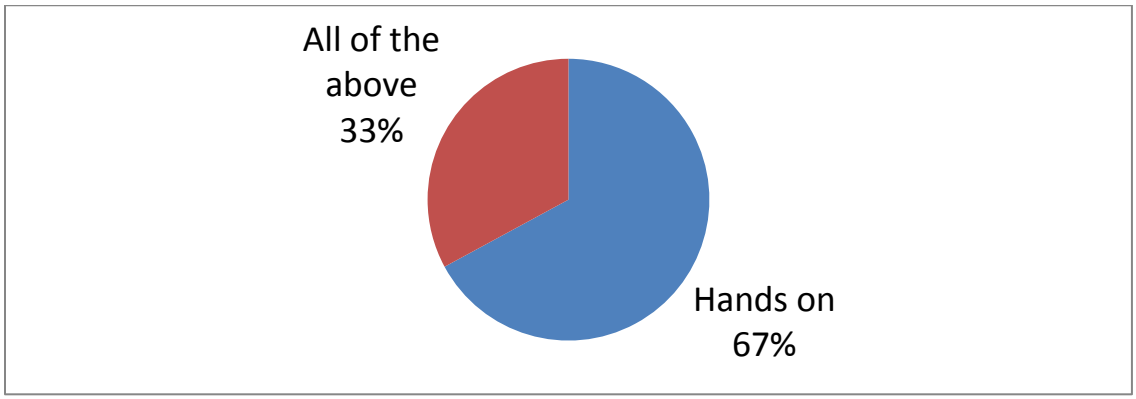
**Figure 4 : Duration to acquire skills by actual trade.**




Non participant observation revealed that some trainees are fast learners and take less time to master certain skills while others take longer.

In low level skills such as welding, 6 months training 73% is common although some go beyond 12 months. However higher level traders of fitter and turner and engineering take much more time. But still for fitter and turners between 6-12 months is sufficient period and for engineers more than a year is required. Although the research could not establish exactly how long is taken for each of the trades a general pictured can be painted. The informal sector is producing a high number of artisans considering the rate per manufacturer and the duration which tends to be much shorter composed to formal training. This short period of training could be explained by a number of factors including little time spared for theory, low teacher/student ratio, and response to individual trainee capacities.

**Figure 5: Percentage distribution of respondents by type of teaching method**




67% of the manufacturers indicated that the 'hands on' approach is mostly used. The remaining 33% use other methods like discussions.

An interview with one water pump manufacturer confirms that the practical approach is the most preferred approach in the informal industry.

> *Skills in practical jobs can be effectively acquired through participating in the manufacturing process. It does not need a lot of theorizing*.

Another grinding mill manufacturer echoed the same sentiments.

> *The jobs that we have here are not about theorizing. You need spanners, cutting blades and harmers to do the job. Skills are acquired as one engages in the manufacturing process*.

The apprentices acquire the necessary skills as they manufacture the metal hardwares and machines. Of course some instructions are given by trainers as guidelines in the manufacturing process. Little discussions are also heard, especially when something goes wrong. Otherwise the prime method of training in the informal industry is the practical approach. Non participant observation revealed that here and there the apprentices are reprimanted on improper tool handling skills. The trainees also emphasise accuracy in measurement. However, I noted that some trainer use inches and feet as units of measurement while their trainees understand centimeters and metres better. This hiccup between the use of imperial and metric measurement is harmonized by the fact that the tape measures they use have both units of

measurement. On the whole, the passing of skills to the informal apprentices in closely monitored by the highly experienced trainers.

### 4.6 The Content of Training

The interviews with both manufacturers and trainees in the informal metal industry as well as non participant observation, seem indicate that informal apprenticeship training takes place at the ordinary work places in the informal industry. The training system makes the production tasks part of the instruction as a means of acquiring technical skills. One can observe that there is no clear dichotomy between training and normal production activities.

