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Young consumers' purchase intentions towards plant-based products during the global climate crisis and Coronavirus pandemic

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DECLARATION

I, Jenasha Tooray (Pillay), declare that:

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ABSTRACT

The COVID-19 pandemic and climate crisis have impacted individuals' purchasing habits across many sectors. Plant-based products are one of the burgeoning sustainable products demanded by consumers. This research investigated the traditional green behaviour antecedents, namely environmental knowledge, environmental concern, attitude towards plant-based products, moral attitude, subjective norm and perceived behavioural control influencing plant-based product purchase intention, relative to health consciousness and concerns about the COVID-19 pandemic, not considered by previous South African research, to address the climate crisis in an emerging economy that is most vulnerable to climate change.

A conceptual framework was developed, based on an extension of the Theory of Planned Behaviour. Data was collected through the personal administration of questionnaires, from registered students at the five UKZN campuses. The positivist paradigm and cross-sectional quantitative, descriptive-correlational empirical research method were applied. Quota sampling resulted in 381 respondents. Exploratory factor analysis, descriptive analysis and structural equation modelling were employed. The data revealed that plant-based product adoption among young South African consumers is still in its infancy, albeit gaining momentum, as this cohort intends purchasing plant-based products for ecological reasons. The direct positive and significant predictors of influencing plant-based product purchase intention were subjective norm, moral attitude, and attitude towards plant-based products; with environmental concern, environmental knowledge, and concerns about the COVID-19 pandemic serving as predictors of influencing plant-based product purchase intention through attitude towards plant-based products. By understanding these factors, green marketers can devise appropriate tactics that support and promote influencing plant-based product purchase intention. This study also contributes evidence of young consumers' plant-based product purchase intentions and underscores the need for climate change education, plant-based product awareness and government intervention, thereby increasing young consumers' knowledge and willingness to adopt plant-based products during two major social issues facing mankind today.

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GLOSSARY OF ACRONYMS

ATT	- Attitude towards Plant-based Products
CFA	- Confirmatory Factor Analysis
C19P	- COVID-19 Pandemic
CC19P	- Concerns about the COVID-19 Pandemic
EFA	- Exploratory Factor Analysis
EC	- Environmental Concern
EK	- Environmental Knowledge
FMCG	- Fast-moving Consumer Goods
GHG	- Greenhouse Gas
GPB	- Green Purchase Behaviour
GPI	- Green Purchase Intention
HC	- Health Consciousness
IPCC	- Intergovernmental Panel on Climate Change
KMO	- Kaiser-Meyer-Olkin
MA	- Moral Attitude
PBC	- Perceived Behavioural Control
PBPPI	- Plant-based Product Purchase Intention
PEBs	- Pro-environmental Behaviours
PETA	- People for the Ethical Treatment of Animals
SA	- South Africa
SDG	- Sustainable Development Goal
SEM	- Structural Equation Modelling
SN	- Subjective Norm
TPB	- Theory of Planned Behaviour
TRA	- Theory of Reasoned Action
UK	- United Kingdom
UN	- United Nations
US	- United States
UKZN	- University of KwaZulu-Natal
UNEP	- United Nations Environmental Programme

CHAPTER ONE: INTRODUCTION AND OVERVIEW OF THE STUDY

1.1 Introduction to the Study

"Right now, we're facing a man-made disaster of global scale, our greatest threat in thousands of years: climate change. If we don't take action, the collapse of our civilizations and the extinction of much of the natural world is on the horizon" Attenborough (2018).

Climate change is one of the most critical and complex obstacles right now, therefore it is up to mankind to act now – to go green, as the future is in their hands. This phenomenon has been gaining momentum and garnered attention globally; and in South Africa (SA), where climate change mitigation processes are slow, this has now evolved into an increase in temperatures (Diemen, 2021: para 1-3). The average temperature in SA has increased by "1.5 times more than the observed global average of 0.65°C in the past 50 years" along with extreme weather events – drought and wildfires (Chersich & Wright, 2019, p. 2; Ziervogel, 2015: para 1). According to Atwoli et al. (2022, pp. vi-vii), based on the 2022 Intergovernmental Panel on Climate Change (IPCC) report, sub-Saharan Africa has suffered significantly due to the global climate crisis – vulnerable to poverty, displacement and infectious disease. Despite Africa contributing only 4% of the cumulative global greenhouse gas (GHG) emissions in 2021 and having the least amount of carbon emissions among all the continents – with each person emitting an average of one tonne of CO2 per year, South America comes in second with 2.5 tonnes, Asia with 4.6 tonnes, Europe with 7.1 tonnes, Oceania with 10 tonnes, and North America with 10.3 tonnes (AJLabs, 2023: para 1-3), it is the most vulnerable to climate change.

In light of the climate crisis, scores of young consumers – dubbed the 'green generation' (Bonera, Codini, & Miniero, 2020: para 289-290), are pushing for action across the globe to combat climate change. They have been embarking on worldwide climate strikes, led by young Swedish activist, Greta Thunberg, who first lectured the United Nations (UN) leaders at the UN Climate Action Summit in 2019, with her powerful and emotional speech to push for greater action on climate change (UN, 2019: para 1-7; UNICEF, 2019: para 1-13). The most recent climate change conference, COP28, held in December 2023, which followed a year of extreme global weather events, with many climate records broken, was rebuked by the climate activist, Thunberg (Limb, 2023: para 2). The COP summit system, according to Thunberg, is

a vehicle for nations and businesses to promote their climate credentials, without the effective implementation of climate mitigation processes (Poynting, 2023: para 14). To reduce worldwide heating to 1.5°C, the objective established by the 2015 Paris Climate Agreement, the outcome of COP28 saw a "transition away from fossil fuels", without a particular timeline specified, however, a commitment to phaseout fossil fuels is needed (Dearing, 2023: para 1; O'Malley, 2023: para 1). Also, according to Thunberg, if these COP processes resulted in solutions to solve the climate crisis, humanity would have seen the results by now (Jaffe-Hoffman, 2023: para 6). In SA, climate protests directed at government inaction, led by the African Climate Alliance, are intensifying, where youth are calling for policies to reduce climate change (Hendricks, 2022: para 1). Furthermore, environmental activist and author, Bill McKibben, indicated that younger generational age groups favour policies and initiatives that reduce GHG emissions (Woodward, 2019: para 3).

One particular outcome of the climate crisis, and one which young people have already witnessed in their lifetimes, is the transmission of contagious illnesses, namely COVID-19. This has been linked to the destruction of the natural habitat along with loss of biodiversity, which are associated with the transmission of infectious diseases, such as COVID-19 (Schmeller, Courchamp, & Killeen, 2020, pp. 3096-3098; Vidal, 2020: para 7). Due to deforestation, disease-carrying wild animals are forced closer to human populations, thus increasing the likelihood of zoonotic diseases, such as COVID-19 (Newburger, 2020: para 1-12; O'Callaghan, 2020: para 4-11; WEForum, 2020: para 4-5). However, there are also many other environmental and human health connections to take into consideration, such as air pollution which can cause respiratory and heart conditions and are linked to an increased risk of death from COVID-19 (Morris, 2021: para 5). The announcement of the COVID-19 pandemic on 11 March 2020 by WHO (WorldHealthOrganization, 2020a: para 6-10) has been a catalyst to the sudden lifestyle changes among individuals around the world (Ye et al., 2020, p. 2). COVID-19 has been associated with animal consumption, as evidence relating to COVID-19 suggests that the virus is of zoonotic origin (Haider et al., 2020, pp. 1-2; Loh, Seah & Looi, 2021, p. 2; WorldHealthOrganization, 2020a: para 5-11). The C19P resulted in a quasi-normal for billions of individuals across the globe, and they are now becoming increasingly concerned about their health, the environment and animal welfare (Boyer, 2020: para 4; Frost, 2020: para 6; Loh et al., 2021, p. 4; Milano, 2021: para 3).

The growing concerns for the environment, particularly amongst the youth, and the recent COVID-19 pandemic have led to the rise in the plant-based product diet. These have spurred a worldwide cultural shift around environmental sustainability and plant-based (PB) diets (Chiorando, 2020: para 1-2; TotallyVeganBuzzTeam, 2019: para 1-2). A PB diet is one of the leading defence mechanisms against the constant existential threat of COVID-19 (Rust & Ekmekcioglu, 2023, pp. 18-19). Hudepohl (2020: para 1-2) indicated that, apart from being beneficial to one's health, adopting a PB diet is also advantageous for the environment. Studies have revealed that adopting a PB diet could not only safeguard human health and improve quality of life, but it will also drastically reduce carbon emissions and save habitat for endangered species (Smith, 2014: para 2). Globally, there has been a decline in red meat consumption due to individuals seeking ways to reduce their carbon footprint (Kao, 2023: para 3-4; Rabb, 2022: para 1). Additionally, raising livestock involves the conversion of forests into agricultural land and livestock ranches, which is the major cause of deforestation and cattle emit 14.5% of global GHG emissions (Brown, 2019: para 3, 5).

In relation to young consumers specifically, the 'meat-life crisis' study conducted by PB milk giant, Oatly in the United Kingdom (UK), discovered that 54% of youth were willing to adopt a PB diet in order to help save the planet and reduce their carbon impact (Giliver, 2021: para 1-2). It is unclear, however, how young consumers in SA are affected by the global climate crisis and C19P, and specifically how these factors affect their purchase intentions towards PB products; hence this study was conducted. Moreover, to further justify the need for this study, Paul, Modi, and Patel (2016, p. 124), indicated that individuals in developed nations exhibit greater concern towards the environment than those residing in developing economies and in order to obviate more environmental degradation, "further research is required to understand the green purchase behaviour of consumers from emerging nations".

