Dynamics of Downstream Electronic Waste Entrepreneurship in Ghana: A Case of Agbogbloshie

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List of Acronyms

AMA	Accra Metropolitan Assembly
AVF	Asset Vunerability Framework
COVID-19	Coronavirus-2019
DMW	Daily Minimum Wage
EEE	Electrical & Electronic Equipment
EPA	Environmental Protection Agency
ERP	Rural Enterprise Programme
e-WASTE	electronic-Waste
GDP	Gross Domestic Product
GEM	Global Entrepreneurship Monitor
GESP	Global e-Waste Statistics Partnership
GHC	Ghana Cedi
GIZ	German Agency for International Cooperation
ICT	Information & Communication Technology
ILO	International Labour Organization
LI	Legislative Instrument
MESTI	Ministry of Environment, Science & Technology and Information
Mt.	Metric Tons
REP	Rural Enterprise Programme
SDGs	Sustainable Development Goals
SMEs	Small and Medium-Size Enterprises
SSA	sub-Saharan Africa
UNDP	United Nations Development Programme
WHO	World Health Organisation

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Abstract

Notwithstanding the increasing importance of electronic waste both in academic literature and in practice, robust evidence with respect to entrepreneurial activities within the e-waste space is limited. Much of the literature on e-waste have focused on the environmental and health concerns with no reputation for how e-waste sector offers platform for the entrepreneurial development and livelihood empowerment for the urban poor. The current paper adopted a case study research design to analyze the entrepreneurial dynamics of the downstream e-waste enterprises at Agbogbloshie e-waste processing site in Accra, Ghana. Therefore, the paper links the literature on e-waste, informality, and entrepreneurship. Having identified the downstream e-waste enterprises as collectors/scavengers, recyclers, refurbishers, the middlemen, and scrap dealers, I argue that scaling up enterprises to tap into the opportunities embedded in the e-waste sector would not only create more jobs for the urban poor but would also boost the local economy. The paper finds evidence of necessity and opportunity-driven motives for engaging in the e-waste business. The findings further show that while collectors are survivalists, recyclers and refurbishers exhibit the characteristics of both survivalists and growth-oriented, and scrap dealers are growth-oriented enterprises. There is also evidence that the e-waste business offers better livelihood opportunity by way of creating jobs for the urban poor, income generation, and remittances. However, amidst competition due to free entry, harassment from the government, and associated environmental and health risks, the entrepreneurs adopt some coping strategies, including payment of 'illegal' money (facilitation fees) to city authorities and the security agencies, creation of bulks of e-waste, diversification, self-medication, and paying for the e-waste. The paper concludes that the e-waste generates several entrepreneurial opportunities thus must be streamlined and integrated alongside with the formal sector to create more jobs for the growing number of urban poor.

Relevance to Development Studies

The paper documents the characteristics of downstream e-waste business, the motives, and implications for livelihood empowerment in vulnerable conditions. The paper makes the following contributions. First, it contributes to the literature on the entrepreneurship and informality. Second, the ability to explore the perceptions of workers on their motives to engage in e-waste micro-entrepreneurship amidst threatening environmental and health challenges provides important pointers for public policy which may restart the conversation on either to ban such activities or streamline it. Third, since the e-waste is increasing becoming a global challenge, the development of entrepreneurship in the sector would contribute to the sustainable management of municipal solid waste, generate jobs for the urban poor, and stimulate the growth local economy.

Keywords

Downstream e-waste services, informality, entrepreneurship, urban poor, Agbogbloshie

CHAPTER ONE: INTRODUCTION

1.1 Background

Despite the growing significance of electronic waste, both in academic literature and in practice, robust evidence with respect to entrepreneurial activities related to electronic waste is lacking but emerging. Electronic waste (e-Waste) is one of the most pressing challenges of the United Nations Sustainable Development Goals (SDGs) due to its health and environmental consequences. Indeed, the 2020 report by the Global E-waste Statistics Partnership (GESP) reveals that 53.6 million metric tonnes (Mt) of e-waste were generated worldwide in 2019, having spiked by 21% in five years. Within the period under review, the regional picture suggests that Asia generated 24.9 Mt, the Americas 13.1Mt, Europe 12 Mt, Africa 2.9 Mt, and Oceania 0.7 Mt. The report further envisages that the global e-waste will reach 74 Mt by 2030 if the current trend persists (GESP, 2020; Forti et al., 2020). Furthermore, since only 17.4% was collected and recycled in 2019 (Andeobu et al., 2021), the report concludes that the e-waste market is valued at US$57 billion (GESP, 2020).

Consistent with this trend, scholars have converged on the point that higher levels of disposable incomes, urbanization, and industrialization have intensified the demand for, and use of electrical and electronic equipment (EEE) (Robinson, 2009; Baldé et al., 2017; Ilankoon et al., 2018), leading to the accumulation of huge amount of e-waste. Given that there is a growing global consumption of EEE, which is fueled by a revolution in information and communication technology (ICT) coupled with rapid product obsolescence (Arya & Kumar, 2020), e-waste has become the world's fastest-growing domestic waste stream (Davis, 2021).

Over the past three decades, the extant literature attempts to establish a link between e-waste enterprise and informal economy particularly in developing countries. In developed countries where waste management system is well advanced, Ongondo et al (2011), Sthiannopkao and Wong (2013) argue that the e-waste recycling infrastructure is integrated into the formal economy. However, in low-and-middle income countries, the e-waste management system is either undeveloped or it is almost absent in some countries (Ikhlayel, 2018; Srivastava & Pathak, 2020). In that regard, e-waste is managed mostly by the informal sector. This is particularly so because the fast-paced urban growth in developing countries particularly in sub-Saharan Africa (SSA) has not been accompanied by economic growth, job creation, and service provision (Amankwaa, 2013:552). As a result, entrepreneurial initiatives emerge in slums and informal settlements (Dana, Ratten, & Honyenuga, 2018). Analogous to this view, the GESP's report suggests that e-waste management in Africa is dominated by thriving informal sector collectors and recyclers whose activities are unregulated (GESP, 2020:70).

Consequently, the report by the International Labour Organization (ILO) revealed that 85.8% of Africa's urban workforce work in vulnerable conditions under the informal economy (ILO, 2018). Berner Gomez & Knorringa (2012) also illustrate that entrepreneurs who operate in the informal settings plough their businesses as a survival strategy in slums. Consistent with this view, Oteng-Ababio et al. (2014) argue that e-waste enterprise within informal economy is a matter of necessity, individuals' ingenuity, and novelty. To strengthen this point, Dutta and Goel (2021) add that e-waste entrepreneurs operate in a marginalized survival informal sector involving excess workers living in poor urban neighborhoods. It should be noted that these scholarly characterizations imply that e-waste business in the informal sector evokes both positive and negative images.

Ghana's economy is largely driven by the private sector where the informal economy, accommodates about 90% of active labour force (Ghana Statistical Service, 2016). Additionally, the informal economy generates close to 20-40% of Ghana's gross domestic product (GDP) (Obeng-Odoom & Ameyaw, 2014; Adei et al., 2021). Like most countries across Africa, the rapid migration and natural population growth have stimulated demand for urban services and infrastructure to outstrip supply, resulting in the creation of slums and informal settlements (Cuesta et al., 2021:371). Accordingly, Ghana's e-waste industry is largely informal (Grant & Oteng-Ababio, 2012; Asibey, Lykke & King, 2020), and the Agbogbloshie E-waste processing site in Accra, Ghana - which is widely seen as Africa's largest e-waste dump (Oteng-Ababio, Amankwaa & Chama, 2014) has attracted domestic and international attention. About 5,000 people turn up at the Agbogbloshie site a day to scavenge or transact business related to e-waste. The government's legislation of the e-waste industry in Ghana is minimal and inefficient. The e-waste is processed manually in small workshops by disassembling and open burning (Srigboh et al., 2016), and the e-waste is stripped to remove valuable components, including, gold, copper, brass, and aluminum (Itai et al., 2014). The open burning of metals heavily contaminates "local air, soil, and groundwater as well as diffusion into homes, food markets, and other public locations" (Amankwaa, 2013:34). Nonetheless, it is critical to examine the dynamics of e-waste entrepreneurial initiatives towards livelihood empowerment within urban slums. Therefore, I argue that in-depth knowledge and the opportunity to tap into the synergies and innovation of e-waste business may stimulate sustainable development of urban informal settlements.

The e-waste enterprise in low-and-middle income countries has generated much research attention in recent years. This is because prevalent explanations with respect to urban informality

revolve around two frames: crisis and heroism. On one account, the activities of e-waste enterprises are framed as a crisis due to their rudimentary waste handling practices, which generate health and environmental impacts (Sthiannopkao & Wong, 2013). Therefore, urban informal e-waste entrepreneurs and informal dwellers in general "often face evictions and demolition exercises from city authorities" in the quest to keep the city clean (Asibey, Lykke, & King 2020:2). Though the sector may offer jobs, sustain livelihoods, and generate revenue for city authorities, their activities may be regarded as nuisance. On the other account, informality is framed as 'heroic' or 'survival' entrepreneurship (Berner, Gomez & Knorringa, 2012), which emerges in response to the formal sectors' inability to create livelihoods for the subaltern class of the population. Thus, heroic entrepreneurs only spontaneously responded to the incompetence of state institutions to create economic opportunities for the citizens.

It should be noted that my study focuses on the latter argument to recharacterize the dynamics of urban e-waste entrepreneurial logics, the motivations to engage in e-waste activities, and to understand what e-waste business implies for income generation and livelihoods empowerment. Previous studies have focused on the health and environmental impacts of e-waste activities and paid insufficient attention to understanding the dynamics and frugal entrepreneurial innovations associated with e-waste business. In other words, the extent to which e-waste management offers platform for the entrepreneurial development and livelihood empowerment within urban slums is underexplored. Therefore, the link between e-waste, informality, and entrepreneurship is central in this paper.

The objective of this paper is to identify and analyze the entrepreneurial activities of the downstream e-waste activities at Agbogbloshie e-waste processing site in Accra, Ghana. Consequently, the main research question is, ***to what extent has the downstream e-waste management at Agbogbloshie e-waste processing site offered a platform for the emergence of entrepreneurs in Ghana's urban informal sector?*** To respond to the main research question, the following sub-questions were posed to highlight the various elements of the study: *What is the main e-waste downstream business activities at Agbogbloshie e-waste processing site? What motivates people to engage in e-waste business at Agbogbloshie? What are the differences between the categories of e-waste enterprises offering services at the Agbogbloshie? What coping strategies do people in the e-waste business employ amidst threats from city authorities, associated health risks, and competition from new entrants? How has the e-waste business impacted the operators with respect to income generation and livelihood empowerment? Who are the primary actors and what are their contributions in the activities of these Enterprises?*

For the purpose of this paper, the e-waste industry at the Agbogbloshie E-waste processing site in Ghana can be categorized into upstream and downstream activities. The upstream activities capture companies which finally process e-waste materials into other goods such as iron rods, roofing sheets, burglar resistant window frames, and household appliances, including gas cookers, cooking utensils and pots. These are mostly big companies whose products serve Ghana's construction industries and household needs. The companies do not work under extremely vulnerable or 'survival' conditions. However, the downstream category (also known as e-waste micro-entrepreneurship) is made up of collectors (scavengers) of e-waste, those involve in

dismantling and open burning of e-waste, as well as those who strip the EEE for gold, copper, brass, and aluminum, and other vital components.

The downstream activities of e-waste micro-entrepreneurship cut across African countries. Nevertheless, the extent of legislation may differ from one country to another. For example, few countries including Egypt, Cameroon, Cote D'Ivoire, South Africa, Nigeria, Rwanda, Nigeria, and Ghana have published waste management legislations. Moreover, Tanzania, Rwanda, Burundi, and Kenya have implemented regional e-waste management system. Therefore, my paper focuses on the downstream activities. The downstream activities mostly take place within slums or informal settings that hold the potential for the emergence of different frugal entrepreneurial innovations. The seemingly limited knowledge on the e-waste business has occasioned threats from city authorities.

The study is divided into six (6) chapters. The background to the study, statement of the problem, purpose of the investigation, research questions, significance of the study, and delimitation of the study were examined in chapter 1. The chapter 2 consists of the literature review and the theoretical background of the study. Thus, it discussed the concepts and theories which provided the foundation for theorizing entrepreneurship in the context of the downstream e-waste services. The chapter 3 contextualizes and examines the growth of e-waste sector in Ghana. The chapter also shed light on the legal framework guiding the e-waste space in Ghana. The chapter 4 focuses on the demographic characteristics and the nature of downstream e-waste enterprises. The chapter 5 documents the features, growth aspirations, and trends of e-waste enterprises. Finally, the chapter 6 discusses the conclusion and policy recommendations.

