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Leadership Strategies for Reducing Operational Costs in Waste Management Businesses in Liberia

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Abstract

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MBA, University of San Diego, 1980

BBA, University of San Diego, 1978

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

Waste is a global composite of organic and inorganic derivatives from human activities. Municipal solid waste consists primarily of plastics from households and e-wastes, creating opportunities for waste management businesses. The purpose of this study was to explore leadership strategies for reducing operational costs in waste management businesses in Liberia. In this multiple case study, 6 business leaders from 6 waste management businesses in Liberia were recruited as participants. The conceptual framework guiding the study was the transformational leadership theory. Each business leader responded to open-ended questions in a semistructured interview. Data were analyzed by iteratively searching recurrent codes to elicit themes. Themes that emerged included education and training for customers and staff, as well as efficiency and effectiveness for value creation from waste. Based on the findings of this study, waste management business leaders might contribute to social change by employing marginalized population segments in local communities. The marginalized segments in communities could be empowered to communicate waste management messages about recycling, supplementing their skills and messages using waste management technological innovations. The results from this study might provide insight into how waste management leaders might use innovative solutions to reuse, recycle, and re-engineer wastes. The results from this study might help waste management business leaders envision opportunities for improvement on waste-to-energy products and services in the lives of customers and employees.

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Dedication

This work is dedicated to my beloved family, beginning with my parents, E. Reginald Townsend, my father, who quizzed his children at the dinner table, and Sophronia C. Richards, my mother, who taught us that no one can take your education from you; get your education. Most especially, I dedicate this work to my LORD God the Father, Jesus Christ the Son, and Holy Spirit for wisdom, understanding, counsel, knowledge, and strength. May this accomplishment glory Him and edify His people.

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Section 1: Foundation of the Study

World monitoring bodies and countries in the northern hemisphere create circular economies to preserve and protect the planet. A circular economy is a new concept in the southern hemisphere, where citizens and businesses are accustomed to the open discarding of wastes or wastes to landfills. Wastes need to be recycled, reused, and reengineered to make a circular economy viable so that jobs can be created and the environment can be protected. The focus of this study was exploring strategies for operational costs reduction, thereby introducing waste management business leaders to a circular economy. I used the transformational leadership theory to explore how waste management business leaders could utilize innovative practices conducive to a circular waste management economy.

Background of the Problem

Waste management is an emerging entrepreneurial circular economy enterprise. The world population is increasing at a pace of 1.18% per year, and is expected to double in Africa by the year 2050 (United Nations Department of Economic and Social Affairs [UN DESA], 2017). Moreover, a large percentage of youth, ages 18–35 years, use technological devices (Baller, Dutta, & Lanvin, 2016; UN DESA, 2017). Populations are migrating to urban areas from rural settings, placing socioeconomic stresses on municipalities (Carreon & Worrell, 2017). Therefore, business leaders should explore waste management as an emergent business in Africa. In addition, cities must prepare for the household municipal and toxic electronic wastes (e-wastes) generated by humans' impact on the environment (Heacock et al., 2016).

Municipalities should plan and strategize to absorb the current and future migration to urban areas while the population grows in those areas (Carreon & Worrell, 2017; Nwofe, 2015). Humans, animals on land and sea, and the environment bear the brunt of human-made wastes in landfills, incineration, or renewability. Natural resources are dwindling without natural replacement or are nonrenewable, and the replacement rate is slow for minerals, ores, and fossil fuels (Directorate General for the Environment, 2014). In addition, humans' waste disposal should include renewability for sustainability and continuity (Njoku, Lamond, Everett, & Manu, 2015; Nwofe, 2015). The migratory e-wastes flows from southeast Asia to developing countries in Africa (Baird, Curry, & Cruz, 2014). Most e-wastes are toxic (Perkins, Drisse, Nxele, & Sly, 2014); however, other types of wastes can be renewed. Leaders in waste management businesses might create a better quality of life for residents and the environment by providing job opportunities through formalized recycling, reusing, and reengineering wastes in a modern circular economy.

Problem Statement

Leaders in municipal waste management businesses in developing countries face operational cost challenges that negatively affect business profitability (Jashi & Ahmed, 2016; Yukalang, Clarke, & Ross, 2017). Intensive labor costs, old equipment, and transportation constitute 20-50% of municipal waste management budgets (Anestina, Adetola, & Odafe, 2014). The general business problem is that an increase in operational cost in waste management can result in reduced profitability. The specific business

problem is that some business leaders in waste management businesses lack operational cost strategies to reduce costs.

Purpose Statement

The purpose of this qualitative, explanatory multiple case study was to explore the strategies some business leaders in waste management businesses use to reduce operational costs. The target population consisted of six leaders from waste management organizations in Monrovia, Liberia, who have implemented operational cost strategies that reduced costs and contributed to profitability. Waste management leaders may use the results of this study to develop programs that may use recycled and reengineered materials to reduce operational costs, save the environment, and improve the health of citizens in their communities. Waste management leaders could use the findings of this study to establish zero waste-to-landfills, which may improve communities' environmental disease burden and improve health factors. In addition, waste management leaders may use the findings from this study to improve operations that support employment creation for local citizens.

Nature of the Study

Researchers may select from qualitative, quantitative, or mixed-methods approach to research (Almalki, 2016). Researchers use a qualitative explorative approach to understand in-depth real-life situations from respondents' perspective (Yin, 2017). For this study, I used the qualitative method to understand how leadership strategies reduce operational costs from respondents' perspective. The quantitative method is used to answer an inquiry by testing hypothetical variables against a theory to predict outcomes

(Gerring & Cojocaru, 2016; Yilmaz, 2013). The quantitative method is unsuitable for this study because my intention is not to investigate hypothetical or numerical data against a theory to predict outcomes. Researchers use the mixed-methods approach to draw inferences from both in-depth qualitative and quantitative data collection, analysis, and findings (Doorenbos, 2014; Halcomb & Hickman, 2015). The mixed-methods approach is inappropriate for this study because my intention is not to collect empirical data.

The qualitative method encompasses several research designs. I used a case study design to explore six cases bound within their real-world situation to discover what and how business leaders' operational cost strategies can reduce costs in waste management businesses. Researchers use a case study design for an in-depth exploration of an activity or individual (Owen, 2014; Yin, 2017). An ethnographic design is used to explore the real-life culture of a group to gain an understanding about the group's culture (Liberati et al., 2015). A narrative researcher employs story-telling of lived experiences of individuals, interpreting past experiences to understand who they are (Clandinin et al., 2015). Ethnography is focused on historical, psycho-sociological, and cultural experiences (Marcén, Gimeno, Gutiérrez, Sáenz, & Sánchez, 2013). The phenomenology design is used to explore unique human-lived experiences (Sarma, 2015). Only the case study design answers what and how questions and is suitable for this study.

Research Question

What strategies do business leaders in waste management businesses use to reduce operational costs?

Interview Questions

1. What are the major operational costs in your waste management business and how have you reduced them?
2. How did you identify and select strategies to reduce operational costs in your waste management business?
3. What challenges are you experiencing attempting to implement your strategies to reduce operational costs?
4. What strategies are you using to overcome the challenges you encountered when you began implementing operational costs reduction?
5. How do you assess the effectiveness of your strategies to reduce operational costs?
6. What new ideas do you have that are potential strategies to reduce operational costs in your business?
7. What else would you like to share about your organization's developing and implementing successful strategies for reducing operational costs?

Conceptual Framework

Transformational leadership theory is the theory that aligns with the research question of this study. Burns (1977) propounded transactional and transformational leadership theories as a political leader's ability to motivate members. Burns expanded transformational leadership theory to include leaders' motivational behavior that can inspire mutual and moral selflessness for higher performance levels, achieving sustainable competitive advantage (Beh & Shafique, 2016; Birasnav, 2014; Yasir &

Mohamad, 2015). A follower's resultant higher-level performance can reflect morality, trust, and admiration for the leader (Ighobor, 2015).

Bass (1999) extended Burns's (1977) transformational leadership by identifying (a) idealized influence, (b) inspirational motivation, (c) intellectual stimulation, and (d) individualized consideration. A transformational leader's effective use of these elements can result in job satisfaction, psychological empowerment, and organizational commitment (Asif, Ayyub, & Bashir, 2014; Yang, 2016). Transformational leadership theory is relevant to this study because business leaders in waste management businesses may influence, motivate, and stimulate individual stakeholders to shift to new ideas (Borland, Ambrosini, Lindgreen, & Vanhamme, 2016). New ideas may include innovative business models like a circular economy, policies, operational cost strategies that contribute to enhanced financial performance due to cost savings, organizational performance, and ecocentric competitive advantage strategies (Sethibe & Steyn, 2015). New ideas may also include social responsibility so that internal and external stakeholders experience positive social change (Hasnas, 2013; Strand, 2014; Tschopp & Huefner, 2015).

Operational Definitions

Full cost accounting (FCA): Full cost accounting is a method of cost analysis suitable for analyzing operational and maintenance costs in waste management businesses (Dasgupta, 2014).

Social exchange theory: Social exchange theory is a belief that a transformational leader can influence a follower's attitude to behave and perform well (Wang et al., 2016).

Stakeholder: A Stakeholder refers to a person or those groups (stakeholders) besides shareholders or stockholders who have a stake or interest, rights, ownership, knowledge, and contribution in what the corporation, company, or group does (Bourne, 2016; Brandt & Georgiou, 2016).

Sustainable leadership development: Sustainable leadership development is a concept of incorporating sustainability into a company's mission for organizational success during uncertainty (Peterlin, 2016; Savelle, 2015).

Tacit knowledge: Tacit knowledge is a term used to describe advising on knowledge transfer (Lobacz, Glodek, Stawasz, & Niedzielski, 2016).

Triangulation: Triangulation is a convergent point from many sources of evidence (Haeger, 2016).

Trust communication dyad: Trust communication dyad is an expression of the intangible of trust that a leader uses to influence a follower through communication expressly between the leader and follower (Savolainen, Lopez-Fresno & Ikonen, 2014).

Assumptions, Limitations, and Delimitations

Although qualitative case study designs are growing in popularity, a case study researcher needs to overcome hurdles associated with a lack of research rigor (Marques, Camacho, & Alcantara, 2015). Researchers may make assumptions about the phenomenon under study, inducing subjectivity; such subjectivity may contradict rigor (Hyett, Kenny, & Dickson-Swift, 2014). The research might be limited by uncontrollable factors that threaten the research validity, creating difficulty with transferability (Otieno-Odawa & Kaseje, 2014; Taylor & Thomas-Gregory, 2015). A researcher must disclose

the bounds and scope of the research to delimit the research parameters within a focused context that is within control of the researcher, which improves internal validity (Bernhardt et al., 2015).

Assumptions

Assumptions are a researcher's belief about a phenomenon that may not be substantiated (Ponelis, 2015). The researcher's belief (ontology, epistemology, methodology) provide a lens through which readers or reviewers might observe research findings (Moon & Blackman, 2014). Three epistomological interpretive assumptions guide this applied research study. First, I assume that leaders in waste management businesses in Liberia need operational cost strategies to reduce costs. Second, I assume that business leaders can obtain buy-in from stakeholders toward sustainable waste management businesses. Third, I assume there is a need for peer-reviewed research papers to build a knowledge base on waste management businesses in Liberia.

Limitations

Limitations in a research study refer to those factors that are out of the researcher's control that might weaken the replication of the study (Brutus, Aguinis, & Wassmer, 2013). A potential weakness of this study is the lack of prior research on leadership operational cost strategies to minimize costs in waste management businesses in Liberia. A potential limitation is the leaders' unwillingness to disclose critical information, such as financial statements, due to a fear of a confidentiality breach. Leaders' potential nondisclosure of financial statements will affect internal validity because operational costs are inherently in financial statements (Baskarada, 2014).

Another limitation might be reliance on the business leaders' self-reported responses to the interview questions.

To address the limitations respectively, I checked and rechecked findings from this research. I checked the literature for similar research in developing countries. I addressed any unwillingness to disclose financial data by using confidentiality for participants and their companies, and by coding each leader's responses to interview questions. I addressed self-report bias by fact-checking, member checking, and comparing similar responses from other sources.

Delimitations

Delimitations refer to the scope and boundaries of the study set by the researcher (Adesiyan, 2016). The researcher set the scope of this study. The researcher limited responses to the six selected leaders in waste management businesses. As the researcher, I reviewed six leaders' strategies for reducing operational costs in waste management businesses in Liberia, relying upon their expertise and veracity in response to the interview questions. Due to the limited number of cases in this study, my findings may not be generalizable to waste management businesses outside of Monrovia, waste management businesses located in the rural areas, nor to other waste management businesses in Monrovia.

Significance of the Study

Value to Business

Business leaders should focus on maximizing efficiency and minimizing costs in alignment with the strategic objectives of the company (Henri, Boiral & Roy, 2016).

Profitability can improve by using a cost management system to control strategic and nonstrategic costs (Henri et al., 2016). Similarly, strategic cost management strategies use data to streamline costs through lean thinking (Collatto, de Souza, do Nascimento, & Lacerda, 2016). Collatto et al. (2016) found lean thinking is a strategic practical approach to cost management, value analysis, quality costing, logistic costing rather than looking at externally driven benchmarking and competitive strategies. Corporate leaders implement a cost management system to gain a competitive advantage over rivals. Implementation of a cost management system might be a strategy to reduce operational costs in waste management businesses. When return on investment improves due to adopting cost reduction strategies, then the waste management business leader can identify increased value to the business (Georghiou, 2015).

Liberian businesses may use the findings of this study to build entrepreneurial capacities through employment to reuse, recycle, and reengineer waste. Liberia's economic recovery since 2006 has spurred Liberian entrepreneurship, leading Liberian diaspora and foreign talent to build human and business capacity among Liberia's largely illiterate youth and female segments of the population (Bickel, 2017; Central Intelligence Agency, 2016; Ighobor, 2015; Werker & Beganovic, 2011). Liberia government attempted to privatize some solid waste management activities by using community business enterprises and pay-for-service-schemes to reduce costs and raise revenues from poverty-stricken communities (Amankwah-Ayeh & Banna, 2017). Additional value to business might include encouraging researchers to improve technologies and methodologies and to induce innovations that lead to economic benefits from efficiencies

discovered in waste management production, pricing, technology, and marketing (Ikhlayel, 2018).

Another value to business might be a contribution to the repository of business knowledge about Liberia. A lack of scholarly research articles by Liberians on Liberian businesses exists due to the intellectual flight attributed to the civil unrest from 1989-2003 (Werker & Beganovic, 2011). The findings from this study might provide business leaders with knowledge-based resources to improve financial performance by using cost-saving strategies, techniques, and innovations (Brandt, Laitinen, & Laitinen, 2016).

Contribution to Business Practice

Researchers contribute to business practice when the practicality benefits end-users. Research must be relevant and practical so that practitioners can benefit from research findings (Toffel, 2016). Toffel (2016) stated that involving practitioners in the research project or process can lead to additional avenues for research, including a higher quality of research. The interrelation of business, environmental quality, and research is needed for emergent markets in developing countries (Pillania, 2014). Pillania recommended bundling business, environmental quality, and research to improve India's economic growth to increase India's position in global markets.

Business leaders may use the findings from this study to reduce costs in waste management businesses in Liberia. Business leaders in waste management businesses in Liberia might apply the strategies gleaned from this study that might be beneficial to their businesses. Business leaders of emergent waste management businesses might find insight from the results of this study to reduce operational costs and to improve

profitability. Business leaders in waste management businesses in Liberia might benefit from strategic leadership styles pertinent to their organization to reduce operational costs. Brandt et al. (2016) found transformational leadership positively affected operational cost strategies.

Researchers, scholars, and academicians have not benefitted from research specific to Liberian business leadership due to the dearth of research on Liberian businesses (Ighobor, 2015). Pillania (2014) found that business consultancy was an outgrowth of research studies in green management. Consultancy fees and recognition in the field might contribute to company income streams. The results from this study might contribute to the body of knowledge by providing waste management business leaders with strategies that can reduce operational costs. Stakeholders may use the findings from this study to create new ways of business practice by incorporating new technologies and innovations, which may also attract new entrants to waste management businesses through tacit knowledge. Research findings might contribute to a new income streams through consultancy and opportunities for additional research.

Implications for Social Change

Profitable business opportunities exist in waste management businesses but so do social economic and developmental sustainability. Businesses that solve societal waste and sanitation problems in developing countries with increasing urbanization, ensure business sustainability. Business cost efficiency is not the only benefit of waste management businesses in, for example, China (Ren & Hu, 2014). Additionally, reuse, recycling, and reduction are not the prevailing themes for municipal waste management

businesses in developing economies. Instead, public trust for service delivery is higher if service prices can be controlled (Ren & Hu, 2014). Therefore, waste management business leaders need to be transparent in engaging customers so that service charges and changes can be accepted. Once customers understand the need for change, whether a change in price, service, or product, waste management businesses will overcome negative reactions to change.

The results from this study might contribute to positive social change by providing findings that waste management business leaders might incorporate into operational cost strategies to employ, empower, and enable community dwellers. Such business operational cost strategies might be innovative insights through technical and tacit knowledge transfer that result in employment opportunities. Business leaders might use the insights gleaned from innovative technologies to reduce cost, improve organizational performance, and build technical skills while improving the quality of life for stakeholders and local communities. Marginalized municipal dwellers may become technically competent, gaining employment and experience that result in a better quality of life (Organisjana, Koke, Rahman, Fernate, & Rutka, 2014). Marginalized segments of communities, such as women and unemployed youth, may experience a better quality of life because of the skills learned from waste prevention, recycling, reusing, and reducing waste (Anestina et al., 2014; Cleary, 2014).

A Review of the Professional and Academic Literature

In this section, I provide a critical and analytical synthesis of professional and academic literature on leadership strategies to reduce operational costs in the waste

management businesses. The literature review consists of journal articles, books, seminal works, and reports to explore in-depth leadership operational cost strategies to reduce costs in waste management businesses. I used key words as *waste management, municipal solid waste management, Sub-Saharan countries, north-north, north-south, east-west, leadership, sustainability, circular economy, green economy, green entrepreneurship, waste-to-energy, recycling, re-using, reengineering,* and *sanitary landfill*. The literature review includes the overarching themes of waste management, cost management, profitability, sustainability, and transformational leadership. These themes help clarify elements of the study, such as (a) waste management, (b) components of municipal solid waste, (c) operational costs and, (d) leadership.

My search to conduct the literature review included scholarly, multidisciplinary sources, such as ProQuest, Questia, professional sources, textbooks, seminal works and governmental and United Nations databases. Other sources include company annual reports, waste management trade documents, historical records, and business reviews. To meet the academic requirements of Walden University, 85% of the total sources should be peer reviewed, be within 5 years of anticipated publication of the research with a minimum of 60 peer-reviewed sources. There are 498 sources in this doctoral study, of which 87.75% are within 5 years of anticipated completion date in 2019, and 393 references of 498 (78.92%) are peer-reviewed (see Table 1).

Table 1

References Audit

References	DDBA Requirement	Number Achieved	Meet 85% Requirement
No. of references meet rubric requirement		498	
Peer review requirements	60	393	Exceeds 60
Recency requirement - Last 5 years	436	498	87.75%
References in Literature Review segment	60	148	Exceeds 60
Citations reflected on reference list	498	498	100%
No of references in section 1 & 2		350	70.28%

Note. Table provided by Dr. Gregory Uche, DDBA 9000-107

Waste Management Definitions and Profile

Waste refers to disposable, discarded, or unused portions of materials (Coker, Achi, Sridhar, & Donnett, 2016). Coker et al. (2016) stated that waste mix differs from one user to the next due to culture, social standing, and financial status. Bontoux and Leone (1997) defined waste through an annexation of named wastes from the European Union. Waste management include various strategies to reduce, reuse, and recycle discards from a source point to end-of-life cycle, or what is termed "cradle-to-cradle" (Liu, Liu, & Huang, 2016). The European Communities (EC) (1999) defined waste management by its activities, including preventing wastes, collecting, transporting, treating, controlling, and monitoring.

Waste management disposal methods were previously limited to landfills, incineration, and composting until technological innovations, environmental harm, and break-down necessitated updating methodologies to reclaim materials through reducing, reusing, recycling, and reengineering discards (Department for the Environment Food and Rural Affairs, 2011; Shuleski & Cristea, 2014). Shuleski and Cristea recommended a review of the main management and support processes in reengineering efforts by studying previous processes to improve current ones. The hierarchical approach to waste was established during under the European Communities in 1999 and became a legal directive in 2008 (European Parliament, 2008). In the hierarchy, waste prevention is preferred to reuse, which is preferable to recycling waste. Recycling waste is better than recovery that leads to gained energy from waste. Recovery is better than disposal of the

used-up waste so that there is no residual value. When the waste is able to be discarded, it has no further value.

Reengineering waste refers to obsolete electronic wastes or e-wastes. Perkins et al. (2014) proposed e-waste recycling without dismantling. Electronic waste recycling without dismantling supports reengineering (Oladipo, Madu, & Okoro, 2015). Oladipo et al. (2015) suggested using open-sourced software on computers considered obsolete to add value and continued equipment life, which can also offset the purchasing costs of new computers. Oladipo et al. supported new use for discarded equipment coupled with e-waste recycling. Hammer (1990) claimed that automation should not replace manual methods, but that automation or reengineering should impact business processes to accomplish the companies' mission through cost savings for effective performance.

Global Nature of Waste

Industrialization from the 1750s to late 1980s began to negatively affect the environment' s air, water, land, health, and food chains (Senge, Smith, Kruschwitz, Laur, & Schley, 2010). Developed countries' transboundary disposal problems of hazardous wastes in the late-1980s forced national leaders to meet in Basel, Switzerland, to create environmental protections, culminating in the Basel Convention (Secretariat of the Basel Convention, 2011). Economically developing countries' political and business leaders accepted end-of-life hazardous wastes from wealthier, developed nations. Poor countries whose leaders accepted wastes were importing discards to the detriment of their citizens and environments (Lucier & Gareau, 2015; Secretariat of the Basel Convention, 2011).

The core framework of the Basel Convention includes integrating environmental disposal with clean technologies; tracking transshipments of hazardous materials; training personnel; and protecting developing countries' economies, health, and environments from being dump sites (Secretariat of the Basel Convention, 2011). The ban did not sufficiently protect developing countries and suggested reforms (Andrews, 2009). Andrews also recommended an independent agency with powers to punish violators and functionally inspect all e-waste and hazardous wastes prior to transshipment and importation into developing countries. Brooke (1988) characterized the unfair advantage that European waste dumpers used to usurp illiterate, poverty-stricken West Africans. Brooke disclosed that wealthy nations paid little or nothing to dump toxic wastes in Kssa, an island in Guinea; and dump wastes in Nigeria. Guinea and Nigeria are countries in Sub-Saharan Africa located on Africa's west coast.

Ogbodo (2009) revisited the impact of hazardous waste dumping in Koko, Nigeria, in 1988. The Koko dump site was the trigger that prompted global hazardous responsibilities. At the Basel Convention, 180 countries concurred with protections for developing countries by signing an agreement. However, some countries in the European Union and the United States have not signed the agreement. Despite protections offered by the Basel Convention, transshipments of hazardous materials wastes ranging from nuclear to plastics continue from developed countries to developing countries, valued at USD 91B by 2016 (Interpol, 2016; Mavropoulos, Wilson, Appelqvist, Velis, & Cooper, 2014).

