

Can the Kenyan Jua Kali Mechanic be Trusted in Servicing the New Technology Rich Vehicles?

Paul Machochi Wanyeki
School of Education, University of
Eldoret P.O. BOX 1125, Eldoret
paullwanyeki@gmail.com

Kisilu Kitainge
School of Education, University
of Eldoret P.O. BOX 1125,
Eldoret
kkitainge@yahoo.com

Ahmed Ferej
School of Education,
University of Eldoret P.O.
BOX 1125, Eldoret
ferejak@gmail.com

ABSTRACT

Mechanics in automotive garages need to keep pace with the ever evolving technological changes in the industry in order to provide relevant service to their clients. The formal garage mechanics have their training provided by vehicle suppliers on every critical technological innovation introduced in their automobiles. But the Jua Kali mechanics on the other hand do not have this symbiotic connection with suppliers. This paper tries to answer the question: can the jua kali mechanic be trusted in servicing the new technology rich vehicles? The study used a descriptive survey research design. The study population consisted of Jua Kali practitioners who deal with repairs and servicing of automobiles within Eldoret town. Data was analyzed using the statistical package for social sciences (SPSS) software and content analysis techniques. The study found that the Jua Kali mechanics cannot be trusted in handling the new technology rich vehicle as they mostly relied on trial and error which more often than not leads to more damages.

Key Words: Jua Kali mechanics, new technology, Informal sector, Jua Kali sector.

INTRODUCTION

The Kenyan informal sector is commonly referred to as the “Jua Kali” sector; a Swahili phrase meaning “the hot sun.” The phrase is derived from the nature of the working conditions under which artisans operate; normally outdoor in the scorching sun. But it was not until the 1972 study of Employment, Incomes and Equity (ILO, 1972) that the term “informal sector” came to be associated with the Jua Kali sector. Most Jua Kali automobile mechanics acquire their skills through informal apprenticeships. However, there are also a few skilled workers in the sector who were trained in the formal institutions. But both are in the Jua Kali job market and they continue to develop their skills through informal on-the job training.

In society, the desire has been to get quality service at the lowest cost possible. Jua Kali artisans do attempt to repair anything given to them at a bargain. They will repair items that established garages may consider replacing. Some of the parts may be patched waiting for spares to arrive from suppliers. Sometimes they modify the part altogether or replace it with an old one. The quality of the work done may not be high but more often it will be to the satisfaction of the customer. Quality and precision are not the forte of the Jua Kali but the cost of repair is usually lower compared to those charged in dealer-run garages.

This study was guided by system theory advanced by Bertalanffy (1968) and innovation diffusion theory (Rogers, 1995). The system theory states that a system consists of various components or sub-systems which must function together for it to work. If a sub-system fails, the whole system is put in jeopardy. Bertalanffy (1968) hypothesized that the whole is more than the sum of the parts and the easier the interrelatedness the more efficient the system is. The study treats the relationship between automotive technology and the Jua Kali automotive mechanics as a system. Rogers (1962) a proponent of diffusion of innovation theory identified the four main elements of the system that influence the spread of new idea as innovation, communication channels, time and a social system. He further noted that for most members of a social system, the adoption-decision depends heavily on the adoption-decision of the other members of the system (Rogers, 1995).

In the past automotive technology was very simple. There were very few, if any, complaints about the abilities and quality of work done by Jua Kali automotive mechanics. Thus the system then could be described as an open system. This system had the advantage of free interaction with its environment that led to the good adoption of the then new technology. At present automotive mechanics have been lagging behind the rapidly evolving technology (Kerre, 2010). Despite their competence in handling the old automotive technology, they are unable to perform to the customer’s satisfaction when dealing with new automotive models featuring advanced technological gadgetry (Kipkurui, Kithyo, Okemwa, and Korir, 2004).