1.2 Research Methodology

This section details the methods employed to understand the dynamics of the e-waste business. The present research was conducted at Agbogbloshie in Accra (the capital city of Ghana). Agbogbloshie is situated on the banks of the Korle Lagoon, Northwest of Accra's Central Business District. It is a densely settled and resource-rich setting. It is projected that 40,000 people inhabit the area – most of whom are migrants from the northern part of Ghana. The residents of Agbogbloshie lack access to clean water and sanitation amidst harsh living conditions. The area covers about 1.4621 km2 (31.3 hectares) land triangle located less than a km outside Accra's central business district, with an approximate population of 79,684 people (Housing the Masses, 2010). The e-waste business emerged more than a decade ago. The Agbogbloshie site is a large plot of land in Accra's western outskirts, bordered on the south by a crowded marketplace as well as on the north by the Korle lagoon. It is prone to seasonal floods from the Odaw river and seawater from the Gulf of Guinea. In the 1960s, the place was quite isolated and deserted. Over decades, the market evolved into a hub for onions, tomatoes, as well as other vegetable sellers, and the majority of whom are large-scale suppliers from Ghana's northern area. Agbogbloshie scrapyard is widely known destination for obsolete automobile and electronic materials.

Consequently, a case study research design was employed to understand in-depth the dynamics of entrepreneurship with respect of the e-waste enterprises at Agbogbloshie. A case study is generally a "bounded entity that refers to a person, an organization, behavioural condition, event, or other social phenomena" (Yin, 2011: 6). In that regard, an investigator explores into detail a program, a process, or an individual. As a qualitative approach, a case study research design allows for the collection of data from multiple sources, including, audiovisual materials, observation, interviews,

and content analysis of reports and and other related documents (Creswell et al., 2007). Yin (2011:16) defines a case study as "an empirical inquiry that investigates a contemporary phenomenon in depth and within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident." Yin's conceptualization of a case study approach is a fit-for-purpose for the current study for two primary reasons: first, the emphasis placed on depth is crucial for this study because I sought to understand in-depth the dynamics of the e-waste business. Second, Yin's definition has highlighted the importance of the context surrounding a case and its implication on the participants. This is appropriate for the current study because the cultural and the natural settings (urban informality or slums) of the participants are assumed to be critical in responding to the research questions. However, the weakness of a case study is that it is not generalizable in the sense that a case is not necessarily a representation of a more significant case (Huberman & Miles, 2002).

1.3 Data collection and Limitations

Two sampling techniques were used: purposive and snow-balling sampling techniques. A snow-balling sampling technique is the one that uses a few cases to help encourage other cases to take part in the study, thereby increasing the sample size (Taherdoost, 2016). The snowballing technique was useful because most of the e-waste workers were not ready to talk to us due to persistent threats of demolitions and evictions by the government. They argued that the media come to interview them and portray their activities in the bad light. So, they have resolved not to grant interviews to anyone. Therefore, snowballing was useful in recruiting e-waste workers that were ready and willing to engage with the researchers. However, purposive sampling was used to select actors (leader (s) of e-waste association and official of an international organization) for key

informant interviews. Additionally, Creswell, Hanson, Clark Plano and Morales (2007) argue that purposive sampling focuses on the identified characteristics of the population. The participants for the key informant interviews were selected because of their knowledge and experience with respect to the e-waste business. In all, the sample size of fifty-two (52) was used. Thus, scavengers/collectors (10), refurbishers (17), recyclers (15), middlemen (3), scrap dealers (5), leader (s) of e-waste association (1), and international organization (1).

Three data collection methods were employed: interview, observation, and the content analysis journal articles. Thus, key informant interviews and questionnaires were used. The questions were both open and closed ended. The opened-ended questions enabled the investigator to probe for critical information on the subject matter. Interviews are a fundamental data gathering instrument for qualitative research (Mann, 2011). The questions were grouped into two sections: Section A (socio-economic characteristics) and Section B (e-waste business operations and classifications). Section A further captured themes or constructs such as downstream e-waste activities, motives for engaging in e-waste business, classification of e-waste enterprises, graduation or growth intentions of entrepreneurs, strategies, and the role of actors. Each interview lasted between 35 minutes to 50 minutes. Additionally, comprehensive data and evidence search using published and unpublished reports, the Government of Ghana's report on e-waste business, reports by the international agencies such as the World Bank, GIZ and the United Nations Development Programme (UNDP). Indeed, content analysis of documents is an essential source of information in qualitative research. These sources of information facilitated the triangulation of data collected from both primary and secondary sources to ensure verification of the realities on the ground (Moran-Ellis et al., 2006).

The data were analyzed qualitatively and complemented with the quantitative data. Thus, the critical incident technique (Flanagan, 1954) was used to probe into incidents that shape respondents' perceptions and experiences of the subject matter. While some information was extracted from the questionnaire, questions that required further probing were audio-recorded and transcribed into Microsoft word. The data were carefully extracted and categorized into various themes based on the study's objectives. In that regard, the data were analyzed through an inductive thematic analysis approach based on issues that emerged from the study context (Miles & Huberman, 1994). The fundamental concepts were labelled and defined, and the key patterns and relationships regarding the e-waste business were explored.

It is worthy of note that some limitations were encountered in the course of the study. First, the sample size of 52 (50 e-waste workers and 2 institutional officers) may not be a fair representation of all stakeholders at the Agbogbloshie e-waste site in Accra. Second, given that a case study approach was used, the findings may not be generalized to be the case in other geographical settings. Nevertheless, the findings may be applied to other contexts that share similar social, economic, and political characteristics. Third, constraints with respect to time and other material resources such as money for research assistants are also worthy of note. Fourth, the use of snowballing as a sampling strategy has the potential to hinder the diversity with respect to ideas and opinions of the e-waste workers included in the study since the workers are likely to refer the investigator to people within their own business cycles, family relations, and friends. With prior knowledge of this potential limitation, deliberate steps such as link tracing, background checks, and verification of interpersonal relations were employed to ensure diverse ideas and opinions.

Unfortunately, the e-waste business is male-dominated; hence, females were not part of the sample and their views were not represented.

Regrettably, face-to-face interviews were significantly impacted by the COVID-19 pandemic. As a result, the investigator could not visit Ghana to interact with the respondents physically. In that regard, some of the interviews were conducted via Zoom by the investigator assisted by the research assistants who were trained for the field work in Ghana. The combination of virtual mode and the use of trained research assistants allowed for triangulation and cross-checking to ensure that the data reflected the reality on the ground. Also, transcripts were sent to the respondents for confirmation and acceptance. It must be stated that all the World Health Organization (WHO) and Ghana Health Service, as well as the Dutch government coronavirus safeguarding protocols, were rigorously observed.

1.4 Researcher's Positionality and Ethical Consideration

In every research, the positionality of the researcher is crucial in the production of knowledge. In this context, positionality is the identification of the political aspects of the self (Cloke et al., 2000:137). It allows for the contextualization of research observations and interpretations (Moser, 2008: 384). In fact, my positionality was the critical deciding factor that conditioned how I related with my respondents as well as the observation and interpretations of my research findings. I started off the research with the expectation that due to the hostile condition under which the people work and the associated environmental and health threats, the participants may be willing to freely participate in the study and offer relevant information against the hope that something may be done to help them.

However, this was not the case because some of the workers were not ready to engage virtually as well as with my research team on the ground. The workers were hesitant because the fieldwork (from September to October, 2021) took place at Agbogbloshie e-waste site shortly after a major demolition exercise, which was carried out by city authorities and task forces. Therefore, the e-waste workers were still counting their losses. In that regard, some of the workers expressed the view that the interviews they grant to the media and other researchers expose them to the hostilities of state officials. Hence, they have resolved not to speak to anybody looking for information from them. This suggests the "complexity of my multiple subjective positionings" (Besio, 2003:31). In spite of this hesitancy, I discovered that it was the aspects of my positionality, including my social skills, passion for the e-waste sector, and my personal and professional relationship with some key actors within the e-waste sector that facilitated my access to certain respondents. This also determined the extent to which the respondents opened up, shared their ideas and opinions, which ultimately culminated into the data collected for the study.

Critically, some ethical considerations were adhered to. Thus, before the interview session, a consent form was given to each of the participants to fill. Besides, the respondents were allowed to withdraw at any point during the interview process. Further, we ensured that the analysis of the data does not contain the identity of the participants.

CHAPTER TWO: LITERATURE REVIEW AND THEORETICAL BACKGROUND

2.1 Introduction

The emerging literature attempts to link the e-waste recycling in urban informal settlements to entrepreneurship. This section discusses the theoretical issues in the entrepreneurship literature. It further examines the theoretical link among e-waste downstream activities, urban informality, and entrepreneurship. Likewise, classifications, motivations and growth intentions of entrepreneurs are discussed. This forms the basis for the development of a conceptual framework to guide the conduct of the study.

2.2 Unpacking Entrepreneur and Entrepreneurship

Entrepreneurship and entrepreneur are not entirely new concepts. The terms are popular amongst scholars from diverse academic disciplines including economics, management, anthropology, sociology, development studies, and psychology. Studies on entrepreneurship have gained traction because of the perceived impact of entrepreneurs on job creation, economic growth, poverty, innovation, and inclusive society by offering opportunities for people who cannot find jobs (Block, Fisch & Van Praag, 2017:63). Within this context, an entrepreneur is seen as "somebody actively involved in starting an enterprise or simply the owner/manager of an enterprise" (Williams & Shahid, 2016:3). An entrepreneur recognizes an opportunity and exploit such opportunities by leveraging resources to create new ventures. Therefore, entrepreneurship is defined as "the discovery, evaluation, and exploitation of future goods and services" (Eckhardt & Shane, 2003: 336).

This conceptualization implies that entrepreneurship involves the exploitation of opportunities. Additionally, entrepreneurial opportunities may be goods, services, raw materials, markets, and modes of transaction (ibid). Shane and Venkataraman (2000) add that the conceptualization of entrepreneurship should not be viewed solely as individuals who set up new organizations but should be understood in the context of searching for opportunities and being able to exploit such opportunities. Nevertheless, conceptualizing entrepreneurship in the context of perceiving opportunities and creating an organization to exploit them is problematic. This is particularly true because some entrepreneurs may exist as a survival strategy or out of necessity and do seek to annex any opportunity. To strengthen this point, Bygrave and Hofer (1992) argue that an entrepreneur may engage in some ventures because he/she may be left with no other choice to earn a living.

Meanwhile, for a very long time, entrepreneurship has been traditionally defined to encompass taking the risk to innovate and coordinate factors of production *inter alia* land, labor, and capital (Acs, Desai & Hessels, 2008). It insinuates that entrepreneurs must take financial and management risks or put their business on the line in their quest to establish a new enterprise. Whichever way one may interpret it, entrepreneurship serves as a primary means of employment and individuals' ability to exert control over one's destiny.

The underpinning idea is the ability of individuals (entrepreneurs) to create value by developing new means and/or ends (Casson, 2005). Judgmental decision-making is also seen as a key feature of entrepreneurship (ibid). And the decision-making is embedded in risk and uncertainty. In fact, it is about turning a creative venture into a new business or the one that revives

an existing business. Entrepreneurship is about innovating new things or providing new products or finding new ways to provide services (Hébert & Link, 1989). Nevertheless, it should be underscored that not all entrepreneurs are innovative. Gartner (1990) argues that there is no point to equate innovation with entrepreneurship in the sense that the term does not always require skills. In this paper, I define entrepreneurship to capture people who engage in informal economic ventures,which employs rudimentary and skillful approaches in their operations.

2.3 Entrepreneurial Motivations in the Context of the Informal Economy

There are varied conceptualizations of the informal economy or sector. This paper adopts Webb, Bruton, Tihanyi and Ireland's (2013:598) fit-for-purpose conception of the informal economy as economic activities that exist outside of formal institutional boundaries but remains with informal institutional boundaries for a large segment of the society. Put differently, the informal economy is conceptualized as the production of goods and services using processes that are wholly illegal (Portes & Haller, 2010).