Global transshipments increased before and after the Basel Convention for the period 1988-2008 (Kellenberg & Levinson, 2014). Developed countries that ratified the Basel Convention shipped less hazardous wastes to each other while increasing transshipment to non-Ban ratifying countries; Ban-ratifying developing countries slowed their imports of hazardous wastes to each other (Kellenberg & Levinson, 2014). Kellenberg and Levinson stated that international agreements, such as the Basel Convention, have no effect on global transshipments of hazardous wastes from developed to developing countries. Developed countries, including those not ratifying the Basel Convention, increased waste generation as technological innovations increased. Developed countries face disposal challenges; excess wastes have posed problems in developed nations beyond those nations' regulations and policies (Mavropoulos et al., 2014). Some opportunists found waste trafficking, an environmental criminal offense, fills a market niche by exporting excess wastes from developed countries (Baird et al., 2014; Germani, Pergolizzi, & Reganati, 2015; Lambrechts & Hector, 2016). Groups in Italian organized crime systems were involved in hazardous waste management over the period 2002-2013 (Germani et al., 2015). Germani et al. (2015) hypothesized there were regional differences in criminal disposal of hazardous wastes, level of education, environmental regulations, enforcement, and the number of waste management plant facilities in Italy. Correlations existed regionally for high criminality where environmental enforcement policies were low (Germani et al., 2015). Higher educated, criminally-minded individuals might be predisposed to use their education to acquire better technological innovations and resources to facilitate waste management crime. On

the other hand, higher-educated individuals predisposed to morals shied away from waste management crimes.

Waste management crime is an economic crime (International Police [Interpol], 2016; Lambrechts & Hector, 2016). Entrepreneurs, brokers, and shippers contributed more to illegal waste transshipments than Italian mafia clans in Italy (Germani et al., 2015). Global waste crime is sophisticated and associated with white-collar crime (Baird et al., 2014). The characteristics of environmental white-collar criminality associated with illegal global movement of hazardous wastes are ease of movement of disguised wastes, especially electronic wastes. Electronic and electrical wastes (WEEE) are bundled as second-hand merchandise for transshipment to developing countries (International Police, 2013). Legal businesses, host governments, and illegal actors include brokers, traders, dealers, and shippers (Lambrechts & Hector, 2016).

Illegal waste traffickers have shown preferences for certain business sectors, certain types of waste material, and geographic locations (Baird et al., 2014; Interpol, 2013). Data were tracked to substantiate illegal exports in the business sector when seized at ports as illegal industrial wastes shipments. Germani et al. (2015) reported that waste confiscated at four ports in Italy in 2012 may not be representative of most illegal waste dumps. The main destinations to receive wastes confiscated were China (32.2%), India (23.3%), and South Korea (22.3%) (Germani et al., 2015). Baird et al. (2014) reported that the EU countries exported metal and plastics wastes to South East Asian countries whose growth economies demand metals and plastics as secondary raw materials. Baird et al. stated that plastics exports alone increased five times the level from 1999-2011,

while metals like copper, iron ore, steel, aluminum, and nickel doubled over the same period. China was the major importer of plastic wastes as secondary materials in 2010, importing 49% of the 56% global trade in waste plastics from the United States, Japan, Germany, and the United Kingdom (Mavropoulos et al., 2014).

Global illegal waste trade is increasing at 26% annually (Interpol, 2013). Interpol (2016) reported that illegal waste trade is a part of organized environmental crimes. Environmental crimes valued over USD 91 billion in 2016 and were ranked fourth in major international crimes behind drug smuggling, human trafficking, and counterfeiting (Interpol, 2016). Interpol further reported world agencies' expenditure to fight environment crime ranged from $20-$30M, slightly less than 3% of the illicit $91B income. The e-waste business exceeds USD 7 billion per annum (Grant & Oteng-Ababio, 2013). Researchers showed that e-waste destinations are emerging nations in Asia and in Africa, such as Ghana, Nigeria, and the Ivory Coast (Grant & Oteng-Ababio, 2013; Heeks, Subramanian, & Jones, 2015).

Waste is a tradable commodity, usually bound for developing countries mainly in Africa and Asia, where environmental regulations and enforcement are poor and where local waste businesses are a novelty (Baird et al., 2014). Waste transshipments are prohibited and are an economic and environmental crime when hazardous waste sales from North-North countries are transacted with developing countries (Baird et al., 2014; Breivik, Armitage, Wania, Sweetman, & Jones, 2016). Discarded electronic wastes in European Union countries were high at 6.2 million tons per year; about 33% was exported to countries with weak regulations (Huisman et al., 2015).

The global population is growing at the rate of 1.18% per year, or 83 million persons per year (World Health Organization [WHO], 2014). Global population is expected to reach 9.8 billion persons by 2050, with Africa spearheading the increased growth, Africa's population doubling by 50% by year 2050, (UN DESA, 2015). The European Union's (EU) response is to the population increase is for a directive in efficiency in natural and waste resource usage (Baird et al., 2014). Each member of the EU consumes 16 tons of natural materials annually, wasting six tons per person that make up 50% of the waste to landfills (EU, 2011). The Union (2014) directed the EU's 28-member states to be circular economies driven by competitive entrepreneurship in a sustainable, low carbon, zero-waste, efficiently resourced environment beneficial to all EU citizens by 2050 (Union, 2014). Germany and the United Kingdom among the EU's 28-member states (EU, 2017), the United States (Environmental Protection Agency [EPA], 2017), and Japan Ministry of the Environment (2017) have established environmental policies that serve their countries' circular environmental and economic growth.

The Association of Southeast Asian Nations (ASEAN) countries comprise producers and exporters of electronics and WEEE simultaneously. They have growth-oriented economies driven by technological and digital demand (Ibitz, 2012). As a block of 10 South-East Asian countries, ASEAN is not unified with a communal, central parliament as is Europe. ASEAN does not have a cohesive, unified environmental policy. Nevertheless, some environmental issues of commonality are water security, deforestation and land degradation, air pollution, and climate change, although individual

countries are attempting environmental policy formulation (Anbumozhi & Intal, 2015; Heilmann, 2015; Ibitz, 2012; WHO, 2014). End-of-life shipbreaking flows prominently from European countries to Asia, particularly in Bangladesh, due to inexpensive labor and ineffectual environmental regulations (Alam & Faruque, 2014).

A need for national governance structures among ASEAN countries became evident before the twenty-first century. Sixteen years later, no cohesive policy structures govern countries whose growth rates vary (Heilmann, 2015). ASEAN economies' growth differ in size and pace: Singapore and Brunei are the fastest, followed by Thailand, Malaysia, Indonesia, Philippines, Myanmar, Vietnam, Laos, and Cambodia (Nguyen, Nguyen, & Phan, 2016). China is not a member of ASEAN, but has imbalanced strategic ties with ASEAN (Heilmann, 2015; Salidjanova, Koch-Weser, & Klanderman, 2015).

The African Union (AU) member countries have not focused on a circular environmental and economic growth policy because they have emphasized different agendas in the UN Millennial Development Goals (MDGs) September 2000 until 2015 (Carin, 2014). African countries' performance on the MDGs was mixed because of heterogeneity in countries, from inequalities (i.e., development, extreme poverty, and gender issues) to the lack of certain performance indicators (Carin, 2014). In 2014, the AU published six goals to attract global acceptance with resource-based funding and comparability among AU member states. Under the AU's Common African Program (CAP) agenda, the goals were

- Structural economic development and inclusive growth
- Science, technology, and innovation

- People-centered development
- Environmental sustainability natural resource management
- Peace and security
- Finance and partnerships (AU, 2014; Carin, 2014).

The AU focused on poverty and economic development to create immediate, systemic needs, rather than an agenda for environmental security through a circular economy. The AU recognizes the impact of certain environmental detriments on the African continent, such as climate change and disasters, although waste management was not addressed (AU, 2014; AU Agenda 2063, 2016). The AU Agenda runs through year 2063 with 10 initiatives that do not explicitly include waste management. The Agenda items are

- Integrated high-speed train network
- Africa virtual and E-university
- African commodity strategy
- Annual African Forum
- Continental free trade area
- African passport and free movement of people
- Grand Inga Dam project
- Pan African E-network
- Silencing the guns
- African outer space strategy (AU Agenda 2063, 2016).

The AU's lack of emphasis on the environment exposes the continent to death-causing pollutants, a derivative of its intake as a hazardous waste dump site (Luzardo et al., 2014; Suk et al., 2016; Zheng et al., 2018). Pollution caused 8.9 million global deaths in 2012; 8.4 million of these persons died in low-middle-income countries (LMIC). That is a 94% death rate in LMICs in 2012 due to pollution (WHO, 2014). Pollution was the most prevalent cause of death in LMICs because expenditures to control pollution were less than half a percent (0.5%) of gross domestic product (Landrigan & Fuller, 2016). The cost of pollution in LMICs, particularly exposure to products with lead, can cause a drop in national intelligence quotients (IQs) by 50% due to debilitating brain functions (Suk et al., 2016). Because of the removal of leaded gasoline in high-income countries (HIC), tests have shown an increase in national IQs in HICs (Suk et al., 2016). Children are vulnerable to environmental pollution due to their formative nature. Suk et al. found that LMIC children's health vulnerability is compounded by malnutrition and unsafe drinking water, in contrast to HICs whose children's health vulnerability was due to noncommunicable diseases (NCDs).

Researchers found illegal e-waste trade routes showed a macroeconomic value and cost from high-income countries to low-income countries and from more socially developed countries to developing countries (Efthymiou, Mavragani, & Tsagarakis, 2016; Rochman, Ashton, & Wiharjo, 2017). Efthymiou et al. (2016) found illegal e-waste trade from developed to developing countries in crimes such as tax evasion, drug trafficking, and money laundering due to the disparity in transnational laws and regulations. Additionally, developing countries' environmental crime laws may be absent or

emerging, with little enforceability (Lee, Offenhuber, Duarte, Biderman, & Ratti, 2017). Links were found showing the exploitative nature of e-waste flow from North-South hemisphere to an effect on humans' food chains above and below ground in Ghana, West Africa (Daum, Toler, & Grant, 2017; Lepawsky, 2015). Due to the digital technological electronic products' use, e-waste flow into Ghana is expected to double by 2020, even as Ghana becomes an electronics producer (Daum et al., 2017). Not only are international transboundary laws with international enforceability needed to protect developing countries in Africa and southeast Asia, but developing, e-waste-producing countries need to protect their own citizens and environments (Daum et al., 2017; Interpol, 2013; Lee et al., 2017).

Formal recycling in e-waste requires safety protections. Julander et al. (2014) tested the blood, urine, and plasma of e-waste recycling workers and office workers in three Swedish companies and found significant amounts of toxic metals like cadmium, lead, mercury, indium, antimony, and arsenic. Indium is a metal in flat screen televisions; its dismantling releases airborne particles that are inhalable, affecting lung functions (Cummings et al., 2013; Zheng et al., 2018). Julander et al. recommended automation in e-waste recycling to protect humans and the environment due to untested properties in newly discovered metals used in advancing technological products.

Unsafe mixtures or removal of e-waste in informal e-waste recycling might contribute to unknown toxicities, impacting humans and the environment. Polychlorinated biphenyl ethers (PBDEs) and heavy metals impact human health and the environment in informal e-waste recycling (Awasthi, Zeng, & Li, 2016; Julander et al.,

2014; Noel-Brune et al., 2013). Health impact assessments supported by environmental policies with legislative enforcement and communications should form part of recycling environmental wastes such as e-wastes (Tetteh & Lengel, 2017).

A focus on public education using reinforced communications should warn citizens of the dangers of e-waste. Such education should integrate health impact assessments into environmental policies such as those governing recycling (Tetteh & Lengel, 2017). Jaiswal, Samuel, Patel, and Kumar (2015) proposed a beginning-of-life to end-of-life incorporation of components in the e-waste products for an effective, health-impactful, and eco-friendly methodology toward recycling e-waste products. Developing countries should adopt formal, strategic policy positions incorporating informal recycling to formal systems because developing countries bear the brunt of e-waste dumping (Khan, Lodhi, Akhtar, & Khokar, 2014). Renckens (2015) recommended recycling e-wastes with a certification backed by governments and international observance. E-waste certificates would meet international standards for the environment, ISO 14001, and regulatory gaps for workers' safety and e-waste disposal (Renckens, 2015).

Chemical elements in e-waste have been shown to affect DNA, learning outcomes, mental and physical health (cancer, obesity, diabetes type 2, hypertension, heart disease, diminished lung functions, and low neonatal birth weight) (Zheng et al., 2018). Many toxic chemicals in the environment have not been tested, particularly, synthetic chemicals and pesticides, clouding precise damage to human health (Suk et al., 2016). Findings show similar negative health effects from waste dumping in Campania in

Southern Italy (Triassi et al., 2015). Hair follicles were used to test for PCBs and POPs (Zheng et al., 2018).

An increase in cancer, childhood mortality, and congenital disabilities after urban, toxic and final-phased industrial wastes such as copper, arsenic, polychlorinated biphenyl (PCB), and hydrocarbons were attributable to improper e-waste disposal (Annamalai, 2015). Toxic burials in arable land, citizenry open incineration of household waste and roadside dumped waste, released dioxins into the environment to the detriment of human health resulting in short term and long-term illnesses (Seitz, 2014; Triassi et al., 2015). Air monitored in subtropical and tropical areas showed marked emissions of PCBs and other industrial-use organic contaminants (Breivik et al., 2016).

Increased incidences of respiratory problems, irritability, and nausea eventually led to chronic respiratory and other illnesses like cancer, heart diseases, lymph, kidney, liver, nerves, and brain impairment. Skin cancers and increased incidences of dermatological diseases as psoriasis, eczema, and pigmentation variations have been linked to air pollutants, requiring indoor ventilation and outdoor filtration against open trash-burning and polycyclic aromatic hydrocarbons (PAHs) released through coal-burning (Puri, Nandar, Kathuria, & Ramesh, 2017). Air pollution includes dioxins from burning plastics (Needhidasan, Samuel, & Chidambaram, 2014). Dioxins are carcinogenic to health and are released during plastic burning (North & Holden, 2013).

Persistent organic pollutants (POPs) in e-wastes and pesticides varied according to socio-economic development in Western and Central African countries prone to poor occupational health and safety policies (Luzardo et al., 2014; Ohajinwa, Van Bodegom,

Vijver, & Peojenburg, 2017). Specifically, Luzardo et al. (2014) found higher levels of polychlorinated biphenyl (PCB) in migrants from urban areas in West Africa; PCB is linked with e-waste in information communication technology (ICT) devices used for internet and telephone. Luzardo et al. (2014) associated the higher levels of PCB to be more than likely due to unmanaged e-waste. Luzardo et al. also found immigrants from low-income countries in Central Africa with origins in rural areas had higher levels of organochlorine pesticide (OCP) associated with DDT pesticide. Ohajinwa et al. (2017) conducted a cross-sectional study of 500 e-waste workers and butchers, finding e-waste workers at a significantly higher occupational health risk than butchers.

Plastics Wastes

Plastics are human-made from nonrenewable raw material sources and are chemicals of a long-stringed petroleum molecule, synthetic polymers, gum, and additives (Geyer, Jambeck, & Law, 2017; Rajkumar, 2015). Geyer et al. (2017) estimated that 7,300 million metric tons of plastic have been produced globally since the widespread use of plastics began in the 1950s. Geyer et al. stated that 4 million metric tons are biodegradable; by inference, 99% of plastics in use are nonbiodegradable, made of resins and additives. Institutional laws, recycling and reusing, and educating consumers were reforms for waste plastics elimination and reuse through recycling in the environment (Aurah, 2013; Raubenheimer & McIlgorm, 2017).

Nonbiodegradable plastics make up high-density polyethylene (PE; 36% of plastics in production), low-density polypropylene (PP; 21% of plastics, carrier bags, bin liners, packaging films), polyvinylchloride (PVC; 12% of plumbing pipes and fittings and

medical tubes), polyethylene terephthalate (PET; ~10%, from which plastic bottles, drinking water sachets), polystyrene (PS; ~10%, styrofoam), resins made of polyurethane (PUR; ~10%, seals, varnish), and polyester, polyamide, and acrylic (PP&A; nylons) made from combinations of 70% PET and other resins (Geyer et al., 2017; Koushal, Sharma, Sharma, Sharma, & Sharma, 2014; North & Holden, 2013). Eighty-five percent of medical devices, equipment, and tubes use single-use plastics due to their low acquisition cost, flexibility, and light-weight handling (North & Holden, 2013).

The estimated volume of plastic wastes in the oceans globally is 4-12 million metric tons of 7,300 million metric tons produced globally (Geyer et al., 2017). One hundred and ninety-two sea-lying countries contribute to plastics found in oceans (Jambeck et al., 2015). Schuyler, Hardesty, Wilcox, and Townsend (2014) found that plastics debris consumed by sea turtles and wildlife deleteriously affected them. Schuyler et al. examined diverse species of dead sea turtles' contents from gastrointestinal ingestion and found that six of seven species of sea turtles ingested hard and soft plastics such as rope, fishing line, styrofoam, tar, fishing hooks, rubber, balloons, and aluminum, contributing to distress and death. Plastics' threat to marine life were reported by United Nations Environmental Programme (UNEP) in 2014 (Raubenheimer & McIlgorm, 2017).

European flat oysters and blue mussels in sea water to find the effects of microplastics on bivalve creatures in their ecosystems and biodiverse habitat (Green, Boots, O'Connor, & Thompson, 2017). Green et al. (2017) found that microplastics did affect the functions of ecosystems and biodiversity, but some bivalves reacted differently. Green et al. recommended additional studies to isolate existing pressures on the bivalves'

habitat due to varied responses. Kuhn et al. (2017) studied plastics marine pollution in marine wildlife and concluded that a solution of potassium hydroxide (KOH) with dosage 1 molar KOH for 2 days at room temperature could mitigate traditional plastics ingested by some marine wildlife. Green et al. recommended that the marketing term, biodegradable, be truly biodegradable because microplastics still do not biodegrade sufficiently to cause no harm to aquatic creatures' habitats. Improved biodegradable plastics still affect marine ecosystems and invertebrate creatures (Green, Boots, Blockley, Rocha, & Thompson, 2015). Biodegradable materials and specialized plastics degrade at different rates and conditions. Industrial biodegradation varies from at-home plastics degradation for recycling, proposing prevention, reducing, and societal change to mitigate plastics wastes in oceans and on land (Vegter et al., 2014).

Plastics found on lands or generated from households are primarily from plastics used as product wrappers (Geyer et al., 2017; Glaser, 2017). Mavropoulos et al. (2014) stated that Asia produces 40% of globally used plastics; China alone uses at least 50% of the 87% plastics exported from the EU countries. Plastics quality varies, so disposal methods vary. Mechanical recycling is preferable to chemical recycling in that PET plastics with compatibilizers more easily blend to recycled PET than complications with chemical processes (Hamad, Kaseem, & Deri, 2013; Maris et al., 2018). Cow dung was a mediating method to degrade petroleum products in soil (Agumuthu, Tan, & Fauziah, 2013). Open discarded plastics led to low milk yields from cattle, and ultimately led to deaths of cattle (Rajkumar, 2015).

Sewage sludge helped improve soil contaminated with hydrocarbons (Agumuthu et al., 2013). Limited amounts of sewage sludge might apply due to heavy metal and PAH content equally affecting the periodicity of sewage sludge application to contaminated soil (Suciu, Lamastra, & Trivisan, 2015). PAHs are made up of different incompletely combusted organic materials; therefore, mediation applications affect PAH materials differently under varying conditions such as adding biochar to sewage sludge mitigated PAH in the soil (Abdel-Shafy & Mansour, 2016; Stefaniuk & Oleszczuk, 2016; Stephan, Patterson, Kelly, & Mair, 2016). PAH-mediated responses vary under climate conditions, wet versus dry PAH materials, prompting a need for more studies (Abdel-Shafy & Mansour, 2016). Agumuthu et al. (2013) found similar contaminated soil biomediation using cow dung. Waste is a commodity that has value. Its value can be calculated in several terms, quantified as income and as costs. Waste has an economic and social value that can be positive and negative in the following areas:

- Illegal hazardous dumping from developed to developing countries: tremendous profits to sellers, but is costly to uninformed buyers
- Some waste can be secondary raw materials for production in developing countries in ASEAN, China, and India
- Costly to the environment regarding air pollution, water, and land due to danger to aquatic animals and their ecosystems and habitats. Toxicities seep into lands to endanger cattle and humanity's food supply

- Costly to human health in contributing to noncommunicable diseases in HICs and to communicable diseases in LMICs already saddled with socioeconomic challenges.

The North-North hemisphere, also known as developed countries, have a better-quality governance mechanism with functional policies and judicial systems. Governance may be weak to absent with little accountability including judicial systems in developing and emerging countries, such as East-South hemisphere and South-South hemisphere countries. Global population increases are trending in more youth-aged populations, migrations from rural to urban areas, show pronation to e-wastes due to increased accessibility of digital, technological, innovative devices. Wastes associated with technological devices have increased, and a more urban population go with a rise in municipal solid wastes.

Municipal Solid Wastes

Municipal solid waste (MSW) management refers to cities' methodologies for handling wastes from households and nonindustrial sources (Bello, bin Ismail, & Kabbashi, 2016). A migration phenomenon is occurring: Cities are urban centers to which populations are shifting in search of work, or a better quality of life (Ajaero & Onokala, 2013; UN DESA, 2017). Since 1975, migration to urban areas has increased six-fold, from 700,000,000 to about 4,200,000,000 in 2015, with developing countries' urban migration dominating the trend (WHO, 2014).

Asian and African populations will escalate by 2050; Africa's 1.3 billion population is expected to double by 2050 (UN DESA, 2017). Africa's population

composition will be young, aged 18-35. Africa and Asia will face urbanization from a youth population dependent on digital, technological products that will generate e-wastes plus derivatives and municipal waste management options on a scale that requires day planning, policies, and socioeconomic development that include waste management.

Given the profile of urbanization in developing countries, especially African countries, strategies to manage waste must be developed. The goals of waste management are two-fold: protection for humans and the environment and sustainable use of raw materials (Brunner & Fellner, 2007). North-North countries' and the United Nations' model of waste management is the hierarchy of waste. Each developing country should craft its waste management model by income levels and socioeconomic developments, already surpassed by developed countries (Yukalang et al., 2017). Singh, Laurenti, Sinha, and Frostell (2014) discussed MSW's factors as population, climate, income levels, and socioeconomic development.

A correlation exists between income levels, care for the environment, and plastics disposal methods (Rajkumar, 2015). Rajkumar (2015) showed that lower- to middle-income level respondents discarded plastics in open areas instead of using proper waste bins as did higher-income-level respondents. Income level does impact waste management handling; countries with higher income levels focused more on sustaining resources than human and environmental protection. Low-income countries focus on public health and have not reached the stage of conservation to circular economy level (Brunner & Fellner, 2007).

Leaders in developed countries view waste and waste management differently compared to leaders in developing countries. Countries with higher per capita income levels focused on developing waste management environmental standards, getting more value from waste, and identifying a hierarchy of waste such that prevention and recycling create a circular economy (Khan, Kumar, & Samadder, 2016; Ozcan, Guvenc, Guvenc, & Demir, 2016). Developing countries focused on public health due to openly discarded wastes (Wilson, 2007). Waste management was more informal than formal in developing countries' economies, and external donors pushed for clean environmental development (Wilson, 2007). Agbogbloshie, a city in Ghana, is waste attractive, receives donor support through nongovernmental organizations (NGOs), but receives no policy support (Grant & Oteng-Ababio, 2013).

Improper waste management handling in developing countries as those in Sub-Saharan Africa can lead to floods and flooding (Mohamed & Mohamed, 2016; Njoku et al., 2015; Nnaji, 2015). Njoku et al. (2015) found that dumping wastes into water ways can contribute to urban floods. Poorly constructed settlements in improper locations, coupled with poor regulations including waste management regulations, have contributed to flooding in West Africa (Salami, von Meding, & Giggins, 2017). Cities and infrastructural developments in some African countries experiencing rapid development have not included drainages for water flow-through, leading to floods enmeshed with waste materials followed by health hazards and death (Eguaroje et al., 2015). Waste management businesses are not punished for dumping wastes into streams, lakes, and

rivers because of weak legal frameworks and deficient waste sites and waste mechanisms in low-income settlements and towns (Abubakar, 2017; Alam & Faruque, 2014).

