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The role of innovation and institutional pressures in sustainable packaging

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ABSTRACT

There is an under-developed scale of research conducted on sustainable production and consumption of environmentally friendly packaging Tanzania. Using the main concepts from institutional theory along with the diffusion of innovation model, this paper will examine the environmentally friendly packaging innovations in the Tanzanian food and beverage industry. The purpose of this research is to understand the factors that enable adoption. It suggests that mimetic, coercive and normative pressures exist within manufacturing firms that can regulate and coordinate solutions. A level of understanding of perceived fidelity and perceived effort required were established to develop conditions where firms can create strategies for the adoption environmentally sustainable packaging.

The research setting is in the manufacturing industry. The data gathered for this study was collected by distributing a survey to respondents using convenience and snow-balling technique. Manufacturing businesses and packaging suppliers of the food and beverage industry participated. The respondents were requested to forward the survey by passing on the google form link to business owners, company CEOs, CFOs, COOs. 29 firm responses from the target population were measured to establish the pressures that they face and their intention to adopt.

After applying regression analysis to the data, coercive pressure and intention to adopt with perceived fidelity as a moderator suggested a significant relationship. Similarly, perceived effort required positively moderated the relationship between mimetic pressure and intention to adopt. However, the results showed that no significant relationship from each of the three isomorphic constructs namely normative, mimetic and coercive and intention to adopt. This was contradictory to previous researchers of isomorphic pressures and should be subjected to future research.

KEYWORDS

Mimetic pressures, coercive pressures, normative pressures, innovation, sustainable packaging

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INTRODUCTION TO RESEARCH PROBLEM

1.1 Introduction

The planet is facing unprecedented pressures from the growing impact of environmental abuses. This concern has started to influence many features of life across the major continents as the effects of climate change and biodiversity loss cause increasing levels of disruption (Adam, Walker, Bezerra, & Clayton, 2020). Firms and the consumers they direct their products and services to are also having to increasingly consider establishing practices in order to allow for more sustainable choices to be made. These pressures have been widely described in the industrialised countries which have also traditionally been understood as the major contributors to processes such as climate change (Ellen MacArthur Foundation, 2020). However, processes of environmental change respect no political borders and the African continent is reported as being likely to face major impacts from these dynamics (United Nations Industrial Development Organization, 2020). Across the continent, one of the most dynamic industries in recent years has been that of food and beverages (African Development Bank Group, 2018). This paper explores the factors that are influencing packaging changes in this sector in Tanzania, one of the African continent's most dynamic economies in recent year.

This section of the paper will commence with a background on the use and reliance of plastics in society. Then an outline of the research problem, scope, relevance and motivation of innovation and environmental protection as it relates to packaging materials. The section will conclude discussing the main concepts of the research and an overview of how the rest of the paper will be structured.

1.2 Background to research topic

Plastics are everywhere, they keep food from spoiling, belong in medical devices, they make your car lighter and reside in your garbage/recycling bin; it is inconceivable to think that modern societies and economies could thrive without them (Ellen MacArthur Foundation, 2016; Geyer, Jambeck, & Law, 2017). Plastic material can originate from renewable sources such as sugar crane, vegetable oils, from mineral bases like salt or from fossil-based feedstock in the form of crude oil and gas (PlasticsEurope, 2019). Due to its versatility and low cost it is used in technological appliances, agriculture, clothing garments, manufacturing, healthcare, infrastructure, food packaging and transportation. Originally developed as a synthetic substitute for scarce and natural resources during World War II it has since been commercialized to deliver many economic benefits to the sectors mentioned (Geyer et al., 2017; PlasticsEurope, 2019). It has served the world economy well because it is corrosion

resistant, easily moulded into products, strong relative to its weight, possesses adhesive and absorptive properties are far better off than natural materials and can be produced at scale. In 2018, the plastics industry contributed to a turnover of EUR 360 million in Europe, through the savings in fossil fuel energy, advances in the fields of science and medicine, direct employment and creation of small to medium enterprises (PlasticsEurope, 2019).

The growth of plastic production is expected to double to 622 million tonnes in the next 20 years to satisfy increasing customer demand but the properties that make plastics so adaptable in numerous applications and products fails to be integrated back into the environment (Ellen MacArthur Foundation, 2016). The energy and gas required to transform plastics from fossil fuels damages the earth's surface, while plastic matter that ends up recycled as secondary materials is contained in landfills and in open dumps or left on the land or water (Trucost, 2016). When the chemical compounds used in plastics manufacturing leaks into the natural ecosystem they affect human health and reproductive developments within animals (Geyer et al., 2017). Plastic pollution and leakages into the marine ecosystem harm marine life costing tourism, shipping and fishing industries at least USD 13 million annually (Ellen MacArthur Foundation, 2016). Such climate-related issues have dominated the World Economic Forum's long and short-term global risks by likelihood since 2017 (World Economic Forum, 2017, 2018, 2020).

Overall, in the last decade there has been a shift and sense of urgency for business to adjust their practices and value chain linkages in order to function within ecological boundaries. Packaging uses 40% of the world's plastic, making it the largest end-user market for plastic material (Geyer et al., 2017). Plastic packaging has enhanced the delivery of safe, high-quality consumer products intended to be used only once before it is disposed or recycled. However despite its efficiency and inexpensiveness, 72% of plastic packaging is not recoverable and leaks into the environment (Ellen MacArthur Foundation, 2016; Zhao, Cornish, & Vodovotz, 2020).

The research report emphasises plastic packaging material because of its clear benefits to the food and beverage industry, but on the other hand it has a long-term deleterious impact on the environment. Discussions and strategies to mitigate the negative effects plastics have on society and environment are yet to qualify and meet the scale required (Hommann & Lall, 2019). Solutions to overcome these challenges such as sustainable plastic use, circular economy thinking and investment in innovations have financial implications and are met with resistance from producers and customers (Ellen MacArthur Foundation, 2015; Frishammar & Parida, 2019; Lewandowski, 2016). Developing economies however want to promote sustainable utilization of natural resources, leaders need to activate and promote pro-

environmental behaviours and norms within society (Adam et al., 2020; Spranz, Schlüter, & Vollan, 2018).

In Africa, the population living in urban spaces will expand from 1.3 billion in 2017 to 2.5 billion people by 2050 (Goldstone, 2019). By 2100, 304 million people will reside in Tanzania, making it Africa's third most populated country. Africa will then account for 75% of the world's population (United Nations, 2017). This upcoming, young, cash-conscious market will increase the domestic demand for manufactured products, signalling the growth in processed foods and beverages (Signe, 2018). This pressure has a negative consequence on African cities, outpacing public infrastructure and natural surroundings. On land and in oceans, plastic pollution is visible, it includes plastic bags, plastic drinking bottles, cutlery, polystyrene cups and food containers that clog waterways and block road drainage systems causing floods, destroying housing, and causing death to livestock (Adam et al., 2020). To establish water, sewage and storm drain pipes for crowded cities will require capital investment, donor grants and acquiring financial debt for developing economies (Hommann & Lall, 2019).

In order to continue doing business now and in the future under such conditions, the East African community, an intergovernmental organisation comprising of 6 member countries (namely Burundi, Kenya, Rwanda, South Sudan, Tanzania, Uganda), is joining the rest of the world in proposing sustainable business practices that will positively impact the environment (Ellen MacArthur Foundation, 2016; UN Environment, 2020)(Ellen MacArthur Foundation, 2016; UN Environment, 2020). This paper shall discuss the use of environmentally sustainable packaging material as an alternative to convention and harmful packaging.

Sustainable options are raw materials that come from non-food crops or plants which are natural and biodegradable, from recycled materials and from multiple use packaging applications. Such adoptions have proven to participate in the producing, packaging, transporting and marketing of consumer products in an eco-friendly manner. Adoption of sustainable options will gain momentum and importance in society (Gerber & Hoffmann, 1998; Silva & Blumberga, 2019).

1.3 Research problem

In June 2019, Tanzania joined thirty other African countries to introduce a ban that applied to the manufacturing, importing selling and using of single-use plastic bags to curb plastic pollution its effects on marine life and blocking cities drains (BBC News, 2019; DW, 2019). This measure has shifted the responsibility of plastic pollution to consumers but eventually manufacturers and producers in the country will have to transition to alternative options of

packaging in the form of paper, cloth or plant material. The availability of trendy technology influences manufacturers to produce single use plastic material because the return on investment is reliant on large volume of plastic purchases (FAO, 2014). As predicted in early 2021 an ultimatum from the Tanzanian government was given to packaging producers and importers to phase out sub-standard, non-compliant plastic material that push back efforts to protect the social and ecological environment (The Guardian, 2021).As a member of the East African Community and ultimately in the African Continental Free Trade Area, the Tanzanian landscape for manufacturing businesses will continue to evolve as constraints intensify. Manufacturers and producers will be required to imitate or independently adopt new frontiers in order to remain relevant and competitive in the market (DiMaggio & Walter, 1983; Signe, 2018). Industry stakeholders will need to embrace key dimensions that underpin manufacturing competitiveness by prioritizing talent acquisition, leveraging advanced technologies and adopting innovation strategies aimed at strengthening value chains, industry partnerships and reducing the carbon footprint (Deloitte, 2016). Furthermore, manufacturers need to adapt to increasing pressures from customers abandoning products that are not environmentally efficient for imported goods that meet these standards. Anticipating customer demand for sustainable and socially responsible businesses is an integral part of corporate strategy (Pulpex, 2020).

As much as alternative forms of packaging materials safeguard the environment, they will increase demand for plant and non-crop matter for its production. Also, these alternate materials are not water resistant yet, so leakages affect packaging and branding (Pulpex, 2020). Coronavirus disease (COVID-19) is an infectious disease caused by a newly discovered coronavirus spread through droplets of saliva or discharge from infected persons on to other persons or surfaces has to led to hundreds of millions of positive cases (World Health Organisation, 2020). Due to the variability of the virus, there were concerns about the safety of re-useable food and beverage packaging and as a means of feeling in control and protection from the virus, consumers reverted to disposable single-use applications goods (Boucher, 2020; Ullaland, 2020). This exceptional circumstance relates to the need for developing packaging which are sterilized and can be sanitized to prevent the spread of the virus. For manufacturing business to overcome these challenges mentioned through innovative strategies it can be discouraging due to the degree of complexity and unfamiliarity of new obligations. (Ansari, Fiss, & Zajac, 2010). Firms expect or believe that a competitive advantage can be gained by introducing an ecological strategy but it sometimes it can lead to environmental failure or negative implications for the firm's reputation (Gast, Gundolf, & Cesinger, 2017). Unsuccessful attempts of transitioning to sustainability by firms and government are observed as obstacles that get in the way of innovativeness (Ma, Park, & Moultrie, 2020).

Despite the challenges, the world is socially moving away from plastics and transitioning to sustainability practices (Borg, Curtis, & Lindsay, 2020). The world is capable of mobilising change at great speed during times of crisis such as COVID-19. Global regimes and institutions are searching for alternative socio technologies that can eliminate problematic packaging material (Fuenfschilling & Binz, 2018). The test is finding environmentally sustainable and innovative strategies for the coming generations of Africans.

1.4 Research scope

This paper will focus on how Tanzanian manufacturing business can improve competitiveness within environmental limits through the introduction of sustainable packaging. The study will combine theoretical concepts from institutional theory and diffusion of innovation theory. Mechanisms of institutional isomorphism such as coercive, normative and mimetic pressures will be used to observe process of innovation adoption. The aim is to take a fresh look at how institutional theory is applied in the African context. Elements from diffusion of innovation such as communication channels and social patterns will be used to interrogate the rate of technological uptake. The present study will investigate producers from the food and beverage industry of Tanzania that use materials such as plastics, glass, other metal coating i.e. tin, steel, aluminium and polystyrene to brand, package, transport, protect and sell end-user goods. An analysis of the organisational determinants for choosing conventional packaging materials and the barriers for adopting sustainable packaging. The choice to survey top management offers a general reflection of the experiences by producers through a replicated study. Discussions regarding the moderating effect that perceived fidelity and perceived effort require have on intensifying the need of adopting innovation will be drawn from observations and literature.

1.5 Research relevance and motivation

The spread of innovation has been re-introduced by organisations, governments, business, communities and individuals towards findings sustainable ways of creating value within planetary boundaries. The food and beverage industries were chosen because of the largest deposits of visible pollution it generates and its markets consume 50% of the world's packaging (FAO, 2014). The extent of packaging material in landfills and oceans is grand and models to help drive improvements are impossible to implement alone because decreasing carbon footprint creates disruption along the entire supply chain (Deloitte, 2016; Ellen MacArthur Foundation, 2020; Gast et al., 2017). The lack of knowledge, compatibility, parent corporation pressure, harsh government timelines and legislations causes adoption of unsustainable and impractical interventions (Spranz et al., 2018). It is important to know how the manufacturing business can be stirred from a chaotic space where adoption is perceived

as complex or foreign to making decisions based on the quality of institutional support and appropriate information available. Within the study, perception of effort required and compatibility will be used to illuminate the effect of packaging adoption.

The research report will produce an overall sense of where the food and beverage industry is in terms of development through the concept of isomorphism. There is an opportunity of addressing isomorphic pressures for societal values, investment, partnerships and legislations to develop and harness the importance of sustainable innovation in relation to manufacturing competitiveness (African Development Bank Group, 2014; Deloitte, 2016). The paper will determine a holistic view of the appropriate food packaging solutions and models available locally and internationally. Application of social constructs of behaviours, imitation, competition and direct coercive powers will be to improve environmentally sustainable packaging innovations in a developing economy (Beckert, 2010).

Tanzania needs to be able manage its abundance of non-renewable natural resources in order to avoid resource depletion and contamination (Wasteaid, 2016). Innovation is required for sustainability in order to stretch the conventional way of addressing the competition, environment and society (Richey, Genchev, & Daugherty, 2005). Since the struggle to innovative and survive is constant, government entities need to recognize actions that are reasonable for sustainability to play a central role (Montreuil, Lauzier, & Gagnon, 2020).

1.6 Conclusion

This paper will discover how manufacturing firms in the food and beverage sector are choosing respective packaging materials to use and whether they have plans to improve practices which are environmentally friendly.

The rest of the research paper will be laid out to capture academic and business discussions on the topic. A review of existing literature will separately examine in Chapter 2, the theory of innovation against institutional pressures. The research questions in Chapter 3 will investigate specific areas of concerns for the research project. Thereafter, Chapter 4 establishes the argument for the research methodology that will be deployed. Chapter 5 presents the results and analysis of the data collected using the research methodology emphasised in Chapter 4. The results will be deliberated and discussed as Chapter 6 in relation to academic research. Chapter 7 presents the practical and academic findings and implications, limitations of the research project and suggestions for future research.

LITERATURE REVIEW

2.1 Introduction

This section of the paper will explain two theories, their key constructs and the interrelationship of the highlighted frameworks. The objective is to understand the extent institutional pressures have on the diffusion of environmentally sustainable practices that can reduce pollution. The proposed theories such as Diffusion of Innovation and Institutional Theory shall be used to explain the role of social actors that are applicable to early stages of adopting environmentally harmless packaging materials. In this instance, innovation will be referred to as the re-invention of food and beverage packaging materials or the process that have less negative environmental outcomes.

The diffusion of innovation as a theory will be defined as by how firms choose to adopt certain innovations into practice. The main and overarching framework of institutional theory will be explained along with an overview of the theory's constructs, namely, normative pressures, mimetic pressures and coercive pressures. This will then be followed by the concept of innovation in sustainability and its importance to the problem statement. After, a general overview of the challenges and shifts in the food and beverage packaging will be explained in relation to the Tanzanian context. The section will close with a discussion of the key constructs, the application of the literature review as it relates to the business context of a developing economy.

2.2 Diffusion of Innovation

Re-inventions and innovations are ideas perceived as new, diffusion is the unique channel of communicating about an innovation or re-invention (Rogers, 1962). This theory emerged as a general concept to explain how certain ideas, over time, gain momentum and adoption within a social system. Diffusion as a theory has been used in a wide variety of scientific research such as anthropology, sociology, education, communication and marketing (Rogers, 1962). The constructs of innovation, time, communication channels and the social system work together to determine the rate of adoption. The construct of time is measured between when the knowledge is obtained about the innovation until when a change in attitude occurs leading to the decision stage of adoption or rejection. Innovations are evaluated via the construct communication channels, mass communication leads to information disseminating about a new idea whereas homophily interactions are effective in changing behaviours, beliefs and practices about an idea perceived as new. The construct of social system is a set of units or patterns that form social structures to realise certain norms and behaviours. Within the social system change agents influence innovate decisions when they deem desirable (Rogers, 1962). These constructs and information flows are being used by governments, customers

and suppliers to persuade firms to adopt certain technologies (Swan, Newell, & Robertson, 1999). However, technical efficiencies and criteria alone do not adequately explain why firms adopt certain innovation developments. The business environment and institutional context have a strong influence on how decisions are being made especially for developing countries (Goedhuys, Janz, & Mohnen, 2008).

The acceleration and spread of innovations especially through free trade agreements and globalisation shuts out businesses that do not adjust or grasp ideas that serve the market's expectations (Teece, 2018). In more recent developments, diffusion of innovation has been key in advancing such concepts as crowdfunding capital or freelance markets (Sturgeon, 2019; Teece, 2018; UNCTAD, 2017). The study on diffusion of innovation has been extended extensively to support firms in developing new products and to serve markets in many different industries such as health, education, automotive, online retail, financial services and manufacturing (Ahlstrom, 2010; Swan et al., 1999).

2.3 Adaptation of diffusion practices

Authors Ansari, Riss & Zajac (2010) say that firms do not passively accept or reject certain diffusions, because there is a process of adaptation involved before deciding to innovate or re-invent (Rogers, 1962). To ensure organizational fit is between the innovation and the firm's practices the choice to adapt rests on the varying degrees of fidelity and extensiveness. Other previous studies argued that firm internal factors affecting the adaption process can been drawn also from resource-based theory (Martín-de Castro, Delgado-Verde, Navas-López, & Cruz-González, 2013; Richey et al., 2005). Resource commitment from top management is essential to developing innovation capabilities that can be absorbed into the current and strategic business practises.

Fidelity refers to whether the scope and meaning of a new idea resembles or deviates from the features of preceding practices. Firms make meaning of this by benchmarking new ideas with current ones. It is the reason why dominant packaging solutions continue to be adopted because the original point of reference was good. Extensiveness is the perception that the effort required to implement certain innovative practices outweighs the performance benefits (Ansari et al., 2010; Davis, 1989; Venkatesh, Morris, Davis, & Davis, 2003). Less extensive and familiar versions are frequently implemented, a greater degree of extensiveness and deviation from current practices leads to inadequate adaptation. For as long as certain new practices do not increase fidelity and extensiveness within the firm's context, the status quo will prevail. Also, the attributes and characteristics associated with an innovation contribute to the adoption rate and are useful in diffusing new ideas.

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Explained in Tornatzky & Klein (1982) and Kapoor, Dwivedi & Williams (2014) meta-analysis innovation adoption and implementation is influenced by the characteristics of innovation. Both studies extended Roger's (1962 & 2003) theoretical framework of innovation characteristics to 8 attributes namely, compatibility, relative advantage, complexity, cost, divisibility, voluntariness, riskiness and social approval. This paper will consider only relative advantage and compatibility characteristics because they positively relate to adoption when the innovation is novice and not well established within the industry. Compatibility is the degree of how an innovation is consistent with past experiences. This means newly introduced innovations that support a firm's ability and ease of use will eventually lead to improved operation. The perception that the innovation can be better than the value or idea it supersedes is termed relative advantage. Studies show that despite cost being important, risk and competitive advantage have a better convincing power to firms in deciding whether to adapt or not (Kapoor, Dwivedi, & Williams, 2014).

Furthermore, research has shown that adaptation can be influenced by internal resources and actors to the firm. A firm's innovation-related capabilities are based on the firm resources, following Rickey's study (2005) resource commitment can be divided into technological resources, managerial resources and financial resources. Slow diffusion rates can account for having outdated technology and managerial employees with no prior knowledge of trending products and models.