Portes (1996) adds that economic activities that take place within the informal economy are technically illegal. Therefore, the activities that fall under the informal economy are characterized as unregistered businesses, operating in violation of labor regulations, and the sale of counterfeit products (Webb, Bruton, Tihanyi & Ireland, 2013:598). Schenck and Blaauw (2011) add that because many urban dwellers have no other alternative source of livelihood, they venture into the informal economy. Regardless of these characterizations, the informal economy is seen as an "incubator for business potential and a platform for graduation to the formal economy since some informal workers exude real business acumen, creativity, dynamism, and innovation

(Williams, 2007:311). Based on the features of the informal economy, scholars have classified entrepreneurs as discussed below.

2.3.1 Necessity versus Opportunity Motives

To analyze the motives of entrepreneurs in the informal sector, scholars adopted different labels including *'necessity'* and '*opportunity*' entrepreneurs (Bygrave & Hofer, 1992). On one hand, some entrepreneurs have engaged in or are 'pushed' into entrepreneurial activities because all efforts to find jobs proved futile - necessary entrepreneurs. On the other hand, entrepreneurs are 'pulled' into the business out of choice to exploit some available opportunities (Welter & Smallbone, 2004; Williams & Williams, 2014). The commentary on the necessity/opportunity dualism suggests that whereas some entrepreneurs are pushed by structural factors others are driven by choice. Moreover, the Global Entrepreneurship Monitor (GEM) also adopted this classification to distinguish between necessity-driven and opportunity-driven entrepreneurship (Minniti, Bygrave & Autio, 2006).

2.3.2 Survivalist Versus Growth-Oriented Enterprises

Scholars have further classified enterprises into *'survival'* and *'growth-oriented'*. Like the 'necessity' category, the 'survival' entrepreneurship or what Regerson called *'survivalist enterprise'* encapsulates the endeavors of core poor people who are unable to secure regular wage employment or access to an economic sector of their choice (Rogerson, 1996:171). The people who engage in survival enterprises are oftentimes ignored or looked down for the work they do which is widely construed as dirty (Schenck & Blaauw, 2011). Hayami, Dikshit and Mishra (2006) assert that they are located at the bottom tier of the urban informal sector. They are adaptable,

flexible, and able to respond quickly to demand-driven forces. They are bereft of skills training coupled with minute capital often suffocate their ability to expand into a viable business.

Consequently, poverty and a desperate attempt to survive are the cardinal features of survival enterprises (Rogerson, 1996). In theory, enterprises formed by the poor and have limited options concerning employment opportunities are deemed to be survivalist enterprises (Rosa et al., 2006). The growth-oriented enterprises, however, are distinct from the survival enterprises in the sense of their capacity to expand, motivations, and size (Kanothi, 2009). The motivation to expand and plough back profits into the business is part of the defining features of growth-oriented enterprises. They usually take on additional staff, apply specialized skills, and source supplies (Berner Gomez & Knorringa, 2012). Generally speaking, whereas informal enterprises in industrialized countries can be categorized as growth-oriented, those in developing societies are deemed to be survivalist (Langevang & Gough, 2012). In Africa, the majority of enterprises have survivalist orientations because they cannot find jobs in the formal setting and have to start something on their own (Afutu-Kotey, Gough and Owusu, 2017).

2.3.3 Growth Intentions/Graduation

The literature on entrepreneurship has linked the motivation to start a business to growth prospects or aspirations (Langevang & Gough, 2012). The assumption is that entrepreneurs with survival motives have no intention of to grow compared with necessity or growth-oriented entrepreneurs. To buttress this argument, Berner Gomez and Knorringa (2012) contend that the growth or what is popularly referred to as 'graduation' potential of survival entrepreneurs is highly limited.

The scholars who have been very active in this area of entrepreneurship literature are Mead and Liedholm (1998) who observed from developing countries that only a few enterprises with less than four employees graduated or grew to become viable businesses. Consistent with this view, Sleuwaegen and Goedhuys (2002) found in Cote D'Ivoire that lack of access to infrastructure and financial services hurt enterprises' ability to grow into viable businesses. Altenburg, Hampel-Milagrosa and Loewe (2017) observed that a burdensome regulatory environment undermines the graduation of micro-enterprises. Analogous to this point, Berner Gomez and Knorringa (2012) posit that it is even an 'elusive mirage' to think that survival enterprises can graduate or grow.

2.4 Role of actors in Entrepreneurship

This section highlights the role of various actors in entrepreneurship. It is important to understand how various actors interact to facilitate or constrain entrepreneurial development. As far as promoting entrepreneurial activities is concerned, the role of the government, development organizations, and the private sector are crucial. In fact, governments' role in an economy has been a contested issue.

One school of thought contends that the state should exercise a minimal role by allowing invisible forces of demand and supply to determine market transactions (Leftwich, 2011). Thus, the state or government should play a facilitative role by providing conducive environment for entrepreneurs to operate. The other school of thought posits that the state generally should play a greater role in the economy and serve as an engine of socio-economic development (Kieh, 2015). These contrasting views suggest that although the government has a role in the promotion of entrepreneurship, it is not clear how such a function may be performed. In reality, an active body

of the literature on entrepreneurship has underscored how the actions of the government tend to constrain or facilitate the emergence of new firms (see Dreher & Gassebner, 2013; Branstetter et al., 2014). For example, corruption, excessive bureaucracy, and red-tape on the part of state institutions are found to be key threats to entrepreneurial development (Dreher & Gassebner, 2013).

Concerning the private sector, the classical theories of economic development have long argued that the private sector plays a critical role in the economic development of countries. Since most small and medium-size enterprises (SMEs) may lack access to credit and may not be able to invest in productive assets as well as be able to expand their businesses, the private sector plays a critical role in that regard (Altenburg & Von Drachenfels, 2006). Thus, the private sector companies including provide financial, technical, and operational supports to SMEs (Schreiner & Woller, 2003).

Furthermore, the role of business associations on entrepreneurship has gained traction in the entrepreneurship literature. These associations often represent, negotiate, and champion the interest of their members (Helmsing, 2005). For example, the entrepreneurs with survival orientation use their association as a collective action to marshal stronger voices to advance their interests (Fairlie & Fossen, 2018). However, entrepreneurs may not always act in the collective interest of their members: since individuals as economic beings and may always seek to maximize their utilities (Berry et al., 2001). Therefore, association leaders are likely to advance individuals' interests at the expense of the collective interest.

2.5 Livelihood

Livelihood has attracted much research attention over the past few decades based on the view that it can create a window for economic growth and poverty alleviation. There are several conceptualizations of what 'livelihood' is in both policy documents and academic literature.

However, the most widely cited definition is the one offered by Chambers and Conway (1992:4), as "comprising the capabilities, assets, including both materials and social resources as well as the activities required for a means of living". This conceptualization implies that livelihoods extend beyond income generation to embrace many ways a person might make a living. It starts with the extent to which different people in different places live. Chambers (1995) posits that livelihoods are the means of gaining a living or a combination of the resources used, and the activities are undertaken in order to live. Scoones (2009) points out that livelihoods connote terms such as copying, adaptation, improvement, diversification, and transformation. In line with this thinking, scholars have established a link among livelihoods, vulnerabilities, and assets.

This paper conceptualizes livelihood in line with Moser's (1998) Asset Vulnerability Framework (AVF). The AVF frames livelihoods in terms of assets. Within this framework, livelihoods assets comprise of five types of capital including *labor* (the most important assets of poor people), *human capital* (health status, which determines peoples' capacity to work, and skills and education, which determine the return to their labor), *productive assets* (housing is the most productive assets for poor urban households), *household relations* (a mechanism for pooling

income and sharing consumption), and *social capital* (reciprocity within communities and between households based on trust deriving). Therefore, this paper seeks to understand the extent to which the e-waste business has improved the livelihoods assets of those who engage in it.

2.6 Analytical framework

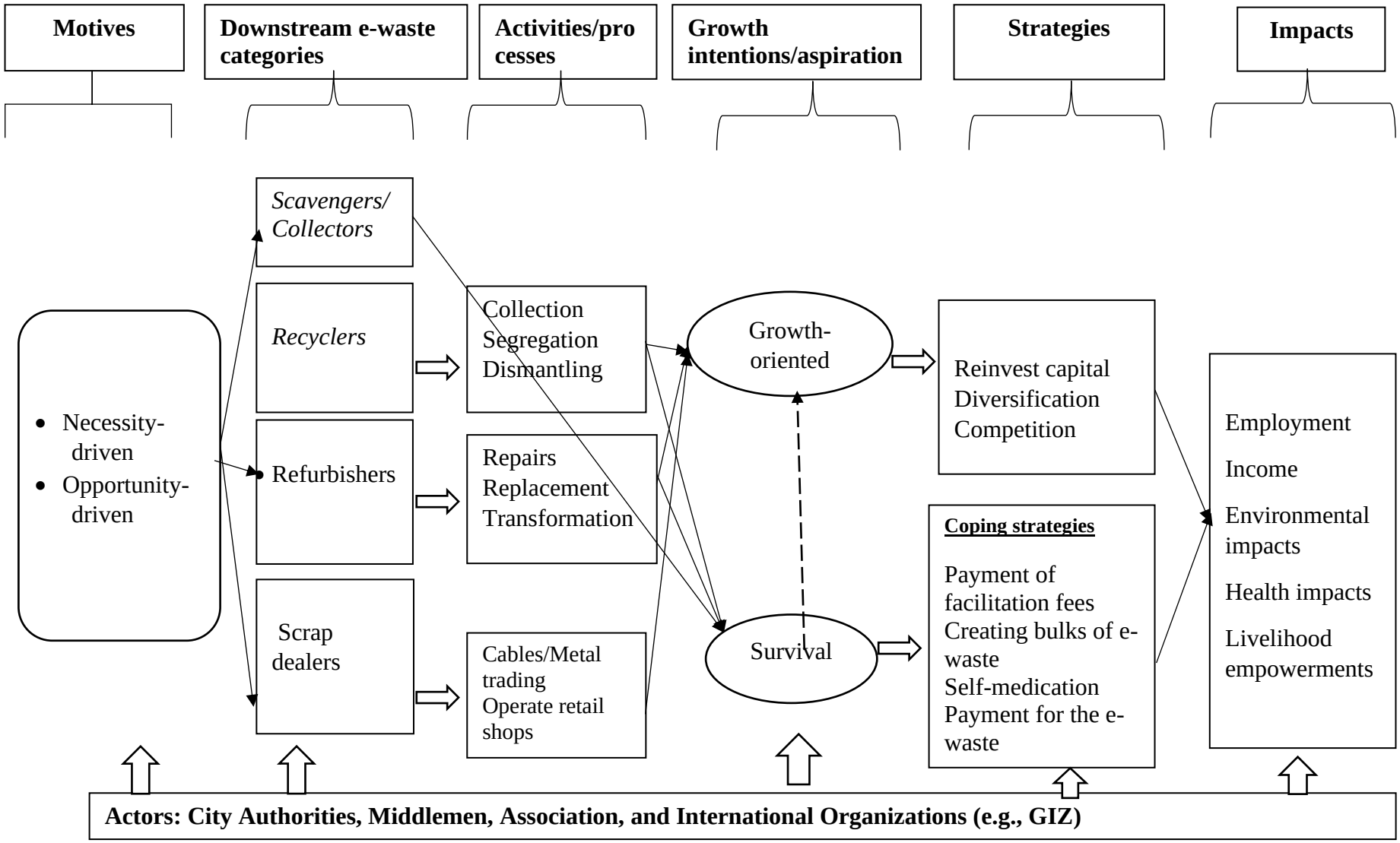
Figure 2.1 captures the framework that will guide the conduct of this study. Since e-waste in developing countries including Africa is largely informal, the entrepreneurs are likely to be driven by a survival motive. The survival enterprise motive assumes that peoples' inability to find jobs in the informal settings push them into the informal sector jobs including e-waste for survival. Within the e-waste industry, survival entrepreneurs engage in downstream activities such as scavenging/collection, refurbishing, and recycling. "*Scavengers/collectors* are people who go around to look for electrical and electronic equipment (EEE) such as obsolete televisions, mobile phones, household gadgets and appliances, broken down car parts and many others. They visit street sides, households, seashores, market squares, refuse dumps, and waste bins. *'Refurbishers'* are those who engaged in cleaning and repairing activities in order to make the product more attractive and affordable to the public.

