# An Exploratory Study into Human-Centred Design in New Product Development for Low-Income Consumers

A Dissertation

presented to

The **Master of Philosophy (MPhil)**

Graduate School of Business

University of Cape Town

In fulfilment

of the requirements for the Degree of

**Master of Philosophy in Inclusive Innovation**

by

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January, 2022

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**ACKNOWLEDGEMENTS**

My journey to completing this dissertation has been a challenging one. Yet, for every moment of doubt, anxiety or writer's block, there has been a tenfold sense of purpose, passion, and gratefulness to be able to do this work. I would not be here without the patience, guidance and embodiment of excellence of my supervisor, Professor Mignon Reyneke. I am so grateful to Professor Reyneke for her encouragement and ability to see this end goal even when I doubted it was possible. I also want to thank Dr. Badri Zolfaghari, Professor Warren Nilsson and Ms. Nuraan Isaacs for supporting me through this programme. I have learned so much through the lectures and conversations and deeply appreciate your time and consideration over the last few years.

The academic support from Mary Lister and Hanoria Kalimashe from the GSB, Gava Kassiem, my editor, and Gabi Nudelman, my thesis coach, is deeply valued. There has never been a question too small or too complex for them. Their passion for supporting students and immersing themselves into new topics has been invaluable encouragement to me every step of the way. I would like to thank the respondents who were part of my research. I was deeply moved by the purpose and passion each of them revealed during our conversations. It humbled me to be reminded that it is a privilege to be a brand which consumers invite into their homes.

Lastly, I dedicate this dissertation to my family. To my mother and father, who inspired my curiosity about consumer products. Our Friday evening trips to the supermarket were the highlight of my week. My education in product development and design started early, by listening and watching you being discerning shoppers, and always having time for my questions.

To my husband, Vidal, I am so grateful for your encouragement, support and patience over the last few years. You did not give me space to do this work but instead you walked this journey with me. You stepped in and asked questions about my research, offered design support by re-drawing the figures in this research and by giving an honest critique about my writing. Thank you for always seeing more in me.

**ABSTRACT**

After more than 25 years of decline, the global poverty rate has started to increase driven by the COVID-19 pandemic, taking millions back into poverty; most of whom live in sub-Saharan Africa. Low-income consumers are underserved and struggle to find essential goods that meet their needs, that they can afford or that contain adequate communication about the product. Yet the financial opportunity resulting from the spending power and demand from consumers at the bottom of the economic pyramid in emerging markets and developing countries is motivating for global consumer goods companies. However, they also have a social obligation to democratise new product innovations across markets.

The 4As framework (affordability, acceptability, availability and awareness) encompasses factors which help manufacturers reach and serve low-income consumers better. Human-centred design has been employed to develop solutions to complex problems with empathy to users and stakeholders. By interviewing consumers and designers, this study explored (1) the motivations and challenges of designing for low-income consumers, (2) how human-centred design was being employed when designing products for this group against the 4As framework and (3) how products meet the needs of low-income consumers, against said framework. Findings show that designers were motivated to design products for this consumer group if the products added value to the consumer. However, the constant evolution of needs, and need to design to an affordable price posed challenges. It was also determined that some human-centred design practices were present but that consistency in application was needed, particularly regarding acceptability, affordability and awareness.

*Keywords:* human-centred design, low-income consumers, new product development, inclusivity

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## LIST OF ABBREVIATIONS

| | |
|---|---|
| BoP | Bottom of the Pyramid |
| CPG | Consumer Packaged Goods |
| EMDCs | Emerging Markets and Developing Countries |
| HCD | Human-Centred Design |
| ISO | International Organisation for Standardisation |
| LIC | Low-Income Consumer |
| LSM | Living Standard Measure |
| NPD | New Product Development |
| PPP | Parity Purchasing Power |
| R&D | Research and Development |
| UCD | User Centred Design |

# 1. INTRODUCTION

## 1.1. Research Background and Problem Statement

### *1.1.1. Research Motivation*

Global poverty has been steadily declining over the last 25 years (The World Bank, 2020). More than 1.2 billion people have escaped poverty since 1990, at a rate of 36 % (The World Bank, 2020). In 2017, 9.2 % of the world were living in poverty, which is an estimated 689 million people living on or below US $ 1.90 per capita per day (Peer, 2020). When converting parity purchasing power (PPP) into annual income at local purchasing income, this would be below US $ 3 000, which is the minimum that someone would require to live a decent life. However, for the first time in 20 years, the poverty rate began to increase in 2020, driven by the global coronavirus pandemic in 2019. The COVID-19 pandemic resulted in worsening the effects of conflict and climate change. A further 88 to 150 million people were expected to enter poverty by 2021, some being pushed back after just having escaped (The World Bank, 2020).

More than half of the world's poor live in sub-Saharan Africa (Harapan et al., 2020; Peer, 2020; The World Bank, 2020). Referring to the economic pyramid, this group is often referred to as the bottom of the pyramid (BoP). These citizens are some of the world's most underserved people in many ways, with limited access to infrastructure, resources, land and finances (Pizzagalli, Sharma, & Lascu). From a lens of consumption, the BoP as consumers are also underserved and do not have the means to pay for or have access to goods or services which are required for a minimum standard of living (Anderson & Billou, 2007). They are also referred to as low-income consumers with many hurdles to face including a number of economic, physical and social challenges (Anderson & Billou, 2007; Darley & Johnson, 1985; Prahalad & Hart, 2002).

Distribution is one such significant challenge in BoP markets, with most consumers living in rural areas, in extreme weather conditions, and with poor infrastructure to reach these consumers adding cost to serving these consumers (Anderson & Billou, 2007). This is one of

the reasons why the poor are believed to pay more for goods compared to richer consumers. In India, for example, access to rural consumers is extremely limited during monsoon season, due to the destruction of roads. Another challenge for low-income consumer is not being able to afford products and services with their low earnings. Often more than two-thirds of their income are used on food, leaving little room to afford personal care, hygiene, telecommunications, and other essentials (Anderson & Billou, 2007). A third hurdle for low-income consumers is that companies often do not understand their unique needs when offering products or services (Anderson & Billou, 2007). For example, in many developing countries, electricity is not reliable and consistent, requiring non-electrical options to maintain the cold chain of products. Despite most of the developed world having access to traditional media (for example, television), allowing companies to raise awareness of their products to consumers, BoP consumers have limited access to this media, limiting the awareness of new innovations (Anderson & Billou, 2007; Hamilton & Catterall, 2005).

Influenced by such challenges, low-income consumers often have reduced variety in their choices and they often have to pay more for products or have lower quality products and services than their middle-or high-income counterparts (Hamilton & Catterall, 2005). These consumers may also experience dietary deficiencies because of the lack of access to good quality foods, which is related to long-term negative health outcomes (Hamilton & Catterall, 2005). Lock (2020), further highlights that access to better health and wellbeing are key to ending extreme poverty since poor health is both an indication of poverty and the outcome of poverty.

In South Africa, it has been observed that the poor experience a greater level of inflation on their food basket compared to the annualised inflation. In March 2016, when average food inflation was 9.8 % for the country, inflation for the poorest in the country was 11.8 % (Kelly, 2016). Inflation can cause poor consumers to move to cheaper options as well as smaller package sizes which may not have the same value as their usual purchases (Hamilton & Catterall, 2005; Kelly, 2016). A study by a KwaZulu-Natal-based non-profit organisation (Pietermaritzburg Economic Justice and Dignity) established that food prices in local settings appreciated significantly more than the reported country average, and were not monitored by regulators who put in place laws to prevent extreme pricing during the COVID-19 related

lockdown in 2020. Food insecurity, while enshrined in South Africa's Constitution, in practise is hindered by such hurdles in the food system (Bassier et al., 2020).

From the mentioned examples, it can be seen that products developed for low-income consumers are not always physically available to them for purchase, do not always tackle their real needs, are too expensive, or the benefits which they are developed for are not always understood by the consumers. The lack of inclusive access to affordable consumer goods was especially poignant during the COVID-19 pandemic. With the strict lockdowns enforced in South Africa in early 2020, many informal vendors were not able to operate. These vendors form an integral part in providing access to goods in rural areas and townships in South Africa.

Low-income consumers are not always provided with the right information to make the best choices in products (Mchiza, 2017). In a study conducted by Mchiza (2017) in South Africa, more than 650 adverts in 5 magazines which were targeted at poor black consumers were reviewed and found to have more adverts for unhealthy foods, as well as misleading nutritional information compared to magazines for non-black South Africans.

From the below examples it can be seen that products common in low-income communities can sometimes be found to be harmful to consumers. A common example of this can be seen with relaxers (chemical hair straightening products), which are commonly used by African females to straighten curly hair. It has been established that some of these ubiquitous products can lead to weakening of hair, scalp inflammation and hair loss due to poor quality (Khumalo et al., 2010). Small package sizes of products have been a frequent design direction to reduce the unit pack price for food, home and personal care consumer products, such as soups, detergent powder and shampoo. While these allow consumers to afford essential products, these often discarded, non-biodegradable sachets have contributed to an environmental disaster, polluting land and water (Posadas, 2004).

Prahalad and Hart (2002) clearly show the benefit of marketplace activity in emerging markets and developing countries (EMDCs), not just to citizens but also to companies looking to grow their profits. However, very little research has been undertaken to explore the gap in the appropriateness of new products for the South Africa BoP market. The current research aims

to explore the experiences of low-income consumers in South Africa by looking through the lens of these consumers as well as the designers who develop products for the BoP. The research aims to identify design practices which could help bridge the gap between designer and user, with a core foundation of human-centred design as a means to better empathise with underserved consumers. This research is a means to explore the application of human-centred design in the development of new consumer products for low-income consumers, with the aim of developing a more robust praxis for product designers in South Africa.

### *1.1.2. Research Context*

The spending power and demand of citizens at the BoP in EMDCs is undeniable (Anderson & Billou, 2007; Arunachalam et al., 2019; Dabla-Norris et al., 2015; Pizzagalli et al., 2018; Prahalad, 2006). This has created a significant commercial opportunity for local and multinational companies. Responding to this opportunity not only brings financial benefit but is a social obligation to democratise new product innovations across markets (Arunachalam et al., 2019). At this economic level, even basic consumer products, such as fortified foods and soap, can play a significant role in combatting preventable diseases (Leisinger, 2007).

However, reaching consumers in EMDCs (many of whom are resource poor), with good quality products, at prices which they can afford is rare, as seen in the examples shown above. Anderson and Bilou (2007) suggest four key factors to reach and serve low-income consumers better and drive purchase, which the authors termed the 4As framework:

- *Affordability*: the potential consumer is not economically able to afford, or psychologically willing to pay for a particular item.
- *Acceptability*: the product does or does not meet the functional or psychological needs or expectations of consumers at the lower end.
- *Availability:* the product is not available to be purchased or is not of acceptable convenience to be purchased.
- *Awareness:* the potential consumer is not, or not adequately, made aware of the brand and product to understand the product's features, nor are they adequately engaged in trial tactics and reminded of the product.

Further research such as the work of Arunachalam et al., (2019), provide detailed approaches to designers and developers who want to target low-income consumers. However, consumer products are not always developed for the needs of low-income consumers. Arunachalam et al., (2019) explain that there is startling evidence that these approaches are not adopted by manufacturers and thus perpetuate the challenge of low-income consumers to acquire consumer goods. In cases where products have been carefully designed for low-income consumers it can lead to both profit and societal benefits.

Hindustan Lever Limited, the largest soap manufacturer in India for example, was able to directly impact the epidemic of diarrheal diseases, which causes 2.2 million deaths a year, by driving awareness of their Lifebuoy soap product through strong education messaging to the right consumers, in the right local languages (Prahalad, 2006). In a more recent example, the power of the humble soap bar could not be more relevant with the COVID-19 pandemic in 2020. Handwashing with soap was cited as one of the most effective ways to kill the virus on hands and reduce transmission (Resnick, 2020). Lifebuoy launched a public service campaign to raise awareness of the importance of handwashing with soap and how it can reduce the spread of COVID-19 (Verma, 2020).

In another example from India, the Aravind Eye Care (AEC) centre was started with the aim of eradicating needless blindness in India (Prahalad, 2006). The $3 000 price tag for cataract surgery in developed countries reduced the economic and psychological affordability of this important surgery in India. Working within the limits of an emerging market, AEC developed a way to provide the surgery for $25 - $30. As a result of the innovative process developments, they were able to deliver quality surgery greater than that seen in Britain at a much-reduced price (Prahalad, 2004).

### *1.1.3. Bottom of the Pyramid Research in South Africa*

South Africa is one the biggest emerging markets in Africa. In recent research, Lappeman, Ransome and Louw (2019) highlighted the significant gap in research about the BoP in South African. Through the meta-analysis of BoP research within the South Africa context, only four

studies covering this topic were identified: Louw (2008), Naidoo (2009), Chipp and Corder (2009) and Jacobs and Smit (2010) all cited in Lappeman et al. (2019). These studies, respectively, looked at understanding the sustainable opportunities at the BoP, how social investment from corporates could drive BoP loyalty, reviewed this segment for marketers, and the role of materialism in the BoP. This study will help to elucidate further insights into this important consumer segment in South Africa, of which limited academic literature currently exists.

### *1.1.4. Innovation for Low-Income Consumers*

In any market economy, the development of products and services is a basic market activity. However, in EMDCs, new product development (NPD) can do much more, as it can unlock solutions to societal, resource and physical barriers (Viswanathan & Sridharan, 2012). From the turn of the millennium, the work of BoP scholars such as Prahalad (2004) have shown that market place activities in EMDCs are not just the right thing to do but can also provide new profit opportunities for multinational companies (Prahalad, 2004).

Africa is regarded as the next frontier of growth for consumer package goods (CPG) companies (Leke et al., 2018), however, innovation through NPD in Africa is often an iteration of western models. Rolling out products and using models which worked outside of Africa may not unlock this commercial opportunity within Africa. Instead of deploying products which have worked in western markets, these innovations needs to be evaluated against the needs of low-income consumers and where relevant, business models adjusted to provide useful and affordable solutions for these citizens (Tinsley & Agapitova, 2017).

Multinational companies familiar with product development for middle- and high-income consumers typically design products for experiential value and with a vast suite of infrastructure development already in place (such as telecommunications, roads, internet access and electricity). However, low-income consumers experience persistent problems with resource limitations, literacy rates and social barriers (Viswanathan & Sridharan, 2012).

Sometimes companies do not factor in the cost of doing business in the bottom of the economic pyramid. Due to complex supply chains and limited infrastructure; the last mile of delivery to the consumer requires additional investment. If the introduction period for the product, which is characterised by low volume, is not financed by companies, these costs are transferred to the consumer, placing the product out of reach for many poor consumers (Tinsley & Agapitova, 2017).

Innovations are also not always personalised to local constraints such as the typical coinage and the sequence (for example, a weekly wage) or the irregularity of income. This would result in a company developing a product which might be too expensive to purchase (Tinsley & Agapitova, 2017).

While there are examples of where innovations have become more focussed on the needs and constraints of low-income consumers, it is not yet commonplace. Building a better understanding of the needs of consumers can help improve the inclusivity of innovation, as seen in the following examples.

While there is often a strong focus on reaching a price point that can be afforded by low-income consumers, it is important to also focus on the overall value for the consumer. A cheaper price tag may impair the quality of the product as opposed to designing a product which can have a longer lifetime use even if it costs more initially (Tinsley & Agapitova, 2017).

When companies commit to serving low-income consumers, the lack of resources which typically constrain innovation, can give rise to the creation of more innovative solutions to meet the needs of this group and improve the acceptability, affordability, availability and awareness of the product and, in turn, improve the product success with low-income consumers (Prahalad, 2012).

Innovation which aims to deliver to the needs of low-income consumers is essential to win at this economic level and to provide products which are affordable and accessible. Leveraging the designer toolbox to develop a deeper level of empathy with the consumers being designed for, would allow product designers to understand the evolving needs of BoP consumers deeply

(Prahalad, 2006), while simultaneously understanding which current features of products are not necessary to this group. Stripping away unnecessary innovation elements and focussing more clearly on the design needed by these consumers would allow product designers to better develop products for low-income consumers.

Research into how products can be better and more innovatively designed to meet the needs of the BoP has been largely focussed on countries in Asia (Prahalad, 2006, 2012). This current study aims to provide a contribution to this area in the South African context. The prevalence of human-centred design in NPD has not been extensively explored academically in the South African context and as one of the biggest emerging markets in Africa, these findings can also have impact beyond South Africa.

### *1.1.5. Human-Centred Design for New Product Development*

Product design has traditionally been associated with the roles of industrial designers and engineers and focussed on the form and function of the product. It has become a more integrated field, encompassing: consideration of the context and company strategy; the design of the form and function of the product; and the post-purchase implications, such as product success, disposal and company performance (Luchs & Swan, 2011). In this research, the modern definition of product design is used as it entails the intentional design of the various touchpoints of the products within and out of the CPG organisation. These practitioners could range from marketers, supply chain managers, research and development managers, product design specialists to systems developers.

Human-centred design is a design approach which incorporates collaborative and participatory processes, techniques, tools and mind-sets to solve problems and develop innovative products, systems and services (IDEO.org, 2015). It has long been applied to systems engineering to improve the intuitive nature of hardware and software and render these more user-friendly (Giacomin, 2014).

However, since the early 2000s human-centred design has been increasingly applied to businesses and social design ventures to develop solutions to complex problems with great

empathy to users and stakeholders, as opposed to technology applications alone (Baker & Moukhliss, 2020; Giacomin, 2014). Human-centred design is able to be applied to situations with resource-poor individuals in order to tackle the systemic challenges which face them and implement innovative solutions which work. One such example is d.light, a social enterprise which develops and distributes solar light and power products for developing markets with unreliable electricity. They use human-centred design in their development process, embracing collaboration and engagement with diverse teams to investigate problems in the field, and develop products which people can afford (IDEO.org, 2015).

The application of human-centred design into NPD for low-income consumers in an African setting is understudied. From the above examples, it is clear that it can a have positive impact in developing products that not only build economies but also serve people by solving problems that they face at a cost that they can afford.

### 1.2. Research Aims and Objectives

Through interactions with consumers and product designers in this research process, this study aims to better understand the challenges experienced by low-income consumers related to consumer products. It further aims to explore the application of human-centred design in the development of consumer products for low-income consumers. The research aims to identify how human-centred design might unlock opportunities to design products which better serve these citizens through acceptability, affordability, availability and awareness in the South African market, democratising innovation and improving access to new benefits and technologies.

The overall research question in this study is: How might human-centred design practice in CPG companies influence the design of products to be more inclusive of low-income consumers?

The related sub-questions are:

- R1: What are the motivations and challenges facing product designers and developers in developing products for low-income consumers in South Africa?

  - R1a: What are the motivations for product designers and developers in developing products for low-income consumers in South Africa?
  - R1b: What are the challenges facing product designers and developers in developing products for low-income consumers in South Africa?
- R2: How are human-centred design practices embedded into the process that product designers currently follow to design products for low-income consumers?
- R3: How do these products currently meet consumer needs among low-income consumers based on the 4As framework (affordability, acceptability, availability, and awareness)?
  - R3a: How do these products currently meet consumer needs among low-income consumers based on affordability in the 4As framework?
  - R3b: How do these products currently meet consumer needs among low-income consumers based on acceptability in the 4As framework?
  - R3c: How do these products currently meet consumer needs among low-income consumers based on availability in the 4As framework?
  - R3d: How do these products currently meet consumer needs among low-income consumers based on awareness in the 4As framework?
- R4: How might Human-Centred Design application in CPG companies enhance the affordability, acceptability, accessibility and awareness of product design for low-income consumers?
  - R4a: How might human-centred design application in CPG companies enhance the affordability of product design for low-income consumers?
  - R4b: How might human-centred design application in CPG companies enhance the acceptability of product design for low-income consumers?
  - R4c: How might human-centred design application in CPG companies enhance the availability of product design for low-income consumers?
  - R4d: How might human-centred design application in CPG companies enhance the awareness of product design for low-income consumers?

The purpose of the research is to contribute mutually to designers and poor citizens of South Africa, and possibly other EMDCs, in the following ways:

- Adding to existing knowledge of identifying key factors that are important to low-income consumers when making product choices, and
- Identifying how human-centred design can be used by product designers within CPG companies to serve low-income consumers.

The findings of this research can contribute to design practice by identifying the factors which would enhance the design of products. As a core contribution to practice, this research is expected to guide product designers in local or multinational CPG companies, or individuals on entrepreneurial journeys to design products with greater consideration for low-income consumers. This can enhance commercial success of these ventures as innovation is an important part of the growth strategy for organisations (Tsafarakis et al., 2011), but would also improve access for low-income consumers' to meaningful NPD innovation for them.

A praxis was developed which is an outline to an online open-source resource for organisational, entrepreneurial and intrapreneurial practice to support new product design and development for low-income consumers in South Africa. This can lead to better serving for these consumers. The praxis helps create confidence among designers when launching NPDs in South Africa, to aim for an ideal customer-product fit during their developments and deployments. Along with the traditional commercial goal, through this praxis this research will aim to encourage inclusive new product design as a social goal (Coleman, 1976).

In the following chapter, the researcher will review literature relating Human-Centred Design, New Product Development in Emerging Markets, the 4As Framework and consumer behaviour in South Africa. In Chapter 3, the researcher details how the study has been designed, how sampling occurred, how the data was analysed and highlights any limitations and ethical considerations. Chapter 4 presents the results from the data collection, presented for each research question and sub-questions. These results are discussed in Chapter 5. In Chapter 6, the researcher highlights the key managerial implications of the research, how the research contributes to theory as well as recommends areas for future research.

# 2. LITERATURE REVIEW

## 2.1. Design and Designing for Social Inclusion

Design is part of the roots of human history and forms part of every human culture and civilisation (Nelson & Stolterman, 2012). From the discovery of fire to the invention of the wheel, and development of tools, the human ability to not just observe but imagine and bring these ideas into reality is evidence of our ability to design and is foundationally part of our humanity (Nelson & Stolterman, 2012). Nelson and Stolterman (2012) go on to say that design is the ability to 'imagine *that-which-does-not-yet-exist*' and bring to life something that can engage the senses and integrate into the real world. It stands to reason that much of the world is based on design – be it homes, businesses, relationships, artefacts, or lives; or even design choices to create experiences.

As humans evolved from designing for their survival, improvement and development and moved to designing to thrive in their world, it becomes a natural progression for the purpose of design to serve others (Nelson & Stolterman, 2012). Designing with the purpose of positively impacting society (social impact design) has become a popular choice for studies, work and new enterprises in recent years (Lasky, 2013). Social impact design has traversed countries, economic levels, industries to identify systemic changes that can benefit society. However, the call is not to build content to craft a career path in social impact design, but rather how general design education might teach, promote and instil social tenet in students to drive social benefit in all interventions (Lasky, 2013; Nelson & Stolterman, 2012).

The latter is more aligned to the premise of this study, that the layering of social (and environmental) consideration is necessary in the various fields of designing to truly meet the design purpose of serving others. This also liberates one from expecting design for social impact and rather seeing oneself as part of the journey for more inclusive design (Lasky, 2013; Nelson & Stolterman, 2012).

### 2.2. Human-Centred Design

At its core, human-centred design is a design approach to problem solving driven by empathy for the user and related stakeholders (IDEO.org, 2014). Ergonomics, computer science and artificial intelligence are fields which first adopted the application of human-centred design (Giacomin, 2014). The International Organisation for Standardisation (ISO) reflects these roots in ISO 9241-210:2019, which guides designers in the development of hardware and software in interactive systems which enhance human-system interaction. The approach is expected to improve effectiveness, efficiency, human wellbeing, accessibility and sustainability, while reducing ill-effects on human health and safety (Giacomin, 2014; International Organisation for Standardisation, 2019).

Initially referred to as User Centred Design (UCD), to reflect the importance of user involvement in the process, ISO's 2010 version of the standard (ISO 9241-210:2010) saw this term changed to human-centred design to expand engagement by including other stakeholders related to the system with users (Harte et al., 2017; International Organisation for Standardisation, 2019). ISO 9241-210 defines human-centred design as 'an approach to interactive systems development that aims to make systems usable and useful by focusing on the users, their needs and requirements, and by applying human factors/ergonomics, and usability knowledge and techniques" (International Organisation for Standardisation, 2019, p.5).

Gasson (2003) suggests that human-centred design allows the designer to better serve the user by considering more than the technical challenge experienced by the user but also the social context, and deeper meaning for the technology. Using a human-centred design approach results in products, systems and services which are intuitively designed, allowing the user to discern physical and informational features with greater human emotional engagement (Giacomin, 2014).

Human-centred design might have had its background in ergonomics and systems engineering but has evolved from these early roots into focussing on usability, inclusivity, interaction

design, empathic design, and design for product, customer and emotions. This design approach is now more of an umbrella paradigm of design and represents a powerful suite of techniques to engage, stimulate, empathise and discuss with users and stakeholders to identify needs for products, systems and services which can go beyond what people may initially realise (Giacomin, 2014).

Human-centred design aims to seek meaning and make sense, as seen in the human-centred design pyramid presented by Giacomin (2014). The model in Figure 1 shows the levels of complexity in human-centred design using simple questions of Who, What, When and How and reflects the multi-level engagement of people with the product, system or service and the interplay of physical and metaphysical elements. This ultimately leads to the question of Why, representing the meaning. Products, systems and services which unravel deeper meaning can build better motivational structures, enabling more likelihood of adoption or uptake and commercial or social success (Giacomin, 2014).

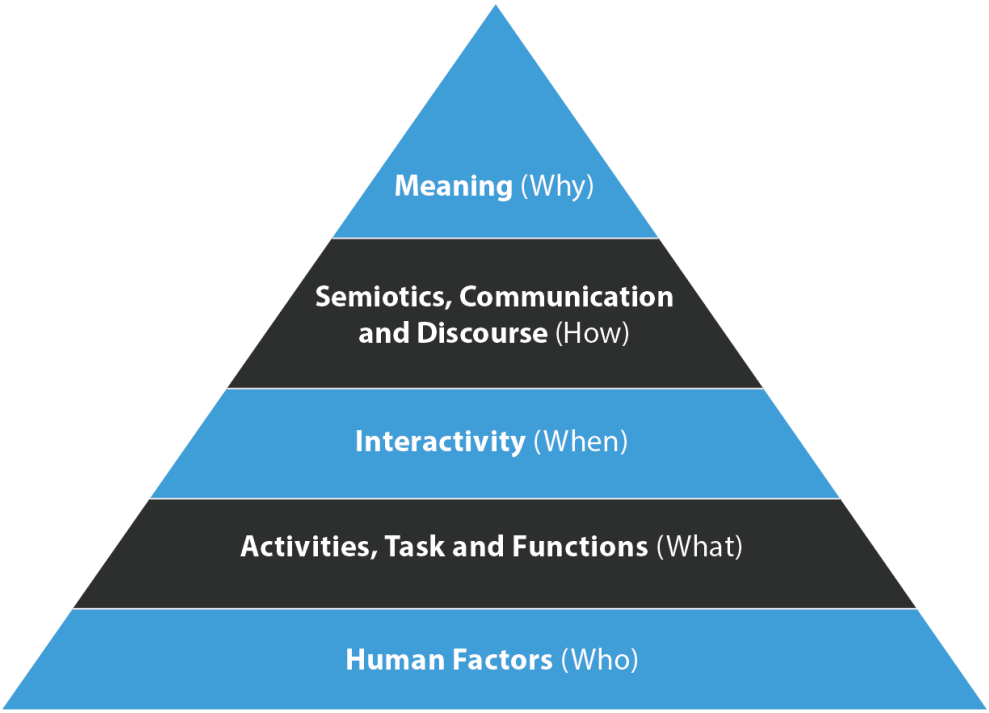


Figure 1: The human-centred design pyramid developed by Giacomin (2014)

Traditionally, human-centred design was limited to being focussed on incremental improvements on existing artefacts or systems using human-centredness. Giacomin (2014) proposes that human-centred design rather challenge pre-existing mind-sets and limitations to

a degree that it enables innovation which is disruptive. This broader view of human-centred design is shared by Sanders and Stappers (2008). As indicated in Figure 2, these scholars' mapping of the design landscape incorporates various co-design or participatory design approaches as human-centred design. IDEO.org (2015) further suggests that human-centred design be viewed as more than physical work, questions and techniques but is also grounded in mind-sets which bring alive human-centred design application in consistently changing environments. Human-centred design has also been used inter-changeably with Design Thinking (Baker & Moukhliss, 2020).

For the purposes of this research, human-centred design is regarded as an umbrella term to incorporate practices, approaches, tools, techniques, and mind-sets which allow practitioners to tackle problems in business and society.

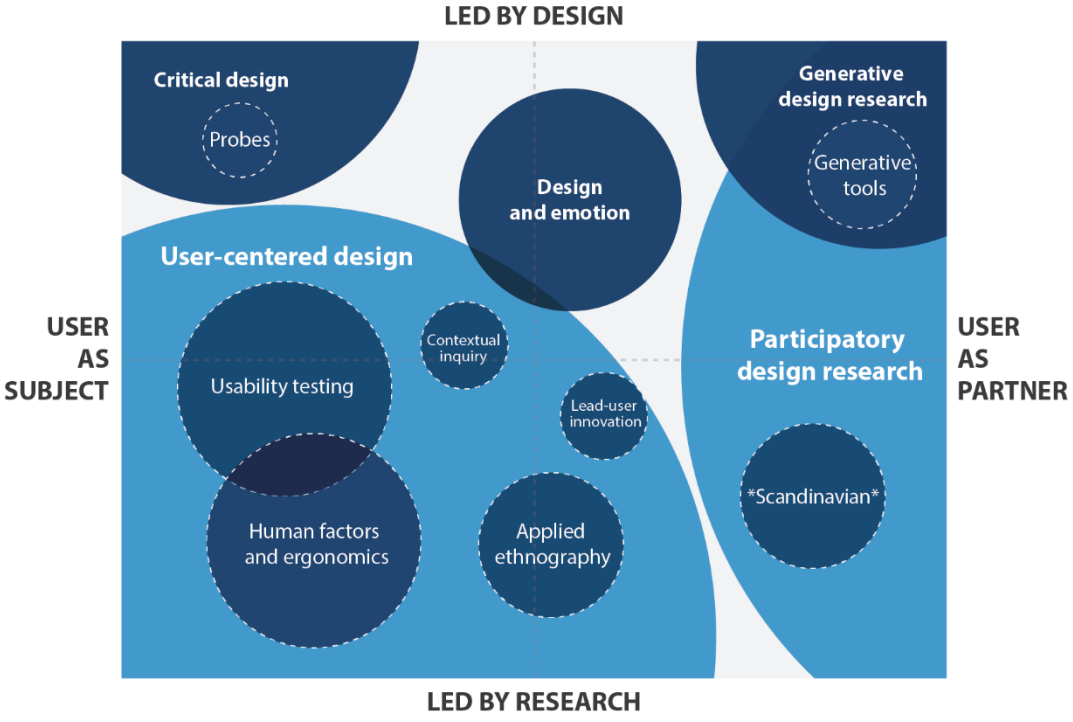


Figure 2: The landscape of human-centred approaches as classified by Sanders & Stapper (2008, p.6)

A practitioner in human-centred design has an ever-increasing variety of tools to draw out the needs of the people at the centre of the activity. Apart from tools which might be founded in

sociology or psychology, such as a day-in-the-life analysis and ethnographic interview, many organisations develop toolkits based on their own ethos. Some of these include IDEO, LUMA Institute, NESTA, Stanford d.school (Giacomin, 2014). These are also done across contexts such as health (Health Services Co-design guide and toolkit), education (Garreta-Domingo et al., 2018) and mining (Horberry et al., 2016).

Stanford d.school identifies empathising as the first step in their design thinking process, and foundational to human-centred design (d.school, 2018). This involves observing user's behaviour in their contextual environment, engagement with users and immersion in the reality of the consumer (d.school, 2018). The use of prototypes was also called out as a valuable step in the process, to gain a deeper understanding of the needs of users, explore concepts with users and to test and refine products with users (d.school, 2018). The same process also recommends keeping prototypes in low resolution in the early stages to make it easier and quicker to change direction if feedback from testing requires one to iterate.

There is a clear business value in getting closer to consumer needs. Hippel (2005) highlights that a major reason for commercial failure of new product innovations is the lack of information about users' needs and since the user generates the information about their needs, manufacturers and designers should engage with them to gather this information to enhance commercial success (Giacomin, 2014). In their seminal work, Bower & Christensen (1995), identified that leading companies succeed by being closer to their customers, and understanding their needs. However, they specifically focussed on investing in technologies for nascent or emerging markets – prior to the market presenting an immediate lucrative opportunity.

The application of human-centred design practices to NPD can not only enhance the development journey but has also been shown to help create great products which are commercially successful. Product development with human-centred design principles helps to increase collaboration and improve idea generation (Veryzer & de Mozota, 2005). Companies like Proctor & Gamble used to focus on looking at how consumers used their products, however, by shifting to a more design-focussed approach, they began to look at how consumers carried out routines, becoming more human centric. This led them to improving how they helped consumers choose their Olay skincare product among the plethora of options on shop

shelves, as opposed to undergoing another packaging redesign, saving time and money (Cohan, 2012). In 2012, snack, food and beverage company, PepsiCo, made a decisive move to make design a key part of their innovation process. This has led to numerous human-centred design innovations, such as a chip innovation which was designed for women in China. By understanding how they want to snack, the chips were stacked and packaged in a tray to reduce messiness and made less of a crunch when eaten since consumer wanted to be less conspicuous. Over the nine years since placing design front and centre in the organisation, PepsiCo's revenue has increased at a steady rate (Ignatius, 2015). It stands to reason that human-centred design can play a role in building better product solutions for low-income consumers when it comes to NPD in EMDCs.

### 2.3. New Product Development in Emerging Markets

At the turn of the millennium, the millions of people living at the bottom of the economic pyramid earning less than $1.90 per day, were largely ignored by global product manufacturers (Prahalad, 2004). Companies assumed that these consumers could not afford or did not need the same products marketed in advanced economies. This assumption has been incorrect, considering that emerging markets over the last 15 years have accounted for more than half of new consumption compared to advanced economies (Woetzel et al., 2018). It is estimated by 2025 that emerging markets will account for $30 trillion worth of consumption, this being the largest opportunity in the history of capitalism (Atsmon et al., 2012).