Wastes disposed in landfills have declined in North-North countries while wastes remain a nonrenewable method of waste disposal in developing countries. Landfills are made up of 20-30% nonbiodegradable plastics (Adamcova & Vaverkova, 2014). Researchers in North-North countries experiment with biodegradable plastics in treated landfills using bacterial polymers, plant-derived polymers, and chemically synthesized polymers (Adamcova & Vaverkova, 2014). Untreated landfill use continues in developing countries, disregarding contribution to anthropogenic greenhouse gases (Oteng-Ababio, 2014; Tan et al., 2015). Tan et al. (2015) stated that Malaysia's landfills contributed up to 90% of greenhouse gases (CH_4), an increase of 54% over a 10-year period. Some residents near landfills choose to move due to foul odor from landfills, soil leaching, devalued properties, and public and environmental health hazards (Che et al., 2013). Landfills serve as burial grounds for 23% of e-wastes and medical wastes (Kinobe, Gebresenbet, Niwagaba, & Vinerras, 2015). Burial of wastes is due to the inaccurate perception of the limited value of e-waste, while another 63% of biodegradable wastes in landfills is unrecovered (Kinobe et al., 2015).

The most prevalent waste disposal method used in developing countries to eliminate unsorted household, municipal, and industrial waste is open dumping (Abas & Wee, 2014; Liyanage, Gurusinghe, Herat, & Tateda, 2015). Income levels are low to sustain private firm waste collection from individual households. Although urban populations are on the rise, waste management companies find customers among

municipalities; businesses; and large groups as educational institutions, religious facilities, and hospitals medical wastes (Bello et al., 2016). Low-income residents in makeshift settlements and unplanned communities in urban areas practice open dumping of mixed wastes (Abubakar, 2017; Ahsan et al., 2014; Liyanage et al., 2015).

End-of-plastics life could be treated in three different ways: (a) recycled as secondary raw materials, (b) recalibrated using heat, and (c) discarded in a sanitary dump site (Geyer et al., 2017). Plastics disposal in a sanitary dump site works better in North-North countries where recycling of biodegradable plastics is a pecuniary possibility (Adamcova & Vaverkova, 2014). Recycling due to thermal treatment consists of two methods thermoplastics and thermosetting. Thermoplastics, when reheated, melts shape-mold plastics with additives that contribute to biodegradation. Thermosetting degrades plastics that can be molded and then reheated; however, thermosetting is expensive to break down chemical molecules to monomers from polymers (Koushal et al., 2014).

Plastics were originally designed for convenience without biodegradability considerations and would have continued, except for the eyesore of plastics waste in the environment and their nonbiodegradability in landfills (Carey, 2017; Koushal et al., 2014). North-North countries began to shift to biodegradability away from convenience and to healthy humans and environments to offset plastics' toxins in additives for color, texture, and shapes. However, plastics usage is increasing in non-North-North countries, such as India (Joseph, Kumar, Majgp, Kumar, & Prahalad, 2016; Roy, 2016).

Calls for a circular economy to reduce and reuse nondegradable and biodegradable plastics usher in opportunities for new and innovative technologies to

solve the problem of plastics as wastes. Waste businesses enlist plastics users to make simple, everyday behavioral changes by sorting plastics and recyclables like paper and wrappers at source points. Companies introduced color-coded waste bins for customers to presort wastes in the United States at home, universities, and work (O'Connor, Lerman, Fritz, & Hodde, 2010; RecyclingatWork.org, 2015).

Presorted wastes and mixed MSWs from companies in England, Ireland, Germany, and the Netherlands produced the same quality reshaped plastics pellets (Carey, 2017). Companies face questions of having enough plastics to invest in new technologies that produce value for shareholders and stakeholders. Carey (2017) pointed out that the fall in oil prices makes raw plastics materials cheap, competing with recyclers' income from plastics as secondary raw materials. Nevertheless, innovative companies in plastics recycling need massive amounts of recycled plastics to make their businesses profitable (Carey, 2017).

Waste pickers in developing countries collect plastics manually. There is a need for waste pickers in developing countries to receive support to be competitive. Waste pickers in higher income areas receive sustenance from an efficient, mechanized recycling industry with technological innovations supported by fees from high income users' ability to pay (Marello & Helwege, 2014).

Informal Waste Pickers to Organized Recyclers for Socioeconomic Development

Open dumping of unsorted household wastes attracts waste pickers, triggering an informal hodge-podge of waste recyclers looking for what is saleable (Liyanage et al., 2015; Mani & Singh, 2016; Mavropoulos et al., 2014). Waste pickers could organize to

become a subcategory industry within waste management (Medina, 2008). Poverty drives vulnerable, marginalized groups of people, such as women, children, elderly, unemployed, and disabled persons into waste picking, accounting for 1% of urbanites in developing countries (Medina, 2008).

Waste pickers provide economic and environmental contributions to urban development settings upon organizing for political and economic empowerment by providing socioeconomic sustenance for their livelihoods and by saving on the excavation of virgin materials because of recycling (Dias, 2016; Medina, 2008). Waste pickers' organization into an economic block might mitigate their exposure to hazardous, toxic, environmentally polluted wastes, and even wet wastes soaked with leachates that are typical of tropical countries (Liyanage et al., 2015). Medina (2008) advocated consideration of three organization models beneficial to waste pickers' recycling contribution to urban development: (a) micro businesses (b) cooperatives, and (c) public-private partnerships. Dias (2016) proposed a similar model based on governance, integrated participation, and an economic sustenance supportive of livelihood, recognition of the value of waste picking, and its contribution as formalized recyclers in society. Aparcana and Salhofer (2013) proposed a social impact assessment that considers human rights and working conditions of waste pickers' recycling efforts that augments waste pickers' formalization and associations. Informal recyclers' main source of income was from informal recycling; informal recyclers contributed marginally where municipal services were inadequate (Burcea, 2015).

Observations about waste picking show the toll on the sociological, political development of waste pickers and the industry. Informal recyclers tend to be marginalized and concerned about health hazards. Gutberlet, Baeder, Pontuschka, Felipone, and dos Santos (2013) researched participatory sustainable waste management to study how to strengthen and consolidate recycling cooperatives in Brazil. Recyclers found the work rewarding financially, in addition to protecting the environment. However, the turnover rate among recyclers was high due to emotional vulnerability and physiological deficiencies, which threatened program continuity (Gutberlet et al., 2013). Marello and Helwege (2014) found similar results in three Latin American countries including Brazil. Ohajinwa et al. (2017) studied 279 e-waste workers and 221 butchers in the informal sector in Nigeria and found little regard for occupational health and safety because the informal economies had been marginalized at policy formulation levels. E-waste picking and e-waste management should be separated from other waste management, creating separate integrated systems with training to waste pickers, recycling facilities, and informed residents (Ikhlayel, 2018).

The number of waste pickers in LMICs with low skills exceeds politically correct social inclusion. In middle to high income countries, municipalities seek efficient and effective economies of scale for circular waste that include equipment, space, and technology, excluding the very labor-intensive low skilled high numbers of economically poor waste pickers (Marello & Helwege, 2014). Gender and income disparity showed in findings: female waste pickers in Southern Africa preferred landfill waste picking for

safety reasons; landfill waste pickers earned more due to the volume of waste (Schenck, Blaauw, & Viljoen, 2016).

Open dumped wastes consist of biodegradable wastes as food trash or body wastes that are composted for fertilizer. Dehydrated wastes from paper, plastic bags and hard plastics, glass, metal, and e-wastes from overflowing waste bins transform into refuse-derived fuel (RDF) (Bello et al., 2016; Mani & Singh, 2016; Nwofe, 2015). The need for proper waste management handling is greatest in LMICs, where income is less than $876.00 per month, regulatory reforms and enforceability are low, and there is much opportunity for business entrepreneurship in waste management (Singh et al., 2014). Waste sorting needs to occur at source points or storage to save time, collections costs, transportation, and treatment (Abas & Wee, 2014). Waste sorting enables recyclers to separate wastes for recovery and to save on environmental degradation, although environmental concerns are lower ranked for low-income countries (Singh et al., 2014).

Waste management business leaders must analyze sustainability for waste management businesses in developing countries. Although populations in developing countries are growing and there is a demand for solid municipal waste management, potential customers' income is insufficient to sustain waste management businesses. Business leaders should consider strategic waste management options. Such options include (a) life cycle analysis, (b) anthropogenic responses to types of wastes as new chemical and organic interactions with MSW to mitigate leachates and produce energy recovery, (c) biofuel from gases in various industries, (d) renewable energy from PV, the

wind, and hydro sources, and (e) mitigate carbon emissions in power-producing industries.

Waste to Energy

Waste-to-energy is an opportunity to explore the transition from waste diminution, to waste as a resource, to waste resource for sustainable recovery (Dobraja, Barisa, & Rosa, 2016; Mikulcic, Klemes, & Duic, 2016). Aguilar-virgen, Taboada-González, and Ojeda-Benítez (2013) found that separating MSW could potentially commit 46.63% waste for biogas, enough to contribute 60% to street lighting in Ensenada, Mexico, while the balance recyclables could contribute to composting. In 2013, 192 countries contributed to ocean debris of plastic wrappers, plastic drink bottles, and plastic bags totaling 275 million metric tons of plastics made from resin, gum-based petroleum (Schupska et al., 2015). Plastics entering the ocean is deleterious to ocean creatures and humanity. Petroleum-originated plastics debris can be reconfigured to produce energy. Waste to energy provides an alternative to disposal in landfills by reusing waste to produce electricity.

Due to population increase and urbanization, the most common method of waste handling was open landfill dumping versus waste-to-energy renewability in the Kingdom of Saudi Arabia (KSA) (Ouda et al., 2016). With technological advances such as waste to energy, KSA leaders explored the best waste-to-energy method for three cities in the Kingdom. Three methods in waste to energy were incineration, RDF, and biomethanation (Ouda et al., 2016).

Incineration could eliminate 80% of all nonrecyclable wastes including isolating metals as a byproduct; incineration is the lowest costing waste-to-energy method to the detriment of the environment, polluting air and water in KSA (Ouda et al., 2016). KSA leaders found waste-to-energy output contributed 25% to the 54 giga watts energy needed (Ouda Cekirge, & Raza, 2013). The U. S. Department of Environmental Protection Agency (EPA, 2017) reported incineration ranks close to the bottom of waste disposal mechanisms. Further, the EPA reported that 86 waste-to-energy incinerator plants produced per year 2720 MW of power due to 28 tons of nonrecyclable waste; on average, a waste-to-energy plant can produce 550kWh at the cost of USD 0.04/kWh; equivalent revenue is USD 20.00/ton (EPA, 2017). Waste-to-energy contributes to lowered greenhouse gas emissions (climate deterioration agent), is renewable, and contributes to a circular economy (Michaels & Shiang, 2016). For each dollar spent, income from revenue is $1.77 or $0.77 towards profit or equity (Michaels & Shiang, 2016). North-North countries are using circular economy strategies in waste management.

RDF is one of two methods for heating MSW-the first being incineration of all MSW without segregation (Johari, Mat, et al., 2014). Upon segregating MSW into combustible and noncombustible wastes, the combustible wastes with a propensity for high energy value is RDF (Johari, Mat, et al., 2014). Johari, Mat, et al. (2014) experimented with three types of segregated wastes including simulated MSW, wet sludge, and mixed MSW from Thailand, while varying the air factor and the wetness of MSW. Johari et al. found optimal combustion of RDF when the air factor was slightly

less than 1 and the average bed temperature was 808°C. Thailand's wet sludge is like tropical conditions for wetness in Liberia, West Africa, which is the site for this study.

Many researchers experiment on everyday combustible wastes in tropical areas to offset fossil fuel use, reduce greenhouse gas emissions to mitigate climate change, or contribute to renewable sources of clean energy to preserve the environment. Leaders of businesses and governments in African countries could benchmark waste recovery to electricity. African countries could produce electricity for consumption from landfill gas and ease electrification problems to impoverished citizens while creating business value (Scarlat, Motola, Dallemand, Monforti-Ferrario, & Mofor, 2015). Potential energy recovery from landfill gas from urban areas could increase by 134% from 613 PJ collected in 2012, with 155 PJ energy recovery, to about 1508 PJ, with 363 PJ of potential recovered energy by 2025 (Scarlat et al., 2015). Nigeria as an exemplar, could produce substantive energy, 47.97 million tons of energy from biomass, and about 17.5 BMJ/day from solar energy (Giwa, Alabi, Yusuf, & Olukan, 2017). Businesses could produce diesel methanol from inedible waste cooking oil, comparing a mechanical stirring versus hydrodynamic kinetics or cavitation (Chuah et al., 2016). Chuah et al. (2016) found that mechanical stirring required higher energy and produced less energy, confirming hydrodynamic cavitation produces more energy in less time, a lower carbon footprint, and contributing to clean energy production.

Dried coconut leaves and dried biomass cut into small pieces are equivalent to coal used to create energy (Pestano & Jose, 2016). Torrefied dried coconut leaves carry a higher heat value than dried biomass (Pestano & Jose, 2016). Although Pestano and Jose

found dried biomass useful for energy, its challenges include slow and low calorific value when wet, meaning a high oxygen content detracted from optimal energy production. However, a mix of pressurized biomass and coal can produce briquettes for energy. A dried coconut, moreover, contributes a shell, roughage, husks, and leaves to generate energy from biomass. Nevertheless, biomass and coconut leaves torrefied at 245°C to eliminate oxygen yield biomass for fuel. Biomass is useful for producing power while mitigating carbon dioxide emissions in the environment (Kazagic, Music, Smajevic, Ademovic, & Redzic, 2016).

Other emergent technologies that use gasified wastes to produce energy include coal-to-liquids, biomass-to-liquids, and synthetic gas (Aitkens, Loughlin, Dodder, & Yelverton, 2015; Saad & Williams, 2016). Aitkens et al. (2015) combined coal-and-biomass-to-liquids-and-electricity (CBtLE) plants with analysis to attest market price sensitivities and environmental effects in the United States. CBtLE technology was more expensive than common forms of energy products as gasoline, diesel, and ethanol (Aitkens et al., 2015).

From Zero Waste to a Circular Economy

The purpose of zero waste to a circular economy is to prevent wastes to landfills, incinerators, and to reuse, recycle, and reengineer wastes to maximize value as a resource (Peart, 2016). In 2009, EU countries sponsored a project, Zero Waste in Industrial Networks (ZEROWIN), to explore industrial networks using strategies to eliminate wastefulness (den Boer, Williams, Curran, & Kopacek, 2014). The Zerowin project's network of partners in academia, industry, multicontinental, charitable, and

information technology makes its comprehensive diversity advantageous for learning about zero waste to a circular economy.

The Zerowin project focused on WEEE, automotive, photovoltaic, and construction wastes, improvement could be enhanced by incorporating technology to form an industrial network to reduce greenhouse gases, reuse and recycle waste, and reduce use of fresh water (den Boer et al., 2014). Den Boer et al. (2014) recommended research on a laptop to explore WEEE's economic circularity. The Zerowin project adopted a case study design to study WEEE for economic circularity, naming the project design for recycling, repair, refurbishment, and reuse D4R laptop (Hickey et al., 2014). An industry network of computer manufacturers, end-of life IT asset management companies, IT companies experienced in refurbishing, component manufacturers, and other partners designed a laptop whose end-of-life components are recyclable for reuse (Gala, Raugei, & Fullana, 2015; Hickey et al., 2014). The D4R laptop design extended the life cycle of components, reused components through repairs and reengineering, and saved on raw materials for a single-use laptop.

To produce everyday products from recycled to reengineered products so that a circular economy is viable, municipal governments are mandating zero wastes. Mehta (2017) reported that New York City set a 90% zero waste-to-landfill goal to be achieved by 2030. Such municipal city mandates (San Francisco, Los Angeles, Seattle, and Dallas in the United States and European cities) for circularity of wastes necessitate public-private partnerships for businesses, including waste management businesses and manufacturers to adjust retooling, communications, facilities, and strategic plans and

capabilities. Zero waste-to-circular economy is present in North-North countries and the future in South-East and South-South countries (See Figure 1).

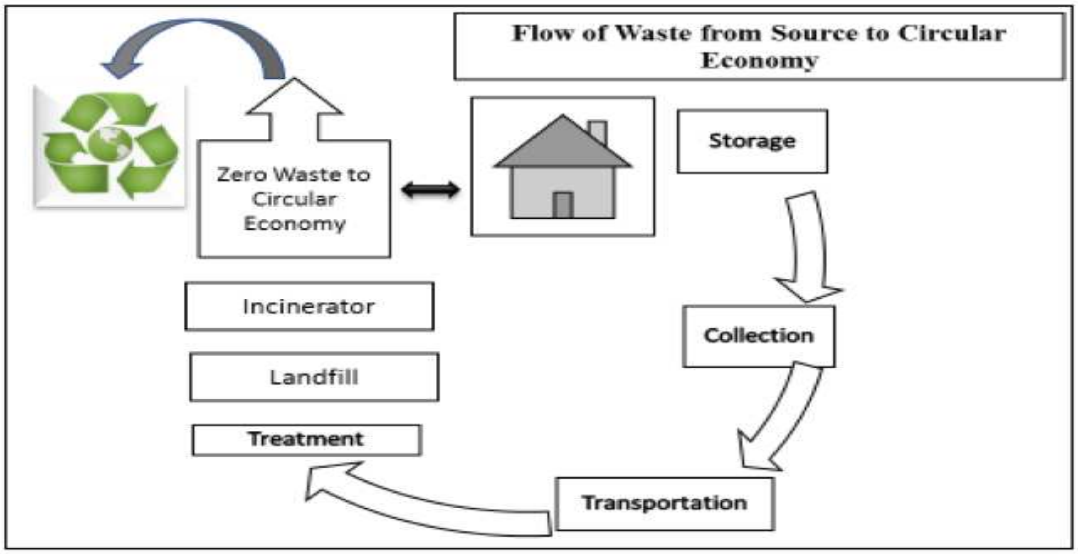

Figure 1. Flow of wastes to circular economy. "Municipal Solid Waste Management in Malaysia: An Insight Towards Sustainability," by M. A. Abas and S. T. Wee, 2014 [Conference Paper], *ResearchGate,* 196-197. Adapted and used by permission from M. A. Abas.

Waste Management Businesses Operational Costs

Waste management businesses in Sub-Saharan Africa experience hurdles in developing countries in the tropics. Some hurdles include

- Wet wastes due to the tropical weather
- Humid nature of climate conditions
- Low-income level of customers
- High demand for services in urban areas
- Poor to emergent environmental protection laws
- Poor law enforcement
- Municipalities' low budgeted amounts for wastes
- Low-skilled or low educated workforce
- Lack of facilities including land
- Inability to access capital
- An uphill battle to change the perception of waste-to-valuable resources requiring recovery (Jashi & Ahmed, 2016; Kinobe et al., 2015; Lohri, Camenzind, & Zurbrugg, 2013; Zaman, 2013).

Waste management business leaders must find solutions for business sustainability to handle municipal wastes while providing socioeconomic, environmental, and regulatory services (Lohri et al., 2013). By changing citizens' perception to waste is everyone's problem and responsibility and that waste is valuable, business leaders and institutional administrators can develop reform strategies with economic investments for sustainability (Tot, Vujic, Srdevic, Ubavin, & Russo, 2017). Citizen peer-to-peer

involvement in solving environment problems leads to citizen engagement in finding appropriate solutions (Wildschut, 2017).

In waste management businesses, certain costs directly link to operations. Operational costs are transportation, waste collections, wastes storage, workforce/labor, tools, and other hidden costs. Developing countries' budgets for MSW management may vary between 20-50% but may serve less than 50% of municipalities' populations (Bello et al., 2016; Lohri et al., 2013). Bello et al. (2016) stated that MSW in Uganda varies between 52%-80% of daily wastes produced.

Reverse logistics is a solution to reduce MSW costs by making waste collections from recycled wastes at landfills cost effective by comparing collections with the size of the waste collection truck and by finding the point of lowest fuel consumption vis-a-vis carbon emissions into the atmosphere (Kinobe et al., 2015; Soto, Munoz, & Giesen, 2016). Waste separated into three types of streams (downstream, midstream, and upstream) can support reverse logistics with effective supply chains based on cost-benefit analysis and a profit motive (Barrera & Cruz-Mejia, 2014; Pumpinyo & Nitivattananon, 2014). When waste is separated at its source, the cost is less throughout the supply chain (Vidovic, Ratkovic, Bjelic, & Popovic, 2016). End-users such as recycling centers upstream need a constant supply of waste to maximize benefits. Franchised waste management companies experienced more effectiveness using reverse logistics than stand-alone companies by negotiating prices with buyers and sellers by improving workflows.

The burgeoning supply of e-waste is fodder for the recycling entrepreneur in a

circular economy. China's e-waste industry is expected to increase from 5.5M tons in 2013 to 11.7M tons by 2020, with, for example, an average profit margin of $2.50 per unit for a television (Li, Yang, & Liu, 2015). India's e-waste annual consumption is 0.13M tons, growing at 26% per year due to an increasingly economically upward population (Roy, 2016; WEEE Recycle, 2015). The Australian government leaders follow China, Japan, and the EU by providing a circular economy policy with regulations to support the innovative business opportunities in the circular e-waste metals industry (Dominish et al., 2017). Businesses need a strategic leader to envision the innovative business model that will drive the circular economy, especially the e-waste circular economy (Al-Husseini & Elbeltagi, 2014; Xenikou, 2017).

Waste Management in Liberia

"Monrovia Stinks" (Kappia, 2010) is a pictorial in the Daily Observer newspaper in mid-1981, that tested the limits of press freedom while presenting truthful pictorial evidence of piled-up waste under the year-old Liberian military government. Liberia still struggles with unsorted municipal waste in Monrovia from vegetable and putricibles (43% of all wastes), miscellaneous items constituted 20% with 780 tons per day waste generation (UNEP, 2007). United Nations Environmental Program (UNEP, 2007) recommended that Liberia's Environmental Protection Agency spearhead the country's waste management efforts including institutional policy frameworks, the public, along with world-organization stakeholders such as government agencies, municipalities, Aid agencies from the United Nations and from the United States of America (UNEP, 2007).

Following the Ebola Virus Disease outbreak in West Africa in 2014, representatives from the United Nations International Childrens Emergency Fund (UNICEF) reported the necessity for onsite healthcare waste management accommodations (UNICEF, 2015). UNICEF representatives reported national environmental risks from open dumping, burning garbage, and unsanitary landfills (UNICEF, 2015). Slightly over 51% of Liberia's 4.7M population lives in an urban area, with 1.42M living in Monrovia, Liberia's capital city (CIA World Factbook, 2018). Liberia's urbanization growth rate of 3.4% is higher than 1.9%-2.2% projections in Africa for years 2020-2050 (CIA World Factbook, 2018; Guneralp, et al., 2017). Sixty percent of Liberia's population profile is below age 25, fitting the profile for development, but perhaps 10 years hence, this generation should have acquired education, skills, and experience to harness development (CIA World Factbook, 2018). Teledensity in Liberia is 90%, mostly in urban areas, specifically, Monrovia (CIA World Factbook, 2018). Mobile cellular telephony alludes to e-wastes if teledensity is ninety percent. Liberia's high urbanization rate, youthful population, and dependence on mobile telephony might present opportunities for municipal and e-waste management businesses. The primary landfill in Whein Town, Monrovia is predicted to reach life expentancy by 2019 (Wheeler, 2017). City officials are exploring an alternate landfill site in Cheesemanburg while exploring recycling, reusing, and composting (Wheeler, 2017). In areas of high and fast urbanization in developing countries with increasing population growth, waste management is affected by social-cultural, technical, financial, organizational, legal and political effects and should be analyzed for internal and external

constraints (Yukalang et al., 2017). Opportunities in Monrovia, Liberia should include the trend to explore enterprises for a circular economy with zero waste given municipal constraints (Carreon & Worrell, 2017; Heacock et al., 2016; Nwofe, 2015; Yukalang et al., 2017). Waste management business leaders in Liberia should focus on effective and efficient waste management cost strategies in a circular economy.