They also cannibalise unserviceable items for workable components that are used to repair others for the second-hand market. And the *'recyclers'* are those who recover important material components from the EEE. These downstream categories of e-waste entrepreneurs ensure that the EEE undergo some processes (activities). Thus, scavengers/collectors engage in the collection, segregation, and dismantling of EEE. The 'refurbishers' do repairs and extract usable materials from the EEE. And the 'recyclers' engage in the open burning of harvested materials as well as

trade some of the materials they recovered. Based on the review of the literature, entrepreneurs within the informal sector can be classified as survivalists/necessity enterprises or growth-oriented enterprises. However, scholars have argued that most of the enterprises are survivalists, and it may be difficult for them to graduate or grow into viable businesses due to some constraints. Therefore, the broken arrow suggests that it may be difficult for survival enterprises to grow to become growth-oriented enterprises.

The framework further suggests that whereas survival enterprises may adopt some coping mechanisms due to some threats emanating from the institutional environment, the growth-oriented enterprises may exhibit specialized skills, reinvestment of capital, and diversification of their products to be able to withstand competition. Overall, regardless of the motive – either survival or growth-oriented, the impacts could be positive or negative. The positive impact could be the generation of employment opportunities, income, and livelihood empowerment. The negative in the sense that there could be environmental and health impacts due to the rudimentary handling of e-waste. Nevertheless, I recognize that the entire process could be influenced by some actors including threats from city authorities, the activities of middlemen and that of an international organization.

F*igure* 1.1: Analytical Framework for Downstream e-waste Services



Source: Author's Construction

CHAPTER THREE: E-WASTE SECTOR IN THE GHANAIAN CONTEXT

3.1 Introduction

This chapter contextualizes the e-waste sector in Ghana. It specifically captures the growth of e-waste sector and highlights the legal framework for the e-waste sector and its impacts. More so, the role of actors in the e-waste value chain is presented.

3.2 The growth of e-waste sector in Ghana

Over the last 3 decades, Ghana has witnessed an increasing consumption of electrical and electronic gadgets as a result of high population growth and changing consumer behavior. As is the case across the globe, the demand for EEE in Ghana keeps increasing. Most of these EEE are imported largely from Europe, North America, and Asia since Ghana presently has a low level of production and assembling capabilities. The technological uptake has triggered and continue to trigger an alarming inflow of EEE into the country; but most of which are second-hand equipment (Oteng-Ababio, Amankwaa & Chama, 2014). Moreover, the imported gadgets are not only old but also, they are near or at end-of-life with no long-term value and consigned to waste equipment for disposal within a short time. Table 3.1 shows the top 10 EEE usually imported in Ghana.

Table 1.1 Category of EEE imports in Ghana

Category	**Tonnage**	**Usage (%)**
Personal Computers	130, 756	7
Refrigerators	128. 190	62
Air Conditioners	27, 580	91
Radios	9, 387	95
Mobile Phones	1,612	1
LCD Monitors	1.495	50
LCD TVs	1, 336	17
Irons	832	25
Stereos	676	88
Kettles	116	19

Source: Ghana Customs and Excise, 2010-2018, Grant and Oteng-Ababio, 2021:78).

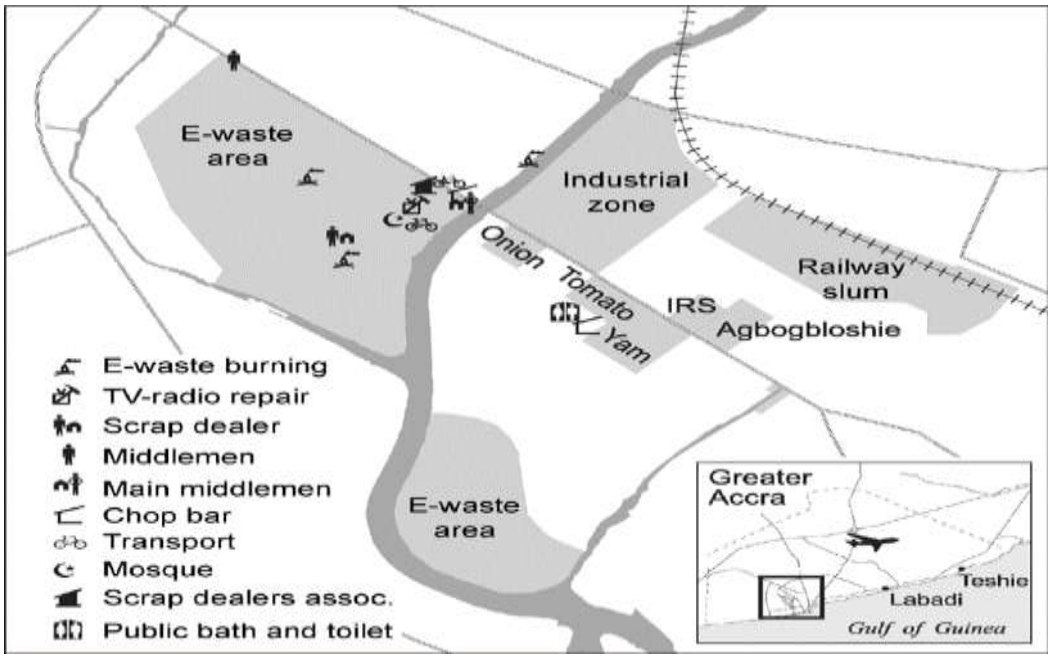
About 170, 000 tonnes of e-waste are generated, only 60% is recycled and out of which 95% is managed by the informal sector (Oteng-Ababio et al., 2013). As a result of high amounts of the importation of second-hand imports, there are abundant second-hand products in the Ghanaian market that can be purchased at relatively low prices. This leads to a higher e-waste generation per year (Daum et al., 2017).

The challenge is exacerbated by the fact that a small fraction (10%) of solid waste in Ghana is sent to the landfil (Oteng-Ababio et al., 2016). Consequently, Grant and Oteng-Ababio (2012) argue that a 'niche market' for informal recyclers has emerged in Ghana due to the inability of the formal economy to meet the requirements of waste disposal. The Agbogbloshie e-waste processing site in Accra has become the largest e-waste dumpsite in the world (Oteng-Ababio et al., 2014).

Scholars have also researched the e-waste at the Dagomba-Line community (see Asibey et al., 2020), an emerging e-waste dumpsite in Kumasi – Ghana's second largest city. The e-

waste stockpiled or dumped because of the absence of disposal facilities. The e-waste is often processed in small workshops with rudimentary tools and methods through manual disassembling and open burning (Srigboh et al., 2016). The e-waste enterprise plays an important role in Ghana's economy as it employs about 30, 000 workers (Otsuka et al., 2012).

Map 1.1 Map showing Agbogbloshie e-waste site in Ghana



Source: Daum et al., 2017

3.3 Legal Framework for E-waste Sector

An estimated 150, 000 tons of e-waste was produced in Ghana while 215, 000 tons were imported in 2009 despite Ghan being a signatory to the Basel Convention (Ackah, 2017). The Basel Convention of 1989 seeks to limit the transboundary movement of waste. Having realized the environmental and health challenges posed by e-waste, the Government of Ghana developed a legal and institutional framework toward sound management of e-waste: "Hazardous and Electronic Waste Control and Management Act, 2016 (Act 917) under the legislative instrument LI 2250 was passed by the Parliament of Ghana." The LI seeks to create Technical Guidelines on Environmentally Sound E-Waste Management for Collectors,

Collection Centers, Transporters, Treatment Facilities, and Final Disposal (GESP, 2020:70). With the Ministry of Environment, Science, Technology and Innovation (MESTI) and the Environmental Protection Agency (EPA) as the institutional home, the Act takes a multisectoral approach and seeks to cooperate with all relevant public and private stakeholders.

Ghana's e-waste management Act is anchored on three pillars: 1) a policy framework to ensure sustainable e-waste at the macro level; 2) economically viable business models are introduced and developed at the meso level; and 3) through capacity development, informal sector players at the micro level are enabled to make e-waste management more sustainable and less damaging to the environment and population's health. It should be noted that Ghana is not a manufacturing-oriented economy and depends largely on imports. In this regard, Act 917 and LI 2250 require private importers and producers to register with the EPA and pay an advance Eco levy for the importation of electronic goods. The levies are then aggregated into a fund and disbursed among various stakeholders by an administrator appointed by the MESTI.

The criteria for the disbursement of the fund include a percentage to those involved in the collection of electrical and electronic goods at the end of life, construction and management of e-waste recycling plants and related facilities, to the implementing agency (e.g., EPA), related activities at the Ministry of Environment, research and development in public awareness creation, education, and sensitization at the national, regional, district, and community level, and monitoring activities. The others include support to key trade associations and manufacturers of electrical and electronic equipment for capacity building as well as the administrative expenses of the fund (Kumi et al., 2019:15).

The e-Waste Management Guideline is expected to lay a foundation for the formalization of the informal e-waste sector along the entire value chain. Nevertheless, the success of the legal framework and the subsequent e-waste policies and programmes may depend on many factors including enforcement and the dissemination of knowledge between and amongst stakeholders.

CHAPTER FOUR: DEMOGRAPHIC CHARACTERISTICS AND MAIN DOWNSTREAM E-WASTE ENTERPRISES

4.1 Introduction

One common narrative about the e-waste is that the sector is not only marginalized but also involves excess workers living in poor informal settlements. Other narratives contend that the sector is riddled with environmental and health challenges. Notwithstanding these framings, the emerging literature suggests that the e-waste sector holds the potential for economic growth and job creation. Therefore, this study explored the dynamics of entrepreneurial activities within the e-waste sector at the Agbogbloshie e-waste site in Ghana. Using the data gathered from the field, this chapter discussed the demographics of the people involved in the e-waste business and the downstream e-waste enterprises.

4.2 Socio-economic characteristics of e-waste entrepreneurs

The demographic characteristics of e-waste entrepreneurs captured during the data collection process include age, gender, marital status, level of education, nationality, and work experience with respect to the e-waste economy. The data show that most of the sampled e-waste entrepreneurs are young people between the ages of 20-35 years. This age group of entrepreneurs accounted for 45 (90%) of the respondents covered in this study. This finding resonates with the prevailing socio-economic condition in Ghana; while the national average unemployment rate is 6%, the youth unemployment is much higher at 12.1% with an additional 28% out of the labor force as discouraged workers (Aryeetey et al., 2021).

Ghana's youth policy defines a youth as a person between the age of 15 and 35 years. This means that under the current youth budge situation in Ghana amidst limited economic

opportunities, the youth may see the e-waste business as a viable option to make a living and create wealth. Moreover, official reports suggest that employment opportunities for the youth are in vulnerable/informal and part-time/temporary jobs (Government of Ghana, 2014). This may explain why a majority of the youth seem to dominate the e-waste market in Ghana. Equally, the data further revealed that people above 35 years are also engaged in the e-waste business even though they constitute a small proportion (10%) of the respondents employed in the study.

Furthermore, the findings suggest that the e-waste business is male dominated as entrepreneurs who responded to our questions were entirely males. This is contrary to the dominant view in the entrepreneurship literature that females tend to dominate enterprises in the informal economy (Gomez, 2008; Williams & Shahid, 2016). The key reason is that the e-waste business involves long hours of manual work where handcarts containing e-waste are pulled by workers from different parts of the city to the Agbogbloshie site for processing as well as the manual dismantling of EEE to remove valuable metals. This is because the e-waste business is a vigorous job, food, water, and beverages are mostly consumed by the workers.

Therefore, by observing the crowded but busy e-waste site at Agbogbloshie, women rather took advantage of the e-waste market to sell food, drinks, and water to the workers. Again, some women also took to the sale of collectors' working tools including spanners, hammers, screw drivers, chisels, and others. It should be noted that women do not directly engage in the e-waste business, but their role is limited to complementary and life support services. This means that women capitalize on the positive externality created by the e-waste business to define their livelihood.

Concerning nationality, entrepreneurs were all Ghanaians who migrated from northern Ghana, suggesting rural-urban migration. Although some entrepreneurs have attained some level of formal education, the data show that the maximum level of education is primary school education. This means that entrepreneurs in the e-waste business have a low level of education, and this may pose a challenge for them to obtain alternative jobs in the formal economy. The findings further reveal that while some of the entrepreneurs (30%) of them are married and have a family (wife and children), a majority of them (70%) are single.