Ferraz, Buhamra, Laroche, and Veloso (2017, p. 14) and Hassan, Abbas, Zainab, Waqar, and Hashmi (2018, p. 7) also argued that green consumption research is relatively less common in emerging countries in comparison to developed economies. SA is considered a developing country, due to the high rates of poverty and unemployment, and despite having natural resource abundance and economic growth, it is one of the most industrialised nations in Africa in terms of GDP and wealth (Bakari, 2017, p. 2). According to Duddu (2022: para 1), emerging economies serve as a lucrative market for fast-moving consumer goods (FMCG) companies, big foodservice and retail firms due to their flourishing

population, increasing education levels and growing household income. SA is the second largest economic powerhouse in Africa, after Nigeria, with a GDP worth 418 billion US Dollars, in 2021 (Kamer, 2022: para 1). Therefore, this research investigated young South African consumers' purchase intentions towards PB products in light of two major social issues facing mankind today and will significantly contribute towards the consumer behaviour research and sustainability of the country.

Moreover, green consumption is relatively less common in emerging economies (Ferraz et al., 2017, p. 14) and as indicated by Mkhize and Ellis (2020a, p. 18), when it comes to their consumption behaviour, South African consumers are only moderately environmentally conscious. Mkhize and Ellis (2018, p. 122) also found that while 73% of their South African respondents demonstrated 'concern towards the environment', only 22% translated their concern into green consumption behaviour. This could indicate that green consumption is still relatively low in SA. Likewise, the systematic review on green consumption in Sub-Saharan Africa by Traoré, Belinga, and Lescuyer (2023, pp. 11-12) indicated that green consumption is still in its infancy in Africa, specifically among the working class (who are the majority), as they are concerned about meeting their basic needs rather than that of the environment.

As established above, the globe faces a climate crisis, which is a key concern of the youth. On top of this concern is the related but separate emergence of zoonotic diseases, such as COVID-19. These global threats have led to an increase in PB diets. However, emerging markets, such as SA, have seen a slow uptake of green product consumption generally and it is unclear what young consumers' perceptions are pertaining to the global climate crisis and their purchase intentions towards PB products. Thus, this study endeavoured to understand young South African consumers' plant-based product (PBP) purchase intentions and determine the level of importance of the traditional green behaviour antecedents that influence PBP purchase intentions during the global climate crisis and COVID-19 pandemic. This study also sought to determine whether concerns about the COVID-19 pandemic and health consciousness are catalysts for sustainable change in lifestyle and dietary habits. This study, conducted within an emerging economy in Africa, aligns with the Sustainable Development Goal 12 (SDG 12), ensuring responsible consumption, and SDG 13, involving the prevention and mitigation of the impacts of climate change (UN, 2023b, pp. 36-38). Young consumers' uptake of behaviours that mitigate the threat of diseases and continued degradation of the climate is important because these also address SDG 12 and SDG 13.

The background and motivation for conducting this study are presented in the subsequent section.

1.2 Background and Motivation for this Study

The climate crisis alluded to briefly in the Introduction, is dire and far reaching. For example, globally and in SA, there has also been a phenological shift that has been observed among species due to climate change (Fitchett, 2021: para 3-4). The study by Fitchett and Fani (2018), which focused on the timing of the annual cycle of the renowned Jacaranda blossom in SA, discovered that there has been an advance in flowering (from September to June). This is due to a temperature increase in Gauteng and if the temperatures continue to rise, the trees will be prone to heat stress and the continued advance in flowering could result in frost damage during the late winter months (Fitchett, 2021: para 2, 4-9, 12, 14). This is just an example of the warning signs urging the implementation of a robust climate change mitigation plan.

Additionally, as GHG emissions and global temperatures increase with records broken, nations have pledged to keep global warming to no more than 1.5°C by reducing carbon emissions to 43% by 2030, then to 60% by 2035 and attain net-zero carbon emissions by 2050, as declared in the Paris Agreement and IPCC (IPCC, 2023, p. 92; UNEP, 2023a, pp. 28-30). This is confirmed in Figure 1.1, which depicts the global average temperature as of July 2023. From the illustration it is evident that nations have not reduced their carbon emissions to prevent further global warming. Moreover, according to Figure 1.1, the world experienced record-high land and ocean temperatures, with July 2023 being the hottest month on record (NCEI, 2023: para 3-4).

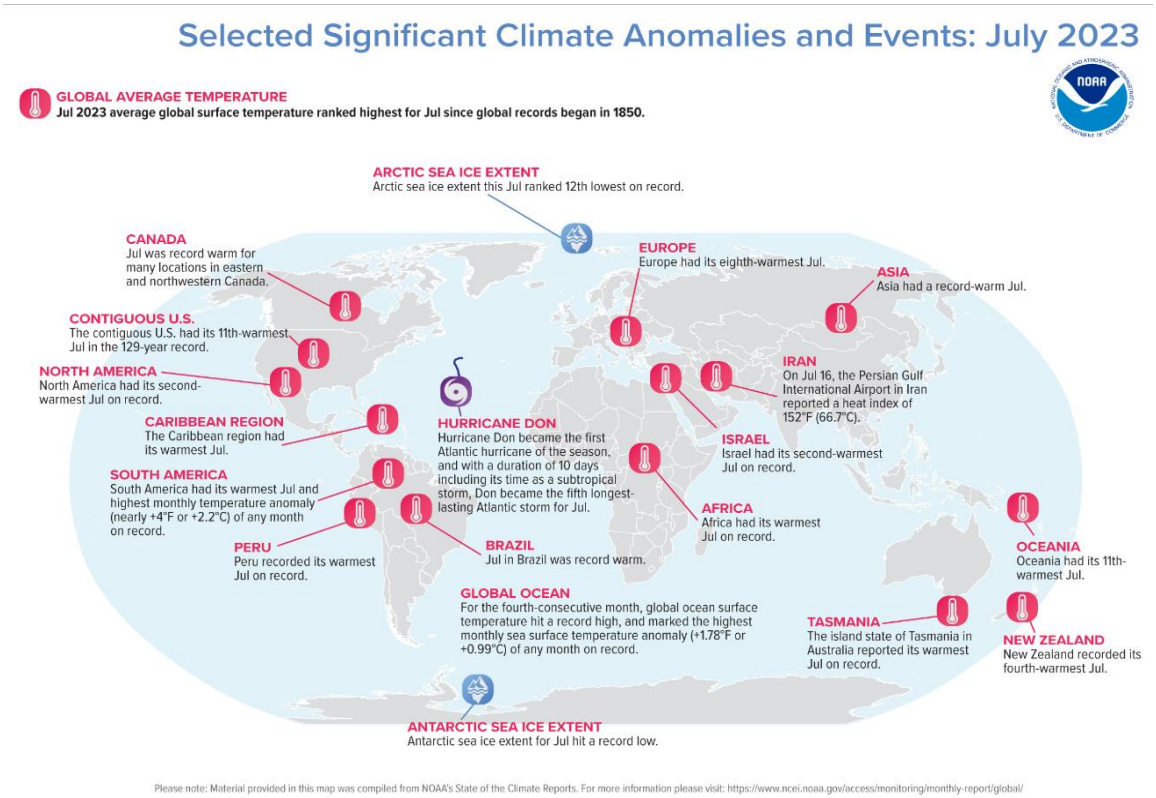

Figure 1.1: Global Average Temperature as of July 2023

(NCEI, 2023: para 1)

According to the United Nations Environmental Programme (UNEP) Emissions Gap Report 2023 (UNEP, 2023a, pp. 21-22), nations are not on track to attain this net-zero goal by 2050. Thus, urgent and sustained climate change mitigation action is needed by all nations to unite and fight against humanity's common enemy.

Young consumers are concerned about the environment and according to Naidoo (2019: para 1-5), climate change was one of the leading problems facing humanity today, among the young generations, as they are anxious about the fate of the planet – their future. As studies have revealed abroad, young consumers have a more sustainable outlook compared to the older generational age groups and are preparing for a better, more sustainable future (Hassim, 2021: para 1, 5-8, 11; Popovic, Bossink, & van der Sijde, 2019, pp. 13, 18; Sogari, Pucci, Aquilani, & Zanni, 2017, p. 3; Song, Qin, & Qin, 2020, pp. 1, 10-11). For example, due to pressure from eco-conscious students, several universities in the UK have now implemented a ban on beef and lamb due to the pressure from eco-conscious students (Peat, 2020: para 3, 5-7). This is one of the ways in which students in the UK can reduce their carbon footprint; by eliminating meat,

eggs, and diary from their diet. In the same vein, researchers from the University of Oxford stated that a PB diet not only improves human health, but has a low impact on the environment in comparison to red meat, poultry meat and dairy (UniversityofOxford, 2021: para 1-7). According to Kent, Kehoe, Flynn, and Walton (2021, pp. 1-2), a PB diet embraces a broad spectrum of dietary patterns highlighting plant products, namely vegetables, fruits, nuts, seeds, legumes, wholegrains, PB meat and dairy alternatives, with limited or no animal-based products.