Business Leadership Strategies

Strategies are the science of planning, directing the implementation of plans, and the skill in the management of plans (Merriam Webster, 2018). Business management scholars recognize three levels of management: (a) strategic, (b) tactical, and (c) operational (Boshkov & Drakulevski, 2017; Misni & Lee, 2017). Operational management is concerned with the day-to-day affairs of running the business under the leadership of supervisors (Misni & Lee, 2017). Tactical managers implement the plans and strategies to fulfill strategic leaders' organizational vision (Misni & Lee, 2017). Strategic business leaders are at senior levels, such as the chief executive officer and executive heads of major divisions within an organization. (Boshkov & Drakulevski, 2017). Short-term and long-term plans to accomplish the vision and mission of the organization are the responsibility of strategic business leaders (Boshkov & Drakulevski, 2017). Depending on the organizational structure, strategic leaders might be end decision makers (sole proprietorship or partnership) or report to a board for a public corporation (Bai, Feng, Yue, & Feng, 2017). Both the end decision maker and board are accountable to internal and external investors, customers, and stakeholders including regulatory bodies (Cohen, Cavazotte, da Costa, & Ferreira, 2017; Lee & Lo, 2016).

Strategic business leaders fulfill the company vision with profitable performance through competitive advantage strategies (Boshkov & Drakulevski, 2017). Competitive advantage in a company occurs when the company value exceeds the costs of value creation (Oktem & Canel, 2016; Tanwar, 2013). Using Porter's scheme on generic competitive advantage, a company competes based on (a) an inimitable (not easily duplicated) differentiation, (b) cost leadership (commands the price in the industry), and (c) by focus (a niche within the industry) (Tanwar, 2013). Tanwar (2013) mentioned that Porter's market dimension of scope when the exact size of the market is unknown is an external factor, and company dimension that consists of a company's core competencies is an internal factor.

A strategic leader should examine how the company's internal competencies supply the demand needs of the market (stakeholders and customers), its products, or service, including strategies' effect on leadership (Martinez, 2014; Marx, 2015; Nulkar, 2014). Indicators should be used to assess waste collection, waste captured for recycling, the recycling rate, and disposal rate for financial sustainability with respect to the business, regulatory, and social expenditures and investments (Di Maio & Rem, 2015; Ferronato et al., 2018; Friede, Busch, & Bassen, 2015; Li & Lu, 2016; Quartey, Tosefa, Danquah, & Obrsalova, 2015). Benchmarking is an indicator companies use to assess profitability, personnel performance, and use of technical and other resources (Sarfaraz, Jenab, & Bowker, 2015).

The way businesses use energy from various sources, exceeds micro business operations decisions, to broad macro level impact in societies (de Lange, 2016). Business

leaders' decisions affect socio-developmental, political, economic and innovative use of energy at macro policy levels but also includes individual energy behaviors of employees. European, Chinese, and American businesses use energy differently, with varying impacts on climate change, to micro businesses' influence on employee energy behavior for say, renewable energy for business operations (Andrews & Johnson, 2016; Hancock, 2015). Business leaders in Nigeria and Kenya in the agro-agriculture sectors need regulations to allow access to capital, emerging information, and technology through public-private partnerships (Ndichu, Blohmke, Kemp, Adeoti, & Obayelu, 2015). Ideas and theories for the emergent business models include: (a) green supply chain management (Coetzee & Bean, 2016; Garzella & Florentino, 2014), (b) knowledge management systems (Cerchione & Esposito, 2017), (c) entrepreneurship and strategic management (Akinbola, Ojo, & Hakeem, 2015; Dogan, 2015), (d) effectual institutional entrepreneurship (Parris & McInnis-Bowers, 2015; Skarbek, 2016), (e) closed-loop waste systems for sustainability (Bocken, Short, Rana, & Evans, 2014; Gupt, 2014; Wagner & Svensson, 2014), (f) smart connectivity of internal and external competencies (Porter & Heppelmann, 2015), and (g) mitigation through appropriate actions (Higashida & Managi, 2014; Kim, Moon, & Yin, 2016; Soezer, 2016).

Sub-Saharan Africa's (except South Africa) electrical demand is anticipated to double between 2012-2035, up from 6% of average global consumption (Colenbrander et al., 2015). Renewable energy sources may provide an answer to energy production over expensive and climate-affecting fossil fuel energy generation (Colenbrander et al., 2015). Sub-Saharan African countries' use of renewable energy technologies could be

promulgated through small- and medium-sized enterprises, provided that legal, judicial, and economic reforms support their viability (Bowale & Ilesanmi, 2014; Colenbrander et al., 2015; Tot et al., 2017). Although renewables are associated with solar, wind, hydro, and waste as a source of energy, recycling polymers to enhance pavement construction, an innovative strategy useful for Ghana (Appiah, Berko-Boateng, & Tagbor, 2016). Recycled polymers can be extrapolated to augment Sub-Saharan African roads and other uses.

Not much is known about the waste management industry in Liberia, such as the size of the industry, the market, ease of entrance, organizational unions, competition, external threats, and regulatory frameworks. Nevertheless, each company in the waste management industry in Liberia operates for profit. Strategies that fulfill corporate vision, mission, profitability, sustainability, and social responsibility must be addressed. The circular economy for waste management will be a new paradigm in Monrovia, Liberia. Transformational leadership will be needed to guide any waste management company to drive the change toward a circular waste management economy.

Urbanization is the global trend, visible in African demography and demonstrable in Liberia. Youth populations add to the population pyramid making new models for doing business necessary, especially with the global push for circular economies. The emergent market based on a circular waste management economy will require innovative methods to market a company and its products. Green entrepreneurship is an emergent way of doing business that is consistent with social change (de Bruin, 2016). The framework for green entrepreneurship is built on sustainable ecology and social

innovation to solve social problems (de Bruin, 2016; Holt & Littlewood, 2017; Zur, 2015). Companies' longevity depends on building sustainability through ecoefficiency, eco-effectiveness, employing transformational eco-centric strategies, and social value creation (Borland et al., 2016; Sinkovics, Sinkovics, & Yamin, 2014). Leaders of emerging businesses could consider a sufficiency-driven business model that manages consumer demand through education so that business consumption might sustained (Bocken & Short, 2016; de Lange, 2016; Samadi et al., 2016).

Waste management business leaders' strategies for reducing operational costs will depend on the identification of internal competencies and understanding social, institutional, and green entrepreneurship. Waste management business leaders who understand internal competencies help to supply market demand consistent with a circular waste economy. Transformational business leaders may use the findings of this study to prompt recycling, reuse, and reengineering of resources to create a focus niche using innovation for waste management companies in an emerging circular economy.

Leadership

Leadership is attributable to leading amidst the four functions of management, which are (a) planning, (b) organizing, (c) leading, and (d) controlling (Schraeder, Self, Jordan, & Portis, 2014). Five elements comprise leadership: (a) a leader, (b) follower(s), (c) action-oriented, (d) have a course, and (e) have goals and objectives (Gandolfi & Stone, 2017). Northouse (2016) distinguished leadership from management in that leaders inspire, motivate, provide direction through visioning–a broad, higher stroke of management, while managers engage the operations of a company.

Traditional management theorists referred to leading as communicating, inspiring, motivating, influencing, and providing a space for trust through organizational change or change toward goals accomplishment (Al-Ani & Redmiles, 2009; Algahtani, 2014; Hussain & Hassan, 2016; Schraeder et al., 2014). Managers plan, shape, and give direction throughout the organization, while leaders provide strategic influence and inspiration through organizational change (Algahtani, 2014). Quality business management skills and knowledge evolve as business environments change (van Kemenade, 2014). The personal computer's burgeoning use during the 1990s ushered change with continuous disruptive innovation, propelling adaptivity to emerging business paradigms resulting in value creation (customer-oriented) and value capture (systems approach to technology and organizational environment) (Baden-Fuller & Haefliger, 2013). Leaders need to know how to transition the organization through change management or risk failure due to no support from strategic leaders, not enough education or training, failure to plan for the change, inadequate communication, and no resources to support the change (Mosadeghrad & Ansarian, 2014).

Process is an attribute in leadership theory evolvement that explains leadership as occurring over time (Dinh et al., 2014; Northouse, 2016). A leader needs to strategically inspire and influence the organization to brace for change (Hirsch, 2014). A leader uses interpersonal influence through mentoring to support and curtail turnover rate (Huang, Weng, & Chen, 2016). Algahtani (2014) noted that leaders motivationally align followers by inspiring them to follow the vision or adapt to change. Adaptation to change takes time, requiring trust between leaders and followers (Schraeder et al., 2014). Brumm and

Drury (2015) found followers' empowerment critical to implementing strategic plans. van Kemenade (2014) advanced Theory C to address trust between leaders and followers, advocating leaders' interpersonal communication and relatability skills to mitigate employees' fear of change.

Communication, specifically leadership communication, must be authentic, actively flow throughout and beyond the organization, be realistic, and be resourcefully facilitative for employees' positive reaction (Hirsch, 2014). Hirsch (2014) stated that leadership communication must, within the crux of change, provoke followers to act. Said and Shah (2017) studied leadership response to negative communication and found a that leader's response, positive, or negative, sets a tone for how the organization responds.

A leader designated to bring the organization to accept a change should be trusted by followers for effective organizational and individual follower performance (Brown, Gray, McHardy, & Taylor, 2015; Jiang & Probst, 2015). Saetren and Laumann (2015) noted a relationship between trust and risk during organizational change. Employees asked to accept a technology change perceived the change was safe exhibited low risk and high trust to acceptance without questions. (Saetren & Laumann, 2015). The reverse was true when employees felt the change was unsafe, their risk perception was high, trust was low, and employees questioned management decisions (Saetren & Laumann, 2015). Individual/employee retention is affected by leadership (Gyensare, Anku-Tsede, Sanda, & Okpoti, 2016). Employee retention and employee commitment are higher when a leader demonstrates transformational leadership values (Gyensare et al., 2016).

Boughzala and de Vreede (2015) proposed a model for collaboration to test a company's collaboration maturity and found the model of collaboration was based on individual goodwill of individuals willing to share knowledge and resources. Moreover, a resultant test showed the model flawed when asymmetry exists between locations (Boughzala & de Vreede, 2015). Coordination rather than collaboration occurs when collaboration is imbalanced between responsibility and authority.

An ethical climate affects employee trust in authority and in the organization (Simha & Stachowicz-Stanusch, 2015). Organizational trust climate affects employee trust in management, which in turn affects individual employee performance (Jiang & Probst, 2015). A positive trust relationship exists between employees' trust in management and work performance evidenced through positive ratings in finances, productivity, and product and service (Brown et al., 2015). Sarwar and Mumtaz (2017) found that trust in a leader affects organizational identification because individualized consideration from a transformational leader elicits trust from the employee/follower. An ethical organizational culture that reinforces organizational core values contributes to trust in a leader and followers' attitudes toward teamwork and the organization (Pucetaite, Novelskaite, & Markunaite, 2015). Trust in a leader who exhibits individualized consideration yields better organizational and individual performance, including ease of going through change (Pucetaite et al., 2015). Leadership style affects trust between a leader and follower (Schraeder et al., 2014).

There is a lack of literature on leadership and customer value creation (Toytari, 2015). Suriyankietkaew (2016) linked leadership style to customer satisfaction, quality of

service, and transformational leaders' influence on employees to innovate customer satisfaction and service quality. The leader influences the employee to make the customer satisfied through service quality, resulting in better company financial performance (Suriyankietkaew, 2016). Toytari (2015) stated that a company's attention to creating customer value can lead to competitive advantage. Suriyankietkaew observed that leadership styles can influence increased and productive employee-customer engagement during periods of business instability. Toytari underscored a check on value creation (sales force training, leadership strategic entrance at close of sales) to avoid exceeding potential profitability.

Literature is replete with customer-oriented value creation and with value capture's delivery value through systems including technology and leadership in the organizational environment (Anantadjaya, Nawangwulan, Pramesty, & Gunawan, 2015; Baden-Fuller & Haefliger, 2013). Anantadjaya et al. (2015) found that leaderships' influence on value capture using innovation positively affected employee brand equity. Employee brand equity, in turn, affected customer loyalty using word-of-mouth testimonials (Anantadjaya et al., 2015). Transformational leadership positively influenced employee internal branding to serve customers' needs and expectations, resulting in customers' positive word-of-mouth testimonials (Anantadjaya et al., 2015).

Business model choice, timing, and price affect the effectiveness of technological innovations as measured by profitability, including value creation and value capture and leadership (Toytari, 2015). A two-sided business model designed to link a company's products with advertisers and customers with each other, creates value capture and value

creation, especially in times of disruptive technology emergence on the market (Toytari, 2015). A company that captures and uses the disruptive innovation should benefit from competitive advantage creation. However, Rexhauser and Rammer (2014) stated that a company's environmental innovation may not contribute to its profitability performance, although the company might gain the competitive advantage, but lose due to externally induced variables, such as regulations.

Barriers to competitive advantage existed when Ghanaian construction industry consultants could not compete due to barriers from external force changes, such as governmental regulations, changing policies, rapid technological disruptions, and financial fluctuations from innovation costs (Owusu-Manu, Quaigrain, & Edwards, 2015) Internal environmental stability was required to manage innovation, such as moderating risk, designing a flow of communication, encouraging creativity, and finding funding opportunities for research and development (Owusu-Manu et al., 2015).

Innovation and entrepreneurship occur with collectively unified cultural values (Peter & James, 2017). Shanghai, China, is an exemplar of a product for innovation, as Peter and James (2017) proffered two types of entrepreneurial economic growth strategies, one-way linear innovation, and intersectional innovation. Peter and James reasoned that a one-way linear innovation is building on an innovation through improvements, such as the automobile. Intersectional innovation in entrepreneurship is an inherent change that causes a paradigm shift in practices, the business environment, and short-term goals. The result is opportunities for new business models, a culture of

innovation, and willingness to take risk with respect to existing environmental stiffness (Peter & James, 2017).

Contextually, 21st century digital and global leadership styles reflect creativity, competence, skills, knowledge, courage, ethics, and the ability to interact with multicultural persons virtually and in co-locational sites (Gandolfi & Stone, 2017). The strategic leader demonstrates creativity by providing vision and setting strategies with business modelling to gain sustainable competitive advantage by influencing internal and external stakeholders (Hoyes, 2014; Northouse, 2016). Hoyes (2014) stressed that leaders and followers should be able to see issues clearly to generate new ideas antecedent to innovation.

A global business environment is built on virtual teamwork; virtual teams need to experience trust in the leader who sets directions through fairness, empathy, justice, and by providing resources to achieve success (Guinaliu & Jordan, 2016). Guinaliu and Jordan (2016) found a positive relationship between the attractiveness of the leader and the virtual team's reception of the trusted leader's message, especially from a transformational leader. Virtual teams, also known as distributed or dispersed teams, face issues of trust within the team. To increase trust and minimize conflicts, electronic profiles of team members should be shared. Windeler, Maruping, and Robert (2015) conducted tests using E-profiles. Windeler et al. found that shared understanding minimized task conflict, leading to team effectiveness. Team effectiveness decreases during relationship conflicts but has no effect on shared understanding.

Multiculturalism is a characteristic of the global business environment. Leaders of multinational corporations, supply chains, and call centers must observe cultural beliefs, mores, ethics, and norms of local business relationships (Huang, 2016). The global leader must build trust by incorporating cultural intelligence for local human resource empowerment, relatability, and knowledge for effective performance in cross-cultural organizations (Coulson-Thomas, 2014; Solomon & Steyn, 2017). The global, multicultural leader must exhibit business harmony through empathy, expertise, and cultural competence in the work environment (Huang, 2016).

Ethical behavior in corporate boards and senior corporate leaders sets the tone for managing the image and culture of the corporation. Corporate boards look at the organizational big picture within a broader macro scope for sustainability or long-term life of the company. Coulson-Thomas (2014) presented a case for corporate sustainability based on corporate culture to minimize risks of unethical behavior. The opening decade of the 21st century was fraught with unethical behavior. From 1990-2014, corporations collapsed due to collusion between the chief executive officer and the chief financial officer (Abid & Ahmed, 2014). There is a trend away from unethical behavior in organizations. Demonstrations of unethical behavior resulted in poor corporate performance from financial losses due to greed, reputational damage, safety issues, and loss of customers (Askew, Beisler, & Keel, 2015). Senior executives in organizations were charged with falsification of accounts, embezzlement/theft, and fraud (Abid & Ahmed, 2014). Abid and Ahmed (2014) reported 83% of company collapses yielded 72%

of cases in which key operators who faced criminal charges ended in imprisonment; some executives faced pecuniary penalties.

Reflecting on the 21st century business environment, observers can see innovations needed for collaborative, multicultural organizational performance. Corporate image is a trend. There is a trend to baseline corporate ethical behavior by reinforcing corporate values, such as transparency and performance improvement (Coulson-Thomas, 2014). Baseline is grounded in corporate policies, job expectations, performance targets, and behavior of respect and behavior appropriate to ranking. Ethical behavior includes methods of recruiting and retaining human capital. Typically, the office of personnel management (OPM) uses an approach based on data, innovation, and collaboration. OPM uses a strategy called recruitment, engagement, diversity, and Inclusion.

OPM relies on data-based information for decisions. The OPM uses technological innovation for in-depth recruitment in communities and for retraining employees. OPM recruits from partnerships, such as nonprofit organizations, universities, and colleges to develop employees who are representative of local communities. Diversity in ethnicity, gender, and education are reflective in colocation and virtual teams. OPM promotes training and senior management mentorship and a strategy to create teams for different situations (Ketter, 2015). Lam (2015) promoted female gender in IT via support groups that provided encouragement, inspiration to persevere, and professional networking. Lam found that there is inequity in pay against females for the same work of male counterparts. Additionally, female employees and business executives need to balance

family and career, prompting the need for flexibility in the workplace and in work practices.

Researchers have shown a disparity between men and women in leadership. There are fewer than 5% of fortune 500 companies run by women in the United States (Catalyst, 2018). The American Association of University Women (AAUW, 2016) reported that in almost every sector in the government, education, nonprofit organizations, unions, and the private sector, there is a gender disparity where women comprise 25%-28% of senior-level positions. Abara and Negero (2018) concluded that women are marginalized from top-level decision making in public service administration due to a lack of empowerment. Alonso-Almeida and Bremser (2015) commented on leadership style differences and strategies between male and female decision makers during crisis in 132 travel agencies in Spain and found that educated decision makers used different strategies during a financial crisis. Female decision makers tended to use transformational and sustainable business strategies that benefitted internal and external stakeholders, while male decision makers' financial model was to lay off some of the workforce and share extra duties amongst remaining staff (Alonso-Almeida & Bremser, 2015).

Race and ethnicity are discriminants among paid senior management: White men, followed by Asian men, are at the top the hierarchy of leadership, then white women, Hispanic women, followed by African American women in the private sector (AAUW, 2016). The EC (2012) found a similar profile of women in senior-level positions. The EC reported that 34% of corporate boards in 10-member countries had no female

representation in 2010, although qualified women were available. The EC set a goal of 30% female representation on corporate boards by 2015, and 40% by 2020 checked by self-regulation instead of external regulations.

Women in leadership were perceived as not showing confidence to lead, nor did they inspire other women to be empowered to senior leadership by undergoing training (Abara & Negero, 2018). The EC (2012) found that more than 75% of male respondents had low confidence in female leadership, and 68% associated females with family duties as the reason for low female corporate leadership participation. Anderson et al. (2015) found that cultural, gender, and stereotypical biases existed in performance evaluations of female leaders and hypothesized three strategies to overcome implicit and explicit biases: when implicit bias decreased, female leaders could get a less biased performance evaluation while high external biases led to bias in female leaders' performance evaluation. Therefore, female leaders face implicit and explicit biases in performance evaluations based on cultural, gender, and stereotypical biases. Some female leaders subsequently displayed low confidence in themselves.

The trend in multiculturalism management is to select leadership that is adaptable and authentic. Zaldivar (2014) wrote that organizations with cross-cultural and intercultural communications need adaptive leadership with skills in listening, accountability, and authenticity. As interculturalism and diversity are incorporated into organizational dynamics, leaders need to be authentic and appreciative, listening to stakeholders through self-awareness, social awareness, and cultural awareness (Zaldivar, 2014). Accountability in adaptable leadership is another trend in multicultural

management. Accountability refers to how a leader acts as an individual at the company and at the national level. Zaldivar iterated that at the individual level, the leader is concerned with self-management; at the company/group level, the adaptable leader is concerned with relationships, and at the societal level, the leader is multiculturally competent. Businesses are dependent on technology for speed in communication and information flow. Conflicts in tasks and relationships can be mitigated though technological innovation. Stapel and Schneider (2014) proposed FLOW, a mapping system to team awareness and multidirectional and multisite information flow. Task conflicts can be resolved though the specificity of written directives, while relational conflicts require in-person trust relationships based on visual cues (Windeler et al., 2015). Trends in multicultural management are headed toward leaders of global organizations leading distributed or multicultural teams.

Certain leadership characteristics are significant when leading multicultural organizations. Authenticity, inquiring with appreciativeness of others' culture, actively listening, being mindful of the mental and physical images being created during interaction, and being mindful of an individual's own bias can mitigate conflicts and build trust (Zaldivar, 2014). Idealized influence and inspirational motivation might impact trust-building (Bass, 1999). Coulson-Thomas (2014) argued for ethical leadership to encompass corporate values, such as accountability, transparency, sustainability, and change management. In transformational leadership, Bass (1999) proposed idealized influence and inspirational motivation to enhance trust.

Clear communication is a key to success (Stapel & Schneider, 2014). Adherence to policies that are fair and open, human capital recruitment, engagement, diversity, and inclusion should be reflective of communities served to reflect positive social change (Ketter, 2015; Lambert, 2016). Networking, flexibility in work practices, and balanced work/family life contribute to individual and team success (Lam, 2015). Boughzala and de Vreede (2015) proposed a model for collaboration to test a company's collaboration maturity. Boughzala and de Vreede (2015) found the model of collaboration was based on individual goodwill of individuals willing to share knowledge and resources. Boughzala and de Vreede showed the model flawed when asymmetry existed between locations. Coordination rather than collaboration occurs when collaboration is imbalanced between responsibility and authority.

Team performance is enhanced through collaboration grounded on trust. Policies and programs must be followed to build trust and minimize process, task, and relationship conflicts (Korovyakoskaya & Chong, 2016; Lambert, 2016). Hain, Johan, and Wang (2016) found that trust variations occurred in venture capitalist relations where institutional trust was found in developed economies, but relational trust was found emerging economies. The leader must understand trust variations to mitigate multicultural and geographic distance (Hain et al., 2016). Ardoin, Gould, Kelsey, and Fielding-Singh (2014) found that leadership styles shifted from trust and standardized leadership theory. Ardoin et al. (2014) found a collaborative, bottoms-up, learning-facilitation style of leadership more appropriate to environmental management.

Leadership Styles

Leadership researchers examined leadership styles based on leaders' skills, behavior, trait, personality, direct relationship between leader and follower, contingency exchange, shared leadership, transactional leadership, and transformational for effective leadership (Choi, Kim, & Kang, 2017; Northouse, 2016). An effective leadership style that is either democratic, autocratic, or laissez-faire affects organizational response from employees through (a) turnover, (b) retention, (c) commitment, (d) employee well-being, (e) increased customer value creation, (f) organizational productivity and performance, (g) job satisfaction, and (h) leadership trust (Fiaz, Su, Amir, & Saqib, 2017; Lewin, Lippitt, & White, 1939; Ronald, 2014; Yang, 2016).

According to the trait style, leaders are born with innate capacities to lead primarily by the leader's personality (Northouse, 2016). Trait leaders may lack the capacity to support a learning environment for a team or group of followers (Northouse, 2016). Leadership traits are antecedent to other leadership styles based on the leader's distal (personality, cognition, and motives) and proximal attributes (problem-solving and social skills, and tacit knowledge) (Clack, 2017). The leadership trait style shares attributes with the skills style of effective leadership, such as the distal and proximal attributes (Northouse, 2016). With respect to leader personality and autocracy, Lewin et al. (1939) noted a relationship between autocracy, aggression, and repression by followers who responded favorably to a democratic leader.

Leader-member exchange (LMX) theory builds on process attributes between the leader and followers (Northouse, 2016). LMX is the process of development of the

dyadic work relationship between a leader and each follower with a sense of duty (Nie & Lamsa, 2015). In a global business environment, leaders must stress a cultural aspect on the organization. Nie and Lamsa (2015) found that in China, Western business leaders needed to reciprocally acculturate Chinese work value of *guanxi*. Guanxi is embedded in Confucianism, a Chinese belief system that seeks harmony in relationships between people and between people and the environment (Nie & Lamsa, 2015). Guanxi is an exchange in relationships, making guanxi compatible with LMX in the closeness between a leader apt to inspire and support, while the follower performs the expected dutiful role (Nie & Lamsa, 2015).