4.3 Main downstream e-Waste Enterprises

During discussions with e-waste workers at the Agbogbloshie site revealed that they have been in the business for the past 15 years. Our interactions with entrepreneurs revealed television sets, electric irons, computers, fridges/refrigerators, microwaves, and ovens as common EEE they deal with at the Agbogbloshie scrapyard. However, because refrigerators and television sets are increasingly being used in households, the entrepreneurs did indicate that these two EEE are of high interest to them. The findings disclosed that the e-waste economy at the Agbogbloshie has several layers, which constitute the downstream activities; collectors, recyclers, and refurbishers. Interestingly, some other two categories such as the middlemen and scrap dealers emerged during the data gathering process. These activities are analyzed below:

4.3.1 Collectors

The findings showed that 20% of entrepreneurs included in the study engage in e-waste collection (hence, the name collectors). It should be emphasized that the entry point into the e-waste business is the collection of the e-waste. By interviewing and observation, this group of entrepreneurs are largely the youth. Discussions with them (collectors) revealed that during the initial stages of the business some years ago they used not to pay for the e-waste materials.

However, with increasing competition as a result of new entrants into the business, the e-waste now attracts a fee at the point of collection. It emerged that the entrepreneurs who are e-waste collectors move several hours daily with pulling handcarts and trucks to scavenge for e-waste. They visit market centres, mechanic shops, households, auction points and even the refuse dumps. The extract below captures the nature of e-waste collection business during the interview session:

> *"Our work is very difficult. Initially, we were not paying for the waste materials. But because we are now many, we pay a fee. We go round Accra with our handcarts every day to collect used or spoilt electronic materials like fans, fridges, televisions etc*." (Field data, 2021).

Probing further to understand the subtleties of the e-waste collection process, several issues were discovered. Thus, the e-waste collected is finally brought to the Agbogbloshie scrapyard to be sold to the middlemen, scrap dealers, and other shop owners. It further came up strongly that the collectors tend to hire the hand carts and trucks at a fee from the middlemen**.** The collectors are independent and decide where to go for scavenging, however, on many occasions, they return to the Agbogbloshie yard without e-waste materials, or where they get some materials, no profit may be accrued on them. The competition due to new entrants has produced some implications: a fee is placed on the collection of e-waste materials that hitherto was free, and collectors have decided to spend several days in new localities to build bulks of e-waste before they are carted to the Agbogbloshie site.

4.3.2 Recyclers

Within the e-waste value chain, recovery of important materials is done by the recyclers. Material recovery is the most vibrant and lucrative activity within the value chain and serves as the lifeblood of the e-waste enterprise. It came up from the data that 30% of e-waste entrepreneurs included in the study are recyclers. The recyclers use rudimentary or manual approaches to disassemble and segregate e-waste materials.

The e-waste entrepreneurs disclosed that gold, silver, copper, aluminium, platinum, and other valuable metals are recovered from the waste materials. It must be emphasized that in developed countries, however, the retrieval of such precious metals is done by professionals with the help of technology. However, because the recyclers within the Agbogbloshie site do not have the requisite skills, they tend to rely on crude methods with the aid of pliers, screw drivers, hammers, chisels, and stones to dismantle the EEE.

During the field work, we observed that dismantling and segregation of EEE are done by people between the ages of 15-35 years but under the supervision of others mostly above the age of 40 years. Another common but crude method observed at the site is open burning to recover precious metals. While the burning emits smokes into the atmosphere, most of the parts that are no longer required are deposied in drains. Further discussions with the respondents suggest that the workers are aware and feel the environmental and health hazards particularly due to the crude means adopted to segregate copper and other valuable metals from the e-waste. This was what one the of respondents had to say:

"We can feel the health effects. Sometimes after work, I have to go and take medicine. The smoke that is coming from the burning of e-waste materials affects

our health. But what can we do? We have no choice. The government officials can only see the smoke that is coming from our work. But they have no idea the money that is coming from that. Money dey "borla". The authorities need to recognize that that is where we eat" (Field data, 2021).

The excerpt above suggests that the rudimentary methods employed by entrepreneurs to ply their trade pose both environmental and health challenges. These findings echo similar empirical findings on the health and environmental impacts of e-waste recycling in Ghana (Agyei-Mensah & Oteng-Ababio, 2012; Huang et al., 2014; Srigboh et al., 2016).

Despite the negative impacts, entrepreneurs feel that they have no alternative since their livelihoods depend on that. For them to say "money dey borla" (there is money in the refuse) is a testament to the lucrative nature of the e-waste business. Therefore, the e-waste business is a source of livelihood for the entrepreneurs and government authorities need to recognize that fact and find a way of regularizing their activities.

4.3.3 Refurbishers

Typical of most developing countries, repair, and re-use of spoilt or outdated EEE is a common practice in Ghana. The results reveal that 34% of entrepreneurs included in the sample are refurbishers. It was observed that non-functional EEE are repaired and transformed into functional ones by replacing defective parts. We also observed that the shops that engage in refurbishing have bulks of EEE either waiting for the refurbishment or unable to be repaired and yet to be given to the scrap dealers. The refurbished products provide a huge service for the second-hand market in Ghana. It should be noted that most Ghanaians are poor and are not

able to afford new household appliances, hence, the second-hand market becomes a viable option to meet their household needs. Therefore, entrepreneurs who are within refurbishing space are able to sustain their livelihoods.

4.3.4 Middlemen

It emerged from the findings that there is another layer of downstream activities performed by the middlemen. They are middlemen because of the interface between scavengers/collectors, recyclers, and scrap dealers. The findings reveal that 6% of respondents were middlemen. Our interaction with the respondents reveals that in most cases collectors and recyclers are unable to access the scrap dealers' market because their goods are in small quantities. Therefore, the middlemen phenomenon emerges to offer an easy market for collectors and recyclers by linking them to scrap dealers. It emerged also that the middlemen offer financial assistance to the collectors and even assist them to hire handcarts and trucks to facilitate the scavenging process.

4.3.5 Scrap Dealers

The scrap dealers form 10% of the sampled respondents for this study. Between the collection and the final marketing of the recovered precious metals, the scrap dealers play a critical value-addition role. For some of the scrap dealers, e-waste business is not their only source of income as they engage in businesses including the sale of general goods such as provisions at other locations within the city of Accra. One of the scrap dealers narrated that:

> *"e-Waste business is very good. I get a lot of money and even own shops at Nima (a community in Accra) where I sell cement and other provisions. So, this business (e-waste) is not my only source of income"* (Scrap dealer, 2021).

Within the hierarchy of the downstream e-waste value chain, the scrap dealers occupy a high rank. Due to their relatively large capital base, scrap dealers tend to purchase EEE from collectors, and recyclers in bulk and send them to Tema – an industrial city of Ghana where giant scrap recycling companies operate. At Tema, large scrap dealers (upstream activities) process the EEE into building materials such as iron rods, roofing sheets, cooking utensils, and other construction materials. Therefore, scrap dealers at the Agbogbloshie site have their activities connected to upstream e-waste businesses at Tema.

CHAPTER FIVE : FEATURES, GROWTH ASPIRATIONS AND TRENDS IN E-WASTE ENTERPRISES

5.1 Introduction

In this chapter, motivations for engaging in the e-waste business, classifications, and strategies are discussed.

5.2 Motivations for engaging in e-waste business

Four-pronged motives emerged when workers were asked about their motives for engaging in e-waste business: poverty and unavailability of jobs, peer influence, the lucrative nature of the e-waste business, and strong passion and interest for the e-waste business.

5.2.1 Poverty and unavailability of jobs

It emerged from the findings that 70% of entrepreneurs who took part in the study expressed the view that poverty and unavailability of jobs in Ghana compel them to engage in e-waste business. When the data were further disaggregated and through observation, it was discovered that this group of respondents who highlight poverty and unavailability of jobs in the formal economy are predominantly collectors, recyclers, and refurbishers. Further discussions with the workers reveal that most of them migrated from the northern part of Ghana where agriculture is the mainstay or livelihood of the people.

Conversely, owing to the land tenure system, erratic rainfall, poor yields, and general poverty, they are unable to sustain themselves through farming activities. Therefore, they migrated to Accra (the Capital city) in the hope that they could find some jobs. The majority of them did indicate, however, that they resorted to e-waste business because they could not

find jobs in the formal economy partly due to their low level of education as well as low skill sets. And for them to be able to support their respective families back home, break inter-generational poverty, and avoid poverty trap and insecurity, the e-waste business has become their means of survival. An interview with a worker at the Agbogbloshie site reveals thus:

> "*Though I suffer a lot moving from one place to another to look for waste materials, I have no choice. People don't respect me. Sometimes owners accuse us as thieves. I do this just to survive. I don't get anything from it"* (Collector, field data: 2021).

A recycler also disclosed that:

> "*I came from the North to look for a job in Accra to support my family. But because I didn't go to school, I could not find any suitable job and decided to do e-waste business. E-waste business is good for me. It is my only source of livelihood"* (Field data, 2021).

Another worker collaborated that:

> *"You know there is poverty in the north and we came to Accra to look for jobs. But it was difficult for me to find one and decided to do scrap (e-waste) business. At least, we are managing with this. I'm able to sustain myself and my family through this business"* (Refurbisher, field data).

The field data suggest that entrepreneurs particularly collectors, recyclers, and refurbishers undertake e-waste business out of necessity. This is in response to the failure on the part of the state to grow the economy that will create enough jobs for the population. Though the entrepreneurs did attribute their inability to find jobs to their low level of education and lack of skills to secure formal sector jobs, the real challenge is the government's failure to provide the right environment for the private sector to expand and create jobs to meet diverse skill sets of the population.

In actuality, an accumulated body of empirical evidence points to high graduate unemployment in Ghana (Baah-Boateng, 2015; Ampong, 2020). This is particularly true when a majority of them responded to the question that they will quit doing the e-waste business if they get a better opportunity. This suggests that this group of entrepreneurs have no option but to take the advantage of the free entry created by the e-waste sector to not only define their livelihoods but also as a coping strategy.

5.2.2 Peer influence

Some workers expressed the view that they found themselves in e-waste business owing to the influence they receive from friends and family relatives. It should be noted that there is a strong cohesion and social ties between and among people from northern Ghana because of their ethnicity and linguistic features. Due to these features, the people mostly cluster in specific areas within key neighborhoods in the capital city of Accra. Therefore, it is a common practice to see such a homogenous group engages in similar businesses and activities.

The findings records that 14% of the respondent did indicate that they were influenced by friends, colleagues, and relatives to engage in e-waste activities. To them, the encouragement

and pieces of advice received from friends and relatives who were already into e-waste business motivated them to also engage in it. Most of them expressed the view that although the business is helping to meet their basic needs, they will take up any opportunity that comes on their way. One of them had this to say:

> *"I was influenced by my friend to do this business. The business is helping me but if I get a better opportunity, I will leave. The business affects my health."*

5.2.3 Lucrative nature of e-waste business

Relatively, few workers (16%) tend to view the e-waste business as a lucrative venture through which they generate a substantial amount of money. Through further interviewing and observation, the data reveals that this category of entrepreneurs consists of scrap dealers and middlemen. They indicate that the higher returns associated with the business motivate them to engage in it. To them, they will continue to do e-waste business even if another opportunity comes on their way. They reveal that e-waste business pay-off compared to other businesses within the informal economy such as commerce and construction works.

5.2.4 Passion-driven e-waste entrepreneurs

Another motive that emerged from the data is when some respondents disclosed during interview sessions that they have a passion for the e-waste business or e-waste business is their interest area. The strong passion and interest expressed by these entrepreneurs (2%) dovetail with others who showcase lucrative and opportunity-driven motives. This suggests that entrepreneurs who show a strong passion for e-waste business are likely to put in efforts to grow their business.

An analysis of entrepreneurs' motives for engaging in the e-waste business suggests that collectors are necessity-driven entrepreneurs as they utilize e-waste trade as a survival strategy. Regarding recyclers and refurbishers, however, though they initially engaged in the e-waste business out of necessity and the need to survive, they have now realized that e-waste business is a good opportunity to create sustainable livelihoods. Thus, recyclers and refurbishers exhibited the characteristics of necessity-driven entrepreneurs at the beginning of the business and as the business progressed, they assume the features of opportunity-driven entrepreneurs.