2.4 Institutional Theory

In existing institutional theory, the acceptable view is that behaviours, perceptions and choices are established through governance structures, social arrangements, rules and norms (Meyer & Rowan, 1977). The purist of this theory was to explain processes that make organisations similar but not necessarily more effective (DiMaggio & Walter, 1983). Studies on how forces in government and civil society work together to influence business performance has been applied to finance, health, manufacturing, supply chain and agriculture sectors (Glover, Champion, Daniels, & Dainty, 2014; Teo, Wei, & Benbasat, 2003; Wuttke & Heese, 2019). The institutional variables that shape and form how firms operate, compete and make decisions are distinguished into coercive, normative and mimetic isomorphic pressures (Teo et al., 2003). The construct of mimetic pressure refers to firms forming a perception of exclusion or illegitimacy amongst similar firms or rivalries, the construct of coercive pressure steams on firms that depend on inter-firm relationships for scarce resources, these inter-firm exchanges influence how certain practices are perceived and adopted, normative isomorphic pressures is the extent firms allow perceived rationalised myths to influence organisational structure (DiMaggio & Walter, 1983; Huang & Yang, 2014; Teo et al., 2003; Wuttke & Heese, 2019)

2.5 Isomorphism

Isomorphism is a manner in which organisations tend to be shaped equally by external forces (DiMaggio & Walter, 1983; Glover et al., 2014; Korsunova, Goodman, & Halme, 2016; Teo et al., 2003). For instance, irrespective of the differences among manufacturing business within the food and beverage industry, the same packaging materials may be used because the suppliers, customers and governing policies apply similar conditions respectively. The concept of isomorphism is well grounded, and we see it been used to regulate and coordinate solutions, even at a global scale, in a homogeneous institutional process (Beckert, 2010). Isomorphism is seen on global socio-technical agendas that propel governments to decide on available technological choices (Fuenfschilling & Binz, 2018). The readiest example of isomorphism is the need for COVID-19 vaccination that applies equally to every single country of the world.

Under similar circumstances isomorphism can be further explained as normative, mimetic and coercive pressures that businesses reflect to obtain legitimacy (DiMaggio & Walter, 1983).

2.5.1 Normative pressure

Is society's way of ensuring organisations feel obligated to participate and comply (Glover et al., 2014; Meyer & Rowan, 1977). It explains similarities within, and outside a given organisation where a common set of norms and values are created for business to reflect. Also normative pressures can stem from similar standards and approaches of a profession or shared values and patterns of associations such as physicians or chartered accountants (Aargon-Correa, Marcus, & Vogel, 2020; Abdulaziz, Senik, Yau, San, & Attan, 2017; DiMaggio & Walter, 1983).

There is a comprehensive amount of research studying the effects of norms and values of pro-environmental behaviour studies related to littering in public places support this construct (Spranz et al., 2018).

2.5.2 Mimetic pressure

Mimetic pressures are the strong signals sent by organisations that have attempted and successfully adopted new ideas. Innovations can be diffused by organisations modelling and adapting certain practices testing for organisational fit (Ansari et al., 2010; DiMaggio & Walter, 1983; Rogers, 1962). Occasionally, mimicry has proven to be less disruptive in avoiding conflict for the same resources (DiMaggio & Walter, 1983). The banning of single-use plastic bags is an example of mimetic isomorphism that continues to gain momentum, compelling governments to address the problem in global waste and recycling practices. When

information is derived from a network or alliance mimetic isomorphism encourages benchmarking.

Under perfect market conditions mimetic pressures leads to homogenization because cost-effective solutions are optimal and attractive institutional changes. However, while firms are observing one another with similar or limited resources, competition forces firms to specialize and differentiate, in order to capture niches within the market (Beckert, 2010; DiMaggio & Walter, 1983).

2.5.3 Coercive pressure

Pressure that is exerted from powerful stakeholders within the value chain on smaller players is called coercive pressure (Glover et al., 2014). Businesses are sensitive to stakeholders namely governments, customers, professional inter-organizational networks, associations and suppliers because they directly determine their economic profit (Etzion, 2007). A certain layer of dependence and central concertation of resources leads to greater coercive isomorphism pressures (DiMaggio & Walter, 1983; Meyer & Rowan, 1977). Uni-professional networks diffuse information about new technologies to firms, successful adoption is achieved at a faster rate because of the level of trust developed between the firms in the network (Abdulaziz et al., 2017; Swan et al., 1999). Ferlie, Fitzgerald, Wood & Hawkins (2005) points out the barriers to the spread of novelty. Such barriers are conditioned by different disciplines formed in multi-professional networks. In this instance, information accessible to potential adopters tends to be re-enforced by the idea of what best practice ought to be. Such best practices are not necessarily the appropriate technological solutions. In conclusion, isomorphic can also led to non-appropriate choices of technological solutions (Masocha & Fatoki, 2018).

2.6 Innovation for sustainability

Innovation is expressed as by a process the business goes through to implement ideas that are more efficient and effective (Teece, 2018). The widely accepted term sustainability refers to the balancing in business context of “economic prosperity, environment protection and social justice” (Ghassim, 2018, p.3) for current and future generations (Hassan & Lee, 2015; L. Huang, Wu, & Yan, 2015). The unique element of sustainable initiatives is that it requires for collaboration to serve societal needs rather than just meeting market needs (Glover et al., 2014). Elkington (1994) definition of sustainability seeks to obtain corporate level commitment as firms act responsible, focusing on the social and environmental concerns but not at the expenses of profits. Innovating for sustainability means developing products, process and sustainable practices that advocate for improvements in carbon footprint and waste reduction whilst delivering economic value for the firm (Ghassim, 2018). This paper will focus on

pollution and single- use plastic reduction innovations that can change packaging choices and materials for food and beverage commodities. Innovations in the form of biodegradable plastics, recycled materials, glass, aluminium composites and plant-based materials offer alternatives that reduce environmental impact and provide tangible operational efficiencies (Sand & Patel, 2021; Teece, 2018; Trucost, 2016).

According to Ghassim (2018) a firm's perspective on sustainable product and process innovation is influenced by organisational, institutional and cognitive pathways. A study done in 2018 on mining companies in Norway found that there is a relationship between inter-organisational partnerships and sustainability enhancement, through appropriate stakeholder communication an appetite can be formed to deploy socially sustainable practices (Ghassim, 2018). Pre-existing institutional determinants such as regulations and rules that support objectives of economic and environment prosperity were adapted by firm in their pursuit for eco-efficient products and process. Mining firms that had more educated and informed employees applied external knowledge and resources were able to create efficiencies in products and processes that are environmentally friendly.

The spill overs of engaging in product, process, or organisational sustainable innovations are intangible such as greater employee satisfaction, improved company social reputation, participation in environment preservation and tangible economic gains (Wu, Liao, Tseng, & Chou, 2015)

2.7 Packaging for food and beverage (the case of Tanzania)

In the case of Tanzania, the volume of non-organic packaging material which is plastic, paper, metal and glass is approximately 1500 tonnes (United Nations Environmental Programme, 2018).Such packaging material ends up as undesirable waste (The Guardian, 2021). This generated waste applies pressure on to inadequate waste collection systems in the society. Undesirable waste also creates pressure for producers to change their respect packaging to reach the goal of sustainability (United Nations Environmental Programme, 2018).

The food and beverage sub-sectors in Tanzania are highly labour intensive and presents low barriers of entry especially in the informal sector (National Bureau of Statistics, 2018). The industry outlook is that producers upgrade operational packaging systems to align with low and unpredictable customer spending patterns. Packaging formats are smaller than before and cater for one-time use, making it more challenging to manage waste (FAO, 2014; Sustainable Packaging Alliance, 2014). Pressure from customers are double bladed and disingenuous they may say they are concerned about the environment, but consumer choice ultimately comes down to price, this claim makes it more challenging for producers to invest

in sustainability (Ma et al., 2020).

Packaging changes and models that are being applied to beverage sector are the use of clear instead of coloured packaging, sale of cheaper returnable bottles rather than single-use bottles and collection services to pick-up empty dispenser containers from offices (Cool Blue Corporate, 2020; Ellen MacArthur Foundation, 2020; Unilever, 2020). Majority of the beverage packaging is glass, produced by one of largest manufacturer of glass containers and bottles in East Africa (The Guardian, 2020b).

In majority of open markets for fresh produce such as fruit, vegetables, meat, fish and poultry, food is sold without excess foil or plastic wrapping (FAO, 2014). Such practices reduce the impact on the environment and consumer health. However, before the national plastic ban, poly or fill plastic bags were used to carry the goods cause pollution. To eliminate problematic plastic packaging in waste management, the government enforced and reviewed the standard of carrier plastics bags and sacks from lightweight to thicker biodegradable material. A levy for the new carrier bags was introduced but eventually customers started factoring in the charge into their shopping budget (Ellen MacArthur Foundation, 2020; The Guardian, 2021).

The Tanzania Bureau Standards (TBS) is a statutory body that puts effort to formulate standards that measure the quality of food and beverage supplied to market Through quality management services, company visits, training and the recent procurement of a testing machine for packages they safeguard the quality of the environment by promoting better use of materials (Tanzania Bureau of Standards, 2019; The Guardian, 2021). Firms can choose whether to import, procure locally or develop packaging material in-house that adhere quality controls and food safety (De Martino & Magnotti, 2018).

Due to plenty of other challenges Tanzania faces such social injustice and economic stability there is an inefficiency in dealing with packaging pollution (Shilla, 2019). Lack of data and public awareness of the presence of undesirable waste restricts the demand for alternative or sustainable packaging solutions (Ritchie & Roser, 2018; Scott & Vigar-Ellis, 2014; Spranz et al., 2018).

2.8 Conclusion

This section exposed how adoption of innovations through the theory of diffusion of innovation does not completely explain the choices firms make to either accept or reject new ideas. It covered the main framework institutional theory and each of its key constructs that will be tested namely, normative pressure, mimetic pressure and coercive pressure. The constructs

of institutional theory as a lens to explain the adoption of sustainable packaging material has not been applied to manufacturing in an emerging market such as Tanzania. Innovations as means of curbing carbon footprint and pollution were covered and especially how efficiencies must balance economic, environmental and social aspects.

References within the review were made to mining, retail and manufacturing sectors this study will be tested within the food and beverage industry because consumer goods are among the significant contributors of plastic use and harm to the environment. The review will show the interrelationship between the isomorphic pressures of institutions towards a firm's intention to adopt innovation through the moderator perceived fidelity and perceived effort required.

RESEARCH HYPOTHESIS

3.1 Research Question

The aim of this study is to understand indicators manufacturers use in their response to growing pressures to utilise environmentally sustainable packaging for food and beverage products. So far, how firms make choices according to the diffusion process of innovation has resulted in the dominant use of plastic material and consequently the presence of plastic waste in the environment. As firms implement innovations, certain business practices evolve through automation, customisation and localisation until they become meaningful and dominant (Ansari et al., 2010). Presently, these dominant practices are challenged by environmental pressures to become sustainable (Glover et al., 2014; Teo et al., 2003).

The study shall answer the below research questions:

Research Question 1: What is the logic used by firms to pursue dominant packaging materials?

Research Question 1a: How did the dominant packaging material gain momentum

Research Question 2: In the firm's perceptive what interferes with making sustainable choices regarding packaging?

Research Question 2a: How do firms obtain information on technology development in packaging material?

Research Question 3: How important is it for firms to adopt sustainable developments intended to protect the social and environment factors from waste caused by the dominant packaging material?

Research Question 4 What influence does institutional pressures have on facilitating or preventing firms from making sustainable packaging choices?

Research Question 4a: How can the size of the firm make it more vulnerable to coercive, normative and mimetic isomorphic pressures?

Within the studies mentioned in the literature review and research objective the below hypotheses were formulated:

3.2 Hypotheses

H1: Coercive pressure positively affects firm's intention to adopt innovations in sustainable packaging.

Business that are heavily regulated and provide mature products or services would face significant coercive pressures from government, regulatory institutions, suppliers and

customers because certain expectations of what is legitimate in the industry has been established (Etzion, 2007). Alliances, coalitions and partnerships has led to further development and adoption at a rapid scale compared to voluntary adoption of sustainable best practices (Abdulaziz et al., 2017).

H10: Coercive pressures have a no positive relationship with the firm's intention to adopt.
H11: Coercive pressures have a positive relationship with the firm's intention to adopt

H2: Normative pressure positively affects firm's intention to adopt innovations in sustainable packaging.

DiMaggio & Walter (1983) research explained that early adoption of US civil reform was depicted by the city's size and characteristics, late adoption was related to institution legitimacy. A large business increases the visibility and sense of obligation to understand and comply to improvements in sustainable innovation and environment performance. Small business are understood to face less pressures to adhere to environmental friendly practices in a short timeframe (Etzion, 2007). Also, normative pressures can originate from managers that have undergone a similar educational system that emphasised on the importance of business, social and environmental sustainability. The assumption is that their range of choices will be dictated by a perception of what is professionally rational and important.

H20: Normative pressures have a no positive relationship with the firm's intention to adopt.
H21: Normative pressures have a positive relationship with the firm's intention to adopt

H3: Mimetic pressure positively affects firm's intention to adopt innovations in sustainable packaging.

When a business encounters an ambiguous uncertain situation, it will look outside its organization field for best practices to adopt. Mimetic pressure and peer pressure have a role in implementing voluntary environmental efficiencies (Aargon-Correa et al., 2020). This explains why organizations that are not in the same industry may look and behave the same. A study in Malaysia hypotheses that because green practices are not prevalent in the country, Malay companies would likely model other companies. Malay subsidiaries would replicate green practices of the parent corporation or observe how other nations have successful implemented these practices (Abdulaziz et al., 2017).

H30: Mimetic pressures have a no positive relationship with the firm's intention to adopt.
H31: Mimetic pressures have a positive relationship with the firm's intention to adopt

H4: The relationship between mimetic pressures and the firm's intention to adopt innovations in sustainable packaging and is moderated by the firm's perception of the effort required

The hypothesis in the Malaysian study was not supported, it did prove that the more resource intensive and disruptive an endeavour is, for a business the chances are that adoption will be observed outside of the organisation field or industry. (Abdulaziz et al., 2017; DiMaggio & Walter, 1983). Once pioneering entities seize the opportunity to differentiate themselves, these initiatives diffusion through imitation when the effort required is less intense and technological advancements are rewarding (Etzion, 2007) .

H40: Perception of effort required does not improve the relationship between mimetic pressures and the firm's intention to adopt.
H41: Perception of effort required improves the relationship between mimetic pressures and the firm's intention to adopt.

H5: The relationship between coercive pressures and the firm's intention to adopt innovations in sustainable packaging and is moderated by the firm's perception of fidelity

Generally, coercive pressures are understood by business through influential actors, powers, politics or by legislation (DiMaggio & Walter, 1983; Meyer & Rowan, 1977). However, may not lead to adoption throughout the organisation because the innovation is perceived as risky, complex and deviates from preceding practices (Ansari et al., 2010; Vasi & King, 2012). For instances, where coercive pressure is used upon firms, adoption is treated as symbolic. For example, should a subsidiary firm be forced to consume packaging practices like their parent corporation however it causes disruption to resources already committed, adoption is met with reluctancy.

H50: Perception of fidelity does not improve the relationship between coercive pressures and the firm's intention to adopt
H51: Perception of fidelity improves the relationship between coercive pressures and the firm's intention to adopt.

3.3 Conclusion

Based on the arguments presented thus far, a deductive approach will be used to test the theory and the formulated hypotheses. Figure 1 illustrates a conceptual model of the hypothesized relationships expected between the three isomorphism pressures towards the intention to adopt sustainable innovations in packaging and to understand how the moderator perceived fidelity and perceived effort required influences the relationship.

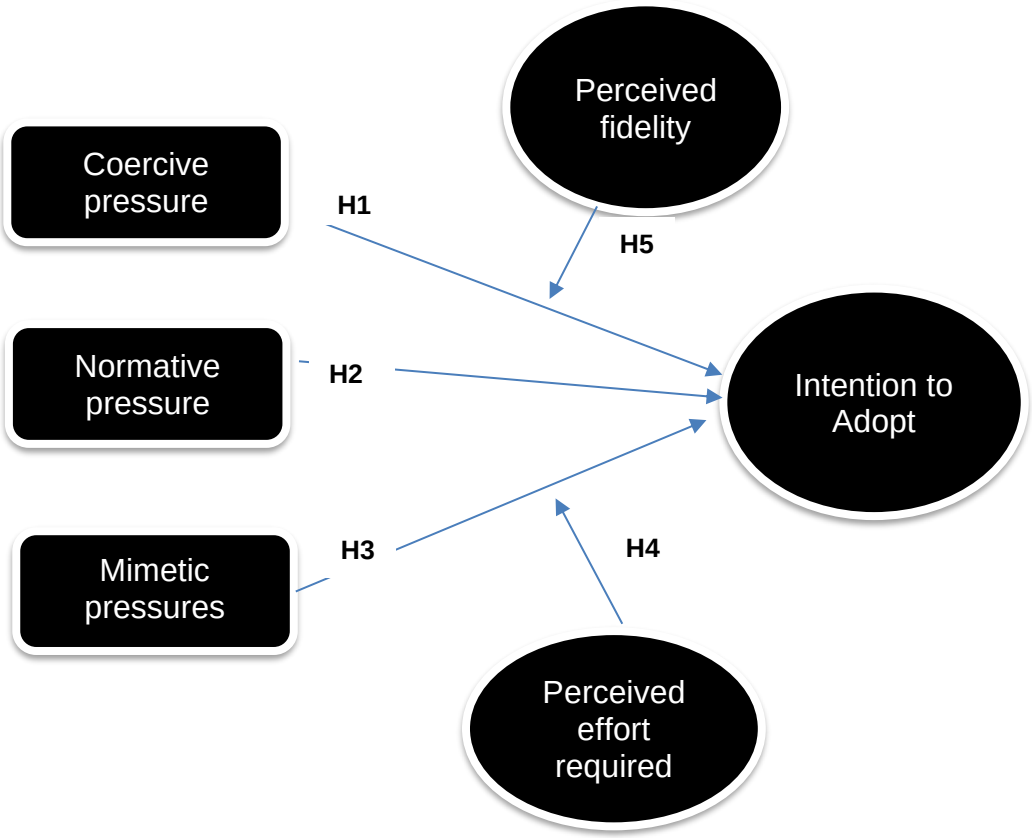

Figure 1: Conceptual Model of Hypothesised Theory

RESEARCH DESIGN AND METHODOLOGY

4.1 Introduction

This section of the paper is a review of the methodology selected to test each research questions. Rationale for the research design, universe, sampling method, unit of analysis applied will be provided. Followed by reasons for the research setting, description of the research instrument and the data gathering process. The limitations that come with research instrument and challenges encountered during data collection are mentioned along with ethical considerations for research.

4.2 Research design

The literature available on diffusion of innovation and institutional theory is well developed and offers objective and generalisable facts, this lends itself to a positivism research philosophy (Saunders & Lewis, 2012). The nature of this study tested existing theory by examining the relationship among variables using a deductive research method (Creswell, 2009; McGregor, 2019).

The deductive approach is appropriate because hypotheses have been formed to test the relationship among constructs (Saunders & Lewis, 2012). This research study combines the constructs from the widely accepted institutional theory, mimetic, coercive and normative pressures with perceived fidelity and perceived extensiveness constructs to test the strength of the relationship (Gerber & Hoffmann, 1998; Meyer & Rowan, 1977; Rogers, 1962; Teo et al., 2003)

The methodology for this research is a mono method, data samples shall be taken on a cross-sectional time horizon, adopting a quantitative approach to collect data. The research design is descripto - explanatory in its purpose to explain an outcome through the discover of causal factors (Saunders & Lewis, 2012). Descripto-explanatory research designs entail identifying and measuring important variables from literature, predicting hypotheses in advance with the intent of developing a casual model about the variables (McGregor, 2019). This study focuses on how and which institutional constructs can cause the adoption of alternative and sustainable forms of packaging consumer goods.

In order to facilitate replication of existing theory, sufficient information is required to reproduce the procedures and to draw comparisons on the data collected against previous literature (McGregor, 2019; Saunders & Lewis, 2012). The purpose was to make certain generalisation from the sample to the population so that conclusions about the behaviours of

the population can be made (Creswell, 2009). A field study technique using a self-administered survey involving manufacturing business was conducted on the spot using an online questionnaire available through company email.

4.3 Research setting

The study was conducted online and in person with manufacturing businesses in Tanzania between November 2020 and February 2021.

Certain East African countries (Kenya, Tanzania and Rwanda) are conserving their natural resources from the effects industrial production by phasing out non-biodegradable materials (African Development Bank Group, 2018). Single and double use plastic carrier bags were prohibited in Tanzania two years ago, however there has been an uphill battle to implement the removal of thin plastic wrappers over the years (Daily News, 2020; Nicholls, 2020; The Guardian, 2020a). A setting such as Tanzania can help to explain if institutional factors motivate or compel firms to participate and join the ongoing movement of sustainability.

One can question the appropriateness of multi-national brand owners, packaging companies and global retailers being pressed to come up with packaging strategies and packaging innovation. Pressures such as public protests, strict government regulations and demanding environmentally conscious consumer expectations add to this challenge on packaging (Sonneveld, James, Fitzpatrick, & Lewis, 2005). Replicating a similar research study in a different setting will provide the understanding of how a developing African country can choose to effectively responsive to packaging sustainability.