Not only is the globe facing a climate crisis, but the COVID-19 pandemic had an unparalleled impact on the world's population. In addition, the pandemic, which transformed the lives of billions across the globe, is said to be here to stay and mankind needs to find a way to live with this entity, as this is humanity's reality now, and many scientists believe that the virus will become endemic (Phillips, 2021: para 2). The pandemic fuelled individuals' apprehensions about meat consumption and the negative impact it has on health and the environment (Food&BeverageInsider, 2021: para 1-3; Mascaraque, 2020: para 1, 4). Several studies have investigated the congruency between meat consumption and zoonotic diseases, such as COVID-19, which has now influenced consumers' dietary habits (Bogueva & Marinova, 2020, pp. 70-71; Espinosa, Tago, & Treich, 2020, pp. 1019-1024; Magouras et al., 2020, pp. 1-3; Reddy & Saier, 2020, pp. 2-3).

According to Attwood and Hajat (2020, pp. 3116-3117), individuals became familiar with the term zoonosis in 2020, around the inception of COVID-19 and this has led to individuals' diet status quo evolving (Lombardo et al., 2021, p. 1). The United Nations Food and Agriculture Organization (FAO) announced that COVID-19 has spurred the biggest plunge in meat consumption in decades, and research from around the world is also depicting that overall demand for meat is significantly declining, prompting food establishments to quickly begin offering more dishes made using vegan alternatives devoid of animal products (Ho, 2021b: para 1-5). In the same vein, studies carried out in the United States (US), China and the UK have revealed record levels of consumer interest and willingness to shift to PB products due to the pandemic (Ho, 2021b: para 11).

However, popularity towards a PB diet was already on the rise worldwide, prior to the COVID-19 pandemic (Poinski, 2020: para 8). Western societies experienced an increasing interest in PB diets due to the immense health benefits for weight, energy metabolism and systemic

inflammation (Medawar, Huhn, Villringer, & Veronica Witte, 2019, p. 1). Kim et al. (2021, pp. 264-265) discovered that individuals who followed a PB or pescatarian diet, (a PB diet which also includes fish and other seafood), had a lower risk of contracting severe COVID-19 and it was deduced that a healthy diet rich in foods comprising of vegetables, nuts and legumes, and a reduction in poultry, red and processed meat consumption, may provide a defence against severe COVID-19.

Since the current study focused on young consumers in SA, it is pertinent to look at existing research on green consumption perceptions and behaviours of South African youth. In 2019, Deloitte held its ninth annual Millennial survey, which featured respondents from 43 countries, where 200 South African Gen Z individuals and 309 Millennials participated (Deloitte, 2020, p. 1). The survey, which covered a myriad of issues, including the environment, revealed that over 90% of the participants agreed that climate change is most certainly unfolding and is predominantly caused by human activities (Deloitte, 2020, p. 8).

In January to February 2021, Deloitte conducted their tenth annual Millennial survey, where South Africans participated and it was revealed that climate change or the environment remains one of the top three concerns among the participants (Deloitte, 2021, pp. 2, 11). However, the key findings of this survey did not provide insight into whether these younger generations are willing to engage in climate change mitigation by adopting a PB diet in light of the pandemic to reduce their carbon footprint and it did not incorporate health concern in general. Thus, there was a need for the current study to be conducted to capture the insights pertaining to young South African consumers' purchase intention towards PB products during the global climate crisis and COVID-19 pandemic.

According to Dilotsotlhe (2021, p. 2), previous studies on green products, conducted in SA, focused on consumers' awareness, knowledge, perceptions, and habits in relation to green products but few focused on how these factors affect consumers' willingness and actual purchase behaviour. Koloba (2020) investigated the purchase intentions of South African consumers towards environmentally friendly products, whereas Bisschoff and Liebenberg (2016) investigated the factors influencing green purchase behaviour (GPB) in SA. Mkhize and Ellis (2018) examined the nature and extent of the green gap and investigated the reasons for the insufficient green behaviour among South African consumers, and Synodinos (2014)

investigated the factors influencing the green purchase behaviour of black South African Generation Y students.

In her study, Dilotsotlhe (2021) determined the factors influencing the purchase of green household appliances among South African millennials while Hamilton and Terblanche-Smit (2018) examined the purchase intentions of South African consumers towards alternative fuel vehicles (AFVs). Taljaard-Swart, Sonnenberg, and Jacobs (2017) investigated male consumers' underlying motivations and purchase intentions towards eco-friendly apparel acquisition in SA. While these studies broadened knowledge on South African consumers' green purchase intentions and behaviours, they did not relate specifically to food products. In relation to green food products, various studies have investigated South African consumers' perceptions and behaviours related to organic food products, for example, Mhlophe (2016) and Mkhize & Ellis (2019). While some incorporated a health-related independent variable, none could be found that specifically investigated concerns about COVID-19. Given the expected rise in zoonotic diseases (Marie & Gordon, 2023, p. 1; Wikel, 2024, p. 8), understanding concerns about a pandemic, such as COVID-19, is beneficial to investigate, hence the concerns about the COVID-19 pandemic variable was explored in the current study.

In relation to PB consumption specifically, the study conducted by Szejda, Stumpe, Raal, and Tapscott (2021), investigated the probability of consumers adopting PB meat alternatives and cultivated meat (produced by cultivating animal cells directly) in SA as a conduit for a food supply that is healthy, sustainable, and equitable (Szejda et al., 2021). The study comprised of 1 087 participants, aged 18 to 61 years and discovered that 67% or two thirds of South Africans demonstrated a high interest in trying novel sources of protein, such as cultivated meat and vegan or PB protein (Szejda et al., 2021, pp. 1, 4, 7). Interest was specifically among the younger generations, indicating the likelihood of these products being widely accepted and adopted (Szejda et al., 2021, p. 10). The authors stated that this was a maiden study, which analysed consumers' perceptions of cultivated and PB meat in Africa, and will serve as a crucial source for future research throughout Africa (Szejda et al., 2021, p. 10). However, the study's primary focus was not on the younger generations, but rather the general adult population in SA, and focused on both PB and cultivated meat. Although the study considered sustainability in light of the climate crisis, it did not factor in the COVID-19 pandemic and consumers' related concerns thereof, specifically. The authors also indicated that most of the research investigating consumers' perceptions of PB products has overlooked emerging economies predominantly in

Africa (Szejda et al., 2021, p. 2). Thus, to the researcher's knowledge, the current study can be considered to be the first of its kind, as it investigated young South African consumers' PBP purchase intentions, during two existential threats facing the planet today, the COVID-19 pandemic and global climate crisis.

Consequently, although it can be assumed that young consumers are green, it is unclear whether concerns about the COVID-19 pandemic positively or negatively influence plant-based product purchase intention in relation to the other traditional green behaviour antecedents, and whether young consumers are also concerned about their health in light of the pandemic. Knowing this is important because it will bridge the gap in existing literature relating to the relative role that concerns about the COVID-19 pandemic and health consciousness play in influencing young South African consumers' plant-based product (PBP) purchase intentions and the level of importance of the traditional green behaviour antecedents influencing the PBP purchase intentions of young consumers during the global climate crisis and COVID-19 pandemic.

The research problem is discussed next.

1.3 Research Problem

As discussed in the previous sections, research suggests that young consumers are green and their purchase decisions are influenced by environmental sustainability (Danziger, 2020; Hassim, 2021; Ho, 2020; Majhi, 2020; Mulloy, 2021; Nguyen et al., 2018; Petro, 2021; Quoquab & Mohammad, 2019; Rowland, 2018). Most research on this cohort in relation to green products, has been conducted abroad (e.g. Nguyen et al., 2018; Uddin & Khan, 2018; Wijekoon & Sabri, 2021; Yadav & Pathak, 2016; Zafar et al., 2020), and there are limited studies within emerging economies, such as SA, representing the first knowledge gap this study addresses: Young, emerging market consumers' green perceptions and behaviours amidst the climate crisis.

While some research in SA has investigated factors influencing purchase intentions and behaviours towards various green products generally (e.g. Dilotsotlhe, 2021; Hamilton & Terblanche-Smit, 2018; Koloba, 2020) and organic food consumption specifically (Mhlophe, 2016) and (Mkhize & Ellis, 2019), few have investigated health consciousness and its role, and none, to the author's knowledge, have considered concerns about a pandemic, such as COVID-

19, as influencers of PBP consumption. Since PBP consumption is beneficial to both individual health and the environment, this represents a significant gap in knowledge worthy of research. The study, most similar to the current study, by Szejda et al. (2021), investigated South African consumers' adoption of PB meat alternatives and cultivated meat. The research by Szejda et al. (2021), however, leaves the knowledge gap of knowing how young consumers, considered green and also most affected by the climate crisis, perceive and behave towards PB products. The current study focuses on this important demographic and expands the scope to PB products in general and not just meat alternatives. Addressing such knowledge gaps can make significant contributions to the achievement of SDG 12 (responsible consumption) as well as SDG 13 (climate change mitigation), thus again representing a significant knowledge gap important to address.

The purpose of conducting this study is discussed in the next section.

1.4 Purpose of the Study

As previously stated, there are limited studies that focus on young South African consumers' dietary patterns and none that focus on the purchase intentions towards PB products during and post COVID-19 and during the climate crisis. Hence, the aim is to close this gap, by advancing knowledge through the development of a conceptual framework and empirical findings of the study.