Although there is no syllabus document, the informal metal industry manufacturers follows a specific programme and emphasizes specific skills in the manufacturing process as one manufacturer reveals:

> *Yes of course we have a syllabus, only that it is not written down. We do not have a document, but the manufacturing process of window frames entails all the skills and procedures which are relevant. If one masters all the requisite skills, he or she would have completed our syllabus.*

An interview with another door and window frames manufacturer reveals:

> *Here were expect one to be accurate in all measurements. One is also expected to create different window frames designs. He or she is also expected to be able to interpret designs created by others. We also emphasise proper tool handling skills and welding techniques. Painting is the last aspect.*

The table below shows some aspects emphasized by the informal metal industry syllabus.

**Table 6: Specific skills trained in the informal industry.**

| Important skill | Percent (%) |
|---|---|
| Cutting pieces | 2.9 |
| Designing | 42.9 |
| Fitting parts & drilling holes | 11.4 |
| Interpreting designs | 8.6 |
| Painting | 7.1 |
| Tool handling | 7.1 |
| Welding & wiring | 20 |
| **Total** | **100** |

N=70

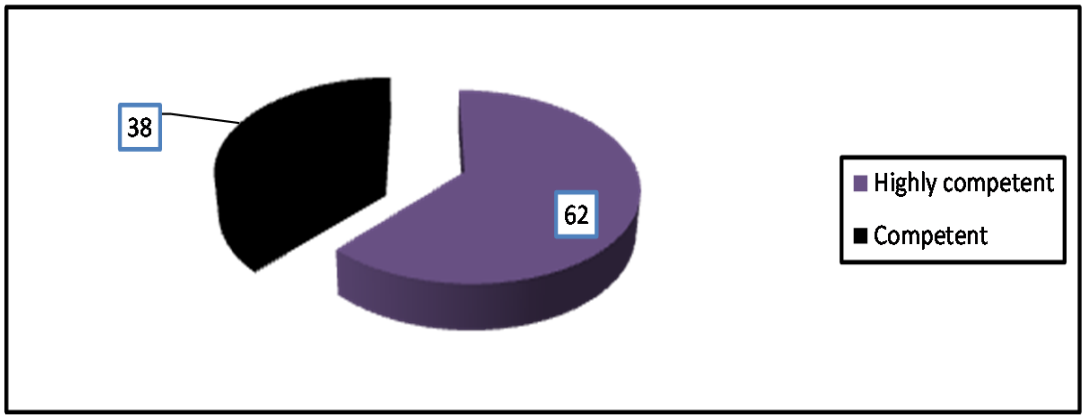
Designing is most taught and emphasised skill at almost 43% followed by welding and wiring 20% cutting pieces has the least percentage 3%. It would seem designing and welding are the most important skills. With emphasis on designing, this should indicate a high propensity for invention and innovation in this sector. This is evident from the wide modifications of machines of all types that I observed.

Non participated observation also reveals that the informal apprenticeship training programme does not limit itself to production skills only. The apprentices acquire basic skills in business practices through the same process of observation and participation. Such skills include costing and pricing, marketing, record keeping and management of income and expenditure. Generally the manufacturers in the informal metal industry emphasise the above skills across the trades. I also observed that accuracy in measurement, assembling or mounting parts are some of the skills emphasised in the production process.

## 4.7 Indicators of Training Quality

Field data show that trainers in the informal metal industry are competent in their respective trades. Trainees' perceptions about the competence of trainers, training quality and recruitment procedures, are quite revealing.

**Fig 6: Trainees' evaluation on their mentors**




**N = 50**

A 5 point richter scale measuring trainers perception of trainers competence was used and it revealed that 62% of the trainers were judged to be highly competent while the remaining 38% were seen as competent. There were no trainers who were judged as excellent, poor or very poor. With 100% being judged as competent to very competent, there is little doubt that trainees are confident with trainers.

There is also profound evidence to show that the manufacturers in the informal industry have successfully trained many other metal workers who are now operating their own enterprises.