4.4 Population

A target population was selected since the population would be difficult to reach (Saunders & Lewis, 2012; Wegner, 2016). The focus was on manufacturing businesses and packaging suppliers to the food and beverage industry who use or produce materials such as plastics, glass, other metal coating i.e. tin, steel, aluminium and polystyrene to brand, package, transport protect and sell end-user goods. The profile of respondents that participated in the research conducted by Teo et al (2003) allowed for businesses with less than 100 permanent employees to qualify. In Abdulaziz et al (2017) study, the duration of business establishment was at least for one year. The geography of this study was situated in the Arusha, Dar es Salaam and Kilimanjaro regions where there is a notable number of manufacturing activities according to the annual industrial survey (African Development Bank Group, 2014; National Bureau of Statistics, 2018).

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4.5 Unit of analysis

The unit of analysis was of local and subsidiary firms in the packaging, food and beverage manufacturing industry within the Arusha, Dar es Salaam and Kilimanjaro regions of Tanzania.

4.6 Sampling method and sample size

A purposive non-probability sampling method was chosen because the complete list of firms is not known, time and resources were limited and the population is geographical dispersed (Creswell, 2009; Saunders & Lewis, 2012). A two-step sampling technique was deployed; convenience sampling and snow-ball sampling. Convenience sampling is when sample respondents representative of the population are drawn from researcher's close networks (Goertzen, 2017). The respondents were engaged over phone or email requesting for a meeting in order to participate in field research intended for the adoption of environmental efficient packaging material. Subsequently, snowball sampling was used to increase response rate, upon completing the survey respondents were asked to identifying members of the population that met the criteria by forwarding the survey and recommending to the researcher business within the food and beverage industry or within their network that could participate. This sampling strategy was used to focus on respondents that know of and have interest in the research topic (McGregor, 2019). Stratification was not involved because the sample chosen did not present characteristics (gender, income, education) that are a true reflection of the population (Creswell, 2009).

To establish a sample size for the research proposal, manufacturing industry reports were consulted. The representation of food and beverage manufacturing establishments that met the population criteria were 165 business consisting of local and subsidiaries companies. However, there were only 10 large business (with more than 500 employees) therefore the logical assumption is to study all the large firms across the three regions and to follow a similar approach for medium and small manufacturing business (National Bureau of Statistics, 2018). Given these findings a total of 30 respondents was the sample size for this study.

Criteria for choosing the respondent from the sample size is a senior manager with at least three years of experience in top management. The respondent is a member of top management within the firm, who understands the strategy of the manufacturing industry and represents the views of the firm. Due to the introduction of unwoven biodegradable plastic carrying bags in the country since 2019 all respondents met the criteria of having at least once in the past one month come into contact with a sustainable packaging material. The useable responses excluded surveys that were completed by non-top management employees such

as team leaders, procurement managers and HR managers, Table 1 shows that the 29 remaining responses were the sample size analysed.

Table 1: Response Data

Number of participating respondents	Number of responses	Number of ineligible responses	Number of useable responses
42	31	2	29

4.7 Research instrument

According to Saunders and Lewis (2012) data collected in a questionnaire is appropriate to test theory. Therefore, the measuring instrument was adapted from existing and validated standardised scales for the constructs (Creswell, 2009). An online template was created on Google Forms, consisting of predominantly close-ended questions on a five-point Likert scale ranging from strongly disagree (1) through neutral (3) to strongly agree (5). A link with the entire survey was made available for each respondent to complete.

The measuring instrument was divided into an introduction followed by instructions, a set of demographic and screening questions about the respondents and their respective firms then the Likert scale questions. To confirm a senior manager completed the survey and did not delegate to junior staff, the introduction informed respondents to anticipate a follow up email seeking clarify on their answers and thanking them for participating (Teo et al., 2003).

The introduction to the questionnaire explained the purpose of the study and simple instructions were presented to request for consent. The respondent was informed that the survey is voluntarily, and that all information is confidential as well as whom they can contact if they may have questions or concerns. Screening questions checked for the respondent's eligibility then the form redirects the respondent to the demographics section. Each section of the online survey displayed one at a time. A Likert-scale questionnaire followed on from the demographics section, questions were optional to answer however respondents were not able to navigate back in the survey.

To break-up the questionnaire layout from a continuous line of Likert-scale questioning, a technique called visual research was used for respondents to engage with because it reduced the repetitive cognitive burden on respondents and made perceived intention of adoption more acute with visible products (Abdala & Fleck, 2008; Lavrakas et al., 2019) In order to stimulate reflection on to the respondent, the survey contained images of mainstream food and beverage packaging material that already existing in market. Respondents were requested to rank which images of packaging material deviates from the business

proceedings and objectives. The ranking of the images in associations with the business practice will separate potential adopters of alternative packing material from non-adopters.

4.8 Data gathering process

4.8.1 Pilot study

The outcome of the pilot test ensured that each question within the survey had been adequately explained to fulfil the research purpose. Preparations of the questionnaire scores were adapted from previous literature on institutional pressures, perceived fidelity, perceived effort required and intention to adopted. Appendix A outlines literature the questions were based on. Previous literature examining how the three institutional pressures influenced top management's support of introducing green supply chain management was instrumental (S. H. Chu, Yang, Lee, & Park, 2017). A study from China based on DiMaggio & Walter (1983) institutional theory was used to examine how senior managers in the country's manufacturing industry viewed the concept of reverse logistics innovation. How the retrieval of used products was able manage their effect on the environment (Huang, Yang, & Wong, 2016; Ye, Zhao, Prahinski, & Li, 2013). The scores from these studies were adopted because through the lens of institutional theory an interpretation of how businesses are respective of sustainable supply chain practices was established.

Questions to measure the degree in which firms must diverge from present business practices and resources in order to implement trending strategic process were adopted from Ansari et al (2010) and Richey et al (2005). Papers from Teo et al (2003) and Davis (1989) were used to develop scores for the constructs perceived effort required and intention to adopt. A copy of the questionnaire sent out to the sample can be found in Appendix B

After composing the survey, it was reviewed by an executive in the manufacturing industry studying their MBA, the following concerns were raised and changed in the questionnaire before uploading it onto Google Forms.

- Question 4 - Differentiate conventional plastics that are unsustainable and sustainable such as bioplastics
- Question 8 - Replace question on how many years of experience do you have in top management with how do you in your role/position influence decisions on packaging material?"
- Rephrase Question 9 - In the last 2 years our firm has made changes to packaging in response to any sustainability objectives mentioned below (select from the options available)
- Reorganising questions regarding the benefits and efforts perceived with adapting environmental packaging innovations into Question 22 and Question 23

The scales were then piloted to executives from the same unit of analysis. One beverage manufacturing business from each of the sample regions in Tanzania recorded their assessment of the questionnaire. The three respondents recorded their responses on the survey and commented on the content of the questionnaire. By the 27th November 2020, the following improvements were made to the content, construct validity, survey format, flow and scales with consideration to the Tanzanian context (Dubey et al., 2017; Saunders & Lewis, 2012). The scores from the pilot are included into the final instrument revisions.

- Revised the qualifying question to include packaging companies and suppliers' participants in the survey
- Simplified the meaning of Question 2
- Introduced family-owned business and private company as an option to selected from in Question 10
- Introduced distinctive instructions on how to rank/rate answers in Question 21 and Question 24
- Question 22 and Question 23 have similarities and seem repetitive
- One-year timeframe to contemplate intention to adopt mentioned in Question 29 and 30 was considered too short a period

4.8.2 Main study

The survey opened on 30th November 2020 and it took 11 weeks to gather data on the sample size. The response rate and answers collected were viewed periodically in an online table on Google Drive to ensure the minimum sample size are achieved for the following week. Follow-up emails, phone calls and visits were made to management to increase the rate of responses, after the data collection period passed the link to the online survey was disenabled on 22 February 2021. To collect the data, a personalized email invitation or letter was sent or dropped off to each company representative, with a link to the online instrument. The email or letter included an information sheet that provided a brief description of the research's background and motivation.

At the start, the rate of response was low because companies were not inclined to fill online surveys, senior management respondents had other official circumstances that interfered with completing it. Follow-up calls to recontact with respondents increased the response rate during the data collection period and the snowballing technique also focused on only appropriate respondents for the study. In total, 42 firms agreed to participate, 31 firms completed the survey.

4.9 Data analysis approach

From Google Form, the data was extracted to an excel spreadsheet uploaded and analysed using IBM SPSS to perform descriptive, inferential and regression tests.

From the demographic results, condensed descriptive summaries were generated. Thereafter, inferential tests on the hypotheses were drawn from the sample study to the population in order to generalize the sample findings (Creswell, 2009; Wegner, 2016). Statistical modelling was used to build models of relationships between the variables.

Bar graphs, scatters charts and frequency tables were utilized to visualize the nominal and ordinal data. A table displayed the mean and standard deviation for each sub-construct and corresponding survey questions. The assumption was that the dataset will have normal distribution and the level of significance was 0.05. Pearson's correlation co-efficient was chosen to test the associations between two or more nominal variables (Wegner, 2016). The correlation provided insight on relationships between constructs that may support the hypothesis or generate new findings of the study.

4.9.1 Quality control

The internal and external validity in research design refers to ensuring that the findings truly represent the phenomenon set out in a replicated study (Creswell, 2009; Saunders & Lewis, 2012). To avoid influence from the researcher this survey was self-administered and carried out by firm respondents at their own time. A definition, description and example of the packaging material was included in the survey to improve the validity of responses (Teo et al., 2003). Since existing scores were replicated in this study a confirmatory factor analysis (CFA) was used to check for validity thereafter an explanatory factor analysis was used. A factor analysis was used to validate the relationship within a group of variables and examine the loading pattern per construct. Confirmatory factor analysis is the common procedure to follow when existing variable/questions are used from literature. However, the sample size was inadequate hence the cut-off of good fit values were not all met (Beavers et al., 2013). As a substitute, an explanatory factor analysis was used to determine whether the variables/questions are measuring the construct intended (Saunders & Lewis, 2012). To determine if the data is suitable for explanatory factor analysis the Kaiser-Meyer-Olkin (KMO) test and the Bartlett Test of Sphericity were run to check for factorability. The KMO measure determines adequacy in the sample for all the items, the score was unacceptable (KMO = 0.371) indicating that factor analysis was not appropriate given the collected data, however the results of the Bartlett's Test for Sphericity was statistically significant. The purpose of the Pearson's correlation coefficient is to measure the association between continuous variables

(Wegner, 2016). Since factor analysis was not appropriate for the data collected, a Pearson correlation coefficient was used to check the validity for each construct. Perceived fidelity was excluded from the Pearson coefficient test because the construct only had one variable.

Reliability in research refers to the quality of the data collection methods and analysis. To ensure consistency each time in repeated observations of the same phenomenon (Babbie, 2013; Saunders & Lewis, 2012). To demonstrate internal consistency Cronbach alpha statistics was used to test how closely construct items are related (Taber, 2017).

In this study construct reliability was established by calculating Cronbach Alpha coefficients, Inter-Item correlation and Cronbach Alpha if Item-Deleted for all three institutional pressures (coercive, mimetic, normative), perceived effort required and intention to adopt. In Teo et al (2003) study on institutional pressures the Cronbach Alpha criterion was of .70 and the average recommended item-total correlation threshold of .50 was used for each institutional theory construct. The Cronbach Alpha range of between .60 and .70 was acceptable, more than .70 was considered as strong in Perri, Giglio, & Corvello (2020) study on intention to adopt smart energy consumption behaviours. Teo et al. (2003) also used the recommend Cronbach Alpha value of greater than 0.70 as good for the construct perceived effort. A Cronbach Alpha value has been excluded for construct perceived fidelity because it contained one item.

4.9.2 Ethical considerations

Ethical principles in research are there to protect and respect the right of all the stakeholders involved to the research project. For this reason, anonymity and confidentiality must be offered when soliciting data from actual persons through questionnaires. Informed consent was addressed via an information sheet that invited participants to partake in the study with a clear understanding that they are not obligated to do so and will not encounter any negative consequences because of it (Lavrakas et al., 2019).

The information sheet disclosed details about the researcher, reasons for doing to research project, what is the study about, the desired outcomes and what is required from the company in order to participate. The survey questions were designed to ensure data recorded would not identify the firm or respondent. Self-administrated questionnaire provided the best form of anonymity because the researcher can not know who replies to surveys (Lavrakas et al., 2019).

4.9.3 Assumption testing

The following assumptions were tested prior to conducting regression analysis:

- Normality – is applicable to the dependent variable Intention to Adopt, it was found not normally disturbed with a Shapiro-Wik of 0.00, shown in Figure 9 of Appendix C
- Sample size – more than 20 records for each independent variable was satisfactory because the dependent variable was not normally distributed, in the case of linear regression this assumption is satisfied, however for multiple regression this assumption was violated.
- Outliers - there was absence of outliers in all the variables
- Linearity – relationship between the independent variable and dependent variable was linear
- Collinearity between variables – absence of collinearity variables between +3 and – 3

4.9.4 Hypothesis testing

The appropriate statistical analysis to run for hypotheses H1, H2 and H3 was a linear regression to test the straight-line equation that represents the relationship between intention to adopt and the three isomorphic pressures, coercive, normative and mimetic. By changing the independent variable, the research project was able to understand what impact the constructs have on the dependent variable intention to adopt. The linear regression model predicts in a straight line the relationship between one independent variable and dependent variable (Hayes, 2013; Wegner, 2016).

In order to test how perceived fidelity and perceived effort required moderates the outcome of intention to adopt mentioned in hypotheses H4 and H5 a multiple regression analysis was conducted (Hayes, 2013; Wegner, 2016). Multiple regression is used when another independent variable is introduced into the relationship that is being investigated. Construct perceived fidelity and perceived effort are concerned as independent variables.

The results from the regression were interpreted by reviewing the coefficient of determination R–squared (R^2), the p-value (p) and the standardized co-efficient Beta (B). To test the significance of the results obtained from the hypothesis, a cut-off point of p-value is .05 was used. If the p-value is smaller than 0.05, the alternative hypothesis is accepted. R^2 is used to calculate the variance of the data points around the regression line. The R^2 statically measure is always between 0% and 100%, a higher R^2 means that the regression model fits the observed data points considerably better. Beta measures compares the degree of change between an dependent variable and an independent variable (Field, 2013).

The table below mentions the independent, dependent variables and associated methods

that were tested

Table 2: Summary of Variables and Regression Methods

Hypotheses	Independent Variable	Dependent Variable	Method
H1	Coercive Pressure	Intention to Adopt	Linear regression
H2	Mimetic Pressure	Intention to Adopt	Linear regression
H3	Normative Pressure	Intention to Adopt	Linear regression
H4	Mimetic Pressure; Perceived effort required	Intention to Adopt	Multiple regression
H5	Coercive Pressure; Perceived fidelity	Intention to Adopt	Multiple regression

4.10 Limitations

The research was limited to respondents in three regions of Tanzania namely Arusha, Dar es Salaam and Kilimanjaro, it was not a representation of the population in order to make generalisations. Therefore, producers of packaging to the food and beverage industry across the country were included into the study to improve representation of the research population (Saunders & Lewis, 2012). The sample size was bias towards large manufacturing businesses that may have disproportionate impacts on packaging products used verse medium and small business. The decision for the unit of analysis to be the firm meant that data collection was only from one manager who represented the firm's reality and choices. In larger, multi-national firms' choices are made after considering the opinions of various business functions however the assumption is that decisions made by smaller firms are usually embodied within one person. Therefore, a firm's CEO, CFOs or COOs were the preferable respondent however access was constrained. Convenience and snowballing sampling techniques tended to have a bias towards particular respondents type not leading to representativeness because the relations tare close to the researcher's sphere of influence (Saunders & Lewis, 2012).

The KMO test was compromised because the questionnaire design catered for certain constructs that only had two variables, contributing to a small KMO. Normally three or more correlated variable per factor would have produce a large KMO (Field, 2013). The limitation of the Pearson's correlation coefficient is that it does not imply causality. It may be advantageous to include additional and existing constructs such as feasibility, affordability, perceived usefulness to observe the relationship between institutional pressures and organisational capability (Hayes, 2013).

Even after the pilot was conducted to improve the questions to be more meaningful to the respondents. The drawback of self-administrated questionnaires is that respondents had different interpretations of the questions, this miscommunication led to unanswered questions and skewed results. A cross-sectional time horizon did not account for correlation trends over time. Given more time, performing a longitudinal study over several years may identify strong associations between institutional isomorphic pressures and the diffusion of innovation process (McGregor, 2019).

4.11 Conclusion

The research design followed a positivism, deductive approach over a cross-sectional time horizon. The descripto - explanatory research design was used to establish relationships between two or more constructs and how a moderator influences the relationship. Data recorded from Tanzania's top management employees over a 13-week period represented the firm's views using an online survey as the measuring instrument. Results and recommendations learnt from the pilot study were incorporated into the main study. The next section of the paper will carry out and report on the quantitative data analysis techniques such as descriptive statistics, Cronbach alpha, factor analysis and Pearson's coefficient correlation analysis to address the research questions.

RESULTS

5.1 Introduction

In chapter 5, the results of the analyses are presented by using the research methodology defined in chapter 4. A profile of the respondents will be shown, then descriptive statistics, followed by a reliability and validity analyses. To complete this chapter inferential statistics are presented comprising of research question testing and hypothesis testing.

5.2 Sample Profile

In Table 3, the 29 respondent companies had a range of full-time employees from 1 to 3000 while the mean number of employees was 273. Firm size was part of the survey to ensure variety in the data to generalise the findings. The snowballing technique assisted to capture responses from 2 CEOs, 4 CFOs, 9 Company Owners, 3 General Managers, and 9 Marketing/Production/Sales/Technical Senior Managers. Firm respondents from Arusha, Dar es Salaam and Kilimanjaro region were 28%, 34% and 38% respectively and at least one packaging supplier from each of the three regions participated in the study. Majority of the firm respondents were from 14 private companies followed by 7 family-owned and 3 franchisees.

Table 3: Profile of Respondents

Demographic variables	Category	Frequency (n=29)	Percentage
Type of industry	Food & Beverage	26	90%
	Packaging	3	10%
Company Location	Arusha	8	28%
	Dar es Salaam	10	34%
	Kilimanjaro	11	38%
Size of firm (Number of employees)			
	Less than 50	14	48%
	51 - 150	6	21%
	151 - 500	6	21%
	501 -1000	1	3%
	Greater than 1001	2	7%
	Minimum	1	
	Mean	273	
	Maximum	3000	
Company Ownership	Association	1	3%
	Co-operation	1	3%
	Family-owned	7	24%
	Franchise	3	10%
	Multi-national	0	0%
	Partnership	2	7%
	Private company	14	48%
	Social enterprise	1	3%
Company Role	Owners/Founders	9	31%
	CEOs	2	7%
	CFOs	4	14%
	Managing Directors	2	7%
	Marketing/Sales/Packaging Production/Technical Directors	9	31%
	General Mangers	3	10%

5.3 Descriptive Statistics

The analysis of descriptive statistics is designed to describe the basic features of the study, summaries in the form of tables and histograms will report on the following areas:

- Packaging material used by respondent firms
- Packaging material that deviate from respondent firm current core practices

Additional descriptive statistics will be covered in the Research Question Testing section, such as:

- Criteria used by respondents' firm for packaging decisions
- Importance of sustainable development in the future for respondent firms
- Sustainable packaging adoption barriers of respondent firms
- Sources respondent firms obtain information on technological developments for packaging
- Influence of institutional pressures on sustainable packaging adoption
- Firm size impact on institutional pressure

The predicted packaging material that prevailed was conventional plastic material, 44% of respondent firms recorded that they currently use plastic as their main packaging material. The next dominant material was glass and paper at 14% followed closely by cardboard 12% respectively.