Therefore, this study investigated young South African consumers' PBP purchase intentions and determined the level of importance of the traditional green behaviour antecedents, such as attitude towards plant-based products, perceived behavioural control, subjective norm, environmental knowledge, moral attitude and environmental concern that influence plant-based product purchase intention during the global climate crisis and C19P. Furthermore, it was important to determine whether health consciousness and concerns about the COVID-19 pandemic are catalysts for sustainable change in lifestyle and dietary habits. Consequently, the concerns about the COVID-19 pandemic and health consciousness variables were included in this study to determine the level of influence they exert on young consumers' PBP purchase intentions. The mediating role of attitude towards plant-based products in the relationship between the independent variables of environmental concern, environmental knowledge,

health consciousness and concerns about the COVID-19 pandemic, and plant-based product purchase intention, was also investigated.

The research question and objectives of the study are presented next.

1.5 Research Question

The overarching research question of this study is outlined below.

To what extent have young South African consumers adopted plant-based (PB) products and how do environmental knowledge (EK), environmental concern (EC), attitude towards plant-based products (ATT), moral attitude (MA), subjective norm (SN), perceived behavioural control (PBC) and health consciousness (HC) affect intentions to purchase these products amidst the global climate crisis and COVID-19 pandemic (C19P)?

Research objectives were formulated to unpack the factors influencing UKZN students' purchase intentions towards and their adoption of PB products in light of the global climate crisis and COVID-19 pandemic.

1.6 Research Objectives

Five research objectives were formulated, with reference to the study's purpose, which was to understand the PBP purchase intentions among young South African consumers and determine the level of importance of the traditional green behaviour antecedents that influence young consumers' intentions to purchase PB products during the global climate crisis and COVID-19 pandemic, compared to health consciousness and concerns about the COVID-19 pandemic, and determine whether these two variables are catalysts for sustainable change in lifestyle and dietary habits. The purpose was also to investigate the mediating effect of attitude towards plant-based products. Thus, the objectives were to:

1. ascertain UKZN students' perceptions about plant-based (PB) products.
2. determine the extent to which UKZN students have adopted and are willing to adopt plant-based (PB) products.
3. assess the role played by traditional green behaviour antecedents, such as environmental knowledge (EK), environmental concern (EC), attitude towards plant-

based products (ATT), moral attitude (MA), subjective norm (SN) and perceived behavioural control (PBC) on plant-based product purchase intention (PBPPI).

4. examine the relative roles of health consciousness (HC) and concerns about the COVID-19 pandemic (CC19P) on plant-based product purchase intention (PBPPI).
5. explore the mediating effect of attitude towards plant-based products (ATT) on the relationships between environmental knowledge (EK), environmental concern (EC), health consciousness (HC) and concerns about the COVID-19 pandemic (CC19P) and plant-based product purchase intention (PBPPI).

An overview of the literature review pertinent to this study is presented next.

1.7 Overview of the Literature Review

Concern for the natural environment has taken precedence, whereby individuals from around the world, specifically the younger generations – the 'green and PETA generation', demonstrate environmentally and socially-conscious consumer behaviour (Hassim, 2021: para 1; PETA, 2019: para 1-4; YPulse, 2019: para 1-3). Some of the unprecedented global climate events experienced in 2023 include Somalia being ravaged by one of the worst floods in decades; Europe being devastated by record-breaking winds, heavy rain, and floods; intense flooding and heatwaves gripping SA; Mexico being hit by one of the strongest hurricanes to date; wildfires engulfing Argentina; extreme heat devastating parts of Europe, Asia, North, Central and South America; and the melting of the Himalayan glaciers triggering flash floods in India (ARC, 2023: para 1; Menon, 2023: para 1-2; Mlaba, Banjo, & Lowery, 2023: para 1-5).

Throughout the COVID-19 pandemic, there has been a notable diet shift across the globe, which has induced a significant surge in PB food consumption, including meat alternatives (Loh et al., 2021, p. 4). In addition, some studies report that COVID-19, a zoonotic disease, has spurred an increase PBP consumption around the world (Beacom, Bogue, & Repar, 2021, p. 2; Loh et al., 2021, p. 4), primarily due to increasing health concerns among consumers (Acosta-Navarro et al., 2024, p. 2; Samira et al., 2023, pp. 1-2), and a link has been found between meat consumption and zoonosis (Berdak, 2020: para 1, 4; Mascaraque, 2020: para 1-3). Since the COVID-19 outbreak, a particular concern among individuals was meat safety, as there were cluster outbreaks within meat and fish processing plants, which are conducive for

zoonotic spread around the world (Günther et al., 2020, pp. 1-2; Loh et al., 2021, pp. 5-6). Correspondingly, the research by Yaran You, conducted in 2020, investigating the shift towards veganism among Chinese individuals, revealed that the majority of individuals shifted towards a PB diet, and some did so due to safety reasons, as they acknowledged the possible role of meat consumption in the transmission of COVID-19 (You, 2020, p. 302).

In SA, PBP adoption is gaining momentum, due to the worldwide growth of the vegan industry and young South African consumers being more open and willing to try and purchase PB products than the older generations (Ho, 2021a: para 5, 9; Webber, 2021: para 9-10). Additionally, young consumers are more concerned about climate issues and how the food choices that individuals make affect the future of the planet, than the older generations (Ballew et al., 2019: para 1-8; Tyson, Kennedy, & Funk, 2021: para 5-6). Against this backdrop, this study investigated young South African consumers' purchase intentions towards PB products during the global climate crisis and COVID-19 pandemic. South African and international literature were reviewed to support this study's results, which is presented in Chapter Two of the thesis.

An overview of the conceptual framework is presented next.

1.8 Overview of the Conceptual Framework

An integrated conceptual framework was developed for this study, which amalgamates various concepts, founded on the Theory of Planned Behaviour (TPB) and extended TPB model by Maichum, Parichatnon, and Peng (2016); the theoretical framework by Yadav and Pathak (2016) and the grounded theory framework by Qi, Yu, and Ploeger (2020). This model was developed to determine young South African consumers' willingness to purchase PB products and adopt PB products during the two serious threats faced by humanity, today, the global climate crisis and COVID-19 pandemic, and determine the level of importance of the traditional green behaviour antecedents that influence plant-based product purchase intention, compared to health consciousness and concerns about the COVID-19 pandemic.

There were nine variables selected for the purpose of the study, as indicated in Figure 1.2. These variables along with the hypothesised relationships between them are discussed and justified further in Chapter Two. The variables of this study were adapted from the models by

Maichum et al. (2016); Qi et al. (2020) and Yadav and Pathak (2016). These variables are outlined below.

- ***Attitude towards plant-based products (ATT)*** – attitude involves an individuals' response towards an action upon evaluating it (can be positive or negative) (Zheng, Siddik, Masukujjaman, Alam, & Akter, 2020, p. 7), and in the context of this study, ATT signified consumers' attitudes towards PB products.

- ***Moral attitude (MA)*** – assessed the positive assessments of an individual that result from expected adherence to their moral values (Yadav & Pathak, 2016, p. 123).

- ***Subjective norm (SN)*** – denoted "the social pressure to behave in a certain way" as perceived by individuals (Setyawan, Noermijati, Sunaryo, & Aisjah, 2018, p. 146).

- ***Perceived behavioural control (PBC)*** – signified a person's perceived difficulty or ease in behavioural execution (Maichum et al., 2016, p. 4).

- ***Environmental concern (EC)*** – measured the degree to which individuals understand environmental issues and are prepared to offer solutions (Zheng et al., 2020, p. 7).

- ***Environmental knowledge (EK)*** – referred to the level of environmental awareness an individual possesses, the connections between various environmental elements and accountability to preserve the environment for coming generations (Kumar, 2012, p. 10).

- ***Health consciousness (HC)*** – signified the degree to which individuals' daily activities incorporate health concerns (Yadav & Pathak, 2016, p. 123).

The latter two variables applicable to this study were plant-based product purchase intention (PBPPI) and concerns about the COVID-19 pandemic (CC19P). Figure 1.2 portrays the conceptual framework, which was developed for this study, depicting the factors influencing young consumers' PBP purchase intentions during the global climate crisis and COVID-19 pandemic. This model also depicts the mediating variable, ATT, to determine if the paths

between EC and PBPPI, EK and PBPPI, HC and PBPPI and CC19P and PBPPI are mediated by the effect of ATT.