Transactional leadership style has no effect on follower creativity nor learning in educational facilities (knowledge-based), although there is a positive relationship between male gender and transactional leadership contingency reward (Ebrahimi, Chamanzamin, Roohbakhsh, & Shaygan, 2016). Ebrahimi et al. (2016) found a positive relationship between employees and managers who exhibited care, cooperation, and defense of employee rights, which are qualities associated with transformational leadership. Transformational leaders make employees feel empowered, mentally involved, and interactive with fellow employees for improved behavioral outcomes (Aydogmus, Camgoz, Ergeneli, & Ekmekci, 2018; Jauhari, Singh, & Kumar, 2016; Jyoti & Bhau, 2015).

Transformational leadership. Transformational leadership style can be contrasted with various leadership styles because each style focuses on a different dimension of leadership. Transformational leadership is characterized by leaders

empowering followers using motivation, charisma, influence, self-sacrifice, and individualized consideration to accomplish goals for the overall good (Choi et al., 2017; Copeland, 2016; Effelsberg, Solga, & Gurt, 2014; Northouse, 2016). Burns (1977) proposed that a transformational leader presents a vision that inspires followers to act toward accomplishment beyond individual self-interest and external reward. The individual follower will act for group goals while motivating other followers to do likewise (Bass, 1999; Burns, 1977).

Although transformational leaders are adept at organization-leader mutual selflessness, change management, and multiculturalism, some researchers have been critical of transformational leadership styles. Andersen (2015) contended that Burns should have used the term subordinates instead of followers because of religious and political connotations and that managers have no followers but rather subordinates. Yukl (1999) expressed that transformational leadership focused on emotions and values. Yukl discussed ambiguity in idealized influence and that leader-group or leader-organization influence is not dyadic, omission of behaviors (inspiring, developing, and empowering) disable effective leadership, there is bias toward the leader by ascribing hero status, and there may be unchecked charismatic leader influence. McCleskey (2013) suggested employing measurements, assessments, and intervention mechanisms to overcome abuse in charismatic influence and follower trust.

Transformational leadership multidimensions (charisma/idealized influence, inspirational motivation, individualized consideration, and intellectual stimulation) and the Big 5 personality traits (neuroticism, extraversion, openness to experience,

agreeableness, and conscientiousness) were examined to assess the effects on leader performance (Deinert, Homan, den Boer, Voelpel, & Gutermann, 2015; Emerald Publishing Group, 2014). Correlating 58 meta analytic reviews, Deinert et al. (2015) found that inspirational motivation has the strongest influence on leader performance, while idealized influence had the least. Of the big traits, neuroticism had a negative impact on leader performance. Deinert et al. supported prevailing research. Further, Deinert et al. found that leader performance impacted organizational functioning. A relationship exists between transformational leadership idealized influence, individual consideration and leadership effectiveness (Louw, Muriithi, & Radloff, 2017).

Charisma/idealized influence. The transformational leader incorporates attributes of personal power to get things done, determination to see actions to completion, and aspiration of success (Savovic, 2017). Employees or followers respond by following directions with trust, pride, and respect for the charismatic leader. Savovic (2017) found charismatic, transformational leadership positive for change management in a post mergers and acquisition retail business in Serbia. Mittal (2015) studied the cultural aspect of charisma and leadership with respect to cross-cultural open and closeness (tightness) and individualism and collectivism. Mittal (2015) found that charismatic leaders prefer individualism in an open culture; the individual is encouraged to excel, and the charismatic leader is a risk-taker from an expert knowledge power base. Mittal found that in a closed/tight culture where the group or collective is promoted, transformational leadership superseded other leadership styles by elevating group goals and empowering individuals for a collective whole. Unchecked influence in charismatic leaders due to

narcissism, power abuse, self-promotion, and self-exaltation (over core values, policies, procedures, and followers) is dangerous for organizational survival and derailment (Hughes & Harris, 2017; McCleskey, 2013).

Inspirational motivation. Burns (1977) proposed inspirational motivation as a characteristic within the transformational leader that causes followers to strive toward the vision, rising above self-interest. Burns's idea of inspirational motivation incorporated Maslow's theory of self-actualization so that the follower acts for intrinsic rewards for the good of the group goal. Bass (1999) noted that the type of follower who responds to inspirational motivation tends to be altruistic, conscientious, courteous, apt to display civic virtue, and encourage same in cultivated followers. Inspirational motivation contrasts with transactional leadership in that transactional leadership style leaders are motivated by a quid pro quo contingency reward, an external reward, or an exchange or promise (McCleskey, 2014).

Inspirational motivation and follower are linked through follower engagement and psychological safety (Burch & Guarana, 2014; Hayati, Charkhabi, & Naami, 2014). Burch and Guarana (2014) studied 280 full-time employees to test transformational leadership and LMX on follower engagement. A positive reciprocal relationship exists between leader and follower engagement with organizational commitment (retention) and organizational citizenship (Burch & Guarana, 2014). LMX and follower showed little engagement (Burch & Guarana, 2014). Hayati et al. (2014) studied 240 nurses using a descriptive cross-sectional design for work engagement and transformational leadership using the multifactor leadership questionnaire developed by Bass and Avolio in 1991.

Hayati et al. showed that when transformational leaders lead by example and inspire followers/employees to take risks in their job or task for the organizational goal, employees feel empowered, psychologically safe, and satisfied with the job. The work environment moderates between leadership and employee work engagement (Carasco-Saul, Kim, & Kim, 2014).

Inspirational motivation is an aspect of transformational leadership that imbues follower commitment through a shared vision (Northouse, 2016). The leader's inspirational motivation of a shared vision through clear communication generates enthusiasm for followers; work engagement through dedication, vigor, and absorption to overcome work challenges; job satisfaction; and commitment and organizational identification (Effelsberg et al., 2014; Savovic, 2017; Yang, 2016). Yang (2016) studied the effectiveness of transformational leadership for leaders' behavior based on proximal-distance mediation of 341 service personnel in Taiwan in 2011. Yang found that leadership trust and change commitment influenced job satisfaction through team cohesiveness of mutual common interest and goals. Productivity increased when leaders exhibited transformational leadership skills (Vatankhah et al., 2017). However, individuals' trust in the team did not lead to team trust in improving job satisfaction (Braun, Peus, Weisweiler, & Frey, 2013). Mencl, Wefald, and van Ittersum (2016) tested interpersonal skills and work engagement effect on leaders and managers and found that transformational leaders use political skills to improve leaders' job satisfaction. For lower-level managers, Mencl et al. (2016) found that political and emotional skills plus work engagement contributed to job satisfaction. Therefore, a leader's inspirational,

motivational style can lead to followers' job satisfaction, work engagement, and commitment.

Individualized consideration. Mentorship is the key characteristic of individualized consideration, offering care and support by exhibiting empathy and listening skills from the transformational leader toward the follower (Northouse, 2016; Orabi, 2016). Employees' needs and care feature prominently in the relationship between the leader and follower (Hayati et al., 2014). Jayakody and Gamage (2015) studied the leadership style and leadership effectiveness in lectures viz-a-viz emotional intelligence and found that a negative relationship existed between emotional intelligence consisting of self-awareness, social relationships, self-management, and relationship management with leadership effectiveness and transformational leadership style. Jayakody and Gamage's (2015) conclusion differed from previous findings. The difference may have been due to selection of academic heads in Sri Lanka based on seniority rather than transformational leadership style, showing heterogeneity in the procedure.

A negative relationship exists between emotional intelligence (social skills and empathy) and effective leadership (Khan, 2015). Khan (2015) reported a possible relationship between emotional monitoring and management with idealized consideration. Orabi (2016) found that individual consideration, inspirational motivation, and intellectual stimulation contributed to organizational performance significantly. Individualized consideration is a positive influence on individual and organizational performance.

Intellectual stimulation. Intellectual stimulation is the factor in transformational leadership that stimulates followers' creativity and innovation to solve organizational processes, products, and issues (Deichmann & Stam, 2015; Northouse, 2016; Qu, Janssen, & Shi, 2015). Qu et al. (2015) stated that followers' encouragement to look at situations differently led to an inquiry of the fundamental processes and procedures when followers identify with the leader and feel safe in an open environment.

Organizations' ideation programs are used to solicit ideas or suggestions from employees and customers for sustainability (Deichmann & Stam, 2015; Hoyes, 2014) and internal and external social capital for competitive advantage (Chen, Zheng, Yang, & Bai, 2016). Deichmann and Stam (2015) found a positive relationship for leadership commitment, but not necessarily for organization-driven ideas. Chen et al. (2016) surveyed 90 Chinese leadership teams using structural equation to test leadership relationships with followers internal and external social capital. Internal social capital is characterized by trust, cohesion, access to information, and knowledge (new and old) (Chen et al., 2016). External social capital refers to relationships and networks external to the organization (Chen et al., 2016). For example, leaders have referent power and political skills to contact to government, suppliers, and other high-level networks to enhance organizational innovation (Chen et al., 2016). Chen et al. found that leadership does influence internal and external follower social capital for innovation.

An atmosphere of openness, trust, ability to speak up, and less fear to make mistakes is required for creativity and innovation (Hoyes, 2014). Hoyes (2014) suggested proactive training sessions with participatory opportunities to observe, plan, decide, and

act. Training sessions could be the stimulus for organizational unity to determine external threats or weakness to the organization's sustainability (Szekely & Strebel, 2013). Innovation requires organizations to adopt new ways of thinking that include integration, partnerships, and leadership with a vision that inspires, motivates, stimulates intellectual ideas for innovative solutions or new ideas, and exhibits individualized consideration (Ragavendran, 2015; Szekely & Strebel, 2013). Circular economy, ecoefficiency, and systems-transformed supply chains are paradigms necessitating employees' selfless involvement for organizational success (Effelsberg et al., 2014; Gritzo, Fusfeld, & Carpenter, 2017; Szekely & Strebel, 2013). A transformational or transactional leader's gender affects organizational learning and follower creativity (Ebrahimi et al., 2016). Ebrahimi et al. (2016) found no significant relationship between transactional leadership and employee creativity. However, there was a relationship between transactional leadership, employee creativity and managers, and male managers. A positive relationship exists between transformational leadership, management, and organizational learning (Ebrahimi et al., 2016; Nguyen, Mia, Winata, & Chong, 2017).

Transition

Section 1 contained the problem statement, purpose statement, nature of the study, research question, interview questions, conceptual framework, operational definitions, assumptions, limitations, delimitations, the significance of the study, and a literature review about the business problem.

Section 2 of this study comprised an overview of the steps for conducting the proposed research study. I restated (a) the purpose statement, (b) introduced the role of

the researcher, (c) participants, (d) the research method and design, (e) population and sampling, (f) ethical research, (g) data collection instruments, techniques, and analysis, (h) data organization, and (i) reliability and validity. I discussed my role as the researcher including sampling, data collection, and organization plus analysis. I included specific justification regarding the choice for the research method, design, sample size, data collection tool, and content analysis in Section 2. I explained my choice of exploratory multiple case study with six participant decision-makers in six waste management companies. I discussed eligibility for participation, and data collection using semistructured interviews with open-ended questions. I expounded on validity and reliability to ensure repeatability and internal consistency. In Section 3, I presented findings from data collection along with analysis. Included in Section 3 were an application to professional practice, implications for social change, as well as recommendations for action and future research. I also presented reflections and a conclusion of the study.

Section 2: The Project

Section 2 consisted of a restatement of the study purpose, the role of the researcher, participants, research method, and design. Discussions included data saturation, population and sampling, ethical research, data collection, technique, and, analysis. I also provided additional discussion on study validity to support rigor.

Purpose Statement

The purpose of this qualitative, explanatory multiple case study was to explore the strategies some business leaders in waste management businesses use to reduce operational costs. The target population consisted of six leaders from waste management organizations in Monrovia, Liberia, who have implemented operational cost strategies that reduced costs and contributed to profitability. Waste management leaders may use the results of this study to develop programs that may use recycled and reengineered materials to reduce operational costs, save the environment, and improve the health and wellbeing of customers in their communities. Waste management leaders could use the findings of this study to establish zero waste-to-landfills, which may improve communities' environmental disease burden and improve health factors. Waste management leaders may use the findings from this study to improve operations that support employment creation for local citizens.

Role of the Researcher

A qualitative researcher is the instrument of data collection and analysis. The researcher presents evidence of an investigation from a personal lens (Bourke, 2014). The researcher's findings and conclusions evoke readers' trust in the research, making

researchers crucial to the research process (Sutton & Austin, 2015). The qualitative researcher must mitigate bias so that the data collection, analysis, findings, and conclusions are dependable, reliable, and valid (Leung, 2015; Saunders, Lewis, & Thornhill, 2016). A qualitative researcher must be cognizant of personal reflexivity or biases that might inhibit gathering participants' feelings, thoughts, and perceptions of a lived experience (Mojtahed, Nunes, Martins, & Peng, 2014; Sutton & Austin, 2015).

My role in the study included choosing the research method, design, selecting participants from waste management businesses in Liberia, collecting and analyzing the data, and managing the research process. Mojtahed et al. (2014) advocated the use of a decision map as an instrument to support the qualitative researcher and interviewee collaboration in a way that explores interpretation and meaning to questions and responses. A researcher can use a decision map to sketch emergent themes from the review of the literature and phenomenon under question while he or she asks the interviewee to fill the decision map about the emergent themes. There are limitations to using the decision map as an instrument because of its proclivity to influence the interview, consume interview time, take away from the face-to-face interaction between researcher and interviewee, and limit exploration of in-depth pursuit. Although Mojtahed et al. (2014) advocated a decision map as an instrument, I was the data instrument.

Human subjects participated in the research; therefore, I observed strict ethical protocols. National ethical guidelines exist in many countries to protect human subjects and to provide guidelines and procedures (Gallagher et al., 2016). The U.S. Departments of Health, Education, and Welfare oversee The Belmont Report (1979) whose principles

provide guidance on human subjects in research in the areas of respect, beneficent treatment, and justice. The Belmont Report aims at respectful, ethical treatment of research subjects with the provision to seek justice should the subjects feel discordance during the research process. Walden University's Institutional Review Board (IRB) provides oversight of research regarding human subjects. The IRB consists of faculty and staff who ensure students' research meets university standards. Once the student researcher obtains IRB approval to collect data, the student is authorized to collect data and recruit participants (Walden University, 2016). Liberia has an IRB. I was required to apply for approval and defend the doctoral study before the Liberian IRB. Walden University reviewed recommended changes' impact on justice, beneficence, respect for persons, and for substantitive change to the study, then approved the Liberian IRB recommendations as a research partner.

Confidentiality and respect should be customized to suit participants' comfort, privacy, and interactions with colleagues (Gallagher et al., 2016; Kara & Pickering, 2017; Killawi et al., 2014). Respect is inclusive of participants' age of maturity, emotional maturity based on senses and intuition, self-concept of a person's social environment, and emotional control (Gallagher et al., 2016; Roja, Sasikumar, & Fathima, 2013). The participants in this study were not children and the participants had attained maturity. The study participants were leaders of waste management businesses operating in [redacted], Liberia.

Informed consent is the process of protecting recruited participants' welfare and ensuring their willingness to participate in a study. Participants should receive full

information disclosure. Full disclosure information includes compensation, ethnicity, diversity, voluntary participation, participant self-decision, and participant understanding through written authorization evidenced by the signed consent form (Gallagher et al., 2016; Ssali, Poland, & Seeley, 2016). The Belmont Report (1979) has guidelines to respect participants' rights to privacy by including confidentiality and informed consent guidelines. I respected the participants' rights to privacy, treated participants with beneficence, and explained their options for justice should they feel they had been treated unfairly. I followed Walden University IRB's protocol of application and 40-question checklist upon research approval (Walden University, 2016). Liberia IRB initial submission did not require separate consent forms per its ethical guidelines for human research.

Personal bias mitigation is critical to capturing, analyzing, and presenting findings in a study (Baskarada, 2014; de Massis & Kotlar, 2014). I overcame my personal bias by documenting my observations in a journal during data collection and by audio recording the interviews. Documenting in a journal helped me see trends of my involvement to make corrective adjustments if needed. I used method triangulation through various data collection means to help mitigate personal bias, as suggested by Carter, Bryant-Lukosius, DiCenso, Blythe, and Neville (2014). I used method triangulation during data collection from interview sources, a journal, and an audio recording device.

Interpretive interview questions should be structured to get the lived experiences from the participants to answer the research question. The interviewer should ask introductory questions, probing questions, and feedback questions to clarify or to refine

answers (Castillo-Montoya, 2016; Khan, 2014). My strategy was to use purposive population sampling in semistructured interviews with open-ended questions that aligned with the research question. The interview protocol I used consisted of alignment between the research question and interview questions; probing, open-ended conversational questions; and clarifying questions to refine answers.

Participants

In qualitative research, the participants should meet eligibility criteria through a decision-making process or selection strategy with ground rules for exclusion (Guetterman, 2015; Mabikwa, Greenwood, Baxter, & Fleming, 2017; Pol et al., 2017). Researchers set predetermined eligibility criteria to help mitigate personal and selection bias while providing a framework for the exclusion of recruits (Vining, Salsbury, & Pohlman, 2014). Newington and Metcalfe (2014) found that recruits were motivated to participate due to altruism, ease of logistics, ease of participation, and removal of language barriers.

Researchers use purposive sampling and snowball sampling techniques to strategize participant recruitment. Purposive sampling is the selection of a participant to gain an understanding while snowball sampling is a referral technique to locate hard-to-find research prospects (Etikan, Musa, & Alkassim, 2016; Valerio et al., 2016). Research participants should be homogeneous so that all participants can answer the research question for meaningful data analysis (Ponelis, 2015; Sargeant, 2012; Yusuf, Adams, & Dingley, 2016). Recruits who participate in a study should be able to help the researcher understand a phenomenon (Sargeant, 2012). Managers or decision makers are more apt to

respond to in-person, face-to-face interviews rather than to impersonal surveys (Saunders et al., 2016).

I included four eligibility criteria to partipate in this study. A participant should be a strategic decision maker in a waste management business. The decision maker should be at least 18 years of age, having reached the age of majority. The participant should be homogeneously qualified and recognized as a decision maker in his or her waste management business. A participant's waste management business should be in an urban setting. This case study was bounded in an urban setting to explore urban waste management trends and challenges. I recruited leaders of waste management businesses in [redacted], an urban setting in Liberia. I selected the recruits purposively and by snowball sampling, based on homogeneous ranking such as chief executive officers; managers; or designated leaders who made strategic decisions, were at least 18 years of age, and whose waste management business was in an urban setting.

Researchers devise strategies to gain access to participants to conduct their fieldwork (Cunliffe & Alcadipani, 2016; Kondowe & Booyens, 2014). Gaining access is defined as being able to enter an organization's environment to answer a research question, establishing ground rules for the extent to which the researcher can handle documents or information, and outlining limitations regarding contact with organizational personnel and maneuverability in physical spaces (Cunliffe & Alcadipani, 2016). Ponelis (2015) found that using purposive and snowball sampling helps researchers to recruit participants who can contribute to an in-depth exploration to answer the research question. There are challenges to gaining access, such as relational, personal,

sociocultural, language difficulties, and organizational resistance to scrutiny by an outsider (Fjellström & Guttormsen, 2016). A researcher needs to be strategic, act ethically during participant engagement, and update access privileges (Biritwum et al., 2017; Fjellström & Guttormsen, 2016; Kondowe & Booyens, 2014).

Immersion is a strategy to gain access and trust when working with participants' schedules, availability, and access to the interview site (Biritwum et al., 2017; Cunliffe & Alcadipani, 2016; Kondowe & Booyens, 2014). Fjellström and Guttormsen (2016) found that keeping a journal containing notes on access challenges and ease enhances research knowledge. I immersed myself in the organizations while maintaining a journal on access privileges, interpersonal relationships, and pertinent issues encountered.

The waste management association is an organization of waste management businesses in [redacted]. The waste management association should maintain a directory of waste management businesses whose leaders can be contacted. I contacted the waste management association for a list of waste management business leaders who could be contacted via telephone to negotiate site visits with them. I used ethical strategies and skill sets such as negotiation, communication, and trustworthiness to build relationships for traditional, face-to-face, in-person, and physical access to a participant's business. During the face-to-face visits, I explained the voluntary nature of participation in the study, explained the informed consent form, received a commitment to participate in the study, and explained that withdrawal from the study could occur at any time. In addition to gaining trust and making the recruit feel at ease, I used the snowball referral recruitment technique to find possible research recruits.

Eligible participants in a study should be able to help the researcher answer the research question, provide relevance and rigor for research applicability, and contribute knowledge to the research (Oke & Kruijsen, 2016; Ponelis, 2015; Toffel, 2016). I recruited six participants as research subjects in this multiple case study. Each participant's response contributed to answering the overarching research question, supported the exploration of the conceptual framework, and led to substantive data analysis.

Research Method and Design

A research method is a systematic process with rules and procedures for scientifically conducting a study to produce a credible, valid result (Oun & Bach, 2014). Champlin, Mackert, Glowacki, and Donovan (2017) found that qualitative researchers use the exploratory nature of the method to find information and meaning hidden in the participant's response to the research question. Where the literature or scientific study is negligible or nonexistent, qualitative research is a viable method of exploration because its lens can be epistemological; to know how to know something and its ontological meaning, the study is placed in the context of reality (Ellis & Clark, 2015). Because there is scant literature related to my study topic that occurred in the natural setting in Liberia, the qualitative method was suited to this study.

The qualitative research method is a systematic process for exploring a phenomenon in its natural setting; the research design involves the methodology or strategy for data collection and analysis conducive to the study (Byrne, 2017). I selected the qualitative method to focus on the participants in their natural setting to get the

meaning of their responses conveyed. From the participant responses, I developed themes from which analysis might answer to the research question. I selected a case study design to answer the research question on operational costs strategies leaders in waste management businesses use to reduce costs.

Research Method

I used the qualitative method in this study to seek answers to the research question holistically, in the natural setting of the phenomenon, where participants could meaningfully respond to inquiries (Byrne, 2017). The research question to be answered is the following: What operational cost strategies do business leaders in waste management businesses in Liberia use to reduce costs? Because existing literature and research studies may be lacking in the natural setting of this study, I chose a qualitative method over the quantitative or mixed method.

Researchers may select from the mixed methods, qualitative, or quantitative methods (Almalki, 2016; Haq, 2014). The qualitative method is suitable for a study when an explorative approach is needed to understanding lived experiences in a constructivist paradigm for data collection and analysis (Akeju, Wright, & Maha, 2017; Haq, 2014; Webster & Jarosinski, 2017). A constructivist paradigm for data collection and analysis refers to a researcher's use of a participant's viewpoint. A participant's viewpoint includes gathering data using inquiry or discussing while observing responses, coding for thematic analysis, and triangulating themes to arrive at a conclusion (Akeju et al., 2017; Haq, 2014; Webster & Jarosinski, 2017). Ciravegna, Lopez, and Kundu (2014) argued that qualitative findings can induce theory to explain the phenomenon under study.

Qualitative researchers find small bits of non-numerical information about the phenomenon for processing toward finding a conclusion (Hofer, 2015). I used the qualitative method for this study.

Researchers use the quantitative method to answer a research inquiry by testing hypothetical variables against a theory to predict outcomes based on statistics or to determine causal relationships (Gerring & Cojocaru, 2016; Haq, 2014; Yilmaz, 2013). McCusker and Gunaydin (2015) simplified the quantitative method to answer questions about "how many" and "how much." The quantitative method was unsuitable for this study because my intention was not to investigate hypothetical or numerical data against a theory to predict outcomes based on statistics or to investigate causal relationships. The qualitative method is used to explore the lived experiences through semistructured interview questions from a participant's viewpoint to answer the research question in what, how, or why terms (McCusker & Gunaydin, 2015). I used the qualitative research method using open-ended questions in semistructured interviews to answer what and how questions, to explore the participants' viewpoint to answer my research question.

