Study and analysis of Skill level of mobile phone repairers in Morogoro City of Tanzania

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ABSTRACT

The study investigates the practices of mobile phone repairers in repairing mobile phones. Data were collected through interviews and observations from 15 mobile phone repairers in Morogoro municipality and were analysed qualitatively using thematic and content analysis techniques. Findings revealed that mobile phone repairers engage in the mobile phone repair business because of various factors. Most mobile phone repairers join the mobile phone industry because of income and employment problems. It noted further that, about 75% of phone repairers acquired the related skills informally while 25% of them had this knowledge in formal ways. Therefore, it is recommended that mobile phone repairers should not depend only on learning from more knowledgeable and experienced mobile phone repairers but also should attend training institutions such as Vocational Education and Training Authority and Dar es salaam Institute of Technology.

Key Words: Formal Training, Informal Training, Mobile Phone Repairers, Skill Development.

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1.0 INTRODUCTION

Businesses and industries all over the world are beginning to value skills over mere mastery of theoretical knowledge (Pearce, 2013). This is why many more people have decided to employ themselves in various businesses that help them run their lives (Bojczuk 2019). This scenario has found expression in mobile phone industry.

The unprecedented growth of the mobile phone industry is hardly a secret. In modern world, people are not able to live without their phones for these have become one of the most crucial things in a person's life (International Technology Report, 2015). The customer base for the mobile phone industry has risen significantly, giving rise to many job opportunities (Manner, 2018).

The unprecedented growth of mobile phones has given rise to many job opportunities (Manner, 2018). Mobile phones, like all gadgets are subject to breakages. Most people have experienced a broken phone at some point (Manner, 2018). Daily, we come across people looking for places and experts to repair their mobile phones (Carl& Arleo, 2017). Many phone users who are not tech savvy require help even for the smallest problems (Chang, 2010). That is to say, the introduction of mobile phone technology has compelled the need and opportunities for people to engage in the job of repairing mobile phones. Generally, with the mobile industry growth, there appeared a rapid growth in the mobile phone repair industry, with small repair shops popping up every day (Nkwi, 2013).

According to (Douglas, 2015), in the developed world, the mobile phone repairing service has been strictly offered by trained and certified personnel. The situation, however, is different in developing countries. The rapid spread of mobile phone technology had led to the rise of local and untrained mobile-phone repairers. The untrained mobile-phone repairers carry out activities in urban and rural areas.

While consumer expectation for quality repair service has become higher (Chang, 2010), local repairers face technological challenges. Versatile brands, multi-functions, and various interface specifications have made mobile phones more complicated to repair (Chukwuedo & Nwachukwu, 2014). Faced with the booming creation of new mobile phone models, repair personnel must regularly update service engineer technology (GSMA, 2016). For these people to work more efficiently, there appears a need to provide local mobile phone repairers with specialist training. Like the rest of the world, mobile phone ownership has increased

significantly in Tanzania since the 1990s (Mtenzi et al., 2008). This widespread ownership of mobile phones has subsequently prompted an increase in the number of untrained mobile phone repairers (Douglas, 2015; O'Dea, 2021). However, there has been relatively little investigation of what motivates them to become mobile phone repairers. In addition, empirical evidence remains scarce on how these repairers acquired such mobile phone repairing skills, hence the goal of this paper.

2.0 METHOD

The study employed a qualitative research approach to get in-depth information (Creswell, 2012). This approach enabled the researcher to develop details about the individual or place and be highly involved in the participants' actual experiences. The data were organized within the premises of the single case study design involving only mobile phone repairers. This case study involved 15 mobile phone repairers with different experiences and levels of education who were selected using the snowball sampling technique. The study found nine respondents had an experience of more than five years in the mobile phone repairing industry while six respondents had an experience of fewer than five years in the field. The raw data gathered through interviews were organized into manageable units. These units included data relating to what motivated mobile phone repairers to learn about mobile phone accessories and how they acquired the skills. The researcher synthesized and searched the general pattern through content analysis by grouping the data in a meaningful manner analyzed thematically (Creswell 2003).

3.0 THE STATE OF MOBILE PHONE REPAIRERS (TECHNICIANS) IN MOROGORO IN TANZANIA

This section analyses factors that motivate individuals into becoming mobile phone repairers, how they acquire related skills, business opportunities (for mobile phone repair), ways of getting customers and costing. Also it analyses challenges facing mobile phone repairers and ways employed in solving those challenges.