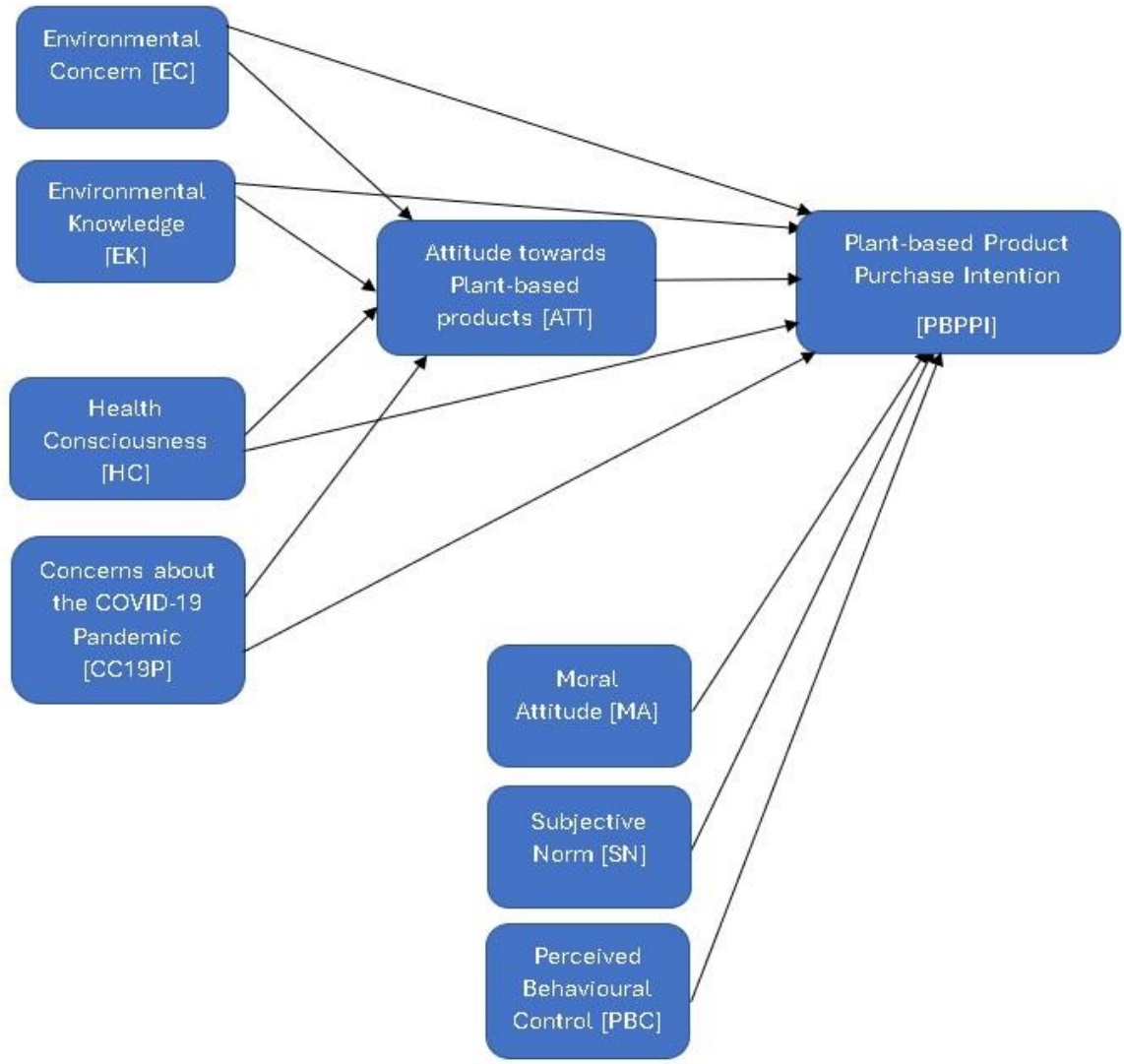

Figure 1.2: Conceptual Model of the Factors Influencing Young Consumers' Plant-based Product (PBP) Purchase Intentions During the Global Climate Crisis and COVID-19 Pandemic (C19P)

Twelve hypotheses were developed to determine the relationships among the variables. As depicted in Figure 1.2, plant-based product purchase intention (PBPPI) was the dependent variable. The independent variables were moral attitude (MA), attitude towards plant-based products (ATT), environmental concern (EC), perceived behavioural control (PBC), subjective norm (SN), health consciousness (HC), environmental knowledge (EK) and concerns about the COVID-19 pandemic (CC19P). The mediating role of attitude towards plant-based products (ATT) in the relationship between the independent variables of environmental concern (EC),

environmental knowledge (EK), health consciousness (HC) and concerns about the COVID-19 pandemic (CC19P), and plant-based product purchase intention (PBPPI), was also investigated and justified in Chapter Two.

The hypotheses are listed below, however, the rationale for each hypothesis is provided in Chapter Two.

H_1: UKZN students' attitude towards plant-based products positively influences their intention to purchase PB products.

H_2: Moral attitude positively influences UKZN students' purchase intentions towards PB products.

H_3: Subjective norm positively influences UKZN students' purchase intentions towards PB products.

H_4: Perceived behavioural control positively influences UKZN students' purchase intentions towards PB products.

H_5: Environmental concern positively influences UKZN students' purchase intentions towards PB products.

H_6: Attitude towards plant-based products mediates the effect of environmental concern on UKZN students' plant-based product purchase intentions.

H_7: Environmental knowledge positively influences UKZN students' purchase intentions towards PB products.

H_8: Attitude towards plant-based products mediates the effect of environmental knowledge on UKZN students' plant-based product purchase intentions.

H_9: Health consciousness positively influences UKZN students' purchase intentions towards PB products.

H_{10}: Attitude towards plant-based products mediates the effect of health consciousness on UKZN students' plant-based product purchase intentions.

H_{11}: Concerns about the COVID-19 pandemic positively influence UKZN students' purchase intentions toward PB products.

H_{12}: Attitude towards plant-based products mediates the effect of concerns about the COVID-19 pandemic on UKZN students' plant-based product purchase intentions.

The next section provides a summary of the research methodology.

1.9 Overview of the Research Methodology

The study was conducted on the five campus sites at the University of KwaZulu-Natal (UKZN), namely Howard College, Westville Campus, Pietermaritzburg (PMB), Edgewood, and the Medical School. The unit of analysis comprised of young consumers, aged 18 to 40 years old, thus registered students from UZKN constituted the sample. This research was conducted through the lens of a positivist objectivist philosophy, which directed the researcher's choice of research strategy, data collection and analysis methods. Thus, a cross-sectional quantitative, descriptive-correlational empirical research method were applied.

The quota sampling technique was utilised, whereby a sample of 381 respondents were selected for this study. Based on the application of quota sampling, 122 respondents were from Howard College, 76 respondents from PMB, 23 respondents from the Medical School, 95 from Westville Campus and 65 from Edgewood. The UKZN campuses, within two municipalities – the eThekwini and Msunduzi Local municipalities in the KwaZulu-Natal province were selected, as prior studies on GPB in SA were conducted in the Gauteng and Free State provinces, as evident in the studies by Bisschoff and Liebenberg (2016); Dilotsotlhe (2021); Koloba (2020); Mhlophe (2016) and Synodinos (2014). Additionally, UKZN is one of the largest, oldest and most transformed universities in sub-Saharan Africa and is one of the four universities in SA ranked in the top 500 universities in the world (THE, 2022: para 1; UKZN, 2022c: para 3).

A self-administered questionnaire (Appendix B) was utilised for the collection of primary data at the five UKZN campus sites. The questionnaire comprised of 12 sections – Section A to Section L. Sections A – I pertained to the study's key variables and employed a five-point Likert scale that ranged from 1 (strongly disagree) to 5 (strongly agree), to measure the responses. Meanwhile, Sections J and K were developed to measure respondents' perceptions about COVID-19 and their food consumption behaviours, respectively. These constructs were not part of the model in this study; they were employed to reveal additional findings related to Research Objectives One and Two, respectively, which sought to determine young consumers' perceptions about PB products and the extent to which they have adopted and are willing to adopt such products in light of the climate crisis and pandemic. The justification for the inclusion of these constructs in this study is included in Chapter Two.

Section L measured the biographical details of respondents, where a nominal scale was used with closed-ended questions. To ensure the reliability of the research instrument, a pre-test was conducted on 12 individuals including an expert in eco-conscious consumerism and an experienced academic researcher, an expert statistician and 10 student respondents.

The data collected was processed, analysed, and interpreted by employing Statistical Package for Social Sciences (SPSS) and AMOS (Analysis of Moment Structures) version 27. Exploratory factor analysis (EFA), structural equation modelling (SEM), correlation analysis, reliability and validity analysis and descriptive analysis were the statistical methods utilised in this study.

The de-limitations of the study are discussed below.

1.10 De-limitations of the Study

Only one tertiary institution in SA was selected, within two municipalities and this study focused on the student population as a unit of analysis, in order to gather the perceptions of young consumers relating to plant-based product purchase intention during and post COVID-19 and during the global climate crisis. However, according to Dubihlela and Dubihlela (2017, p. 131), "university students are among the young South Africans constituting a significant portion of total consumers in the South African market", hence the justification for the unit of analysis in this study. Similarly, most of the extant literature focusing on young consumers'

green purchase intentions and behaviours have also utilised students and not the general public (Bhutto, Zeng, Soomro, Mussadiq, & Khan, 2019; Dilotsotlhe, 2021; Nguyen et al., 2018; Setyawan et al., 2018; Song et al., 2020; Soomro et al., 2020; Synodinos, 2014), therefore, this delimitation is believed to be acceptable.

Furthermore, only certain known antecedents of green behaviour were investigated in this study. There are many green behaviour models as well as variables, but to address the purpose of this study, there needed to be a limitation on the number of variables tested. Therefore, the variables employed in this study were extracted from the most commonly used models of GPB by Maichum et al. (2016); Qi et al. (2020) and Yadav and Pathak (2016).

Additionally, this study's primary focus was on PB food products, namely meat, dairy and egg alternatives, in general, as opposed to other green products, such as energy or fuel-efficient vehicles, eco-friendly household detergents, apparel, cruelty-free cosmetics, toiletries and energy-saving light bulbs (Heller & Green, 2020, pp. 6-19; Naz, Oláh, Vasile, & Magda, 2020, pp. 2-4; Sarumathi, 2014, p. 778).

A brief outline of the ethical considerations is presented in the next section.

1.11 Ethical Considerations

As a mandatory requirement, all researchers need to familiarise themselves with the research ethics (Jenn, 2006, p. 74), as they are the moral principles that govern a researcher's behaviour (Resnik, 2020: para 2-3). According to Parveen and Showkat (2017, p. 3), "research ethics is referred to as doing what is morally and legally right in research". The basic rights of the respondents in this study were protected, and the research data was not misrepresented.