The research question should determine the research method for analysis and writing the findings (Petersen, 2011). Researchers use the mixed-methods approach to draw inferences from both in-depth qualitative and quantitative data collection, analysis, and findings (Doorenbos, 2014; Halcomb & Hickman, 2015). Consistency is needed when collecting data using a mix of quantitative and qualitative methods (Guetterman, Fetters, & Creswell, 2015). The mixed-methods approach requires an interdependence of quantitative or numerical data and qualitative experiential data to answer the research

question(s) with hypotheses to expand the breadth of inquiry (Guetterman et al., 2015; Schoonenboom & Johnson, 2017). The mixed-methods approach is supportive in health, behavioral, social, and human sciences where quantifiable evidence may be required to test hypotheses or to answer a research question. A systematic framework for data integration is needed to evaluate the research because few guidelines are known (Chen, 2017; Venkatesh, Brown, & Sullivan, 2016). The mixed-methods approach was not appropriate for this study because my intention was not to collect empirical data to draw inferences from quantifiable data, but rather to explore real-life situations with concluding thematic analysis. I used the qualitative research method.

Research Design

The purpose of this multiple exploratory case study was to explore the leadership strategies that business leaders use to reduce operational costs in waste management businesses. I selected a case study as the research design for my study to gain in-depth insight into a real-world phenomenon by answering what and how questions. I explored six multiple case studies using semistructured interviews with open-ended questions to get in-depth understanding of the real-world strategies that business leaders in waste management businesses in [redacted] use to reduce operational costs.

A case study is a unit for analysis bound by time and place (Yin, 2017). The nongeneralizable analysis derived from the case study design involves collecting data around interview questions within a context to explore an in-depth understanding about an issue from a participant's viewpoint (Harrison, Birks, Franklin, & Mills, 2017; Ponelis, 2015; Yin, 2017). The context can be case studies in the field of social science,

such as business, education, law, and urban planning (Harrison et al., 2017). The researcher as the data collector must extricate personal bias reflexivity so that the study is reliable and valid (Coldwell, 2017). Other qualitative research designs include narrative, phenomenology, grounded theory, and ethnography (Yin, 2017). Narrative, phenomenology, grounded theory, and ethnography were inappropriate for this study. A discussion of each of these designs ensues.

Researchers use an ethnography design to study a group or class of people longitudinally by living in their natural, everyday, cultural settings, collecting data from observation or by interviews. Medicine, anthropology, or sociology fields use ethnography to gain historical information (Rashid, Caine, & Helly-Goez, 2015). The researcher's reflexive bias and time consumption in the study can be a challenge for validity, time, and finances (Fusch, Fusch, & Ness, 2017; Hampton, 2017; Ibiamke & Ajekwe, 2017; Swinglehurst, 2014). The ethnography research design was not appropriate for this study because my immersion with the study participants did not involve living with the participants to understand the participants' feelings and group interactions. I used a case study design to collect data in a semistructured interview with open-ended questions asked of business leaders in waste management businesses.

Researchers use the phenomenology design to study how humans behave in their natural setting or their lived experience of a phenomenon while the researcher tries to bracket any preconceived knowledge about the phenomenon (Eddles-Hirsh, 2015; Padilla-Diaz, 2015; Sutton & Austin, 2015). I did not use phenomenology as a research design in my study because I was not studying business leaders' real-world experience

with waste management. I studied business leaders' strategies to reduce operational costs in waste management businesses by asking open-ended questions including probing for clarity in semistructured interviews.

Researchers might begin with a grounded theory or find a theory inductively while analyzing the data collected (Foley & Timonen, 2015; Peters, 2014; Saunders et al., 2016). Through different stages of comparative sampling, the researcher may uncover pieces of emergent data as codes to be categorized, inductively leading to a theory (Saunders et al., 2016). Three levels of coding require the researcher to look for recurrent themes. The researcher may code the themes, categorize the codes, then iteratively compare categories against theoretical samples leading to theoretical saturation (Peters, 2014). A narrative researcher uses language or figures of speech to assist in bringing the story to light (Bruce, Beuthin, Sheilds, Molzahn, & Schick-Makaroff, 2016; Megias, Garcia, & Arcos, 2017; Wang & Geale, 2015). Wang and Geale (2015) stated that narrative inquiry analysis involves (a) interaction that is personal and social; (b) story continuity of time in the past, present, and future; and (c) situates the story in a place or location of occurrence. A narrative design or grounded theory was inappropriate for my study in that the lens for knowledge transfer was neither personal storytelling nor inductively seeking a theory. I intended to answer strategy questions about what and how business leaders in waste management businesses reduce operational costs.

Data saturation in qualitative research is the point at which no new thematic information emerges, or where data become repetitious (Fusch & Ness, 2015; Hagerman & Wutich, 2017; van Rijnsoever, 2017). Each coded theme represents a piece of

information, and each piece of information must be coded at least once according to the contextual reason for the research (Morse, Lowery, & Steury, 2014; van Rijnsoever, 2017). Hagerman and Wutich (2017) stated that identifying inductive themes helps to achieve data saturation, although several interviews might be needed to elicit site-specific themes and multiple themes across (cross-cultural) sites. Hagerman and Wutich (2017) did not provide a specific number of interviews to attain data saturation. Researchers should consider spatial bounds in attesting data saturation along with qualitative themes (Morse et al., 2014). Spatial mapping to obtain data saturation was not a requirement in my multiple case study. This case study was bounded in [redacted], Liberia. I studied six purposively sampled, nonculturally ethnographed participants.

When a researcher cannot reach data saturation, the results may be subject to validity flaws. Little or no validity may prevent the replicability of the study (Coldwell, 2017; Fusch et al. , 2017; Morse et al., 2014). Although there is no prescribed number of interviews or participants to achieve saturation, the researcher's judgment may suffice (van Rinjsoever, 2017). I collected data until no new themes were obtained from the responses in semistructured interviews with open-ended questions to answer the research question.

Population and Sampling

Approximately six formal waste management businesses exist in [redacted], Liberia. There is limited research on waste management companies in [redacted]. The target population for the study included six formally established waste management businesses in [redacted]. The sample size for this exploratory, multiple case study

consisted of business leaders from each of the participating waste management companies. The criteria for selecting participants included (a) 18 years of age or older; (b) be a decision maker, such as a business leader, who was knowledgeable about the waste management business; (c) be homogeneous in a subset of the sample population by being a business leader; and (d) the waste management business was to be located in an urban setting.

Researchers use purposive sampling when the number of participants is small (Saunders et al., 2016). Researchers also use purposive sampling to explore units within a case using in-depth probing for rich data to answer the research question (Gelling, 2015; Yin, 2017). Researchers use other types of sampling techniques such as (a) theoretical sampling used mainly with grounded theory, (b) homogeneous sampling when there is similarity between samples, (c) critical case sampling to point out something significant, and (d) snowball sampling to get information on likely candidates for research participation (Gentles, Charles, Ploeg, & McKibbon, 2015; Saunders et al., 2016). Researchers use convenience sampling to provide ease of access to a participant, while nonprobability sampling is helpful when the sample selection is not random (Etikan et al., 2016; Newington & Metcalfe, 2014). I used the purposive, nonprobability sampling technique to select study participants. Due to the small population size, I supplemented sampling with snowball sampling.

In qualitative research, data saturation is the point at which no new themes emerge, or where repetition of data appears (Fusch & Ness, 2015). Researchers choose either of two types of data saturation techniques to help answer the research question

theoretical saturation associated with grounded theory, or thematic saturation used for other research designs (O'Reilly & Parker, 2013). Thematic data saturation is achieved when researchers ask probing questions that yield no new data or no new emergent themes for coding (Fusch & Ness, 2015). Scholars can use complementary data, such as handwritten notes from observations, data recorded on a device for transcription, and field notes that capture nonverbal behavior and the setting during the semistructured interview session to understand the participant's viewpoint (Sutton & Austin, 2015). Member checking is a tool used to check a participant's responses. Researchers use member checking to capture missed information or to give the participant the opportunity to enhance information (Simpson & Quigley, 2016). I employed a thematic data saturation technique using semistructured interview questions, complementary data, and member checking until neither new data nor new themes emerged to answer the research question for this multiple case study.

When conducting interviews, it is important that the participant be in a comfortable setting to be free to share information so that the interviewer gets the participant's meaning (Moser & Korstjens, 2017; Sivell et al., 2015). Cultural sensitivity should be observed when conducting interviews with Vietnamese participants (Nguyen, 2015). Cultural sensitivity includes cultural belief, mores, age, gender, social standing, saving face, giving eye contact, and giving token thank you gifts. Zhou and Miguel (2013) noted the concept of guanxi when attempting to access participants. Zhou and Miguel (2013) explained that guan means a barrier, but also a point of juncture, while xi means a link, meaning a link must be established to overcome the barrier. Hofstede's

cultural dimensions have applicability in the interview setting by observing power distance, individualism, gender, and uncertainty (Vasile & Nicolescu, 2016). To overcome cultural insensitivity, I built rapport by observing and responding to body language and reactions toward me. I humbly created distance by putting participants at ease, gaining their trust for their honest and full response in a semistructured interview with open-ended questions to answer the research question.

To answer the research question, I contacted at least six business leaders in waste management businesses in [redacted], with two business leaders from each waste management company in the sample if needed. I requested a face-to-face meeting for 45-60 minutes at a location convenient and comfortable for each business leader to answer open-ended questions in a risk-free, comfortable, and safe setting for a semistructured interview. The ideal location was suitable for the participant's sense of comfort and convenience.

Ethical Research

Ethical researchers are guided by rules for respect for persons, beneficence, and justice (Office of Human Research Protections [OHRP], 1979). Respect for persons means that participants are individual persons needing protection of their rights to (a) volunteer or withdraw from research, (b) privacy, and (c) be informed to be able to make independent judgment or decision. The OHRP refers to protections toward participants beyond dutiful requirements as beneficence, in addition to reducing risk to participants. The OHRP refers to justice as equal treatment for each participant.

Researchers at Walden University follow the OHRP guidelines. Researchers follow Walden University's application process, which includes the letter of invitation to participants, the informed consent form, and confidentiality agreement form. As a part of the Walden University application process, the IRB application is used internally between the university and the researcher. Upon IRB approval, I was assigned an approval number, 06-20-18-0526452, that has become a part of the study. After receiving IRB approval, I delivered the consent form to prospective participants. I explained the consent form and the research process to each participant so that the participant understood the research and the research process. After each participant indicated understanding the research and agreeing to participate, the participant was asked to sign the consent form. I also obtained approval from the Liberian IRB as a research partner to meet Liberian institutional review requirements.

Researchers need IRB approval prior to approaching participants and collecting data for research involving human participants (Gelling, 2016). Getting approval prior to participant contact will (a) mitigate harm to participants, (b) inform the participant about the research, (c) provide withdrawal information to the participant, (d) inform the participant of compensation for participation, (e) mitigate research bias, and (f) mitigate risk to the participant (Barker, 2013; Gelling, 2016; Jurate, Zivile, & Eugenijus, 2014; Swanson & Betensky, 2015). The informed consent form may include the invitation to participate, descriptive information about the research, the research procedure, voluntary participation, any expectation of payment for participation, risks and benefits, withdrawal

at any time, and the researcher's contact information. Before participant contact and data collection, I obtained Walden University's IRB approval.

A participant may accept the consent form which includes an invitation to participate in the research via e-mail or by personal delivery. A participant who understands the research process and the informed consent process can agree to participate voluntarily by signing a simple consent form (Beskow, Check, & Ammerell, 2014). A participant may withdraw at any time from a study (Thorpe, 2014). The participant wishing to withdraw may communicate with the researcher at the contact information provided. I safeguarded the participants' confidentiality by assigning codes to each participant and to any corporate information, such as financial statements, annual reports, and proprietary data. The consent form explained how I safeguarded participant information. No participant was offered incentives for participating in the research so that no bias on the research might occur, as suggested by Resnik (2013).

As the researcher, I delivered an invitation to participate, by a means convenient to the participant (see Appendix A). I met each participant at a location for the participant's convenience. I explained the research, the research process, and that no incentives would be offered for participation. Additionally, I agreed not to disclose confidential information formally or informally, or transmit or modify participant information. I agreed to uphold my responsibility long after the research ends, including (a) the 5-year period of safe data retention; (b) handling participant data lawfully; (c) signing the consent form, giving a copy to the participant, maintaining a copy for the research study; (d) reiterating confidentiality as agreed in the consent form; and (e)

included a statement of safe data retention for 5 years under lock and key that only I will have access to. After 5 years, I will destroy all data from all participants by shredding them.

Data Collection Instruments

In qualitative research, the right data collection instruments are critical when collecting data to answer the research question (Zohrabi, 2013). The researcher is a data collection instrument and mediator in the research process (Sanjari, Bahramnezhad, Fomani, Shoghi, & Cheraghi, 2014). Yin (2017) pointed out that the qualitative researcher should know the research case, understand the intention and fulfillment of the evidence, and be able to adapt to changes during the research process. As the expert for the research undertaken, the researcher must plan research protocols to answer the research question (Baskarada, 2014; Yin, 2017). The researcher's protocol lays out the research overview; identifies the researcher; and addresses data collection instruments, research processes, and report of findings (Baskarada, 2014; Castillo-Montoya, 2016; Yin, 2017). I was the primary data collection instrument for this study, and I adopted semistructured interviews with open-ended questions for my data collection.

Data collection and data analysis are gears that churn a research process (Oun & Bach, 2014). Qualitative research data collection instruments consist of the means to answer the research question using structured, semistructured, or nonstructured interview questions and field notes from researcher observations during data collection (Sutton & Austin, 2015; Yin, 2017). A qualitative researcher may use structured interview questions to narrow participant responses for responses to answer the research question, giving the

researcher control over the interview and responses (Christenbery, 2017). Scholars use semistructured and nonstructured interview questions to solicit rich, in-depth responses from the participants' viewpoints through probing questions in the case of semistructured questions or letting the respondent answer ad infinitum using nonstructured interview questions (Christenbery, 2017; Jamshed, 2014). I used semistructured interviews with open-ended questions as a collection tool to collect data and to probe respondents' answers.

Data collection instruments are used to collect evidence for analysis to answer the research question (Subramanian, Tangka, Edwards, Hoover, & Cole-Beebe, 2016). When a researcher uses standardized data collection instruments, such instruments help to support validity, reliability, and rigor in the research findings (Subramanian et al., 2016; Zohrabi, 2013). Validity is an indicator of truthfulness, accuracy, and trustworthiness that research findings mirror the collected data (Denscombe, 2014; Noble & Smith, 2015; Zohrabi, 2013). The purpose of reliability is to ensure that the same research results occur with repetition of tests or if the same results occur with different research instruments, such as using different researchers, because researchers are themselves data instruments (Denscombe, 2014). Rigor in qualitative research is established when a researcher subjectivity reduces bias so that textual qualitative data become trustworthy (Hadi & Closs, 2016). As the primary researcher, I ensured trustworthiness by member checking, data triangulation, comparative field notes, audio recordings, and use of secondary data for the data collection tool and for collected textual data.

The interview itself is a data collection instrument because the participant's voice, thoughts, and feelings can be captured (Alshenqeeti, 2014). Qualitative researchers use audio and/or visual recording devices as secondary data collection tools to assist the researcher, fill in gaps in the researcher's notes, and capture respondents' reactions and emotions. Sutton and Austin (2015) stated that audio recording devices assist qualitative researchers in collecting large amounts of field data that must be transcribed word-for-word. Researchers may also use archival data or company records as secondary data collection tools (Sutton & Austin, 2015). Although I used semistructured interview with open-ended questions as my primary data collection instrument, I also used secondary data collection tools as company records, archival data, observations and field notes, and recording devices to supplement information from data collection.

Data Collection Technique

A researcher may use data collection techniques or protocols to plan the research process in a systematic way (Ranney et al., 2015; Tong, Sainsbury, & Craig, 2007). Having a data collection technique helps the researcher to ensure clarity and language and to avoid gaps or lapses in the research process (Colorafi & Evans, 2016; Ranney et al., 2015). Researchers use the appropriate data collection technique, like a checklist, to identify the following: (a) the approach to participants; (b) describe how data will be collected; (c) under what conditions and where data will be collected; (d) identify procedures for probing responses to get rich, thick data; (e) arrange convenient follow-up times to check the data; and (f) remind the researcher to thank respondents for participation in the study (Ecker, 2017; Ranney et al., 2015; Ruark & Fielding-Miller,

2016). I followed the checklist that contains the interview protocol, making sure to introduce myself, the study, and obtain the participant's consent to audio record and take notes (see Appendix A).

As the primary data collection tool, the researcher strategizes how to answer the overarching research question when collecting data (Halcomb, 2016). Interview questions, focus groups, field notes, and observations are among a set of data collection techniques available to a researcher to answer the research question (Alshenqeeti, 2014; Jacob & Furgerson, 2012; Saunders et al., 2016). During the semistructured interview, when a researcher asks open-ended questions, the researcher may follow up by asking probing questions to draw out in-depth information from a respondent (Alshenqeeti, 2014; Castillo-Montoya, 2016). The researcher's ability to ask probing questions during the interview helps the researcher to actively listen to a respondent, simultaneously observing the respondent's demeanor, tone of voice, inflection, nonverbal behavior, and other noteworthy events (Oun & Bach, 2014). Grossoehme (2014) recommended that a qualitative researcher develop a risk plan should a participant become uncomfortable during the interview, whether the interview be face-to-face, by telephone, or by some electronic or written means. I used open-ended questions during face-to-face semistructured interviews to assess a respondent's comfort level. I asked probing questions to elicit rich, thick data from respondents to explore their feelings and meanings associated with each question. During each interview, I used a journal to capture observations about each respondent's demeanor, nonverbal behavior, interview site, and any other noteworthy event.

Qualitative researchers use structured, semistructured, and unstructured questions to gather data. A researcher may use structured interview questions to explore a narrow path of questions to answer the research question (Castillo-Montoya, 2016). Researchers use unstructured, open-ended questions to allow free-form responses ad infinitum until a topic is exhausted (Oun & Bach, 2014). Qualitative researchers use semistructured interviews to ask probing questions to explore depth, clarify, and share a sense of understanding with the respondent within the bounds of the research question (Crocker et al., 2014). I asked each participant seven prewritten, open-ended questions followed by probing questions to obtain primary data, in a semistructured interview, to answer the research question. The open-ended questions are documented in the interview protocol (see Appendix A). I also used smart phone audio recording devices, observations, field notes, and secondary archival data sources (i.e., company and industry records). I transcribed audio recorded data using a transcription service, but later found the transcription service could not transcribe verbatim Liberian vernacular, nor nuances nor innuendos. I manually retranscribed the interviews. I assigned codes to keep data and respondents' identity confidential.

Researchers should use checklists as data collection technique protocols to avoid missteps and cost overruns (Tong et al., 2007; Yakob & Ncama, 2016). Checklists serve as guideposts, so the researcher stays on track in terms of research tasks, schedule, and costs (Abara & Negero, 2018). Tong et al. (2007) developed a comprehensive, 32-item checklist for use in qualitative research. I used a modified Tong et al. checklist appropriate to this study to answer the research question.

A qualitative researcher can verify the data collected by using data collection tools, such as member checking and triangulation with data from other sources (Kornbluh, 2015; Simpson & Quigley, 2016). A researcher may present collected data interpretations and transcriptions to the respondent to validate that what the respondent meant was accurately collected (Kornbluh, 2015). Simpson and Quigley (2016) stated that there are no rules for member checking. Kornbluh (2015) identified five benefits of member checking: (a) recognizes the researcher's personal bias, (b) verifies the respondent's voice and meanings were captured, (c) identifies gaps in the data collected, (d) is an opportunity for the researcher to probe the respondent for rich and thick data, and (e) affords the researcher opportunity for better understanding of the research question. I incorporated protocols and checklists to guide the research. I used the interview protocol (see Appendix A) to introduce myself at the outset of the interview. I asked questions to ascertain the respondent's eligibility to participate, asking such questions as name (which was coded), respondent's leadership role at the waste management business, and age. I noted the setting for the interview and the respondent's willingness to participate. I introduced the research, thanked the respondent for the appointment, and reaffirmed the amount of time needed for the interview. I received the participant's permission to record using a smartphone and to take notes during the interview. I received the participant's permission to begin the interview, noting the time. At the end of the interview, I thanked the respondent and requested a scheduled time to verify responses for member checking.

I used member checking with each respondent to go over the open-ended question responses. During member checking, I asked each respondent to verify, clarify, and confirm my interpretation of responses I collected during the interview. I also noted in a journal any personal bias I had. A respondent might have an inquiry regarding the research or of a personal nature. I wrote in the journal the respondent's question and my response to the respondent's inquiry as soon as I was able upon leaving the respondent's presence. Documenting unscripted inquiries and responses added to the richness and thickness of the data.

Triangulation can be used to verify the data collected when a respondent is unable to member check (Kornbluh, 2015). Triangulation is the process of comparing collected data with supplementary or secondary data sources, such as company records, journals, field notes, observations, and other data sources to establish validity, reliability, and credibility. A researcher may use many data points to seek truthfulness, trustworthiness, and rigor to validate collected data (Carter et al., 2014; Colorafi & Evans, 2016; Yakob & Ncama, 2016). A qualitative researcher should seek reliability to assess dependability and repeatability that the same results recur under the same conditions (Stewart, Gapp, & Harwood, 2017). Colorafi and Evans (2016) stated the importance of trustworthiness and authenticity to establish confirmability, dependability, internal validity, external validity, and accessibility of the research findings. I triangulated collected data with secondary data sources, such as company records, industry data, my journal, field notes, literature review, and conceptual theory along with observations to authenticate confirmability,

dependability, internal validity, external validity, and accessibility with the research findings.

Scholars use triangulation to spot bias and gaps in the data (Oleinik, 2015). Carter et al. (2014) noted that individuals were more likely to express themselves fully compared to focus groups that tended to respond based on group members' responses, indicating less bias and more rich, thick data using individuals' interviews. Toews et al. (2017) warned against dissemination bias in qualitative research because dissemination bias can cause distortion with comparative research findings. Saxena (2017) noted sensitivity to respondents' wishes to record while getting permission to handwrite responses. Saxena pointed out that immediately making notes after each interview helped to mitigate researcher reflexivity. I triangulated the data to spotcheck for gaps as well as to spotcheck for biases by using member-checked responses, field notes, observations, industry data, company data, my journal, literature review, and conceptual theory. I disseminated research findings to form a part of the body of knowledge to either add new information or to support existing information.

Data Organization Technique

A qualitative researcher may use data from many sources to establish construct validity through triangulation (Yin, 2017). A researcher demonstrates construct validity when an alignment of many sources of data to the data findings is shown through a chain of evidence (Baskarada, 2014; Yin, 2017). To answer the research question, the case study qualitative researcher may use interviews as a data collection tool; use semistructured interview questions as the primary data collection technique; and include

field notes, observation journal notes, a researcher's reflective journal, company data, archival data, the literature review, and any other piece of information (Sutton & Austin, 2015). The database of information needs to be labeled, catalogued, and coded to help the researcher organize. Ottosen, Engebretson, and Etchegaray (2017) recommended a master code list with an explanation of the codes and how the codes will be used during iterative data collection and analysis.

The researcher's job of data analysis is more easily performed with data labeled, coded, catalogued, and organized in one place (Sutton & Austin, 2015). Because multiple sources of data need to be labeled, coded, categorized, and tracked to show a chain of evidence, a researcher may use a database software such as NVivo, qualitative data analysis software (QDAS), or computer-assisted qualitative data analysis software (CAQDAS) instead of a manual method for efficiency and effectiveness. I used a data management software to label, code, and track my study data. Qualitative researchers began to use QDAS and CAQDAS in the 1980s to code, recall, and analyze data (Woods, Paulus, Atkins & Macklin, 2016). Qualitative researchers used NVivo, a subsequent QDAS tool, to code data more easily than other tools such as ATLAS.ti, which was not used as much in case studies nor in content analysis to arrive at themes (Woods et al., 2016). NVivo is easy to use in a short period of time to transcribe audio files using an mp3 format and Microsoft Word data files to code data (Zamawe, 2015). I used NVivo data management software for my data organization and management technique. I will store the primary data collected, coded themes, data analysis, secondary data, journals, all

field notes, and archival data for 5 years under lock and key in a secured location controlled only by me. After 5 years, I will destroy all data and analyses.