Kerre (2010, pp.66) asserts that “the emphasis of Technical and Vocational Education and Training (TVET) in the informal sector is the acquisition of practical skills for direct employment.” This agrees with Knowles (1990) assumption that adults are motivated to learn from being in situations in which they see a need to learn. The form of education and training that exists in this informal sector is apprenticeship and as such it is unregulated. The motor vehicle mechanic in the informal sector learns on the job under an experienced practitioner and in varying circumstances. In this system of apprenticeship, the masters teach their apprentices the way that they were taught to the limit of their own knowledge. Therefore, very little infusion of new technology and new designs to the *Jua Kali* artisan takes place (Ng'ethe and Ndua 1992).

The automotive technologies are evolving rapidly especially in electrical and electronic gadgetry. This brings with it repair challenges to the *Jua Kali* automobile mechanics. Some of the present evolutions giving the *Jua Kali* automobile mechanics repair challenges are: Electronic fuel injection (EFI), Gasoline direct injection (GDI), Variable valve timing (VVT) varieties, ON-board diagnostics (OBD) just to mention a few.

Informal apprenticeship is one of the major training method in Kenya. Understanding how automobile mechanics adopt new automobile technologies will help in providing suggestions for developing, improving and implementing programs that can enhance lifelong learning in the informal sector. It is in this regard that this paper attempts to answer the question: can the *Jua Kali* mechanic be trusted in servicing the new technology rich vehicles?

Research questions

1. What are the challenges that *Jua Kali* mechanics encounter when handling completely new technology?
2. How do *Jua kali* mechanics learn for tomorrow when defeated today?
3. What are the Challenges encountered by *Jua Kali* mechanics while sourcing knowledge?
4. What are the opinions of *Jua Kali* automobile mechanics on how to enhance adoption of new technologies in the *Jua Kali* sector?

METHODOLOGY

This study utilized a descriptive survey research design. This is because a descriptive survey research determines and reports the way things are (Mugenda and Mugenda, 1999) and also attempts to describe such things as possible behavior, values and characteristics (Best, 1970). It gave the study the advantage of collecting original data for the purpose of describing a population which was too large to observe directly hence good for the purpose of generalization (Cohen, Manion and Morrison, 2000). The study was conducted within Eldoret town covered by Eldoret *Jua Kali* Association. The respondents were drawn from 60 garages with a total of 60 mechanics; 6 mechanics from the same sample were used for focus group discussion. All the respondents were male except one.

A researcher administered open-ended questionnaire was used to collect data from mechanics. This questionnaire was best for this study because some of the target group were at work during the data collection process. In this sense the researcher read the questions to them and noted down their responses as they continued working. After administration of questionnaires a focus group discussion was conducted.

The focus group discussion guide was used to lead the discussion. The sample consisted of six mechanics that were purposively selected to reflect the natural *Jua Kali* environment. Four of the participating members were products of apprenticeship and two had Diploma in Automotive Technology. The researcher chaired the focus group and moderated the discussion.

RESULTS AND DISCUSSION

Data processing exercise commenced with the coding of all the quantitative and almost qualitative responses obtained to facilitate easy analysis with the help of computer Statistical Package for Social Sciences (SPSS). A master codebook was designed to ensure that all the questionnaires were coded uniformly. Taking into account the above, this study utilized content analysis approach in analyzing qualitative data. The purpose of this study was to investigate how automobile mechanics adopt new technologies in the *Jua Kali* sector in Kenya.

Question 1: What are the challenges that *Jua Kali* mechanics encounter when handling completely new technology?

It was found that mechanics had different challenges as shown in table 1. From the table, the *Jua Kali* mechanics major challenge was lack of tools. This can be explained by the fact that the tools required are very expensive and beyond the purchasing power of most *Jua Kali* automobile mechanics. This affects the adoption rate of technology in the *Jua Kali* sector. Also, the *Jua Kali* mechanics created more problems while employing trial and error method and this was a big challenge to them. The reason why they preferred trial and error can be because of the present system of apprenticeship. This is where the master teaches their apprentices exactly the way they were taught Ng'ethe and Ndua (1992) and that mostly involved, trial and error, especially where the master is not sure or doesn't know completely. So the masters more often than not duplicate their skills and knowledge on apprentices but rarely create new knowledge (Singh, 1992). Repetition of duty enhances acquisition of skills and attaining naturalization. *Jua Kali* mechanics learn through repetition of the same job. This is why the *Jua Kali* mechanics cited that the low frequency of repetition of major repair jobs was a significant problem to the mechanics. This is because the first time mechanics encounters a problem they solve the problem through trial and error. They need to repeat the same over a number of times for them to reach naturalization. Lack of books was the least cited challenge by the *Jua Kali* mechanics. This could be because of the poor reading culture among *Jua Kali* mechanics.