Ethical clearance approval, from the UKZN Research Office, was obtained to conduct this study (Protocol Reference Number: **HSSREC/00005159/2023)**; refer to Appendix H. Gatekeeper's approval was acquired from the UKZN's registrar to administer the questionnaires to students (Appendix C). Moreover, prior to administering the questionnaires at the Medical School, permission was sought from Prof. Ndlovu, the Dean and Head of the School of Clinical Medicine, to access the students at the Medical School (Appendix D).

This study involved respondents who were 18 to 40 years old, hence parental informed consent was not required. Informed consent is the cornerstone of research ethics and obtaining it is crucial in fulfilling ethical research principles of justice, respect and beneficence (Xu et al., 2020, p. 1). Based on the aforementioned, prior to completing the questionnaire, respondents were provided with an informed consent letter (Appendix A), which outlined the study's objectives, ensured respondent anonymity, informed respondents that they were taking part in the research and what was required of them. Respondents were informed about voluntary participation and the capacity to withdraw from the study at any time, without repercussions. Respondents were also assured that they would remain anonymous, as this study was purely for academic purposes and any published results would only be in summary form. At no point in time were respondents coerced into disclosing their personal data, as anonymity of respondents was guaranteed and there was no breach in confidentiality and privacy.

The contributions of the study are highlighted next.

1.12 Contributions of the Study

This study on young South African consumers' purchase intentions towards PB products during the global climate crisis and C19P should be beneficial to governments, policy makers and green marketers, by providing useful insights into this relatively uncharted territory in SA. For instance, when devising sustainable strategies that are targeted towards this consumer cohort, this study provides useful measures to governments and policy makers, as they will become aware of the extent to which, and the reasons why young consumers are adopting PB products.

Governments and policymakers will be able to determine the extent to which young South African consumers are concerned about environmental issues and aware that mankind is in a state of planetary emergency, which will then assist them to develop more robust social interventions not only for the general public, but also for educational institutions. These could include, but not be limited to, green education, implementing eco-socially conscious awareness campaigns focusing on global warming or other major environmental problems, educating society about the ways to mitigate the climate crisis, and highlighting the connection between the over consumption of animal products and zoonotic diseases. In addition, within the green food industry, governments and stakeholders could utilise the results of this study to devise

suitable future public health and marketing strategies, serving as vehicles to encourage healthier and sustainable lifestyles and PB food consumption. Likewise, the growing demand for PB food options may also be able to motivate governments to introduce PB menu items in hospitals, schools, universities, government canteens and social events. Furthermore, governments, policymakers, educational institutions and various other stakeholders can invest in educating and enlightening individuals about the global climate crisis and how they can mitigate the effects of this.

Green marketers will also be able to determine if there is a lucrative market for PB products among young South African consumers, especially within the hospitality industry, as the PB trend has a significant impact on this industry due to it gaining momentum, not only across the world, but in SA as well. For a developing country, such as SA, the empirical evidence of this study presents a clear understanding of the motives and factors influencing the PBP purchase intentions of young consumers, as this consumer cohort plays an important role in the future global economy – young consumers are the future. The demand for PB products continue to soar globally, where health and environmental sustainability are the key drivers (Kerry, 2022, p. 6); thus the insights from this study will shed some light upon sustainable and healthy consumption from a South African context. Furthermore, since the important indicator of behaviour is purchase intention, gaining a better understanding of consumers' purchase intentions is critical for strategic market planning in the future and developing the PB food sector in SA.

There are also methodological contributions resulting from the concerns about the COVID-19 pandemic (CC19P) construct, as scale items for this construct were developed. These items could be useful for measuring consumers' attitudes towards other zoonotic diseases or future pandemics, apart from COVID-19.

With reference to the theoretical contributions, new insights pertinent to the COVID-19 pandemic (C19P) and its impact on consumers' dietary patterns and PBP purchase intentions have been established from a South African perspective. Moreover, the TPB model was extended by including variables, such as environmental concern (EC), health consciousness (HC), moral attitude (MA), concerns about the COVID-19 pandemic (CC19P) and environmental knowledge (EK) in order to determine its influence on young consumers' PBP purchase intentions. Furthermore, the validated model, generated, improves predictive power

and theoretical clarity by providing an opportunity to uncover the factors influencing young consumers' PBP purchase intentions under the effect of the pandemic (or a future zoonosis or pandemic) and the global climate crisis. Hence, this study serves as scaffolding for future studies relating to PBP purchase intentions and consumption during future global health and climate crises, within a South African context.

As previously indicated, purchase intention for PB products in SA has been generally unexplored with just a few significant studies that were published within the field of green purchase intention. This study further contributes to the current knowledge base encompassing green, organic and PBP purchase intentions by investigating the degree to which young consumers in an emerging economy, within Africa, are health conscious and concerned about the environment, knowledgeable about environmental issues and changing their dietary patterns due to concern surrounding COVID-19.

An overview of the thesis is presented in the next section.

1.13 Overview of the Thesis

The thesis constitutes five chapters, with the introduction, background and motivation for this study, research problem, purpose, objectives, including an overview of the literature review, conceptual framework, and research methodology, which are presented in Chapter One. The de-limitations, ethical considerations and contribution of the study are also elucidated in the introductory chapter. A brief synopsis of the remaining chapters is stipulated next.

Chapter Two provides an assessment of the extant literature and previous studies pertinent to green purchase intention and consumption, followed by PBP consumption among young consumers during the global climate crisis and C19P. Thereafter, the frameworks underpinning this study that serve as a cornerstone for the formulation and development of the conceptual framework, which depict the possible factors that influence young consumers' PBP purchase intentions are presented. Finally, the variable and hypotheses development in tandem with a theoretical background are discussed and justified.

Chapter Three provides a description and justification of the study's research methodology. A discussion on the marketing research process is presented at the onset, followed by the research

paradigm, approach and design, the unit of analysis, sampling plan and questionnaire design. The procedure for data collection in tandem with the statistical analysis techniques are presented. The methodology outlined in this chapter provides a baseline for the data that has been gathered and ensures that the research questions are answered.

Chapter Four highlights the findings obtained from the research. A report of the sample is presented, thereafter the results of the EFA is provided. The results obtained from the empirical testing of the conceptual model of the factors influencing young consumers' PBP purchase intentions are also reported, where SEM was employed. The results of the mediation analysis follow. Finally, a discussion on the descriptive analysis is presented.

Chapter Five presents a retrospection of the entire study in tandem with the conclusive findings. A comprehensive discussion for each research objective is also provided. The contributions, focusing on the theoretical, methodological, and practical implications are discussed. Finally, the study's limitations along with the recommendations for future research are presented.

1.14 Conclusion

This chapter provided insight pertinent to the dimensions of the study, more specifically, the global climate crisis, C19P, and an overview of the consumption and purchase intentions of PB products among young consumers. The background and motivation for the study, along with the research problem, purpose and objectives were elucidated. Based on the robust theoretical foundation, which was provided, a conceptual framework for this study was created, which led to the development of 12 hypotheses. This chapter also outlined the research methodology, de-limitations, ethical considerations, contribution of the study and finally, provided an overview of the thesis.

It is evident in the extant literature that the global climate crisis requires urgent mitigation and is a great concern among young consumers. There has also been a significant increase in the demand for PB products or meat and dairy alternatives across the world, with PB product gaining popularity, specifically among the South African consumer market, more so due to the C19P. Concerns surrounding health, the environment and animal welfare are gaining momentum, especially among the young consumer cohort, who are anxious about the planet's future. Additionally, due to climate anxiety, the desire to eat healthier, and curtail future

pandemics or zoonoses, the PB movement is soaring in popularity. However, there is limited knowledge about young South African consumers' PBP purchase intentions, hence the need for this study.

In the succeeding chapter, the literature review of the study is presented, which includes a discussion on the study's theoretical underpinnings along with the formulation and development of the conceptual framework. This leads into a discussion and justification of the study's hypotheses.

CHAPTER TWO: PLANT-BASED PRODUCT PURCHASE INTENTIONS

2.1 Introduction

This chapter presents a review of both South African and global literature which has been accomplished by utilising a myriad of academic information sources pertinent to the topic at hand. Chapter One provided an overview of the global climate crisis, the COVID-19 pandemic (C19P) and plant-based product (PBP) purchase intentions among young consumers. This chapter explores these components further and delineates the relative importance of the selected traditional green behaviour antecedents, which has spurred debate among researchers in the field, and are pertinent to the PBP purchase intentions among young consumers. In doing so, a conceptual model was developed to investigate the factors influencing young consumers' PBP purchase intentions. Moreover, a thorough analysis of the prominent frameworks that underpin this study is presented, which leads into a discussion on and justification of each hypothesis, along with the conceptual framework developed for this study's purpose.

It was already established in Chapter One that there are limited studies conducted in SA that focus on green, organic and PB food purchase intentions among consumers and the factors that influence their purchase decisions. This was also validated by Dilotsotlhe (2021, p. 2) and Mhlophe (2016, p. 3), who indicated that there is limited research on environmentally friendly product consumption in SA, hence this study addressed the deficiencies in the extant literature.