Data Analysis

A qualitative researcher may generate a minefield of data to show alignment between the research question and data sources (Harrison et al., 2017). By using many data sources to understand a phenomenon, a qualitative researcher using a case study design might analyze data by triangulating various data points to reveal themes (Loubere, 2017; Ridder, 2017; Rishi & Joshi, 2016). Carter et al. (2014) discussed four types of triangulation as follows: (a) method, (b) investigator triangulation, (c) theoretical triangulation, and (d) data source triangulation. The qualitative researcher using different methods in data collection might use methodological triangulation. A researcher using investigator triangulation may add more than one researcher to collect data leading to multiple findings. Theoretical triangulation is useful when the researcher uses theories for data analysis. Data source triangulation is explained by the researcher using data from divergent sources for data thickness. I used methodological triangulation because I used participants' transcribed responses in semistructured interviews with open-ended questions, observations, field notes, and secondary data to establish trustworthiness.

Several qualitative researchers posited the process of data analysis as having a framework with stages, steps, or processes such that the researcher works backwards from a possible conclusion to the research question (Houghton, Murphy, Shaw, & Casey, 2015; Lee & Davidson, 2017). A first step in data analysis is to gather and transcribe verbatim responses to the interview questions. Upon transcribing participants' responses,

the researcher should fact check the transcription with audio recordings and field notes to correct errors, memo observations, and code the data for confidentiality and for themes and differences in concepts (Sutton & Austin, 2015). Social researchers identified this first step as comprehending (Morse, 1994), broad coding (Miles, Huberman, & Saldana, 2014), decontextualizing (Bengtsson, 2016), or pattern matching (Yin, 2017).

The next step is to synthesize the broad codes for patterns that reflect the participants' views and voice (Houghton et al., 2015). The third step in data analysis is to iteratively compare emerging themes with a conceptual framework or theory, a process called theorizing, that leads to discovery of findings through compilation (Bengtsson, 2016; Kumar & Atonenko, 2014; Morse, 1994; Sutton & Austin, 2015). A researcher using a case study research design also looks for lapses between data and the lack of a theory, or seeks lapses between data and an existing theory, or pours over data to expose rich, thick data, or, discovers anomalies between data and theory (Ridder, 2017).

Using case study guidelines for the data analysis, I transcribed data by scanning participants' responses in semistructured interviews with open-ended questions with follow-up probing questions. I assigned codes first to respondents according to the sequential appointment for interviews. I synthesized by separating the codes into groupings. I categorized like or similar groupings together, looking for themes within groupings, noting the name of an emerging theme, assigning a subsidiary code for subthemes. Finally, I compiled the major thematic groupings for analysis.

A qualitative researcher might use a computer-assisted methodology and mechanism to add efficiency and effectiveness when performing data analysis. Using a

computer-aided software speeds up the process, and technological data management tool use will increase over time (Salmona & Kaczynski, 2016). I used the logical data analysis processes posited by Miles et al. (2014), Morse (1994), Bengtsson (2016), and by Yin (2017). I used computer-assisted data software to efficiently and effectively analyze data, recategorizing themes iteratively until no new themes emerged. I continued to seek and process new, updated data, incorporating them in the data analysis.

A qualitative researcher might use a computer-aided software in the data analysis process. Researchers code data points from the literature review, conceptual framework, transcripts, and primary data for comparative and contrasting themes (Crocker et al., 2014; Lodhi, 2016; Rishi & Joshi, 2016). Iteratively comparing and contrasting themes from all data sources contributes to rigor, and software aids the researcher in managing multiple data sources and iterations. NVivo software is easy to learn, and a researcher can begin using it immediately (Woods et al., 2016). NVivo is adaptive and flexible for use with multimedia digital communications, literature review, and presenting findings (Bazeley & Jackson, 2013). I used NVivo Version 12 Pro to transcribe, sort, code, identify, categorize themes, and analyze data iteratively until no new themes emerged to present the research findings.

Reliability and Validity

Quality of an exploratory case study research design depends on the researcher's ability to demonstrate reliability and validity from data collection through data analysis (Dikko, 2016; Moon, Brewer, Januchowski-Hartley, Adams & Blackman, 2016; Yin, 2017). A qualitative case study design is used by researchers to ask participants what and

how questions, by drawing out their feelings about a phenomenon in a natural setting. The results of a qualitative approach are not generalizable to other populations, but point to a theory or concept (Owen, 2014; Yin, 2017). Case study research findings are not generalizable to external populations. The researcher must demonstrate rigor when analyzing findings (Leung, 2015). Rigor is demonstrated when a researcher proves trustworthiness through iteratively conducting triangulation and member checking the data collected through reporting findings (Elo et al., 2014). In a case study design, reliability and validity are appropriate in data collection through data analysis, comparative to the conceptual framework, the literature review, and secondary data (Pearson, Albon, & Hubball, 2015). I conducted a case study. I demonstrated reliability and validity by triangulating transcribed responses to my conceptual framework, literature review, and secondary and archival data. I demonstrated rigor by iteratively member checking data so that research findings are reliable and valid. I hand delivered or sent by electronic mail to respondents my interpretation of data collected during the interview for their feedback for accuracy of my interpretation, or for errors in collection. I included transcription of the interview so that the respondent could review and compare the actual interview account with my interpretation.

Reliability

Reliability is used to show that research findings can be repeated under the same circumstances and the same conditions with consistent outcomes (Noble & Smith, 2015). Consistency is linked to dependability in that the researcher's decisions reflect an audit trail throughout the research such that the study is repeatable (Noble & Smith, 2015).

Saunders et al. (2016) noted that repeatability, and dependability may be affected by threats such as interviewer, interviewee, or participation bias or errors at the time of primary data collection in the real-world, natural setting of the participants. The researcher should prepare to mitigate and explain biases and errors. One way to mitigate biases and errors is to member check the accuracy of participants' responses by verifying with the participants that their responses were captured and interpreted correctly (Birt, Scott, Cavers, Campbell & Walter, 2016). I demonstrated dependability by member checking participants' responses from data collection through data analysis to mitigate bias and errors. I asked respondents to point out areas where I may have shown interviewer bias or participation bias. Upon correcting areas of interviewer or participant bias, I again member checked with respondents for accuracy.

Validity

Validity is a measurement of the correctness of measures used to assess participants' feelings and in-depth meanings of a phenomenon in a qualitative study (Saunders et al., 2016). Validity is a reflection of the accuracy of the results chained from the data collected and iteratively analyzed until saturation is obtained (Noble & Smith, 2015). In qualitative research, results may not generalize, but transferability of the results should align with the conceptual framework or theory, the literature review, other documentary supplements, or across similar qualitative studies (Leung, 2015).

Content validity is an appropriate measurement tool to assess qualitative research when semistructured interview questions are used to collect data for analysis and interpretation of findings (Kelly, Fitzsimons, & Baker, 2016; Pandey & Chawla, 2016).

Construct validity is an appropriate assessment tool to compare constructs in the literature review (Pandey & Chawla, 2016). Triangulation using the literature review is an acceptable assessment (Leung, 2015). Qualitative researchers refer to Lincoln and Guba's strategy on validity that includes credibility, confirmability, and transferability (Trochim, 2000). I validated data collection, data analysis, and findings by iteratively member checking. I used methodological triangulation, which is appropriate when using semistructured interview questions. I used Lincoln and Guba's strategies of credibility, transferability, confirmability, and data saturation to validate this study.

Credibility. Credibility is trustworthiness or truth value or internal validity in the research (Noble & Smith, 2015; Saunders et al., 2016; Yin, 2017). A researcher who is able to show a chain of evidence from research findings backward through data collection demonstrates that the research is credible and readers can place confidence in the study (Korstjens & Moser, 2017). Peer debriefing (having another researcher scan the research), member checking to mitigate bias and validate analysis, reading the research work aloud, and triangulation help mitigate distrust in research (Oun & Bach, 2014; Thurston et al., 2014). Truthfulness is a measure of how the researcher's intent will be accomplished, matching research findings with the research design to get rich data (Delmas & Ivankova, 2018; Korstjens & Moser, 2017). I established credibility by member checking and asking participants to verify their responses with the analysis. I provided the respondent a transcription of the interview along with my interpretation so that each respondent could review what they said with what I interpreted, checking for

accuracy. Upon correcting any errors, I again member checked with participants until no errors existed.

Transferability. Transferability is the strategy that researchers use to draw in a reader to the study by using rich, thick data (Korstjens & Moser, 2017). Researchers consider their own experiences, the research context, and situations to see if the study can be replicated in a similar context and situation (Houghton et al., 2015). Transferability is equivalent to external validity in qualitative research, and it relates to generalizability (Saunders et al., 2016). Generalizability refers to whether a researcher or reader can replicate a study to other contexts or situations. A qualitative researcher using semistructured interview with open-ended questions as a tool seeks deep, rich, thick data about respondents' personal feelings about a phenomenon and may conclude that findings are specific to the context; however, a reader may judge whether transferability applies (Saunders et al., 2016). I provided as much information as possible about the study context for a reader to judge transferability. I augmented transferability by documenting observations in a journal and making the journal available. I worked backwards from the findings through data analysis through data collection for the chain of evidence to answer the research question. I read the work aloud to help identify areas of untruthfulness. I hoped to establish that the findings were specific to the context. I hoped to establish that duplication of the research process is transferable.

Confirmability. Confirmability is a strategy to authenticate a study by having the study replicated by another researcher for contextual comparability (Anney, 2014; Moon & Blackman, 2014). Researchers may use confirmability as a strategy to authenticate the

findings by conducting data triangulation (Yin, 2017). When using data triangulation, a researcher may use many sources of data, helping to confirm, or not, construct validity (Yin, 2017). Establishing a decision audit trail is one way a researcher may establish confirmability, meaning another researcher may be able to identify the rationale for decisions made during the research process (Houghton et al., 2015). I documented my decisions guiding the research by using data and methodological triangulation. I used data triangulation to test the findings with a convergence of evidence from semistructured interviews with open-ended questions, observations, my reflective journal, and secondary data. I triangulated findings with the literature review, conceptual framework, my reflective journal, and secondary data that other researchers may be able to replicate the work.

Data Saturation

Data saturation is the point in the research process where the researcher obtains no new data, no new themes emerge, nor is there a need for new coding (Fusch & Ness, 2015). Data saturation affects research content validity and quality because failure to obtain all data diminishes the research quality (Fusch & Ness, 2015; Yin, 2017). A critical input to data saturation is to have an adequate sample size to get rich, thick data (Boddy, 2016). Although the sample size of six participants might be small due to the small number of waste companies in Liberia, I followed up semistructured interview open-ended questions with probing questions to explore all responses from participants. I processed data iteratively until no new data emerged. I processed data until no new themes nor new coding emerged.

Transition and Summary

In Section 2, I presented the purpose statement, role of the researcher, participants, research method, research design, population and sampling, ethical research, data collection instruments, data collection technique, data organization technique, data analysis, and reliability and validity assessment. In Section 3, I introduced the section, presented findings of the study, application to professional practice, implications for social change, recommendations for action, recommendations for further research, reflections, and conclusion of the study.

Section 3: Application to Professional Practice and Implications for Change

Introduction

The purpose of this exploratory multiple case study was to explore strategies some business leaders used to reduce operational costs in waste management businesses in Liberia. I collected data from six decision makers in waste management businesses that are located in an urban setting. I used face-to-face semistructured interviews using open-ended interview questions. During the interviews, I took notes in a journal and recorded the interviews with consent from the participants. Each respondent agreed to participate by signing the consent form. Each participant agreed to member check by verifying the interviews via emailed transcripts.

I collected data from six participants who were decision makers in their waste management businesses, five chief executive officers (CEOs) and one operations manager who was recognized as a decision maker. Each participant was coded for the numerical sequence of interviews. For example participant interview 1 was coded P1 for the first interviewee. In a semistructured interview I asked seven open-ended questions with follow-up questions until a topic was exhausted in a 30-60 minutes period. I used methodological triangulation to verify collected data using the literature review, conceptual framework, and member checked information from participants. I used NVivo 12 Pro to analyze the data, creating codes for several emerging themes. Emerging themes included (a) training/education/workshops for clients and staff, (b) client feedback for assessment of efficiency, (c) reports for efficiency and effectiveness, (d) a trend towards

recycling, (e) color coded-bins, (f) enforcement of regulations, and (g) personnel configurations for profit and sustainability.

Presentation of the Findings

I sought to answer the overarching research question: What strategies do business leaders in waste management businesses use to reduce operational costs in Liberia? To answer the research question, I conducted face-to-face interviews with six decision makers in six waste management businesses in an urban setting, [redacted], Liberia's [redacted]. The participants met the research criteria: (a) be decision makers knowledgeable about their waste management business, (b) be at least 18 years old, (c) each business was located in an urban setting, and (d) be homogeneously ranked.

Emerging themes included (a) training/education/workshops for clients and staff, (b) client feedback for assessment of efficiency, (c) reports for efficiency and effectiveness, (d) a trend towards recycling, (e) color coded-bins, (f) enforcement of regulations, and (g) personnel configurations for profit and sustainability. Figure 2 shows

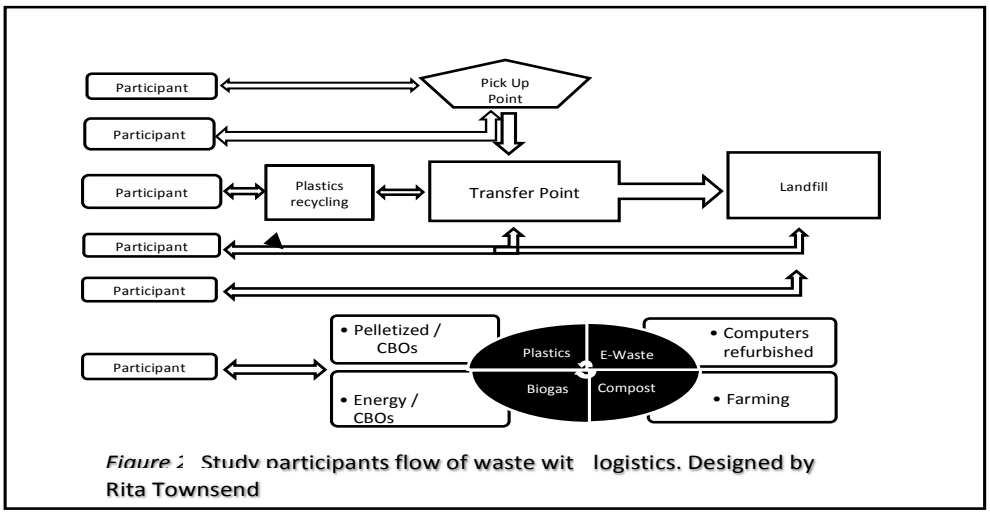

Figure 2. Study participants' logistical flow of waste and value addition. Designed by Rita Townsend, 2019.

how each participant presented their waste management flow logistically for the end result, the landfill or value creation.

Theme 1: Training/Education/Workshops for Clients and Staff

Training for clients or customers was a prevalent response from six of six participants. Customers need to be trained to sort waste at the source because customers dump all waste together, usually in one bin or one bag, or loose in the community "SKIP" bin. The "SKIP" bin is a large open bucket that is picked up by SMEs or by the municipality which became a waste management actor. All types of waste in one bag had composition of moist, compostable household waste with plastics, yielding mixed waste, and sharp objects like broken glass, used needles, and metals that are hazardous to waste collection employees and waste pickers.

The findings of the theme of education for clients / customers is consistent with customer profiles for wastes in developing countries. Customers do not sort at the source, placing mixed wastes with high moisture content in a single bag or bin. Srivastava et al. (2015) reported 40%-85% high, organic matter in unsorted waste in low income countries. United Nations Environmental Protection (UNEP) (2007) reported Liberia's organic waste composition at 43%. Participant P5 in the current study said their "waste company in urban Liberia duplicated the UNEP survey and found customers' waste consisted 44% of organic waste in 300 bins." Liberia is a low-income country (Enterprise Surveys-The World Bank, 2017), fitting the profile for low-income countries disposing unsorted mixed wastes with high organic moist waste.

An emerging subtheme from the study participants is customers need to learn the benefits and deficits of waste management in Liberia. CBE customers tended to dwell in flood zones, congested communities where unemployment was high, and income levels low, resulting in negligible income to pay for waste management services. Participant P1 stated "customers learned throwing waste in the drainage or in the flood zones resulted in floods in their community." Customers dumping wastes in flood zones confirm the literature on the likelihood of flooding in poor, congested slum communities due to wastes dumped in waterways and drainages. When settlements are poorly constructed in unplanned areas, with poor waste regulations, flooding is a likely outcome (Njoku et al., 2015; Salami et al., 2017).

An emergent sub-theme was staff training through education/workshops. Participant P6 said their "competitive advantage was based on having trained staff who received knowledge on how waste is handled in other countries." Participant P1 said he sent "employees to workshops conducted by waste management sector leaders supporting [his] strategy to 'invest in education.'" Participant P5 said he conducted "training in waste management and environmental care in-house but also externally to increase company income." Participant P3 said he was "willing to pay significantly to train his staff because in the long-term application of their training would reduce operational costs and contribute to waste management as a profession, not just waste collection." Specifically, participant P3 said "you are playing with an equipment of 16 tons, any mistakes on the road, the damage will be huge; you need the right mechanic, right

electricians, the right people in administration, the right supervisors, and you pay them well."

Training and education of staff were not specifically addressed in the literature review. However, the two-fold goal of waste management, protection of humans and the environment, and, sustainable use of raw materials implies socioeconomic considerations as population, climate, income levels, and development need attention (Brunner & Fellner, 2007; Singh, Lauranti, Sinha, & Frostell, 2014). Given the ballooning population trends toward urbanized areas in Africa, and trend toward a circular economy with zero waste, it makes sense to develop waste management as a viable business profession with trained personnel and business infrastructures toward an impactful waste management industry. The literature points to a trend toward green entrepreneurship, eco-efficiency, eco-effectiveness, transformational eco-centric strategies with social innovation and social value creation (Borland et al, 2016; de Bruin, 2016; Holt & Littlewood, 2017; Sinkovics, Sinkovics & Yamin, 2014; Zur, 2015). The theme to train and educate staff appears to add to the body of knowledge in the waste management profession for effectively reducing operational costs.

Theme 2: Client Feedback for Assessment of Efficiency

All participants stressed assessment for efficiency of their operational cost reduction strategies included customer feedback. If waste pick up or collection did not occur as scheduled, customers called the companies to inform that waste had not been collected. Customers alerted the companies of waste accumulation at the pick-up point if pick-up was a day or two late. Participant P6 stated their "company's effectiveness was

based on low customer complaints such that the customer relationship is an 'open door.'" A low customer complaint rate was an indication that the collection team was working. Participant P1 said "when customers are happy with the collection service, they express satisfaction with telephone calls, cards of appreciation, and give positive feedback that yes, you are on top of things." Participant P2 said their "field supervisors get customer feedback biweekly, and to a larger extent we always get positive results." The literature review did not address customer feedback nor its importance for company efficiency. Customer feedback for company efficiency might add new knowledge to the literature.

Theme 3: Reports for Efficiency and Effectiveness

All participants said they relied on some form of daily reports to identify efficiency and effectiveness. Participant P5 said "by knowing the quantity of waste collected and processed along with revenues generated from various streams" in the business, he can calculate his effectiveness. Participant P6 responded he uses daily logs to calculate the number of customers served, fuel consumption vis-à-vis the number of trips to the landfill site, reports on the accident rates of drivers, lack of customer complaints, and monthly expenses on equipment. Participant P6 said he instituted a "monitoring system that will force them [employees] to do the right work at the right time and give you the result." Participant P3 said he looked at annual reports and marked points when he made a change so that from period to period he assessed efficiency and effectiveness. Participant P4 said they set targets and assessed efficiency and effectiveness through monitoring and evaluation reports, for example the daily distribution of fuel vis-à-vis the number of loads deposited at the landfill site. Participant

P4 advocated for waste audit reports which were developed years before but have not been published. Participants mentioned other factors were (a) the number and frequency of loads to the landfill, (b) gasoline consumption, (c) avoidance of tire puncture at landfill, and (d) avoidance of the landfill. Participant P2 said "importing modernized equipment requiring less manpower will enhance efficiency and effectiveness" in his company.

All participants responded that customers have difficulty paying, directly affecting efficiency and effectiveness of the waste management business. Customer types ranged from slum community dwellers to businesses to the government of Liberia. Participant P1 said he strategized "slow pay by trying to understand the customer's difficulty in paying for waste services and offered alternative pay schedules, a flat rate, with possible reduction in the number of days of waste collection." Participants P2, P3, P6, strategized segregating large customers from smaller ones and reducing the frequency of waste collection to smaller customers. Participant P4 is constrained by non-private sources of funds that are tied to government negotiations but is constrained to provide public waste services. Lack of non-private revenue for participant P4 constrained operations by a lack of fuel and, an inability to purchase equipment, therefore he must rent equipment. Participant P5 used CBOs run by youths to collect wastes to sell to the participant nonorganic waste for the business' recycling program.

There was no specific information on efficiency and effectiveness of the waste management industry in Liberia in the literature review. No one seminal source of Liberian business information in the waste management industry existed in the literature

review. It is conceivable that the participants' responses might add to the body of business knowledge in the waste management industry in Liberia. Liberia is a low-income country with a high poverty rate. Liberia does confirm the literature review in terms of customer profile and waste disposal behavior (Yukalang et al., 2017).

Theme 4: A Trend Towards Recycling

Participants alluded to the concepts of value addition and value creation. Value creation is what companies can do to create perceived value to customers (Lindman et al., 2016). Lindman et al. (2016) implied companies' goals, objectives, and activities translating to customers in a way that customers perceive self-beneficial responses. Participants P3 and P5 stressed value addition through recycling and renewable energy. Participant P5 said "we can recycle almost like 30%-40% of our waste and we have like 60%-65% going into our landfills…we can use biogas and biofuel to heat water in homes and in slum communities." Participant P3 said that "encouraging customers to reuse or recycle as much as possible will reduce the amount of waste" headed to the landfill site. Participant P3 further stressed separating at the source and using color-coded bins will increase value creation through reduce, reuse, and recycle. Participant P5 responded that "creating a value chain through composting will produce organic fertilizer to improve the soil for better crops." Participant P5 said the "deforestation causing farmers to relocate each farming season could be reduced because microorganisms lost to deforestation would be replaced due to soil fertilization." Participant P4 envisioned a recycling plant in [redacted] to handle municipal and other waste. Participant P2 responded that "having recycling plants would provide solutions to some obstacles and challenges."

Strategies promoted by the participants confirm the literature review for value creation by reducing, reusing, and recycling. The strategies allude to business strategies for competitive advantage by exploiting the companies' own internal competencies (Boshkov & Drakulevski, 2017; Martinez, 2014; Marx, 2015; Nulkar, 2014). Companies set up indicators such as the waste collection rate, recycling rate, and disposal rate to gage financial sustainability (Di Maio & Rem, 2015; Ferronato et al., 2018; Friede, Busch, & Bassen, 2015; Li & Lu, 2016; Quartey et al., 2015). Green entrepreneurship is an emergent business model built on customer education and social responsibility (Bocken & Short, 2016; de Lange, 2016; Samadi et al., 2016). Green enterpreneurship might intertwine with transformational leadership by influencing, motivating, and taking a personal interest in entrepreneurs (Bass, 1999; Burns, 1977). Intertwining green entrepreneurship with transformational leadership could spearhead the waste management industry in Liberia to a circular economy with zero waste, a new paradigm.

Theme 5: Color-Coded Bins

Participants P3, P5, and P1 advocated using color coded bins to segregate recyclable waste thereby saving time and resources. Using color-coded bins present contrasts to open dumping where community waste is mixed and dumped at unattended sites resulting in cost and environmental health inefficiencies. The push to use color-coded bins is supported in the literature. Seyring et al. (2015) found 28 countries in the EU using mandatory waste separation significantly increased the recycling rate for reusable materials. Mandating color-coded bin use in Germany with 82M population led

to 87% recycling rate from 50M tons of waste by using the same bin colors consistently for the same type of waste (We Future Cycle, 2015).