3.1. Motivation for the Profession

The study was interested in establishing what motivates phone repairers in joining this profession. The most prevalent reasons were easily available income and employment opportunities, encouragement, prestige, and seizing (grabbing) an opportunity.

3..1.1 Income and Employment Problems

The results indicated that mobile phone repairers became interested in mobile phone repair activities because of easily available income and employment problems. This inference was authenticated by interviewed respondents. For example, respondent B with experience of ten years in repairing mobile phones disclosed, "You know this enterprise has a lot of money; it pays a lot if you are competent and committed to it; this is what made me join the field".

Another respondent D with experience of five years echoed;

"I developed an interest in mobile phone repair because it was the only remained solution to overcome employment problems and I wanted to earn money to run my life".

The above statement indicated that due to complex life and lack of employment, there was no way except resorting to learning mobile phone repair so that it could later be the solution for employment scarcity and source of income. The results echoed Bojczuk's (2019) observation that phone repairing has a crucial role in kick-starting and motivating grassroots innovations. Now, there's a binding belief that digital technologies can spur economic growth in the world's youngest continent.

The study noted further that some repairers join the career because they saw the opportunity associated with them. It was found that phone repairing services had increased due to the increase in mobile phones compared to computers and other electronic accessories. For example, respondent G commented, "I developed an interest in mobile phone repair because I found a mobile phone with many users than a computer".

The development of technology with modern mobile phones made the repairers spend a lot of time on online programs to improve their knowledge to cope with the changing technology and the latest version of mobile phones to grab the opportunity. Respondent M stated, "I spent much time learning online programs to repair new mobile phone versions like TECNO, Itel, and Infinix". This concurred with Mtenzi et al, (2008) that some repairers join the career because they see the opportunity associated with them. Likewise, Hauston (2019) argues that mobile phone repairers rely much time on different online programs to get the required knowledge to repair and service modern mobile phones because they see opportunities associated with the phone repair business.

3.1.2 Encouragement from Schools and friends

Six out of 15 mobile phone repairers developed an interest in mobile phone repair because they were encouraged by their peers. For example, respondent D was encouraged by his former trainer to venture into this career. As he said; "I developed an interest in

mobile phone repair because the more knowledgeable and experienced repairer who taught me was humble and advised me to learn mobile phone repair for future life".

The results supported (Msikula, 2016; Turkeli, et al 2019) conclusion that some people opt for a job career because they were recommended by either their friends or family or encouraged by their teachers in school.

3.1.3 Pride and Prestige

The result analysis revealed further that some repairers joined the careers because of the success story they had either read or seen from a successful mobile phone repairer. These repairers had a desire of becoming famous and economically endowed just like their role models; thus, they opted to learn phone repairing, hoping they would succeed and fulfill their desire. For example, respondent E disclosed; "My interest was to become an expert famous in mobile phone. 'However, getting money was not my main agenda for engaging in mobile phone repair". This agrees with Abbasi & Sarwat, (2014) who demonstrate that some people join specific careers because of the pride and prestige associated with the status quo of a specified profession.

3.2 Skill acquisition in Mobile phone repair

The study was also interested in establishing how the phone repairers acquired the mobile phone repair know how. The data collected revealed various forms of skills acquisition which are grouped into formal and informal training.

3.2.1 Formal Training

Some phone repairers did not undergo any formal training in phone repair, they had got prior training in either Information Technology (IT) or science-based technology courses. Through an interview with mobile phone repairers, it was disclosed that mobile phone repairers had some knowledge about IT. Thus, they used such knowledge to learn how to repair mobile phones. Repairers argued that the IT software program uses the same system as mobile phones. This meant that the system of software in a computer was the same as the software system in mobile phones. However, the IT knowledge was supplemented with practical learning from the more knowledgeable repairers. For example, respondent G, one of the IT graduates and a mid-experienced mobile phone repairer, narrated, "Mobile phone system is as the same as any IT system, so it is easy to apply knowledge of IT program to mobile phone repair".

The findings align with Msikula's (2016) observation that IT graduates from various institutions apply the acquired IT knowledge to provide mobile phone repair and maintenance services in different streets, including Kariakoo streets.