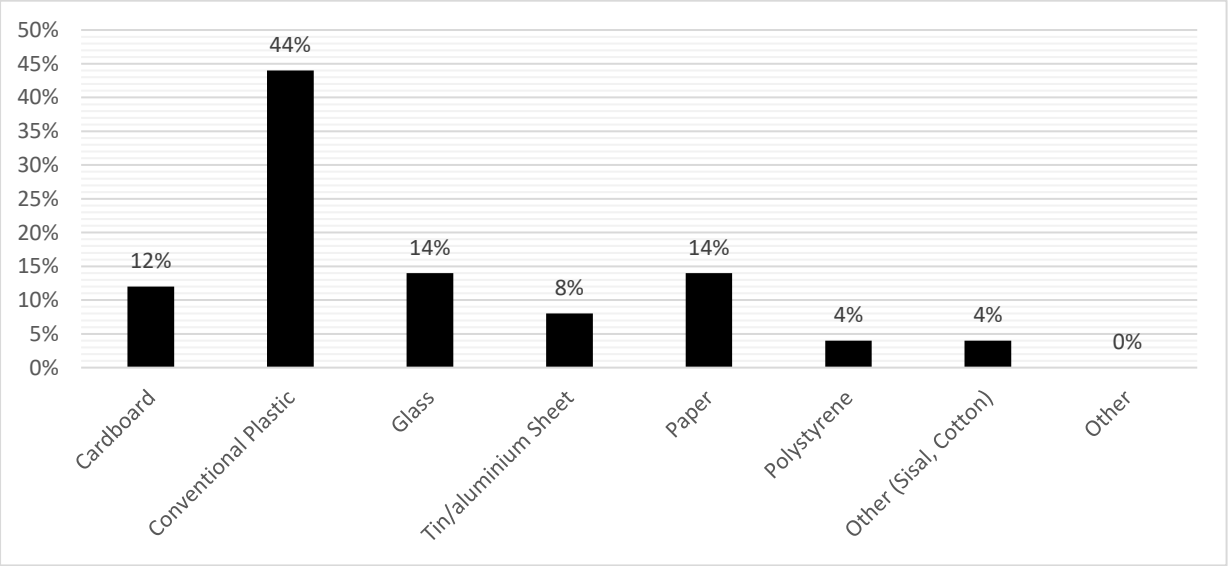


Figure 2: Percentage of Prevailing Packaging Materials used by Respondent Firms

Conversely, Figure 3 reported on packaging material that respondent firms ranked as deviating from their current business practices, material that had the greatest amount of deviance was ranked as 1, the least amount of deviation from current practise was ranked as

5. It was expected that based on Figure 2 plastic would not be ranked at all as a material that deviates from the respondent firm's business practices, this claim is supported by the results. Tin/Aluminium coating and polystyrene foam were both ranked as first, cardboard and glass were both ranked as second and lastly paper ranked third.

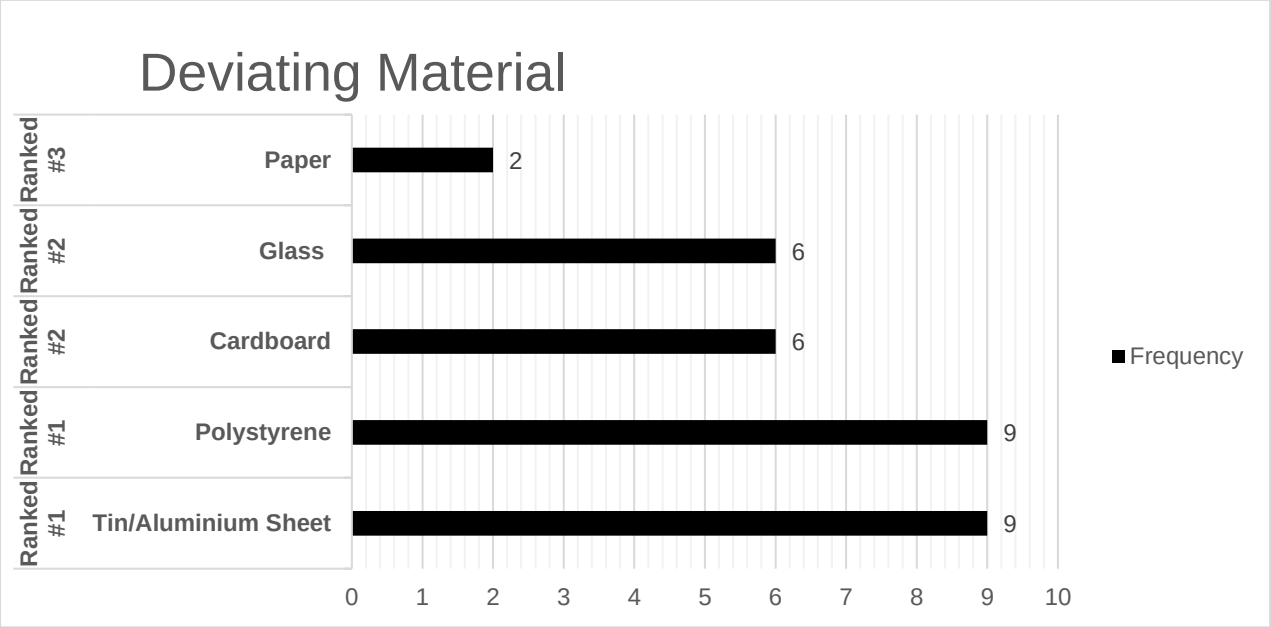


Figure 3: Ranked Deviating Packaging Material from Current Business Practice

5.3.1 Research Question Descriptive Statistics

5.3.1.1 Research Question 1

Research Question 1: What is the logic used by firms to pursue dominant packaging materials?

Research Question 1a: How did the dominant packaging material gain momentum

Figure 2 reported that conventional plastic is the dominant packaging material used by respondent firms followed by glass, paper and then cardboard.

Respondent firms were then asked to rank the criteria for choosing their current packaging material. Product integrity, food safety and consumer preferences were rated as primary criteria that packaging material needed to fulfil. Respondent firms once more warranted product integrity as important for deciding the material to pack their products along with packaging quality. Packaging that satisfies the overall performance of a product by preventing spoilage and retaining aromas gains validity and dominance (Banaeian, Mobli, Nielsen, & Omid, 2015; FAO, 2014). Ranked third was environmentally friend material, availability and affordability of packaging material as criterion for making packaging choices. Logistics and cost of production were considered as the 4th conditions. The 5th conditions for pursuing a packaging material was durability and availability of such material.

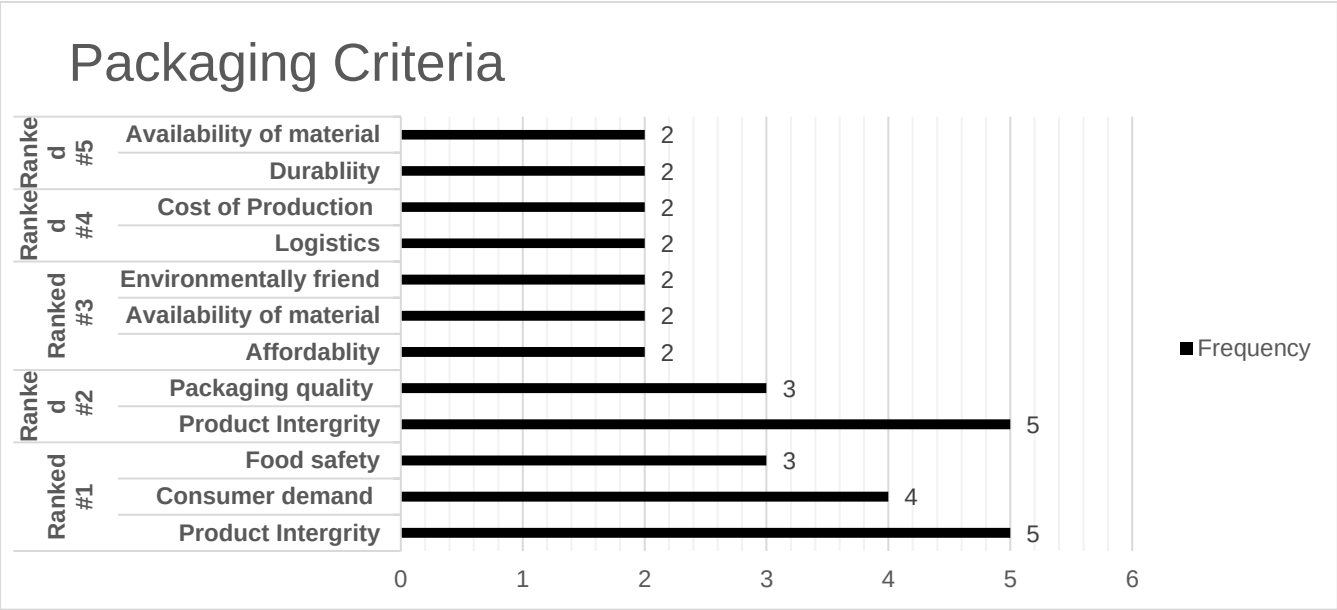


Figure 4: Ranked Criteria for Packaging Decisions

5.3.1.2 Research Question 2

Research Question 2: In the firm's perceptive what interferes with making sustainable choices regarding packaging?

> **Research Question 2a:** How do firms obtain information on technology development in packaging material?

When asked to rank/rate barriers to adopting sustainable packaging choices high production cost was recorded as the first inhibitor, 7 firm respondents in Figure 5 ranked this criterion as the first and 4 firm respondents recorded it as the second barrier. The lack of available suppliers that produced sustainable material in the market was also ranked as a first barrier by 6 respondents and then ranked third by 4 respondent firms. Firm placed their concerns over food safety as a criterion for first place by 5 respondents and second place by 4 respondent firms. The remaining perspectives from the respondent firms was that implementing sustainable packaging forms would lower sales margins and sustainable packaging options were few to choose from. These concerns are typical perspectives companies have about green product packaging (Scott & Vigar-Ellis, 2014).

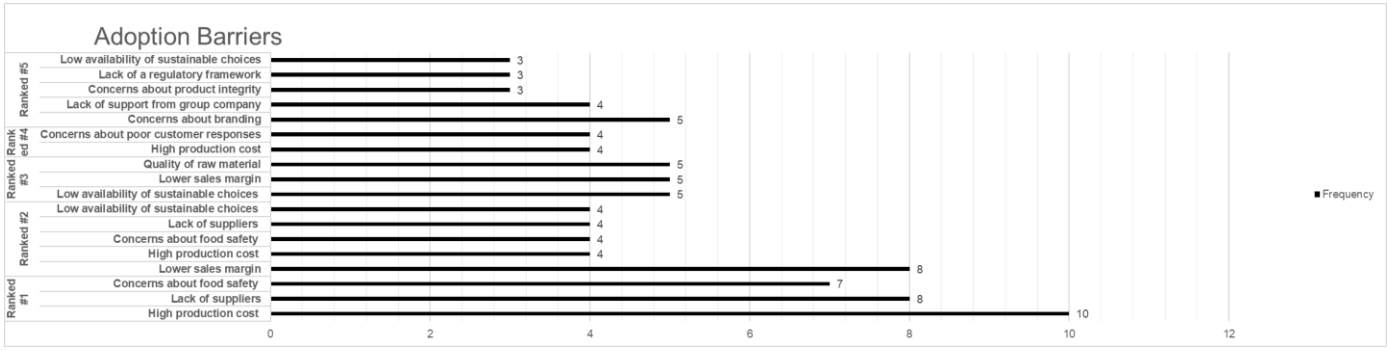


Figure 5: Ranked Sustainable Packaging Adoption Barriers

The three packaging companies that answered the question on how they obtain information on technological developments with regards packaging material and systems sourced it from the market, industry benchmarks and their own research. Food and beverage companies mainly retrieved information by using the industry as their bench market for sources of technological development, their own research and the competition. Smaller firms develop and rely on in-house research and competition observation majority of the time. Due to their capacity larger firms tend to make use of external sources of industry information.

Table 4: Source of Information on Technological Developments Associated with Packaging

Category	Food & Beverage Companies	Packaging Companies
Suppliers	3	1
Competition	10	1
Industry benchmarks	16	2
Our own research	15	2
Group company	3	0
Associations	3	0
Other	0	2

5.3.1.3 Research Question 3

Research Question 3: How important is it for firms to adopt technology intended to protect the environment from waste caused by the dominant packaging material?

97% of the respondent firms recorded that sustainability decisions are going to be very important in making future packaging choices. Since this question touches on a sensitive topic often related with climate change, it could be one of the reasons why it is so important to them.

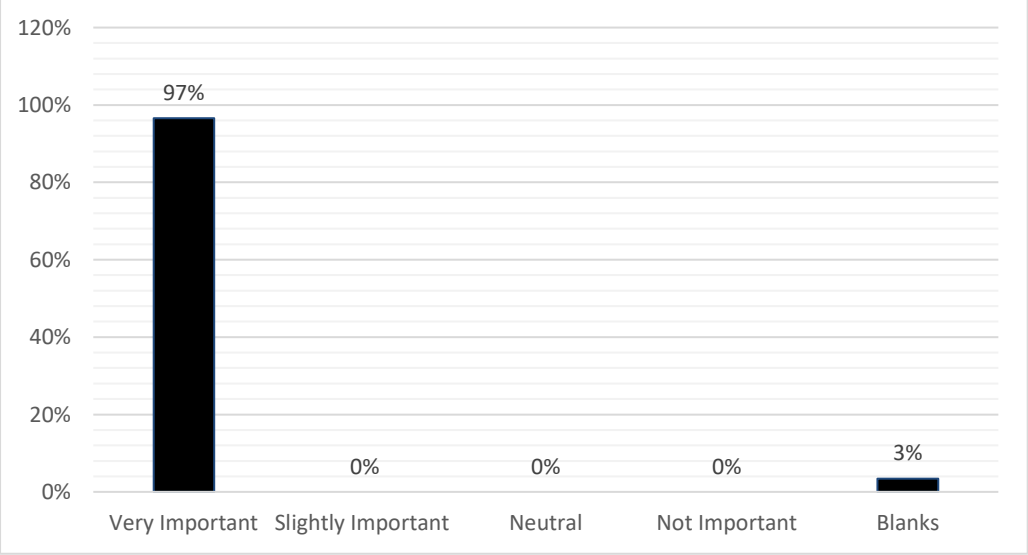


Figure 6: Importance of Sustainability Decisions for the Future Packaging Systems and Choices

5.3.1.4 Research Question 4

Research Question 4 What influence does institutional pressures have on facilitating or preventing firms from making sustainable packaging choices?

> **Research Question 4a:** How can the size of the firm make it more vulnerable to coercive, normative and mimetic isomorphic pressures?

Table 5 shows the mean score and standard deviation of each variable and construct. Three questions namely CP1, CP2, CP2 together produce a mean score of the construct coercive pressure (M = 3.69, SD = 1.269), on average respondent firms could neither agree nor disagree = 3 whether coercive pressure influenced their packaging decisions. Coercive pressures are applied by laws, legislations or by constraining access to resources until compliancy.

Construct normative pressure made up of three questions namely (NP1, NP2, NP3) showed a higher construct mean score compared to coercive pressure of (*M* = 4.06, *SD* = 0.869). Respondents firm agreed = 4 that normative pressures influence how they made sustainable packaging choices. Normative pressure is a social construct that obligates business to act in a certain way by a common set of norms and values established by industry, suppliers, society or customers.

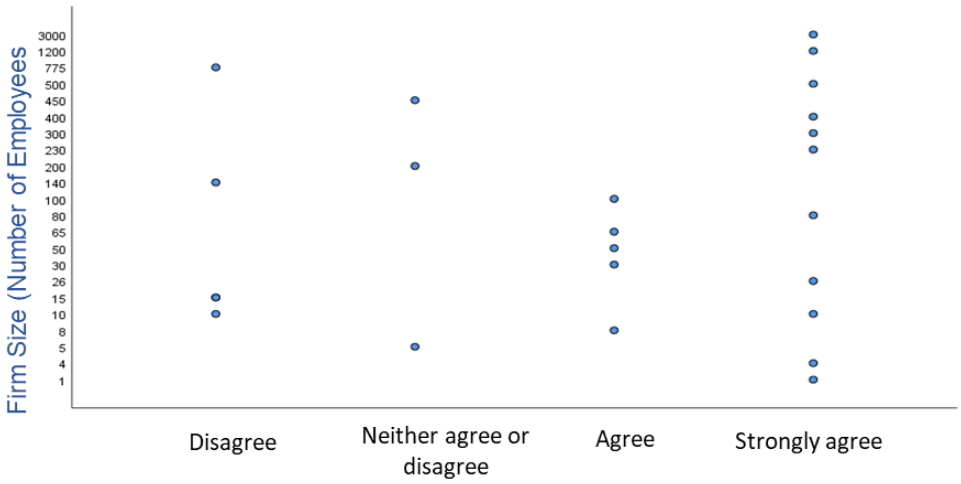
On average four questions namely MP1, MP2, MP3, MP4 produced a mimetic pressure score of (*M* = 3.00, *SD* = 1.159), like coercive pressures, respondents were unsure, could neither agree nor disagree = 3 whether the construct influenced their decisions. Firms' experience mimetic pressures through the attraction for another firm or push from suppliers and competition.

Table 5: Means and Standard Deviations of the Data Collected per Observable Variable and Construct

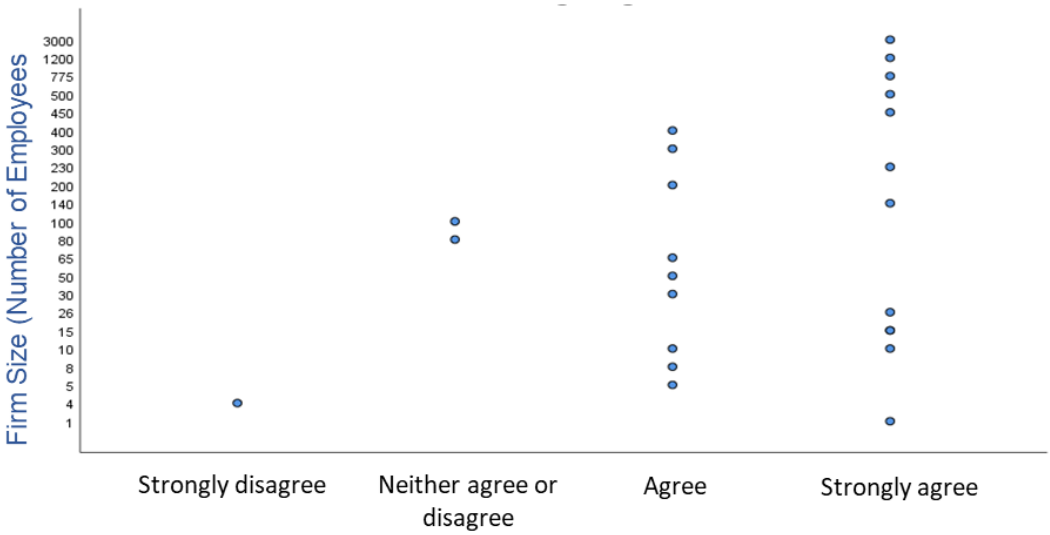
Variables and Constructs	Mean	Standard Deviation
Coercive Pressures (CP)		
CP1	3.72	1.360
CP2	3.52	1.639
CP3	3.83	1.311
Average	3.69	1.269
Norm Pressures (NP)		
NP1	3.79	1.236
NP2	4.28	0.922
NP3	4.10	0.976
Average	4.06	0.869
Mimetic Pressures (MP)		
MP1	3.29	1.117
MP2	3.29	1.213
MP3	2.93	1.245
MP3	2.93	1.303
Average	3.00	1.159
Perceived Effort Required (RER)		
PER1	3.52	0.893
PER2	3.37	1.006
Average	3.20	1.242
Perceived Fidelity (PF)		
PF1	3.55	1.616
Average	3.55	1.616
Intention to Adopt (ITA)		
ITA1	4.04	1.091
ITA2	4.11	1.050
Average	4.07	1.467

Figure 7 below plots the average score of each isomorphic pressure construct against the size of the company on a scatter graph to show how respondent firm sizes are susceptible to coercive, normative and mimetic pressures.

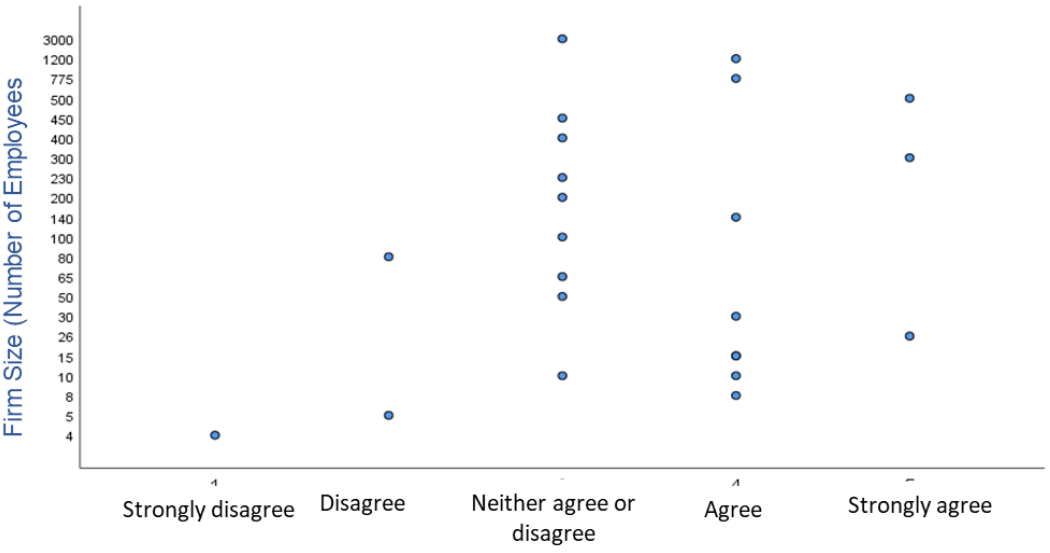
Respondent firms' sizes ranging from 1 – 3000 employees agreed =4 and strongly agreed =5 that they were affected by coercive or government directives regarding regional environmental policies and packaging. Respondent firm size small, medium and large agreed = 4 and strongly agreed = 5 that consumer influence affects company packaging practices and implementation. Interestingly, respondent firms with 10 or more employees including the largest firm of 3000 employees were divided, could neither agreed or disagreed = 3 on the influence that competition or mimetic pressures had on their packaging practices.