This implies that during the initial stages, e-waste entrepreneurs (particularly for the recyclers and refurbishers) may be necessity-driven entrepreneurs, nonetheless, they may transition to opportunity-driven entrepreneurs in the course of the business. It can be concluded that recyclers and refurbishers exhibit both characteristics. For scrap dealers, the e-waste business is a viable business opportunity that can be used to create wealth. Thus, they have seen a business opportunity and decided to grab it. Therefore, scrap dealers meet the categorization of being opportunity-driven entrepreneurs.

These findings with respect to the necessity-driven and opportunity-driven illustrate the dominant view in the entrepreneurship literature (Block & Wagner, 2010; Langevang et al., 2012). Thus, the necessity theory holds that starting a business is not the primary aim of some entrepreneurs until they cannot find any available option in the economy. Therefore, they can only be pushed into a particular business venture by structural factors including poverty and unemployment. In such instances, the business only serves as a survival strategy or a coping mechanism. On the contrary, the opportunity-driven thesis contends that entrepreneurs enter into a business out of choice in order to exploit some identified business enterprises (Williams & Williams, 2014).

5.3 Classification: Survival and Growth-oriented Enterprises

Having established the e-waste entrepreneurs' motives for engaging in the business, the paper proceeds to classify the e-waste enterprises based on their unique characteristics as they operate within the informal economy. Scholars within the entrepreneurship literature have broadly put enterprises within the informal economy into two main categories: survivalist and growth-oriented enterprises (Gomez, 2008; Langevang et al., 2012). To effectively classify the enterprises, ten (10) indicators or items were used as shown in Table 5.1 (Appendix) below. As can be seen, the enterprises were classified either as survivalist or growth-oriented based on the number (counts) of entrepreneurs who responded exhibiting the following characteristics.

Table 5.1 shows that collectors are survival entrepreneurs in the sense that their responses point to indicators that are characteristic of survival enterprises. These include the inability to secure regular wage employment or unable to find an economic opportunity of their choice (10 counts), daily income is less than the national daily minimum wage of 12.53 Ghana cedis or US$ 2.07 (10 counts), they lack skills that will enable them to secure alternative employment (10 counts) and use rudimentary or crude method in their business operations (10 counts). In fact, this group of e-waste workers are driven by poverty and a desperate attempt to survive.

The findings (Table 5.1Appendix) further revealed that the e-waste recyclers who participated in the study can be classified as both survivalist and growth-oriented entrepreneurs as regards the characteristics they exhibit. This group of entrepreneurs (recyclers) seem to exhibit the features of the two enterprises. On one hand, their inability to secure regular wage employment due to limited employment opportunities they are engaging in the e-waste business due to unavailability of economic opportunities in the formal sector (10 counts), lack skills that

can position them to secure alternative employment (10 counts), and use rudimentary or crude means to recover metals such as gold, silver, copper, aluminium, and platinum from the EEE.

On the other hand, however, the responses of recyclers are characteristic of growth-oriented enterprises. Hence, their daily income is more than the national daily minimum wage of 12.53 Ghana cedis (10 Counts), employ external labor (10 counts), employ family relations (10 counts), have at least three (3) paid workers (10), and indicate that they reinvest their capital into the business (8 counts). The recyclers appear to exhibit both characteristics because they entered the e-waste business as necessity-driven entrepreneurs and as the business progresses, it becomes a business opportunity that they can grow to become a full fledge business. As such, they begin to exhibit the characteristics of growth-oriented enterprises.

Like the recyclers, the refurbishers also exhibit both survivalist and growth-oriented enterprises. The survivalist enterprise features portrayed include the inability to secure employment opportunities, lack of skills, and the use of rudimentary means in their operations. These characteristics received 17 counts each from the refurbishers. Nevertheless, some growth-oriented characteristics were observed among refurbishers including the daily income greater than Ghana's daily minimum wage of 12.53, employing external labor, employing family relations, having at least four (4) paid workers and reinvestment of capital into the business. With respect to these indicators (daily income greater than Ghana's daily minimum wage of 12.53, employ external labor, employ family relations, have at least four (4) paid workers, and reinvestment of capital into the business) 17 counts each were observed except for reinvestment of capital, which received 13 counts.

Consequently, the responses of scrap dealers suggest that they are growth-oriented enterprises. Thus, they own most of the shops at the Agbogbloshie e-waste site, rake in daily income far above the national daily minimum wage, employ external labor, have more than 4 paid workers including family relations, and have a large capital base, which they reinvest into the business. These indicators have received 5 counts each as responses from the entrepreneurs. It should be noted that most of the scrap dealers do not undertake e-waste business alone but have other businesses running elsewhere within the capital city of Accra. Generally, scrap dealers are not necessity-driven entrepreneurs but view e-waste sector as a business opportunity to be exploited.

From a gender perspective, scholars including Berner, Gomez and Knorringa (2012) and Williams (2007) have maintained that women are mostly associated with Survivalist enterprise than men. However, interviews with the workers and observations reveal that the e-waste business at the study area is being undertaken by men. The reason may be that e-waste business is a vigorous venture that requires long periods of pulling handcarts through the length and breadth of Accra (in case of collectors); hammering, dismantling, and disaggregating of e-waste to retrieve precious metals (recyclers), and the repair of obsolete materials for re-use by the Ghanaian population (refurbishers), which are deemed to be male-dominated activities.

Rather, women were seen to be offering complimentary services including the sale of e-waste workers' tools such as harmers, chisels, pliers, and the likes. Women were also observed to be providing 'life support' services in the form of selling food, drinks, and beverages. It should be noted that the e-waste site at Agbogbloshie is a crowded area, which provides a 'niche market' for women to provide such services as livelihood

strategies despite the fact that they are not directly engaged in e-waste business. It should be emphasized that the results of the current study do not support female-informal business hypothesis (Langevang & Gough, 2012). Therefore, future studies should note that gender and the motive to engage in informal business may be specific to the nature of the informal activity and generalization should be avoided as far as practicable.

Survivalist and growth-oriented enterprises have been an active research stream in the entrepreneurship literature. The findings of the study insinuate that survivalist and growth-oriented enterprises do exist in the downstream e-waste sector. The study found generally that the e-waste collectors are survivalist entrepreneurs. Likewise, recyclers and refurbishers exhibit both survivalist and growth-oriented enterprises whereas scrap dealers show symptoms of growth-oriented enterprises. These findings are consistent with the literature (Mole, 2000; Volery et al., 2015; Choto, Tengeh & Iwu, 2014).

5.3.1 Graduation

Considering the characteristics observed in line with the downstream activities of the e-waste business at Agbogbloshie, collectors or scavengers show no signs of ever graduating to the status of growth-oriented enterprises. This is consistent with the existing literature that the graduation potential of survival entrepreneurs is highly limited (Berner Gomez & Knorringa, 2012).

Again, it is observed that recyclers and refurbishers have the potential to transition from survivalist to growth-oriented enterprises. Though their observed features insinuate that the e-waste business is being used as a survival strategy, they exhibit some features such as the

engagement of external labor and employment of paid staff, which are symptomatic of growth-oriented enterprises. More importantly, when the recyclers and refurbishers were asked a question with reference to what they could do with any money they receive by chance such as winning the lottery, most of the workers did indicate that they will invest it back into the business by buying more EEE. One of the recyclers responded thus: "*When I get such an amount, I will invest it in my business. I will go to Brong Ahafo and Western regions to buy more EEE"* (Recycler, field data). The findings as regards growth-oriented enterprises, the scrap leaders due to their high earnings and large capital base, they have the potential of being on the path of growth.

5.4 Strategies Employed by e-waste Entrepreneurs

Having classified the enterprises based on their unique characteristics, this section examined the strategies adopted by the e-waste entrepreneurs to remain in their respective businesses despite competition from new entrants, associated health risks, and persistent harassment from city authorities. Our interaction with the workers revealed several strategies including payment of 'facilitation fees', creation of bulks of e-waste, diversification, self-medication, and paying for the e-waste. These are analyzed in turns below:

5.4.1 Payment of 'facilitation' fees

Some of the entrepreneurs particularly recyclers, refurbishers, and scrap dealers disclosed that they often pay money to city authorities and police officers to avoid unnecessary threats of demolitions and evictions. When questions were posed to them to ascertain whether their activities are duly registered with the city authorities and they pay corresponding taxes, all of them responded that their businesses have not been registered and they do not also pay taxes to the government. A respondent has this to say*:*

"No I've not registered with the government, and I don't also pay taxes" (Scrap dealer, field data).

It should be noted that the e-waste space has not been formalized and the activities are not registered with state institutions and are considered illegal. Therefore, city authorities and security agencies capitalize on the vulnerability of the entrepreneurs to extort money from them. Moreover, the e-waste entrepreneurs also think that paying such 'facilitation money' is the surest way to maintain their livelihoods.

5.4.2 Creating bulks of e-waste

It emerged that due to the competition as a result of new entrants into the e-waste space, the entrepreneurs particularly the collectors or scavengers have adopted a strategy by moving to 'grey areas' (new places where collectors or scavengers have not mined for e-waste) to spend several days and build bulks of e-waste before they are carted by trucks to the Agbogbloshie site. The decision to build bulks of EEE in 'unmined' communities before transporting them to the Agbogbloshie site allows entrepreneurs to withstand competition from the new entrants and guarantee supplies.

5.4.3 Diversification

To minimize risks, businesses need to diversify their activities rather than specialize in one particular product. Our interactions with e-waste workers at the Agbogbloshie revealed that entrepreneurs particularly the scrap dealers have diversified their activities by running other retail businesses including provision shops and the sale of building materials. They explained that because of threats of demolitions and evictions from city authorities, engaging in other activities aside from the e-waste business cushions them against loss of income. Some of them

alluded to the recent demolition exercise on August 7, 2020, that does not only lead to the displacement of most e-waste workers but also resulted in the loss of livelihoods. This is consistent with the literature that diversification as a livelihood strategy allows entrepreneurs to spread risks, cushions against income loss eventually increase security for them (Berner, Gomez & Knorringa, 2012).

5.4.4 Self-medication

Previous empirical studies elsewhere on e-waste observed some associated health crises such as cancer and birth defects (Keirsten & Michael,1999). During our interactions with the workers, related physical accidents such as body injuries including cuts and burns were revealed as critical health concerns. This is not surprising because e-waste business involves improper handling of the e-waste such as manual hand pulling of carts and hammering and chiselling to dismantle and segregate the EEE for precious metals, which may result in such body injuries. Moreover, some particularly those who engage in open burning of the e-waste complain about headache and dizziness after a day's work. These findings echo the empirical results of similar works conducted within the study area (Agyei-Mensah & Oteng-Ababio, 2012; Amankwaa, 2013; Kyere et al., 2018).

In response to a question as to how they cope with the health challenges associated with their business revealed that some of the workers purchase medicine from the local chemical sellers (self-medication) after a day's work to offset the health impacts. It was observed during field data collection that despite the health impact associated with the e-waste business, workers play their trade without protective measures such as nose masks, gloves, and boots. This exposes them to adverse health risks.

5.4.5 Payment for e-waste

The workers were unanimous on the point that the competition from new entrants into the e-waste industry has stimulated a negotiation for payment for the e-waste that was hitherto free. They indicated that another strategy adopted is to use measuring or weighing scales to determine the prices of the e-waste. For them to lower prices for the e-waste, the scales are adjusted to their advantage. This enables them to reduce costs as a result of putting a monetary value on e-waste that used to be free.