The inequality between the low-income and upper-income groups in most EMDCs continues to increase (Dabla-Norris et al., 2015), yet it is the low-income groups that support the growth of EMDC economies. (Dabla-Norris et al., 2015) found that growth of the bottom 20 per cent in a country greatly affects the GDP growth of a country, whereas if only the top 20 per cent were to grow, then the GDP growth over a medium-term would decrease. The poor and the middle class can therefore be considered the "main engines of growth" for EMDCs (Dabla-Norris et al., 2015, p. 4).

It is not surprising that multinational companies have subsequently become highly interested in the growth of EMDCs. Coupled with general rising populations, a growing middle class and a

higher earning upper class, EMDCs have become a key opportunity for growth for global multinationals and domestic firms alike (Arunachalam et al., 2019). In addition to growth, domestic and multinational companies have discovered that catering to low-income consumers requires refreshed innovation and new tools to design and develop products for the people of these markets (Prahalad, 2012).

For example, in advanced economies, consumers tend to buy in bulk, which has popularised stores like Walmart, Costco and Sam's Club (Prahalad, 2004). However, in emerging economies, resources to stockpile are scarce, therefore small and single serve packs have resulted from innovation endeavours to better serve these markets. Businesses like Unilever and P&G have over the years transitioned many CPG categories into these single serve sachets. In India, for example, more than 60 % of shampoo sales are now in these small packs (Prahalad, 2004). The negative environmental effects of single serve sachets were discussed in Section 1.1.1.

While sachets enable affordability of quality products and to some degree meet physical and psychological needs, this cannot be the pinnacle of inclusion for low-income consumers. Innovation which better leverages values such as affordability, accessibility and availability would more authentically engage low-income consumers.

Developing markets can create environments which encourage designers to innovate to create access to products and services that low-income groups have not had before. An example being the development of a lower bandwidth data service at a quarter of the cost of the original service proposal in smaller cities in which could not afford the higher bandwidth option (Gudlavalleti et al., 2013). This would not have happened had the designers not engaged with customers in these cities to understand the trade-offs they were willing to make to ensure access. In recent years, conversations have evolved from understanding the opportunity in emerging markets to understanding how to better serve low-income consumers, while making a profit (Arunachalam et al., 2019).

Designing to ensure the appropriate value to emerging market customers is important to appeal to these customers in an environment which is characterised by volatility, uncertainty,

complexity and ambiguity, and for customers who are demanding and often cost-inelastic. Understanding customer needs and problems in emerging markets is a key way to win sustainably in emerging markets (Gudlavalleti et al., 2013b; Lemoine & Bennett, 2014). Gudlavalleti et al. (2013, p. 5) recommend that companies should adopt a "zero-based design" approach. This means that they should start their designs from a complete starting point, as opposed to altering expensive design to meet the needs of low-income consumers. By doing this, companies can discover the right design which works for this consumer group as opposed to force-fitting a design that worked in developed markets.

Customer insights can also be found by engaging consumers in research to better understand their needs. In an example, an Asian automotive-parts manufacturer engaged this network in a workshop called a 'collision workshop' to identify insights, discuss them and formulate hypotheses which can be tested at a later point (Gudlavalleti et al., 2013). Through this workshop, a passing comment from an attendee about the heaviness of a wheel, sparked a thought from engineers. This resulted in a higher quality of steel being used to make the wheel, while saving costs since less of that grade was needed, thus allowing it to be sold more affordably.

In another example, as opposed to stripping down global product mixes, to reduce the price point of a globally designed camera to be able to sell in an emerging market, the company was encouraged to spend time to better understand what modifiable features are required by potential customers in that market (Gudlavalleti et al., 2013). Once this was understood, the necessary features could be retained and the unnecessary features removed, to be able to manage down the cost of the product and ensure affordability for the consumer.

It is surprising that many multinational product manufacturers have operations in emerging markets but do not do their best to design for and market to these consumers. By choosing not to innovate appropriately, the sustainability of an organisation is placed at risk due to ever changing consumer preferences and buying behaviour, amongst other reasons (Tsafarakis et al., 2011).

### 2.4. The 4As Framework

The current research suggests that the 4As framework as developed by Sheth and Shah (2003) would be an appropriate theoretical framework to underscore the relationship between human-centred design and the needs of low-income consumers. Sheth and Shah (2003) suggest that there are four key values required by low-income consumers to reduce social and financial challenges faced by this consumer segment. These values posited by Sheth and Shah (2003) are affordability, acceptability, availability and awareness. The 4As Framework prioritises the most important values that a low-income consumer might use to consider whether a product or service meets their needs. When applying a human-centred design approach to understanding the needs of low-income consumers, the 4As Framework provides a structure of values to evaluate a product for consumers and designers.

Affordability looks at the whether the potential consumer is economically able to afford, or psychologically willing to pay for a particular item (Anderson & Bilou, 2007). This is an important consideration which can impact how a product is designed, the materials used, the longevity of the product and where it is sold (Anderson & Bilou, 2007). Acceptability considers whether the product does or does not meet the functional or psychological needs or expectations of consumers at the lower end. By meeting the needs of this consumer group, who are highly risk averse, long-term loyal relationships can be formed with the brand (Anderson & Bilou, 2007). The factor availability studies if the product is available to be purchased or is of acceptable convenience to be purchased. By controlling availability, brand owners can enhance being selected. However, to do this, they would need to ensure they work with relevant retailers and have strong understanding of the retail environment for the low-income consumer (Anderson & Bilou, 2007). Lastly, awareness look at whether the potential consumer is adequately, made aware of the brand and product to understand the product's features but also if they are adequately engaged in trial tactics and reminded of the product. With low-income consumers being adequately made aware of products, their benefits and being engaged in trial, brand owners might be able to sway consumers from their existing products and support the democratisation of technologies to the BoP (Anderson & Bilou, 2007).

The concept that the factors of acceptability, affordability, availability and awareness would enhance the purchasing decisions for low-income consumers is rooted in the relationship marketing research of Sheth and Shah (2003). This framework was further developed by scholars like C.K. Prahalad and Jagdish Sheth and popularised by Anderson and Bilou (2007). Anderson and Bilou (2007) evidence additional examples of where leveraging the 4As framework strongly helped companies not just grow but grow profitably while serving the bottom of the economic pyramid. Hindustan Lever Limited, Haier Group and Smart Communications are just a few large companies with strong performance in EMDCs like India, China and Philippines.

The 4As framework centres on the perspective of the buyer and is objective-focussed, unlike earlier marketing models. The frequently used 4P model (price, product, place and promotion) has a strong product proposition. By shifting the position to that of the customer, one can reframe questions and decisions on real opportunities and hurdles for the target market (Nezakati et al., 2011).

Prahalad and Hart (2002) motivate for a new model of marketing (4As framework) for multinational companies looking to enter EMDCs because traditional marketing theories and the inherent bias from MNCs would not necessarily support the new markets that the BoP presented. These markets needed new approaches for the hurdles that are mentioned in Section 1.1.3. Bates and Buckles (2017) studied which marketing frameworks are appropriate for the three layers of the world's economic pyramid and endorse the recommendation that the 4As framework is applicable for the BoP markets. Table 1 highlights which marketing models are more appropriate for the grouping of the world's economic pyramid.

*Table 1: Marketing Strategies in relation to World Economic Pyramid market groupings (Bates & Buckles, 2017, p. 26)*

| WEP-based Global Economic Markets | Articulated Marketing Strategy |
|---|---|
| Top of the Pyramid | 4Ps: |
| • Per capita annual income > $20,000 | • Product<br>• Price<br>• Place<br>• Promotion |
| Middle of the Pyramid | Undefined: |
| • Per capita annual income ≤ $20,000 and > $3,000 | • Potential mixed 4Ps & 4As strategy?<br>• Potential new innovative strategy? |
| Base of the Pyramid (BoP) | 4As: |
| • Per capita annual income < $3,000 | • Awareness<br>• Affordability<br>• Access<br>• Availability |

### 2.5. Consumer Behaviour in South Africa

Due to the lack in BoP research, this group of consumers living below the poverty line is seen as a homogenous group (Lappeman et al., 2019). Local and multinational companies should be cautious in their strategies by recognising that consumers in low-income groups might be different from one another and have different needs, therefore needing to be marketed to differently. Cui and Liu (2000) identified that from region to region, in China, consumers' purchasing power, attitudes, lifestyles, media use and consumption behaviour change, indicating that consumers in emerging markets are more heterogenous than literature currently reflects.

Consumer behaviour has seen an explosion of research since first being written about in the 1960s (MacInnis & Folkes, 2010; Tsafarakis et al., 2011). Consumer behaviour seeks to understand how consumers of products, services, ideas and experiences search for, purchase, use and dispose of these to meet their needs or wants (Parumasur & Roberts-Lombard, 2013). However, the decision-making process for consumers is complex and made up of socio-cultural drivers, internal drivers, personal factors, elements of the marketing mix and situational variables (Schiffman, Kanuk, Brewer, Crous, Du Preez, et al., 2014). Combined with this, consumers are presented with greater choice in the 21st century than ever before (Schiffman, et

al., 2014), and in turn driving expectations of choice in their purchase behaviour (Tsafarakis et al., 2011).

Choice brings with it risk, since the outcome of choice is only realised in the future (Taylor, 2006). In South Africa, purchase behaviour of bread with low-income consumers shows that good quality brands are purchased at the beginning of the month (aligned to when social grants are paid) and brands which are affordable are purchased toward the end of the month (Simpson & Lappeman, 2017). Consumers at the BoP buy well-known brands because they want to ensure that they invest their limited resources in products which are trusted to deliver on their promises and which they know work. They sometimes even forego cheaper products which they have not tried before, to avoid the risk of dissatisfaction with the product. However, as prices increase or their available cash reduces, they are forced to compromise this stance in order to make ends meet (Lappeman et al., 2021). With limited economic resources, low-income consumers, need to make trade-offs and juggle these risks with their purchases, often trading off acceptability for affordability.

While a framework to understand the alignment and differences in Africa's BoP consumers is not yet available, research by Lappeman et al., (2019) attempts this in one of Africa's biggest economies, South Africa. The study was undertaken and resulted in identifying five characteristics of the BoP unique to South Africa. These uniquely identified characteristics describe how they impact and drive South African consumer behaviour:

- Unlike many neighbouring countries, South Africa is a **hybrid economy** comprising both a formal and informal economy. This hybridity is worsened by South Africa having the world's highest income inequalities (The World Bank, 2021). Distribution of products to the informal marketplace requires strategies which are different to those used for modern trade environments and require marketers to design accordingly. The informal trade environment is well served by the network of wholesalers in South Africa and consideration to the consumer journey is needed to design products appropriately for these distribution channels.
- Despite the income disparity, South Africa's poor still have a **stability in their income** due to the social security grants given by the South African government for various reasons such as disability, child support and pension. In 2018, 44.3 % of households

received social security grants in South Africa. For 19.9 %, it is the main source of income for those households (StatsSA, 2018). While social security grants are not specific to South Africa, the stability that this brings to South Africans provides a unique brand loyalty in this segment as a result of being able to plan their purchases and buy bulk packages though coordinated group buying (referred to as *stokvels*).

- The poor in South Africa are also afforded **free access to governmental services** such as water, electricity and housing which is not seen elsewhere in the world. These services free up income to purchase other goods.
- The Group Areas Act of 1950 was part of the apartheid regime in South Africa and required that black and coloured people live in areas set aside for them, often far from central business districts. This created a unique **township planning** that houses about half of the urban population. These areas have limited access to shops and reduces brand choices. After the apartheid regime, retailers have tried to get closer to these consumers, however, access to goods at affordable prices is still a challenge for low-income urban consumers.
- Millions of **low-income South Africans have progressed into middle-income bracket and even the upper-income bracket** after the fall of apartheid but have kept connections with low-income consumers in townships and rural areas. Seeing the reality of financial mobility, fuels South African consumers' aspiration and influences their brand loyalty. This also means that many low-income consumers have relatives who support them financially – increasing the disposable income of these consumers.

South Africa has the highest unemployment rate in the world (International Labour Organisation, 2020). In the first quarter of 2020, this has increased by 1 % to 30.1 % (StatsSA, 2020). While social grants bring stability and predictability of income for many, the millions more who are unemployed are left without certainty of when they can buy goods, and have also been shown to spend more on the same goods as higher income counterparts (Lappeman et al., 2019).

Since the early 1970s, the spaza shop has been an important retail destination in South African townships. With more than 100 000 informal stores across South Africa, they account for 54 %

of township enterprises (Rogerwilco, 2021). However, in the 2021 South African Township Marketing Report, a survey of over 1 000 people living in townships across South Africa, 47 % of interviewees reported that they were shopping more in formal supermarkets than six months ago (Rogerwilco, 2021). With more shopping malls coming up in townships, there is increased access to modern trade. However, popular South African retailers like Shoprite, Pick ‘n Pay and Mr Price have also been setting up smaller stores made from shipping containers to be able to get geographically closer to potential consumers in townships and creating greater convenience to gain access to these retailers (Madubela, 2021). Price is a key factor which draws shoppers to modern trade stores. These retailers have the benefit of volume and direct purchasing from manufacturers (Rogerwilco, 2021).

By delving deeper with low-income consumers and understanding how they make choices of brands, products and where to shop, the researcher will build knowledge about these decisions from a lens of human-centred design. These choices will be defined using the 4As framework to understand how consumers shop based on their needs (acceptability), where they choose to shop and if they have the products available, and if it is convenient (availability), if they can pay for it (affordability) and if they are engaged to learn about the product’s benefits and to try the product (awareness). Considering the challenges low-income consumers are experiencing in township planning, this research will help identify opportunities to improve the needs of availability in particular.

### 2.6. Conclusion

Human-centred design has driven the design field forward from the early 2000s to focus on the people that solutions are being designed for but using collaborative processes with diverse perspectives. Human-centred design has supported teams working on designing solutions to help people with waste and sanitation crises to improve city design to build better electronics. New products development of consumer goods is another sector where human-centredness is increasingly being appreciated (Nagaraj et al., 2020).

However, the literature shows that the consumer goods sector in emerging and developing markets, while valuable, is not being designed for as seen in the developed world despite the

potential growth in developing markets (Bates & Buckles, 2018; Prahalad, 2012). While the apprehension to innovate for EMDC markets from multinational companies has started to change, many innovations fail because of poor planning for the challenges which exist in EMDCs. Innovations on new products have also been found to not suit low-income consumers and not meet their unique limitations.

This study aims to build on the insights found in literature which highlight challenges in product design for the resource poor in Asia. The study further applies the 4As framework to human-centred product design which has not yet been utilised to understand consumer satisfaction in South Africa.

Human-centred design can play a part in equipping businesses with tools to better engage and empathise with users and their surrounding network to understand barriers to entry for brand owners and surface insights into what might solve these problems. Human-centred design also encourages prototyping which provides feedback on rudimentary versions of a business model to strengthen it in time. Human-centred design can help designers in various sectors to design better for the BOP and therefore, this study is well placed to explore the application of human-centred design in consumer good design for low-income consumers.

The exploration of experiences of low-income consumers with consumer products through the lens of the 4As, combined with on-the-ground insights from the designers who design for low-income consumers present an opportunity to build a conceptual framework and praxis that can have significant value for the inclusive design of products for the poor in South Africa.

# 3. RESEARCH METHODOLOGY

## 3.1. Research Design

In this study the researcher explored how current consumer products meet the needs of low-income consumers and how human-centred design techniques are used in the development of consumer products for these consumers. Through interactions with consumers and product designers in this research process, the thesis aimed to better understand the challenges experienced by low-income consumers related to consumer products and how human-centred design might unlock opportunities to design products which better serve these citizens through availability, acceptability, affordability and awareness in the South African market.

The research is exploratory in nature to gain deeper understanding of the phenomena among consumers and designers with their choices of products and how to design them. An exploratory design was chosen, as opposed to being a conclusive study owing to the fact that gaps exist in the available research on the prevalence of human-centred design in product development for low-income consumers in an African setting.

Exploratory research is recommended when a research situation is not sufficiently clear or too complex, allowing for insights into the situation to be uncovered and surfacing future research thoughts from the investigation itself (Brotherton, 2012; Malhotra, 2007). Brotherton (2012, p. 12) describes exploratory research as being "concerned with the why and how of the situation", while descriptive research design aims to a build a concrete view of the facts of a situation. Exploratory research helps to uproot new ideas and observations, which are important in this study to better serve low-income consumers.

A qualitative approach was chosen since a deeper exploration into the specific situation was needed and builds on the information already available from the literature review above (Flick, 2011). Qualitative research is more than just the antithesis of quantitative research. This approach deals with text rather than numbers, starts with participants and focuses on the social construction of realities in the study (Flick, 2011). Therefore, it favours the building of deep understanding within a context and learning directly from participants within a context of

research (Flick, 2011). Qualitative research was appropriate in this study since it allows the researcher to ask questions about motivations and preferences in purchasing decisions and manage any discomfort from consumers relating to potentially sensitive topics, such as shortage of financial resources and affordability. It also allowed the researcher to delve deeper into consumers feelings and motivations than quantitative research may allow.

Data were collected through recorded in-depth interviews with 12 designers and 12 consumers. The rationale for selecting 12 participants of each type is indicated in Section 3.3. below. The sampling procedure was direct, clearly explaining to respondents the purpose of the study. These interviews were preferred to focus groups as they allow the researcher to achieve the appropriate depth from multiple individuals on sensitive topics (such as affordability) and improving the likelihood of accurate responses (Rosaline, 2011). The interview discussion guide is included in Appendix B.

To address the specific research questions of this study, specific data needed to be obtained. Table 2 below details the required data and how it was obtained.

*Table 2: Information needed from study and how this was obtained*

| **Information Needed** | **How Information was obtained** |
|---|---|
| Understanding of motivations, challenges and considerations when designing for low-income consumers (R1). | Low-income consumers were asked questions pertaining to motivations, challenges and considerations in purchasing decisions. |
| Understanding if human-centred design practices and mind-sets are applied in designers work when developing for low-income consumers (R2). | Designers were interviewed to better understand the prevalence of these tools and how it helped in the design process for low-income consumers. |
| Understanding of how current products are perceived and evaluated by low-income consumers (R3). | Low-income consumers were interviewed and asked questions allowing them to evaluate products in their homes according to the 4As framework. |

| | |
|---|---|
| Understanding of the role of human-centred design in enhancing important attributes when designing products for low-income consumers (R4). | Data obtained from both designers and consumers were combined to develop this understanding. |

The outputs from the exploratory study were used to develop a praxis in the form of an outline to a guide to help designers on steps that can be used when designing products for low-income consumers. The intention is to build the outline into a full online open-source resource accessible by large and small organisations as well as freelance designers.

### 3.2. Research Scope

Following insights from Arunachalam et al., (2019) who conducted a study across multiple emerging countries to understand factors which encourage acceptability, awareness, availability and affordability of new products to low-income consumers, interviews were conducted with product designers and consumers in South Africa, to understand the same.

South Africa was chosen as the geographical context due to the strong presence of multinational companies who operate out of South Africa and into Africa. South Africa is also considered one of the biggest emerging markets in Africa and has a large low-income consumer base, making it appropriate for this study.

### 3.3. Sampling method

The unit of analysis in this research is the product designer, specifically understanding how they design for low-income consumers, what human-centred design tools are used, as well as the low-income consumer and understanding how they evaluate products for their needs and constraints. The unit of analysis is the element from which the required information is needed (Malhotra, 2007).

Within South Africa, interviewees were recruited from Durban and Cape Town, these being two of the three the main hubs of industry activity in the consumer goods industry and since these sites also allowed access to consumers who may fall into the low-income grouping.

Different to quantitative studies, sampling in qualitative research is not based on formal selection criteria with the aim of generalising to a population (Flick, 2011). Instead in this qualitative study, focus was given to recruiting respondents who would represent a variety within groups where this phenomenon might be observed. The sampling of consumers and designers were purposive, selecting typical members of each population.

This research relies on two sample sets, namely low-income consumers and product designers.

### *3.3.1 Low-income consumers*

Low-income consumers form an integral part of this research, ultimately being the people designers serve by designing products for them. Through this research the evaluation of products and insights into needs are provided by low-income consumers. Yet it is the designers who must also be engaged to understand how they design for low-income consumers and if human-centred design forms part of the tools and techniques used.

The researcher spoke to low-income consumers living in urban settings, with a household income between R1 – R19 200, as defined by Lehohla (2015). The respondents for the consumer sample adhered to the following criteria:

- Low-income consumers:
    - Earning from R1 – R19 200 in total household income, typically within urban informal townships.
    - Be responsible for purchasing of products for their household (male or female). This is to ensure that they can speak knowledgeably about their purchase behaviour.

### *3.3.2 Product designers*

The second sample set, product designers, who work in the product design and development process were interviewed. These individuals are from a consumer goods company, at management level or above, who have been working on NPD for at least the last 5 years. As a first step, permission was sought from the company, respecting their wish to remain anonymous. Once permission was available the researcher approached individuals in the organisation via email, ensuring the letter of permission was provided to the employees. Twelve (12) individuals involved in the design of products for low-income consumers were interviewed.

Respondents for this sample adhered to the following criteria:

- Employed in a CPG company for the last 5 years, at management level of above
- Responsible for the development of products for low-income consumers in South Africa.
- Worked across any functions involved in the idea, scoping, design, development, marketing, and sales of these products (for example, Innovation Strategy, Marketing, Research and Development or Busines Development).

The research was restricted to interviewing designers from one organisation to avoid a conflict of interest. Due to the researcher being employed in the CPG industry, interviewing designers broader may reveal information that may be confidential and could be seen as inappropriate sharing of information between competing companies. Therefore, the researcher recruited using convenience sampling (Flick, 2011; Malhotra, 2007) by identifying individuals known to him, within his organisation, to interview. While convenience sampling is not a preferred first step, it is acceptable when there are resource limitations which prevent an alternative directed approach (Adams et al., 2012; Flick, 2011).

### *3.3.3 Sample size*

The researchers conducted 12 interviews with product designers and 12 with consumers. It has been established that 12 interviews of an hour each can identify more than 80 % of the needs of a consumer before which the insights identified begin to plateau (Griffin & Hauser, 1993). Exploratory research can typically have a small sample size, therefore the current study's samples size of consumers and designers were adequate (Malhotra, 2007).

With the limited movement allowed during lockdowns, implemented to control the COVID-19 pandemic, the researcher was not able to travel into areas where low-income consumers resided. The researcher reached out to workers at public transport stations, to identify potential interviewees. Thereafter, snowball sampling was also employed to secure more interviewees as needed by linking into the network from previously interviewed consumers. This is a recommended approach where there may be difficulty in recruitment (Malhotra, 2007; Rosaline, 2011). A table with details of the 12 designers and 12 consumers is available in Appendix F.

A sampling frame error indicates the differences between the target population and the sampling frame being used. This can result in elements being included or excluded erroneously (Malhotra, 2007). In this research, a sampling frame error was avoided by the use of screening or filter questions to ensure that respondents adhere to the criteria to be included in the specific sample groups.

## 3.4. Data Collection Methods

The researcher conducted semi-structured interviews with two different samples groups; consumers and designers.

### *3.4.1 Designers*

Interviews with designers elucidated information to answer the first two research sub-questions:

- What are the motivations, challenges and considerations facing product designers and developers in developing products for low-income consumers in South Africa?
- How are Human-Centred Design practices embedded into the process that product designers currently follow to design products for low-income consumers?

In these interviews, the researcher delved into why designers develop products for low-income consumers and what hurdles they face in achieving this goal. Designers were asked about what tools and design practices are used to design for low-income consumers; how they are embedded into the organisations, as well as what additional considerations are made for product design for low-income consumers. While not referring directly to the 4As framework in the interviews, the researcher probed into how products are designed to:

- Meet the needs of low-income consumers (Acceptability)
- Meet consumers' cash constraints or their willingness to pay (Affordability)
- Be available where low-income consumers shop (Availability)
- Raise awareness of the product's benefits to low-income consumers and engage them in trial of the product (Awareness)

The third research sub-question was directed to consumers.

- How do these products currently meet consumer needs among low-income consumers based on the 4As framework (affordability, acceptability, accessibility and awareness)?

### *3.4.2 Consumers*

Consumers who fell into the established criteria were interviewed to better understand what common products are purchased by the respondents, and how these products meet their needs.

The researcher also worked to understand what needs are not being met. While not referring directly to the 4As framework in these interviews, the researcher probed into how consumers would evaluate these products against key criteria:

- Do these products meet the needs of the consumer? (Acceptability)
- Can consumer afford the product and is he/she willing to pay for it? (Affordability)
- Is the product available where the consumer shops or within a reasonable distance? (Availability)
- Does the consumer have a good understanding of the benefits that the product delivers and was he/she engaged by the brand prior to purchasing? (Awareness)

Information such as gender, age (over 18 years of age) and source of income were collected from consumers to provide information on demographic variables for the sample and to add to the richness of the data. No other information was requested apart from questions on shopping and product evaluation, as indicated in the interview discussion guide which follows (Appendix B).

The final research sub-question is answered through a combination of insights from both designers and consumers.

- How might Human-Centred Design application in CPG companies enhance the affordability, acceptability, accessibility and awareness of product design for low-income consumers?

All interviewees were requested to sign a consent form which indicated that participation was voluntary and that the respondent could withdraw at any point in the study without prejudice. Additionally, the consent form clarified that all information gathered will be treated confidentially and all respondents will be anonymous without any identifiers being collected. Consent was also requested for recording of the interviews and note-taking during the interviews. The approach, design and instruments were approved by the UCT Graduate School of Business and ethical clearance was obtained before engaging any potential participants. The ethics application approval can be found in Appendix D.

As a result of the global COVID-19 pandemic in 2020 and 2021, which limited people from coming into close contact, these interviews had to take place on a virtual tele- or video-communication platform (such as Microsoft Teams or WhatsApp Video Call). The interviews were recorded, and notes were taken during the interviews for ease of analysis later in the study.

Microsoft Teams allows for recording of video and audio calls. However, it was expected that consumers would be more familiar with the WhatsApp platform. WhatsApp calls can be made from a desktop computer (in Beta as of 13 Jan 2021). These calls were recorded using a built-in screen recording capability as part of the Microsoft Office Suite. This also reduced the risk of storing the interview on an unsecure third-party call recording application.

Zoom was the preferred product for this study, since it is easy to use, cost-efficient and secure. In a study of nurses and researchers who had previously interacted on Zoom as part of a different study, these participants rated Zoom as better than any other available platform for face-to-face interviews (Archibald et al., 2019). Microsoft Teams was used where designers felt more comfortable using this platform since Archibald et al (2019) determined that technical challenges in accessing Zoom was the biggest concern from participants in qualitative research. Where video or voice recording of interviews were conducted or notes taken, these were discarded after the relevant period of time as per the institution's data handling policies.

Where participants did not have access to, or were not familiar with, the above platforms, WhatsApp was used. This is a popular tele-communications platform in South Africa and is viewed as a model example for technology adoption in South Africa due to its affordability, simplicity, user-friendliness, and flexibility across many devices (Shambare, 2014).

Sources of error in data collection should be managed closely in any research. Inability or unwillingness errors were two concern areas for this study (Malhotra, 2007). An inability error is when a respondent is unable to provide a response to a question for various reasons, such as

lack of familiarity, poor recall or poor question formatting (Malhotra, 2007). There was a concern that consumers may not be able to recall all details relating to products being evaluated. To overcome this the researcher asked for the consumer to work through different samples to cover evaluation criteria as opposed to limiting the evaluation to a few products.

An unwillingness error occurs when the respondent does not provide an accurate response (Malhotra, 2007). This may be due to various reasons such as to avoid embarrassment or to impress researchers. Consumers may be embarrassed by the brands of product they use and may not want to show these products (Malhotra, 2007). The researcher guarded against this by letting the consumer know that all products shown, and information shared will be treated confidentially. Designers may also try to protect against intellectual property (IP) breaches in their responses and may not answer accurately. This was overcome by obtaining permission from their employer (refer to letter in Appendix C) and by asking for input on generic human-centred design tools used as opposed to specific IP protected internally developed tools (Malhotra, 2007).

Since the research requires an understanding of practices involved in the development of new products, the researcher specifically recruited individuals who are actively working in this field in South Africa. The researcher endeavoured to ensure maximum representation of ethnic backgrounds, gender and functional skills (Marketing, Design, Research and Development), where possible. Gathering insights from diverse groups is a foundational principle in human-centred design and this study works to reflect these mind-sets in its design and intention. Profiles of these individuals as well as consumers are included in Appendix F. This variability helped to reduce the bias in the sample and broaden the feedback which is an important mind-set in human-centred design.

### *3.4.3 Pre-tests*

Pre-tests were conducted within the researcher's professional network. This was to ensure appropriateness and clarity of questions being asked. Pre-tests allowed the researcher to make revisions to the questions before the data collection began (Elo et al., 2014). The change that was implemented was to spend time at the beginning of the interview to explain terminology

like human-centred design and to remove one question since it was answered easily at the beginning of the interview.

### 3.5. Research Instruments

Three key research instruments were utilised in this study:

- A consent form for consumers and designers (Appendix A);
- A discussion guide for consumers and designers (Appendix B); and
- A permission form for a designer's employer to grant permission to interview their employees (Appendix C).

Since recruitment and interviews were done virtually the signing of the consent forms required a flexible approach. The researcher believes that the ethical considerations of due consent was covered by sending an image of the consent form to the respondent (consumer) via WhatsApp. This is a widely used communications application in South Africa, including among low-income consumers (Shambare, 2014) This will allow the respondent to review the consent form and confirm acceptance. The respondent's verbal consent on WhatsApp was noted, but the consent form was also read at the beginning of the interview, while recording, and the consumer was again able to confirm acceptance for the interview to proceed.

Consent forms for designers were emailed to the designers, who could sign and return the forms electronically due to their available technology resources.

### 3.6. Data Analysis Methods

Data analysis focusses on managing, sorting, and interpreting the data in the form of transcripts from the recorded interviews conducted with consumers and designers. The raw data from transcripts were organised and transformed into research findings. It is particularly important to be rigorous with the analysis of the data, and this starts with a robust plan to organise the vast data which have been collected (Bloomberg & Volpe, 2012).

The researcher transcribed each interview within the day of the interview to ensure the familiarity with the data was maintained. Each transcript was given an alphanumeric identification code, which was a concatenation of whether it was a consumer or designer interview and a sequential number from 1 based on the order of interview. Transcriptions included any non-verbal cues noticed during the recording and noted in the hand-written notes during the interview. Identification codes to enable easier tracking if the researcher needed to trace back to obtain further context.

From the transcripts, the text was organised into text documents. Responses to questions which were mapped to each research sub-question for designers and consumers and were contained in a single text document. The mapping of research questions to questions to consumers and designers can be found in Appendix E. The analysis was grounded in the 4As framework (acceptability, affordability, accessibility and awareness).

The qualitative analysis was done using the program Leximancer, which is a computer program used in qualitative studies as a content analysis tool (Smith & Humphreys, 2006). The documents were separately uploaded into Leximancer as input data. All default settings in Leximancer were used and the analysis was run one at a time for each document. In interpreting the document, Leximancer looks for significance rather than frequency to generate a concept map (Harwood et al., 2015). Leximancer excludes words of low semantic value such as conjunctions and pronouns (Reyneke, 2011).

The concept map which Leximancer generates clusters concepts into these, using heat mapping to represent dominant themes, indicated by circles. Red is the most relevant theme to the research question, orange is the second most relevant and cooler colours represent decreasing significance, in order of the colour wheel (Leximancer, 2021). Concepts which give rise to a theme are indicated by a dot. The size of the dot highlights connectivity to the concept map. The more a concept is coded in the text inputted into Leximancer, the larger the dot. Concepts are connected to highlight where terms are mentioned closely together, or the co-occurrence of these concepts in the text (Leximancer, 2021). Where circles (themes) or dots (concepts) appear close to each other, this indicates that mention of these concepts appear frequently together in the text. Leximancer is a good choice for this analysis since English was not the first language

for all consumer interviewees and Leximancer is able to account for grammatical errors in its analysis (Reyneke, 2011).

### 3.7. Research Criteria and Limitations

The trustworthiness of a study is important to ensure that the research is recognised but that it can also stand up to scrutiny (Lincoln & Guba, 1985). Trustworthiness is often associated with credibility, dependability, conformability, transferability, and authenticity. The researcher is responsible to ensure the trustworthiness since it is the researcher who applies judgements when coding and contextualising data from research activities. Therefore, the research needs to clearly reflect the full process from recording, organising to analysing the data for the data to show the credibility of the process (Elo et al., 2014; Nowell et al., 2017).

In this study, credibility, which relates to the focus of the study, is established by only collecting data that is necessary to answer the key questions related to the aim of the study. The collection method was through semi-structured in-depth interviews. Care was taken to not influence the respondents' answers which is also important to maintain credibility.

A limitation of the study was the use of convenience and snowball sampling. These non-probability methods can negatively affect the trustworthiness of the research and decreases the dependability of the data and transferability of the results (Elo et al., 2014). The researcher worked on building trustworthiness by detailing criteria such as age, location, and gender to enhance the transferability of results and equip future researchers.

Another limitation of the study was that all designers interviewed for this study were from the same organisation. The researcher ensured that a spread from different departments from the organisation were interviewed to improve trustworthiness of the research.

### 3.8.Research Ethics

Maintaining ethical considerations through the study was important. Only secondary data which were deemed to be appropriate for the study and morally sound were included in the research

(Malhotra, 2007). This was achieved by using reputable journals where the data collection methods from researchers were scrutinised. Such trustworthy sources improve the dependability of the data being used.

In the primary data collection through in-depth interviews, the purpose and expected outcomes from the study were included in the consent form (Appendix A) which was shared with all participants. The purpose and outcomes were also explained at the beginning of the interviews. Any clarifying questions that participants had were responded to and participation remained voluntary throughout the process.

Respondents were also informed that they could receive a copy of the transcript of the interview. This was to ensure that their responses were captured as they intended and that they could feed back any clarifications before the researcher uses the data.