Influence of regional government environment regulation on the firm's sustainable enivironmental



Consumer influence on company's packaging practices and implementation.



Competiton influence on company's packaging practices and implementation.

Figure 7: Scatter Graph of Isomorphic Pressures on Firm Size

5.4 Construct Validity Analysis

The Pearson's correlation coefficient test indicated that there is significant correlation between all the scales used to form each of the following constructs coercive pressure, normative pressure, mimetic pressure, perceived effort and intention to adopt because p value ≤ 0.05, results can be seen in Table 6 through to Table 10 below.

Table 6: Coercive Pressure Pearson's Correlation

			Stringent government regulations	Conflicts between products and environmental regulations	Government's environmental regulations.
CP1	Stringent government regulations	Pearson Correlation	**1**	**.627****	**.753****
		Sig. (2-tailed)		**0.000**	**0.000**
		N	29	**29**	**29**
CP2	Conflicts between products and environmental regulations	Pearson Correlation	.627**	**1**	**.641****
		Sig. (2-tailed)	0.000		**0.000**
		N	29	29	**29**
CP3	Government's environmental regulations.	Pearson Correlation	.753**	.641**	**1**
		Sig. (2-tailed)	0.000	0.000	
		N	29	29	29

**. Correlation is significant at the 0.01 level (2-tailed).

The p-value of questions CP1, CP2 and CP3 is ≤ 0.05 correlate to form construct coercive pressure

Table 7: Normative Pressure Correlation

			Environmental consciousness of consumers	Consumers influence	Enterprise environmentally friendly image
NP1	Environmental consciousness of consumers	Pearson Correlation	**1**	**.459****	**.610****
		Sig. (1-tailed)		**0.006**	**0.000**
		N	29	**29**	**29**
NP2	Consumers influence	Pearson Correlation	.459**	**1**	**.523****
		Sig. (1-tailed)	0.006		**0.002**
		N	29	29	**29**
NP3	Enterprise environmentally friendly image	Pearson Correlation	.610**	.523**	**1**
		Sig. (1-tailed)	0.000	0.002	
		N	29	29	29

**. Correlation is significant at the 0.01 level (1-tailed).

The p-value of questions NP1, NP2 and NP3 is ≤ 0.05 correlate to form construct normative pressure

Table 8: Mimetic Pressure Correlation

			Competitors' earlier implementation	Competitors' influence	Competitors' environmental protection strategy.	Intense industry competition
MP1	Competitors' earlier implementation	Pearson Correlation	**1**	**.839****	**.548****	**.523****
		Sig. (1-tailed)		**0.000**	**0.001**	**0.002**
		N	28	28	28	**28**
MP2	Competitors' influence	Pearson Correlation	.839**	**1**	**.627****	**.646****
		Sig. (1-tailed)	0.000		**0.000**	**0.000**
		N	28	28	**28**	**28**
MP3	Competitors' environmental protection strategy.	Pearson Correlation	.548**	.627**	**1**	**.476****
		Sig. (1-tailed)	0.001	0.000		**0.005**
		N	28	28	28	**28**
MP4	Intense industry competition	Pearson Correlation	.523**	.646**	.476**	**1**
		Sig. (1-tailed)	0.002	0.000	0.005	
		N	28	28	28	28

**. Correlation is significant at the 0.01 level (1-tailed).

The p-value of questions MP1, MP2, MP3 and MP4 is ≤ 0.05 correlate to form construct mimetic pressure

Table 9: Perceived Effort Required Correlation

			Perception of effort required in business strategy	Perception effort is required in production practices
PER1	Perception of effort required in business strategy	Pearson Correlation	**1**	**.806****
		Sig. (1-tailed)		**0.000**
		N	27	**27**
PER2	Perception effort is required in production practices	Pearson Correlation	.806**	**1**
		Sig. (1-tailed)	0.000	
		N	27	27

**. Correlation is significant at the 0.01 level (1-tailed).

The p-value of questions PER1 and PER2 are ≤ 0.05, correlate to form construct perceived effort required

Table 10: Intention to Adopt Correlation

			Contemplating adoption	Likely to adopt
ITA1	Contemplating adoption	Pearson Correlation	**1**	**.970****
		Sig. (1-tailed)		**0.000**
		N	27	**27**
ITA2	Likely to adopt	Pearson Correlation	.970**	**1**
		Sig. (1-tailed)	0.000	
		N	27	27

**. Correlation is significant at the 0.01 level (1-tailed).

The p-value of questions ITA1 and ITA2 are ≤ 0.05, correlate to form construct intention to adopt

5.5 Construct Reliability Analysis

The values of Cronbach Alpha are shown in Table 11, the results for Inter-Item correlation and Cronbach Alpha if Item-Deleted are reported in Table 12.The Cronbach Alpha for all the constructs that were put through the test produced results of greater than 0.70 which is an acceptable range. Results for item-total correlation were also good, all constructs producing a score of greater than .50 In addition, the Cronbach Alpha for all questions within the construct were able to remain appropriate even if items were to be deleted.

Table 11: Assessment of Internal Consistency Cronbach Alpha Per Construct

Constructs	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	Number of Items
Coercive Pressure	0.853	0.861	3
Normative Pressure	0.764	0.772	3
Mimetic Pressure	0.859	0.862	4
Perceived Effort Required	0.889	0.892	2
Intention to Adopt	0.984	0.985	2

Table 12: Assessment of Internal Consistency Per Item

Construct	Item	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Coercive Pressure	Stringent government regulations	0.753	0.786
	Government's environmental regulations.	0.767	0.733
	Conflicts between products and environmental regulations	0.677	0.805
Normative Pressure	Environmental consciousness of consumers	0.615	0.686
	Consumers influence	0.542	0.745
	Enterprise environmentally friendly image	0.668	0.612
Mimetic Pressure	Competitors' earlier implementation	0.746	0.806
	Competitors' influence	0.849	0.758
	Competitors' environmental protection strategy.	0.622	0.854
	Intense industry competition	0.621	0.857
Perceived Effort Required	Perception of effort required in business strategy	0.806	
	Perception effort is required in production practices	0.806	
Intention to Adopt	Contemplating adoption	0.970	-
	Likely to adopt	0.970	-

5.6 Regression Analysis

Prior to conducting a regression analysis, the data provided to pass all the assumption stated in Section 4.9.3 Assumption Testing. Regression analysis was performed at a signification level of ($p \leq .05$). The Pearson's correlation coefficient between the construct will be described followed by the results of the regression analysis. Null and alterative hypotheses will be stated along with the output of the regression test.

5.6.1 Correlation Analysis

A correlational analysis was conducted to determine if there was a relationship between all five constructs.

For the positive correlation

A positive correlation is observed in Table 13 between constructs perceived fidelity, perceived effort requires and intention to adopt, p-value ≤0.05 suggests statically significance. The values of (r =.773, p-value = 0.000) between constructs perceived fidelity and intention to adopt show a strong statistically significant relationship. Indicating that intention to adopt is highly influenced by perceived fidelity by respondent firms. Constructs perceived required effort and intention to adopt with values of (r = .592, p-value = 0.00) have strong relationship. Also, there is a strong a positive correlation between perceived effort required and perceived fidelity (r =.510, p-value = 0.00).

For the negative correlation

From Table 13 it shows that coercive pressure has a negative relationship, the r value has (-) sign in front. There is a non-significant relationship with normative pressures, perceived fidelity, perceived effort required and intention to adopt because the p-value ≥0.05. Coercive pressure and perceived fidelity had an output of (r= -0.360, p-value 0.055) suggesting respondent firms strongly found that as coercive pressures decrease so does perceived fidelity. Constructs coercive pressure, normative pressures and the intention to adopt showed a non-significant negative relationship with because p-values ≥ 0.05 and r has (-) sign.

Table 13: Correlations between constructs

		Coercive Pressure	Normative Pressure	Mimetic Pressure	Perceived Fidelity	Perceived Effort Required	Intention To Adopt
Coercive Pressure	Pearson Correlation	**1**	**-0.132**	**0.117**	**-0.360**	**-0.271**	**-0.320**
	Sig. (2-tailed)		**0.495**	**0.545**	**0.055**	**0.155**	**0.090**
	N	29	**29**	**29**	**29**	**29**	**29**
Normative Pressure	Pearson Correlation	-0.132	**1**	**0.336**	**0.256**	**0.281**	**0.117**
	Sig. (2-tailed)	0.495		**0.074**	**0.180**	**0.140**	**0.545**
	N	29	29	**29**	**29**	**29**	**29**
Mimetic Pressure	Pearson Correlation	0.117	0.336	**1**	**0.229**	**0.220**	**0.294**
	Sig. (2-tailed)	0.545	0.074		**0.233**	**0.252**	**0.122**
	N	29	29	29	**29**	**29**	**29**
Perceived Fidelity	Pearson Correlation	-0.360	0.256	0.229	**1**	**.510****	**.773****
	Sig. (2-tailed)	0.055	0.180	0.233		**0.005**	**0.000**
	N	29	29	29	29	**29**	**29**
Perceived Effort Required	Pearson Correlation	-0.271	0.281	0.220	.510**	**1**	**.592****
	Sig. (2-tailed)	0.155	0.140	0.252	0.005		**0.001**
	N	29	29	29	29	29	**29**
Intention To Adopt	Pearson Correlation	-0.320	0.117	0.294	.773**	.592**	1
	Sig. (2-tailed)	0.090	0.545	0.122	0.000	0.001	
	N	29	29	29	29	29	29

**. Correlation is significant at the 0.01 level (2-tailed).

5.6.2 Hypothesis Testing

Hypothesis testing was done by running regression analysis, linear regression was conducted on hypothesis 1, hypothesis 2 and hypothesis 3, a multiple linear regression was run for hypothesis 4 and hypothesis 5.

H1: Coercive pressure positively affects firm's intention to adopt innovations in sustainable packaging.

> **Null Hypothesis H10:** Coercive pressures have a no positive relationship with the firm's intention to adopt.
> **Alternative Hypothesis H11:** Coercive pressures have a positive relationship with the firm's intention to adopt

Table 14 reports the linear regression conducted to predict intention to adopt based on coercive pressure.

> The linear regression model through the R^2 is explained by 10.3% variance of the independent variable intention to adopt. A (p-value = 0.90) indicates a statistically insignificant relationship between intention to adopt and coercive pressure.

Table 14: Hypothesis 1 Linear Regression Analysis

Model Summary[b]

					Change Statistics					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.320[a]	**0.103**	0.069	1.22418	0.103	3.088	1	27	**0.090**	2.032

a. Predictors: (Constant), CoercivePressure
b. Dependent Variable: IntentionToAdopt

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4.628	1	4.628	3.088	.090[b]
	Residual	40.463	27	1.499		
	Total	45.091	28			

a. Dependent Variable: IntentionToAdopt
b. Predictors: (Constant), CoercivePressure

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	4.741	0.640		7.409	0.000
	CoercivePressure	-0.277	0.158	-0.320	-1.757	0.090

a. Dependent Variable: IntentionToAdopt

H2: Normative pressure positively affects firm's intention to adopt innovations in sustainable packaging.

Null Hypothesis H20: Normative pressures have a no positive relationship with the firm's intention to adopt.

Alternative Hypothesis H21: Normative pressures have a positive relationship with the firm's intention to adopt

Table 14 reports the linear regression conducted to predict intention to adopt based on normative pressure.

The model through the R^2 explains 1.4% variance of the independent variable intention to adopt means that the observed data points hardly fit the model. The relationship between intention to adopt and mimetic is statistically non-significant (p-value = 0.545).

Table 15: Hypothesis 2 Linear Regression Analysis

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.117[a]	0.014	-0.023	0.87897	0.014	0.375	1	27	0.545	2.227

a. Predictors: (Constant), NormativePressure

b. Dependent Variable: IntentionToAdopt

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	0.290	1	0.290	0.375	.545[b]
	Residual	20.860	27	0.773		
	Total	21.150	28			

a. Dependent Variable: IntentionToAdopt
b. Predictors: (Constant), NormativePressure

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	3.794	0.459		8.258	0.000
	NormativePressure	0.069	0.113	0.117	0.612	0.545

a. Dependent Variable: IntentionToAdopt

H3: Mimetic pressure positively affects firm's intention to adopt innovations in sustainable packaging.

Null Hypothesis H30: Mimetic pressures have a no positive relationship with the firm's intention to adopt.

Alternative Hypothesis H31: Mimetic pressures have a positive relationship with the firm's intention to adopt

Table 16 reports the linear regression conducted to predict intention to adopt based on mimetic pressure.

The linear regression model through R^2 is explains 8.6% variance of the independent variable intention to adopt. The relationship between intention to adopt and mimetic is statistically non-significant (p-value = 0.122).

Table 16: Hypothesis 3 Linear Regression Analysis

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.294[a]	0.086	0.053	1.128295	0.086	2.555	1	27	0.122	2.594

a. Predictors: (Constant), MimeticPressure

b. Dependent Variable IntentionToAdopt

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.253	1	3.253	2.555	.122[b]
	Residual	34.372	27	1.273		
	Total	37.625	28			

a. Dependent Variable: IntentionToAdopt
b. Predictors: (Constant), MimeticPressure

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	2.119	0.590		3.592	0.001
	MimeticPressure	0.232	0.145	0.294	1.598	0.122

a. Dependent Variable: IntentionToAdopt

H4: The relationship between mimetic pressures and the firm's intention to adopt innovations in sustainable packaging and is moderated by the firm's perception of the effort required

Null Hypothesis $H4_0$: Perception of effort required improves the relationship between mimetic pressures and the firm's intention to adopt.

Alternative Hypothesis H41: Perception of effort required does not improves the relationship between mimetic pressures and the firm's intention to adopt.

Table 17 reports the multiple regression conducted to predict intention to adopt based on mimetic pressure and moderator perceived effort required

The model through R^2 explains 37.9% variance of the independent variable intention to adopt. The ANOVA table tests the null hypothesis indicating statistical significance (p-value = 0.002). Under the standardised coefficient beta, the construct perceived effort required showed more contribution to the model (Beta = 0.554) than mimetic pressure (Beta = 0.172).

Table 17: Hypothesis 4 Multiple Regression Analysis

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.616[a]	0.379	0.331	1.199680	0.379	7.934	2	26	0.002	1.335

a. Predictors: (Constant), MimeticPressure, PerceivedEffortRequired

b. Dependent Variable: IntentionToAdopt

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	22.839	2	11.419	7.934	.002[b]
	Residual	37.420	26	1.439		
	Total	60.259	28			

a. Dependent Variable: IntentionToAdopt
b. Predictors: (Constant), MimeticPressure, PerceivedEffortRequired

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	1.041	0.782		1.331	0.195
	PerceivedEffortRequired	0.654	0.187	0.554	3.500	0.002
	MimeticPressure	0.218	0.200	0.172	1.086	0.287

a. Dependent Variable: IntentionToAdopt

H5: The relationship between coercive pressures and the firm's intention to adopt innovations in sustainable packaging and is moderated by the firm's perception of fidelity

Null Hypothesis H50: Perception of fidelity improves the relationship between coercive pressures and the firm's intention to adopt.
Alternative Hypothesis H51: Perception of fidelity does not improve the relationship between coercive pressures and the firm's intention to adopt

Table 18 reports the multiple regression conducted to predict intention to adopt based on coercive pressure and moderator perceived fidelity

R^2 suggests that the model explains 59.9% of the variance for the independent intention to adopt meaning that observed data point fit the model much more. The ANOVA table reports statistically significant with a p - value of 0.00. The coefficient table shows that contribution in the standardised coefficient beta of perceived fidelity (Beta = 0.755) is far greater than coercive pressure (Beta = -0.48)

Table 18: Hypothesis 5 Multiple Regression Analysis

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.774[a]	0.599	0.568	0.963904	0.599	19.428	2	26	0.000	2.134

a. Predictors: (Constant), Perceived Fidelity, CoercivePressure
b. Dependent Variable: IntentionToAdopt

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	36.102	2	18.051	19.428	.000[b]
	Residual	24.157	26	0.929		
	Total	60.259	28			

a. Dependent Variable: IntentionToAdopt
b. Predictors: (Constant), Perceived fidelity, CoercivePressure

Coefficients[a]

		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	1.564	0.845		1.851	0.076
	CoercivePressure	-0.056	0.154	-0.048	-0.362	0.720
	Perceived fidelity	0.685	0.121	0.755	5.674	0.000

a. Dependent Variable: IntentionToAdopt

5.7 Summary of Results

The analysis presented in this chapter demonstrated that there is a weak and negative relationship between isomorphic pressures; coercive and normative and intention to adopt, these statistical outcomes are worthy of discussing and contributing to the body of knowledge. The descriptive results provided insights from the respondents, of interest was that all respondent firms found that sustainability decisions are very important for future packaging systems, could be because of the sensitivity of the question. The Pearson coefficient construct validity test indicated that there was enough commonality amongst each of scales per construct. The Cronbach Alpha reliability test results provided an acceptable range with values greater than 0.70. A summary of results from the hypothesis tests are mentioned in Table 19.

Table 19: Results Summary

Hypothesis	Results	Relationship
H1 **Coercive pressure positively affects firm's intention to adopt innovations in sustainable packaging.**	• Null hypothesis accepted • Alternate hypothesis not supported	No significant relationship
H2 **Normative pressure positively affects firm's intention to adopt innovations in sustainable packaging.**	• Null hypothesis accepted • Alternate hypothesis not supported	No significant relationship
H3 **Mimetic pressure positively affects firm's intention to adopt innovations in sustainable packaging.**	• Null hypothesis accepted • Alternate hypothesis not supported	No significant relationship
H4 **The relationship between mimetic pressures and the firm's intention to adopt innovations in sustainable packaging and is moderated by the firm's perception of the effort required**	• Null hypothesis not supported • Alternate hypothesis accepted	Positive and significant relationship
H5 **The relationship between coercive pressures and the firm's intention to adopt innovations in sustainable packaging and is moderated by the firm's perception of fidelity**	• Null hypothesis not supported • Alternate hypothesis accepted	Positive and significant relationship

The following chapter will discuss further and in more detail the hypotheses by integrating concepts, literature and results from preceding chapters to answer the research objectives.

DISCUSSION OF RESEARCH RESULTS

6.1 Introduction

The industry forces are under-developed in Tanzania with limited number of available substitute packaging material, few customers demanding and acting in an environmentally friendly manner is and only recently did the government introduce sustainable practices to retailers. These factors as well as limited sample size of the research project provide certain findings that are not consistent with concept from literature.

This chapter will go into a discussion about the outcome of the research results captured in Chapter 5. The chapter will start with a brief discussion about the demographics of the sample study, the intention is to interpret the diversity of the research participants. A discussion on the findings of research questions shall follow, making inferences using literature regarding the constructs identified in Chapter 2. Next, the chapter will deliberate on the findings for the research hypotheses considering the literature mentioned in earlier chapters. Hypothesis findings will be used to highlight and answer the research questions. The chapter will end by re-presenting a summary of the findings in a diagram to illustrate the research objective met.

6.2 Demographic Discussion

The profile of respondent firms mentioned in Table 2 showed that 90% of firms were involved in food or beverage industrial activities, this representation is aligned to the national bureau of statistics where manufacturing firms of food products account for largest number of industrial establishments, 803 firms to be exact. Manufacturers of packaging products such as plastic and paper combined account for 74 firms in those sub-sectors, the population is aligned to the sample profile of three packaging companies (National Bureau of Statistics, 2018). The industries of packaging and processing is diversified, because this sector is underdeveloped in Tanzania and importers for packaging supplies and materials still supply to more than 50% of food and beverage companies, shown in Figure 11 of Appendix C (Forbes Africa, 2019).

The respondent profile showed that nearly half of the sample study 48% had less than 50 employees. Teo et al (2003) study allowed for businesses with less than 100 permanent employees to qualify however, national statistics report that within the industrial sector 60% of food and beverage firm establishments have more than 500 employees (National Bureau of Statistics, 2018). The expectation was for more respondent firms with employees greater than 500 to participant in the study, to improve the diversity in the sample size, where just three respondent firms with employees greater than 500 participated.