## 4.8 Training quality judged by post training success

**Figure 7: Trainer's demonstration of successful training**


68% of the manufacturers indicated that they have trained other manufacturers who are now independent employers. 17% have successfully trained metal workers who are either self employed or employed in the informal industry. 15% argue that their workmates are the evidence of their ability. 1% boost of vast experience in manufacturing metal hardwares. It can thus be argued that the informal training system is effective in passing requisite skills in manufacturing products.

Recruitment in the informal metal industry is usually through relatives and friends. However, some recruits are referred actually referred to trainers in specific trades by other while others simply look for employment.

**Table 7: Methods of Recruitment**

| **Method** | **Percent %** |
|---|---|
| Referred by others | 45.7 |
| Relatives and friends | 48.6 |
| Job seekers | 5.7 |
| **Total** | **100** |

Here we see that aspect of social capital and social networks become crucial as 49% of the trainees are recruited through relatives and friends. 46% are referred to specialists in specific trades. The remaining 6% come looking for employment.

An interview with one door frames and window frames manufacturers also reveals:

> *The two guys are my relatives, my young brother and my cousin recruited from our rural home.*

Another water pump manufacturer also confirms that recruitment is done through relatives and friends.

> *That guy is my friend's son. He wants to be trained in manufacturing of oil pressing and peanut butter machines. He is very new in the system.*

In yet another interview with another door frames manufacturer, it came to light that some prospective apprentices actually look for trainers of reputable expertise so that they can acquire the necessary skills.

> *Here people come looking for employment and training in door frames manufacturing. Quite a number of the manufacturers in this industry graduated here. Mine is actually a training centre.*

Non participant observation reveals that some people merely look for employment in the informal metal industry but end up training in particular trades. The training system seems to be so flexible that the trainees do not do have to necessarily start the training at the same time.

I observed that some manufacturers of window frames supply reputable wholesalers and retailers in the city and around the country. One window frame manufacturer argued that the quality of their work makes them suppliers of reputable formal hardware wholesalers which themselves are highly neglected by the state:

*We supply very large and reputable wholesalers in town. We actually get very big orders that at times we subcontract our colleagues.*

The same can be said for manufacturers of the grinding mills, water pumps, compressors, oil pressing machines as well as peanut machines. Some manufacturers of wheelbarrows, doorframes, window frames sometimes get very big orders from reputable construction companies. One manufacturer of building materials revealed in an interview:

*As you will appreciate, these days people are so much into building. Right no were given a very big order by a cooperative which is building some houses in uplands suburb. So we manufacture quite a lot of window and door frames.*

## 5.0 Discussion of Findings

### 5.1 Characterisation of the informal industry

The informal industry tends to be diverse in its organisation, class, gender and age composition. It is largely based on African traditional economic organisation and production in kin and family units. Traditional approaches of passing vocational skills to the new generation in the form of apprenticeship based on family ties and connections form the backbone of this new economy.

Evidence from the empirical data of the research illustrates that most people joined the informal industry after Zimbabwe adopted neoliberal policies which saw many people being retrenched as companies closed shop. Contrary to what many academics have argued, these company closures constitute the process of reconfiguration of industry as opposed to industrial shrinleages (Sadomba, 2011). However, Sadomba did not go further to analyse the internal organisation and social networks revealed in this study. In fact this sector is clearly poised for growth judging from consumer demand of its products, its ability to wade off especially Chinese competition, its resilience and its efficiency and effective training. More generally the demise of the formal industry gave the impetus to the

growth of the informal industry with smaller units of production and a wider base for recruitment.