Theme 6: Enforcement of Regulations

The municipality overseeing Monrovia's waste system is Monrovia City Corporation (MCC), housed in the Mayor of Monrovia's office. MCC is tasked with ensuring Monrovia's cleanliness fosters a green environment. MCC is to enforce city ordinances for waste management, (a) including sanitation, (b) educating the public on health issues and ordinances such as against open dumping, (c) incineration, (d) promoting use of color-coded bins for waste separations, (e) at-source separation, and (f) safety measures relating to waste picking.

MCC however, has little control of its budget or funding source and raises funds by issuing licenses to CBEs and accrediting private waste management small-medium sized companies. Mayor Jefferson Koijee disclosed Monrovia's value chain will be through plastic recycling and waste-to-energy (New Democrat, 2018). In fact, MCC has become a waste management actor, competing with private SME waste companies which it accredits.

MCC does not have the internal competencies to participate in the waste management business: (a) MCC rents its equipment, having no equipment of its own to collect waste from two transfer points for onward delivery to the one sanitary landfill that will reach capacity in 2019; (b) MCC has no access to its own budget, depending solely on the government of Liberia's national budget that is subject to vacillating revenue collection, or international grants and aid; (c) MCC is planning a replacement sanitary

landfill in Cheesemanburg, Montserrado County, twice as far as the existing landfill. Private SME waste companies currently find challenges to the existing sanitary landfill due to operational logistical and transportation costs, as well as hazards to tires due to sharp objects when disposing waste at the landfill. SME company participants said one 8-ton truck tire's cost might range from $325-$370 USD and disposing wastes as the dumpsite is unpredictably costly if a tire is punctured.

The literature review is confirmed when municipalities enforce ordinances and mandate color-coded bins use (O'Connor, Lerman, Fritz, & Hodde, 2010; RecyclingatWork.org, 2015; We Future Cycle, 2015). Waste pickers should be redirected to participate in organized, technologically-driven recycling programs for their livelihood (Dias, 2016; Marello & Helwege, 2014; Medina, 2008). Singh et al. (2014) found that low income countries should employ regulations and ordinances to support waste management. Abas and Wee (2014) found separating at source might save businesses on collection costs and time.

Theme 7: Personnel Configurations for Profit and Sustainability

The findings provided by all participants with respect to personnel showed that personnel costs were a factor configured to offset frequency of waste collection, mitigating high logistical or transportation costs, e.g. fuel costs. Participants P2, P3, and P6 reduced the number of employees by stratifying them into casual or permanent labor. Casual workers were those short-term workers used for short-term contracts. Participant P1 said he "used a small number of manpower …for a small number of equipment." Five of six participants stated salaries were a major operational cost requiring minimizing cost

and maximizing efficiency. Minimizing costs and maximizing efficiency were prominent in deciding the frequency of waste collection, size of the contract, and distance to the customer and landfill (see Figure 2). Employees were treated as pawns in a chess game, transactionally, and not transformationally, when deciding when to use them.

Participant P5 had a different approach to handling salaries. He devised the concept of teams rather than a hierarchical organizational structure. Two team members are rewarded with land ownership annually, part of the company's 10-year plan to retain personnel for company sustainability. Reward was based on team members' work ethic and performance adjudged by the team. The company also supported social responsibility by supporting team members' extra work activities such as talents in music and the arts.

Participant P5's strategy to retain employees is not based on transactional factor salary. Instead participant P5 used a transformational style of leadership, motivating team members by individualized consideration, intellectual stimulation, inspirational motivation, and idealized influence. Participant P5's approach to leadership confirmed the literature for innovative business models needed for a circular economy (Borland et al., 2016; Sethibe & Steyn, 2015; Strand, 2014; Tschopp & Huefner, 2015).

Applications to Professional Practice

Business leaders in waste management businesses in Liberia might find results from this study applicable to reducing operational costs. Two participants stated longevity of their waste management business exceeded a decade, focusing on disposing wastes at the landfill. Despite the length of time in the waste business, some waste business leaders have been in operation in the waste management sector and observed

increases in population density in urbanized areas and unplanned slum communities steeped in poverty. Few leaders observed an increased need for business leaders of waste management services to use innovative strategies leading to a circular economy with zero waste.

A finding in this study was the need to separate and bag waste at the source and use color-coded bins. Participants felt municipal enforcement of city ordinances such as mandating color-coded bins could contribute to reduction in labor and logistical operational costs. Participants explained they would not need extra manpower to sort and bag wastes at dumpsites and would avoid wastes that are hazardous to employees which cause loss of manpower due to injury and sickness. Further, participants felt they would save time and they would reduce the frequency of trips to either the transfer point or to the landfill if wastes were pre-sorted using color-coded bins.

Another finding was that business leaders could use innovative strategies to add value or create value to wastes. Participants spoke of recycling and of a proposed recycling facility just outside of Monrovia. A participant's response included experimenting with biogas and biofuel. Another participant was experimenting with creating street pavers out of wastes. Participants reasoned that value addition and value creation strategies were required preventatives from going to the landfill where value addition or creation was nonexistent. The participants said the likelihood was high regarding puncturing costly equipment tires. If just one tire was punctured at the landfill, participants said they would experience loss of income due to downtime coupled with a lack of spare parts (tire replacement) and labor costs. Value addition or value creation of

wastes would open other streams of income due to sale of the value-added products to willing consumers who have ability to pay. Value addition/value creation should be co-created between companies and their customers for mutually beneficial activities (Lindman et al., 2016).

An additional finding was to seek efficiency and effectiveness, such as avoiding the landfill altogether. Participants felt the distance to the landfill was far, contributing to transportation costs in fuel, increased labor costs, and, the risk was high for tire puncture upon disposing wastes at the landfill. Representatives of the municipality concluded that when the current Whein Town sanitary landfill reaches capacity in 2019 after 'temporary' operation beginning in 2012, a replacement, permanent 100-acre sanitary landfill in Cheesemanburg Township with boundaries in Grand Cape Mount, Bomi, and Monserrado Counties will become fully functional (The World Bank, 2017). The Cheesemanburg Township landfill is farther away than the Whein Town landfill that is 26km round trip from Monrovia, therefore will not mitigate costs. Waste management business leaders will need further strategies to compensate for the extra distance to dispose wastes from Monrovia to Cheesemanburg Township. Closure of the Whein Town landfill involves spreading laterite over the site and sectioning it off.

How Findings Relate to Conceptual Framework

Transformational leadership theory espoused by Bass (1999) and Burns (1977) is about leaders influencing followers and stakeholders to see and do things that are much larger than themselves. Transformational leadership theory proposed tenets regarding how a leader might influence followers through motivation, inspiration, personal

consideration, and intellectual stimulation so that followers follow of their own volition (Bass, 1999; Burns, 1977). A transformational leader is powerful to effect change in a follower, is ethical, moral, and just, and behaviorally elicits responses from followers (Chen & Wang, 2017; Judge & Piccolo, 2004; Nikoloski, 2015). A transformational leader exemplifies idealized influence by using referent or expert power, prompting followers to accomplish organizational mission and goals to achieve corporate comparative advantage (Judge & Piccolo, 2004; Nikoloski, 2015).

Referent power is non-authoritarian, personal power that evokes a volitional, positive response from a follower (Haller, Fischer, & Frey, 2018). A personal, emotional appeal from a transformational leader is an exemplar of referent power or charisma (Judge & Piccolo, 2004). Followers respond to transformational leaders' charisma or role-modeling behavior to lead through change, crises, or instilling a sense of belonging when employees refuse to cooperate (Nikoloski, 2015). Followers respond positively to ethical leadership when a leader exhibits social responsibility that elicits goodness (Haller et al., 2018). Bavik, Tang, Shao, and Lam (2018) found ethical leadership leads followers to share knowledge. In contrast, when a leader's charisma is used irresponsibly in a Machiavellian way for organizational success or opportunistic gain over moral high ground, inevitably the organization suffers (Castille, Buckner, & Thoroughgood, 2018). An organization's ethical climate helps followers perceive ethical behavior in leaders, providing followers a comfort level to innovate and take risks, or refrain in an unethical environment (Chen & Wang, 2017). A transformational leader behaving ethically and exhibiting referent power during crises or in a noncooperative work environment, can

steer followers to perform for organizational success. Findings from this study suggest followers were willing to adhere to the waste management leaders although there was a skew toward transactional leadership according to responses from five of six leaders.

In contrast to transformational leadership, transactional leadership works on a dutiful exchange of rewards for accomplishing goals rather than empathetic concern (Gandolfi & Stone, 2017). When a follower meets deadlines, or accomplishes objectives, the follower receives compensation or reward, although transformational leadership and contingent reward theories highly correlate (Judge & Piccolo, 2004). A finding from this study was waste management business leaders in waste management businesses in Liberia required constant feedback and reports to gage effective and efficient use of resources to lower operational costs, specifically transportation, equipment, and salaries. Five of six waste management business leaders in this study focused on on-time payroll payments to staff to mitigate loss of trained staff to their competitors, reduce expenses, reduce equipment loss through thefts, subsequently inducing job satisfaction. The nature of the exchange and the contingent reward support both transactional and transformational leadership theory.

Transactional leaders' style affects organizational creativity through knowledge-sharing to compensate for rewards (Hussain et al., 2017). Leaders use the exchange of rewards such as job satisfaction to help followers manage their interpersonal negative emotions through cognitive exchange, change in situation, or benevolence (Little, Gooty, & Williams, 2016). Five of six participant waste management business leaders stressed employee training through educational workshops as opportunities to stimulate

organizational creativity and job satisfaction especially during times of low revenue. Study findings for training, education, and workshops for staff/employees support cognitive exchange and knowledge sharing for job satisfaction.

A leader's effective use of transformational leadership principles contributes to psychological empowerment, organizational commitment and job satisfaction (Asif et al., 2014; Yang, 2016). Organizational opinion leaders positively affected leader-member exchange, loyalty, and professional respect through idealized influence (charisma) (Brown, Chen, & O'Donnell, 2017). Transformational leaders can facilitate business sustainability by creating an atmosphere for innovation and organizational resilience through communicating and role-modeling forgiveness in a fast-paced, competitive business climate (Kim, Kim, & Jung, 2018). Jiang, Zhao, and Ni (2017) found employees' organizational citizenship behavior increased sustainable performance through relationship with a transformational leader. Transformational leaders positively affect financial performance and company ideation for new products and processes (Strukan, Nikolic, & Sefic, 2017).

Transformational leaders' ability to communicate a vision, influence, impeccable moral standing, competence and skills positively build confidence in followers (Strukan, et al., 2017). Transformational leadership positively affects employees' willingness through affective commitment to the organization (Gyensare, Sanda, & Opoti, 2016) exemplified by long work hours, taking initiative, and retaining long-term employment relationship with the organization. When a leader shows concern for followers, followers put their trust in the leader, resulting in job satisfaction, organizational citizenry, and

organizational commitment, although cautioned against relational, emotional dependency on the leader (Nohe & Hertel, 2017).

A finding was that the style of leadership of one of six participants was more transformational than transactional. The participant leader exhibited charisma, individualized consideration, intellectual engagement, a participatory, and a non-hierarchical form of organizational structure that contributed to highly motivated employees. As a result, employees worked long hours to accomplish objectives, took initiatives, and contributed creatively to the organizational mission, vision, and goals. The participant leader envisioned a circular waste management business based on value addition, community and youth participation, creativity, and sustainability through granting land ownership to employees.

Findings showed two types of leadership styles, transactional and transformational. I explored participants' leadership style regarding people – employees and stakeholders. All participants found residential customers' failure or inability to pay for waste removal from their residences or communities affected business sustainability. The SME participants prioritized business or corporate clients over residents to ensure consistent financial revenues. Five of six participants in the study viewed the three-themed cost elements (equipment, transportation, and labor/salaries) as transactions or exchanges while one of six participants took a transformational leadership approach to reducing operational costs. The waste management leader in Liberia needs to influence followers and stakeholders to envision and act beyond their immediate self-satisfaction or challenges, to engage in positive innovative behavior, and perform toward accomplishing

goals for the greater good, the larger community, the environment, as well as for business sustainability.

Implications for Social Change

Findings from this study might impact social change in the Liberian waste management industry in several ways. One way is to use at-source waste separation because of a growing urbanized population that continually produces waste. At-source separation and bagging wastes will contribute to a cleaner environment, resulting in reduced disease burden, and reduction in slum community residents' changed behavior regarding burning wastes and practicing open dumping (Liyanage, et al., 2015; Ziraba, Haregu, & Mbenu, 2016).

Separating at-source contributes to efficiency and effectiveness in waste management by adding value. If Liberia's waste composition consists at least 40% organic, putrescible waste (UNEP, 2007), then separating organic wastes at source will add value to waste by composting. The leftover approximate 60% non-organic waste in Liberia could be sorted for value addition through recycling, reuse, and re-engineering wastes. If household food and organic wastes were separated at-source and segregated, then waste pickers could benefit by sorting any mixed wastes to sustain their livelihood (Edokpayi, Odiyo, Durowoju, & Adetoro, 2017).

Placing color-coded bins in slum communities, well-to-do communities, and businesses means wastes could be at-source separated, bagged, and placed in the color-coded bins for curbside collection, or in SKIP buckets. The change in managing wastes could lead to effective and efficient collection. Public and private waste collectors could

experience an easier, effective and efficient collection, transfer, and treatment of wastes. Efficient and effective waste collection, transfer, and treatment begin a reduction in cradle-to-grave activities, meaning reducing wastes sent directly to the landfill (Mmereki, Baldwin & Li, 2016).

Another way the findings might impact social change is for municipal authorities to mandate enforcement of policies through education and training. Policy enforcement could include mandatory separation at-source complemented by color-coded bin use in every community (Damtew & Desta, 2015). If community dwellers, households, and businesses separated at-source and used color-coded bins, Monrovia City Corporation might accomplish its goal of making Monrovia a clean and green city.

The mayor of Monrovia wants to accomplish the city's goal for a clean, green environment (New Democrat, 2018). MCC could work with other agencies such as the Liberian Environmental Protection Agency (EPA), the Ministry of Health, and other organizations as community-based enterprises to educate citizens and businesses regarding safe waste disposal using at-source separating and color-coded bins. MCC could economically empower youth and women from under-privileged communities to disseminate information on waste disposal for a clean, healthy environment. Disseminating information on waste disposal to the communities is critical to successful waste management (Damtew & Desta, 2015). The strategy to employ youth and women to circulate mandated waste disposal policies and practices might reduce unemployment among marginalized populations.

Education awareness programs could decry unhealthy practices as open dumping, informal incineration, dumping into drainages and flood zones, and cooking with plastics. The education campaign could re-enforce messages promoting recycling and zero waste for a circular economy that utilizes local labor and skills. The education campaign could also prepare citizens for the need to pay for services to remove wastes from their environment (Mombo & Bigirwa, 2017). If customers understood the need to pay for disposal service of waste, they would pay even if price changes were necessary, or even pay a reasonable fee (Damtew & Desta, 2015; Ren & Hu, 2014). A message campaign valuing waste and explaining costs of disposal might lower citizens' resistance to pay, even though some citizens might be in a low-income status.

Recommendations for Action

Participants in this study responded to seven open-ended questions in semistructured interviews to answer the overarching research question: what strategies do leaders in waste management businesses use to reduce operational costs? From the data collected and the data analysis, I gathered four thoughts that might be recommendations with respect to leadership strategies for reducing operational costs in waste management businesses in [redacted], Liberia. I recommend evaluating the following action items for implementation: (a) separating and bagging wastes at source, (b) use of color-coded bins, (c) massive public awareness of the need for a circular economy, its benefits with impact on the environment and human social welfare for value addition and value creation, and (d) employing marginalized members of local populations to assist in the formal dissemination of information about waste disposal.

A recommendation is to promote separating and bagging wastes at-source. Separating and bagging wastes at source would enhance recovery of wastes for composting (Oduro-Kwarteng, Anarfi, & Essandoh, 2016). One participant replicated the UNEP Liberian waste composition study (UNEP, 2007) and found similar results. Supportive of the literature for developing countries in a tropical climate, 43%-44% of the waste is compostable. That means compostable waste could contribute to soil fertilization to promote larger, better quality crops. Replenishing the soil will also add microorganisms to soil damage due to deforestation. Farmers could remain in their local communities instead of having to relocate because soil microorganisms were depleted due to farmer-induced deforestation.

Another recommendation is to use color-coded bins at curbside or community dump sites. Using color-coded bins would contribute to efficiency and effectiveness when collecting waste at collection points for onward disposal to the transit points or sanitary landfill. Participants responded that strategies to reduce operational costs included a configuration of minimizing labor and transportation costs. If wastes were separated, bagged, and appropriately delivered to color-coded bins, waste management leaders could reduce operational costs such as manpower costs by using less manpower at collection points. Waste management leaders might reduce employee health costs and loss of time because employees might experience a fewer number of injuries at collection points (Ziraba et al., 2016). Transportation costs might be reduced by strategizing the size and number of equipment needed at collection points.

A third recommendation will require significant amounts of education and transformational leadership to get households, businesses, and the government of Liberia to envision the benefits of a circular economy. All participants responded that the waste management industry in Liberia is headed towards value creation and value addition through recycling. Two of six participants are actively exploring mechanisms to recover biogas or biofuel or pavers from wastes. It means that waste management business leaders could explore green entrepreneurial models to spearhead waste recovery. MCC, private SMEs, and CBEs will need to conduct massive educational awareness programs to educate, inform, regulate, and enforce ordinances to keep the city clean. Public private partnerships between MCC, SMEs, and CBEs could drive the message and implementation toward a circular economy, particularly as SMEs avoid sanitary landfills to reduce transportation and spare parts costs. Employing marginalized members of local population to assist in the formal dissemination of information about waste disposal might reduce unemployment while transforming lives for inclusion in communities.

The recommendations presented might be useful for authorities in municipalities, national agencies such as the Environmental Protection Agency, the Ministry of Lands, Mines, and Energy, and the Ministry of Public Works. Banks and funding agencies might develop financial programs that incorporate waste management entrepreneurs for a green economy so that access to capital and ability to network with industry participants become mainstream. Municipalities, SMEs, and CBEs should form partnerships to exploit synergies to fully develop waste management as an industry in Liberia. These recommendations for action can be shared at public and private seminars, workshops, and

conferences. The findings from this study might inspire further scholarly research on waste management businesses in Liberia. I plan to develop a value chain to put the findings and these recommendations into action.

Recommendations for Further Research

Findings from this multiple case study might shed light on areas for further study. One area is for the national government of Liberia to create an atmosphere for companies to provide financial statements. Each of the six participants promised to share financials but did not follow through. The implicit sentiment is to seek privacy for fear of competition and of misuse of company data. The results from this qualitative, multiple case study may not generalize.

Another area for further research is to explore recovery from the sanitary landfill in Whein Town, Montserrado County. Santos, Barros, and Filho (2018) recommended evaluating the economic value of landfill gas in view of advantages and disadvantages of gas recovery from sanitary landfills. The advantages are the low cost of landfill gas, soil regeneration, and use of unskilled labor and the disadvantages are contamination from soil and groundwater especially in tropical, rainy areas; methane explosions; and methods to handle leachates (Santos et al., 2018).

Reflections

My experience in the Walden University doctoral study process has been an eye-opener. I started out to do something about plastics from open dumping in Monrovia. My preconceived notion was that I would solve the used and openly discarded water sachets dropped by thirsty persons. When I gathered information for the literature review, I

experienced an enlightenment that I had embarked on more than just plastics strewn in the environment. My preconceived ideas quickly were subsumed in the larger worldview about waste management, where information and studies were plenteous. For the business of waste management in Liberia, little data existed.

I am grateful to the participants in this study. The business leaders took time from their busy schedules to sit with me to answer questions about their waste management businesses. Each one was willing to answer the open-ended questions in a semistructured interview and share the excitement they found in their business. One participant stated the interview process was very academic. An interesting discovery was that online transcription services were unable to interpret the Liberian accent language nuances, and innuendos. I had to retranscribe the interviews.

Conclusion

The overarching research question was to find leadership strategies for reducing operational costs in waste management businesses in Liberia. Six decision makers in waste management businesses in Liberia participated in this study. Their strategies from a strategic business level gave them the unique view to identify challenges in equipment acquisition and use, logistical or transportation use with expensive, limited spare parts, and high labor costs to collect wastes. Each participant spoke of value creation and value addition as strategies to reuse, recycle, and re-engineer wastes. Landfill avoidance was strictly targeted by two participants due to the risk of puncturing heavy equipment tires and incurring costly delays while acquiring spare tires. Trips to the only sanitary landfill were expensive, requiring accountability through monitoring and evaluation reports.

Customers or residents in diverse communities do not separate and bag wastes at-source. Community dumps or SKIP buckets contain mixed wastes including organic, putrescibles, hard plastics, scrap metal, glass, and paper boxes. Considering that Liberia fits the global profile for rapid, increasing urbanization with a bulging youth population, businesses, municipalities, and appropriate, relevant national agencies need to synergistically, massively educate the populace toward a circular economy that will clean environments while providing employment. Transformational leadership style and skills will be needed to change mindsets and behavior for proactive, viable, and sustainable results.

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Appendix A: Interview Protocol

Title of Doctoral Study: Leadership Strategies for Reducing Operational Costs in Waste Management Businesses in Liberia

Participant Business (PB):	Code:
Interviewee:	Title:
Interviewee Code:	Interviewee Contact:
Date:	Interview Location:

Qualification Questions: (circle appropriate answer)

Are you a strategic decision maker in PB?	Y or N
Are you at least 18 years of age?	Y or N
Are you recognized as a qualified and recognized decision maker in PB?	Y or N
Is PB in an urban setting in Liberia?	Y or N
Are you willing to participate in the herein entitled Doctoral Study?	Y or N
Participant consent form signed?	Y or N

Introduction of the Interview:

This interview may last 45 to 60 minutes. I am using Walden University guidelines and am reminded to inform you of your right to withdraw from participating in this study at any time. I am also reminded to inform you that there is no monetary exchange for your participation or withdrawal.

Purpose of the Doctoral Study: The purpose of this study is to explore strategies some business leaders in waste management businesses in Liberia use to reduce operational costs.

As we begin**,** may I get your permission to **jot down notes and record our time together so that I do my best to capture the interview?** This interview is flexible, using open-ended questions. The interview is confidential and private so please feel free to respond freely, even to follow-up questions. Shall we begin?

Interview Questions:

1. What are the major operational costs in your waste management business and how have you reduced them?

Response:

Follow-up question:

Non-verbal cues / demeanor

2. How did you identify and select strategies to reduce operational costs in your waste management business?

Response:

Follow-up question:

Non-verbal cues / demeanor

3. What challenges are you experiencing attempting to implement your strategies to reduce operational costs?

Response:

Follow-up question:

Non-verbal cues / demeanor

4. What strategies are you using to overcome the challenges you encountered when you began implementing operational costs reduction?

Response:

Follow-up question:

Non-verbal cues / demeanor

5. How do you assess the effectiveness of your strategies to reduce operational costs?

Response:

Follow-up question:

Non-verbal cues / demeanor

6. What new ideas do you have that are potential strategies to reduce operational costs in your business?

Response:

Follow-up question:

Non-verbal cues / demeanor

7. What else would you like to share about your organization's developing and implementing successful strategies for reducing operational costs?

Response:

Follow-up question:

Non-verbal cues / demeanor

The interview questions are exhausted for today. I thank you for participating in this doctoral study. I will go through the interview. **May I call upon you in a couple of weeks to clarify anything I may have missed or misunderstood?** Y or N

Again, thank you for your time and for participating in this interview. All data will be kept private and safely stored for 5-years. I alone will have access to the information.

Appendix B Photo of Unsorted Waste Dumped on the Street [redacted]

Figure 3. Photo of unsorted, mixed waste [redacted]. Photo by Rev. Rita Townsend, taken March 7, 2018.