Majority of decisions made in small to medium private firms with less than 500 employees are done by company founders or sole proprietors (Teo et al., 2003). Profile results in Table 2

show that 31% of the sample study was completed by owners or founders, this supports the objective of the research. In the industrial sub-sector of food manufacturing majority of employees are operational staff employees. Managerial employees make up only 17% of the workforce, this demographic lowered the response rate of the study, several surveys became unusable because directors or senior managers were not participating (National Bureau of Statistics, 2018). However, due to the snowballing technique 31% (9) technical directors in marketing, production and sales participated in the study.

In Tanzania's 2003 Company Act, private, public and foreign companies are the only types of companies considered, therefore the majority of sole proprietorships view themselves as private firms hence the results in Table 2 depicting 48% of company ownership as private (Business Registrations and Licensing Agency, 2019). Though small, it is a representation of the target population where 90% of organisation types in the food industrial sub-sector are privately owned firms (National Bureau of Statistics, 2018). Furthermore, the type of organisations from other studies also recorded the highest firm establishment as private companies (Abdulaziz et al., 2017).

In Teo et al (2003) study, majority of the respondent firms 88 (39.6%) had number of employees between 100 -399. In this study, the data indicated that respondent firms that had less than 50 employees dominated in the sample, this partly because the researcher's network of influence was not broad or diverse enough for convenience sampling (Goertzen, 2017).

Of the descriptive statistics mentioned in Figure 2, plastic was the dominant packaging material recorded by 44% of respondent firms. Such results were expected because of the increased commercialization of plastic and the applicability of the material, the economic benefit it delivers are far greater than existing packaging materials in the market (Ellen MacArthur Foundation, 2016; Geyer et al., 2017; PlasticsEurope, 2019). Respondent firms reported glass and paper as the second dominant packaging material each constituting of 14%, compared to plastic. However, paper is susceptible to leakages during transportation and handling (Pulpex, 2020). Conversely, glass is economically feasible. But the sole supplier of glass containers and bottles in Tanzania only caters for large orders. For smaller order the per unit cost is high making this alternative to plastic not favourable for smaller manufacturers (The Guardian, 2020b).

Of interest are the 9 respondent companies reported in Figure 3 that mentioned tin/ aluminium coating and polystyrene foam as deviation from their core practices. The role of metal in food packaging may be unconventional but the fact is metal lining helps food with aromas to maintain product flavour for longer (Sand & Patel, 2021). Polystyrene foam is a lightweight material widely used in the food service industry this maybe the reason it does not conform to the core business practices of the sample study (Richey et al., 2005).

The next section shall further discuss findings for the research questions.

6.3 Research Questions Discussion

6.3.1 Research Question 1

What is the logic used by firms to pursue dominant packaging materials?

Food packaging serves a variety of functions for consumable goods (Ellen MacArthur Foundation, 2016; Zhao et al., 2020). Product integrity, food safety and consumer preferences were rated in Figure 4 as the first criteria that packaging materials needs to fulfil. According to the Sustainable Packaging Coalition (2021) packaging must meet conditions that are related to performance and cost, therefore information in Figure 4 supports the claim. In a study on criteria definitions for green supplies criteria and sub-criteria were established. The most relevant criteria was quality followed by form, finances then environmental impact, each then had sub-criteria's for raw material selection (Banaeian et al., 2015). These findings are like those from respondent firms, the only difference is how the criteria was ranked.

Tanzania food and beverage respondent firms prioritize their customer, being comfortable with the safety and integrity of packaging material because it is contacts with food directly. These criteria are part of the decision whether to purchase packaging material locally, to import or to produce in-house (Banaeian et al., 2015). So far, there is an even split between locally available packaging solutions and imported material, showing in Appendix C Figure 11. This means firms are importing even dominant packaging material such a plastic, shown in Figure 2, due to under-developed and limited packaging supply in the country (The Guardian, 2020b).

6.3.2 Research Question 1a

How did the dominant packaging material gain momentum?

A dominant institutionalized technology is the growing use of plastics - this material has reached validity across the globe in various contexts. Plastic is an uncontested material that functions well and is widely accepted as the packaging material of choice (Fuenfschilling & Binz, 2018). In Figure 2, plastic was recorded as the main material used for packaging. This is not surprising, for numerous countries similar trajectories exist because of the prevailing socio-technical regime and institutional forces at play. In spite of its versatility and low cost, conventional plastic through isomorphism has been validated by its supporters as the appropriate material to use(DiMaggio & Walter, 1983; Glover et al., 2014; Korsunova et al., 2016; Teo et al., 2003). Equally application of isomorphisms over a period has businesses

resembling one another. Since common stakeholder groups have rendered packaging with conventional plastic as the acceptable and appropriate action to take.

6.3.3 Research Question 2

In the firm's perceptive what interferes with making sustainable choices regarding packaging?

There is narrow research on green raw material selection but such barriers can be flipped into opportunities for accepting non-conventional packaging (Banaeian et al., 2015; Huang et al., 2016; Zhao et al., 2020).

The results in Figure 5 characterized sustainable packaging adoption barriers as high production costs, lack of suppliers, concerns about food safety and low availability of sustainable choices. In the survey, respondent firms articulated that they were conscious of the efforts to be sustainable but because the means of transitioning to environmentally friendly practices are not well defined, the choice of convenience and cost take precedence (Ma et al., 2020). These inhibitors resemble 5 out of the 8 innovation attributes mentioned in Kapoor et al (2014) and Roger (1962 & 2003) theoretical frameworks, namely relative advantage, cost and riskiness. Tornatzky & Klein (1982) found that relative advantage, compatibility and cost as the common determinants. It is interesting that these same attributes that lead up to innovation diffusion were identified in Figure 5 as factors that deter adoption.

Not having adequate sustainable packaging options to choose from means that business cannot optimize their potential in new sectors/markets. The emerging concern about food safety is of great importance for food manufacturers supplying produce at a retail level. Customer mistrust in product quality and food safety especially when new packaging is introduced can bring down social approval and customer engagement (De Martino & Magnotti, 2018).

Majority of the respondent firms with less than 50 employees focused on surviving and serving the traditional marketplace (FAO, 2014). Even though, the volume of trade is high in this market, profit margins remain low therefore any packaging material that increases production costs would increase the economic hardship of smallholders. Larger firms must seek from top management commitment of tangible resources such as financial investment that can cover and absorb strategic changes to marketing and product packaging (Ellen MacArthur Foundation, 2020).

Intangible resources in the form of knowledge assets contribute to the creation company value

and sustainability of economic wealth through company employees, working tools and infrastructure that supports employees work, employee empowerment and IT systems (Huang et al., 2016; Martín-de Castro et al., 2013). These authors argue that highly motivated knowledge employees push the boundaries of a firms' technological limits, helping the innovation process to go forward.

Suppliers that can offer quality eco-friendly packaging materials are few and far between. Alternatively, selecting a sub-standard packaging supplier could lead to negative repercussions or reputational damage (Gast et al., 2017).

Such barriers can be diluted through access to public funding, firm awareness and participation in setting reduction targets (De Martino & Magnotti, 2018; Ellen MacArthur Foundation, 2020). In addition, firms can deliver much better outcomes through the innovation process by changing leadership practice, trusting in the personal growth and expertise of individuals and providing a corporate culture that believes in the importance of innovation (Martín-de Castro et al., 2013).

6.3.4 Research Question 2a

How do firms obtain information on technology development in packaging material?

The first step to deploying innovation efficiently is understanding the technological development that back up the innovation. The three packaging companies that answered the question on how they obtain information on technological developments with regards packaging material and packaging systems sourced it from the market, industry benchmarks and their own research. The food and beverage companies mainly retrieved information by using the industry as their bench market for sources of technological development, their own research and the competition. It is usual for firms to use multiple sources of information when the innovation barriers are many and more in depth and to repeat sources that were successful in the past (Adeyeye, Egbetokun, Opele, Oluwatope, & Sanni, 2018). The communication channels that disseminate information are key in encouraging the rate of technological uptake because innovation involves risk (Rogers, 1962; Swan et al., 1999). In comparison to Europe and Asia, there is scarcity among the Tanzanian manufacturing firm's capability to innovation (United Nations Industrial Development Organization, 2020). Hence, business leaders use industry benchmarking over their own research because of the trust they have within their business network, which is more convincing and less uncertain. Observing and obtaining information from the competition buys firms time to adjust in order to stay innovative (Montreuil et al., 2020).

The reason for food and beverage firms mostly obtaining and developing sources of innovation activities in-house is to ensure strict controls are adhered, especially when it comes to quality and food safety (De Martino & Magnotti, 2018). Information which originates within firms whether it be from the research and development or information exchange between employees, becomes highly effective when business leaders encourage idea-generation and risk-taking (Martín-de Castro et al., 2013). More collaboration among manufacturing firms and managerial networks will positively impact the rate of adoption of technological that are associated with innovation. Governments, customers, suppliers and academia should use these modes of communication to transfer and discuss technological developments within the manufacturing industry. Also, positive leaders who can tolerate risk are an important source of innovation diffusion, as it leads to new ideas and innovation behaviour.

Only three respondent firms recorded associations as their source of finding assistance on technological adaption. Perhaps because food and beverage manufacturing business associations are not widely prevalent in Tanzania. Smaller firms in Europe where resources were limited and there was a lack qualified staff, were relying on networks to allow them to follow through and implement innovations (De Martino & Magnotti, 2018). More needs to be done for firm awareness and industry collaboration between the informal and formal sector in Tanzania.

6.3.5 Research Question 3

How important is it for firms to adopt sustainable developments intended to protect the social and environment factors from waste caused by the dominant packaging material?

In developing economies, the desire to protect the environment, improve sanitation and contamination is because crop and livestock yield, food security and quality are threatened by choices made by humans. In Mauritania, 70% of livestock death is being caused by irresponsible business practices and selective interventions that are poorly enforced (Adam et al., 2020).So, it is interesting that 97% of the respondent firms recorded in Figure 6 that sustainability decisions are going to be very important in making future packaging choices. According to Ghassim (2018) a firm's appetite to achieve sustainability is formed from culture and norms. A growing perspective of its value, environmental sustainability, could be the start of making enforcements and adoption easier (Adam et al., 2020). A high response rate could suggest respondent firms' confusion their view of sustainability improvements with climate change. The reason being is, because there less infrastructure in Tanzania to support sustainable behaviours global and national issues such as climate change take precedence (Scott & Vigar-Ellis, 2014).

Although respondent firms have intentions to be more sustainable in their business practices, misguided producers will continue to do unintended environmental harm (Ma et al., 2020). Producer awareness sessions and practicals can solidify the understanding of what benefits environmentally friendly packaging can have for their firms, for the societies they live and the environment.

6.3.6 Research Question 4

What influence does institutional pressures have on facilitating or preventing firms from making sustainable packaging choices?

Coercive pressure

Table 5 shows an acceptable mean score and standard deviation of the construct coercive pressure (M = 3.69, SD = 1.269), means that on average respondent firms could neither agree nor disagree whether coercive pressure influenced their packaging decisions. A study on sustainability practices in South Africa and the role of coercive pressure depicted similar results (Masocha & Fatoki, 2018). The authors Masocha & Fatoki (2018) suggest that regulations regarding sustainability in the developed economies are well-defined and operational whereas to a large extent in the African context policies are barely implemented as intended. This makes the influential power of coercive pressure less effective. More so, coercive pressures do not necessarily have to come from national polices and regulations. Studies in Zambia, Thailand proved that pressures can be exerted from powerful stakeholders on smaller players (Glover et al., 2014). Conditions are imposed by international bodies such IMF and World Bank on countries limiting access to national resources and restricting organisational choice (Beckert, 2010).

Hypothesis 1 - Relationship between coercive pressures and intention to adopt innovations in sustainable packaging.

A p-value of (0.90) greater than 0.05 is not statistically significant indicating evidence for the null hypothesis to be accepted

> **Null Hypothesis H10:** Coercive pressures have a no positive relationship with the firm's intention to adopt.

So far, in Tanzania, there are no environmentally sustainable packaging material conditions that producers are forced to comply with. It is therefore no surprise that this hypothesis was not supported (Beckert, 2010). Only the country's retail market has had to conform to using ecological friendly, multiple - use carrier bags, by banning sub-standard plastic material for shoppers (BBC News, 2019; DW, 2019). In industries where there are weak government

enforced policies for waste management and the environment, entrepreneur's gravity to opening food businesses that are eco-friendly because of their own values and beliefs (Etzion, 2007; Gast et al., 2017). In this study, there are cases mentioned in Figure 10 of Appendix C where 16 respondent firms made certain packaging changes, in the past two years to environmentally friendly packaging material without interference from coercive pressure.

Despite the few firms that decided to adopt environmentally sustainable packaging systems on their own accord, adoption rate is improved through pressures formed within alliances, coalitions and partnerships (Abdulaziz et al., 2017). That is because centralization of resources and ideas create a layer of dependency and influence, though not equal, over organisational decisions (DiMaggio & Walter, 1983; Meyer & Rowan, 1977).

Normative pressure

Among the three isomorphic constructs shown in Table 5, normative pressure produced the highest mean score of (M = 4.06, SD = 0.869), respondent firms agreed that normative institutional factors influenced sustainable packaging choices. This result is backed up by the comprehensive amount of literature on how normative conduct positively influences behaviour especially environmental behaviour (Aargon-Correa et al., 2020; Abdulaziz et al., 2017; DiMaggio & Walter, 1983; Spranz et al., 2018). For instance customers believed that avoiding single-use straws was a normal behaviour especially when plastic straws were banned in restaurants in Australia (Borg et al., 2020).

Hypothesis 2 - Relationship between normative pressure and intention to adopt innovations in sustainable packaging.

A p-value of (0.545) greater than 0.05 is not statistically significant indicating evidence for the null hypothesis to be accepted

> **Null Hypothesis H20:** Normative pressures have a no positive relationship with the firm's intention to adopt.

Overall, the construct normative pressure stimulates change in business practice and behaviour, however the hypothesis does not corroborate with this notion. Given that Tanzania already demonstrated behaviours in society can change by banning plastic carrier bags, the expectation was that this hypothesis too will be supported.

New forms of packaging technologies and forms are driven by spending patterns (Sonneveld et al., 2005).There is a growing theme amongst consumers from developed countries to prefer and change their purchasing behaviours demanding for environmentally friendly products. In response, producers try to minimize plastic pollution through new product and packaging

designs that environmentally sustainable. However, customers in developing nations are given little choice to refuse plastic packaged foods or beverages (Ritchie & Roser, 2018). The limited awareness and visibility of affordable alternative options to plastics is the reason why customers are not pushing for ecological packaging (Ellen MacArthur Foundation, 2020). Customers are uniformed of the benefits of sustainable packaging, making it challenging to change purchasing behaviours or values (Tanzania Bureau of Standards, 2019).

Producers are responsible for the absence of information available to their customers on environmental issues that are directly related to purchasing decisions and waste management at home. A study in India showed that consumers continued to pay for goods wrapped in conventional or traditional packaging material because it was what they were familiar with (Pani & Pathak, 2021). There is a lack of awareness and reinforcement from producers and packaging suppliers through marketing campaigns and product labelling that can explain why environmentally sustainable packaging is beneficial and worth paying more for. Undoubtedly producers can influence customer norms through persuasive marketing, product labelling and point of sale information but ultimately behavioural change is systemic (Borg et al., 2020; Ma et al., 2020; Scott & Vigar-Ellis, 2014).

Mimetic pressure

In Table 5 the average of the four questions (MP1, MP2, MP3, MP4) produced a construct mimetic pressure score of (M = 3.00, SD = 1.159), like coercive pressures, respondents were unsure whether the construct influenced their decisions or not. Results of a recent study done in 2016 where (M = 4.292, SD = 2.487) showed that companies were more likely to adopt similar behaviours from other companies that could be referenced (Martinez-Ferrero & García Sánchez, 2016). Figure 6 shows that all respondent firms found sustainable packaging important to attain a desirable outcome for the industry however firms are reluctant to be the first case to implement alterative business practices if it means compromising product design or incurring higher production costs (Ma et al., 2020).

Hypothesis 3 – Relationship between mimetic pressures and intention to adopt innovations in sustainable packaging.

A p-value of (0.122) greater than 0.05 is not statistically significant indicating complex evidence for the null hypothesis to be accepted

> **Null Hypothesis H30**: Mimetic pressures have a no positive relationship with the firm's intention to adopt.

Firms hold back from imitating one another because of the heterogeneously of supply chains. Mimicry has less disruptive for firms that have control over their supply chain

(DiMaggio & Walter, 1983). However, firms that have pre-existing outsourcing arrangements changing systems is more complex (Ma et al., 2020). Another reason for there not being a positive relationship between firm adoption and mimetic pressure is management's belief and trust of their firm goals over that of a rivalry firm.

For the industry, having plenty more visible successful companies that have committed to non-conventional forms of packaging can lead to imitation of a firm's environmentally sustainable strategy (Abdulaziz et al., 2017).

Perceived effort required

Firm imitation is legitimized only when imitated institutions are perceived as significantly successful and the effort required comes with economic gains (Beckert, 2010). For industries that belong to networks or form alliances effort required is observed through benchmarking which in turn encourages mimetic isomorphism (Ansari et al., 2010; Davis, 1989; Venkatesh et al., 2003).

A p-value less than 0.05 (0.002) is statistically significant. It indicates strong evidence against the null hypothesis. Therefore, the null hypothesis is not supported, and the alternative hypothesis is accepted

> **Alternative Hypothesis $H4_1$:** Perception of effort required improves the relationship between mimetic pressures and the firm's intention to adopt.

As players in the market studied one another, business perception of success and effort tend to generally be correct (Chu & Spires, 2003). The motivation to innovate for a firm is judged by the variety and intensity of the effort required or barriers faced by other firms (Adeyeye et al., 2018). But firms also gravitate to company imitation as a response to uncertainty and failure. The model firm becomes a source of ideas that have been tested and are less challenging to implement (Abdulaziz et al., 2017; Beckert, 2010).

Pioneering firms continue to challenge and chip away at stagnant global packaging regimes. In some instance, they emerge successful and their resolutions validated. These initiatives provide better adapted solutions that are less and more readable imitable (Etzion, 2007; Fuenfschilling & Binz, 2018).

Perceived fidelity

According to previous literature fidelity and compatibility are constructs that positively relate to adoption (Kapoor et al., 2014; Tornatzky & Klein, 1982). A study on Nigeria's manufacturing sector found that firms were nearly four more time likely to be innovative when the constraint was regulatory but were reluctant if variations related to organisational structure (Adeyeye et al., 2018). The time it takes for adoption is shorter for innovations that support certain existing organisational functions which are directed at achieving company goals (Ansari et al., 2010; Vasi & King, 2012)

Hypothesis 5 – Perception of fidelity moderating effect on the relationship between coercive pressure and intention to adopt

A p-value less than 0.05 (0.00) is statistically significant. It indicates strong evidence against the null hypothesis. Therefore, the null hypothesis is not support, and the alternative hypothesis is accepted

Alternative Hypothesis H51: Perception of fidelity improves the relationship between coercive pressures and the firm's intention to adopt

For firms that feel their organisational structure and procedures are under threat would favour well established, regulated and centralised adoption techniques. Particularly, if firms are expected to deviate from preceding business practices, governments and regulating bodies need to have credible action plans. To enable conditions for producers to accelerate the transition to environmentally sustainable packaging solutions (Ellen MacArthur Foundation, 2020; Fuenfschilling & Binz, 2018).

6.3.7 Research Question 4a

How can the size of the firm make it more vulnerable to coercive, normative and mimetic isomorphic pressures?

Figure 7 shows that the respondent firm sizes ranging from 1 – 3000 employees agreed and strongly agreed that the influence of norms of customers and coercive government directives affects company packaging practices and implementation. In Teo et al (2003) and Rogers (1995) articles it was mentioned large organisations were more likely to apply external knowledge and resources in order to comply or assimilate to technological changes. Interestingly, respondent firms with 10 or more employees as well as the larger firms were divided on the influence that competition or mimetic pressures had on their packaging practices. The coincides with Research Question 2 where food and beverage firms mentioned competition as source of reference for technological development on packaging. These results

could generally mean that firms are more attuned to the needs of customers and the demands of government than what the competition is doing.

Firms feel obligated to constantly meet the norms and values customers have towards food and beverage to create better experiences for them (Glover et al., 2014; Meyer & Rowan, 1977). Authors De Martino & Magnotti (2017) stressed in their article on small food firms in Italy that knowledge of the customers' needs is crucial for developing activities of innovation along the supply chain.