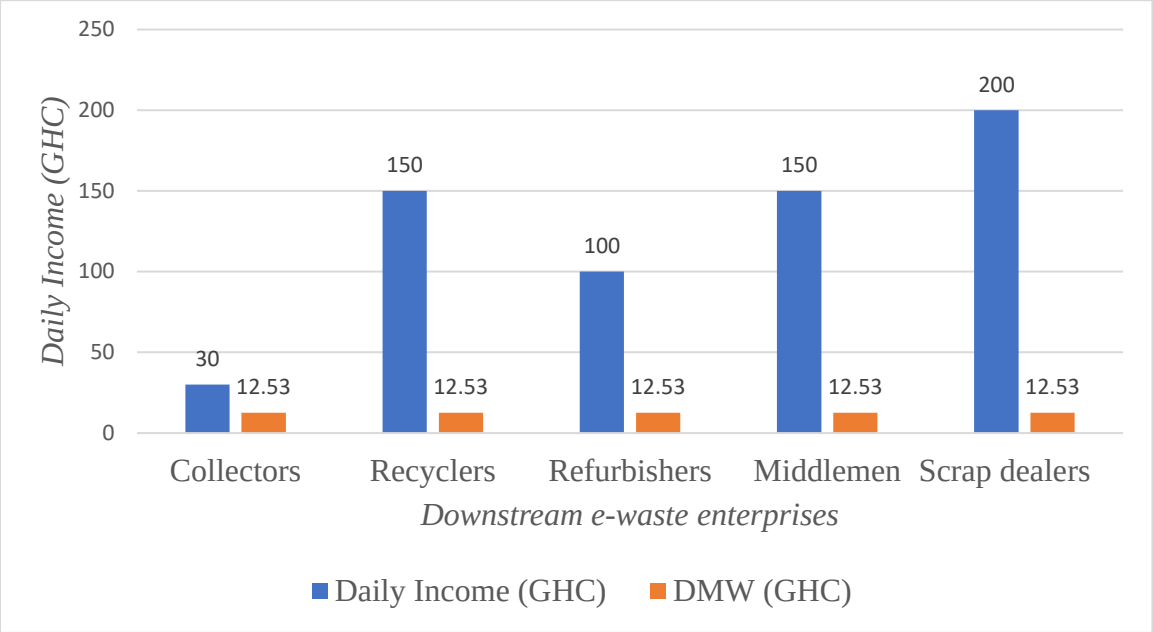
5.5 The Impacts

In this section, the contribution of the e-waste business to improving the living conditions of the respondents is examined. Thus, the section analyzed the views of the respondents with respect to how they perceive to be the impacts of the e-waste business on their standard of living.

5.5.1 Income generation

The literature on the economic activities of the informal economy argues that entrepreneurs hardly keep records of their transactions, including the revenues accrue from business activities (Webb et al., 2013). Consistent with the literature, the study found that the respondents do not keep formal records of their business transactions. However, during discussions with them, it was evident that they had no difficulty recollecting the amount they make daily, weekly, and monthly particularly in relation to the national daily minimum wage (DMW) of 12.53 Ghana cedis or US$ 2.07. They expressed the view that the e-waste business is offering a better livelihood opportunity compared to Ghana's DMW of 12.53 Ghana cedis. Figure 5.1 shows the average daily income of the respondents.

Figure 2.1 Daily income of e-waste entrepreneurs and the national daily minimum wage



Source: Field data, 2021

The results (figure 5.1) suggest that the e-waste business is lucrative as entrepreneurs earn sizeable income from trade. This is particularly revealing when the average daily income is compared with the national DMW. For instance, on average, the lowest earners on the downstream e-waste chain (collectors) earn double of the national DMW. This implies that the e-waste workers earn far higher than most public sector workers.

Further expressing their views with respect to how the e-waste business contributes positively to the household economy, a majority of the entrepreneurs disclosed that prior to joining the e-waste business, they were not able to take care of their children in school and the family also skipped daily meals on some occasions. However, having joined the business, they can comfortably pay hospital and education bills due to the proceeds from the e-waste business. This implies that the e-waste business has the potential to smoothen household consumption.

The findings are consistent with the extant literature, which argues that informal workers in Africa earn higher income (Obeng-Odoom & Ameyaw, 2014; Afutu-Kotey et al., 2017).

5.5.2 Remittances

As noted in the demographic features of the respondents, a majority of the people who engage in the e-waste business hailed from the northern part of Ghana, suggesting rural-urban drift. In fact, available evidence suggests that poverty is predominant in the northern part of Ghana (World Bank, 2018). Therefore, most people particularly the youth from northern Ghana drift to the capital cities such as Accra and Kumasi in search of jobs. Therefore, the investigator probed further to ascertain how they contribute to their families back home. The data revealed that entrepreneurs support their families back home in several forms, including cash, foodstuffs, and building materials (iron sheets), funerals, and donations for other social events. Most of disclosed that they often engage in financial remittances. One of them explained thus: "I have my father, mother and siblings back home at the north. My parents are old and cannot go to farm. So, I often send money to them" (Respondent, field data).

An analysis of the data suggests that the kind and quantum of remittances the entrepreneurs send back home varies based on the kind of downstream e-waste service they do. The study found that entrepreneurs who are married with their families back home are likely to send cash, foodstuffs, and farm implements to their wives and relatives. However, the unmarried are likely to send goods such as television sets and mobile phones to their siblings.

The remittances are also based on the income distribution among e-waste workers – survival entrepreneurs such as the collectors tend to send few items or nothing at all compared to those with large capital such as scrap deals and sometimes recyclers and refurbishers. This

is consistent with the work of Oteng-Ababio et al. (2016) who observed that remittances are sent based on the type of activity and the demographic characteristics.

5.6 e-Waste Association and Collective Action

Interactions with respondents revealed that though they have an association of e-waste workers at the Agbogbloshie, it has been ineffective. Responding to questions as regards whether they pay up their membership dues and attend regular meetings, they were unanimous on the view that they do not pay their dues and do not also attend meetings. They further disclosed that they never attended any meeting since January 2021. When they were probed further to ascertain why they do not attend meetings and pay up their membership dues, the respondents were of the view that they do not see the need since the association is unproductive and does not seek their interest and welfare.

Figure 3.1 Picture of the demolition of Agbogbloshie e-waste site on 7 August 2021

***Source**: Shutterstock.com.*

Figure 4.1 Picture of a cleared land after the demolition of Agbogbloshie e-waste site.

***Source**: ghanaweb.com.*

Some of the workers referred to the recent demolitions and evictions (Figures 3.1 & 4.1), which were carried out by the city authorities in August 2021. One of the respondents narrated that: "*Look at these demolitions. All our properties have been destroyed by the City officials. We lost a lot of money. Nobody is speaking for us. There is no association to talk for us*" (Recycler, field data).

It must be emphasized that if the e-waste workers had a strong association and are active members by paying their dues and attending associations' meetings, they could have formed a strong collective force to pursue their common interest. Such a unified front could have acted or intervened on behalf of the members to prevent demolitions and evictions. However, an interview with the leader revealed that the association has been making efforts to fight for its members, but the state officials disregarded them. The leader explained that:

> *"The state officials don't listen to use. Whenever they threaten to demolish our shops and evict us, the leaders go to talk to them (city authorities), but they don't listen to us. Moreover, our members don't attend meetings and refuse to pay their dues. So, we are powerless"* (Leader, E-waste Association, field data).

The finding showed that e-waste workers have no collective voice to defend their common good. As the leader intimated, apathy on the part of members culminates into the general powerlessness of the association. Therefore, efforts to negotiate and stand for the general good of the members particularly on issues of the threat of demolitions and evictions have proved

futile. Thus, the association is powerless in the face of state officials who wields many coercive powers.

Yet, some of the workers were pessimistic about the existence of an association and the extent to which the association can offer support to them. They further disclosed that most often city guards and the police come to use threats of demolitions and evictions to extort money from them. The ineffectiveness of the e-waste association is consistent with a view in the literature of entrepreneurship that entrepreneurs may not always act in the collective interest due to some structural constraints (Berry et al., 2001; Fairlie & Fossen, 2018).

5.7 International Organization

The data indicated that under the Ghana-German Cooperation, the German Agency for International Cooperation (GIZ) plays an active role within the informal sector of Ghana including the e-waste. The support by the GIZ comes in the form of capacity building, advocacy, and streamlining the e-waste sector. The findings showed that GIZ has held several discussions with state institutions such as the Environmental Protection Agency (EPA), the Accra Metropolitan Assembly (AMA) and the Ministry of Environment, Science, Technology and Innovation on ways to streamline the activities of e-waste workers.

The discussions include giving the e-waste workers the permit or license to legally ply their trade and streamlining the activities of e-waste workers. An officer at the GIZ revealed that the GIZ supported the enactment of the Hazardous and Electronic Waste Control and Management Act, 2016 (Act 917) in Ghana. Though the act has provided the guidelines for streamlining the e-waste sector, it has fallen short of implementation and enforcement on the part of state institutions.

CHAPTER SIX: CONCLUSION

In this chapter, a summary of major issues of the study is presented. It should be underscored that the objective of this research paper was to explore the extent to which the e-waste downstream activities generate opportunities for entrepreneurial development of informal settlement in Ghana. The findings of the study generally challenge the orthodoxy that sees e-waste business as a driver of environmental and health consequences only. Such framings glossed over the fact that when the e-waste sector is well formalized, it can serve as an important source of livelihood for many deprived urban poor and complement the inefficiencies of the formal economy.

This study finds that generally downstream e-waste business at Agbogbloshie has four layers: collectors/scavengers, recyclers, refurbishers, the middlemen, and scrap dealers. By the nature of their work, the collectors move several hours every day with some pulling handcarts while others use trucks to search for the EEE. They visit places such as market centres, households, auction points and mechanic shops to search for e-waste. The findings further revealed that collectors usually hire the handcarts and trucks at a free from the middlemen, and this is supposed to increase their cost.

It should be noted that the most lucrative layer of the e-waste business within the study area is the recovery of precious metals from the EEE. The recyclers use crude approach to dismantle and segregate the EEE to recover metals such as gold, copper, aluminium, and platinum. These metals are exported outside to be sold in the international market. The

refurbishers repair spoilt and outdated EEE or transform them for the Ghanaian second-hand market. It emerged from the findings that some of the respondents included in the study serve as middlemen or intermediaries between collectors and recyclers on one hand, and scrap dealers on the other. The phenomenon of middlemen arose because in most cases the collectors and recyclers are unable to directly access the market of scrap dealers to sell the EEE they gathered from the field (collectors) as well as the precious metals recovered (recyclers). Interview session with the middlemen revealed that they offer a market for collectors and recyclers.

The study observed that some of the workers at Agbogbloshie work as scrap dealers. It should be noted that the scrap dealers occupy a high position within the downstream e-waste value chain. The scrap dealers have large capital and buy bulks of EEE from collectors, recyclers, and refurbishers. The scrap dealers buy the EEE in bulk and send them to Tema (an industrial city of Ghana) where large companies (upstream e-waste companies) operate. The activities of scrap dealers are connected to upstream e-waste enterprises.

As regards the motivation for engaging in the e-waste business, the study discovered that poverty and unavailability of jobs, per influence, lucrative nature of e-waste business, and the passion for e-waste business drive people to engage in e-waste business at Agbogbloshie. The findings also revealed that collectors/scavengers are necessity-driven entrepreneurs because they venture into e-waste business due to poverty and unavailability of jobs and peer influence. However, recyclers and refurbishers equally began the e-waste business as necessity-driven entrepreneurs (motivated by poverty and unavailability of jobs and peer influence), however, they are now transitioning to opportunity-driven entrepreneurs as the business

progresses. Thus, they are currently driven by the lucrative nature of the e-waste business as well as their passion for e-waste.

The analytical model for this paper was drawn from an extensive review of the literature on entrepreneurship (Rogerson, 1996; Mead & Liedholm, 1998; Welter & Smallbone, 2004; Kanothi, 2009; Langevang & Gough, 2012; Berner Gomez & Knorringa, 2012). This strand of the literature has classified enterprises in the informal economy (survivalist vs growth-oriented) based on clearly delineated characteristics. Amongst others, poverty, desperate attempt to survive, limited capital, and lack of skills are defining features of survivalist enterprises (Rogerson, 1996). Specialized skills, the desire to reinvest profit into the business, and the employment of additional staff are characteristic of growth-oriented enterprises.

In light of the above literature, the study uncovered that only collectors or scavengers can be strictly classified as survival enterprises. As survivalists, collectors or scavengers are characterized by the inability to secure regular employment wage or they are unable to find economic opportunities of their choice, hence their daily income is less than the national daily minimum wage of 12.53 Ghana cedis or US$2.07, and also lack relevant skills that will enable them to secure alternative employment. Additionally, they do not employ external labor, they do not also engage family members and relations, and use rudimentary or crude methods in their business operations.

The empirical evidence revealed that recyclers and refurbishers exhibit the features of both survivalist and growth-oriented enterprises. They are partly survival enterprises because they entered into the business due to poverty and inability to secure jobs, lack skills

that could gain them an alternative livelihood, and use rudimentary or crude approaches in their business operations. Particularly for growth-oriented enterprises, their daily income is more than the national daily minimum wage of 12.53 Ghana cedis, employ external labor, employ family relations, have at least 3 paid workers, and reinvest their capital back into the business. They (recyclers and refurbishers) entered into the e-waste business as necessity-driven entrepreneurs (mainly due to unavailability of jobs and poverty) and as the business progresses, they now find it as a business opportunity that they can exploit and grow.