Respondents were interviewed anonymously. This was possibly of particular importance with designers, who may be concerned about critical answers being traced back to them by their company. Permission was sought from employers before approaching designers.

Mobile data were purchased for the consumers participating in the study. This was neither a payment, nor a gift for the study. It was deemed as a cost of the study. To reduce the risk of influencing the output of the study, or inducing more favourable responses, the researcher did not pay cash to the participant. Instead, a mobile data voucher was purchased for the participant at the start of the call. An estimated 500 MB of data were required for the 60 mins video call.

Transcription of recordings were done by the researcher to maintain the chain of confidentiality. The notes and recordings from interviews were stored on a password protected computer and were also stored to the researcher's cloud storage account for the duration of the study as a backup. The backup storage was also password protected to maintain the anonymity of respondents and security of the data.

The study was cleared by the UCT Graduate School of Business before proceeding with any participant engagement.

## 4. RESULTS

This chapter evaluates the results from the interviews with designers and consumers. The results are structured according to each research question. Each section begins with the relevant Leximancer map, followed by the results which emanate from these maps and concludes with a summary of the key findings for each research question. Table 3, below, shows the descriptive statistics of the group of consumers and designers interviewed in this research.

*Table 3: Summary of age groups, gender and source of income or role for consumers and designers interviewed in this research.*

| **Respondent Groups** | **Age Range** | **Gender** | **Source of Income** | **Role** |
|---|---|---|---|---|
| Consumers | 18 – 25: 1<br>26 – 35: 6<br>36 – 45: 5 | Female: 9<br>Male: 3 | Salary or Wage from Work: 12 | N/A |
| Designers | 26 – 35: 3<br>36 – 45: 7<br>46 – 55: 2 | Female: 10<br>Male: 2 | N/A | Marketing Role: 5<br>R&D Role: 6<br>Sales Role: 1 |

**R1a: What are the motivations for product designers and developers in developing products for low-income consumers in South Africa?**

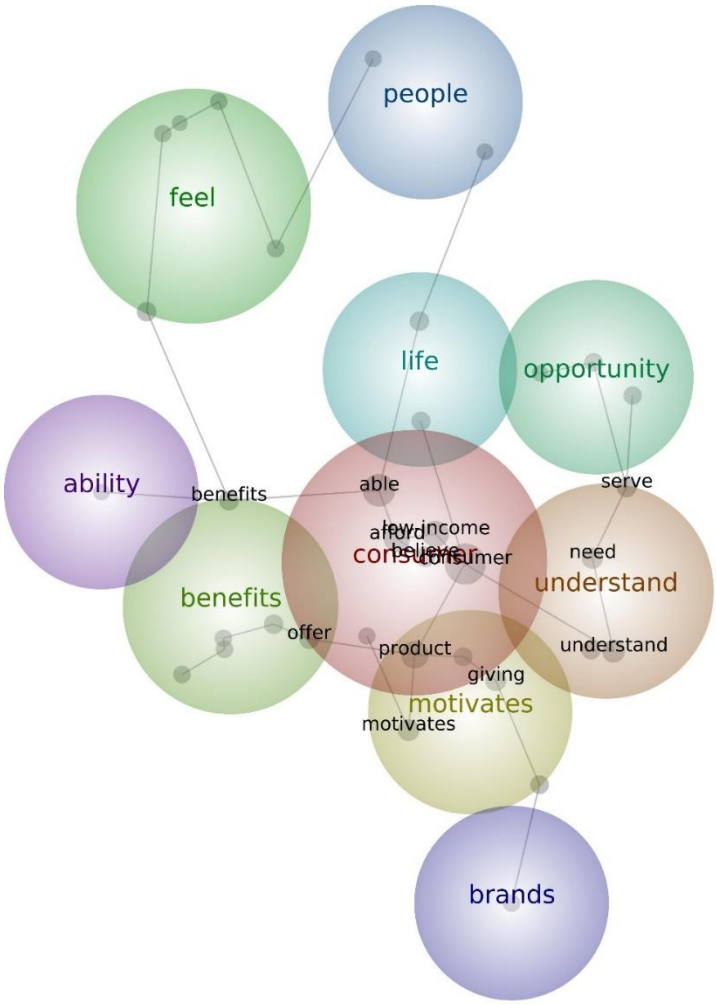


Figure 3: Leximancer map of designers' motivations for developing products for low-income consumers

When looking at what motivates designers to design products for low-income consumers, the main themes which emerged from the interviewee feedback are ‘consumer’, ‘understand’, ‘motivates’, ‘benefits’, and ‘life’, as indicated in Figure 3. The above figure also highlights themes which are at the periphery of the map. The cool colours indicated by ‘feel’, ‘people’, ‘brands’ and ‘ability’ show lower relevance to the overall research question.

The first key theme, the most relevant to the research question, is ‘consumer’ as indicated by the size (it being the largest) and colour of the circle being the warmest (red) of the ‘consumer’

theme in Figure 3. The concepts which give rise to this theme are ‘consumer’, ‘able’, ‘product’, ‘low-income’, ‘afford’, ‘believe’ and ‘offer’.

The consumer is central to the motivations of many designers’ reasons for designing for low-income consumers as indicated by the largest dot in Figure 3 being ‘consumer’. In close proximity to the ‘consumer’ concept is ‘low-income’ and ‘believe’ showing that designers are particularly motivated by designing products for low-income consumers and products which consumers believe will work for them. As one interviewee describes:

> *For me it's the delight that you see in the consumer’s face when they pick up a product, and they can afford it, they know it works and they believe it is something that works for me. I think sometimes we underestimate how products can actually have a big impact in people's lives*. (Designer-11)

Designers also indicated that they were motivated when they were able to design a product which can be afforded by consumers, as indicated by the relationship between the ‘able’, ‘products’ and ‘afford’ concepts. For example, one designer said:

> *Being able to allow low-income consumers to afford this product motivates me because I'm doing a greater good for these consumers*. (Designer-7)

The second key theme when looking at what motivates designers to design for low-income consumers, was ‘understand’. This theme is constructed by the concepts ‘need’, ‘understand’ and ‘serve’. These concepts suggest that designers are motivated by potential commercial growth opportunities. These opportunities arise from understanding the needs of low-income consumers and serving these citizens. As one designer described it:

> *And then the other thing is we also understand the demographic in the environment we operated, and that low-income consumers are part of the biggest portion of the consumer that we serve. So, it's a big opportunity for growth.* (Designer-6)

The themes ‘consumer’ and ‘understand’ are two of the largest circles and within the warm range of the colour wheel, indicating the high relevance of these two themes which overlap as can be seen in Figure 3. These reflect the ability to have a positive impact on the lives of low-

income consumers but understanding their needs and delivering products which are affordable. The comment from a designer below shows this:

> *For me it's the delight that you see in the consumers face when they pick up a product, and they can afford it, they know it works and they believe it is something that works 'for me'. I think sometimes we underestimate how products can actually have a big impact in people's lives.* (Designer-11)

Overlapping with the themes 'consumer' and 'understand', the third key theme, 'motivates', indicates that designers' motivations are closely aligned to those which surfaced from 'consumer' and 'understand'. The concepts 'giving' and 'motivates' giving rise to the theme of 'motivates' shows that designers are motivated by being able to give consumers a broader positive impact in consumers. In the quote below, one can see that designers see this as giving consumers a means to tackling a greater pain point than purely the direct intended use of a product:

> *If you come to me and say this is a real pain point, this family cannot afford the toothpaste and if we don't give it to them in a certain point in the smaller pack, they are actually not going to be able to use toothpaste and then I understand the consequences of this. Toothpaste is so important with regard to the overall health and wellbeing of children especially and what motivates me is knowing that I'm not just giving someone a pack, a product.* (Designer-7)

The view about the value designers add to the lives of low-income consumers also surfaced in the concepts 'offer' and 'benefits' which construct the third key theme, 'benefits', which overlaps with the theme 'consumers'. Talking about this phenomenon, a designer said:

> *So, to be able to offer something that is accessible to them that offers the same benefits for them to have a better quality of life even through a shampoo or conditioner, makes me feel that I am helping. It gives them joy and I think that they appreciate that a lot more.* (Designer-5)

In summary, these results show that designers are primarily motivated by serving low-income consumers by developing products which consumers believe in, are delighted by and bring value to their lives. The deeper underlying benefit to consumers from products was a strong

motivator for designers who saw that products could bring real value to health and wellbeing. Designers were also motivated by being able to develop products which could be afforded by low-income consumers. The potential of commercial growth emerged as another motivator for designers.

**R1b: What are the challenges facing product designers and developers in developing products for low-income consumers in South Africa?**

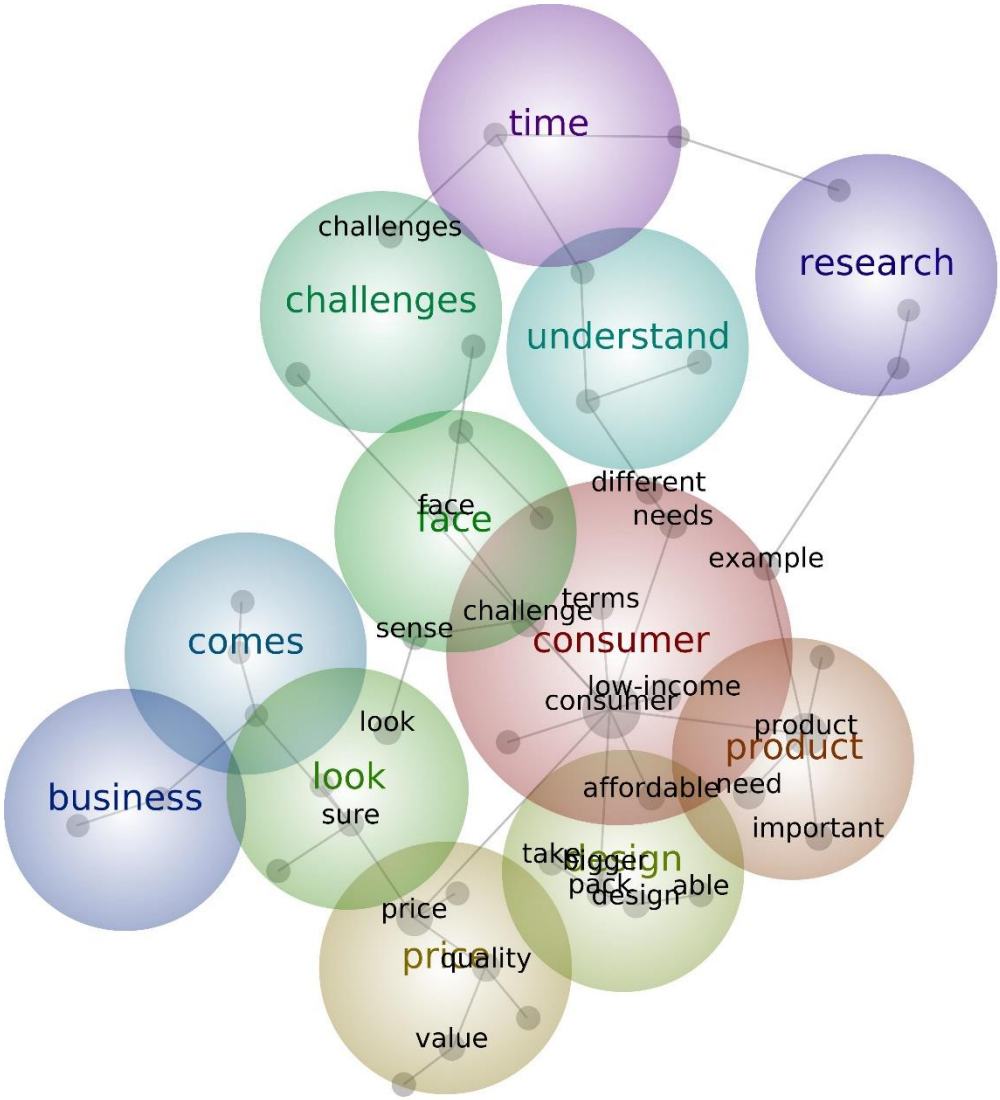


Figure 4: Leximancer map of designers' challenges when developing products for low-income consumers

The four main themes which emerge from designers' responses regarding challenges experienced in developing products for low-income consumers in South Africa were 'consumer', 'product', 'price' and 'design' as shown in Figure 4. Themes at the periphery of the map contributed to the feedback from designers but were less relevant, as indicated by the cooler colours they are represented in and by the relatively smaller circle, compared to that of the 'consumer' theme. Themes such as 'comes', 'business', 'time', 'research' and 'understand' are not elaborated on further due to their lack of relevance to the research question.

In comparison to R1a (Figure 3) 'consumer' which is a core theme when looking at motivating factors for designers to design products for low-income consumers, is also a recurrent theme when looking at what challenges designers face when designing for low-income consumers (R1b). While serving these consumers and meeting their needs were highly motivating to designers, there are also challenges relating to consumers. The 'consumer' theme for R1b is the most relevant theme to the research question is, as is visible in Figure 4, by the size of the circle and it being red in colour. The concepts 'consumer', 'low-income', 'challenge', 'needs' and 'terms' are the key concepts which give rise to the theme 'consumer'. The concepts 'consumer' and 'low-income' appear close to each other in Figure 4, reflecting that these words were frequently mentioned together, indicating that challenges that designers faced were in relation to low-income consumers.

Closely related to these concepts and in close proximity to each other, the concepts 'challenge' and 'terms' identify the examples of challenges faced by designers when designing products for low-income consumers. Examples of these challenges are indicated by the responses which group together under the concept 'terms'. One designer talked about the risk aversion of low-income consumers, which caused a challenge to get these consumers to adopt new solutions which were better for them:

> *I think the challenge as a generalisation with low-income consumers, is that they can be risk averse and it can be frustrating to move them forward in terms of new science and technology and they're scared to take that step forward. You need to package it to look low risk for them to take on.* (Designer-3)

Another designer highlighted the challenges getting close to low-income consumers due to their geographical distance and the barrier that language creates:

> *One of the biggest challenges is access to consumers because most of these consumers live in rural areas. So to be able to get an agency or a team out there into these rural areas to be able to engage with them and to understand what consumers are experiencing is a huge challenge because they don't live in urban areas, they live very far away from that in very much rural areas and also their level of fluency in terms of English is not fluent.* (Designer-5)

There is a need to have products which consumers could afford, as mentioned by many designers. The proximity of the dot which indicates the concept of affordability to the 'consumer' theme supports this view, along with the overlap between 'design' and 'consumer'. On this topic one designer said:

> *Being able to meet the price point was the biggest challenge. Most of these raw materials and ingredients are very expensive and not available locally.* (Designer-5)

While affordability is important, one designer warned against reducing the quality of the product to achieve a price point, saying that:

> *If manufacturers chip away at a product to make it affordable, consumers pick up on it quite quickly.* (Designer-1)

The same designer also highlighted that diversity of mix was important to standout:

> *Differentiation is a challenge. Retailers do not like me-too offerings.* (Designer-1)

The concept 'different needs', entrenches the importance of understanding the needs of consumer, as seen in R1a. However, designers experience the evolving needs of consumers to be a challenge to keep up with. One designer described this as a constant change as seen in this excerpt:

> *The change in consumer needs is the other barrier. We constantly have to stay abreast of consumer needs.* (Designer-2)

The same designer speaks about how the COVID-19 pandemic drove these changes in this excerpt:

> *During COVID-19 it was a good example of how consumer needs change. Consumers are constantly changing their habits and needs based on external factors.* (Designer-2)

The 'product' theme is constructed from the key concepts, 'product', 'need' and 'important'. Respondent feedback highlighted the importance and necessity of knowing what factors would encourage or prevent the use of products developed for low-income consumers. It is not surprising that this theme is closely related to the theme 'consumer' which also surfaces factors which are challenges to designers designing products for low-income consumers. Similar to the concept 'terms', the concept 'need' speaks to the necessary action designers must take for their products to be considered by low-income consumers, and therefore challenges these designers experienced if these were not part of their design process.

In one example represented by the excerpt below, a designer reflected on their need to be cognisant of the packaging size of a product in relation to how much is actually needed by a low-income consumer, as well as if the packaging was robustly designed for the trade environment it was sold in.

> *Then you need to think about how are they going to sell it - is the consumer actually going to buy this amount of product? And ask yourself, how is it going to get to this spaza shop in the first place – is it going to be protected enough?* (Designer-7)

The challenges that some trade environments present, such as local spaza shops, were often mentioned by designers. Designers needed to consider how they needed to design the pack to be visible for consumers shopping in this type of store, and how it will be selected. This is reflected in the following comment from one designer:

> *We designed a product that was meant to address a low-income consumer. We put it in a bag which lay flat on the shelf and no one noticed it. That was a really big thing that sort of affected the overall awareness of the project.* (Designer-6)

Overlapping with 'consumer' and 'product', the theme 'design' reflects the challenges designers experience when designing products for low-income consumers, with particular focus

on their attempts to achieve affordability and the opportunities that product package sizes enable them to achieve this. The main concepts which give rise to the theme ‘design’ are ‘design’, ‘pack’, ‘affordable’, ‘take’, ‘bigger’ and ‘able’.

The concepts ‘bigger’, ‘pack’ and ‘design’ appear close together and the dots are of similar size, as seen in Figure 4. This indicates that these terms are often mentioned together in responses from designers. Some interviewees spoke about the roles that varying product package sizes or selling unit dose sizes played in their design process and the challenge experienced in deciding on which package size to pick. This is because decision making is not based solely on affordability but also factors such as quality, as indicated in this excerpt from one designer:

> *They want a good quality product and they would rather take a smaller pack that's more affordable than bigger pack of a cheaper product that they feel would damage their skin.* (Designer-11)

The same designer described that the tension point in these developments in juggling both affordability and quality:

> *I would say it's the balance between delivering good products quality wise and still being able to deliver the product at the right price for the consumer.* (Designer-11)

Another interviewee spoke about the consumer’s tendency to calculate what is good value to them by comparing weighted costs of package sizes, thus bringing in the importance of pricing if designers did have multiple package sizes:

> *Consumers may want a small package size, but they also do the calculation for the bigger size and can reject the smaller size in favour of the bigger economical package size. They calculate pricing per gram*. (Designer-1)

Closely related to the concept ‘design’, the concept ‘take’ speaks to the challenges designers experience in designing products by needing to decide what should be taken out of a collection of features which make up the product (the mix) in order to design a product for a low-income consumer. Designers communicated that mixes need to be adapted to meet the design parameters of low-income consumers. In order to tackle the challenges of affordability,

designers also look to optimise features of products by taking out what low-income consumers would not find important:

> *And then you can take your budget and add lots of your budget to properties that they value and properties that they don't value. You can take it out of the design process*. (Designer-2)

In terms of designing with the retail experience in mind, a sales focussed designer spoke about needing to make decisions about what remained on a shop shelf with each new introduction:

> *And then thirdly [the challenge] if we are to put this product on shelf, we need to make a recommendation of what the retailer needs to take out because the shelf remains the same.* (Designer-6)

Much like with product quality hurdles mentions above, the removal of products from retailer ranges can present a challenge if it was an important part of the portfolio. The same designer mentioned the following about this point:

> *And the right decision is to be made within that, because what we take out needs to then not lead to the retailer actually losing shoppers because that particular offering that we've taken out cannot be fulfilled with the range that is remaining.* (Designer-6)

These responses indicate the importance of the retail context and that this part of the value chain can contribute to challenges that the interviewed designers can face if not taken into consideration.

Another challenge which built into the concept ‘take’ highlighted that designers felt that they needed to go at speed but certain activities take times. As one designer mentioned in an example, consumer studies can slow down the process:

> *Yeah, obviously speed is one. Consumer studies take a long time.* (Designer-2)

In Figure 4, the theme ‘price’ can be found close to the theme ‘design’ with overlap in this theme. This means that there is interplay in the responses from designers on the role of price in design. This is re-iterated in the concept of affordability emerging in the consumer theme as discussed above. The theme ‘price’ is constructed from the concepts ‘price’, ‘quality’ and

'value' and shows the responses from designers on the challenge that meeting an affordable price point poses when designing for low-income consumers. Designers articulated the challenge they needed to manage to provide good quality products. These products provided a value proposition to low-income consumers while still maintaining a price point which could be afforded by these consumers. This is perfectly captured in the following excerpt from one designer:

> *We know that consumers are looking for value and most organisations want to offer value, but obviously without compromising quality of the product. Because the consumer expectation is also quite high.* (Designer-12)

As can be seen in the below comment from another designer, the impact of the COVID-19 pandemic exacerbated the challenge designers face in providing products with value to a low-income consumer while still building a sustainable business:

> *From a business perspective, we always give the consumer good quality. But with that there are intense cost pressures especially with the onset of COVID-19 so maintaining a price that's also good for consumers which you know they can buy into and offers good value for money is a struggle, while maintaining profitable margins.* (Designer-10)

The challenge presented by the complexity of price points is mentioned below in an excerpt from one designer, highlighting the different price points needed by low-income consumers to match their availability of money and introduces a term, 'hell week' to refer to a low-income consumers complete lack of financial resources at the end of the month:

> *You ask yourself if it is a once-off price point, an average price point, month to month differences. There is a term called hell week where consumers literally run out of money and they will be looking for value*. (Designer-1)

In summary, a comparison of the two maps in Figures 3 and 4 highlights the different conversations among designers when considering the motivations (R1a) and challenges (R1b) when developing products for low-income consumers in South Africa. The concept 'consumer' and 'low-income' were central to both datasets, indicating that designing products for low-income consumers both motivated designers but also presented unique challenges when

designing for low-income consumers. A recurrent concept which surfaced in both maps shows that designers make efforts to understand the needs of low-income consumers in order to serve them, which was motivating for these designers. However, these needs are often very different between localities and consumer cohorts and evolve quickly, presenting a challenge for designers to keep up. In Figure 3, the concept ‘product’ speaks to the motivation designers experience by creating a product which they can give to low-income consumers to meet their needs. However, in Figure 4, the same concept shows that designing the product presents challenges and many factors that designers need to consider when designing for low-income consumers.

**R2: How are Human-Centred Design practices embedded into the process that product designers currently follow to design products for low-income consumers?**

Figure 5: Leximancer map of human-centred design practices embedded into the process that product designers currently follow to design products for low-income consumers

Designers were asked about the methods and mind-sets which come alive in their design process when developing products for low-income consumers. The main themes which emerge from the data about which human-centred design practices are embedded into designers' processes are 'consumer', 'need' and 'different'. Figure 5 shows that these are the main

concepts emerging in relation to this research question because of the colours used to represent them being warm colours (for example, 'consumer' is indicated in a red circle) and the size of the circles are the largest compared to the less relevant themes on the fringe of the map. Examples of these themes are 'market', 'innovation', 'look', 'people' and 'design', which contributed to the conversation around human-centred design practices but were not as highly relevant as the main themes indicated in Figure 5. The lower relevance of these themes is also insightful for this research question, particularly with a theme like 'people'. This theme is constructed from the concept 'people', indicated by the dot in the purple theme in Figure 5. Designers did not frequently mention the focus on people, despite this being about practices in placing people at the centre of the design process. The below comment reflects the activities of designers to observe potential consumers:

> *I observe people and what they are doing when they are purchasing.* (Designer-3)

However, one designer showed the use of rapid testing activities with target consumers, showing the human focus in the design process:

> *It could also be rapid testing with prototypes. Last week we did an experiment with 30 people with easy access.* (Designer-2)

Similar to 'people', the cool colour and smaller size of the concept 'empathy' (green circle in Figure 5) indicates that empathy is not frequently mentioned by the designers. This is a key mind-set in human-centred design. The few mentions of 'empathy' from designers does however indicate an emerging appreciation of empathy in their design process, such as this comment from one designer:

> *I think more and more people are doing that. So, I think we started to live the empathy side of it.* (Designer-3)

The same designer conceded about there being more to do in the area of empathy:

> *I think that we are dancing on the surface and not truly embracing empathy yet.* (Designer-3)

One designer believed that empathy was part of their process already, even if they did not call their process human-centred design:

> *One of the mind-sets is definitely empathy and I think it speaks to consumer understanding what they need; what are their pain points and trying to make sure that the product that you are developing addresses that need. So that's quite a key one.* (Designer-8)

Empathy was not an entrenched mind-set with the designers interviewed, although there was increasing awareness and application of it to their design process for low-income consumers.

Turning back to the main themes in Figure 5, the central theme to understanding how human-centred design practices are embedded in low-income consumer product designers is the theme 'consumer'. This theme is constructed from the key concepts being, 'consumer', understand', 'product', 'work', 'important', 'certain', 'understand' and 'better'. This theme brought together a common view from designers that it is important to understand the needs of consumers and their lived experiences. This is reflected in one comment from a designer:

> *Definitely empathy comes to mind. It is important to understand the consumer and what they go through.* (Designer-5)

Another designer mentioned more ethnography work done by staying with consumers:

> *Because the experience of using a product is so important. There have been examples where researchers used to stay with consumers to understand them better.* (Designer-3)

Work is often mentioned within proximity to the consumer as can be seen by the presence of the 'work' concept in the 'consumer' theme in Figure 5 (indicated by the connected dots in the red 'consumer' theme). Some designers referred to the work they put into better understand consumers' pain points as a means to apply human-centred design practises to their design process. Excerpts from a designer is shared below:

> *We are trying to understand the pain point that we're trying to solve for. It is not just with Marketing but also with technical teams to understand the pain point and figure out how is your product development work going to help with solving for that pain point.* (Designer-7)
>
> And:

> *I think we use different words, but we do similar things to human-centred design. A lot of my work involves understanding the pain points of consumers and I keep bringing this up.* (Designer-7)

The concept of 'certain', which is closely related to 'consumer' shows us how designers are aware of elements in the product design that they need to get to grips with in order to determine if the holistic product will work for low-income consumers. Designers referred to *certain claims, certain price points* and *certain languages* which they work on understanding if these will resonate with the consumers they are developing for. Some designers will test these with consumers, while others rely on institutional knowledge and others on establishing tracking methods. Excerpts indicating these are shared below:

> *In Marketing we build concepts when we are addressing consumer to try and understand if a certain claim or certain language that we use on packaging is going to work.* (Designer-8)
>
> And:
>
> *But not all people have the same experiences and approaches as me. To change that, I think the first thing is to understand that we come from different backgrounds and as much as you can explain, you sometimes have to step back and tell people that the consumer cannot afford a certain price point and that a more affordable material will be fine and that it will give them a better taste.* (Designer-4)
>
> And:
>
> *And then other things that we would look at is obviously tracking attributes of the product because there's things that we track as well that we want to see that this innovation is helping us turn the dial on certain attributes. We also seek consumer feedback.* (Designer-3)

One designer highlighted that the COVID-19 pandemic presented challenges in engaging with consumers as designers previously did, in-person and required more virtual engagement:

> *This approach also forces us to have options that we can propose if the results come back to say a certain option will not work. Recently, with COVID-19 and the challenges*

*to interact with consumers directly, the testing work is done using online means.* (Designer-7)

The close relationship between the concepts 'understand' and 'better', which are both linked to the concept 'consumer' surfaces in the efforts designers make to understand the consumers they design for better within their design process:

*Because the experience of using a product is so important. There have been examples where researchers used to stay with consumer to understand them better.* (Designer-3)

The concept 'understand' is an important concept which builds the 'consumer' theme and delves deeper to reveal the efforts by designers to understand the realities of low-income consumers:

*Things like running water, electricity may not be available. You need to understand how they live on a day-to-day basis.* (Designer-5)

Designers are keen to get closer to their consumers they design for by investigating their budgets, and routines:

*That whole experience talks to design. To understand how the daily routine of the consumer is, what the consumer has in their pocket, what they're willing to spend on, and what they're not willing to spend on happens in my projects.* (Designer-4)

The theme 'need' is largely constructed from designer feedback from the concepts 'need', 'needs' and 'mind-set'. With this theme's overlap with the theme 'consumer' one is able to see that designers spoke about the necessity they felt to understand the needs of low-income consumers. One designer referred to the empathy needed by placing oneself in the shoes of the low-income consumers they designed for:

*You still need to have that mind-set because you need to be able to put yourself in that consumer's shoes.* (Designer-4)

Similar to the concept 'need' in R1b, the necessity for designers to understand the needs of low-income consumers surfaces in this research question, however, this time with focus on the

processes carried out to understand the needs of low-income consumers. One designer commented:

> *We need to design for consumers but here is not just one consumer. We have to design and test through consumer testing in qualitative and quantitative testing.* (Designer-2)

About getting onto the frontline to understand consumers, another designer said:

> *However, with the digital testing route there are come challenges because not everybody has access to these platforms. So sometimes you actually need to actually go out there into the market and into the homes.* (Designer-7)

In terms of the 'mind-set' concept, one of the mind-sets that designers adopted in their design process was optimism, as is demonstrated by the following:

> *We have the tools and resources to develop a product for them, covers optimism as a mind-set.* (Designer-5)
>
> And:
>
> *We work to understand what the problem of the consumer is and how do we address the consumer' needs*. (Designer-5)

Another mind-set, to test and iterate, was also sounded by one designer:

> *By designing in countries or continents, this has enabled us to really get the nuances or tweaks or changes or adaptations needed in a mix to meet local needs. We need to test our proposals with consumer so that we know we are in the right track.* (Designer-2)

Some designers mentioned mind-sets that were not well entrenched such as handling ambiguity:

> *And sometimes we could do with a bit more of managing and embracing ambiguity*. (Designer-12)

The theme 'different' surfaces from interviewee responses which form the concepts, 'different', 'business' and 'comes'. This is an important theme in understanding which human-centred design practices are employed by designers in their design for low-income consumers, as indicated by the warm colour of the bubble in Figure 5. The concepts 'business' and 'comes'

speak to the flow of ideas for innovations. Some designers speak about the ideas coming from the business hierarchy while others speak about from ideation sessions held within project teams in the business. The two comments below highlight these differing views:

> *So, if there's an innovation or an idea that comes through from the business, we do a lot of ideation work. It is not 100% on top of my mind all year round.* (Designer-5)
>
> And:
>
> *Brainstorming ideas comes alive in different ways, for example we brainstorm names of products and different claims we can use and then we validate those claims with consumers.* (Designer-8)

Regardless of the source of ideas, the appreciation for engaging with the consumer and understanding their pain points was clear among designers, however human-centredness was not practised daily, as mentioned above.

Despite the lack in frequency, the common theme that emerged from responses was that while human-centred design was not practised in their day-to-day design process, elements of the approach did exist in their practices. Some designers have more experience than others in the methods and mind-sets which make up human-centred design, but there was a nascent appreciation and knowledge of the approach by almost all designers. One designer captured this well in their comment:

> *I think we use different words, but we do similar things to human-centred design. A lot of my work involves understanding the pain points of consumer and I keep bringing this up.* (Designer-7)

When speaking about consumer engagement and frequent testing, one designer mentioned the greater level of cognisance they have of placing the consumer at the centre of their work:

> *So, we actually put it in the forefront of everything we do and now it seems different teams are talking the same language. This has trained our mind to constantly put this in the front of what we are doing*. (Designer-7)

This shows the presence of human centricity among some designers.

In summary, the results outlined in the above section show the centrality of focus on low-income consumers by the main theme being ‘consumers’ in Figure 5. Interviewees do the work to understand the needs or pain points of low-income consumers whom they designed for. Designers employed various methods to better understand the consumer. Some were aligned to best practise human-centred design, like virtual engagement with consumers through interviews and immersions. However, many designers relied heavily on possibly outdated institutional knowledge and did not iteratively test products, ideas or concepts with low-income consumers.

While empathy which is a foundational mind-set for human-centred design practitioners, is not frequently mentioned by interviewees, there was a basic appreciation for this mind-set by some designers and actively employed by a few. However, it was not deeply entrenched in the designer’s day-to-day work. Other mind-sets which emerged from interviewees were optimism, focus on iteration and handling ambiguity. These were emerging in their appreciation and practice by designers, and some designers admit that human-centred design practices do not come alive frequently in how they work.

A common theme that emerged from responses was that while human-centred design was not practised in their day-to-day design process, elements of the approach did exist in their practices. Some designers have more experience than others in the methods and mind-sets which make up human-centred design, but there was a nascent appreciation and knowledge of the approach by almost all designers. When comparing Figure 4 and 5, which represent the Leximancer maps of R1b and R2, it is clear that design (Figure 4) is called out as a challenge for designers when designing for low-income consumers. In R2, it is clear that designers are not applying a robust human-centred design process in designing for low-income consumers, presenting an opportunity to improve this process.