Furthermore, the study noted the existence of online training programs those other repairers had to attend. Thanks largely to their hobbies and interests in mobile phone repair since childhood. However, it was noted that the repairers initially were not into building careers in mobile phone repair; instead, they were interested in the mobile phone software and IT. Later, they also became interested in repair based on the encouragement from people around them. As a result, they began learning how to repair phones' speakers, touch screens, mikes, glass protectors, IC, charging systems, and motherboards. One of the more experienced mobile phone repairers, respondent M, disclosed, "My interest was learning online programs related on how mobile phones are made and repaired". The above argument aligns with Hauston (2019), who asserts that local mobile phone repairers rely upon different online networks to get the required knowledge to repair and service mobile phones. Therefore, it is also important in the globalized world to use the internet to learn how to repair mobile phones because online programs have rich sources of materials.

3.2.2 Informal Training

The study found that the majority of the repairers got the skills either by learning from the experienced one or through trial-and-error practices. For example, during the interviews, it was revealed that 9 out of 15 interviewed mobile phone repairers acquired knowledge from the more knowledgeable and experienced mobile phone repairers. Repairers unveiled that they obtained that knowledge by observing the more skilled mobile phone repairers. In addition, they received this knowledge by first assisting the more knowledgeable and experienced mobile phone repairers in their daily work. Two mobile phone repairers exemplify this approach to learning. The first one was respondent A, who stated,

"I started helping people to do some little things such as connecting phones to the internet, downloading and installing some programs on the phones, doing mobile phone settings, charging phones and batteries and changing housing, mike, speaker, covers or screen protectors". (A, 2022)

The findings align with Ahmed et al. (2015), who disclosed that the mobile phone repair learner should intensively observe experienced mobile phone repairers. While observations do not necessarily lead to successful learning, Ahmed argues that they help someone remember what and how the knowledgeable and experienced repairer is doing.

The other informal means of learning was through trial and error/ practical activity. The study found that some mobile phone repairers learned and acquired skills relating to mobile phone repair through practical training. They started as assistants through trial and error and then developed basic skills to fix simple Mobile phone hardware, such as connecting phones to the internet, setting the phones, replacing phone-housings, and repairing screen protectors. This is testified by respondent D, one of the experienced mobile phone repairers, who articulated,

"I started helping the more experienced phone repairer do some things practically, such as glass replacement, system charge replacement, battery terminal replacement, mike, and speaker replacement, touch replacement, a plate of system charge replacement, and changing housing fixing protector". (D, 2022)

This finding aligns with Ahmed et al. (2015) argument that some repairers have their malls or roadside shops that connect phones to the internet, change housing, fix protectors, and others operate alongside other repair operations in large informal markets. It also aligns with Bojczuk (2019), who asserts that young repairers learned welding techniques practically from a more experienced person known as an engineer. Learning through practical activity makes the learning effective because it allows full participation of the senses, hence, effortless mastery of the skill.

3.3 Opportunities for Mobile Phone Repair

Through the interview with mobile phone repairers, research findings revealed that knowledge of mobile phone repair had created various opportunities for mobile phone repairers. 10 out of 15 mobile phone repairers were able to expand their social network, which means the respondent could create friends and increase their social network with customers. The social network thus was used for advertising and widening the scope of their work, and growing many customers. Respondent E, one of the more experienced mobile phone repairers, revealed, "Through repairing the mobile phones, I create many friends who help me solve various life problems and increase the social network of my other businesses".

Through the interview, the findings revealed that mobile phone repairers used transferable phone repair knowledge to get self-employment and as a source of income. For example, respondent A with experience of four years in repairing mobile phones, disclosed, "I have been employed myself since I obtained this knowledge. I receive between TSH 150 000/= and TSH 200,000/= per month, which enables me run my daily life".

In addition, through interviews with mobile phone repairers, research findings indicated that the amount of income mobile phone repairers obtained per month varied from one repairer to another and depended on how one repairer received the customers. For example, mobile phone repairers with high income range from TSH 500000/= to TSH 650000/= a month, whereas those with low-income range from TSH 150000/= to TSH 200000/= per month.

Research findings obtained from interviews with mobile phone repairers revealed that mobile phone repairing knowledge enabled the repairer to receive income, which helped them pay school fees for their children and house rent.

3.4 Getting Customers and costing

Under this skill, the data generated was how the repairers get and maintain customers. It was revealed from the interview that phone repairers obtained customers through a chain referral style. As a result, customers who are satisfied with the quality of services provided by the repairers recommend other customers and colleagues, which helped bring more customers to their workshops. For example, respondent G, one of the experienced mobile phone repairers, disclosed, "I get customers through customers who become satisfied with the quality of service I provide them, WhatsApp groups, Instagram, Facebook, advertisements in what the repairers commonly marked with Swahili words FUNDI SIMU' and advertisements in front of the office." The arguments align with Su, et al., (2019) who argue that mobile phone repairers got customers through advertisements.