Table 1: Challenges encountered when handling completely new technology

Challenges	Frequency	Percent
Lack of tools	57	91.9
Lack of books	4	6.5
Lack of manuals	7	11.3
Create more problems	50	80.6
Really reoccurs	51	82.3

Question 2: How do *Jua kali* mechanics learn for tomorrow when defeated today?

It was found that all mechanics had preferred one method or the other in order to learn the trade. Majority of the mechanics preferred asking friends with the least preferred method being visiting formal dealership. This can be attributed to fact that they are "wage hunters and gatherers" who are usually but not always uneducated, have little or having no chance of earning a living, wage and no security that is they are "weak and poor" (Bremen, 1994). So they find this method economical and convenient to them and their working environment. In addition some people like to learn from other people. These are the people (Clawson *et al*, 2006) call them social learners. Social learners would rather ask someone how to do something than look it up in a book or simply start trying to do it. For social learners, acquiring new knowledge and skills means, talking and working with other people. For them, the key question is who knows about this stuff, and how can I work with them or pick their brains? Reading manuals, books and using the internet also attracted significantly low attention. The lower percentages in the last three categories can be attributed to poor reading culture among the mechanics, low number of professionally trained mechanics in the *Jua Kali* sector (Kipkurui, 2003) and high rate of computer illiteracy among the mechanics. This population constitutes what (Clawson *et al*, 2006) calls anticipatory learners.

Table 2: Learning for tomorrow when defeated today

Method used	Frequency	Percent
Ask a friend	56	90.3
Read manuals	10	16.1
Read books	11	17.7
Browse in the internet	5	8.1
Visit formal dealership	1	1.6

Question 3: What are the Challenges encountered by *Jua Kali* mechanics while sourcing knowledge?

It was found that different mechanics were faced by different challenges while sourcing knowledge as shown in table 3. From the table it is evident that the greatest challenge is that most of the friends they consulted about a new challenge were always not 100% correct. This was experienced by 50 (83.3%) of the mechanics. We also had 75% of the friends refusing to share knowledge when approached because of competition and equally 75% of the mechanics cited loss of customers during the process of sourcing knowledge as the greatest challenge they faced

while sourcing new knowledge. From the results manuals written in foreign languages was the least challenge encountered by *Jua Kali* mechanics.

Table 3: Challenges encountered by *Jua Kali* while sourcing knowledge

Challenge	Frequency	Percent
Friends refuse to share knowledge	45	75.0
Friends not always 100% correct	50	83.3
Books not available	18	30.0
Manuals not available	12	20.0
Manuals in foreign languages	7	11.7
Friends ask for high payment to teach	42	70.0
Expensive books and manuals	14	23.3
Loss of customers	45	75.0

Question 4: What are the opinions of *Jua Kali* automobile mechanics on how to enhance adoption of new technologies in the *Jua Kali* sector?

In this question though some of the challenges differed with their level of education it was evident that majority of the challenges were universal. They acknowledged that modern cars required special tool kits to open them but they were expensive. This made them modify their own tools that sometimes made the problem worse.

With regard to how they would enhance new skills, the *Jua Kali* mechanics felt that not only should the government give them financial assistance to acquire modern facilities but also to give formal training. The discussion suggested three different types of training; one was to ask the *Jua Kali* mechanics to organize themselves into groups and then from the groups some members will be picked in a rotational manner and sent to formal institutions whenever new technology is brought in use like their counter parts in the formal sector. The few will then teach the rest. Secondly, they were of the view that seminars be offered periodically so as to acquaint them with the latest technology as fast as possible. Lastly, they were also of the view that professionally trained mechanics should be deployed in the *Jua Kali* sector so that if mechanics have any technical questions they can approach them for guidance on the issues. A few of them felt that the national library should be equipped with modern books and manuals that are translated in English.