**R3a: How do these products currently meet consumer needs among low-income consumers based on affordability in the 4As framework?**

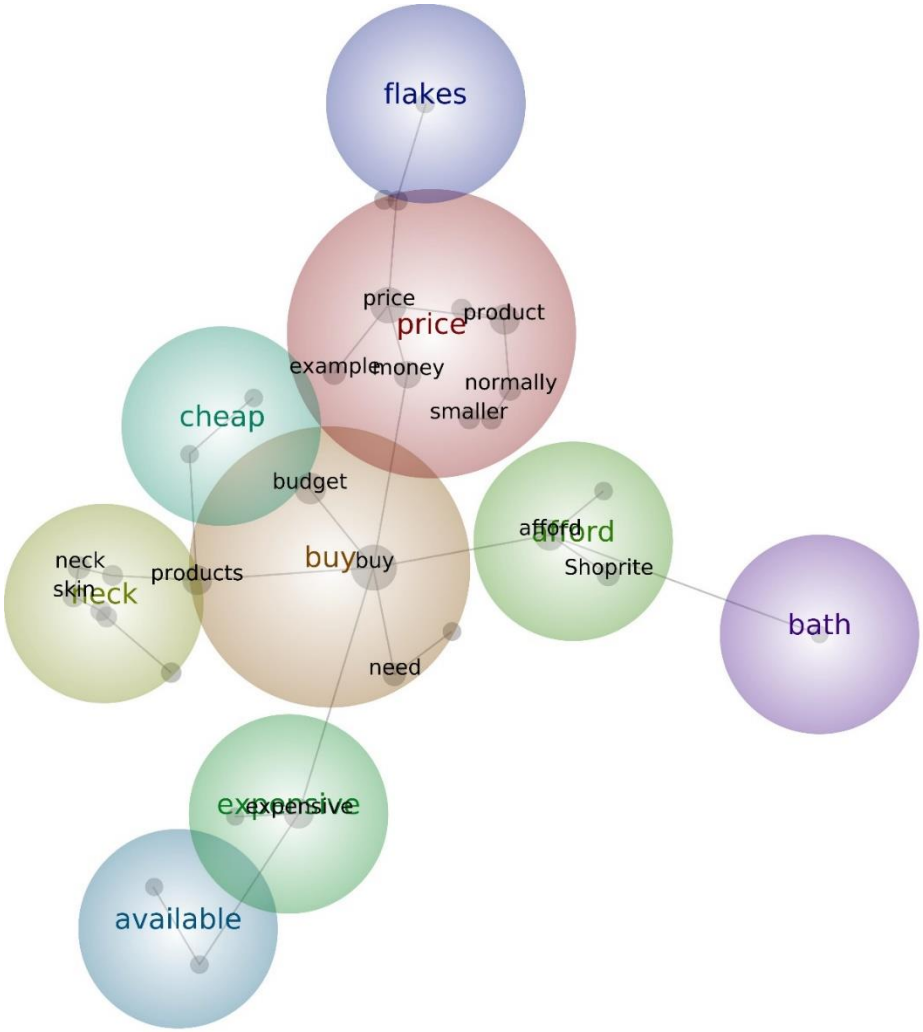


Figure 6: Leximancer map of how do products currently meet consumer needs among low-income consumers based on affordability in the 4As framework

The 4As framework which was referred to in the Literature Review is a theoretical model established by Sheth and Shah (2003) which suggests four key values required by low-income consumers to reduce social and financial challenges faced by this consumer segment. These values are affordability, acceptability, availability and awareness. Affordability looks at the

whether the potential consumer is economically able to afford, or psychologically willing to pay for a particular item.

The two key themes which emerge from consumer responses regarding how products currently meet the need of low-income consumers based on affordability are ‘price’ and ‘buy’. Figure 4 presents the high relevance of these themes through the use of warm colours and size of the circles which these themes are shown in. Themes at the periphery of the map are ‘bath’, ‘flakes’, ‘available’ and ‘cheap’. ‘Bath’ is a relevant theme, which speaks to the affordability of bath products like soaps and how other products for body cleansing, like bubble bath cannot be afforded. While this theme is relevant to the research question, the frequency of this mention from interviewees was low in comparison to warmer themes, as indicated by its cooler colour and smaller circle. The theme ‘flakes’ is also of low relevance indicated by the small circle and cool colour. The theme ‘flakes’ surfaced from the comments of one respondent who could not afford breakfast cereal, called bran flakes, which they found to be out of their weekly budget for groceries. While of low relevance, both themes (‘bath’ and ‘flakes’) refer to categories of products which are available in the stores where interviewed low-income consumers shop but are unable to afford them, thus not meeting their needs of affordability.

The main theme providing insights about how products meet the needs of low-income consumers in the area of affordability is ‘price’. This is indicated in Figure 6 by the theme ‘price’ having the warmest colour and largest circle. ‘Price’ shows how consumers make decisions on product purchases based on what the price is. They also have tactics to switch to other package sizes or brands to manage their budget. These views are shown by a quote from one consumer:

> *I switch between Skip, Ariel, Omo depending on price. If I do not have enough money for a product then I go for a smaller size within my budget – for example I normally buy 2kg but will go for 1kg if I cannot afford a 2kg*. (Consumer-5)

The concepts ‘price’, ‘product’ and ‘money’ and the key concepts which contribute to the theme ‘price’, indicated by the large dots seen in Figure 6. These concepts are detailed from here in order of highest relevance. Firstly, the concept ‘price’ introduces comments from consumers about their satisfaction or disappointment with the price of products they shop for. One

consumer indicated her preference for a particular soap bar because it the affordable price in combination with the larger size of the bar:

> *I'm happy with the price of the product as it's cheap. The soap is R8,99 and it's big.* (Consumer-1)

To further support that their needs were being met, another respondent said:

> *So far, I have not had a problem with the price for those products. It is always reasonable for me*. (Consumer-8)

From another quote from a respondent:

> *The price of the products I like are high and I therefore look for promotions. I think the price should be about half of what it is at the moment*. (Consumer-5)

It was clear that some consumers were not satisfied with the prices of products but promotions which saw prices being reduced did meet their needs of affordability. Such promotions also encourage consumers to purchase more to capitalise on the cost saving as can be seen by this excerpt:

> *It is not on the same price every time. When it is not on sale, I still buy it but when it is on sale, I buy quite a few and when it is not on sale I buy the number I can afford.* (Consumer-10)

One interviewee spoke about choosing dealer-owned brands when she did not have enough money for her trusted brands:

> *Shopping at Shoprite, if you can't afford the brand you want, Shoprite has their own brand where you can get the product you want for a cheaper price. I would purchase a brand if it's 30% cheaper than the brand I normally buy*. (Consumer-3)

Secondly, the concept 'product' indicates the love and loyalty to a particular product or brand. This is reflected well in an excerpt from a consumer who would buy a smaller size of her preferred product and would switch from purchasing the produce from a large retail store to an informal *spaza* shop:

*I cannot go for other rice brands because I am in love with that product. If I buy a small packet, then I go to the spaza shop to buy it.* (Consumer-4)

The quote from a consumer mentioned above where she indicated that she was happy with the price of a large soap product surfaces again in the concept of 'product' showing us that the product preferences of consumers are intricately tied together with the affordability of the price. This is supported by the proximity of the 'price' and 'product' dots in the 'price' circle in Figure 6.

Still highlighting the connection between 'price' and 'product', sometimes products which are priced out of the affordable price range for a low-income consumer, do not change the loyalty and desire for this product. In a quote above, the consumer explained that the price of products that he liked were expensive, but he looked for promotions before purchasing his desired products. While another consumer spoke about a product which was priced so far out of her budget that she would only be able to buy it, even if there was a more affordable smaller size available:

*Dove lotions is one product – they are so expensive, and I cannot afford to buy them. If they were in a smaller size then I will still not buy it.* (Consumer-6)

There is strong connection between the interviewees' responses which give rise to the concepts 'price' and 'product'. Both the price and loyalty to a product bring about satisfaction of needs in interviewed consumers. Within a set of particular brands, consumers would be willing to buy smaller sizes of a product in order to meet their needs of affordability. They would even choose to shop at an informal trader to purchase smaller sizes if they could not afford the bigger size in that month. However, these consumers are also very clear on brands that they do not perceive to be within their reasonable set of products they could buy, like Dove body lotion as an example indicated above. Another way that consumers meet their needs of affordability is by shopping when products are on price promotion or by selecting dealer-owned brands, which are not preferred but play a role in driving affordability.

The third key concept which contributed to the theme 'price' is 'money'. The concept unravels to connect between physical availability of financial resources and the requested price of

products. The connection between ‘money’ and ‘price’ is indicated by the connected dots in Figure 6, within the theme ‘price’. One consumer mentioned:

> *It is too expensive to buy the washing powder from Shoprite. I do not buy it if I do not have the money*. (Consumer-6)

This excerpt shows us that consumers opt out of key purchases if they do not have the resources to purchase it. In support of this, another consumer spoke about trading off on food purchases when they did not have the money available for these resources:

> *My maize meal is a good price but for the rice I buy it is a killing price. If I do not have enough money for the rice, then I will not buy it at all*. (Consumer-4)

The purchasing of smaller sizes is another tactic employed by consumers to deal with not having enough money in a month. This is reflected in the already mention quote where a consumer would purchase a smaller size of laundry powder (1kg) if they could not afford the size they usually purchased (2kg pack).

‘Buy’ is another important theme when dealing with respondent consumers’ evaluation of affordability of products. ‘Buy’ is still a warm colour, however is orange and not red like ‘price’ – showing us that this is a second main theme but still important. This theme reveals buying behaviour from low-income consumers. This is within the context of the money they have available or the budgets they set, as indicated by the connection of the concepts ‘money’ and ‘budget’ in Figure 6. Also, can be seen in Figure 6, the theme ‘price’ has a slight overlap with the theme ‘buy’. It can be determined that conversations included comments of both themes by interviewees showing us that the price of products play a role in what is actually bought by consumers. This theme is constructed from two main concepts, ‘buy’ and ‘budget’. These concepts are explained in this order.

‘Buy’ is the first main concept and reflects responses from consumers about various aspects of their buying behaviour. Referring to a fragrance spray, one respondent explained:

> *I can see these products in the shop I go to, but it is too expensive. I would not buy a small pack since I cannot afford it and my whole family need to be able to use it*. (Consumer-4)

This indicates that while products are available, sometimes consumers do not buy certain products even in small packs since they needed to also serve the whole family. Therefore, products which are meant for family use may not meet the needs of affordability for consumers and the common tactic of reducing size would not be appropriate in this scenario. In the excerpt above which mentioned that Dove lotions were priced out of budget for an interviewed consumer, this supports the point further that smaller sizes do not always drive low-income consumers to purchase products that cannot be afforded in their regular sizes. Smaller sizes are also not always solutions to meet the needs of affordability for individuals who want to show for a product to last the whole month, as indicated by the following consumer quote:

> *Since it will not last me the whole month. I rather just not buy it.* (Consumer-6)

Interviewed consumers also described having a set of brands that they bought from, and switched between these if they could not afford their usual brand. One consumer described this in the following comment:

> *If I do not have money to buy a certain product I can look at other products that are on special. I do not like to mix brands. I like to stick to a few brands only*. (Consumer-7)

This was repeated in the earlier comment from a consumer who spoke about choosing between Skip, Ariel and Omo brands of laundry powder, depending on which was on promotion on that shopping trip.

The concept ‘budget’ highlights the efforts interviewed consumers make to allocate their income to purchase products. Their budget guides them on brands and package sizes to buy, as indicated in above excerpts. This concept is also closely related to ‘buy’ in Figure 6, pointing to consumers buying what is in their budget. This was articulated by a respondent:

> *I don’t buy them because they are expensive and I’m unable to include them in my budget. Yes, they are available.* (Consumer-2)

The theme ‘expensive’ is not closely related to the theme ‘buy’ and details responses which highlight products not purchased by consumers due to them being deemed as expensive. Despite the availability at stores these consumers have access to, affordability is important to

them and they would rather create home remedies as solutions. This is indicated in the following excerpt:

> *So, I need to make home remedies to fix these. When things are too expensive, I look online for homemade remedies using things I can find in the home.* (Consumer-12)

Consumers select a product that serves the family not just themselves. Buying separate products for each family member can be expensive. An interviewee expressed their view on this as follows:

> *I can see these products in the shop I go to but it is too expensive. I would not buy a small pack since I cannot afford it and my whole family needs to be able to use it.* (Consumer-4)

Another consumer spoke about products which were deemed too expensive:

> *Dove lotions is one product – they are so expensive, and I cannot afford to buy them. If they were in a smaller size then I will still not buy it.* (Consumer-6)

In summary, results reveal that the price of products play a significant role in a low-income consumer's evaluation about which product to purchase. For essential products, consumers are in agreement with the prices they find in stores, however, this is not always the case and also applies to a limited range of essential products. When their needs of affordability are not met, they have tactics to ensure they satisfy this need.

One approach to tackling this which often surfaced was switching to smaller product sizes which were cheaper than their preferred packaging size, to manage their budgets. Price promotions were a major influencer in purchases. Consumers actively search out price promotions and shared these price promotions with friends and family. They shop these promoted items, as long as they were in their preferred set, due to the noticeably lower price. Consumers also shopped dealer-owned brands when they were cash-strapped since they found these prices consistently lower than preferred brands. Sometimes consumers are not able to trade down to a smaller size since it will not last them long enough, or they require the item for the whole family. They are faced with the tension of satisfying the needs of affordability for themselves or family while not having enough money to satisfy this need. At these times their

needs for affordability are not met. Consumers are also faced with times where they cannot afford products which are not seen as basic products, such as breakfast cereals. This shows that the need for affordability is sometimes met, but is not always the case.

**R3b: How do these products currently meet consumer needs among low-income consumers based on acceptability in the 4As framework?**

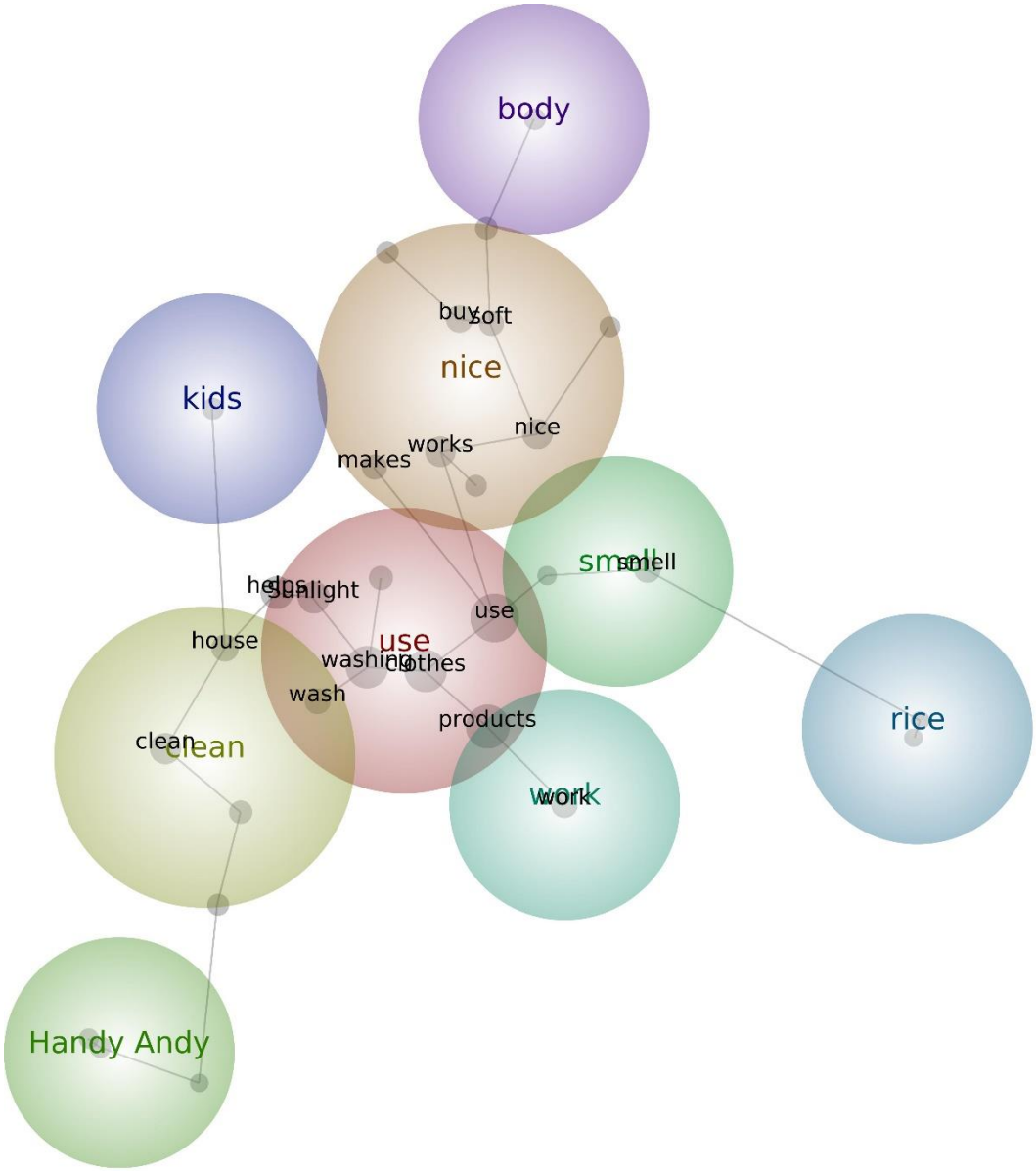


Figure 7: Leximancer map of how products currently meet consumer needs among low-income consumers based on acceptability in the 4As framework

Acceptability, from the 4As framework, considers whether the product does or does not meet the functional or psychological needs or expectations of consumers at the lower end.

Figure 7 reveals the three most relevant themes related to how products currently meet the needs of low-income consumers with regard to acceptability. The themes, 'use', 'nice' and 'clean' appear in warm colours and the largest circles in the Leximancer map. Along the fringe of the map, the themes 'body', 'smell', 'Handy Andy', 'kids' and 'rice' appear as smaller circles and of relevance due to the cooler colours they appear in in Figure 7. The first key theme is 'use' which is built up by the concepts 'use', 'products', 'clothes', 'washing' and 'wash'.

Firstly, the concept 'use' presents examples of products which interviewed consumers believed met their needs well. Some of these products are Comfort fabric conditioner, Sunlight washing powder, Handy Andy, Protex soap, Alabama rice and Iwisa maize meal. Consumers believe that these products work for them and it therefore explains the overlap between the theme 'use' and 'work' in Figure 7. Consumers believed that the products helped them complete missions. In one example a consumer aiming to complete their household chores used a surface cleaner, Handy Andy:

> *I use it for cleaning and it cleans white cupboards, wardrobes, walls and plug points. It is for whitening things in your home*. (Consumer-9)

Another consumer spoke about the delightful end results achieved by using Sunlight dishwashing liquid:

> *It is always good to use them and the cutlery is always clean, looks shiny and beautiful when I use Sunlight liquid*. (Consumer-8)

The longevity of a product and how some products met the needs of consumers were also positive points:

> *It lasts for 2 months. I like the body oil because it has glycerine in it and when I use it, it makes my skin soft*. (Consumer-1)

This was further supported by another consumer who spoke about her preferred products meeting her needs because a little went a long way:

*I like Ariel washing powder and Crown cooking oil. I like both these products, they work, and you only need to use a little of these products and they last*. (Consumer-5)

As can be seen in Figure 7, the dot which represents the concept 'use' is connected and in close proximity to the dot which represents 'clothes'. This dot is, in turn, connected to the concept 'washing' and 'wash'. This shows us that there are detergent products available to low-income consumers which meet the needs of these consumers to wash their clothes:

*The clothes always look new when I do the laundry with Omo and it looks clean and beautiful*. (Consumer-8)

The products also offer sensorial benefit which delight consumers:

*When you use it, it works by making the bedding or clothes to smell nice. It removes any stains I have on my clothes without struggling and it smells nice when it is dry*. (Consumer-11)

The concept 'products' is linked to both 'clothes' and 'works' in Figure 7, showing us that the above-mentioned products used for washing of clothes do work and meet the needs of interviewed consumers:

*These products do what I expect them to do – they work.* (Consumer-6)

Also visible in Figure 7, is the distance between the concept 'use' and the concept 'rice' indicating a lower frequency in mentions and less likely that consumers use this product. In one excerpt, a consumer spoke about how a rice brand met her needs but she did not frequently buy it due to its prohibitive cost:

*I grew up eating this type of rice and it is very tasty, but it is a bit expensive (Alabama). The products taste good and do what I expect them to do.* (Consumer-4)

The second key theme which identifies how products currently meet the needs of low-income consumers is 'nice'. This is constructed of the key concepts 'nice', 'works', 'buy', 'makes' and 'soft' with a clear overlap on the theme 'use' in Figure 7. The concepts highlight how consumers' needs are met after which they buy and use a product which works for them. Consumers describe the benefits as nice or, more particular to clothing or skin, as soft:

> *I buy Sunlight 2-in-1 washing powder because it is cheap and it saves water because I only need to rinse it once. I also do not need to add fabric conditioner because it keeps the clothes smelling nice and keeps it soft*. (Consumer-7)

Or as another consumer mentioned:

> *Or my Vaseline Lip Therapy. I like them because they smell really nice and they also make my skin soft*. (Consumer-12)

The theme 'use' overlaps with the third most relevant theme to the research question, 'helps'. This theme is built from responses related to the concept 'helps', and 'house', with an overlap with the theme 'clean' (see Figure 7). The 'helps' theme largely highlights how products which consumers use help them to carry out a job in their homes, like cleaning. The concept 'helps' is conceived from responses from consumers who described how common consumer goods like dishwashing liquids, laundry soap bars or fabric conditioners, met their needs by performing to expectation in the jobs they were bought for. The below excerpt was mentioned by an interviewee when considering how products met her needs:

> *Especially now that it is winter, the fabric conditioner helps to prevent the clothes from sticking to me. I like washing because I do not like dirty clothes*. (Consumer-6)

. A similar sentiment was echoed by another interviewee:

> *I have washing power and Sunlight dishwashing liquid. This is because I wash my clothes and keep it clean and the washing powder helps*. (Consumer-7)

The close proximity of the concepts 'wash', 'washing', 'helps' and 'clean' in Figure 7 further supports that products being used by low-income consumers are meeting their needs and helping them and in this example by keeping their homes and clothes clean. Needs like sanitisation, especially during the COVID-19 pandemic also surfaced in the responses:

> *I also want to wash the dishes and the Sunlight dishwashing liquid works well on my dishes. It also helps me to sanitise and keep the house clean*. (Consumer-7)

However, such powerful cleaning chemicals also results in concerns for safety like in this excerpt from one consumer who uses bleach to sanitise:

> *But it really helps to sanitise, especially with COVID-19 but it is dangerous to have in the house with kids to use it without putting gloves on. It is very strong, even the odour is very strong and makes me sneeze*. (Consumer-9)

This surfaces with the concept 'house', where consumers expressed concerns about items which may help them keep their homes clean, but which pose threats to safety or wellbeing. A consumer mentioned:

> *I do not have Domestos in the house because it is very strong and it leaves your hands dry if you do not put gloves on.* (Consumer-12)

The concept 'house' is connected to the concept 'helps' in Figure 7, highlighting that some products which consumers purchase do meet their needs:

> *These products do what I expect them to do – they work. If you leave your clothes on the line in the sun, you will still smell the Comfort when you bring it into the house after the long day*. (Consumer-6)

In summary, consumers use a portfolio of products which meet their needs to complete particular missions they have. These products ranged from food products to house and clothing cleaning products. In all instances, consumers spoke about products that were used for basic reasons (for example, nutrition or hygiene). Despite this, the consumers felt that their needs were met and even spoke about delight factors that they experienced from using the products, such as a nice smell. Consumers used the word 'helps' to describe the participative role the product plays in completing chores in their homes, indicating how these products were designed for them and met their needs of acceptability. Consumers appreciated when products lasted a long time. Consumers' need to be protected from microbes were heightened during the COVID-19 pandemic and products were available to low-income consumers to meet their needs. However, with some products, the harshness of the product required to kill germs made them concerned about the safety of these chemicals in homes.

**R3c: How do these products currently meet consumer needs among low-income consumers based on availability in the 4As framework?**

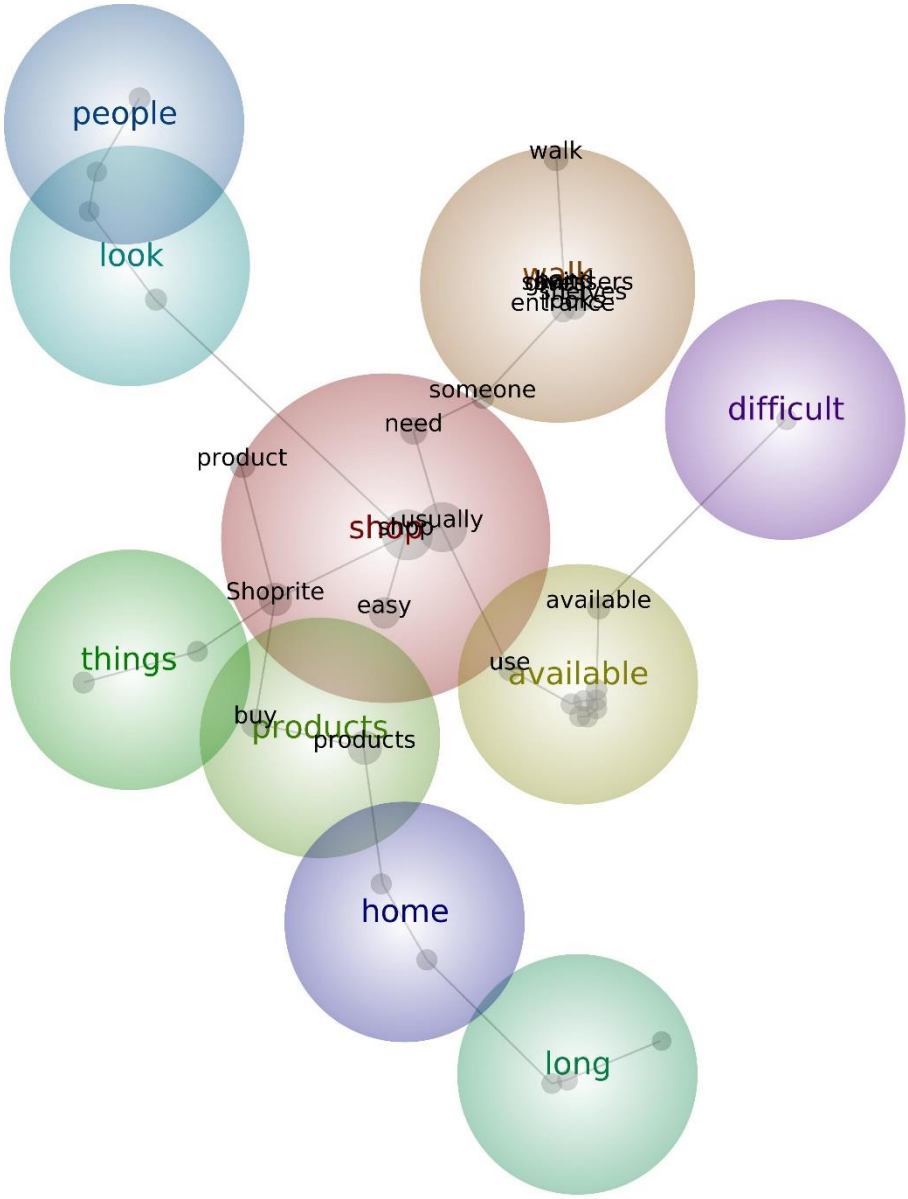


Figure 8: Leximancer map of how products currently meet consumer needs among low-income consumers based on availability in the 4As framework

Availability in the 4As framework studies if the product is available to be purchased or of acceptable convenience to be purchased.

When considering how products meet the need of low-income consumers in terms of availability, from the 4As framework, the key themes which emerge from the Leximancer map in Figure 8 are ‘shop’, ‘walk’, and ‘available’, in order of importance based on the warm colours how these themes are depicted. These are discussed below in order of importance and the theme ‘product’ which has lower relevance to the research question is still closely related to the core theme ‘shop’ and is discussed at the same time as ‘shop’.

Firstly, ‘shop’ is constructed from the concepts ‘shop’, ‘usually’, ‘Shoprite’ and ‘easy’. ‘Shop’ as a concept highlights the experience consumer have when shopping for products in stores close to their homes. Responses from consumers indicated that they valued the convenience of the stores where they shopped. They not only found what they were looking for, but also found it easily. One consumer called it convenient:

> *I like the shop because it’s clean, well-organized, everything is easily visible in aisles. It’s convenient*. (Consumer-3)

The service offered in the store in terms of help and availability of stock was also appreciated:

> *The service is quite good because they come quickly and help you to find the item you are looking for. Whatever I am looking for is always stocked in this shop and I find what I am looking for*. (Consumer-10)

‘Shop’ is also very close to the dot which represents ‘usually’ in Figure 8. This highlights the frequency and consistency with which interviewees carried out their shopping behaviours. They shopped at certain stores loyally and expected their needs to be met in terms of availability from these stores. This is further detailed in the quotes which detail the relationship between the concepts ‘shop’ and ‘Shoprite’ which are closely related. Shoprite is a well-known affordable South African retailer. Interviewed consumers often shopped at this retailer and their needs in terms of availability were often met at this retailer – this was both in terms of range of products and stock levels of products needed:

> *I usually shop at Shoprite. I can find these products when I shop at Shoprite*. (Consumer-4)

These stores are found within walking distance of some interviewees’ homes:

*I walk to that shop. I hear from my friends what is on promotion*. (Consumer-5)

Thus additionally, supporting that their needs are being met with regard to availability. Another consumer spoke about taking public transport to go to the store but did not consider this a hindrance and also felt the store was close enough for them to walk:

*I usually travel by taxi but it is not too far and sometimes I walk there too. It is a nice experience when I go to the shop*. (Consumer-10)

The enjoyable experience of shopping at these stores was raised by a few interviewees. Already mentioned was the availability of a range of products and having enough of these products.

However, another consumer also mentioned being recognised and greeted upon entering the store:

*I enjoy shopping there because I'm greeted when I enter the shop. The shop is always well stocked and it's convenient for my shopping, as I'm able to buy other things like meat from the same shop*. (Consumer-1)

The importance of a good demeanour of the retail staff was reiterated by another consumer:

*I like the shop where I buy my products from because they are friendly and welcoming. It's an unbranded supermarket shop*. (Consumer-2)

This is further entrenched by another interviewee:

*When I get there, when I enter, I feel so welcomed even at the entrance, someone gives me hand sanitisers when I enter. When I walk into the shop, it looks nice and the shelves are well packed, everything is in its place*. (Consumer-11)

The emotions that going to a shop trigger frequently emerged from the responses, showing people enjoying the experience of the availability of products, the demeanour of the staff but were also fundamentally triggered by the action of going shopping and the certainty that they will find what they are looking for:

*It is easy to get to this shop. It is a good experience when I go shopping, knowing that I am going to buy the things I want*. (Consumer-4)

Considerations to an individual's ability was also appreciated by one interviewee:

> *They also prevent me from joining long queues because of my disability. I always feel welcomed at the shop.* (Consumer-8)

The quote above where the consumer explains that he hears about promotions from his friend and walks to that store as a result, also touches on the role of promotions in attracting consumers to visit stores, a topic covered in research question 3b.

One consumer also mentioned their preference to shopping in a bricks and mortar store rather than an online store. The distrust to e-commerce was clear:

> *Shopping in a physical shop is much better since I get what I actually want and not false products like how they advertise online. It is better to shop when I go there to the shop by myself.* (Consumer-12)

The concept 'easy' is related to the concept 'shop' and speaks to the ease with which interviewed consumers were able to go to their nearest stores and how easily they found what they were looking for in those stores:

> *I go to Shoprite to buy this product. It is easy to go there, I am not far* and *I usually buy these products from Shoprite or Checkers. It is easy to shop at this store and as a person with a disability there is always someone to assist me when I need help*. (Consumer-8)

Despite the overwhelming prevalence of interviewees finding what they were looking for in the stores close to their homes, there was also evidence of underserving of consumers in categories that might not be considered as basic, as demonstrated by the following:

> *I need to use a taxi to get to Dischem and would like it to be closer. For example Apple Cider Vinegar, I cannot find it in the Shoprite that I shop at.* (Consumer-5)

In the preceding excerpt, a consumer felt that the health range offered at her local store was not adequate and she was required to travel at an inconvenience to her to find the products needed.

The second key theme is 'walk' which is built from the main concepts 'walk', 'entrance', 'gives', 'hand', 'looks', 'sanitisers' and 'shelves'. Responses which formed these concepts are

closely interrelated as can be seen by the overlapping dots in Figure 8. While the concept 'walk' is further away from the cluster of concepts at the centre of the theme's bubble, it is connected to this cluster. This means that some responses brought the word 'walk' into conversations about the experiences low-income consumers had when entering stores. Examples of these are being greeted, being given sanitiser for their hands and subsequently setting off on their shopping journey through the store as they look for the products they need on the shop shelves. The integration of these concepts are brought together well in the following excerpts:

> *The Shoprite is close, and I can walk with my children from our house. It is close to my house* and *when I get there, when I enter, I feel so welcomed even at the entrance, someone gives me hand sanitisers when I enter. When I walk into the shop, it looks nice and the shelves are well packed, everything is in its place.* (Consumer-11)

The third theme is 'available' which overlaps with the theme 'shop' and relates to interviewees' responses related to availability of products through the various retail options that they go to. The theme is constructed from two main concepts, 'available' and 'use'. These concepts highlight the importance of availability of products. Often interviewed consumers continued to use products for years, after finding them in stores which were easy to visit as indicated by this respondent:

> *The products were available when I moved to the area and after trying them I liked them and continued to use them. I shop at Vivo shop because it's a nice shop and it's near where I live, so I don't have to spend money to travel to the shop*. (Consumer-1)

The theme overlaps with the theme 'shop' indicating that interviewed consumers often find what they are looking for where they shop.

The theme 'difficult' is at the periphery of the map and in a cool colour and shows us that very few responses from interviewees imply that they were experiencing difficulties. This was consistent with other insights from the Leximancer map in Figure 8 which highlighted that interviewees did not experience many challenges in terms of availability of products at their local stores. However, in one example above, health foods could not be found in the preferred retailer and in another a particular deodorant was difficult to find:

*It is also easy to get the products from the shelf. Sometimes it is difficult to get the deodorant, Mitchum, at Shoprite*. (Consumer-8)

In summary, these results indicate that low-income consumers' needs of availability are met in many ways. Products they look for are not only found but found easily due to the proximity of well-known stores to their homes. These stores are also well laid out, well stocked and give good service all the way through the journey in the store. The consumers were greeted and extended help and this made them feel welcomed and noticed. This experience was frequent and consistent. A particular retailer, Shoprite, was the store of choice for many interviewees and consistently met their needs of availability for the products they required and they can conveniently visit this retailer due to its proximity in areas where the interviewees lived. Consumers found their shopping experience easy, and indicated the convenience to reach the store and their experience during the shopping journey in the store. Similar to the findings in research question 3b, consumers' need for availability were not always met when it came to unique items, such as health and wellbeing ranges. They needed to travel to stores further away to access these products. When products are available, low-income consumers continued to use these products for years after finding them.