It should be appreciated that the working class or retrenches resorted to alternative employment in the informal industry not only as a coping strategy, but also as conscious resistance to machinations of settler and international capital. This can be interpreted as human agency, a theory to depict capacity of people to actively confront adverse situations and turn them to their benefit. With this change, the education and skills development has in fact taken a revolutionary trajectory. The informal industry development can thus be interpreted as a social reaction to: harsh economic conditions of neoliberal policies, draconian measures taken by the elite state against them in 2005 – 2006 'Murambatsvina' blitz, capital flight and sanctions. The working class was left with no choice but to boldly force the situation, which they did exceedingly well even out competing and penetrating the fast growing Chinese capital.

## 5.2 Class Dynamics of the informal industry

Evidence from the empirical data of this research indicates that the people who came into the informal sector are of the working class background. According to the Marxist theory, working class is composed of people who do not own means of production and they only have their labour power to sell to the capitalists. Between 1990 and 2010 the formal industry of Zimbabwe, owned by big capitalist establishments, began to shrink rapidly. This explains the sudden growth of the informal sector as the workers who had no capital base were retrenched and found themselves in the streets unemployed. Therefore first and foremost, Zimbabwe's informal sector can be characterised as a working class transforming into many small capitalist establishments as they now own their own means of production in the form of small machines, tools and production materials. Could we be witnessing a working class in transition under conditions of a decentralised economy and industry? That is the question.

The nature and methods of recruitment, as well as the labour hired differ in many respects with the formal industry. Recruitment in the informal sector tends to depend very much on the social networks formed with employment based on personal relatives as relative sand friends as opposed to bureaucratic and impersonal standards of educational qualifications which Max Weber described (Sanderson, 1988).

This therefore argues a revolutionary transformation to Zimbabwe's industry with sudden dislocation of industrial norms that govern entry to the metal manufacturing sector. Although there are some who possess formal qualifications accepted in the formal industry, the rest are informally trained.

## 5.3 Gender and Age Dynamics in the Informal Industry

The reconfiguration of industry saw the decline of strict gender discrimination in the informal sector work place. Prior to the reconfiguration of industry women were hardly present in this sector and now they seem to slowly creep in through the informalisation of industry. However as a result of gender role socialisation most women continue to engage in informal trading within the informal industry while most men are into manufacturing. Moreover all informal apprentices in the informal industry were found to be male. This implies that, although the industry has reconstituted, gender stereotypical roles that dominated formal industry permeate the informal industry. In this regard the acquisition of skills in the informal industry tends to be informed by the ideology of industrial and capitalist education. This emphasises a clear dichotomy between feminine skills and masculine skills (Fafunwa and Aisiku, 1992). However, the fact that women now begin to have a place in the public sphere could be testimony that patriarchal ideology is gradually losing its grip in Zimbabwean manufacturing industry. This change in gender composition suggests more fundamental social transformations.

The findings of the study also show that most trainees are from the young generation who have failed to attain tertiary education or vocational training because of their working class background. This seems to be positive for the industrialization of the country as a young population (below 30 years) embarks on building on independent economy having been forced by circumstances. These circumstances have unequivocally trigged the potentials of these young people to learn, acquire new skills and confidently build an informal economy that is earning respect and confidence of the local population particularly. This is an important ingredient for sustained industrial growth and development which could be a new feature in Africa. This energetic generation is likely to contribute to the vibrancy of the informal industry.

## 5.4 The organisation of the informal industry

The Mbare-Magaba informal industry is manned by experienced and qualified welders, fitter and turners, boilermakers and engineers. The metal hardwares and machinery produced in this sector tend to be of high standards and quality thereby meeting technological needs of especially of agriculture and construction industries.

The informal industry is apportioned into small scale production units managed on a family basis. Zimbabwe may be following the East Asian Industrial structure, particularly Japan’s industrial organisation (Francks, 2000). The Asian Tigers relied on small scale enterprises which were heavily protected albeit funded by the state. Similarly the small scale production units in the informal industry can be supported to regenerate the economy of Zimbabwe. Moreso the training of skills in these small scale manufacturing industries tend to be intensive within the sector itself. Zimbabwe already has the advantage of high education with its informal sector players attaining an average secondary school education which was amiss at the beginning of East Asian industrialisation.