2.2 The Global Climate Crisis

As Sir David Attenborough indicated in the documentary - *A Life on Our Planet*, 2020: "Our imprint is now truly global. Our impact is now truly profound, our blind assault on the planet has finally come to alter the very fundamentals of the living world" (Fothergill, Hughes, & Scholey, 2020: para 10). This is crucial and clearly states that mankind is in a planetary emergency, hence the need for curtailment action to prevent the biggest threat that modern humans have ever faced. Scientific evidence pertaining to the vital signs of climate change from NASA indicate that there has been a global temperature rise, oceans are warmer than ever before, hence the melting of the ice caps (NASA, 2020, p. 1).

Additionally, there are also areas of decreased snow cover indicating that the snow is melting at a rapid rate, global sea level rise is escalating each year, the extreme weather patterns and ocean acidification are all what places humanity in a global climate crisis (Anthony, 2016, p. 61; EPA, 2021: para 1-2; IPCC, 2021: para 1; NASA, 2020, p. 1; Tebaldi et al., 2021, p. 746; Whitmee et al., 2015, p. 1980). It is time for individuals to go green in order to ensure sustainable living and the well-being of planet earth (Batista, 2022: para 2-3).

As such, human change is needed not climate change (Horton & Horton, 2019, p. 90; Tortell, 2020, pp. 8689-8690), hence the dire need for humanity to defend and cherish the natural world. Furthermore, SA is already experiencing the negative impacts of climate change; during the April 2022 floods in KwaZulu-Natal, 400 people died and more than 40 000 people were displaced without basic water and sanitation (Muponde & Lesele, 2022: para 11). The Director of the *Climate Risk Lab at the African Climate and Development Initiative*, Dr Christopher Trisos, indicated that SA relies heavily on coal for electricity and the common downside of burning coal is the emission of greenhouse gases, which is the largest contributor of climate change, thus government policies need to be reinforced to reduce demand or overconsumption of fossil fuels to cut GHG emissions (ENCA, 2023: para 1). According to SDG 13, a climate cataclysm is imminent, hence urgent and transformative action from individuals, organisations and governments is vital, before it is too late (UN, 2023b, p. 38).

The high consumption of meat and dairy products, animal agriculture through the GHG emissions of methane and nitrous oxide and deforestation to expand pastures for animal agriculture are contributing to global warming (Grossi, Goglio, Vitali, & Williams, 2018, pp. 69-70, 74; Ridoutt, Hendrie, & Noakes, 2017, pp. 934-938; Rojas-Downing, Nejadhashemi, Harrigan, & Woznicki, 2017, pp. 146-149). According to Gates (2018: para 10) , "if cattle were a nation, they would become the third largest emitter of greenhouse gases", following China and the US. Individuals' shift toward a PB diet is fundamental to meet the climate change mitigation goals (Bajželj et al., 2014, p. 10). According to Rowling (2019: para 1-3), a survey conducted by Amnesty International among 10 000 young consumers, aged 18-25, from 22 countries across six continents revealed that 41% of the sample selected climate change as one of the most significant challenges of today.

Thus, for young consumers, the global climate crisis is one of the greatest challenges of their age, as they are the future; hence this study is relevant today. Global warming, pollution,

ecosystem disequilibrium, the energy crisis and climate change are some of the most serious environmental crises facing humanity, today (Shah, 2015: para 1-6). Correspondingly, as previous research indicated, these environmental issues, apart from health and ethical concerns, have motivated consumers to reduce their meat consumption or eliminate meat and animal products from their diet (Barnhill et al., 2022, pp. 21; Canova, Bobbio, & Manganelli, 2020, pp. 2-4; Mathur et al., 2020, p. 2, Rust et al., 2020, pp. 2-4; Sanchez-Sabate & Sabaté, 2019, p. 8; Szczebyło, Halicka, Rejman, & Kaczorowska, 2022, p. 11), amongst other environmentally friendly or green behaviours. Therefore, the current study sought to understand whether the global climate crisis might be a greater reason for interest in PB products, among young South African consumers, than the C19P.

2.3 Green Consumer Behaviour

According to Yue, Sheng, She, and Xu (2020, p. 2), green consumption behaviour involves a type of buying behaviour that lessens the negative environmental effects of consuming throughout the entire process of purchasing, using, and disposing, especially during the stage of purchasing eco-friendly products. As explained by Shandwick (2020: para 6-8) and WWF (2021: para 1-5), due to the global climate crisis and being in a state of planetary emergency, there has been a steady growth in the green consumer market recently and these green consumers demand products that are environmentally friendly or green (Clifford, 2021: para 1-3, 6, 9, 12; Pavid, 2020: para 1-3). According to Jansson, Marell, and Nordlund (2010, pp. 359-360), green consumer behaviour is classified into two groups, namely curtailing behaviours and green purchase behaviours. Curtailing behaviours include, but are not limited to, reducing the use of private vehicles (carpooling to work and school), decreasing the temperature on heaters, investing in renewable energy for electricity, reducing the usage of air-conditioners or decreasing water and electricity usage (Herring, 2020: para 1-2; West, 2020: para 2-14).

Green purchase behaviour (GPB) includes pro-environmental behaviours (PEBs), which include following a PB diet and purchasing green products, such as animal-free food products, energy or fuel-efficient vehicles, eco-friendly household detergents, cruelty-free cosmetics and toiletries and energy-saving light bulbs (Heller & Green, 2020, pp. 6-19; Naz et al., 2020, pp. 2-4; Sarumathi, 2014, p. 778). Pro-environmental behaviour refers to the actions that intentionally seek to lessen the negative consequences of a person's behaviour on the natural

environment and built world, and is also referred to as green behaviour (Chelliah, Hau, & Huoy, 2017, p. 57). Other examples of PEBs include opting for a vegan or vegetarian meal instead of a beef burger (Adriana, Teodora, & Francesca, 2018, pp. 483-484; Chai et al., 2019, pp. 13-14). Today, there are a growing number of social awareness campaigns, all which constantly feature on numerous social media platforms, such as Veganuary, Meat-free Monday and the ProVeg Veggie Challenge. Veganuary is an annual challenge run by a non-profit organisation based in the UK, which promotes and educates individuals about veganism in an effort to create a global mass movement that focuses on compassionate food choices in order to end animal farming, protect and preserve our planet and improve human health (Veganuary, 2021, p. 1).

Similarly, there is also a pro-animal, pro-environment, and pro-health initiative by ProVeg, which is the ProVeg Veggie Challenge, trying to encourage individuals to quit meat consumption and adopt a PB diet, which is more sustainable and ethical than meat consumption (ProVeg, 2022b: para 1). ProVeg is a non-profit food advocate aimed at decreasing worldwide animal consumption by 50% in 2040 and they are on a quest to attain a world where everyone consumes food that is good for the planet, animals and health (ProVeg, 2022a: para 2). Such campaigns attempt to make consumers conscious of the impact of the food products they consume on the natural environment. Thus, when individuals are conscious about the environment and the impact of the products or services that they purchase, use, consume and dispose of, there is a greater likelihood of them engaging in GPB.

Therefore, the focal point of this research is on PBP purchase intentions, a form of green purchase intention and the driving forces that influence young consumers to reduce their meat consumption by adopting PB products (meat, dairy and egg alternatives) in light of the two serious threats faced by mankind, today, that is the global climate crisis and C19P. Green purchase intention or GPI is presented next.

2.4 Green Purchase Intention (GPI)

Green purchase intention or GPI refers to a person's ability and willingness to choose an eco-friendly product over traditional products, showing interest in environmental and conscious issues during the production process, often prioritizing the environmental impact and effects (Nia, Rinawati, Suliantoro, & Bayu, 2018, p. 1). Dagher and Itani (2014, p. 189) indicated that green or environmentally friendly purchasing behaviour refers to utilising eco-friendly

products that are mindful or adaptable, recyclable or sustainable, and kind or beneficial towards the natural environment. According to Zhuang, Luo, and Riaz (2021, p. 1), individuals are now paying more attention to the environment, and when they recognise the importance of the environment, they realise the impact that their purchasing behaviour will have on the natural environment. GPI is associated with SDG 12, which is committed to ensuring sustainable or responsible consumption and production patterns, and is connected to global sustainability goals on climate change, biodiversity conservation, pollution reduction, waste management and high-impact sectoral transformation (UN, 2023b, p. 37). The factors influencing GPI are discussed next.

2.5 Factors affecting Green Purchase Intention (GPI)

According to Sarumathi (2014, pp. 779-780), there are numerous variables influencing consumers' green product purchases, which include the availability of environmental information, increased concern towards the environment, green advertising by businesses, and the heightened popularity of green products by social and environmental charities. Similarly, as proposed by Bisschoff and Liebenberg (2016, p. 176) environmental issues strongly influence an individual's intent to purchase eco-friendly or green products. In addition, Bisschoff and Liebenberg (2016, p. 176) indicated that a myriad of research has predominantly proposed a noteworthy positive association between environmental intent and ecological behaviour. However, according to Kaufmann, Panni, and Orphanidou (2012, p. 54), a few studies have revealed the moderate relationship between environmental attitude and ecological behaviour. Consequently, it has been indicated that the more the consumer is involved with the environment, the stronger their intention to purchase environmentally friendly or green products (Bisschoff & Liebenberg, 2016, p. 178).