**R3d: How do these products currently meet consumer needs among low-income consumers based on awareness in the 4As framework?**

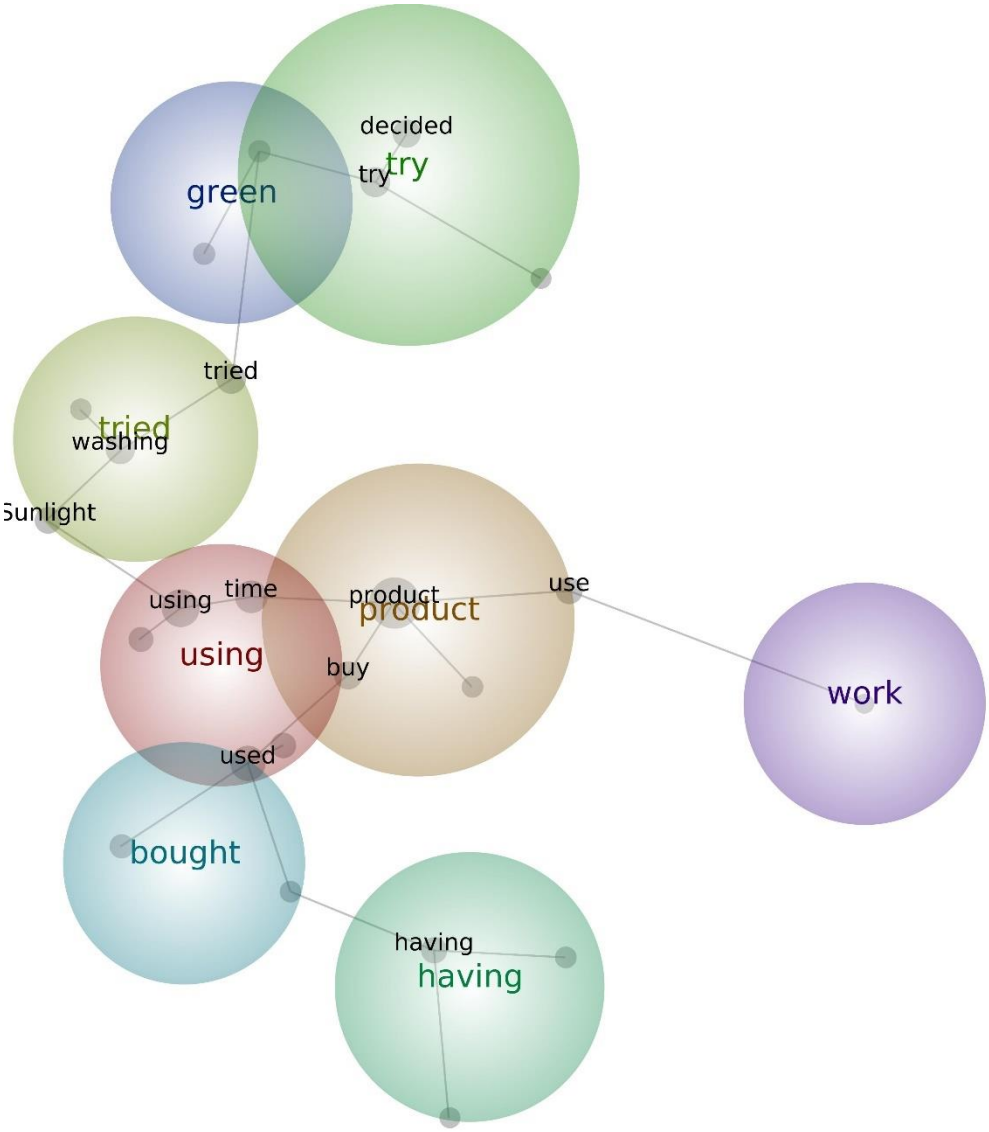


Figure 9: Leximancer map of how products currently meet consumer needs among low-income consumers based on awareness in the 4As framework

Awareness in the 4As framework looks at whether the potential consumer is adequately made aware of the brand and product or not in order to understand the product's features but also if consumers are adequately engaged in trial tactics and reminded of the product.

'Using' and 'product' are the two most important themes which emerged from the Leximancer map in Figure 9. 'Using' is the core theme since it is shown in the warmest colour in Figure 9, despite the circle being smaller than 'products'. The theme 'using' is built from responses classified in the concepts 'using', 'used' and 'time' as indicated by the dots within the red circle in Figure 9. These concepts speak to how interviewees became aware of the products which meet their needs of affordability, acceptability and availability, mentioned in preceding sections.

The concepts 'using' and 'used' introduce examples of when consumers started using their preferred products. Many consumers who were interviewed, continued to use products which they were introduced to by family members when they were younger:

> *Actually, my family used it at home and I grew up using these products at home and that is why I am loyal to those products. I have never had a problem with these products*. (Consumer-8)

This legacy usage was not just due to family influence but also from friend's recommendations earlier in life:

> *Actually, it was because my friends were using it at school, and I said that I also wanted to try it*. (Consumer-12)

Word-of-mouth recommendations continued into adulthood from people whose opinions were trusted by the consumers interviewed:

> *My first time seeing this product was in 2007. I saw my brother using it to wash his clothes and I saw that it was different to other washing powders and I loved it*. (Consumer-11)

Through all of these recommendations interviewees continued to use products recommended to them years later, because they met their needs too.

The concept 'time' is weaved into responses from consumers who speak about the first time they were made aware of these products. They then speak to how they were introduced to these

through promotions in store, television advertising or through online searches. These are elaborated on below along with the relation to the concepts ‘use’ and ‘using’.

The role of availability in stores itself plays a role in driving awareness of a brand product. As one consumer points out, he purchased a new laundry detergent because he saw a promotion for this product on a shop shelf:

> *I’ve seen adverts on TV about the product and I see promotions or discounts about the product*. (Consumer-3)

The motivation to switch is supported by the presence of products on shelves:

> *I have been using Sunlight for a very long time. I saw Surf in Shoprite when I was shopping*. (Consumer-6)

Even when a product was introduced to them in a store it needs to measure up to a consumer’s expectations else they will revert to their original products choices:

> *Yes, I saw Maq dishwashing liquid and I used it but when I used it and it did not have foam or bubbles when I washed my dishes so I went back to my Sunlight dishwashing liquid. I would tell them to have extra foam*. (Consumer-9)

Television advertising plays in important role in raising awareness of products. Many consumers remember seeing an advert for a product first before purchasing it. However, the advert is not always the final decider of a purchase. In this example, the consumers relied on word of mouth to instil confidence in her purchase of a dishwashing product:

> *I see adverts on the TV for Sunlight products and I recognise it and I still like it. Actually, it was because my friends were using it at school, and I said that I also wanted to try it*. (Consumer-12)

The use of internet research about products was present but uncommon in low-income consumer groups that were interviewed. Consumers search for product solutions to their problems and rely on reviews and articles to help them decide if a solution is for them:

> *And I bought a Deep Freeze. I read reviews from Google from people who used it before*. (Consumer-8)

And it was also echoed by another consumer:

> *I have also used Google to find what product I should buy for cramps I was having*. (Consumer-8)

'Product' is the second main theme regarding the current research question being reviewed and is overlapped with the theme 'using' as seen in Figure 9. The concepts 'product' and 'buy' are the key concepts which build this theme. The concepts are composed of interviewees' responses speaking to information about the products they want to buy. Similar to responses in the theme 'using', consumers identify products on shop shelves and purchase them for many years after:

> *I saw the product in the store while shopping and I decided to try them. I was happy with them and continued to use them*. (Consumer-1)

The repeated advertising of products entrenches the belief in a product already being purchased. In an excerpt from one consumer, he believed that his favourite product is continually improved since he often saw new advertising for the product:

> *I see this product advertised and think that it is getting better over time. Because I believe that the makers will forever put something new in it, and improve it so it is better for someone to stick with one that they use and it works since it is getting better over time*. (Consumer-9)

Some consumers believed certain communication media for products were not being used enough to provide them with pertinent details to make informed choices:

> *I would want it to explain the ingredients, how you can use it, the benefits and what to watch out about the product. I would prefer it in a box rather than on the internet since internet access is an issue for some people*. (Consumer-12)

Others found that advertising may not always be representative of real-life experiences like one consumer who found that the amount of dishwashing liquid that was needed in an advert was not what was actually needed when he used it:

> *I cannot afford buying every week – I just want to use a drop in the water and I want it to last 1.5 months. The advertising showed it working but it did not work the same way for me*. (Consumer-9)

In another example, the mismatch between real-life experience and advertising resulted in a consumer changing brands:

> *The product advertised 24-hour protection, but it didn't work out for me. I was disappointed and switched brands*. (Consumer-3)

While products are affordable, consumers still want to have more information about the product and benefits:

> *They were cheap, that's why I chose them. I would like to have more information about the product*. (Consumer-1)

The theme 'try' has a considerable number of mentions in responses from interviewees. The concepts 'try' and 'decided' are the main contributors to this theme. This theme is the largest circle but not the warmest colour indicating that the interviewee often spoke about deciding to try certain products. However, the relevance to the research question was lower than responses in the themes 'using' and 'product' which were discussed earlier in this section. Consumers were prompted to try out new product choices via different sources. One consumer was attracted to the colour of a product on a shelf:

> *I liked the green colour and decided to try it. I do not see people speaking about the product – I have to rely on what is on the shelf*. (Consumer-5)

As expected, TV advertising prompts trial too:

> *I've seen adverts on TV about the product and I see promotions or discounts about the product. I've seen Ariel washing powder being advertised and decided to try it. I didn't like it before but now that I tried it, it's the best*. (Consumer-3)

However, none of the consumers interviewed were engaged in trial through sampling of free products.

In summary, these results suggest that the needs around awareness of products for low-income consumers are largely covered by word of mouth from trusted friends or family members. However, instore promotions and television advertising also played a notable role in informing consumers of new product launches and their benefits. This also affirms consumers' choices and bolstered confidence when they see advertising for products they currently purchase. Advertising, especially on television, can build strong awareness of the product and benefits as seen by how consumers remember seeing an advert which prompted a purchase for many years, which they still use today. On-shelf availability impacts the rising awareness of brands and products since consumers can sometimes be promoted to try a new product if there is a significant price promotion or when looking for an alternate if a preferred product is out of stock.

Online informational articles and reviews are helpful for products which are not basic, and consumers leverage these sources to learn more about how to tackle pain points before making purchases. These results indicate that the needs of awareness are being met by raising awareness of the brand and product to consumers on relevant channels of communication.

There are also results which indicate that there is room for improvement in terms of the depth of awareness, believability of the benefits and engagement in trial. Some consumers wanted more information on the packaging about the ingredients and its benefits as well as not wanting the advertising to exaggerate the claims of the products. Products should do what it claims to do since consumers hold it accountable to the claims made. Consumers were not engaged in trial through free sampling or other direct methods. Consumers usually only tried a new product by purchasing a full size.

When looking at how products currently meet the needs of low-income consumers in terms of affordability, acceptability, availability and awareness, a comparison of Figures 6, 7, 8 and 9 reveals the following key points. While the themes from each research question (3a, b, c, and d) are not common, they do reveal the interconnectedness of the solutions which meet the needs of low-income consumers in each area. For example, a consumer's need for affordability is met by the product options which meet the needs they have as part of a mission such as chores. These products are found in a store close to their home, which meets their need for availability.

They are made aware of this product though awareness tactics such as television advertising. This shows that the journey that consumers embark on, and that their need for basic products are often holistically met.

**R4a: How might Human-Centred Design application in CPG companies enhance the affordability of product design for low-income consumers?**

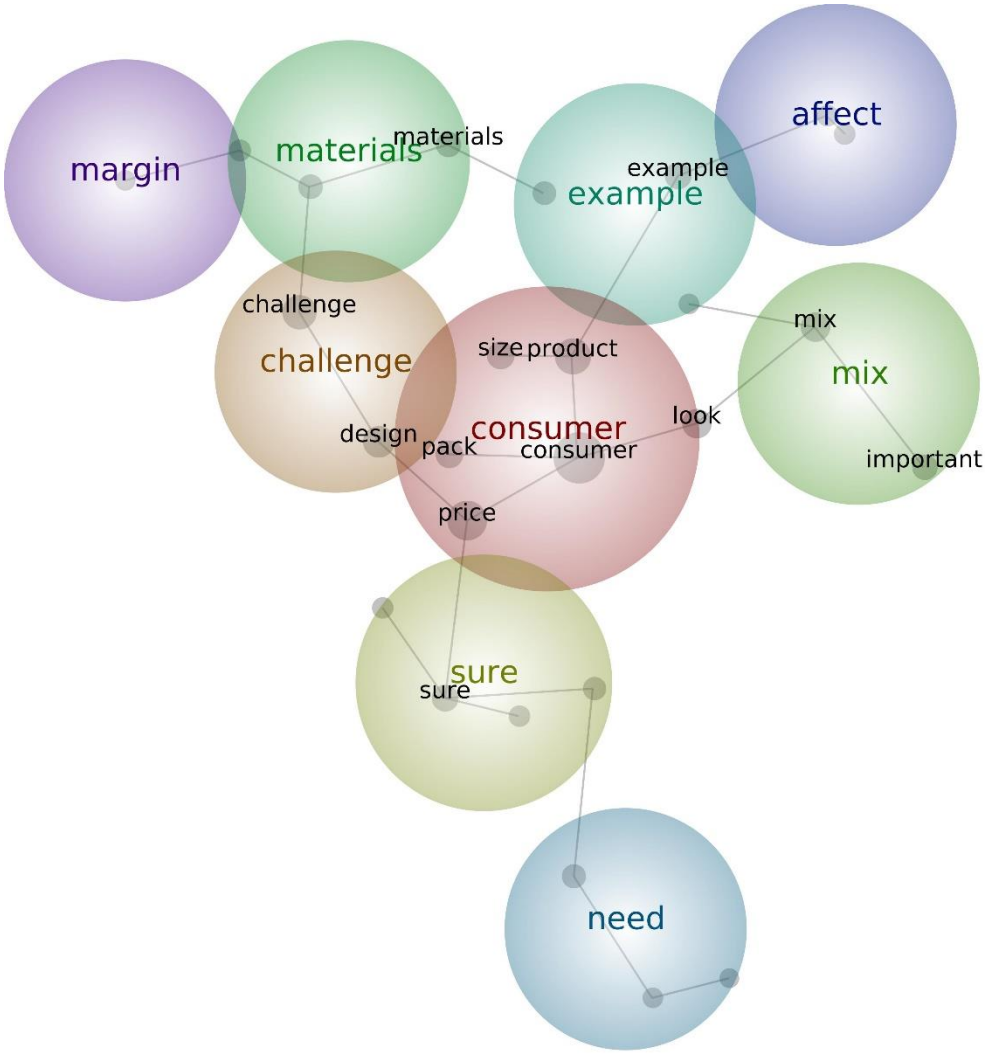


Figure 10:Leximancer map of how human-centred design application in CPG companies might enhance the affordability of product design for low-income consumers

The themes most relevant to this research question are ‘consumer’, ‘challenge’ and ‘mix’. These are represented by warm colours in Figure 10 and are large circles compared to less relevant themes like ‘margin’ and ‘effect’.

Firstly, the theme ‘consumer’ is formed from six main concepts: ‘consumer’, ‘price’, ‘product’, ‘look’, ‘pack’ and ‘size’. Each of these concepts, except ‘size’ are connected to the central concept ‘consumer’ as indicated by the connection of dots shown in Figure 10 within the red circle. ‘Size’ is related to ‘product’. Designers provided insights into how products may be designed for better consideration to the needs of low-income consumers regarding affordability. It was clear that designers spent time working out (‘look’) which packaging materials were necessary for a product for low-income consumers. They believed that they could afford a consumer value by reducing the features which would not add benefit to the physical formulation contained in the packaging:

> *The other important thing is to actually look at design end to end in terms of managing costs to design to an affordable price point. How do you give the consumer the value in the product and reduce costs on other areas such as reducing back label size, removing corrugates*. (Designer-2)

The size of the product purchased is also considered as a route to make a product more affordable, with the understanding that a low-income consumer will ultimately do the calculation to evaluate the loss of buying a small pack versus a regular or large pack:

> *Consumers may want a small package size, but they also do the calculation for the bigger size and can reject the smaller size in favour of the bigger economical package size. They calculated pricing per gram*. (Designer-1)

Some consumers may still choose a smaller package size to avoid buying a product which they do not believe is of good quality. The search for value is important to a low-income consumer and understood by designers:

> *They want a good quality product and they would rather take a smaller pack that's more affordable than bigger packs of a cheaper product that that they feel would damage their skin. I would say it's the balance between delivering good products quality*

> *wise and still being able to deliver the product at the right price for the consumer*. (Designer-11)

Knowing what the correct package sizes are requires engagement with consumers, which is carried out by designers to ascertain the best mix of sizes for a product:

> *We did many consumer studies to find the correct mix. Usually the main challenge we face is around price relativity with the rest of the portfolio. if we have a lot of package sizes and then we are bringing in another package size, the challenge is that the price point that is right for the consumer will throw out the relativities with the rest of the package sizes within that brand*. (Designer-6)

However, designers also have access to internal data which infers consumer preferences through purchase behaviour:

> *I guess the simple answer is data first and foremost. So we would look internally across categories that are sold at a particular channel which would be accessible to the shopper that you're targeting and to understand at what price point do we see a peak in sales versus a dip in sales*. (Designer-1)

The second key theme is ‘challenge’ which overlaps with ‘consumer’. The theme is built from the concepts ‘challenge’ and design’ and reflects the challenges interviewees experienced in designing products for affordability for low-income consumers. One designer relayed the quagmire of needing to maintain the performance of a formulation while trying to make a product more affordable:

> *My product needs to stay the same but how do I design the packaging to get to the right price point. Definitely affordability is a challenge when designing for low-income consumers*. (Designer-7)

Another designer spoke about the challenge in knowing the right product sizes for low-income consumers when balancing affordability with practical needs for themselves and their family:

> *I think the biggest challenge is knowing what the right package size is. Because based on the product that you are making it could be different. For example, for a food product*

> *like a staple product, like if you selling rice or even a washing powder, low-income consumers don't want a small pack, if they have big families*. (Designer-11)

The concept 'look' from the theme 'consumer' in Figure 10 is closely linked to the third concept 'mix' which contributes to the theme 'mix' along with the concept 'important'. This theme elaborates how designers prioritise features in a product to create a collection of features (referred to as the mix), which are important to the consumers they design for. Relating to affordability, designers select only the elements of a mix which are needed by the consumer, thus reducing costs:

> *But a consumer working in the sun all day may find fragrance to be an important element in the mix but the high levels of moisturisation or oiliness is not important. You can figure out who your consumer is*. (Designer-2)

Thus by understanding a consumer, one is able to design for affordability for the consumer. This is done to find the right balance and not remove value from low-income consumers. One designer reflected this point well:

> *You look at your portfolio to find the right solution without compromising or cheapening the mix. I think sometimes when we talk about affordability and we confuse that with being cheap, and that's not necessarily what it's about*. (Designer-1)

The focus on not removing value for the consumer is further echoed by the distance in the theme 'affect' which shows that designers do not want to affect the efficacy or claims in a product by optimising the mix. This is shown in the following excerpt from a designer:

> *It is important not to cut out important things, especially when it comes to care products. You do not want to cut out that will provide a benefit, affect claims*. (Designer-7)

In summary, designers used target price points to make key decisions about the product design. Some interviewed designers worked with consumers to understand which features in a product were important and traded features for affordability. This consumer engagement process is discussed in further detail in 4b. Consideration extended to choices of materials to design a product which could meet a desired price point. Another tactic employed by designers was to

develop products in small package sizes to create a low price point for low-income consumers to afford, which comes from their understanding of consumers budgets and cadence of earnings, as well as their loyalty to good quality brands. This frequent tactic sought by consumers and intentionally designed for by designers was smaller package sizes, as indicated by the concept 'smaller' in Figure 6 and 'size' in Figure 10. Designers were aware that the consumers they designed for appreciated value as well as price in their assessment of what is affordable. Tensions developed for designers when trying to balance competing priorities such as providing benefits through a formulation while maintaining affordability or choosing a product size which could be afforded but big enough for large families. Designers aim to tackle these tension points by designing with the consumer at the centre of the process and understanding their day-to-day experiences to prioritise features and develop a mix which makes sense for a low-income consumer by placing value over cheap price points.

When it comes to how human-centred design application might enhance the affordability of product design for low-income consumers, results indicate that two human-centred design mind-sets are practised by designers, these being empathy and embracing ambiguity to get close to understanding what consumers can afford and how to design for these limitations. However, interviewees did not often directly engage with consumers about matters relating to affordability. Instead they relied on data sources in their organisations to identify trends in pricing, growing price segments and other consumer buying behaviour. While these are up to date, there is little direct consumer engagement through methods like one-on-one interviews to build deeper understanding and to test assumptions with consumers. Since early human-centred feedback is missing about the affordability of products, designers rely on feedback from sales post launch. Therefore, in some ways, the presence of particular elements of human-centred design allows the enhancement of the affordability for low-income consumers, while there is still room for improvement.

**R4b: How might Human-Centred Design application in CPG companies enhance the acceptability of product design for low-income consumers?**

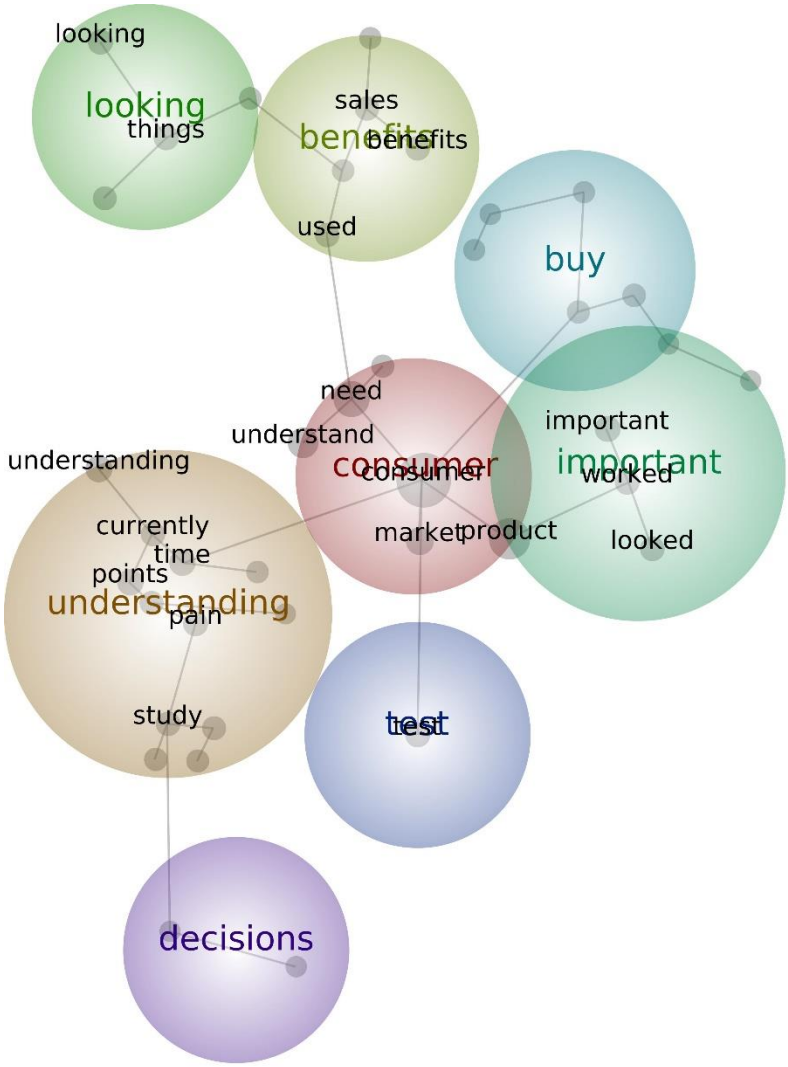


Figure 11: Leximancer map of how human-centred design application in CPG companies might enhance the acceptability of product design for low-income consumers

Based on the warm colours in the Leximancer map in Figure 11, the key themes which show how human-centred design can enhance acceptability of products for low-income consumers are ‘consumer’, ‘understanding’ and ‘important’. The themes ‘looking’, ‘benefits’, ‘test’, ‘buy’

and ‘decisions’ are at the periphery of the map and represented in cool colours, indicating their lower relevance to the research question, compared to the main themes mentioned.

‘Consumer’ is the first main theme and like R4a is central to the results from this research question. ‘Consumer’ is built from responses grouped under five key concepts: ‘consumer’, ‘product’, ‘need’, ‘understand’ and ‘market’. The concept ‘consumer’ is linked to each of the other concepts, as can be seen in Figure 11 by the connected dots in the red circle. The concepts ‘need’ and ‘understand’ are also connected to each other. These connections indicate that the terms were often mentioned together in designers’ responses. This theme speaks to the work that designers do to understand what the real need of a consumer is when developing products for low-income consumers. Sometimes, designers grapple with not truly knowing the needs of the consumer as shown in the following excerpt:

> *I have seen in some instances where we sit and we think we know what the consumer need but you realise at the end that you did not really understand*. (Designer-4)

Designers are connected to the activity in the market they are developing products for and actively look to understand the codes which are present in the market:

> *In one example of a body care product. I looked at the product in the market and what was growing and I worked to understand what the cues were in the market place*. (Designer-3)

When asked about whether products are tested with consumers to determine if a product met their needs, a designer mentioned that they have not recently cycled products with consumers but appreciated the value it could bring:

> *Not previously, but recently I know we need to. I think that's a very good idea to test the product in the market to see what the gap is or what the consumer need is that is not met*. (Designer-4)

However, many designers spoke about seeking inputs directly from consumers in their design process. One designer spoke about using ethnography and observation to gain valuable insights that would otherwise not be attainable through interviews:

> *We work with partners in the organisation to understand a little bit more about the consumer or the specific need. We may do work where we watch videos about how a consumer actually goes about using a product – that is key to understanding things you actually wouldn't know if someone just told you*. (Designer-7)

When determining if a product is meeting the needs of consumers, designers who were interviewed sometimes relied on sales data. However as one designers pointed out, this data could be affected by various other factors which would not necessarily imply that the product was not acceptable to a consumer it was designed for:

> *But before that, it is important for us to step back and understand if consumers did indeed access the product and if they are even aware that we have this product that meets their need. Sales being good is a good indication but if sales are not good, it does not automatically mean that you are not meeting consumer need*. (Designer-12)

A combination of market understanding, and consumer understanding was deemed important to develop a successful product by one designer:

> *And from there we were able to get an understanding for a particular market what the consumer habits were. From the habits we were able to develop some initial prototypes of samples that we felt met the consumer habits*. (Designer-11)

While the 'consumers' dot in Figure 11 is larger than the 'markets' dot, there were still a considerable number of designers who spoke about focussing on the market's competitor activity before understanding the needs of consumers. Identifying a competitor was a key focus for this designer:

> *I think foundational in all businesses is market mapping, so picking up what's currently available in the market, looking at growth cells, and understanding who key competition is. We then do our technical tests*. (Designer-9)

In earlier responses, many designers spoke about using institutionalised information or data. However, one designer speaks about the change that occurs in consumers' needs over time and that one has to keep up with these changes in order to serve their needs:

> *The first thing is about fluidity? Consumer needs change all the time and a consumer study done in 2010 or 2012 is not relevant today because the markets change, and consumers' needs change and demands have changed. I think the first thing is to really understand consumer pain points and understanding what is a consumer currently doing today and how are they solving these needs today*? (Designer-2)

Therefore, ensuring up to date consumer inputs into product development is important to tackle the risk of using outdated information.

From the concept 'need' some interviewees were focussed on solving the pain points of consumers:

> *They may not be solving these needs in the best way. Once we get a view of what the pain points are, we get a view of how we will solve through their pain points through product*. (Designer-2)

The excerpt clarifies that designers are focussed on solving pain points for consumers through their product development endeavours.

'Understanding' is the second key theme related to this research question. The theme is built from the concepts 'understanding', 'points', 'time', 'study', 'currently' and 'doing'. As seen in Figure 11, the theme 'understanding' is closely related to the theme 'consumer' indicating that the response which make up each were mentioned in close proximity of each other. 'Understanding' highlights the awareness of designers that they need to study consumers in order to build understanding of their pain points. Designers are also interested in understanding how these pain points are currently being tackled by consumers. A designer articulates this point well:

> *A lot of the time we need to just figure out what are the pain points and you know what they are currently doing to fill those pain points and then how can we offer better offerings*. (Designer-2)

A deep understanding of the mind-sets of consumers when they are forced to deal with the tension of their needs versus their resources helps designers to make better choices in the products they develop:

> *They dilute to wash so they will stop using the bar once they feel that it's done its job. And if it's not doing its job, it's a personal association that I haven't washed my clothes properly as an example, so understanding that psychology cracks your ability to design your formulation at a cost structure that can work.* (Designer-9)

While not mentioned by many interviewees, the presence of consumer centricity and rapid prototyping was clear among some designers:

> *We would then either go in and we'd usually understand pain points through a qualitative study by chatting to consumer trying to figure what they're using, trying to figure out where the gaps were, what are the pains, what are the issues. We will develop a bunch of prototypes and then take those prototypes and put them into a rapid test so you know we'll get consumers around the office pre-COVID-19 times*. (Designer-2)

Designers were also open to speaking directly to consumers:

> *Initially it was interviewing people face to face and really asking them simple questions about the hair routine and understanding how often they wash their hair or did other styling*. (Designer-11)

Where face-to-face interviews are not possible designers sometimes use recordings to watch how consumers interact with protypes or carryout certain tasks:

> *We may do work where we watch videos about how a consumer actually goes about using a product – that is key to understanding things you actually wouldn't know if someone just told you*. (Designer-7)

The majority of the interviews relied on historic resources of consumer understanding to craft a current view of consumer preferences:

> *I could not speak to consumers at that time but I had to use my experience from previous consumer interviews. Using this knowledge I put a visual together with marketing*. (Designer-3)

Some interviewees also felt that they needed a better way of engaging with consumers to understand their needs:

> *I feel that was an efficient way of understanding what the consumer need is because I have seen in some instances where we sit and we think we know what the consumer needs but you realise at the end that you did not really understand*. (Designer-4)

The third key theme is 'important' which shares an overlap with the theme 'consumer' connected by the concept 'product' as seen in Figure 11. The theme 'important' is built from responses from designers grouped under the following concepts: 'important', 'worked' and 'looked'. The underlying responses reveal how designers looked for what would be important factors for low-income consumers when designing a product for them and how they believed that this would provide belief that the product would work for this target group. This is mentioned by one designer:

> *We also looked at culture and how ingredient choices would be important for these consumers. We designed a product which resonated with them to give them a reason to believe that the product worked for them*. (Designer-5)

By using prototypes, one designer was able to identify which mix of features was the most preferred by target consumers:

> *We looked at the percentage of consumers who bought into the idea of those who were not interested in it at all or the others who that set in the middle and were willing to try it but had recommendations on how we can do this better. And then based on that we were able to lock the prototype that worked best*. (Designer-11)

Another designer reminded us that leveraging historical insights into consumers are still valuable when discussing a successful project which brought incremental sales:

> *I also looked at quals done many years ago. In these studies, I heard consumers speak about why they buy firming creams and I knew how important stretch mark benefits were.* (Designer-3)

However, tracking only sales data to retrospect the success of innovations are not adequate:

> *Sales being good is a good indication but if sales are not good, it does not automatically mean that you are not meeting consumer needs.* (Designer-12)

Where interviewees did engage with consumers, traditional methods like attribute testing with digital product concepts were used:

> *You also look if it is meeting attributes important for the brand. We also ask a small set of consumers about what they experience about the brand or product*. (Designer-8)

However, when looking at the outlying theme, 'decisions', a key finding is that designers may sometimes feel that they themselves stand proxy for low-income consumers, as indicated by this excerpt which is a main contributor to the concept the theme 'decisions':

> *Sometimes we do not test it with the consumer. We look at designs and tested them ourselves and saw if they work or not and made decisions from that*. (Designer-10)

Based on the distance from the core themes and judging by the colour of the circle (a cool colour), it can be expected that this is not a common occurrence.

In summary, designers are more connected to low-income consumers to understand their needs through using established data sources in their organisation than using methods like group interviews, ethnography and engaging with stakeholders. Most designers still prioritised competitor data as a starting point before understanding the pain points of consumers. However, these designers admitted that the approach to design was changing with greater focus on identifying pain points and consumers' needs at the onset and by leveraging rapid prototyping capabilities. Regardless of where they started, interviewees still eventually came back to understanding the needs of consumers and built products to test with consumers to see if these met their needs. To do this they interviewed consumers and leveraged research that was previously done. They also used these approaches to identify the essential needs of a consumer from a product and thus limit features to improve affordability.

It was clear that some human-centred design mind-sets like 'make it', which is about working with prototyping, and 'empathy' and, to a lesser degree, iteration came alive in these designers'

practise. Certain human-centred design methods were also applied, such as prototyping and monitoring and evaluating. Since the process is not truly iterative, short feedback loops are not created to determine early on if a product meets a consumer's needs. Designers use sales as an indication of whether their launch is meeting the needs of the consumers they design for and to affirm if their design practices do support the development of products for their target market. When looking at research question 3b, it is clear that there are many products available on shelves which do meet the needs of low-income consumers. Some of these products may have even been designed by the designers interviewed. As to whether there is room for further improvements in acceptability one should turn to the unmet needs of low-income consumers. One example if the lack of products related to health and wellbeing for these consumers.