## 5.5 Education level of manufacturers

Findings of this study show that most manufacturers hail from the working class background. This explains why most of them do not have tertiary education. Most working class parents fail to pay fees in vocational training colleges and universities because they are paid wages which are not sustainable (Marx in Schaefer 2004). However empirical evidence also shows that all the manufacturers in the informal metal industry had gone through primary education and most of them went up to secondary school level. If we look at the age range of these manufacturers, one can infer that these are some of the beneficiaries of the welfare state policies adopted by the Zimbabwean Government soon after independence.

As a welfare state, Zimbabwe adopted policies such as education for all which emphasised free and compulsory primary education (Zvobgo, 1995). To proceed to tertiary education was a mammoth task for most working class children because coincidentally the state introduced neoliberal policies of ESAP which saw the government abandoning state funding of education. It can be argued that because of their working class background most informal industry manufacturers resorted to the informal training system where they acquired skills for their respective trades. It is also important to understand that the prospective trainees' level of education is essential in mastering skills during the training process and eventually in determining product quality.

## 5.6 Source of Skills and knowledge in the Informal Industry

The philosophy behind socialist ideology was Education With Production whose thrust was to combine education with productive work (Nyerere, 1999). It can be observed that the concept of Education With Production fits very well with the growth of informal industry where skills training and production are simultaneous. For the informal industry manufacturers, it should be acknowledged that the informal education system tends to be more preferable to the formal education system which emphases paper qualifications at the expenses of practical skills.

The problem with an education system that emphasizes paper qualifications is that it tends to take the “one size fits all” approach without contextual analysis to establish the needs of society, at each given time and place.

The informal apprenticeship training system which is largely informed by the ideology of traditional education tend to be synonymous with ‘pedagogy of the oppressed’ suggested by Freire in Taylor (1993). It adopts an emancipator approach to education as opposed to the banking concept emphasized by the formal education. The informal sector focuses on practical and self empowering skills. In other words the education and training system in the informal industry focuses on relevance and instrumentality of vocational skills.

Contrary to the formal education system which tends to be theoretical and not practical thereby incapacitating the working masses by omission the informal education tends to be self empowering for the working class. The working class is not equipped to independently command industrial production. Bourdieu in Giddens (2001) observes that the role of education in a capitalist society is social and cultural reproduction. The formal training institutions inculcate skills needed or employment by the capitalists. On the other hand the informal industry manufacturers rely on informal apprenticeship training which takes place at the ordinary work places and makes production tasks part of the instruction as a means of acquiring relevant productive skills. In this set up, the manufacturers demonstrate the desired quality of performance for apprentices and serve as coaches while apprentices complete the same productive tasks. By performing the different tasks in the manufacturing process, the apprentices acquire the skills and knowledge of their respective trades. Although the sources of skills may seem to be diverse, the majority of manufacturers in the informal metal industry have acquired their skills through the informal training system, implying that informal apprenticeship is instrumentally relevant to the informal industry.

The training strategies adopted by manufacturers or trainers in the informal metal industry are participatory as they combine production and training. According to Freire, participatory pedagogy is emancipatory and self empowering. The findings of the study indicate that the 'hands on' approach is the most widely used training strategy. In the same vein Chung and Ngara (1985) argue that special issues in developing and transitional countries include promoting work based learning, education with production and traditional apprenticeships. In other words training for the economy must have characteristics of education with production since production cannot stop because of training. It can also be argued that the critical role of education and training is promoting employment, capacity, enhancing productivity and product quality. Hence the adaptive informal apprenticeship training system becomes synonymous with liberating education proposed by Freire.