Adherence to compulsory food and beverage standards is enforced by the Tanzania Bureau Standards. The bureau's regular site inspections, trainings and calibration are taken seriously by firms (Tanzania Bureau of Standards, 2019). Hence, food safety was a key criterion for the packaging material selection by respondent firms in Figure 4. A study in South Africa on sustainability practices found that coercive pressures applied onto small business lead firstly to the adoption of environmental practices (Masocha & Fatoki, 2018). This shows that more education and appropriate awareness through the appropriate governing bodies on distinguishing packaging materials that are safe for the environment can led to adoption later.

6.4 Summary of Findings

The key objective attained in this chapter were that perceived fidelity moderates the relationship between coercive pressure and intention to adopt. Similarly, perceived effort required had a positive and significant relationship between mimetic pressure and intention to adopt. Irrespective of literature on how isomorphic pressures predict institutional change, no relationship exists between coercive, normative and mimetic and the intention to adopt. An illustration of the relationships is shown in Figure 8. These insights will be valuable for business practices interventions and for future research studies.

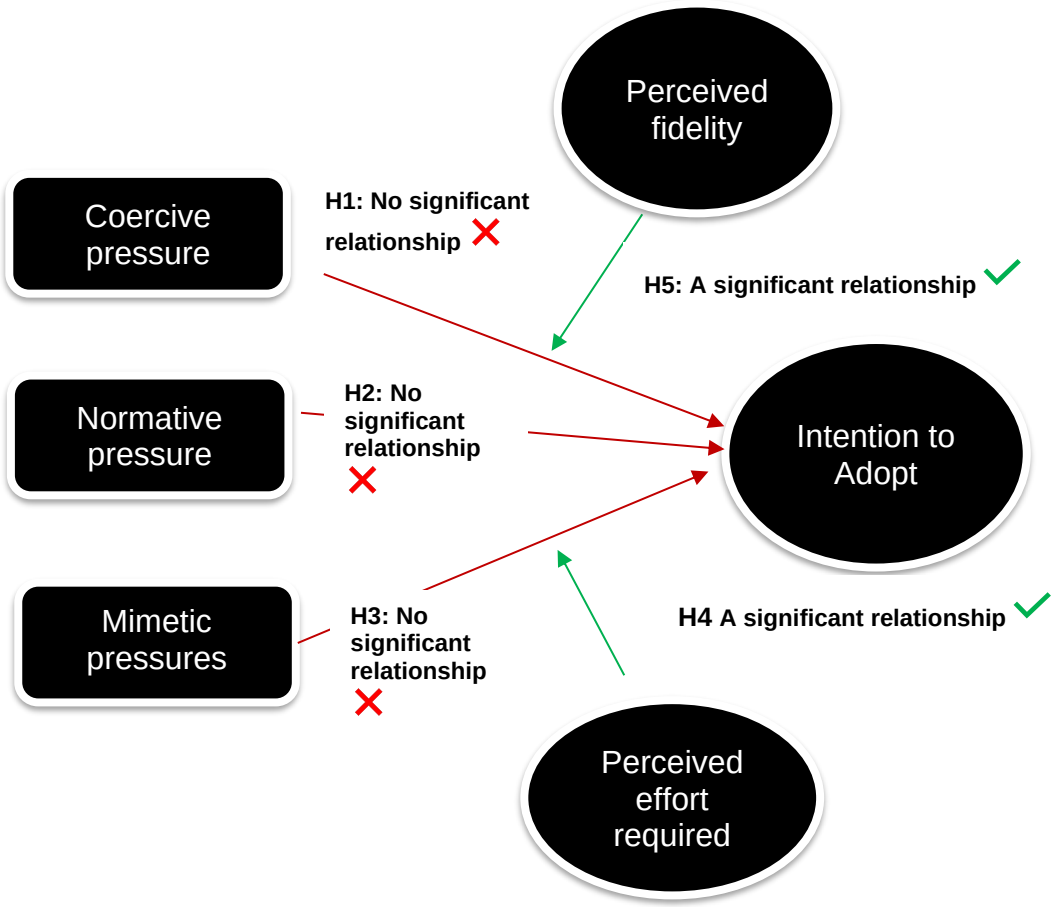


Figure 8: Summary Findings

Legend

Non-significant relationship

Significant relationship

CONCLUSION

7.1 Introduction

The research project findings are somewhat different then what was expected in the literature. Partly due to under-developed scale and range of industrialisation in Tanzania. The country's industrial development is highly uneven. This is attributed to a history and continued dominance and importation of manufacturing and production from developed economies and China (United Nations Industrial Development Organization, 2020). Features of this long-term trend were found in literature from Malaysia, Nigeria, India and South Africa (Abdulaziz et al., 2017; Adeyeye et al., 2018; Masocha & Fatoki, 2018; Pani & Pathak, 2021). Unavailability of alternative suppliers, inferior regularity policy and competitive pressure to innovation around package do not feature in such regions. Whereas in developed industrialised countries where most of literature for this paper was taken from have strong evidence of these variables already existing. Therefore, it suggests that as an industry evolves through more suppliers and fast-moving consumer goods enter the Tanzanian market such factors will possible areas for future research.

This final chapter will outline the research scope and objectives highlighting the important results obtained. Implications and recommendations based on the research outcome will be put forward for consideration by business management and academia. Followed by limitation of the research as well as areas of improvement that can be referred to for future studies.

7.2 Overview of research scope and objective

The research focused on obtaining insight from company senior management (CEOs, CFOs & COOS) and firm owners of the food and beverage sector and from local packaging suppliers within three manufacturing regions of Tanzania. To get an institutional perspective of how significant environmental concerns affect selection of packaging strategies, technologies and models.

The main objective of the study sets out to understand the strength of the relationship between coercive, normative and mimetic isomorphic constructs that exist in the packaging context of the Tanzanian food and beverage sector. To enhance our knowledge of how those constructs and moderators perceived effort required and perceived fidelity can shape intentions to adopt innovations for sustainability.

Coercive pressure

Intention to adopt was observed when regulatory pressures were applied in Nigeria's manufacturing sector (Adeyeye et al., 2018). Restraining access to resources through

coercive powers leads to adaptation and compliance (Beckert, 2010; Masocha & Fatoki, 2018). Hence, the research project chose to study the relationship between coercive pressure and intention to adopt.

Normative pressure

Evidence has shown in Tanzania that avoidance behaviour from customers and society for instance with plastic carrier bags can shift the trajectory of firms in which markets they serve (Borg et al., 2020; Spranz et al., 2018). Based on this, the research project considers the relationship between normative pressures and the firm's intention to adopt.

Mimetic pressure

Replication and implementation of green practices were realized by Malay subsidiaries firms modelling parent corporations or other successful nations that were able balance the needs of the market while protecting the interest of society and the natural environment. (Abdulaziz et al., 2017). This led the research project to also observe the relationship between mimetic construct and intention to adopt.

Perceived fidelity

Plastics efficiency and relevantly low cost is the reason why it is the dominant packaging solutions when it comes to food and beverage (Ellen MacArthur Foundation, 2016). The research study chose to introduce the moderator perceived fidelity to examine how the relationship between coercive pressure and intention to adopt can be improved for a new idea that resembles or deviates from the features of a precedent packaging solution such as plastic (Ansari et al., 2010; Davis, 1989).

Perceived effort required

The firm's ability to endeavor into acts of innovation and emerge advantageous cause adoption rates to increase (Kapoor et al., 2014; Venkatesh et al., 2003). To examine the relationship between mimetic pressure and intention to adopt further the research study introduced perceived effort required. The construct measures what degree of extensiveness on firm resources can result in innovative practices.

The research study's sub objectives focused on determining the criteria used by firms for their packaging choices. To establish where firms source information on packaging innovations that can solution for environmentally sustainable challenges and to find how important the concept of sustainability is to firms.

7.3 Research implications and recommendation

Certain results of the study produced outcomes that did not support the hypotheses set out earlier in the paper. These outcomes introduce different claims and relevant insights for the current field of study.

Research implications

The research did not establish a relationship between coercive pressures and intention to adopt which is expected given theoretical evidence that supports the claim. Gast, Gundolf & Cesinger (2017) reported that industries with poorly implemented legislations and lack of good governance firms tend not to be influenced by the controls set by the authoritarian structures. However, introducing the moderator perceived fidelity into the relationship between coercive pressure and intention to adopt, provided support for 4th hypothesis. This implies that lack of good governance as the reason for there not being a relationship in Hypothesis 1.

Regarding the relationship between normative pressure and intention to adopt, the hypotheses was not supported, despite the strong evidence from previous studies that suggested the claim should have been supported. Literature does points out that pressures from customers can be insincere, generally intent differs from behaviour. Particularly towards sustainability models and ecological friendly packaging because it is not the norm in Tanzania (Ma et al., 2020). Despite government efforts through policy to push producers, the cash-conscious market is not demanding environmental packaging (Signe, 2018). To overcome this, price or tax incentives can be introduced to regulate the price of eco-friendly packaging.

The research findings indicated that a relationship between mimetic and intention adopt does not exist. The 5th hypothesis confirmed that a positive significant relationship exists between mimetic and intention to adopt through the role of the moderator perceived required effort. Observing successful companies that make it seems effortless to achieve increases the rate of innovation adoption (Etzion, 2007; Fuenfschilling & Binz, 2018).The government can consult existing pioneering firms to form more pilots on that will be used to gain insights for the industry to adopt (Abdulaziz et al., 2017).

Practical implications

For as long as innovations equivalent to plastic do not function as well or do not cost the same, there will be a pressure from producers and customers to select the cheapest option. Larger and older firms influenced by market pressures from customers or competition prioritize the economic objective. But taking into account the cost of production and transportation costs associated with changing an existing packaging system (Gast et al., 2017). For adoption of

sustainable products to be achievable the resource pool must be large, the innovation capacity must outweigh performance benefits and become social acceptable (Ansari et al., 2010; Davis, 1989; Venkatesh et al., 2003). To stimulate sustainable consumption, governments can provide economic subsides to producers that align to environmental artefacts and introduce taxes that will hike-up the market price for firms that continue to pollute.

Regularly producers are receiving pressures and are be held responsible for their actions, but regulatory bodies need to give producers the influence to control their own density (Pani & Pathak, 2021). Due to free trade and global regime pressures national regulatory bodies need to strengthen weak regulation and polices that limit the introduction and implementation of comprehensive packaging systems that are not context specific (Fuenfschilling & Binz, 2018).. An understanding of the limitations faced by firms in their innovation process will assist in framing policy outcomes that are context specific (Adeyeye et al., 2018). Government entities should understand that actions from producers that gravity to economic profit or to cases of success. By guiding producers, attending to weak environmental acts and practicing standards that can led to less socio-environmental harm (Ma et al., 2020). These measures will allow for the nation's natural resources to generate socio-economic activities back into the growing economy (Wasteaid, 2016).

Laws cannot protect the environment alone public awareness and participation is equally important for society to understand the cause-and-effect human behaviour has on the environment (Ellen MacArthur Foundation, 2020). A change in customer perspective of social and ecological concerns can drive firms to design sustainable products and make improvements to packaging systems.

For firms, it is important to assess and have knowledge of how their logistics and distribution processes will need to adjust for new packaging forms and models. The biggest concern for firms is the harm and loss of integrity that materials other than plastic will have on the product and the packaging content (Ma et al., 2020). Firms must agree that innovations for packaging that cannot fulfil the role of protecting produce is less sustainable. More so, the research project found that the appropriate talent acquisition, culture and leadership aspects can create the momentum to achieve sustainable goals (Deloitte, 2016; Martín-de Castro et al., 2013). Changing firm strategic marketing campaigns and product labelling can change consumer demand and environmentally sustainable packaging production (Pani & Pathak, 2021; Scott & Vigar-Ellis, 2014)

Given the scale and growth rate of the Tanzanian population reducing global carbon footprint cannot be attempted in silos. Collectively, as an industry formalizing industry partnerships and producer associations can keep producers honest and firm up policy implementation (Pani &

Pathak, 2021). Also, increased competition within the industry will voluntarily forces firms to eliminate inefficiencies and innovate to capture niches markets (DiMaggio & Walter, 1983). Naturally forming a subset of market that will need to be supported by new regulations (Beckert, 2010).

7.4 Research limitations

Theoretically elements that the research project was not able to explore were due to limited time and resources available. The snowballing sampling technique did assist but could not ensure the research project reaching its sample size (Creswell, 2009; Saunders & Lewis, 2012). On the another hand, convenience sampling, a small sample size and sample profile focused on the manufacturing sector made the research findings not representive of the population and not generalisable.

The research instrument had too few variables per construct to ensure validity, this was a novice mistake and could have been overcome by re-designing the questionnaire with more than four items per scale to cover the contruct's theoricatioal domain (Field, 2013). Another limitation is that despite using a survey to collect data, the study dealt with sustainability behaviours. Dealing with behaviour is a sensitive topic which can make respondents embrassed to attempt failure of their respect firm's actual stance on envrionmental issues (Saunders & Lewis, 2012). In addition, self-administrated questionnaires genreally lead to misinterprations and skewed results.

7.5 Future research

Future research should extend the study to include other manufacurting sub-sectors to provide more industry understanding of the context. Taking into conderations the under developed industry future research would benefit more from open-ended questions that provide qualitative data and in dept knowledge of respondent firms (United Nations Industrial Development Organization, 2020; Wegner, 2016).Insights on culture would also be helpful for future studies to understand the depth and complex innovation process firms go through (Martín-de Castro et al., 2013). Additional questions per scale would have cleared how items load for confirmatory factor analysis (Beavers et al., 2013). A moderator such as group identity between normative pressure and intention to adopt should be introduced to observe the strength of the relationship (Borg et al., 2020; Hayes, 2013).

A longitudinal research design will assist in determining developmental trends (McGregor, 2019).

This research project did not have the opporuntity to weight the relevant criteria for packaging choices, future studies can explore this understanding (Banaeian et al., 2015). Since normative pressures exist in the retail industry of Tanzania however the resarch project did not produce evidence to support this construct, future researchers should interrograte this finding. Lastly, coercive conditions that are imposed by domaint players and global instituitions such as United Nations and world bank programmes should be explored (Beckert, 2010).

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APPENDIX

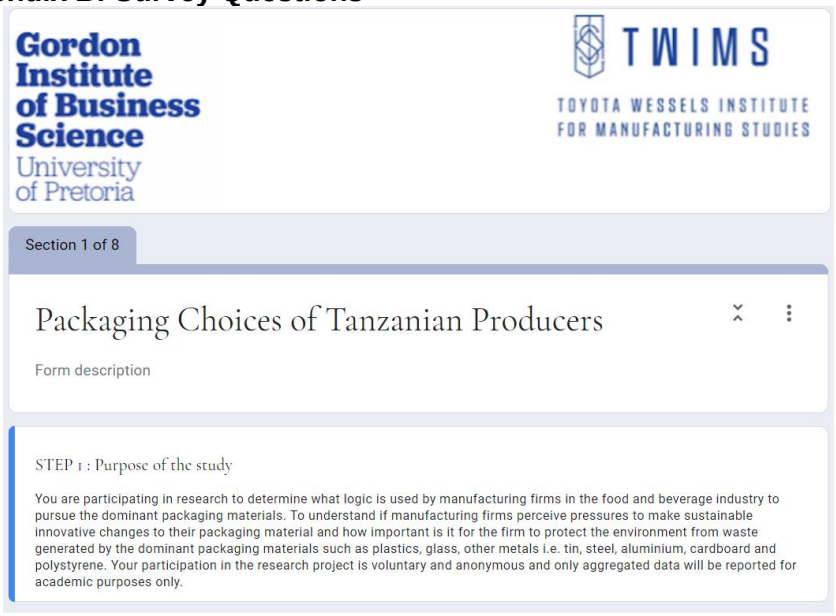
9.1 Appendix A: Questionnaire Design

Research questions	Sections in literature review	Data collection tools	Analysis technique
Research Question 1: What is the logic used by firms to pursue dominant packaging materials? **Research Question 1a:** How did the dominant packaging material gain momentum	**Section 2.2 Adaption of the diffusion process** (Ansari et al., 2010; Davis, 1989; Rogers, 1962; Swan et al., 1999; Venkatesh et al., 2003) **Section 2.4 Isomorphism** (DiMaggio & Walter, 1983; Glover et al., 2014; Korsunova et al., 2016; Teo et al., 2003) **Section 2.1 Diffusion of innovation** (Ahlstrom, 2010; Rogers, 1962; Swan et al., 1999)	**Screening Questions** section of the survey **Firm Perception** section of the survey	Descriptive statistics

Research Question 2: What is the firm's perceptive on the pressures to make more sustainable choices regarding packaging? **Research Question 2a:** How do firms obtain information on technology development in packaging material?	**Section 2.2 Adaption of the diffusion process** (Ansari et al., 2010; Davis, 1989; Rogers, 1962; Swan et al., 1999; Venkatesh et al., 2003) **Section 2.1 Diffusion of innovation** (Ahlstrom, 2010; Rogers, 1962; Swan et al., 1999)	**Screening Questions** section of the survey **Firm Perception** section of the survey	Descriptive statistics
Research Question 3: How important is it for firms to adopt technology intended to protect the environment from waste caused by the dominant packaging material?	**2.4 Institutional Theory** (DiMaggio & Walter, 1983; Glover et al., 2014; Meyer & Rowan, 1977; Teo et al., 2003; Wuttke & Heese, 2019) **2.6 Innovation for sustainability** (Ghassim, 2018; Hassan & Lee, 2015; L. Huang et al., 2015; Teece, 2018; Trucost, 2016)	**Screening Questions** section of the survey	Descriptive statistics

Research Question 4 What influence does institutional pressures have on facilitating or preventing firms from making sustainable packaging choices? **Research Question 4a:** How can the size of the firm make it more vulnerable to coercive, normative and mimetic isomorphic pressures?	**Normative pressure** **Mimetic pressure** **Coercive pressure** (Aargon-Correa et al., 2020; Abdulaziz et al., 2017; Ansari et al., 2010; DiMaggio & Walter, 1983; Etzion, 2007; Ferlie, Fitzgerald, Wood, & Hawkins, 2005; Glover et al., 2014; Meyer & Rowan, 1977; Rogers, 1962; Spranz et al., 2018; Swan et al., 1999)	**Screening Questions** section of the survey **Forceful Pressure, Norm Pressure & Imitative Pressure** section of the survey **Intention to Adopt** section of the survey	Descriptive statistics Regression analysis

9.2 Appendix B: Survey Questions



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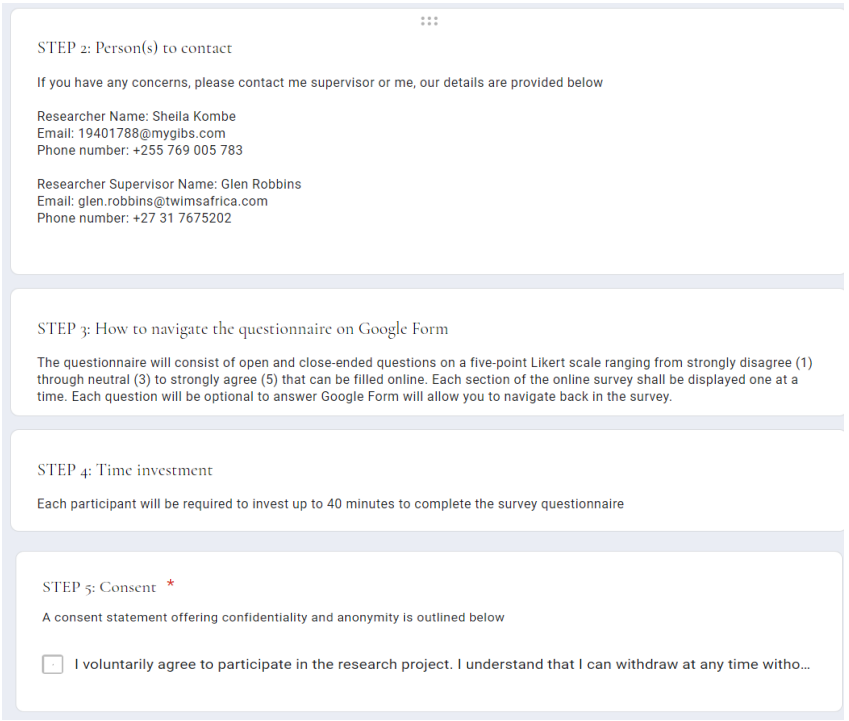
Section 1 of 8

Packaging Choices of Tanzanian Producers

Form description

STEP 1 : Purpose of the study

You are participating in research to determine what logic is used by manufacturing firms in the food and beverage industry to pursue the dominant packaging materials. To understand if manufacturing firms perceive pressures to make sustainable innovative changes to their packaging material and how important is it for the firm to protect the environment from waste generated by the dominant packaging materials such as plastics, glass, other metals i.e. tin, steel, aluminium, cardboard and polystyrene. Your participation in the research project is voluntary and anonymous and only aggregated data will be reported for academic purposes only.