**R4c: How might Human-Centred Design application in CPG companies enhance the availability of product design for low-income consumers?**

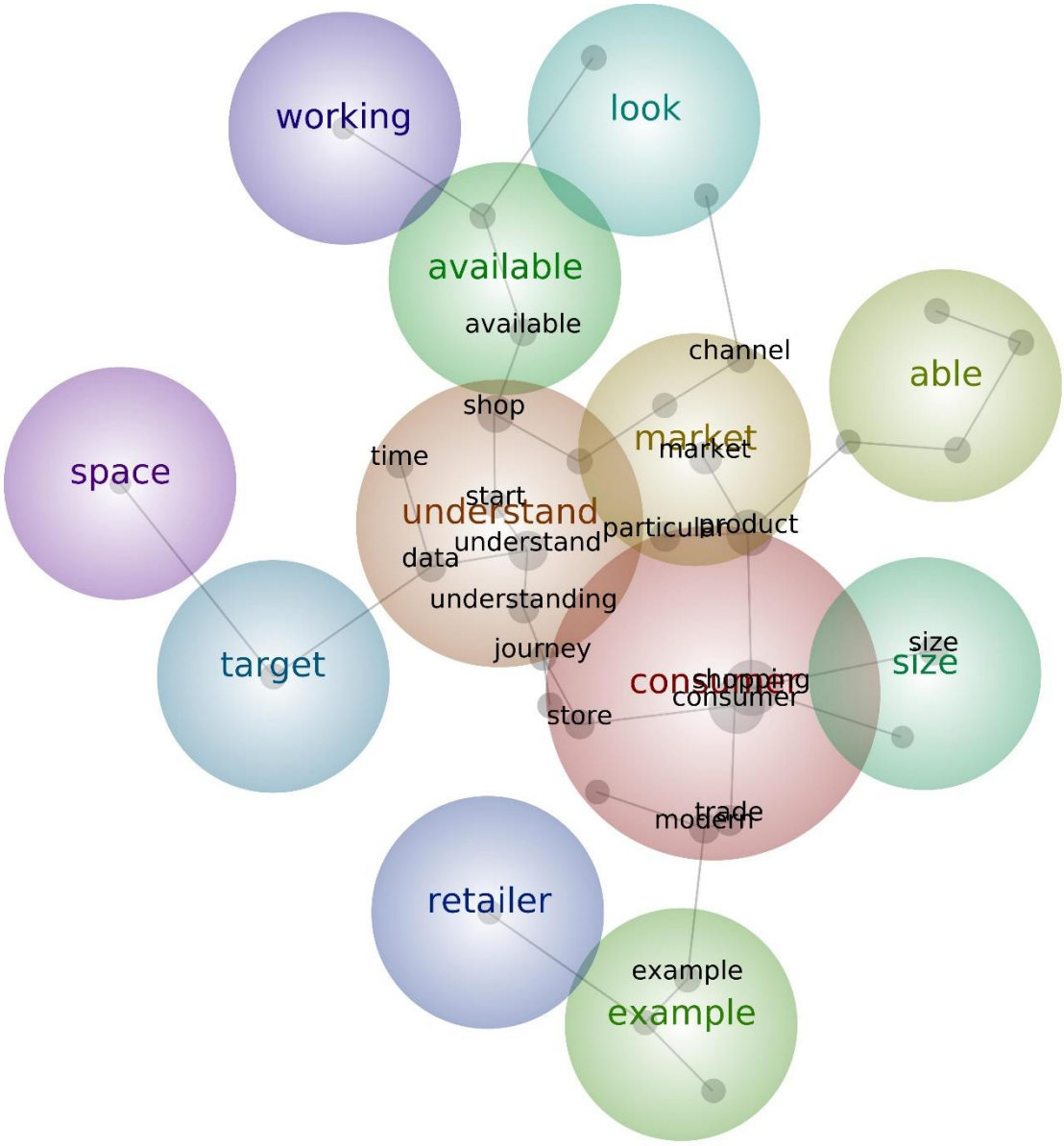


Figure 12: Leximancer map of how human-centred design application in CPG companies might enhance the availability of product design for low-income consumers

'Consumer', 'understand' and 'market' are the three key themes which provide insights into how human-centred design application can enhance the availability of products for low-income consumers. These themes are indicated by warm colours in Figure 12, meaning that they are

the most relevant themes to the research question and the size circles indicate that there was a high frequency of mention of the concepts which gave rise to the theme. This is why ‘market’ is a noticeably smaller circle than the circles for ‘consumer’ and ‘understand’ in Figure 11.

The theme ‘consumer’ is shaped by the concepts ‘consumer’, ‘shopping’, ‘product’, ‘modern’, ‘trade’ and ‘store’. The concepts ‘consumer’ and ‘shopping’ appear in close proximity to each other as indicated by the dots in Figure 11 within the red circle. The concept ‘store’ is connected to ‘consumer’ and together these concepts portray to us the importance of understanding the stores which consumers are currently shopping at to be able to place products designed for low-income consumers into these stores:

> *So, in the low-income consumer base it is important to partner with or choose a channel where they are already shopping*. (Designer-12)

The concepts ‘modern’ and ‘trade’ are also in close proximity to each other, implying that they were frequently mentioned together, with ‘trade’ being connected to the concept ‘consumer’. From the excerpts from designers it is clear that designers are aware that modern trade stores like Pick n Pay and Shoprite are present in areas where low-income consumers shop:

> *Let's take South Africa as an example: just because consumers are classified as LSM-B [Living Standard Measure B], it doesn't necessarily mean that they're not shopping at the Pick n Pay, or Checkers based on where they actually live. So, if you if you live in the in the township like Soweto you have a lot of access to your modern trade types of supermarket stores than you would expect*. (Designer-1)

However, in order to design for availability, designers also need to consider that products will not only appear in modern trade stores, which they feel more comfortable with, but they also need to consider informal trade channels like spaza stores:

> *Now you start thinking about how will this product look on shelf. In modern trade is easier like the feasibility should be very good, but now this is the product that is going to a spaza shop*. (Designer-4)

Working with spaza shop owners also offers an opportunity to glean direct feedback about an owner’s shopper base. Therefore designers often mentioned that they seek information about

what products work for their shoppers, allowing them to edit their offering through this feedback:

> *You can see if a consumer is picking your product more, and if you speak to store owners you can understand what a consumer did not like about the product and what they complained about.* (Designer-7)
>
> And:
>
> *We have data we can use*. (Designer-8)

Designers understand the role that a large modern trade store plays in the shopping cadence of low-income consumers and the experience they seek by treating the trip as an outing:

> *Again, it's all the research that has been done right. So in the current example we understand the trend of this target low-income consumer in that once a month they will go to this big store because it's an occasion for them, going go to a bigger store and do a monthly shopping and it's an occasion, they dress up and go*. (Designer-7)

Access to data which shows trends in shopping behaviour can help designers to identify new channels to develop products to serve low-income consumers:

> *You have access to data to see where products are growing, in which channels. That is where you can launch because consumers are shopping in that space*. (Designer-12)

Another designer spoke about the importance of leveraging the data at hand to make design choices:

> *And that's how I think you would understand the right retailer for a product. It really does start with the data and unpacking that data and deaveraging that data and then really understanding the consumer journey in my experience*. (Designer-1)

The theme 'consumer' overlaps with the theme 'size' which is constructed from the concept 'size'. Input from designers reveals that choosing the right size of a product for a channel where a low-income consumer shops is important to making a product available to be purchased by the consumer. Immersing oneself into the realities of said consumers helps to reveal opportunities to design better:

> *In an example I worked on, the bottle size of something is quite large and therefore the prices are quite high so cannot be afforded easily by low-income consumers and sometimes not sold in retailers the low-income consumer has access to. I identified these insights by doing emersions with consumers and did a lot of trade visits across both modern trade and traditional trade, especially the urban areas and we looked at what products were being marketed and were being sold*. (Designer-5)

As seen in the excerpt choosing the right package size is important to be consumer relevant and can reduce the success of the product if not matched to the consumer's access to stores and affordability to their budget.

The second key theme is 'understand' which is built from the following key concepts: 'understand', 'shop', 'understanding', 'data', 'start' and 'journey. The theme deals with the work that designers do to understand how low-income consumers shop and where they shop. Through using tools like consumer journey mapping and sales data, designers are able to get closer to what retail offerings work for their consumers.

The concept 'journey', is close to the perimeter of the theme 'consumer'. This reflects the appreciation from designers to spend time to understand the consumer journey in order to design products that match the needs of a consumer along the consumer journey, which refers to the steps the consumer takes in being exposed to a product, purchasing it, using it and ultimately disposing of it. This information allows designers to design products which work in different channels for the different moments that bring low-income consumers to these channels. 'Journey' is closely connected to 'understanding' which is in turn connected to 'understand'. Showing the importance the consumer journey in understanding the parameters of low-income consumers in their shopping requirements and limitations. One designer mentioned key considerations on this topic:

> *Products also have differing offers in a spaza versus a wholesaler versus a modern trade store. With the understanding of the consumer journey you also try to understand if they shop monthly or weekly and if they shop monthly, what are they shopping for*? (Designer-1)

The use of a consumer journey as a tool to better understand how to make the right products available for low-income consumers is shared by other designers too:

> *Creating a consumer journey where we then begin to understand essentially her shopping behaviours. So once we've identified, let's say from macro data we say actually this is an LSM-A [Living Standard Measure A] consumer, then unpacking that and saying, well, LSM means that their average income is X, therefore their lifestyle is X. They are likely to live in X, and therefore the likely to shop in this particular shops and you do the same as you go lower and lower the income bracket and then you start to determine little behaviours about where they shop, and deaverage*. (Designer-10)

The concepts 'start' and 'data' are both connected to 'understand' and reflect that an important starting point for many designers is to look at data about retailers and make decisions about ranges to develop using this data:

> *And that's how I think you would understand the right retailer for a product. it really does start with the data and unpacking that data and deaveraging that data and then really understanding the consumer journey in my experience*. (Designer-1)

With an overlap on both 'consumer' and 'understand', the theme 'market', is built from three key concepts, 'market', 'particular' and 'channel'. The theme details the work that designers do to understand particular markets and channels to learn about the requirements low-income consumers have in the products they buy to enable availability of these products. These endeavours provide insights into segments that serve low-income consumer best. Preferred product sizes, and fast-moving variants was mentioned by a designer relating to how they build their understanding of particular markets and channels.

> *We partner with the Sales team, who will know the channels that have the biggest segment, what sells the fastest, what are the margins in that segment, what are the challenges and barriers to entry. I think mapping the market landscape per channel is important and making sure package sizes which are relevant are made available*. (Designer-9)

Selecting a range of channels to match the range of shops that consumers visit is key:

> *Products are not just about innovations but also about channel play. So, you need to understand the price point and understand the kind of product customers are looking for*. (Designer-6)

The closeness of the 'consumer' and 'market' themes show that designers prioritise developing an understanding of low-income consumers and the markets, competitors and channels they shop in to be able to make better choices in their design.

In summary, it is clear that designers are aware of the trade environments which low-income consumers shop in and ways in which they need to design products which fit into modern or traditional trade environments for low-income consumers. This consideration could be about the way the pack will sit on the shelf, the price, and the range of variants or sizes for the retailer to sell to the consumers. Designers are also aware of the information that related stakeholders like shop owners have relating to their customer base. Designers speak to owners to get feedback about their newly launched ranges to identify changes needed to enhance the range. With modern trade stores, data are digitally available to provide insights into shopping behaviours and surface trends for product development.

This active engagement with trade stakeholders enhances designers' knowledge of constraints and opportunities for product design and allows them to build products for low-income consumers which resonate with them. When looking at the feedback from consumers (R3c) about how their needs of availability were met, it is understandable the satisfaction they experienced when tied into the strong network of inputs between designers and retailers.

**R4d: How might Human-Centred Design application in CPG companies enhance the awareness of product design for low-income consumers?**

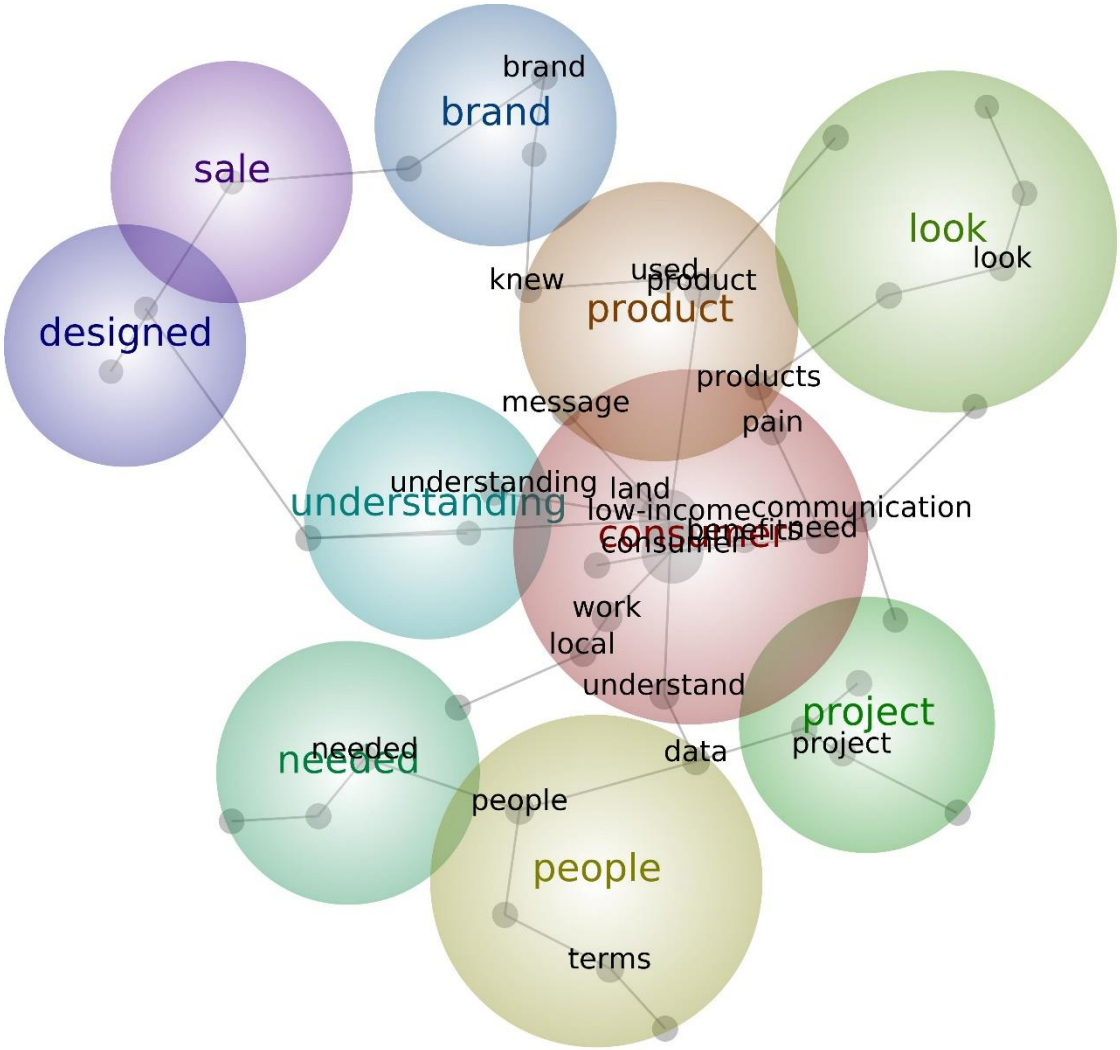


Figure 13: Leximancer map of how human-centred design application in CPG companies might enhance the awareness of product design for low-income consumers

The three key themes are ‘consumer’, ‘product’ and ‘people’ based on these being the warmest colours and large circles in Figure 13. These key themes are closely related to themes with lower relevance to the research question such as ‘project’ and ‘understanding’.

The first key theme is ‘consumer’ which is constituted from several concepts. The main concepts are shown as larger dots in Figure 13, these being ‘consumer’, ‘low-income’, ‘need’, ‘communication’, ‘work’, ‘understand’, ‘land’, ‘pain’, ‘benefits’ and ‘local’. Since there is a large number of key concepts in this theme it is discussed in detail starting with the relationship between the concepts ‘consumer’ and ‘low-income’. The dots which represent these concepts are found closely next to each other in Figure 13, within the red circle. This indicates that designers’ responses mentioned ‘low-income’ when speaking about consumers, therefore indicating that the designers specifically referred to low-income consumers when providing insights into how human-centred design can be used to enhance awareness of products. ‘Low-income’ and ‘consumer’ are connected in close proximity to the other concepts mentioned above since these terms appear frequently together. One designer spoke about needing to conduct research with target consumers to better understand what types of communication would work for consumers and when and where to show this communication asset:

> *If there is nothing existing, we need to do research to understand what will resonate with the consumers and create the communication assets based on what we find from the consumers. We then work with media teams to understand which channels will work for low-income consumer, based on the best time to air*. (Designer-8)

Designers are aware that they need to tie the communication back to the pain points described in R4b, which are obtained by speaking to consumers. By showing how the proposition will deliver benefits in response to the pain points, designers believe that the communication will resonate with the targeted low-income consumer:

> *We need to show them the benefits. But again, it all comes back to the pain points*. (Designer-7)

Another designer used an example of using the understanding of a pain point to drive deeper resonance with a consumer through a demonstration at a roadshow:

> *It showed that the product was being less sticky and preventing dust from sticking to your legs and body. Since this was a key pain point that you know we tackled for consumer, we used this in our launch activation and on communication roadshows to land the benefit of the product*. (Designer-2)

This also entrenched an understanding how different media can be used to reach low-income consumers, for example, roadshows.

Designers pay particular attention to ensuring that the communication they develop resonates with low-income consumers and referred to ensuring that the message of the asset landed with the consumer, which gave rise to the concept ‘land’:

> *We also work to identify how our products deliver against that need and these teams work on finding out how we communicate that need in a way that resonates with the consumer to really land the message with the consumer that articulates the consumer pain point*. (Designer-11)

Apart from identifying the pain points for a low-income consumer, designers also focus on limited features that they would have designed for when asked about acceptability in R4b. These limited features allow the price point to be kept low but are important for the consumers in mind. Designers also spoke about how empathy is key in developing the communication messages to build an asset that can resonate due to the closeness to the consumer. An excerpt from an interview captures these points well:

> *Yes, you can get all the other benefits but if you have the non-negotiables then it becomes easier to engage or communicate with the consumer. I will still go back to empathy because if someone comes with the mind-set of trying to understand what someone needs, then you are trying to find what the consumer needs and not telling them something will be good for them without knowing*. (Designer-4)

The theme ‘consumer’ has an overlap with the theme ‘understanding’, which is largely built from the concept ‘understanding’. This concept highlights the important to build a strong understanding about the consumer base you are aiming to speak to. In one example, a designer spoke about needing to learn about meals that she was not familiar with in order to build communication which included how a stock cube could be used in her targeted consumers favourite meals:

> *We knew we were on the right path. I guess then it was a matter of understanding what meals or dishes we could promote to land this more nutritious stock cube*. (Designer-1)

The second key theme is ‘product’ which is generated from the concepts ‘product’, ‘used’, ‘knew’ and ‘products’. The responses from designers which led to this theme show us tactics that are used to speak up the product or products being sold to target consumers, in this case low-income consumers. Designers may leverage language to drive more understanding with local consumers and may use demonstrative mechanics to convince consumers of product performance. These two following quotes reflect excerpts supporting this:

> *By looking at the product developed which was less sticky, we used demonstrations to show how much less sticky our product was.* (Designer-2)
>
> And:
>
> *We knew that local languages and English were important, so we used both.* (Designer-5)

The third key theme is ‘people’ which is formed from the two main concepts ‘people’ and ‘data’. Similar to R4a, R4b and R4c the use of data about consumers’ habits and buying behaviour was a key asset for designers. They often used data to drive decisions but when it came to building communication for awareness, designers had a strong preference to combine data with people engagement to check if they were on the right track:

> *And from that data we understood that actually, statistically, these are the top dishes and this is the most affordable top dish that we could go after, and one that would pair perfectly for the education job that we needed to do. That's how we got to it. And then in terms of messaging, I think really working with local people, within the company helps*. (Designer-1)

A designer spoke about using radio and social media to drive a richer conversation on a new launch and understand how people were experiencing the new communication for the launch:

> *We asked the radio stations to do a feedback or Q&A, either on their digital platform or even live on radio and people were really absorbed by it. We were able to ask listeners what they were taking out of it and we were able to see if it was working and was understood*. (Designer-1)

Interestingly, the importance of sampling to drive trial was a key tactic for activating new launches, although this was not reflected by consumers in their interviews in R3d:

> *And most importantly invest in driving sampling. If you believe in the quality of your product then get it to as many people as possible to try it*. (Designer-12)

In summary, designers made concerted efforts to understand how best to communicate product messages to low-income consumers. This happened through direct engagement or via digital platforms. Designers were aware of the need to link communication messages back to the original pain points that they gleaned from consumers earlier in the process. Since designers have focussed on limited features of the products, to maintain affordability, the communication is focussed on raising awareness of these key features. Designing the communication requires empathy from the designers to be able to put themselves in the shoes of the target consumer to identify what is the right messaging to resonate with the consumer. Designers are considerate of the various elements like the language of communication and medium of communication to reach their target consumers in a meaningful way.

When comparing findings from what consumers said in R3d, it was clear that the practices applied by designers to understand the low-income consumer and their focus on empathy would likely resonate with consumers since the adverts shown to consumers lived on with them for many years. Tactics such as using promotions in store and word of mouth is underleveraged.

# 5. DISCUSSION

This section discusses the results in relation to the literature review in three parts. The first part reviews the motivations and challenges experienced by product designers when developing products for low-income consumers. The second part discusses how product designers employ human-design-centred practices to design products for low-income consumers in relation to affordability, acceptability, availability, and awareness. The third part discusses how consumer products meet the needs of low-income consumers in the contexts of affordability, acceptability, availability, and awareness.

At the outset, as indicated in Section 1.1.1., the impact of the COVID-19 pandemic has been devastating for the poor, increasing the poverty rate and pulling over 60 million people world-wide back into poverty (The World Bank, 2021). The impact of this pandemic also surfaced in the findings in this research in three ways. However, none of these findings were feedback from low-income consumers about COVID-19 impacting their spending power. Firstly, designers were affected by the pandemic by experiencing a reduced ability to engage with consumers face to face due to heavy lockdowns or the risk of infection when congregating. This was overcome by increasing the use of digital tools to conduct testing virtually. Secondly, for consumers, COVID-19 made them more aware of the needs for sanitising and increased their purchase of cleaning and disinfecting products. Thirdly and most relevant for designers, the pandemic made them more cognisant of the need to design products for those with less disposable income, as a result of the economic impact of COVID-19, lockdowns and job losses.

## 5.1. Motivations and challenges for designing products for low-income consumers

In Section 1.1.4, it was discussed that the development of products in EMDCs, do more than contribute to market activity. NPD can provide solutions to social, resource and physical challenges, allowing businesses to do good and make profits (Prahalad, 2004; Viswanathan & Sridharan, 2012). In interviewing designers, the potential to have socially positive outcomes and make profits both emerged as key personal motivations amongst designers. Interviewed

designers found purpose in their work designing products for low-income consumers when they knew that the products would bring real value to **health and wellbeing** in the lives of the consumers they served. Designers were also motivated to build a product that brought financial benefit to their organisations. Tinsley and Agapitova (2017), argue that innovations needed to be evaluated against the needs of low-income consumers and business models adjusted to be affordable to these consumers. Consistent with the literature, designers paid special attention in their development process to create **products which could be afforded by low-income consumers** and this served as another motivation for designers to serve this group of consumers.

The motivation to enhance social aspects through product development was consistent across interviewees and is in alignment with the growing trend that Lasky (2013) refers to as social impact design. Social impact design is not a particular career path but a direction which encourages practitioners of design to drive social benefit in all their interventions. Aligned to the spirit of social impact design, interviewees, who were trained in various fields from marketing to science, saw themselves as part of the journey to designing a product to be inclusive of low-income consumers **to drive social benefit**. Continuing to create opportunities to serve consumers through purposeful work should be key for managers and designers.

Designers found that a key challenge in designing products for low-income consumers was the need to deliver good quality at a price that consumers could afford and thereby delivering the value which consumers sought. As mentioned by Tinsley and Agapitova (2017) in the Literature Review of this study, a cheaper price tag may reduce the quality of the product and a longer lasting product may be preferred. This was also consistent with the findings of Simpson and Lappeman (2017), who said that low-income consumers strive to buy well-known brands since they were risk averse with their limited resources and even passed by cheaper products if they had not tried it before. The same scholars also highlight that consumers would eventually trade off acceptability for affordability as resources became limited. This was also seen in this research, when a designer mentioned that she was aware of what she called ‘hell week’ when consumers were very short on cash, making **price** an important consideration in the development of products.

In order to manage cost and price, another common challenge experienced by designers was choosing which **features** in a product should be dropped to manage costs and thus pricing. Ultimately, designers stayed close to consumers and worked to understand what the main needs were and used this to select the features (and hence costs) that were essential for the product. These findings align with what Gudlavalleti et al., (2013) and Prahalad (2006) recommend in Section 2.5 when developing products for the BoP. By only focussing on the elements which matter to the low-income consumer, designers could better develop products for these consumers.

## 5.2. How product designers employ Human-Centred Design practices to design products for low-income consumers in relation to affordability, acceptability, availability and awareness

### Acceptability

As discussed in the literature presented, human-centred design requires multi-level engagement with people, ultimately aiming to seek meaning and make sense (Giacomin, 2014). By product designers clearly identifying the meaning behind why a product is needed by a consumer, these designers are able to increase the likelihood of commercial success or social impact of their market offering (Giacomin, 2014). The concept of customer centricity amongst designers who design products for low-income consumers was evident from the research. Designers ensured that consumers and consumers' pain points were front and centre when developing products, thus identifying the meaning behind their endeavours. While empathy was mentioned by interviewees, the frequency was low and not entrenched in their day-to-day working, despite it being a foundational element of human-centred design. At its core, human-centred design is a design approach to problem solving driven by empathy for the user and related stakeholders (IDEO.org, 2014). Yet interviewees were found to be increasing their awareness of human-centred design – as shown by the increasing awareness of empathy and prototyping with consumers. However, from the results it is clear that product design is seen as 'a challenge' to designers when developing products for low-income consumers. In an example, designers spoke about the need to understand how to design a pack so that it could be visible on the shop

shelf of a spaza owner and regarded this as a challenge. Considering that discussions with stakeholders, empathy and iterative testing could effectively resolve these challenges, it is likely a symptom of the lack of consistent and holistic application of human-centred design by designers. This lack of holism and consistency in the application of human-centred design has the potential to reduce the commercial success of a business since understanding the needs of low-income consumers is imperative in building products which meet their unique needs and limitations. Designers should adopt one of the many human-centred design toolkits available, mentioned in Section 2.2 which will guide practitioners on various methods they can apply through the different stages of product development. This will ensure that practitioners will have more consistent approaches to their human-centred design practice.

Designers highlighted that they experienced the challenge of needing to consider the low availability of income for consumers they design for. They also considered the impact of the COVID-19 pandemic on earning when designing products for low-income consumers. The consideration of impact of such inflationary pressures is no surprise and was discussed by Kelly (2016) in research which observed that the poor experienced a greater level of inflation on their food basket compared to annualised inflation. Respondent consumers, however, did not sound out a trend of not being able to afford their preferred items. Instead interviewees acknowledged that prices did increase at times, and they bought cheaper brands or smaller package sizes to obtain their preferred products. Such tactics were called out in the research by Kelly (2016). With designers applying human-centred design principles, they are able to keep close to low-income consumers' sensitivity to factors which affect earning, as was the case with the COVID-19 pandemic. Using this knowledge they should better understand the new needs of consumers and what trade-offs they will make to continue to shop trusted and reliable brands.

The research revealed that interviewed designers leveraged some human-centred design methods, namely ethnography and one-on-one interviews. Human-centred design methods were most frequently carried out when designers tried to understand the needs of consumers, or in others words when trying to improve the **acceptability** of products. However even then, the results of this study showed a low occurrence of empathy amongst designers. Empathy was referred to as a foundational element in human-centred design as practiced by d.School (2018). It can therefore be assumed that it is important in supporting the development of products for

low-income consumers. Designers also leverage prototypes in their testing with consumers, a step in the process which Stanford's d.school recommends. However, this research found that designers were not prototyping early enough in the design process to build iterations into their process. Iteration would help to test the product and get feedback early, while improving the product to build a greater match to the needs of the low-income consumer (d.school, 2018).

**Availability**

Hamilton and Catterall (2005) highlight that low-income consumers were often presented with limited variety of products to choose from and that these products were of lower quality which could have negative health outcomes for these consumers in the long term. A reason for the limited variety could be the trade-off existing products for new products that designer respondents spoke about. They said that a challenge they experienced when designing products for low-income consumers was the limitation of shelf space in informal trade and modern environments. Despite the trade-off leading to maintaining the variety low, when interviewing low-income consumers, the reduced variety was not seen as a negative. Therefore, disagreeing with the literature mentioned. Consumers where cognisant of a narrow portfolio of brands but were often searching for a particular well-known brand to purchase (often trusted national brands). If these were not available or too expensive, they traded down to a dealer-owned brand for example. Consumers did not see the limited range as a negative since it included the brands they wanted to consider in their purchase journey. Additionally, low-income consumers were conscious of the quality of products they purchased and worked hard to remain loyal to trusted quality brands. Therefore, it seems that consumer interviewees were not being adversely affected by the limited range available to them. It is important that designers clearly understand which brands are deemed as reliable and trusted and that they appear on the shelves where low-income consumers shop. Failing to do so would reduce confidence in the reduced range. This is where human-centred design is key, as it will allow designers to stay close to the consumer and understand where they shop and what brands they expect to see on those shop shelves.

When discussing how human-centred design might enhance the **availability** of products for low-income consumers, it is important to understand how products are designed to meet the needs of low-income consumers along their user journey. Designers were aware of how

consumers shopped and their need to use both formal and informal trade environments and how to design for each. Designers made design choices such as identifying the way the pack will sit on the shelf, the price of the pack, the range of variants or sizes for the retailer to sell to the consumers. The differences in design that is needed for each of these marketplaces was explored by Lappeman et al., (2019). In their research, the investigators found that consideration of the user journey for low-income consumers was needed, to be able to develop products which went through the established wholesaler and informal seller network. Consistent with the findings from Lappeman et al., (2019), respondent designers made efforts to speak to shop-owners, representing stakeholders in the purchase journey, to glean feedback about consumers preferences and responses to new launches. In this way, products which are desired by low-income consumers, and which better meet their needs become available on the shelves where they shop. It is therefore recommended that designers work together internally to build products which meet the needs of low-income consumers, while also considering the constraints and limitations of the retail environments where they shop.

**Affordability**

When it comes to leveraging human-centred design to create products to meet the needs of **affordability**, a key activity that designers engaged in was to design for needs and to remove unnecessary features. This was discussed earlier in this section and is an important activity done by practitioners to manage down costs of products and design a product which meets the needs of **affordability** for low-income consumers. Interviewed designers showed a consumer-centric mind-set when designing options for **affordability** by decreasing the package size to allow consumers to be able to afford products they were loyal to, when they were low on cash.

Designers could do more to engage with consumers on the topic of **affordability**. Often institutionalised data were used which could be out of date since this is not data obtained via direct consumer engagement. Methods such as one-on-one interviews, could build a deeper understanding, collaboratively build pricing scenarios, and test these scenarios with consumers. Designers did rely on speaking to stakeholders, like shop owners, after the launch of a range to understand feedback around **affordability**. This was done since shop owners directly engaged with consumers and held this information. However, since deep, collaborative engagement was

not conducted ahead of the launch, the post-launch feedback may be less effective or take longer to action. Thus limiting the agility in response to serving lower income consumers in relation to **affordability**. A reminder from Hippel (2005) is important to keep in mind here that the major reason for the commercial failure of new product innovations is the lack of information about users' needs. Therefore, designers should take heed of this when establishing a basis of **affordability** for consumers.

**Awareness**

When it comes to how human-centred design might enhance the **awareness** of products for low-income consumers, responses from designers made it clear that advertising was intentionally designed for targeted consumers. As discussed earlier in this section, product designers prioritise key features in products which match the key needs of low-income consumers. Designers who form part of the marketing team, design communication to speak up these prioritised features. As mentioned in the literature review, Anderson & Billou (2007) mention that they observed low-income consumers had limited access to media and thus limiting their **awareness** of new innovations. While a limitation in access to media was mentioned in the literature review, this was not a concern for designers who were interviewed. These designers know that low-income consumers whom they designed communication for, had access to traditional media as well as digital media. The time difference between the observances from Anderson & Billou (2007) might be a significant reason for the greater presence of devices allowing access to traditional and digital media.

Designers also design communication with empathy for the low-income consumer, by engaging with them through research activities like testing concepts with consumers to gain feedback on the proposition of the communication. These designers also communicated in local vernacular to ensure the message lands more authentically and attributed the success of marketing campaigns to the use of local language. It can be assumed that by communicating in a language which a consumer understands that these designers are being more human centric and by looking at the success of campaigns mentioned by designers, one can assume that the use of local vernacular also enhances the acceptance of the message in this consumer group. Prahalad (2006), found that one of the elements of success of a campaign run for Lifebuoy soap, was that

messaging was in a local language in India. Therefore, the findings of this study concur with Prahalad's suggestion that the local vernacular enhances the acceptance of a message in this consumer group. This further highlights an important design criterium that practitioners are recommended to keep in mind when designing communication, that is to leverage local language when communicating with low-income consumers.

The depth of resonance of the advertising created by these designers is significant. From feedback from respondent consumers, and discussed in further detail in Section 5.3, some advertising can be remembered for years by this consumer group. The advertising forms a large part of why specific products were selected by this consumer group. Even if the interviewed consumer did not originally see the advertisement, it was this that influences their friends or family to initially purchase the product, and this product use became a habit passed down from previous generations.

The findings of this study suggest that designers should be encouraged to make more use of instore promotions and leveraging word of mouth in their attempts at raising **awareness** of products with low-income consumers. From the feedback from respondent consumers, the results indicated that these consumers relied on products recommendations from trusted friends and family and often cited this as their reason for purchasing a particular product, which they became loyal to. Similarly, consumers articulated that they also relied on instore promotions to sway them from purchasing their regular brand, if it was out of stock or too expensive for that month. In some cases, these new purchases became part of a set of alternate brands that they would regularly purchase. It was clear from the interviews that communication, particularly by word of mouth or instore, played an important role in consumers' decisions about purchase. However, these two particular methods of raising **awareness** of a launch was not leveraged by respondent designers. This poses a question about whether enough human-centred design efforts were being made to look into the methods of **awareness** that could complement the traditional and digital routes being employed by designers.