Evidence from empirical data shows that the trainers in the informal industry do not follow a syllabus document. In other word the informal apprenticeship training takes an integrated curriculum approach as opposed to the compartmentalised curriculum of the formal education. This is supported by Hirst in Barker (1985) who are argues that knowledge is one comprehensive entity rather than fragmented units. Thus the integrated approach adopted in the informal industry tends to be effective in cascading technical skills in the trainees. Generally the syllabus or curriculum for training the metal work apprentices follows general guides and context as opposed to rigid timing, sequence and duration of training of formal education. The former is more flexible, convenient and addresses individual needs based on personal capacities of trainees.

The role of the family in education and provision of life skills, where parents are expected to cascade instrumental technical skills to their children tends to permeate the informal industry. Manufacturing is structured along family organisation unit as was the case prior to industrialisation. Manufacturers in the informal industries are taking their social responsibilities of supporting family

members through training and employment as extended family networks are critical in the recruitment system. On the whole, the reconfiguration of the employment structure to include women and children shows that Zimbabwe like many other societies, is a changing society. The new economic dispensation requires adaptive skill training system like the informal apprenticeship training system.

## 5.7 Conclusions and Recommendations

The study investigated educational levels and skills dissemination in the informal metal industry of Zimbabwe. It entangled the prevailing conditions that led to the sudden growth of the formal sector and characterised those who gravitated into the sector. What education did they possess on entry? To what extent did this equip them to face the new industrial environment? Once they got in, how did they embark on dissemination of the limited available skills in order to expand production and meet effective demand under conditions of a revolution and sanctions? Finally what was the nature and quality of production? As we conclude this study we try to interpret deeper what is happening to the industrial segment of Zimbabwe using the informal sector as a microcosm. Based on the findings of this study, the following conclusions were reached. I shall first comment on the characters driving the informal sector and their rate of achievement.

Findings from the study indicate that although skills and knowledge systems in the informal metal industry stem from diverse sources, however the major source is the informal apprenticeship training system. The vibrancy of the informal metal industry can be credited to the highly trained and experienced manufactures or trainers who initially entered the industry after gaining skills and experience from the formal industry and training institutions and formed the bedrock of this growing sector. These were of the working class background with potential ability to cascade skills to other prospective metal manufacturers.

Like the structures of East Asian economic transformation, Zimbabwe's informal sector decentralized and democratised the training and therefore the skills base of the industry. Consequently this has caused a vibrant group of small capitalist players to emerge with a unique culture of recruitment, training and organisation of production. Unfortunately, this sector has gone it alone, without requisite state support, research and development efforts by institutions of higher learning and without a solid capital base. Zimbabwe has failed to learn from its Asian counterparts, making its look east policy hollow.

Zimbabwe is a changing society as evidenced by the reconfiguration of industry with new owners of business in the informal metal industry coming from the working class. Moreso, women seem to be crossing over the once solid gender-divide line which relegated women to the domestic sphere. Entry of the marginal sections of society into industry with a new role of controlling and owning capital is revolutionary in itself/ indeed this was surrounded by a wider revolution whirling and changing land ownership, affecting distribution of urban housing, democratizing mining and changing the racial composition of bank owners and operations. Sadomba (2011) argument of "full blooded revolution taking place seems to be confirmed by this study. We then must understand what trajectory this process of social transformation is likely to take among the different theoretical postulations and practices.

In the absence of a working class party, wielding state power and use to champion a socialist there is no hope for transformation from the current capitalist production relations. However, a new form of capitalism could be on the cards, commanded by indigenous black entrepreneurs of a working class background. This emerging class has so far displayed positive characteristics that might be critical to Zimbabwe's industrialisation project. It is responsive to internal demand. It is also organized along social structures of the extended family rooted in local cultures and it is sensitive to the direction of the overall revolutionary process. Above all it is highly resilient and has potential to out-

compete foreign capital. With all these qualities and social positioning, Zimbabwe's informal metal manufacturing sector demands serious attention of the country's industrialisation plans are not merely rhetoric and politicking.