STEP 2: Person(s) to contact

If you have any concerns, please contact me supervisor or me, our details are provided below

Researcher Name: Sheila Kombe
Email: 19401788@mygibs.com
Phone number: +255 769 005 783

Researcher Supervisor Name: Glen Robbins
Email: glen.robbins@twimsafrica.com
Phone number: +27 31 7675202

STEP 3: How to navigate the questionnaire on Google Form

The questionnaire will consist of open and close-ended questions on a five-point Likert scale ranging from strongly disagree (1) through neutral (3) to strongly agree (5) that can be filled online. Each section of the online survey shall be displayed one at a time. Each question will be optional to answer Google Form will allow you to navigate back in the survey.

STEP 4: Time investment

Each participant will be required to invest up to 40 minutes to complete the survey questionnaire

STEP 5: Consent *

A consent statement offering confidentiality and anonymity is outlined below

I voluntarily agree to participate in the research project. I understand that I can withdraw at any time witho...

Screening Questions

Does your firm produce food and beverage consumer goods in Tanzania?

- ◯ Yes
- ◯ No

Does your firm produce packaging material for food and beverage consumer goods in Tanzania

- ◯ Yes
- ◯ No

What share of the final product cost is derived from the packaging materials and process. Please mention a number as a percentage?

Your answer

What region of Tanzania does the manufacturing business operate from

- ◯ Arusha
- ◯ Dar es Salaam
- ◯ Dodoma
- ◯ Kilimanjaro

In our firm the main materials used to package existing products are (select from the options available):

- ☐ Conventional Plastic
- ☐ Glass
- ☐ Tin/Aluminium Sheet
- ☐ Polystyrene
- ☐ Cardboard
- ☐ Paper
- ☐ Other...

What criteria does the business use in order to decide the packaging material to go for? Please list 5 criteria and rate on a scale from 1 to 5, with 1 being the highest priority and 5 being the least priority

Long-answer text

How many employees work in the manufacturing business

Short-answer text

Where is majority of the existing packaging produced. Select from the options below:

- ◯ Locally produced
- ◯ Imported
- ◯ Both

How do you in your position influence decisions on packaging material

Short-answer text

In the last 2 years our firm has made changes to packaging in response to any sustainability objectives mentioned below (select from the options available):

- [ ] Recycling packaging material
- [ ] Reusing packaging material
- [ ] Using bio-degradable packaging
- [ ] Ethical sourcing of packaging material
- [ ] No changes

Our firm belongs to the following (select from the options available):

Choose

What share of the total packaging cost is made up of sustainable packaging, please mention a number in percentages?

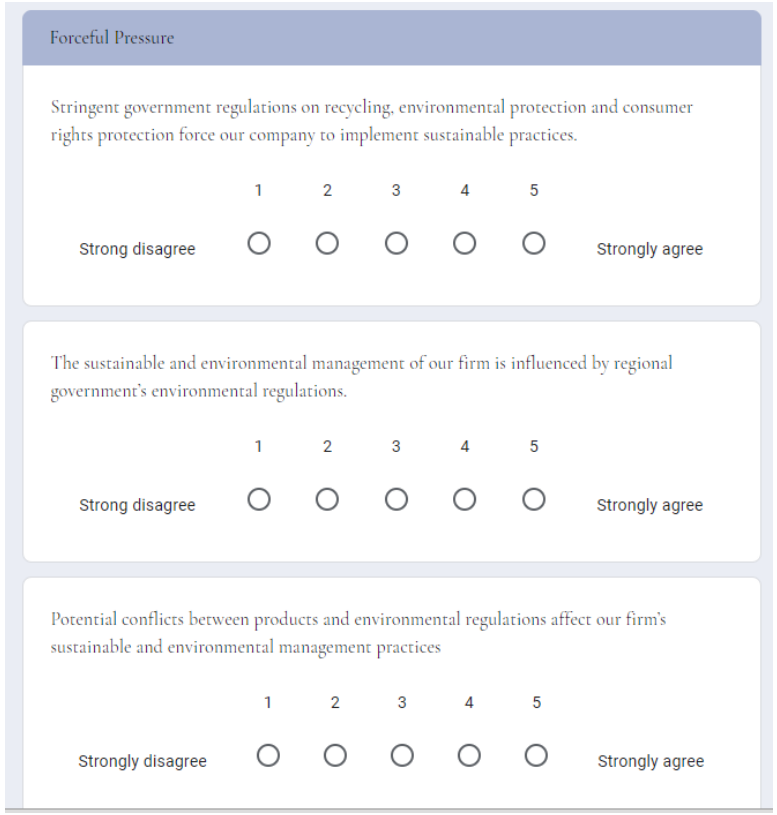
Short-answer text

How important are sustainability decisions going to be in making future packaging choices?

	1	2	3	4	
Not important	○	○	○	○	Very important

Our firm obtains information on technological developments being made regarding packaging material from the following option available:

- [ ] Suppliers
- [ ] Competition
- [ ] Industry benchmarks
- [ ] Our own research
- [ ] Group company
- [ ] Associations
- [ ] Other



Forceful Pressure

Stringent government regulations on recycling, environmental protection and consumer rights protection force our company to implement sustainable practices.

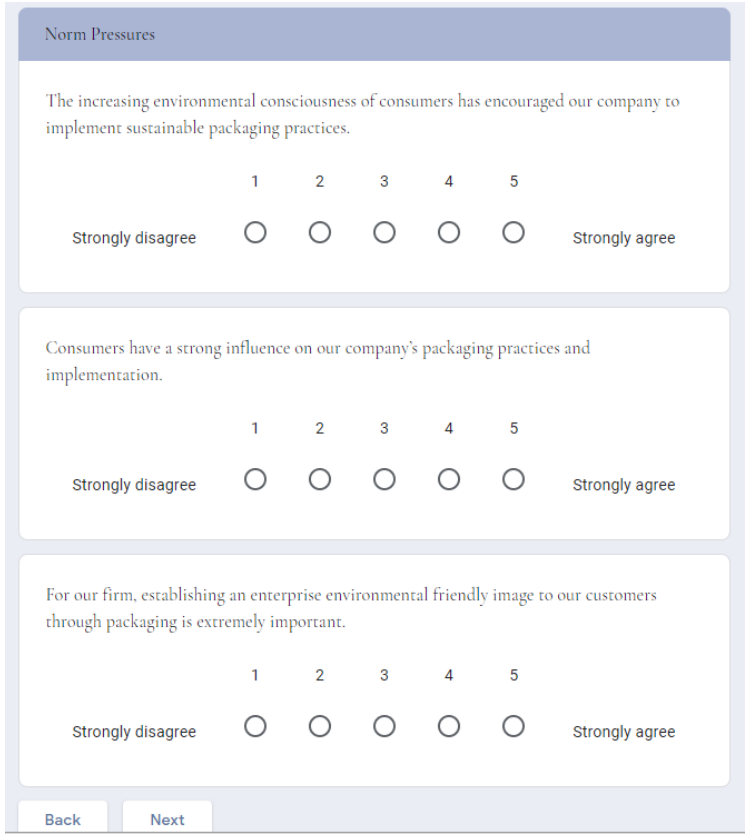
	1	2	3	4	5	
Strong disagree	○	○	○	○	○	Strongly agree

The sustainable and environmental management of our firm is influenced by regional government's environmental regulations.

	1	2	3	4	5	
Strong disagree	○	○	○	○	○	Strongly agree

Potential conflicts between products and environmental regulations affect our firm's sustainable and environmental management practices

	1	2	3	4	5	
Strongly disagree	○	○	○	○	○	Strongly agree



Norm Pressures

The increasing environmental consciousness of consumers has encouraged our company to implement sustainable packaging practices.

	1	2	3	4	5	
Strongly disagree	○	○	○	○	○	Strongly agree

Consumers have a strong influence on our company's packaging practices and implementation.

	1	2	3	4	5	
Strongly disagree	○	○	○	○	○	Strongly agree

For our firm, establishing an enterprise environmental friendly image to our customers through packaging is extremely important.

	1	2	3	4	5	
Strongly disagree	○	○	○	○	○	Strongly agree

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Firm Perception

The next section will display images of possible beverage or food packaging. After reviewing the images rank between 1 to 5 the packaging material that deviates from the core (business/technical) practices.

Conventional Plastics

Glass

Paper

Tin/Aluminium Sheet

Polystyrene

Cardboard

1 deviates the most, 5 deviates the least

Your answer

In your perception what effort is required to conceptually adapt sustainable packaging choices or practices from a business perspective

- ◯ No effort at all
- ◯ Little effort
- ◯ Neutral
- ◯ A lot of effort

For our firm it is important that environmentally efficient packaging practices conform extensively with the current practices

	1	2	3	4	5	
Strongly disagree	◯	◯	◯	◯	◯	Strongly agree

In your perception what effort is required to conceptually adapt sustainable packaging choices or practices from a technical/production perspective

- ◯ No effort at all
- ◯ Little effort
- ◯ Neutral
- ◯ A lot of effort

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Barriers towards sustainable packaging choices

The next section will list various possible barriers to utilizing sustainable choices in packaging.

For each criteria on a scale from 1 to 5 rank the barriers, 1 being the highest barrier and 5 being less of a barrier

High production cost

	1	2	3	4	5	
Rank 1 - Highest	○	○	○	○	○	Rank 5 - Lowest

Lower sales margin;

	1	2	3	4	5	
Rank 1 - Highest	○	○	○	○	○	Rank 5 - Lowest

Concerns about food safety/shelf life

	1	2	3	4	5	
Rank 1 - Highest	○	○	○	○	○	Rank 5 - Lowest

Concerns about damage to goods during distribution

	1	2	3	4	5	
Rank 1 - Highest	○	○	○	○	○	Rank 5 - Lowest

Lack of suppliers

	1	2	3	4	5	
Rank 1 - Highest	○	○	○	○	○	Rank 5 - Lowest

Quality of raw material

	1	2	3	4	5	
Rank 1 - Highest	○	○	○	○	○	Rank 5 - Lowest

Concerns about product shelf life

	1	2	3	4	5	
Rank 1 - Highest	○	○	○	○	○	Rank 5 - Lowest

Concerns about product integrity

	1	2	3	4	5	
Rank 1 - Highest	○	○	○	○	○	Rank 5 - Lowest

Concerns about branding

	1	2	3	4	5	
Rank 1 - Highest	○	○	○	○	○	Rank 5 - Lowest

Centralisation of resources with the group company

	1	2	3	4	5	
Rank 1 - Highest	○	○	○	○	○	Rank 5 - Lowest

Lack of a regulatory framework

	1	2	3	4	5	
Rank 1 - Highest	○	○	○	○	○	Rank 5 - Lowest

Concerns about poor customer responses

	1	2	3	4	5	
Rank 1 - Highest	○	○	○	○	○	Rank 5 - Lowest

Lack of support from group company

	1	2	3	4	5	
Rank 1 - Highest	○	○	○	○	○	Rank 5 - Lowest

Lack of an appropriate operating model (eg infrastructure, machinery, technology, deposits for return of bottles, management skills)

	1	2	3	4	5	
Rank 1 - Highest	○	○	○	○	○	Rank 5 - Lowest

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Imitate Pressures

For example, would our competitors' earlier implementation of sustainable packaging practices provided a benchmark and guidance for our company's sustainable packaging practices and implementation.

	1	2	3	4	5	
Strongly disagree	○	○	○	○	○	Strongly agree

Competitors have a strong influence on our company's sustainable practices and implementation.

	1	2	3	4	5	
Strongly disagree	○	○	○	○	○	Strongly agree

The sustainable and environmental management practices of our firm will be affected by the competitors' environmental protection strategy.

	1	2	3	4	5	
Strongly disagree	○	○	○	○	○	Strongly agree

The intense competition in our industry exerts strong pressures on our company's reverse logistics implementation.

	1	2	3	4	5	
Strongly disagree	○	○	○	○	○	Strongly agree

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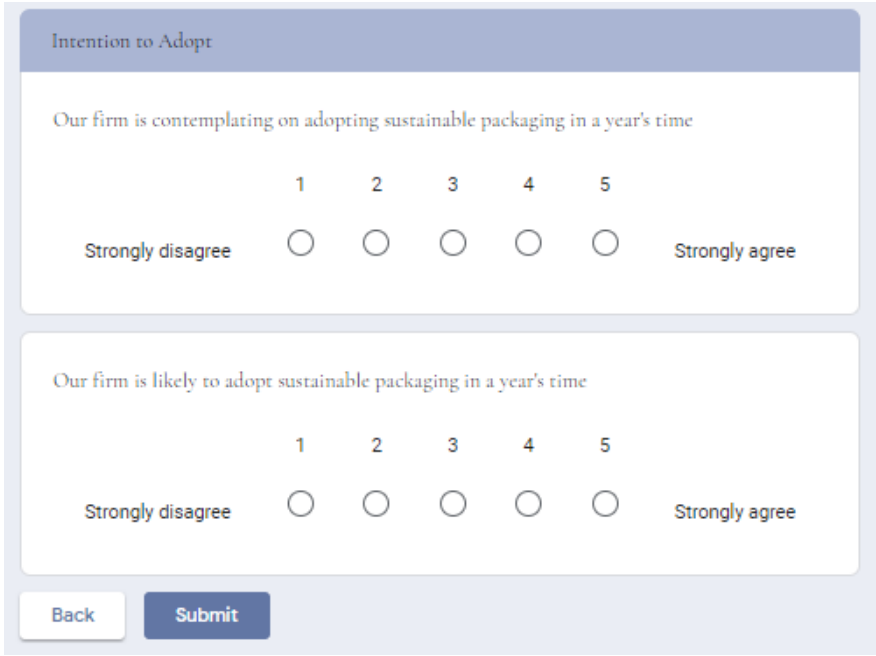
Intention to Adopt
Our firm is contemplating on adopting sustainable packaging in a year's time
1 2 3 4 5
Strongly disagree
Strongly agree
Our firm is likely to adopt sustainable packaging in a year's time
1 2 3 4 5
Strongly disagree
Strongly agree
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Submit

9.3 Appendix C: Quantitative Reporting

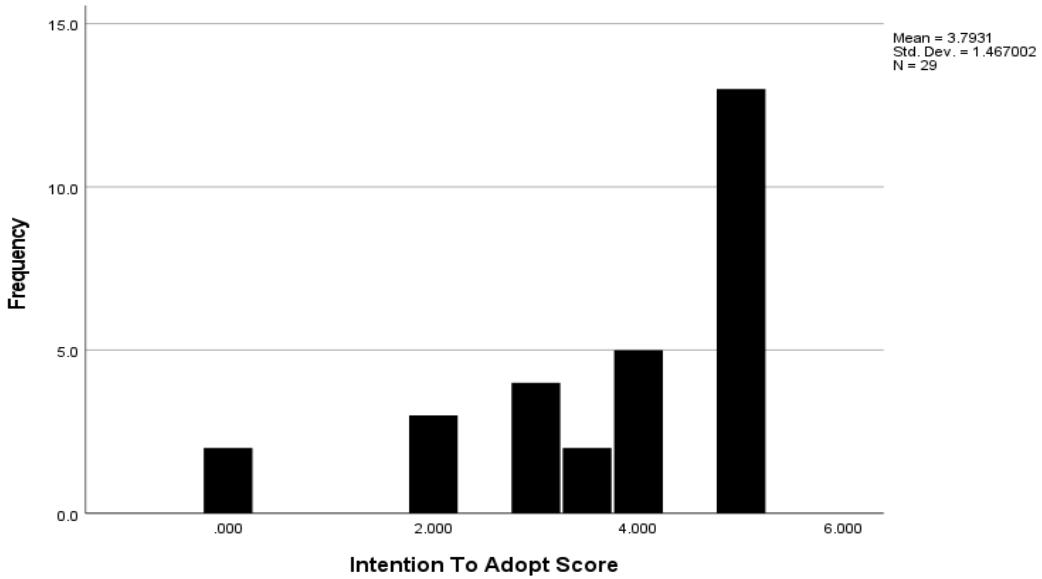

Figure 9: Histogram of Pearson's Coefficient Intention to Adopt

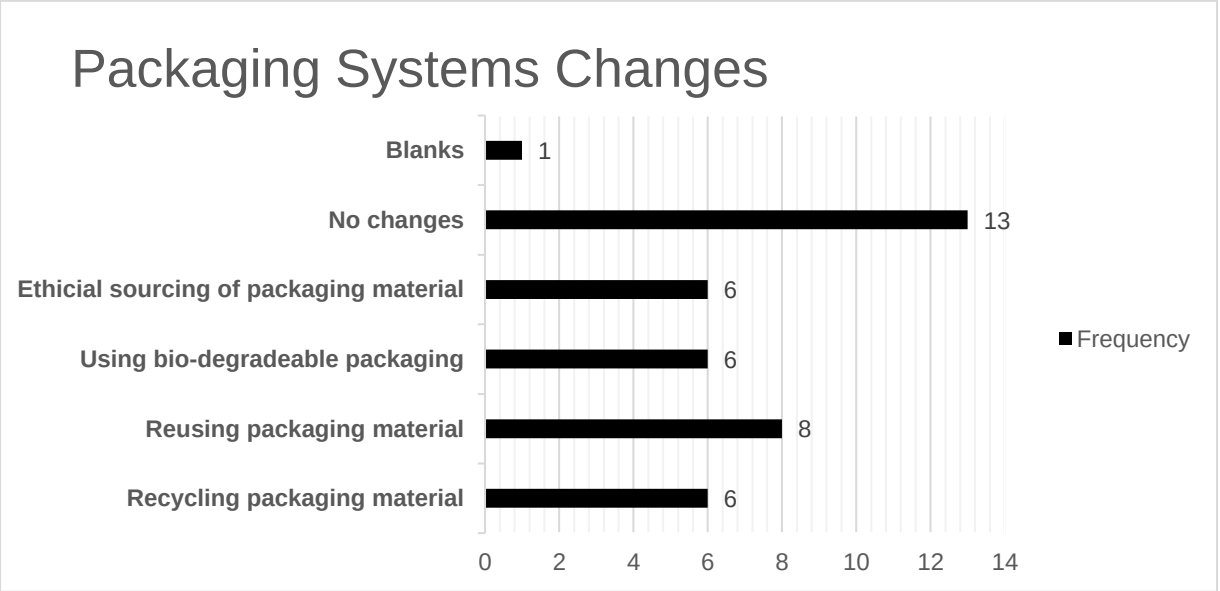

Figure 10: Changes to Packaging Systems in the Past Two Years

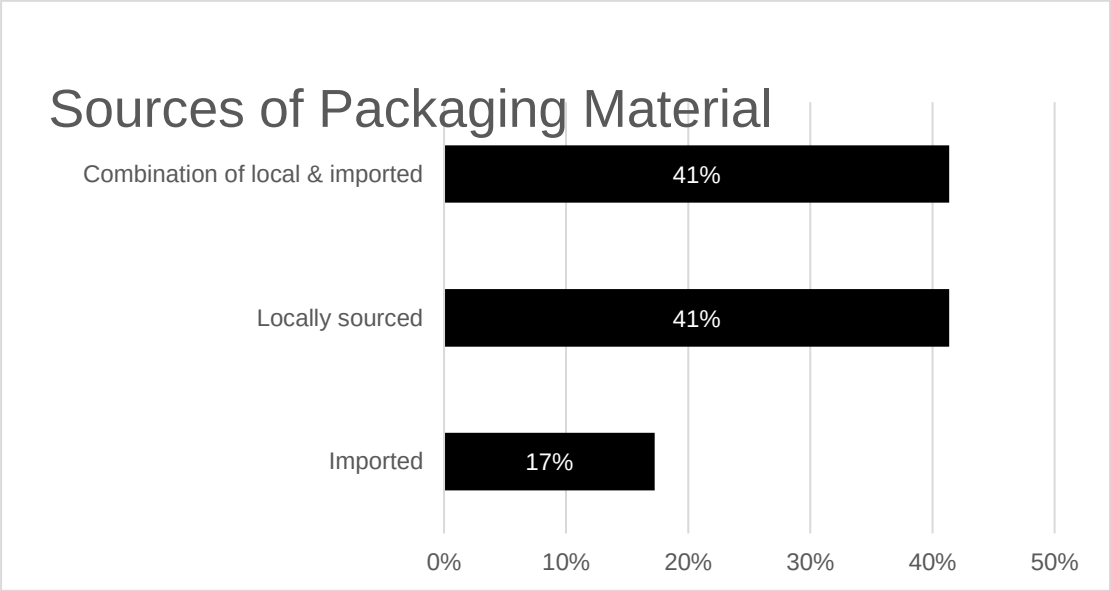

Figure 11: Sources of Packaging Material