It was furthermore noted some repairers get customers through mobile phone shops. Shops offer different information on services to their clients, including where to repair phones when they get at fault.

Also, some phone repairers, who are along the path, get customers from the passer-by. For example, respondent J revealed, "I get customers who pass nearby my table marked with Swahili words 'Fundi simu".

Findings further revealed that several criteria are required to set the prices for phone repairing services. These criteria depend on the nature of faults, kinds of phones, approach or appearance of the customer, and repair time. Su et al. (2019) argue that mobile phone repairs do not have permanent costs for particular services, it is common for mobile phone workers to negotiate with their customers on repair and service costs.

The nature of faults. The interview revealed that most mobile phone repairers charge customers depending on the nature and extent of defects. For example, respond I, one of the experienced mobile phone repairers and mobile phone sellers, disclosed,

"The amount required repairing Android phones such as Infinix, Samsung, Tecno, Itel, Vivo, and Nokia, with different faults vary. The faults include broken LCD, touch screen, memory IC, Power IC, charging control IC, microphones, speakers, network, flashing, and unlocking, repairing, and reading passwords. The amount required to fix the same faults in mobile phones like iPhones and tablets is different" (Respondent I).

Kind of phones. Both interviews and observation revealed type and form of mobile phone determined the amount to pay for repair service. The mobile phone repairers disclosed that the kind of mobile phone was damaged to determine the repair cost. The most expensive mobile phones like the iPhone, Samsung, and iPad are also costly to repair. Respondent L, with experience of three years in repairing iPhone mobile phones, disclosed, "It is costly to repair iPhone because it needs more advanced technology and tools compared to android phones".

The appearance of the customers. The mobile phone repairers categorize customers by their appearance. Observation revealed that customers were charged differently for the same fault or service. A customer who seemed to be less informed on phone spare parts is given a high cost to pay. If the customer appears to be aware and conscious of the spare parts was charged a reasonable amount of money. For example, some customers were charged TSH 5000/= for changing glass protectors while others charged TSH 3000/= for the same service. Respondent C, one of the experienced mobile phone repairers with ten years of repairing mobile phones disclosed,

"Charging the customers depends on their awareness of spare parts. If they seem ignorant of the phone spare parts, they will be charged a high amount of money because they cannot question if they seem to be aware that the spare parts will be charged a reasonable amount of money" (Respondent C).

Repair Time. The repairers evaluate the extent of damage and the time needed to repair it. It was revealed that the damages that required more time were highly charged than the damages that took a short time to fix. For example, respondent K asserted, "If I spend much time repairing a specific mobile phone, the charge of service to the customer will be high".

3.5 Challenges Facing Mobile Phone Repairers
Through interviews and observations held with mobile phone repairers, research findings revealed several challenges that the mobile phone repair cadre faced in dealing with mobile phone repair.

3.5.1 Lack of Office Space
Through interviews and observation of mobile phone repairers research findings indicated that 08 of 15 mobile phone repairers do not have permanent offices. This was because they did not have the capital to hire offices and or buy modern and advanced tools for mobile phone repair. Ultimately, they ended up fixing coloured umbrellas with a table beside the highways and pathways. Mobile phone repairers disclosed that the problem of the office made the customers lose trust in the ability of some mobile phone repairers. Respondent B, who has a twelve year experience in repairing mobile phones stated, "This problem of not owning the permanent office is a limit of getting trust from the customers".

3.5.2 High Price of Items and Lack of Capital
The study established that quality spare parts were very expensive to purchase by both mobile phone repairers and customers. Largely because each form and kind of mobile phone needs its unique toolbox to fix, which were expensive. In addition, 13 out of 15 interviewed mobile phone repairers had the problem of capital that could help them rent offices, get adequate, effective, and modern tools. Furthermore, they failed to attend pieces of training because of capital. Respondent G, with an experience of five years in mobile phones repair, indicated, "The money I earn is for only enough for paying house rent, school fees for my children, buying food and maintaining my day to day life". Moreover, respondent H with seventeen years of mobile phones repair disclosed,

"To be well equipped in mobile phone repair activities, one needs to possess all kinds of tool boxes for diagnosing and fixing all kinds of mobile phones but I don't have enough capital to buy all required toolboxes required for fixing and every type of mobile phone."