### 5.3. How do products currently meet consumer needs among low-income consumers based on affordability, acceptability, availability and awareness in the 4As framework

**Affordability**

Scholars such as Anderson and Bilou (2007), Darley and Johnson (1985) and Prahalad and Hart (2002) elaborate on the economic, physical and social challenges experienced by low-income consumers and how this results in them being underserved in the provision of consumer products. Anderson and Bilou (2007) particularly called out the higher prices the poor pay due to the additional cost of transporting goods to them in rural areas, and that this cost is unaffordable due to their low earnings. In the findings in this research, respondents were not from rural areas but rather from urban low-income areas. With these interviewees it was found that prices of essential goods were mostly *affordable* and *accessible* from nearby well-known retailers. They were also equipped with tactics to meet their needs of **affordability**, such as being able to purchase smaller product sizes which are more affordable than the regular size they usually purchase, buying on price promotions or buying dealer-owned brands which are cheaper than national brands. The findings of this research concurred with the findings by Anderson and Bilou (2007), where it was seen that often two thirds of low-income consumers' budgets were spent on food items and other products such as hygiene products were neglected. Possibly supporting Anderson and Bilou's findings, the feedback from respondent consumers showed that they mainly cited products for home and fabric cleaning and food products were cited as purchases which met their needs. This could mean that personal hygiene products did not often meet the needs of low-income consumers due to **affordability**, or even an interrelation with **affordability**, **availability** or **awareness**. This could pose an opportunity for designers to holistically design for hygiene products to be accessible to low-income consumers. Applying human-centred design could lower the barrier of knowledge needed to better design for this consumer group.

Interviewed consumers were also underserved in categories that were not deemed essential such as health food and breakfast cereals. These findings are consistent with observations from Hamilton & Catterall (2005) who determined that low-income consumers' reduced variety had a direct impact on their access to quality foods, leading to long-term negative health outcomes. Lock (2020) further mentions that better health and wellbeing were key to ending poverty. Therefore, the lack of access to products which empower individuals with healthy choices, present an opportunity for designers to identify ways to make health products, available at an affordable price, where this consumer group shops. This may be a route to support the improvement of health outcomes in this group.

Consumers were also not able to meet their needs of **affordability** in the personal care category when needing to buy products for family use, which typically required large package sizes, but the regular package size was priced out of reach and the smaller package size was too small for family use. This meant that the typical tactic applied by designers to reduce the package sizes may not be viable for these consumers. While promotional activity may make a large package size, which is adequate for family use, affordable for the promotional period, it might not drive repeated use. This presents an opportunity for designers to develop solutions which are deemed affordable for ongoing purchase but in the package sizes which consumers see as large enough for family use. One way to execute this would be to leverage trusted brands which are synonymous with value and ensure their offerings range across personal care products.

While Kelly (2016) found that the poor experience a greater level of inflation on their food basket compared to annualised inflation, this was not alluded to by interviewees. The current research did not compare income levels to corroborate Kelly's findings. However, respondent consumers did experience price inflation. Despite the inflation in South Africa, interviewed consumers were able to afford the essential products they needed. Interviewees acknowledged that prices did increase at times, and in such cases, they bought cheaper brands or smaller package sizes to obtain their preferred products. This finding shows that consumers are affected by price increases and make decisions to change their regular routine to accommodate these increases. However, either due to the essential nature of the products or the impact being bearable enough, they are not excluded from the product category altogether. Low-income consumers mentioned that they would look at cheaper brands to counteract the impact of

increasing prices. The fact that consumers are not completely price elastic, is important for designers to consider in designing products. Designers should look at ways of introducing range extensions of trusted affordable brands in their own stable to accommodate when consumers cannot afford the regular product they buy. Another tactic, which was mentioned previously was to ensure that a range of package sizes are available to allow low-income consumers to shop based on what they can afford. A final recommendation would be for designers to consider new technologies and tactics which would enable continuity of brand loyalty while accommodating the variation of **affordability** for low-income consumers. An example of this would be to install refill stations in informal stores to allow consumers to buy regular products in the exact amount they can afford for that visit.

There is strong connection between designers' activities to prioritise features of products to design for **affordability**, and the benefits which consumers are searching for. For example, a basic brand of washing powder, such as Omo, was frequently mentioned by consumers and the basic need that they required was good cleaning performance. In Figure 14, one can see that a more premium brand, Skip, does more than deliver cleaning performance. The Skip pack claims to also prevent the ageing of clothes. This affirms the designers' choices to identify priority features or benefits that matter to low-income consumers and to develop products with these in mind. Human-centred design is key to identifying the needs and consumer pain points to identify which features or benefits that should be prioritised. Leveraging tools in human-centred design toolkits to test prototypes will enable designs to check if their chosen features resonate with the chosen consumer group. In this way, designers will not waste cost on features which do not matter, thus maximising benefit to meet the needs of affordability for consumers.

Figure 14: Images of two different brands of washing detergent. On the left is Omo, which is a popular affordable brand. On the right is a premium brand. Source: https://www.checkers.co.za.

**Acceptability**

In Section 2.3, Gudlavalleti et al., (2013) and Lemoine and Bennett, (2014) advocate for products to be developed to deliver appropriate value to low-income consumers. These scholars remind us that emerging and developing markets are often characterised by volatility, uncertainty, complexity and ambiguity and that consumers in these markets struggle with costs associated with products, and that a key way to win with these consumers is to understand the real needs of consumers and deliver to these. In the current study, respondent consumers' products were found to mostly meet the needs of **acceptability** for low-income consumers. This may speak to the efforts made by designers to understand the needs of low-income consumers, and to prioritise the features in products to achieve affordability as advised by Gudlavalleti et al., (2013). Invariably, interviewed consumers also spoke about how the bloom of fragrances from the products they used delighted them. It does seem that the prevalence of this feedback means that designers are aware of the impact of fragrance. Focussing on specifically the role of fragrance in consumers' motivations around a product, it is notable to identify that good fragrance is an important feature for low-income consumers. This does not differ from the advice from Gudlavalleti et al., (2013). It entrenches the importance to work with consumers and apply a human-centred approach when trying to understand the most important features for consumers. Designers should ensure their exploration stage covers the non-typical benefits such as those which come from sensorial stimulation, like colour and fragrance.

Consumers used the word ‘helps’ to describe the participative role the product plays in completing chores in their homes, indicating how these products were designed for them and met their needs of **acceptability**. One of the leading motivations of designers was to develop products which played a notable role in the lives of consumers and served them. This often motivated them to develop products with these consumers in mind, and through the description of how products ‘help’ consumers, it seems this intention is fulfilled. The finding also indicates that designers of the products which consumers spoke about did have a clear understanding of what value these consumers were looking for. It is key for designers to continue to apply human-centred approaches to identify what ‘helps’ really means to low-income consumers. By keeping the consumers’ benefit front and centre, designers are able to have real impact in the lives of consumers and deliver a value which is meaningful to the consumer group. In this way, human-centred design practices can be leveraged to meet the needs of **acceptability** in low-income consumer groups.

Germ protection, as a need, was often highlighted by respondent consumers in terms of household products. This could be explained by the COVID-19 virus reaching epidemic levels during the data collection phase of this study and raising the awareness and need for hygiene amongst respondents. Respondent designers did not specifically call out the increased need for disinfecting products. However, these designers did identify that COVID-19 was showing them how quickly consumer behaviour and needs change. The one specific need that designers gleaned was more affordability due to reduced incomes as a result of COVID-19 resulting in reduced economic activity and lower income earning. In response to this need, designers have investigated simplifying product features to be able to reduce costs.

**Availability**

In terms of **availability**, consumers needs were found to be met in many ways. Lappeman et al., (2019) identified that the unique planning of townships where lower-income consumers usually live, have previously reduced access to shops. After the apartheid regime, well-known retailers made efforts to get closer to low-income consumers by establishing new retail stores in these areas. A common example mentioned by most respondent consumers was Shoprite

which was within a convenient distance from their homes and largely met their needs of **availability**. This allowed this consumer group to shop more conveniently, through wider ranges and at more competitive prices. The findings of this study indicate that the efforts from retailers have paid off since they are within a very convenient distance from the consumers interviewed and have become preferred places to shop. These modern trade retail stores, such as Shoprite, also meet the needs of **availability** by the ranges they carry, which are within the set of options low-income consumer are looking for. Designers should continue to nurture the relationships with retailers like Shoprite and ensure that a portfolio that meets the various affordability needs of consumers can be delivered on shelf for low-income consumers. Designers should also ensure that they learn from these shop managers, getting closer to them to identity preferences, unmet needs and likes from consumers. A further opportunity for designers, albeit more linked to awareness, would be to leverage relationships with these retailers to bring alive the product experience in store. These could be sampling campaigns to introduce new products or having informational material on shelves or with brand ambassadors to educate consumers and strengthen loyalty.

What was surprisingly omitted from designer responses was the role that the positive sentiment created by retailers played. Designers have an opportunity to leverage the fact that consumers felt valued when they were treated well in stores. Some examples were the helpfulness of staff in the store and greeters at the entrance. Even being given a promotional pamphlet was valued by consumer respondents. Designers have an opportunity to better influence the consumers experience instore. The designer in a CPG environment may be limited in what can be done in a retailer environment. However, designers could consider interventions such as the use of brand ambassadors who can engage with consumers in prioritised categories to answer questions, make recommendations and inform consumers about products and usage. Designers could also map the journey of a shopper in the store and identify tactics to engage them at certain points along the journey.

**Awareness**

Anderson and Bilou (2007) also highlighted that low-income consumers experienced a lower **awareness** of new technology due to the lower access to media messages which communicates

the launch of new innovations. Probably due to the time difference between Anderson and Bilou's study and the current study, the observations of Anderson and Bilou differed in this case. With urban dwellers who were interviewed, they received up-to-date information due to the **availability** of television and print advertising in their residential areas. However, in this research the most effective forms of advertising happened through word of mouth from trusted friends or family members. This may be linked to the phenomenon that Lappeman (2017) observed where low-income consumers aimed to buy well-known brands to avoid the risk of buying a new product with their limited resources and not being able to replace it with a different choice should it turn out to be a mistake. Lapperman (2017) therefore indicates that low-income consumers are more affected by trust than affordability when making purchasing decisions, in order to avoid risk. Word-of-mouth communication being one reliable source of information that assists these consumers to avoid purchasing risk. Designers can leverage these means of influence more. When discussing campaigns to drive **awareness**, more interventions were traditional and involved advertisements or well-known influencers. However, designers could encourage individuals to share their experiences with products with friends and families, for example on social media. Using reviews, individuals can see honest views from people they know and trust.

With the wide availability of television among interviewees, TV ads played an important part in establishing confidence in the products purchased, even if the original purchase was influenced by word of mouth. When a consumer sees the advertisement for a brand already being purchased, they felt their choice was reaffirmed and that the brand is continuing to invest in the products, keeping it working the best compared to others. This form of advertising has an important role and designers should continue to leverage them, while knowing that only the truly iconic ads are remembered well and truly live on for years and years.

Trusting what a product claims is important to lower-income consumers and is why they often buy well-known and trusted brands (Lappeman et al., 2021). It was noted with interviewed consumers that they have been let down by products and never purchased them again. It is important that designers ensure that claims they make are realistic and will not be misunderstood by consumers to maintain loyalty amongst low-income consumers.

# 6. CONCLUSION

## 6.1. Research Aims and Summary of Main Findings

This study set out to understand the challenges experiences by low-income consumers related to consumer products while also aiming to explore the application of human-centred design in the development of these consumer products for this consumer group. The objective was to identify how human-centred design might unlock opportunities to design products which better meet the needs of low-income consumers through acceptability, affordability, availability and awareness in the South African market.

The overall research question in this study is: How might human-centred design practice in CPG companies influence the design of products to be more inclusive of low-income consumers. It is through the sub-questions that this study tackles the exploration of the application of human-centred design with the lens of the 4As framework. The below section summarised each sub-question which brings together our understanding of how human-centred design can help to better understand the low-income consumer and better design products for them. The sub-questions along with the main findings from each are indicated below.

**R1: What are the motivations and challenges facing product designers and developers in developing products for low-income consumers in South Africa?**

### Motivations

The main motivation of designers is serving low-income consumers by developing products which consumers believe in, are delighted by and bring value to their lives. Designers were motivated by believing that the products that they developed could bring value and health and wellbeing benefits to consumers. Furthermore, designers were motivated by knowing that the products they developed could be afforded by this consumer group. Commercial success of the products they developed also motivated designers.

**Challenges**

Despite being motivated to develop products for low-income consumers, designers also experienced the challenges with designing for this consumer group. Designers need to keep in mind many factors when designing for low-income consumers, including how their needs change across geographic areas and that their needs evolve quickly, making it difficult for designers to keep up. Another challenge was the limited financial resources of this consumer group which necessitated strict prioritisation or features.

**R2: How are Human-Centred Design practices embedded into the process that product designers currently follow to design products for low-income consumers?**

Some alignment to human-centred design practices are seen in how designers apply methods and mind-sets to understand the needs of pain points of consumers, such as interviews and immersions with consumers. However, often designers rely on institutional knowledge and do not iteratively test products, ideas, concepts directly with low-income consumers. Empathy, which is foundational to human-centred design saw a nascent appreciation among respondent designers, although not prevalent in their day-to-day working. Designers largely admitted that human-centred design was not practised regularly, but that some practices, like the interviews mentioned above, were present in their project working. Overall though, it seems that designers are not applying robust human-centred design methods or mind-sets when designing products for low-income consumers and this should be improved.

**R3: How do these products currently meet consumer needs among low-income consumers based on the 4As framework (affordability, acceptability, availability, and awareness)?**

Respondent consumers revealed that they were in agreement with the prices they found in store and that their needs of **affordability** were largely met when looking at a limited range of essential products.. However, when their needs of **affordability** were not met, they were able to employ tactics like switching to a smaller package size, shopping products on price

promotion or switching to more affordable dealer-owned brands. In some cases their needs of **affordability** were not met when trying to afford a pack large enough for their family to use. Needs of **affordability** were also not met when consumers shopped out of basic products, such as trying to buy breakfast cereals.

Respondent consumers felt that their needs of **acceptability** were met with basic products they purchased and even found factors that delighted them, such as a nice smell from the product. Consumers sounded back that they saw these products playing a participative role in completing their chores at home and felt that this meant that the products were developed for them, thus meeting their needs of **acceptability**.

The interviewees also indicated that their needs of **availability** are met in many ways. Products were found easily, in stores which were conveniently close to them, the stores had good customer service and shelves were well laid out. Needs of **availability** were not met when looking for health and wellbeing ranges. When looking for these products, respondents needed to travel much further coming at an inconvenience. Consumers remain loyal to products that work for them and which are easily **available**.

The needs of **awareness** were largely covered by word of mouth from trusted friends or family members, for the products that respondents chose to speak about. Instore promotions and television advertising played a strong role in raising **awareness** of new launches and their benefits. Though not frequently mentioned, online informational articles were also sources of information. Advertising also played a role in bolstering confidence in consumers' current purchases by affirming their choice. **Awareness** from television advertisements, also had a long-term impact on consumers, reinforcing their purchase decision for many years. Some feedback indicates that there is room to grow in ensuring communication is believable, that claims can be trusted, and by engaging consumers in trial.

**R4: How might Human-Centred Design application in CPG companies enhance the affordability, acceptability, accessibility and awareness of product design for low-income consumers?**

Working with consumers and being human centric, designers were able to identify the key features that products should have to be able to meet the needs of **affordability** for low-income consumers. By doing this, designers traded off certain features for ones that were more desired or of more value to this consumer group. This human centricity also helped designers tackle tension points when trying to design with competing priorities like providing benefits through a formulation while maintaining affordability or choosing a product size which could be afforded but big enough for large families. By understanding the day-to-day consumer journey, designers were able to prioritise features and develop products which deliver value, more than just a cheap price point. Empathy and embracing ambiguity are two mind-sets which designers apply when designing products to meet the needs of **affordability**. However, information is not frequently obtained directly from consumers or related stakeholders, rather institutionalised knowledge is used. More frequent, and early engagement, for example through interviews or focus groups, would bring richer input and opportunities to launch with more likelihood of success than relying on post-launch sales alone.

While human-centred practices were increasing amongst respondents, there was still a reliance on established internal data sources, when designing to meet low-income consumers' needs for **acceptability**. Designers could do more to interview consumers, leverage ethnography and engage with stakeholders. The focus on identifying the pain points for consumers, and designing products to resolve those pain points, were key for designers. Designers could do more to develop and test iteratively to improve feedback and development to truly meet the needs of low-income consumers.

Designers actively engage with stakeholders in the retail space to better understand constraints and opportunities to improve product design to better meet the needs of low-income consumers. This ensures that products that are important to consumers appear in stores which are convenient for low-income consumers to shop at. In this way, human-centred design products are helping to ensure products better meet the needs of **availability**. This also helps designers

be more cognisant about the way the pack will sit on the shelf, the price, the range of variants or sizes for the retailer to sell to the consumers. These are some reasons why designers are very aware of the needs of both traditional trade and modern trade environments, which are frequented by low-income consumers.

Designers worked on meeting the need of **awareness** for low-income consumers by directly engaging with them and using stimulus to test concepts and communication assets to test understanding. By leveraging these human-centred practices by interviewing consumers or running focus groups, designers were able to improve communication to better deliver on the needs of **awareness**. Additionally, designers showed empathy in their efforts to understand the consumer when developing communication and built strong bridges with the audience by being intentional about various elements like the language of communication and medium of communication to reach their target consumers in a meaningful way.

### 6.2. Managerial Implications

A key purpose of this research was to contribute to designers in South Africa by adding to existing knowledge of identifying key factors that are important to low-income consumers when making product choices and by identifying how human-centred design can be used by product designers within CPG companies to serve low-income consumers.

The researcher is of the opinion that managers can leverage these insights to contribute to design practise to enhance the inclusivity of product design for low-income consumers. Appendix G has been developed to as an outline to an open-source resource that will guide product designers in local or multinational CPG companies, or individuals on entrepreneurial journeys to design products with greater consideration for low-income consumers. The resource can help teams improve consumer-product fit for low-income consumers by delivering products which serve consumers better and better meet their needs across affordability, acceptability, availability and awareness.

This research helps managers to explore appropriateness of new products for South African consumers, in efforts to grow profits in emerging and developing countries, while better supporting consumers who might be underserved in these markets.

This research has several practical applications for managers in roles involved in NPD, starting with, the sense of purpose that designers feel when designing products for low-income consumers. It is important for managers to know that designers are highly motivated by the role they play in the lives of low-income consumers. Designers found purpose in knowing the products they developed, served this consumer group and brought real value in terms of socially positive outcomes. Managers can leverage this understanding by promoting the **purposeful** work and real-world impact existing and new employees can make through these roles. Purpose has become a significant drawcard for attracting talent into organisations with 89 % of people believing it is important for an organisation to have a clear mission and purpose (Pickup, 2019). Managers would do well to ensure that their initiatives are positioned to drive social and environmental benefit to attract motivated and talented individuals as well as inspire and motivate current team members.

When it came to affordability, value as opposed to a cheap price was a key requirement from interviewed consumers. Consumers wanted to be assured of the quality of the product that they were buying to limit the risk of the product not delivering its promise. It is important for managers to ensure that quality standards are developed for products, based on expectations from consumers and cost and price constraints. These quality standards could play a robust role in ensuring that product development maintains consistency in the value delivered to consumers.

Consumers may trade off acceptability for affordability when their financial resources were low. The price and affordability of a product is ultimately key for this consumer group. This is where managers need to ensure that their portfolio of brands and package size offerings covered the range of affordability needed by low-income consumers. By allowing shoppers to trade down to more affordable brands or smaller package sizes, which still deliver quality and meet their needs of acceptability, companies can continue to serve low-income consumers, and grow commercially.

When it comes to the application of human-centred design in the day-to-day practice by respondent designers, it was clear that there was an appreciation of elements of human-centred design like empathy, prototyping and iteration, but that it was not deeply integrated into roles. A key implication for managers from this research was to robustly apply human-centred design practise to identify the pain points of consumers along the consumer journey, work with consumers to prioritise features and iteratively test prototypes and concepts with consumers and related stakeholders to progressively ensure that the product developed meets the low-income consumers' needs for acceptability. This may require managers to invest in training and capability development of staff to become more familiar with human-centred design methods and mind-sets which can be applied throughout the development process. Section 5.2 highlights why developing products with human centricity can have both social and commercial benefits and thus have important implications for managers. The particular opportunities for improvement amongst designers would be improving empathy, prototyping early enough in the design process to build iterations and getting feedback early from consumers or related stakeholders to improve the prototype.

When it comes to meeting the needs of availability for low-income consumers, it is important for managers to know that working with informal and formal retailers in areas where low-income consumer shop is important. While the range of essential items in these stores are limited, there is still room to ensure that the package sizes, the layout of the packs, and the ranges of products and brands on shelf can be afforded and deliver to the needs of this consumer group. Managers should encourage designers to continue to maintain strong relationships with retailers serving low-income consumer. Shop owners and staff are related stakeholders to this consumer group and hold vital information about experiences and preferences of these consumers.

The intentional prioritisation of features and benefits using human-centred design methods, not only helps manage costs but also helps marketers to focus the communication messages on these benefits, to low-income consumers being targeted. Managers who focus their teams on ruthlessly prioritising features help designers to better deliver to the needs of acceptability, affordability and awareness. Managers should also look to place brand ambassadors into stores to impart more information about products and improve awareness with this target consumer

group. Leveraging other methods like communicating in a locally relevant language are also important to establish authenticity and improve understandability of the message. Managers looking to invest in television advertising should be heartened to know that memorable television adverts has long-term return on the investment made. Managers are encouraged to support investment into instore promotions since these can lend to brand switching. Additionally, investment behind sampling, may help businesses to get consumers to try their products without the financial risk, which low-income consumers are concerned about. The power of word of mouth, is an area that management should consider to leverage further since it reduces the risk associated with products that have not been tried before.

Managers should be aware that mostly essential products met the needs of availability and affordability for low-income consumers. Products in categories like hygiene and personal care, and health foods and cereals were not always accessible to this consumer group. Greater focus on human-centred design for this category to serve low-income consumers may be needed from managers. By lowering the barrier of access to these categories, managers can increase consumption and better serve the evolving needs of this consumer group.

Another key consideration for management is to be aware of the purchasing flexibility required by low-income consumers to deal with inflationary pressures or intermittent lack of financial resources. Tactics like having a range of package sizes to allow consumers to buy what they can afford may empower consumers to remain loyal to their preferred brands, while still meeting their needs of affordability.

While deep brand loyalty exists, there are challenges to breaking into the defined set of options for lower-income consumers. Through deep engagement, listening and understanding real needs and pain points, and then testing to see if solutions meaningfully solve consumer problems, one can possibly overcome deep consumer brand loyalty. This will help consumers to experience more choice of brands and products by building confidence in trying other brands and opening themselves up to possibly new and modern technologies. This requires a deeper practise of human-centred design by practitioners in industry. Currently the early stages of human centricity is present, however the methods and mind-sets employed are not deeply

entrenched and not frequently practised. The practice of human-centred design needs to be entirely embedded in the organisation and consistent across team members.

Organisations also need to look at the recency of data used to make decisions about which products to sell in different trade environments, about habits and preferences of consumers and which package sizes perform best in markets, rather than relying on historical data.

### 6.3. Theoretical Contribution, Limitations and Areas for Future Research

**Theoretical Contribution**

Academic research into how products can be more inclusively designed to meet the needs of low-income consumers has been largely focussed on countries in Asia. This study contributes to theory by exploring this topic in an African context (specifically South Africa), which has been understudied. In addition to this, the 4As framework is applied in this study to explore how low-income consumers' needs are met when purchasing fast moving consumer goods. This too is a novel application of the framework in Africa.

Through the findings in this research, more is revealed about how products currently meet the needs of low-income consumer against the elements of the 4As framework. The application of human-centred design into NPD for low-income consumers is also understudied.

This research identified that for the responded consumers, their needs of affordability were largely met when purchasing essential products. The results indicate that more focus was needed on developing products which were affordable for family use and beyond just essential products. For similar products, this consumer group's needs of acceptability were also met and they often felt that products they purchased were designed for them. The research also revealed that respondents' needs of availability were widely met in terms of access and convenience, however, products outside of essential categories were difficult to conveniently find. These findings highlight that the 4As framework can be applied to evaluating how consumer products meet the needs of low-income consumers in South Africa. The framework was also applied to understand how awareness was raised about products. Word of mouth played a key role in

encouraging purchases but was not leveraged enough by designers. It was also established that engaging low-income consumers in trial was not a frequently employed tactic.

**Limitations**

A key limitation in the research, due to the constraints placed on the researcher during the COVID-19 pandemic lockdown, was that research was done with lower-income consumers in an urban setting, and not a mix of urban and rural. Therefore, there is an opportunity to expand this research to bringing in insights from rural consumers. Rural consumers may not have the same financial resources as urban dwellers.

The COVID-19 lockdowns may have affected face-to-face engagements. However, these were traditionally expensive endeavours to obtain consumers insights. With the limitations presented by lockdowns, the use of digital technologies are prompting more cost-effective consumer engagement. With the advancement of technology, penetration of smart phones and limitations caused by lockdowns due to the COVID-19 pandemic, digital engagement with consumers has played a large part in becoming more consumer centric, because leaner and agile testing are more affordable. Designers are finding that engaging with consumers do not require the scale and scope of testing that was traditionally undertaken. However, this is also revealing the gap in engaging with lower income consumers, who do not have access to these digital solutions, cannot afford the devices or data costs, are not digitally literate, but it has improved access and cost management for engagement. Possibly an opportunity for the future is a praxis which identifies how to better gain access to consumers in rural areas.

**Areas for Future Research**

The results of this study gave rise to some areas for future research. One such opportunity for future research is to explore the specific trade-offs low-income consumers made to be able to afford products when income reduces or inflationary pressure increases.

Since a limitation of this study was that the research was done with respondents from urban areas, exploring how findings may differ between consumers from urban and rural areas may be another opportunity for future research.

With the strong prevalence on smaller package sizes, there is a significant need to understand the environmental impact of this packaging waste and opportunities to reduce this impact.

One of the recommendations in this study was for management to identify ways to improve human-centred design capability in their organisations. A natural opportunity for future research is to explore how best management can cultivate a culture which embraces the mind-sets of human-centred design and which employed the methods of human-centred design in their NPD processes.

### 6.4. Concluding Summary

This research set out to apply the 4As framework to product design in low-income consumer products, where often these consumers find that products are not always physically available, do not always tackle their real needs, are too expensive or the benefits are not always understood. These challenges were believed to be exacerbated by the COVID-19 pandemic. The findings from this study have the potential to guide designers to improve how they design products for low-income consumers by more robustly applying human-centred design methods and mind-sets to their new product development process. By assessing the key areas of focus according to the 4As framework, the study identified how consumer products decisions can be reviewed to understand how needs are met for low-income consumers.

The results also provide academics with a further application of the 4As framework and areas for future research in this theoretical area. Acting on these learnings could help develop solutions which are inclusive for low-income consumers and better serve their needs. It should also be noted that based on the high levels of satisfaction from respondent consumers with their current purchases and where they shop, there seems to be a good level of understanding of consumers and their environment currently. The learnings from this research can enhance the

offerings made to these consumer groups who are often underserved, while generating growth in new market segments.

## 7. REFERENCES

Adams, J., Khan, H. T. A., Raeside, R., & White, D. I. (2012). Research methods for graduate business and social science students. In *Research methods for graduate business and social science students*. SAGE Publications Ltd. doi.org/10.4135/9788132108498

Anderson, J., & Billou, N. (2007). Serving the world's poor: Innovation at the base of the economic pyramid. *Journal of Business Strategy, 28*(2), 14–21. doi.org/10.1108/02756660710732611

Archibald, M. M., Ambagtsheer, R. C., Casey, M. G., & Lawless, M. (2019). Using Zoom videoconferencing for qualitative data collection: Perceptions and experiences of researchers and participants. *International Journal of Qualitative Methods*, *18*, 1–8. doi.org/10.1177/1609406919874596

Arunachalam, S., Bahadir, S. C., Bharadwaj, S. G., & Guesalaga, R. (2019). New product introductions for low-income consumers in emerging ,arkets. *Journal of the Academy of Marketing Science*, *48*, 914–940. doi.org/10.1007/s11747-019-00648-8

Atsmon, Y., Child, P., Dobbs, R., & Narasimhan, L. (2012). Winning the $30 trillion decathlon: Going for gold in emerging markets. In *McKinsey Quarterly* (Issue August).

Baker, F. W., & Moukhliss, S. (2020). Concretising design thinking: A content analysis of systematic and extended literature reviews on design thinking and human-centred design. *Review of Education*, *8*(1), 305–333. doi.org/10.1002/rev3.3186

Bassier, I., Joala, R., & Vilakazi, T. (2020). South Africa needs better food price controls to shield poor people from COVID-19 fallout. *The Conversation*. https://theconversation.com/south-africa-needs-better-food-price-controls-to-shield-poor-people-from-covid-19-fallout-143288

Bates, M. O., & Buckles, T. A. (2017). An examination of market entry perspectives in emerging markets. *International Journal of Business and Economic Development, 5*(3), 19–29.

Bates, M. O., & Buckles, T. A. (2018). Prahalad's market approach impacting brand loyalty in base of the pyramid Philippines. *Journal of Business and Retail Management Research, 12*(2), 28–37.doi.org/10.24052/jbrmr/v12is02/pmaiblibotpp

Bloomberg, L., & Volpe, M. (2012). Completing your qualitative dissertation: A roadmap from beginning to end. In *Completing Your Qualitative Dissertation: A Roadmap from Beginning to End*. SAGE Publications Ltd.doi.org/10.4135/9781452226613

Bower, J. L., & Christensen, C. M. (1995). Disruptive technologies: Catching the wave. *Harvard Business Review*, *February*, 43–54.

Brotherton, B. (2012). Researching hospitality and tourism: A student guide. In *Researching Hospitality and Tourism: A Student Guide*. SAGE Publications Ltd. doi.org/10.4135/9781446280362

Cohan, P. (2012, March). *How Procter & Gamble's design guru spurs growth*. Forbes. https://www.forbes.com/sites/petercohan/2012/03/02/how-procter-gambles-design-guru-spurs-growth

Coleman, R. (1976). Design Council. *Electronics and Power*, *22*(4), 224. doi.org/10.1049/ep.1976.0103

Cui, G., & Liu, Q. (2000). Regional market segments of China: Opportunities and barriers in a big emerging market. *Journal of Consumer Marketing*, *17*(1), 55.

Dabla-Norris, E., Kochhar, K., Suphaphiphat, N., Ricka, F., & Tsounta, E. (2015). Causes and consequences of income inequality: A global perspective. *Staff Discussion Notes - International Monetary Fund*, *15*(13), 1–39. doi.org/10.5089/9781513555188.006

Darley, W. K., & Johnson, D. M. (1985). A contemporary analysis of the low income consumer : An international perspective. *Advances in Consumer Research*, 206–210.

d.school. (2018). *Design thinking bootleg*. Hasso Plattner Institute of Design at Stanford. https://dschool.stanford.edu/resources/design-thinking-bootleg

Elo, S., Kääriäinen, M., Kanste, O., Pölkki, T., Utriainen, K., & Kyngäs, H. (2014). Qualitative content analysis: A focus on trustworthiness. *SAGE Open*, *4*(1), 1–10. doi.org/10.1177/2158244014522633

Flick, U. (2011). *Designing qualitative research*. SAGE Publications Ltd. doi.org/10.4135/9781849208826.n3

Garreta-Domingo, M., Sloep, P. B., & Hernández-Leo, D. (2018). Human-centred design to empower "teachers as designers". *British Journal of Educational Technology*, *49*(6), 1113–1130. doi.org/10.1111/bjet.12682

Gasson, S. (2003). Human-centered vs. user-centered approaches to information system design. *Journal of Information Technology Theory and Application (JITTA)*, *5*(2), 29–46.

Giacomin, J. (2014). What is human centred design? *Design Journal*, *17*(4), 606–623. doi.org/10.2752/175630614X14056185480186

Griffin, A., & Hauser, J. R. (1993). The voice of the customer. *Marketing Science*, *12*(1).

Gudlavalleti, S., Gupta, S., & Narayanan, A. (2013). Developing winning products for emerging markets. *McKinsey Quarterly. 2013*, *2*, 98–103.

Hamilton, K., & Catterall, M. (2005). Towards a better understanding of the low-income consumer. *Advances in Consumer Research*, *32*, 627–632.

Harapan, H., Itoh, N., Yufika, A., Winardi, W., Keam, S., Te, H., Megawati, D., Hayati, Z., Wagner, A. L., & Mudatsir, M. (2020). Coronavirus disease 2019 (COVID-19): A literature review. *Journal of Infection and Public Health*, *13*(5), 667–673. doi.org/10.1016/j.jiph.2020.03.019

Harte, R., Glynn, L., Rodríguez-Molinero, A., Baker, P. M., Scharf, T., Quinlan, L. R., & ÓLaighin, G. (2017). A Human-centered design methodology to enhance the usability, human factors, and user experience of connected health systems: A three-phase methodology. *JMIR Human Factors*, *4*(1), 1–21. doi.org/10.2196/humanfactors.5443

Harwood, I. A., Gapp, R. P., & Stewart, H. J. (2015). Cross-check for completeness: Exploring a novel use of Leximancer in a grounded theory study. *The Qualitative Report*, *20*(7), 1029–1044.

Hippel, E. von. (2005). *Democratizing Innovation*. The MIT Press.

Horberry, T., Burgess-Limerick, R., Cooke, T., & Steiner, L. (2016). Improving mining equipment safety through human-centered design. *Ergonomics in Design*, *24*(3), 29–34. doi.org/10.1177/1064804616636299

IDEO.org. (2014). *Human-centered design for social innovation: 5 week course*. Acumen Academy. https://www.acumenacademy.org/course/design-kit-human-centered-design

IDEO.org. (2015). *The Field Guide to Human-Centered Design* (First). https://www.designkit.org/resources/1

Ignatius, A. (2015). Design thinking into strategy: An interview with PepsiCo's CEO. *Harvard Business Review*, 80–85.