Based on the findings of this study, the *Jua kali* mechanics had the following challenges in adopting new technology;

1. The *Jua Kali* mechanics lacked tools and specialized machines to use to repair the modern vehicles.
2. The *Jua Kali* mechanics relied on their friends for finding answers to new problems.
3. The *Jua Kali* mechanics main method of sourcing information was from friends and by interacting with the technology through trial and error.
4. The *Jua Kali* mechanics lacked support from government towards the *Jua Kali* sector with regard to skill upgrading and infrastructure.

CONCLUSION

This study shows that *Jua Kali* mechanics have a problem in adopting new technology. The speed of adoption is further lowered by the fear of using trial and error to solve problems as most of the time it leads to a bigger problem which mechanics may be surcharged for. Therefore, as long as this problems continues to exist, then it will take too long to reach *critical mass* (this is a point in time within the adoption curve that enough individuals have adopted an innovation in order that the continued adoption of the innovation is self-sustaining) or never reach their completely. Therefore, the *Jua Kali* mechanics cannot be trusted in handling the new technology rich vehicle as they mostly rely on trial and error which more often than not leads to more damages.

RECOMMENDATIONS

Based on the findings and the conclusion of this study, the following recommendations were suggested;

- i. The government should change its view of the education system to emphasize education for self-reliance rather than the accepted notion of education for employment.

- ii. The government through the ministry of education should open an automotive technology information centre equipped with current automotive books, current versions of automotive manuals, and internet services.
- iii. The government through the ministry of education should come up with strategies of partnering with non-governmental organizations and financial institutions to disseminate knowledge to the *Jua Kali* mechanics either through seminars or workshops.
- iv. The government should put in place policies that address and respond to technological changes.
- v. The government through the ministry of industrialization should make arrangements to allow the *Jua Kali* mechanics to acquire required tools and equipment with ease.

REFERENCES

- Bertalanffy, V. L. (1968). *General systems theory*. New York: Braziller.
- Best, J.W. (1970) *Research in Education*. Englewood Cliffs, NJ: Prentice-Hall.
- Breman, J. (1994). *Wage hunters and gatherers*. New Delhi: Oxford University Press.
- Clawson, J. & Haskins, M. (2006), *Teaching Management: A field Guide For Professors, Corporate, Trainers And Corporate Trainers*. Cambridge university press.
- Cohen, L., Manion, L., and Morrison, K. (2000). *Research methods in education*. (5th ed.) New York: Routledgefalmer.
- Kerre, B.W. (2010). *Technology and Vocational Education and Training (TVET): A Strategy for National Sustainable Development*. Eldoret, Kenya. Moi University Press.
- Kipkurui .L, Kithyo .I, Okemwa .P, and Korir .J. (2004). “Modernization in Automobile Technology and Performance of Informal Sector Mechanics”. Agricultural Engineering International: the CIGR Journal of Scientific Research and Development. Invited Overview Paper. Vol. VI. July 2004.
- Kipkurui, L.(2003). *Modernization in Automobile Technology and Performance of Informal Sector Mechanics*. masters of philosophy thesis, Moi university, Kenya.
- Knowles. M.S. (1990). *The Adult Learner*, 4th ed., Houston: Gulf Publishing.
- Mugenda, O. M. and Mugenda, A.G. (1999). *Research methods: qualitative and Quantitative approaches*. Nairobi. Act Press
- Ng'ethe, N. and Ndua, G. (1992), *Jua Kali education, training and welfare: A study of carpentry and metal-work in the Eastlands of Nairobi, Kenya*, University of Nairobi, Institute for Development Studies, Nairobi.
- Rogers, E. M. (1962). *Diffusion of innovations*. New York: Free Press.
- Rogers, E. M. (1995). *Diffusion of innovations* (4th ed.). New York: Free Press.
- Singh, S. (1992). Training for employment: Some lessons from experience. *Journal of Educational Planning and Administration*, 6, 119—32.