3.5.3 Language Barrier
 Research findings obtained from an interview with mobile phone repairers indicated that 12 out of 15 mobile phone repairers had language problems. It was revealed that 100% of mobile phone parts and accessories were written in English, which was hard to understand by 12 out of 15 mobile phone repairers for they had standard seven level education. Respondent B, one of the

respondents with more than fourteen years in the mobile phone repair industry, disclosed, "I face difficulties naming mobile phone accessories and spare parts because all are written in a foreign language that I am not competent in".

3.5.4 Scarcity of Tools

Through interviews with mobile phone repairers, the researchers established that each type and kind of mobile phone needed its toolbox to fix some faults. Unfortunately, some of the equipment required to repair specific mobile phones were hard to find. They were not available unless by particular order from the countries where they were manufactured. So, to overcome the problem, 07 out of 15 mobile phone repairers revealed that some of those items were therefore made locally or taken from another damaged mobile phone but with different faults to meet the customers' needs. For example, respondent B, revealed, "an item like power button for Tecno mobile phone is hard to find in all shops, but there is only one repairer in the whole area that can assemble the item locally".

3.6 Ways Employed In Solving Challenges Facing Mobile Phone Repairers

On the other side, the research findings indicated how mobile phone repairers solved those challenges. Research findings obtained through interviews and observation unveiled that those challenges were solved in various ways. These ways included:

3.6.1 Compensating the Customers

An interview with mobile phone repairers and customers revealed that 04 out of 15 mobile phone repairers required recompensing the customer's property damaged during the repairing process. Moreover, mobile phone repairers must replace the fake fixed equipment with genuine ones. It was found that sometimes mobile phone repairers decided to compensate their customers with the new phone. However, mobile phone repairers chose to refund the broken phone with money.

The interview with mobile phone repairers and customers revealed that 05 customers were compensated differently. 01 customer was replaced with a new phone, another one was replaced with money, and the other 03 were replaced with genuine equipment. One of the experienced mobile phone repairers, Respondent G, revealed, "I compensated the customer with genuine screen touch when his phone was damaged during the repair process".

3.6.2 Cases of Corruption

Mobile phone repairers complained of harassment and frequent arrests whenever police officers found them being in illegal possession of mobile phone flashing or unlocking tools. The police officers would seize their properties by force only to releases them after paying bribes in form of money—the above statement evidenced by 07 out of 15 mobile phone repairers. For example, respondent E revealed, "I was caught by a police officer who took my properties by force until I bribed him so as to get my properties back".

3.6.3 Getting Spare Parts from Colleagues

Due to a lack of spare parts to replace items with faults in some mobile phones, the repairers would contact another repairer to get the required accessory or item. For instance, all kinds of AC systems and power switches for mobile phones or display restart devices. Respondent J, one with experience of nineteen years in repairing mobile phones, indicated, "It's challenging to find a power switch for restarting mobile phones in any shop, so, when the customer brings phone with such fault, I contact other repairers to get it".

4.0 CONCLUSION

Mobile phone repairers are motivated by various factors to join phone repair businesses. The factors include;
   a. Income and employment problem
   b. Encouragement
   c. Prestige
   d. Opportunity grabbing

Employment drives youth to engage in the mobile phone repair industry. All these call for mobile phone repair at different levels. Such levels include level 1 (deals with basic repair) level 2 (intermediate) and level 3 (advanced) knowledge. Other levels include level 4 (for certificate), levels 5 and 6 (diploma). These are avenues for both technical and academic institutions to design programs in that direction.

❖ Mobile phone repairers acquire skills both formally and informally.
❖ The government should facilitate people with mobile phone repair knowledge to upgrade or attend professional training to provide essential and perfect service.

❖ The government should broaden cooperation with other education stakeholders to provide vocational education on mobile phone repair, such as VETA.

❖ Designed program on mobile phone repair should consider their learning modalities. For example; carry out several trials to master the skills. This implies that if programs on phone repair are to be established there must be enough resources for students to practice. Examples of trial-and-error include connecting phones to the internet, setting the phones, replacing phone housings, and repairing screen protectors

❖ There should be short courses that run on a part-time basis rather than full-time to give opportunities for learners to practice or those already with repair shops to take the course alongside their jobs

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