International Organization for Standardization. (2019). ISO 9241- 210: Ergonomics of human-centred system interaction – Part 210: human-centred design for interactive systems. *Geneva: International Organization for Standardization*. www.iso.org/obp/ui/#iso:std:iso:9241:-210:ed-2:v1:en

International Labour Organisation. (2020). *Unemployment, total (% of total labor force) (modeled ILO estimate)*. ILOSTAT Database. https://data.worldbank.org/indicator/SL.UEM.TOTL.ZS?most_recent_value_desc=true

Kelly, P. (2016). *South Africa's CPI reveals how volatile inflation hurts the poorest*. Stats SA. www.statssa.gov.za/?p=7197

Khumalo, N. P., Stone, J., Gumedze, F., McGrath, E., Ngwanya, M. R., & de Berker, D. (2010). "Relaxers" damage hair: Evidence from amino acid analysis. *Journal of the American Academy of Dermatology*, *62*(3), 402–408. doi.org/10.1016/j.jaad.2009.04.061

Lappeman, J., Egan, P., Rightford, G., & Ramogase, T. (2021). *Marketing to South African consumers*. UCT Liberty Institute of Strategic Marketing & UCT Libraries.doi.org/https://doi.org/10.15641/0-7992-2548-8

Lappeman, J., Ransome, K., & Louw, Z. (2019). Not one segment: using global and local BoP characteristics to model country-specific consumer profiles. *European Business Review*, *31*(3), 317–336. doi.org/10.1108/EBR-01-2018-0027

Lasky, J. (2013). Design and Social Impact: A cross-sectoral agenda for design education, research and practice. *Social Impact Design Summit*, 135. doi.org/10.2752/175470715x14153615623880

Lehohla, P. (2015). *Census 2011: Income dynamics and poverty status of households in South Africa*. www.statssa.gov.za/publications/Report-03-10-10/Report-03-10-102014.pdf

Leisinger, K. M. (2007). Corporate Philanthropy: The "top of the pyramid." *Business and Society Review*, *112*(3), 315–342.

Lemoine, G. J., & Bennett, N. (2014). What VUCA really means for you. *Harvard Business Review, January*.

Leximancer. (2021, May). *Leximancer User Guide*. Release 4.5. https://static1.squarespace.com/static/5e26633cfcf7d67bbd350a7f/t/60682893c386f915f4b05e43/1617438916753/Leximancer+User+Guide+4.5.pdf

Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic Inquiry*. SAGE Publications Ltd. doi.org/10.4324/9781315169804-6

Lock, H. (2020, April). *Why good health and well-being are vital to ending extreme poverty*. Global Citizen.

Luchs, M., & Swan, K. S. (2011). Perspective: The emergence of product design as a field of marketing inquiry. *Journal of Product Innovation Management*, *28*(3), 327–345. doi.org/10.1111/j.1540-5885.2011.00801.x

MacInnis, D. J., & Folkes, V. S. (2010). The disciplinary status of consumer behavior: A sociology of science perspective on key controversies. *Journal of Consumer Research*, *36*(6), 899–914. doi.org/10.1086/644610

Madubela, A. (2021, October). *A bigger slice of the pie: Retailers find ways to cash in on township economy*. Mail & Guardian.

Malhotra, N. K. (2007). *Marketing research: An applied orientation* (Sixth). Pearson/Prentice Hall. doi.org/10.2307/3151953

Mchiza, Z. (2017). How marketers target poor illiterate people with unhealthy good ads. *The Conversation*. https://theconversation.com/how-marketers-target-poor-illiterate-people-with-unhealthy-food-ads-70285

Nagaraj, V., Berente, N., Lyytinen, K., & Gaskin, J. (2020). Team design thinking, product innovativeness, and the moderating role of problem unfamiliarity. *Journal of Product Innovation Management*, *37*(4), 297–323.doi.org/10.1111/jpim.12528

Nelson, H. G., & Stolterman, E. (2012). *The design way: intentional change in an unpredictable world* (Second). The MIT Press.

Nemeth, A. (2019, June). *Human centered design resources and methods to help you master HCD*. Moving Worlds.

Nezakati, H., Abu, M. L., & Toh, C. (2011). Exploring hierarchy situation of 4A marketing mix on Malaysia's fast food restaurants. *World Applied Sciences Journal*, *15*(8), 1157–1167.

Nowell, L. S., Norris, J. M., White, D. E., & Moules, N. J. (2017). Thematic analysis: Striving to meet the trustworthiness criteria. *International Journal of Qualitative Methods*, *16*(1), 1–13. doi.org/10.1177/1609406917733847

Parumasur, S. B., & Roberts-Lombard, M. (2013). *Consumer behaviour* (S. B. Parumasur & M. Roberts-Lombard, Eds.; Second). Juta & Company.

Peer, A. (2020). *Global poverty: Facts, FAQs, and how to help*. World Vision. www.worldvision.org/sponsorship-news-stories/global-poverty-facts#FAQs

Pickup, O. (2019, December). *Why work needs to be worthwhile*. Raconteur. www.raconteur.net/hr/corporate-culture/attract-talent-company-purpose

Pizzagalli, L., Sharma, A., & Lascu, D.-N. (2018). Marketing at the bottom of the pyramid: Serving, and in the service of low-income consumers. *Innovative Marketing*, *14*(2), 35–40. doi.org/10.21511/im.14(2).2018.04

Posadas, D. (2004). *Sachets help low-income communities but are a waste nightmare*. The Guardian. www.theguardian.com/sustainable-business/sachet-packaging-low-income-communities-waste-nightmare

Prahalad, C. K. (2004). Why selling to the poor makes for good business. In *Fortune* (Vol. 150, Issue 10, pp. 70–72).

Prahalad, C. K. (2006). *The fortune at the bottom of the pyramid: Eradicating poverty through profits*. Wharton School Publishing.

Prahalad, C. K. (2012). Bottom of the pyramid as a source of breakthrough innovations. *Journal of Product Innovation Management*, *29*(1), 6–12. doi.org/10.1111/j.1540-5885.2011.00874.x

Prahalad, C. K., & Hart, S. L. (2002). The fortune at the bottom of the pyramid. *Strategy+Business*, *1*(26), 1–16. doi.org/10.19177/reen.v1e220081-23

Resnick, B. (2020). *How soap absolutely annihilates the Coronavirus*. Vox. www.vox.com/science-and-health/2020/3/11/21173187/coronavirus-covid-19-hand-washing-sanitizer-compared-soap-is-dope

Reyneke, M. (2011). In the lap of luxury: Consumer conversation concerning online advertisements of luxury brands. *South African Journal of Business Management*, *42*(2), 27–34.

Rogerwilco. (2021). *The 2021 South African township marketing report*. www.rogerwilco.co.za/2021-south-africa-township-marketing-report

Rosaline, B. (2011). *Introducing qualitative research*. SAGE Publications Ltd. doi.org/https://dx.doi.org/10.4135/9780857029034

Sanders, E. B.-N., & Stappers, P. J. (2008). Co-creation and the new landscapes of design. *CoDesign*, *4*(1), 5–18. doi.org/10.1080/15710880701875068

Schiffman, L., Kanuk, L., Brewer, S., Crous, F., du Preez, R., Human, D., Jansen van Rensburg, M., Raninger, S., Tshivhase, T., Shrosbree, T., & Ungerer, L. (2014). *Consumer behaviour: Global and Southern African perspectives*. Pearson Education.

Shambare, R. (2014). The adoption of WhatsApp: Breaking the vicious cycle of technological poverty in South Africa. *Journal of Economics and Behavioural Studies*, *6*(7), 542–550. doi.org/10.22610/jebs.v6i7.515

Sheth, J. N., & Shah, R. H. (2003). Till death do us part...but not always: Six antecedents to a customer's relational preference in buyer - Seller exchanges. *Industrial Marketing Management*, *32*(8), 627–631. doi.org/10.1016/j.indmarman.2003.06.003

Simpson, J., & Lappeman, J. (2017). *Marketing in South Africa: Consumer landscape, concepts & cases* (J. Simpson & J. Lappeman, Eds.; Fourth).

Smith, A. E., & Humphreys, M. S. (2006). Evaluation of unsupervised semantic mapping of natural language with Leximancer concept mapping. *Behaviour Research Methods*, *38*(2), 262–279.

StatsSA. (2018). *General Household Survey - 2018*. General Household Survey - 2018. www.statssa.gov.za/publications/P0318/P03182018.pdf

StatsSA. (2020). *SA economy sheds 2,2 million jobs in Q2 but unemployment levels drop*. SA Economy Sheds 2,2 Million Jobs in Q2 but Unemployment Levels Drop. www.statssa.gov.za/?p=13633

Taylor, J. W. (2006). The role of risk in consumer behavior. *Journal of Marketing*, *38*(2), 54. doi.org/10.2307/1250198

The World Bank. (2020). *Understanding poverty*. Understanding Poverty. www.worldbank.org/en/topic/poverty/overview

The World Bank. (2021). *No Title*. Gini Index - The World Bank estimate - South Africa. https://data.worldbank.org/indicator/SI.POV.GINI?locations=ZA&most_recent_value_desc=true

Tinsley, E., & Agapitova, N. (2017). *Making products and services affordable for low-income consumers*. Washington, DC: World Bank.

Tsafarakis, S., Grigoroudis, E., & Matsatsinis, N. (2011). Consumer choice behaviour and new product development: An integrated market simulation approach. *Journal of the Operational Research Society*, *62*(7), 1253–1267. doi.org/10.1057/jors.2010.70

Verma, M. (2020). Lifebuoy takes a hands-on approach to spread hygiene awareness in times of COVID-19. *The Economic Times - Brand Equity*. https://brandequity.economictimes.indiatimes.com/news/advertising/lifebuoy-takes-a-hands-on-approach-to-spread-hygiene-awareness-in-times-of-covid-19/76476825

Veryzer, R. W., & de Mozota, B. B. (2005). The impact of user-oriented design on new product development: An examination of fundamental relationships. *Journal of Product Innovation Management*, *22*(2), 128–143.

Viswanathan, M., & Sridharan, S. (2012). Product development for the BoP: Insights on concept and prototype development from university-based student projects in India. *Journal of Product Innovation Management*, *29*(1), 52–69. doi.org/10.1111/j.1540-5885.2011.00878.x

Woetzel, J., Madgavkar, A., Seong, J., Manyika, J., Sneader, K., Tonby, O., Cadena, A., Gupta, R., Leke, A., Hayoung, K., & Gupta, S. (2018). Outperformers: High-growth emerging economies and the companies that propel them. In *McKinsey Global Institute* (Issue September).

## 8. APPENDICES

### Appendix A: Interview Consent Forms

**CONSUMER INTERVIEW CONSENT FORM**

**Principal Researcher:** Kuvendren Pillay
**Project Title:** An Exploratory Study into Human-Centred Design in New Product Development for Low-Income Consumers.

**Name of Interviewee: _____**

I volunteer to participate in a research project conducted by Kuvendren Pillay as partial fulfilment of the requirements for the MPhil Degree at the Graduate School of Business. I understand that the research is designed to gather information about products that I purchase, why I choose these products, and how to improve them. I also understand that I will be one of approximately 12 people being interviewed for this research.

**Background and Purpose of Research:**
This study aims to better understand the challenges experienced by low-income consumers related to consumer products such as health and hygiene products, dry foods, and home care products. The researcher will also work with people who design and develop these products to explore how a design process called human-centred design might unlock opportunities to design products which better serve you as citizens through acceptability, affordability, availability and awareness in the South African market, democratising innovation and improving access to new benefits and technologies.

**Ethics Approval**
Ethical consent for the study has been approved by the UCT Commerce Faculty Ethics in Research Committee.

**Participation and confidentiality**

I understand that my participation in this research is voluntary, that I will not be compensated and that I may withdraw at any time.

The interview will take approximately 60 minutes to complete and will be done virtually using a choice of 3 video-conferencing platforms. WhatsApp Video Call, Zoom or Microsoft Teams can be used for the interview. These will be audio and video recorded.

I understand that I will not be identified by name in any reports using information obtained from this interview and that my confidentiality as a participant in this study will remain secure. Subsequent uses of records and data will be subject to standard data use policies which protect the anonymity of individuals.

Should you have any questions or concerns please contact:

- Researcher: Kuvendren Pillay – 084 555 3587
- Supervisor: Prof. Mignon Reyneke - 021 406 1376

**Consent**

I consent to participate in this interview, based on the terms outlined above and subject to the following additional condition of my own (if any).

_____

_____

_____

_____ _____

**Signed by interviewee** **Date**

_____ _____

**Signed by Student** **Date**

**DESIGNER INTERVIEW CONSENT FORM**

**Principal Researcher:** Kuvendren Pillay
**Project Title:** An Exploratory Study into Human-Centred Design in New Product Development for Low-Income Consumers.

**Identifier for Interviewee: _____**

I volunteer to participate in a research project conducted by Kuvendren Pillay as partial fulfilment of the requirements for the MPhil Degree at the Graduate School of Business. I understand that the research is designed to gather information about my professional and personal thoughts, motivations, challenges, and considerations when working on New Product Development for low-income consumers in South Africa. I will also be asked about the tools and techniques I used to better empathise with the consumers and stakeholders whom I design products for. I also understand that I will be one of approximately 12 people being interviewed for this research.

**Background and Purpose of Research:**
This study aims to better understand the challenges experienced by low-income consumers related to consumer products such as health and hygiene products, dry foods and home care products. The researcher will work with NPD product designers and developers to explore the application of human-centred design in the development of consumer products for low-income consumers and identify how human-centred design might unlock opportunities to design products which better serve these citizens through acceptability, affordability, availability and awareness in the South African market, democratising innovation and improving access to new benefits and technologies.

**Ethics Approval**
Ethical consent for the study has been approved by the UCT Commerce Faculty Ethics in Research Committee.

**Participation and confidentiality**

I understand that my participation in this research is voluntary, that I will not be compensated and that I may withdraw at any time.

The interview will take approximately 60 minutes to complete and will be done virtually using a choice of 3 video-conferencing platforms. WhatsApp Video Call, Zoom or Microsoft Teams can be used for the interview. These will be audio and video recorded.

I understand that I will not be identified by name in any reports using information obtained from this interview and that my confidentiality as a participant in this study will remain secure. Subsequent uses of records and data will be subject to standard data use policies which protect the anonymity of individuals.

Should you have any questions or concerns please contact:

- Researcher: Kuvendren Pillay – 084 555 3587
- Supervisor: Prof. Mignon Reyneke - 021 406 1376

**Consent**

I consent to participate in this interview, based on the terms outlined above and subject to the following additional condition of my own (if any).

_____

_____

_____

_____ _____

**Signed by interviewee** **Date**

_____ _____

**Signed by Student** **Date**

**Appendix B: Interview Discussion Guide**

**CONSUMER INTERVIEW DISCUSSION GUIDE**

**Principal Researcher**: Kuvendren Pillay
**Project Title**: An Exploratory Study into Human-Centred Design in New Product Development for Low-Income Consumers.

**Code for Interviewee**: _____

**Preparation for Interview:**

1. **Setup**:

- The interviews with consumers will be carried out on Zoom, Microsoft Teams, or more likely via WhatsApp Video call while consumers are in their homes
- The interviews will be recorded, and notes taken during the interviews for ease of analysis later in the study. Zoom and Microsoft Teams allows for the call to be recorded. WhatsApp calls will be done from the researcher's computer, and a Microsoft Office's native screen recording functionality will be used to record the WhatsApp call.

2. **Beginning of Interview:**

- Confirm that the WhatsApp image of the Consent Form (Appendix A) was viewed and confirm that the interviewee is comfortable to start recording.
- Read through the Consent Form and ask for voice confirmation that consent is granted to continue with the study. This will include iterating that the interview will be confidential and anonymous; and a clear explanation of the research being conducted.

3. **Interview Questions:**

- Initial Interview Questions:
    - In which city do you live?

- What age range do you fall within?
  - ☐ 18 – 25
  - ☐ 26 – 35
  - ☐ 36 – 45
  - ☐ 46 – 55
  - ☐ 56 – 65
  - ☐ 65 +
- What gender do you identify with?
  - ☐ Female
  - ☐ Male
  - ☐ Transgender Female
  - ☐ Transgender Male
  - ☐ Gender variant/Non-conforming
  - ☐ Prefer not to say
- What are the sources of income for you and in your household?
  - ☐ _____
  - ☐ Prefer not to say
- Would you classify your household income above or below R 19 200?
- Do you shop for products for your household?

- **Focus Questions:**
  - Can you select two products in your home that you know and love
  - [Acceptability] Tell me about these products? What do you use them for? Do they work the way you expect them to?
  - [Availability] Where did you buy these? Was it easy to get to this place? Do you enjoy shopping there? Why?
  - [Affordability] What did you think about the price? How much would you think you would want to pay for it? What makes that a good price? What happens if you do not have enough for that item?

- [Awareness] How did you learn about this? Did you try it before you bought it? What other information did you see about this product, such as advertising or instore demonstrations?
- Can you think about a few products that you would like to have in your home, but you do not have them right now?
- Why is that? [Probe with below questions]
  - [Availability] Are these products available where you shop?
  - [Affordability] Does it cost more than is within your budget?
- Can you think about a few products that you bought but did not like?
- Why was that? [Probe with below questions]
  - [Acceptability] Did the product do what you bought it do to? Did it meet your needs?
  - [Awareness] Did you feel that you were missing information about the product and what it was supposed to do?

- **Closing**:
  - Ask if there are any questions from the interviewee
  - Ask the interviewee to suggest a contact in network they would recommend the researcher speak to next
  - Check if interviewee would like to receive the results from this research

**DESIGNER INTERVIEW DISCUSSION GUIDE**

**Principal Researcher**: Kuvendren Pillay
**Project Title**: An Exploratory Study into Human-Centred Design in New Product Development for Low-Income Consumers.

**Identifier for Interviewee**: _____

**Preparation for Interview:**

1. **Setup**:

- The interviews with consumers will be carried out on Zoom or Microsoft Teams, likely while designers are working from home
- The interviews will be recorded, and notes taken during the interviews for ease of analysis later in the study. Zoom and Microsoft Teams allows for the call to be recorded.

**2. Beginning of Interview:**

- Confirm that the digitally signed consent form (Appendix A) has been returned
- Confirm that a signed consent form has been returned and reiterate that the interview will be confidential and anonymous; and a clear explanation of the research being conducted.
- Confirm with the interviewee that permission has been obtained from their employer to conduct these interviews.
- Share 2 charts explaining human-centred design and the scope of exploration under the 4As framework.

**3. Interview Questions:**

- Initial Interview Questions which are to collect descriptive date from you:
    - What age range do you fall within?

        ☐ 18 – 25

☐ 26 – 35

☐ 36 – 45

☐ 46 – 55

☐ 56 – 65

☐ 65 +

- What Gender do you identify with?

  ☐ Female

  ☐ Male

  ☐ Transgender Female

  ☐ Transgender Male

  ☐ Gender variant/Non-conforming

  ☐ Prefer not to say

- What is your current role?

  ☐ _____

  ☐ Prefer not to say

- Which function of the organisation do you work in?
- Are you involved in New Product Development in South Africa?
- Do you develop products for low-income consumers? [Continue if products are developed for low-income consumers]
- How long have you been involved in product development? [Continue if more than 5 years]
- Are you at a management level or more senior? [Continue if answered 'yes']

- **Focus Questions:**
  - What products have you launched for low-income consumers and what role did you play in these projects?
  - Have there been challenges during some of these projects that you needed to overcome? Can you tell me briefly about these?
  - What motivated you to push through these challenges or what are your motivations for working on projects like these for low-income consumers?

- As we work through the next questions, I will be asking about human-centred design [refer to slides]
- Now that you know more about human-centred design, how do you find this approach comes alive in your job when designing for low-income consumers?
    - Are there mind-sets which are practised by you when working on the projects you mentioned?
    - What about methods?
- How frequently do you practise these mind-sets in your day-to-day role involving NPD for low-income consumers?
- You mentioned challenges you experienced on these projects; do you experience other challenges to designing products for the limitations of low-income consumers?
- [Acceptability] Next we will speak about understanding consumer needs. Think about a project you worked on that has done this well and one which has not?
    - Where this has gone well, how did you get closer to understanding the needs of the consumers, what mind-sets and methods you used – walk me through the journey to understand the problem
    - How did you test to see if you met these needs?
    - Where there any barriers (not mentioned above) that you experienced when designing for these needs?
- [Availability] Next we will speak about channels for sales. Think about a project you worked on that has done this well and one which has not.
    - How did you identify which channels would work best for this consumer to get this product? What mind-sets and methods did you use – walk me through the journey to understand where consumers prefer to shop?
    - How did you check to see if this worked for the consumer group?
    - What were the hurdles and considerations when designing for these channels?
- [Affordability] Next we will speak about affordability. Think about a project you worked on that has done this well and one which has not.
    - In which price tier were you designing for? (e.g. Mass, Masstige, Value)
    - What challenges did you experience when designing for this price tier?

- [Awareness] Next, we will speak about communication. Think about a project you worked on where you needed to help develop communication to help the low end consumer understand the product and its benefits. Think about one example where this went well and one where it did not.
    - How did you design the communication to ensure the consumer's understanding of the benefit and increase their trial of the product?
    - How did you test if this was the right approach?
    - Can you tell me about other products in the market which has done this well for low-income consumers?
    - How did you identify which medium of communication would work best for the consumer?

- **Closing**:
    - Ask if there are any questions from the interviewee
    - Ask the interviewee to suggest a contact in network they would recommend the researcher speak to next
    - Check if interviewee would like to receive the results from this research

**Appendix C: Letter of Permission to Conduct Interviews with Employees**

Date: 06/03/2021

Title

Company

RE: Permission to Conduct Interviews with Employees

Dear Sir/Ma'am,

I am writing to you to request permission to interview employees in your business who are involved in new product development. I am enrolled at the University of Cape Town, Graduate School of Business working to complete an MPhil Degree. In partial fulfilment of this degree, I am completing a dissertation entitled: An Exploratory Study into Human-Centred Design in New Product Development for Low-Income Consumers.

I would like to recruit up to 12 employees from your organisation who frequently work on new product development for brands which serve low-income consumers. These individuals could be from various functions: Research and Development, Marketing, Supply Chain or Sales. It is preferred if a variety of individuals were identified to obtain diverse inputs.

Each individual would be interviewed separately, and the interview would require an hour of their time. They will be given a consent form which provides context to the interview, confirms that is it voluntary and that responses are confidential. The individual can withdraw at any point.

This study aims to better understand the challenges experienced by low-income consumers related to consumer products such as health and hygiene products, dry foods and home care products. The researcher will work with NPD product designers and developers to explore the application of Human-Centred Design in the development of consumer products for low-income consumers and identify how human-centred design might unlock opportunities to design products which better serve these citizens through acceptability, affordability,

availability and awareness in the South African market, democratizing innovation and improving access to new benefits and technologies.

If approved, interviews will be conducted via Microsoft Teams or Zoom. All responses will be anonymised, and your organisation's name will not be associated with any of the responses.

The report will present findings that can help improve how we design products for low-income consumers by analysing responses from interviews with 12 designers and 12 consumers. The report can be made available to you if you would like to view this.

Your approval for me to proceed with this study in your organisation will be greatly appreciated. If you are okay to proceed, you would only need to sign the below and send back to me.

## Appendix D: Ethics Clearance

**Faculty of Commerce**
**Private Bag X3, Rondebosch, 7701**
2.26 Leslie Commerce Building, Upper Campus
Tel: +27 (0) 21 650 4375/ 5748 Fax: +27 (0) 21 650 4369
E-mail: jacques.rousseau@uct.ac.za
Internet: www.uct.ac.za
@Commerce UCT **UCT Commerce Faculty Office**

17 03 2021

Kuvendren Pillay

Graduate School of Business

University of Cape Town

REF: REC 2021/03/014

**An Exploratory Study into Human Centred Design in**

**New Product Development for Low-Income Consumers.**

We are pleased to inform you that your ethics application has been approved, Unless otherwise specified this ethical clearance is valid until 31-Mar-2022 .

Your clearance may be renewed upon application.

Please be aware that you need to notify the Ethics Committee immediately should any aspect of your study regarding the engagement with participants as approved in this application, change. This may include aspects such as changes to the research design, questionnaires, or choice of participants.

The ongoing ethical conduct throughout the duration of the study remains the responsibility of the principal investigator.

We wish you well for your research.

2021.03.17
08:40:25 +02'00'

**Jacques Rousseau**
Commerce Research Ethics Chair
University of Cape Town
Commerce Faculty Office
Room 2.26 | Leslie Commerce Building

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E-mail: jacques.rousseau@uct.ac.za
Website: https://www.commerce.uct.ac.za/Pages/Ethics-in-Research

**Appendix E: Mapping of Results Section to Questions to Designers or Consumers**

| Question | Question |
|---|---|
| R1a: What are the motivations for product designers and developers in developing products for low-income consumers in South Africa? | What motivated you to push through these challenges or what are your motivations for working on projects like these for low-income consumers? |
| R1b: What are the challenges facing product designers and developers in developing products for low-income consumers in South Africa? | Have there been challenges during some of these projects that you needed to overcome? Can you tell me briefly about these?<br>And<br>You mentioned challenges you experienced on these projects; do you experience other challenges to designing products for the limitations of low-income consumers?<br>[Acceptability]Where there any barriers (not mentioned above) that you experienced when designing for these needs?<br>[Availability]What were the hurdles and considerations when designing for these channels?<br>[Affordability] What challenges did you experience when designing for this price tier? |
| R2: How are human-centred design practices embedded into the process that product designers currently follow to design products for low-income consumers? | How do you find this approach comes alive in your job when designing for low-income consumers?<br>Mind-sets: How do you find this approach comes alive in your job when designing for low-income consumers?<br>Methodology/Tools: How frequently do you practise these mind-sets in your day-to-day role involving NPD for low-income consumers? |
| R3a: How do these products currently meet consumer needs among low-income consumers | [Affordability] What did you think about the price? How much would you think you would want to pay for it? What |

| | |
|---|---|
| based on affordability in the 4As framework? | makes that a good price? What happens if you do not have enough for that item? |
| R3b: How do these products currently meet consumer needs among low-income consumers based on acceptability in the 4As framework? | [Acceptability] Tell me about these products? What do you use them for? Do they work the way you expect them to? |
| R3c: How do these products currently meet consumer needs among low-income consumers based on availability in the 4As framework? | [Availability] Where did you buy these? Was it easy to get to this place? Do you enjoy shopping there? Why? |
| R3d: How do these products currently meet consumer needs among low-income consumers based on awareness in the 4As framework? | [Awareness] How did you learn about this? Did you try it before you bought it? What other information did you see about this product, such as advertising or instore demonstrations? |
| R4a: How might human-centred design application in CPG companies enhance the affordability of product design for low-income consumers? | [Affordability] What challenges did you experience when designing for this price tier? |
| R4b: How might human-centred design application in CPG companies enhance the acceptability of product design for low-income consumers? | [Acceptability] Where this has gone well, how did you get closer to understanding the needs of the consumers, what mind-sets and methods you used – walk me through the journey to understand the problem [Acceptability] How did you test to see if you met these needs? |
| R4c: How might human-centred design application in CPG companies enhance the availability of product design for low-income consumers? | [Availability] How did you identify which channels would work best for this consumer to get this product? What mind-sets and methods did you use – walk me through the journey to understand where consumers prefer to shop? |

| | |
|---|---|
| | [Availability] How did you check to see if this worked for the consumer group? |
| R4d: How might human-centred design application in CPG companies enhance the awareness of product design for low-income consumers? | [Awareness] How did you design the communication to ensure the consumer's understanding of the benefit and increase their trial of the product? [Awareness] How did you test if this was the right approach? [Awareness] How did you identify which medium of communication would work best for the consumer? |

## Appendix F: Details of Respondents

| Designer/ Respondent | Age Range | Gender | Source of Income | Role |
|---|---|---|---|---|
| Consumer-1 | 36 - 45 | Female | Salary | N/A |
| Consumer-2 | 26 - 35 | Male | Salary | N/A |
| Consumer-3 | 26 - 35 | Female | Salary from Work | N/A |
| Consumer-4 | 26 - 35 | Female | Salary from Work | N/A |
| Consumer-5 | 36 - 45 | Female | Salary from Work | N/A |
| Consumer-6 | 26 - 35 | Female | Salary from Work | N/A |
| Consumer-7 | 36 - 45 | Female | Salary from Work | N/A |
| Consumer-8 | 36 - 45 | Male | Salary from Work | N/A |
| Consumer-9 | 26 - 35 | Female | Salary from Work | N/A |
| Consumer-10 | 36 - 45 | Female | Salary from Work | N/A |
| Consumer-11 | 26 - 35 | Male | Salary from Work | N/A |
| Consumer-12 | 18 - 25 | Female | Wage from work | N/A |
| Designer-1 | 36 - 45 | Female | N/A | Marketing Manager |
| Designer-2 | 36 - 45 | Male | N/A | R&D Manager |
| Designer-3 | 46 - 55 | Female | N/A | R&D Manager |
| Designer-4 | 26 - 35 | Female | N/A | R&D Manager |
| Designer-5 | 36 - 45 | Female | N/A | R&D Manager |
| Designer-6 | 26 - 35 | Female | N/A | Sales Manager |
| Designer-7 | 36 - 45 | Female | N/A | R&D Manager |
| Designer-8 | 26 - 35 | Female | N/A | Marketing Manager |
| Designer-9 | 36 - 45 | Male | N/A | R&D and Marketing Director |
| Designer-10 | 36 - 45 | Female | N/A | Marketing Manager |
| Designer-11 | 46 - 55 | Female | N/A | R&D Manager |
| Designer-12 | 36 - 45 | Female | N/A | Marketing Manager |

## Appendix G: Praxis: Open Source Resource

The following sections will provide practical application of the learnings from this study for practitioners. Specifically, the learnings are laid out as an outline for an online free resource to help companies build human-centred design practices into their new product development process.

The resource is developed for designers who are involved in new product development for low-income consumers and who would like to improve how their products resonate and meet the needs of this consumer group.

### Online Resource

The below is only a draft outline of what will become an online resource. The researcher will detail each topic further in the future when developing the resource. In this section a list of topics according to phases of development are detailed.

1. Establishing an understanding of acceptability, affordability, availability and awareness
    - Access to respondents: Designers may not always be able easily access consumers due to geographical distance, however working with community workers and establishing digital communication options, has been shown to low barriers to communication
    - Acceptability: It is important to start with understanding the needs and pain points from consumers. There are various tools available from human-centred design toolkits which can help you get closer to consumers and their related stakeholders to understand the problems they experience with products or which products could help tackle their pain points.
    - Affordability: Guidance is given on how to discuss financial resources as well as activities to test for affordability.

- Availability: This page will discuss how to identify related stakeholders who play a role in driving availability for low-income consumers. This section will also include case studies to highlight tactics other organisations have taken to help meet low-income consumer's needs to find products in a convenient manner.
- Awareness: This part of the guide will highlight how to build and test communication with consumers to improve the resonance of assets with low-income consumers. The section will highlight types of tactics to enhance awareness such as demonstrations, online content, instore assets as well as how to engage consumers in trial.

2. Upskilling: Each step will have details about methods or activities that can be applied, how to choose an activity based on the outcome or situation, how easily the activities can be carried out in low resource situations and how to carry these out virtually if needed. Ways to build the mind-set's that are important to human-centred design, like empathy, are also detailed in this guide. Building capability in mind-sets which support human-centred design will help practitioners to lead interventions with consumers and get the most out of the process.
3. Prototyping: The guide will offer ideas to designers on how they can prototype their ideas, starting early and doing this often to obtain feedback from consumers.
4. The site will also house links to existing human-centred design toolkits to help designers use an already developed toolkit. A few open source resources are listed below, sourced from Nemeth (2019).

| **Toolkit** | **Access Link** |
|---|---|
| IDEO: Design Kit: The Human-Centered Design Toolkit | www.ideo.com/post/design-kit |
| LUMA Institute: Innovating for People Handbook | www.luma-institute.com/our-offerings/book-and-cards |
| Stanford d.school: Design Thinking Bootleg | dschool.stanford.edu/resources/design-thinking-bootleg |
| Frog Design: Collective Action Toolkit | www.frogdesign.com/designmind/collective-action-toolkit-empowering-communities |
| Google Design Sprint Kit: Design Sprint Methodology | designsprintkit.withgoogle.com/methodology/overview |
| +Acumen: Human-Centred Design 101 Course | https://acumenacademy.org/course/design-kit-human-centered-design |

**Hints and Tips Section** (will be in a gamified format to increase engagement and learning)**:**

- Ensure that designers are empowered to work directly with consumers and related stakeholders since they are motivated by knowing that they are serving low-income consumers and having a positive impact on the health and wellbeing of these consumers.
- Since low-income consumers can be risk averse and prefer to buy trusted and well-known brands, the first priority is to ensure that the needs of availability are met. When trying to win over consumers, an underleveraged opportunity is engaging consumers in trial, for example free product sampling which negates the risk of trying different products.
- Spend time at the beginning of an NPD project to understand what are the needs, pain points or desires of a consumer by leveraging one of many human-centred design tools. Then work with consumers to identify what are the priority features that should be included in the solution you identify
- Do not rely on historic consumer information to close the gap between designers and consumers in the NPD journey. Work with consumer groups or agencies to identify consumers or related stakeholders who can help you better design with the human centricity needed to meet the evolving needs of this consumer group.
- Prototypes do not need to be advances. Simple handmade prototypes can be a good starting place to create stimulus for interviewees.
- Following the journey the consumer goes on into the retail environment will help you identify opportunities to design packaging artwork to maximise visibility in places with limited space available
- Leveraging local languages can help to build more connection with this low-income consumers
- Word of mouth is a strong motivator for this consumer group. Therefore finding ways to influence not just your target consumer but also people who are influencers to this consumer is important when raising awareness of new products.
- Do not be afraid to explore the needs of consumers beyond the essential consumer goods categories. Possible unmet needs in categories that seem expensive might have opportunities for disruption.

- With the strong prevalence on smaller package sizes, there is a significant need to understand the environmental impact of this packaging waste and opportunities to reduce this impact.
- Trust in communication and claims are important for low-income consumers. Therefore, ensure that communication is tested and co-developed with consumers for believability, impact and talkability due to word-of-mouth impact.