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## APPENDICES

## Appendix 1

## QUESTIONNAIRE FOR MANUFACTURERS IN THE INFORMAL METAL INDUSTRY

### SECTION A: Personal Details

A1 Gender | M | F |

A2 Age _____years

A3 Marital status
1= married 2 = single
3=divorced 4=widowed

A4 Formal Education Level
1= Illiterate 2 = primary
3 = secondary 4 = tertiary
5 = vocational training

A5 Area of specialisation _____

### SECTION B: Source of Skills

B1 How did you come to join the informal industry?
1=could not secure formal employment 2=retrenched
3=interest in self employment 4=Other (specify)_____

B2 What is your actual trade?
1=general hand 2 = welder 3 = fitter and turner
4 = other (specify)

B3 Where did you acquire the skills?
1=vocational training college 2 = formal apprenticeship
3= informational apprenticeship 4 = Divine Inspiration
5 = other specify _____

B4 Did you have any further education? | Yes | No |

B5 If so, what skill did you acquire?_____

B6 How long did it take to acquire such skills?
1 = less than 6 months 2 = less then 12 months
3 = more than 12 months

B7 Do you have any trade test certificates? | Yes | No |

## Appendix 2

## QUESTIONNAIRE FOR TRAINEES IN THE INFORMAL METAL INDUSTRY

### SECTION A: Personal Details

A1 Gender

| M | F |
|---|---|

A2 Age

A3 Marital status 1= married 2 = single
3 = divorced 4 = widowed

A4 Formal Education Level
1 = illiterate 2 = primary
3 = secondary 4 = tertiary

A5 Area of specialisation _____

### SECTION B: Background to Interest in The Trade

B1 Did you do Metalwork at School? Yes / No

B2 If yes, what skills did you master at school?
1 = Tool handling 2 = basic brazing 3= basic welding
4 = other (specify)_____

B3 For how long have you been training? _____months

B4 How long did it take you to master the skills?

B5 How did you join the informal industry?
1=had not alternative employment 2 = interest in self employment skills
3 = other (specify)

### SECTION C: The Training Process

C1 How do you rate the competence of your trainer?
1 = excellent 2= highly competent 3=competent 4 = poor
5 = very poor

C2 Do you follow a specific syllabus? Yes / No

C3 If no, how do you make sure that all skills are covered?

C4 What could be the best way of mastering the skills?
1 = hands on 2= college training 3=observation
4 = other (specify)_____

C5 With the skills you have, so far, do you think you can train other people? Yes /No

C6 If no, what training needs should be put in place to make you competent?

C7 What problems are you facing in your work?

1. _____
2. _____
3. _____

C8 How can the informal training system be improved?

1. _____
2. _____
3. _____

## Appendix 3a

**INTERVIEW GUIDE FOR MANUFACTURERS**

1. Reasons for joining the Informal Industry.
2. Year joined the Informal Industry
3. Education / experience
4. Source of Skills
5. Duration of Mastering Particular Skills
6. Methods used to train Prospective metal products manufacturers.
7. Perceptions on Teaching methods/ strategies
8. Skills emphasized
9. Quantity of products
10. Perceptions on Goods Produces
11. Source of Materials
12. Marketing Strategies
13. Challenges
14. Possible Solutions to Challenges.

## Appendix 3b

## INTERVIEW GUIDE FOR CONSUMERS

1. Metal Products bought / intended to be bought.
2. Frequency of visiting the Informal Industry
3. Length of Time buying from the Information Metal Industry
4. Perceptions of Quality, Standard and Durability
5. Reasons for Buying from the Informal Industry
6. Quantity of Goods
7. Goods for Personal consumption / Resale
8. Challenges
9. Possible Solutions.

## Appendix 4

1. The Production Process
2. Mentoring trainees
3. Number of trainees per workshop
4. Skills emphasized
5. Materials used in manufacturing hardware
6. Quality and durability
7. Quantity
8. Marketing strategies
9. The working space and environment
10. Gender and age composition of people in the informal sector.