It can deduced from the findings that scrap dealers are strictly growth-oriented enterprises. They have a large capital base and own most of the shops at the Agbogbloshie e-waste site, they rake in daily income far beyond the national daily minimum wage, employ external labor and have more than four paid workers including their family relations. The findings revealed scrap dealers have diversified their operations by engaging in other businesses such as provision shops. They are not necessity-driven entrepreneurs but view e-waste sector as a business opportunity to be exploited.

The strategies used by e-waste workers to carry out their trade due to competition from new entrants and threats of demolitions and evictions. It came up that e-waste entrepreneurs use several strategies such as payment of "facilitation" fees, creation of bulks of e-waste, diversification, and payment for the e-waste to remain competitive and resilient as a result of threats from new entrants, demolitions and evictions.

Based on the above findings, the study provides the following recommendations. Though Mead and Liedholm (1998) have argued that it pays off to support growth-oriented entreprises, Berner Gomez & Knorringa (2012) agreed with this assertion but suggest that

more attention and targeted policies should be directed at survivalist entrepreneuers. The rationale is that a majority of entrepreneurs in this category are not only likely to stagnate as survivalists but also, they are most likely to use the business as a means to smoothen their household consumption rather than a means for upward mobility. This is particularly the case because a majority of our respondents (collectors, recyclers and refurbishers) exhibit the characteristics of survalist entrepreneurs. Therefore, deliberate policies that target collectors, recyclers and refurbishers will enable entrepreneurs to spring up within the e-waste space since they are many and most of them particularly the recylers and refurbishers are already gravitating towards growth-oriented entrepreneurs.

Furthermore, to achieve a far reaching impact on poverty reduction in urban informality, e-waste entrepreneurs that show survivalist characteristics need different support from that of growth-oriented entrepreneurs. In line with the work of Mead and Liedholm (1998), because most entrepreneurs who are found in survivalist group employ a majority of poor people, targeting such group with poverty reducting programmes means that programmes and policies will go to the segment of the population that are the neediest. Considering the level of their vulnerability, De Soto (2000) argues that protective policies rather than promotional policies will go a long way to cushion lifeline survivors.

Therefore, this research paper recommends that social protection programmes in the form of skill-based transfers should target e-waste entrepreneurs. Already, Ghana is implementing Rural Enterprise Progromme (REP): a skill-based social protection programme which targets rural poor. This research paper recommends that such programme should be extended to the urban poor in the informal settlments including e-waste entrepreneurs. However, that is not to say that growth-oriented entrepreneurs such as scrap dealers do not

need support. Since they emply additional staff, have large capital base, and are on the look out to expand and grow their businesses both vertically and horizontally, they have the potential to create more jobs for most of urban poor. Hence, the two categories of entrepreneurs should be supported as a sustainable approach to poverry reduction.

One notable feature of survivalists is that they seek to maximise security and smoothen household consumption (Berner et al. 2008). Therefore, policies and interventions should take congnizance of the destructive and uncertain environment in which e-waste entrepreneurs operate and increase their security. For instance, Berner, Gomez and Knorringa (2012: 392) argue that entrepreneurs in settlements that are considered illegal tend to suffer imminent threat of demolition, evictions, bribe extortion, and often undermine by inefficient social amenities. Consistent with this view, the study found evidence of extortions, evictions, and demolitions of activities of e-waste entrepreneurs at Agbogbloshie. Therefore, the paper recommends that the activities of e-waste workers should be streamlined and formalized to guarantee the needed security. Already, Berner (2001) demonstrates that providing a secured environment has the potential to promote investment and the development of entrepreneurship.

Moreover, owing to the government's hostile policies toward e-waste workers, the entrepreneurs within the e-waste space should form associations for collective action. Similarly, networks and associations through private learning are powerful tools for entrepreneurs to form a collective voice for the purpose of common interest. Such associations will forge inclusive platforms for collective action, mutual support, and interdependence. The collective force will enable them to negotiate for favorable terms with government officials in ways that will curtail threats of demolitions and evictions.

The government's role in an economy can either constrain or facilitate the emergence of entrepreneurs. In that regard, the study recommends that the government should play a facilitative role by providing conducive environment for entrepreneurs to emerge and operate. In fact, threats of demolitions, evictions, and **s**eizure of properties can only constraint the development of entrepreneurship within the e-waste industry. Efforts should be made by the government to eliminate corruption, bribery, and extortions perpetrated by the city officials.

Finally, since the government of Ghana is embarking on the industrialization drive and to move Ghana beyond aid, the study strongly recommend that the e-waste sector should be given the required attention. This implies that targeted policies and programmes should be implemented to formalize the e-waste space with the intention of not only to help the sector to grow but also as a means to create jobs, increase economic growth, and consequently raise the revenue.

APPENDICES

Appendix 1.1

Questionnaire/interview guide

This study is designed to examine the dynamics of e-Waste business in Ghana. This exercise is for an academic purpose and your personal details will be treated as an anonymous. I would be very much appreciative of your participation in this survey. I would like to ask you some questions related to the e-Waste which will take you about 30 minutes to complete. Your participation in this survey is voluntary and you can choose not to answer any individual question or all of the questions.

Section A: Socio-Economic Characteristics of Respondents

1. Age. 20-25 [ ] 25-30 [ ] 30 – 35 [ ] 40 and above [ ]
2. Gender Male [ ] Female [ ]
3. Marital status Single [ ] Married [ ] Divorced [ ] Widowed [ ]
4. Level of education. Primary [ ] JHS/Middle School [ ] JHS/Middle School [ ] SHS/TVET [ ] Tertiary [ ]
5. Housing. Rented room [ ] Rented flat [ ] Rented house [ ] Own flat [ ] Own house [ ] other (please specify)……..
6. Your nationality. Ghanaian [ ] Others (specify)
7. How long have you been in the E-waste business? ……...
8. What is the size of your household?.....
9. Have you and your family ever gone without food in hard times?
   YES [ ] NO [ ]
10. Do you consider yourself and your family to be poor?

Always poor [ ] Not poor before but now [ ]
Poor before but no more [ ] Never poor [ ]

11. Which of the following assets do you and your family own? (**Choose as many as apply to you**)
    TV [ ] Radio [ ] Refrigerator [ ] Computer [ ] Motorbike [ ]
    Car [ ]
12. Did any of your children dropped out of school for financial difficulties?

    YES [ ] NO [ ]

13. What is your source of finance? **(Choose all that apply)** 1. Self-financing [ ]

    Borrow from family/friends [ ] Borrow from bank [ ] Borrow from E-waste collectors'

    group/co-operatives [ ] NGOs [ ] Other (Please Specify) ……...

Section B: Business classification

14. What are the main e-waste business activities you engage in? .....
15. Is the e-waste business your main source of income?

Neither first nor second source of income [ ] Second important source of income [ ]

Main but not only source of income [ ] Full-time and only source of income [ ]

16. What motivates you to engage in this business? .....
17. Have you left a paid job to engage in this business? Yes [ ] No [ ]
18. Will you still continue to engage in this business even when you are given support or got a better opportunity? Yes [ ] No [ ]
19. Why will you leave your current job if any opportunity comes on your way? .....
20. What is your daily/weekly/monthly/annual income from this work? Probe against the national daily minimum wage of 12.53 Ghana cedis.....
21. Do you have other source of income? Yes [ ] No [ ]
22. If yes, what is your alternative source of income?.....

23. If you get some money by chance, you win a lottery, will invest more in the business to expand it? Yes [ ] NO [ ]
24. How many days do you engage in this business in a month? 30 days [ ] about 21 days [ ] about 14 days [ ] about one week [ ] cannot tell [ ]
25. Do you have access to loan for this business? Yes [ ] No [ ] Explain your answer
26. Do you get support from your family or friends? YES [ ] NO [ ]
27. Do you invest more in this activity in times when your revenues are higher? No [ ] Rarely [ ] Sometimes [ ] Always [ ]
28. Did you have regular paid staff (except the above) in the last year?

    Full-time paid worker/s [ ] Part-time regular worker/s [ ]

    Occasional or irregular paid worker/s [ ] No paid workers [ ]
29. Do you take in external labor?

    YES [ ] NO [ ]
30. Do other members of your household/family help in the business?

    None [ ] Spouse [ ] Children [ ] Parents [ ]

31. Is the business registered with government authorities? If NO, why? .....
32. Do you pay tax? Yes [ ] No [ ]
33. If no, why?.....
34. Have you ever experienced eviction and/or confiscation of your products? Yes [ ] No [ ]. Give reasons for your answer .....
35. Are you a member of any association that engages in E-waste business? Yes [ ] No [ ]. If NO, provide reasons .....
36. If yes, are you an active member of this association? Yes [ ] No [ ] ***NB: Probe for regular attendance at meetings and payment of dues***

37. Do you think your membership in the association can help you mobilize support for your business? If YES, explain .....
38. Is your business registered? Yes [ ] No [ ]
39. Do you pay tax? Yes [ ] No [ ]
40. If no, why?.....
41. Has the e-waste business improved your living condition? YES [ ] NO [ ]
42. If YES, give tangible examples .....
43. Does the e-waste business affect your health YES [ ] NO [ ]
44. If YES, how do you cope with the situation? .....
45. Do you own any asset (s) as a result of engaging in this business? YES [ ] NO [ ]. If YES, give examples
46. Do you receive support from city authorities, international organizations, NGOs, associations? If YES, indicate the nature of support
47. Do you have to make informal payment to the police/government officials?

    YES [ ] NO [ ]
48. Have you ever experienced eviction, demolition or confiscation of your goods?

    YES [ ] NO [ ]

Interview guide for key actors (international organizations, associations, etc.)

49. What will you say about people who engage in e-waste business at Agbogbloshie?
50. What is the nature of e-waste business? What are the main activities?
51. What motivates people into the e-waste business?
52. Does Ghana have e-waste management policy? Explain your response
53. Do you think that e-waste business can be a source of livelihood?
54. How do city authorities perceive people who are into e-waste business? What is the policy response?

55. What role do international organizations, NGOs, and associations play with respect to the e-waste business?

Appendix 2.1: Classification of Enterprises

Indicators	Number of Respomdents (Counts)	Downstream e-waste enterprises	Classifications
Limited employment opportunity	10 counts	Collectors	Survivalist
	10 counts	Recyclers	Survivalist
	17 counts	Refurbishers	Survivalist
Income received daily in relation to the national minimum wage of 12.53 Ghana cedis (US $2.07)	Below 12.53 (10)	Collectors	Survivalist
	Above 12.53 (10)	Recyclers	Growth-oriented
		Refurbshers	Growth-oriented
		Scrap dealers	Growth-oriented
Employing external labor	10 Counts (NO)	Collectors	Survivalist
	10 Counts (YES)	Rcyclers	Growth-oriented
	15 Counts (YES)	Refurbishers	Growh-oriented
	3 Counts (YES)	Scrap dealers	Growth-oriented
Readiness to take new job opportunity	10 Counts (YES)	Collectors	Survivalist
	7 Counts (YES)	Recyclers	Survivalist
	10 Counts (YES)	Refurbishers	Survivalist
	3 Counts (NO)	Scrap dealers	Growth-oriented
Have required skills in e-waste operations	10 Counts (NO)	Collectors	Survivalist
	10 Counts (NO)	Recyclers	Survalist
	17 Counts (NO)	Refurbishers	Survivalist
	3 Counts (YES)	Scrap dealers	Growth-oriented
Employing family relations	10 Counts (NO)	Collectors	Survivalist
	7 Counts (YES)	Recyclers	Growth-oriented
	10 Counts (YES)	Refurbishers	Growth-oriented
	3 Counts (YES)	Scrap dealers	Growth-oriented
Number of paid workers	10 Counts (NONE)	Collectors	Survivalist
	Employ at least 3 workers	Recyclers	Growth-oriented
		Refurbishers	Growth-oriented
		Scrap dealers	Growth-oriented
Mode of operation (rudimentary/crude method)	10 Counts	Collectors	Survivalist
	10 Counts	Recylers	Survivalist
	17 Counts	Refurbishers	Survivalist
	3 Counts	Scrap dealers	Growth-oriented
Reinvestment of capital	10 Counts (NO)	Collectors	Survivalist
	10 Counts (NO)	Recyclers	Survivalist
	17 Counts (NO)	Refurbishers	Survivalist
	3 Counts (YES)	Scrap dealers	Growtth-oriented

Source: Field data,2021

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