Hassan et al. (2018, p. 10) utilised a conceptual framework based on the TPB, with the inclusion of variables: information and knowledge, environmental consciousness, quality of life, social context and quality and price, in order to predict green product consumption; and all variables had a highly significant positive relationship with green product consumption, albeit without reference to PBP purchase intentions. Also, variables, such as environmental concern (EC), environmental knowledge (EK), health consciousness (HC) and moral attitude (MA) were not taken into account, nor concerns about the COVID-19 pandemic (CC19P). Thus, the current study attempts to fill this knowledge gap by incorporating these additional factors (EC, EK,

HC, MA and CC19P) that influence young consumers' purchase intentions towards PB products.

An introduction to green products is presented next, followed by a discussion on PB products (meat, egg and dairy alternatives), pertinent to this study.

2.6 Green Products

Nia et al. (2018, p. 2) argue that green products are harmless to the environment and humans, they efficiently utilise resources, do not involve animal cruelty and avoid generating excessive waste. Bhardwaj, Garg, Ram, Gajpal, and Zheng (2020, p. 1) describe green products as the products that strive to safeguard, maintain, or improve the environment throughout production, usage, or disposal by conserving resources and minimising the reliance on toxic or harmful substances, waste and pollution. Consumers who perceive themselves to be environmentally conscious are inclined to change their consumption preferences for products that are environment-friendly, thereby spurring lucrative business opportunities for companies, such as the development of green product lines (Bhardwaj et al., 2020, p. 2).

Individuals are now becoming aware of this planetary emergency, hence the increase in sales of products, such as electric vehicles (EVs) (Kane, 2022: para 1-3), environmentally friendly household products (Wespes, 2021: para 4-6), energy efficient lighting (Moghavvemi, Jaafar, Sulaiman, & Parveen Tajudeen, 2020, p. 2; VantageMarketResearch, 2022: para 1-3) and animal-free products (Wunsch, 2022: para 1). These are examples of green products, as they have the ability to reduce environmental impacts (Aschemann-Witzel, Gantriis, Fraga, & Perez-Cueto, 2021, p. 3123; Beacom et al., 2021, pp. 204-205; Borrelli, 2021: para 2-3; Poinski, 2021: para 1-7). Furthermore, according to Peat (2020: para 1-6), there has been an upsurge in the demand for vegan options in the campus restaurants from eco-conscious students across universities in the UK and a cornucopia of students in the UK are adopting a vegan lifestyle and joining the plant-powered revolution (PETA, 2021: para 1). In this study, the green products included PB food products (meat, egg and dairy alternatives).

2.7 Plant-based (PB) Products and a Plant-based (PB) Diet

According to Fardet (2017: para 1), PB foods include vegetables, fruits, grain, legumes, seeds and nuts; their processed versions including cooked and fermented vegetables and legumes,

pasta, breads, breakfast cereals, along with jams, juices and fruit purées. A PB diet does not mean that one is vegan or vegetarian, rather, it focuses on consuming only or mostly food from plant sources (McManus, 2020: para 1). Plant-based refers specifically to an individual's diet and is focused on health not ethics (Panoff, 2020: para 5, 13-14). It describes the growing consumer preference for PB alternatives over animal-based food products, leading to reduced meat and dairy consumption or adhering to dietary regimes tantamount to a greater or even sole focus on PB foods (Aschemann-Witzel et al., 2021, p. 3120). On the contrary, veganism is a form of lifestyle that attempts to exclude animal exploitation and cruelty, concerning food, clothing and mode of living, and focuses on the rights of non-human species (Loh et al., 2021, p. 4; Petre, 2016: para 4). Additionally, vegans are individuals who avoid meat, fish, dairy, and eggs (Le & Sabaté, 2014, p. 2132) and being vegan also relates to consciously not consuming any products derived from animals, such as leather accessories or cosmetics involving animal experimentation (Miguel, Coelho, & Bairrada, 2020, p. 1; Mota-Rojas et al., 2023).

Alcorta, Porta, Tárrega, Alvarez, and Vaquero (2021, p. 2) specified that the global market for PB meat alternatives is expected to increase "from USD 1.6 billion in 2019 to USD 3.5 billion by 2026" and the most successful meat alternatives sold in 2019 were burger patties, hot dogs, and sausages. On the contrary, other data has revealed that meat sales have diminished by 5% from 2015 to 2019 (Aschemann-Witzel et al., 2021, p. 3123). Moreover, the PB milk alternatives market has also grown significantly over the past few years and according to Alcorta et al. (2021, p. 2), the sales of cow's milk have decreased. Based on society's increasing need to go green, companies, such as Beyond Meat, Inc. have seen an increase in their product sales across the globe by effectively catering to the green consumers' shifts towards a PB diet (BeyondMeat, 2020: para 1-2) and stakeholders are now exploring targeting meals as an effective strategy to reduce meat consumption, such as re-engineering menu cards, recipes and even offering meat-replacement products (Ernstoff et al., 2019, p. 2).

The South African PB sector is briefly discussed below.

2.8 The Plant-based (PB) Sector in South Africa (SA)

Onet (2019: para 1-4) indicated that, in SA, the interest in veganism and shift towards a PB diet have been at an all-time high and SA ranks among the world's 25 nations where veganism is most popular. Many South Africans have slowly embraced veganism and as indicated by

Nasson (2020: para 1), according to the recent survey from Uber Eats – the fast-food delivery service, SA ranks fifth when it comes to vegan takeaways. According to BusinessTech (2022: para 2), SA represents 57% of the African PB protein market, which is predicted to increase with a yearly growth rate of 6.5% to roughly R8 billion by 2030; hence the firm has invested in Herbivore Earthfoods, which specialises in manufacturing and selling PB and vegan products. In 2021, the South African fast-food industry manifested a resilience following the effects of COVID-19, which was reflected by an increase of 27.5% between 2020 and 2021, driven by the increasing popularity and inclusion of PB menu items (InsightSurvey, 2022: para 4).

The mounting popularity of PB alternatives in SA has resulted in the introduction of new and innovative PB fast-food offerings by some of the largest local franchises, including Spur, Nando's, Burger King and Panarotti's (InsightSurvey, 2022: para 7). Nando's, for example has launched its new vegan PERinaise product and introduced a myriad of PB items on the menu. In keeping with this global trend, Spur has also introduced PB and vegan-friendly options to its local menu, including the Crumbed Veggie Burger and Veggie Schnitzel; likewise, Panarotti's offers PB and vegan-friendly pizza, pasta dishes and waffles. According to Clarke (2024: para 2-3), SA, previously known as a meat-heavy nation, is now experiencing a significant shift towards PB food, where fast-food chains are boosting their vegan options to meet the growing demand for PB foods. Hence, this study sought to examine young South African consumers' purchase intentions towards PB products, since the adoption of PB products are gaining momentum in SA.

There are numerous PB options available on the South African market for those consumers choosing to reduce their meat and animal product consumption in their home-cooking. To accommodate the needs of these consumers and ensuring that PB products are easily accessible and available to the market, major South African FMCG retailers, namely Checkers, Pick n Pay and Woolworths in tandem with the leading retail pharmacy group, Dis-Chem, have launched a cornucopia of PB products. These retailers sell PB cheeses by brands, such as Simple Truth, Irene's, Nature Moi and Fairview; PB milk products by Earth & Co, Buttanut, Clover Good Hope, Simple Truth and Lifestyle Food; PB meat alternatives by Fry's, Future Farm, Beyond Meat, Linda McCartney, Vejoy and Simple Truth; and PB yogurt by Yokos and Irene's. Woolworths has its own line of PB yogurt, cheeses, ice-cream and ready-to-eat PB meals. Figure 2.1 portrays some of the PB products on the market.

Figure 2.1: Plant-based (PB) Products on the Market

(FoodStuffSA, 2020)

According to Le and Sabaté (2014, p. 2131), many individuals adopt a PB diet due to ethical and religious reasons, environmental concerns and health benefits and numerous South Africans are making a serious commitment to PB eating by signing up for Meat-free Monday, Veganuary and the ProVeg Veggie Challenge (Gaalen, 2020: para 1-2).

The impact of a PB diet on the environment, human health and animal welfare is discussed next.

2.9 The Plant-based (PB) Diet and its Impact on the Environment, Animal Welfare and Human Health

The findings published in the *Proceedings of the National Academy of Sciences*, conducted by Oxford University researchers in 2016, is the first time that researchers have investigated the impact of a worldwide vegan diet on human health and climate change (UniversityofOxford, 2019: para 2). Dr Marco Springmann, the lead author of the *Oxford Martin Programme on the Future of Food*, specified that what individuals consume significantly influences human and planetary health; also, those diets with a limited amount of fruits and vegetables but feature mainly processed and red meat are accountable for the global health crisis (UniversityofOxford, 2021: para 3). Springmann, Godfray, Rayner, and Scarborough (2016, p. 4) indicated that dietary shifts involving limited animal products and mainly PB foods yield significant benefits due to the decrease in diet-related mortality and GHG emissions. Similarly, according to Marlow et al. (2009, p. 1699S), a non-vegetarian diet results in greater environmental degradation and a higher environmental impact in relation to a vegetarian diet. To put this into perspective, the non-vegetarian diet requires 2.9 times the amount of water, 2.5 times the

primary energy, 13 times the fertiliser, and 1.4 times the pesticides compared to the vegetarian diet (Marlow et al., 2009, pp. 1699S-1700S).

A vegan diet is the most significant method to decrease an individual's impact on the planet (TheVeganSociety, 2018: para 4). Poore and Nemecek (2018, p. 991) indicated that in order for individuals to mitigate their environmental impact, dietary change, which involves excluding animal products can be beneficial towards the environment. Furthermore, the vegan and vegetarian diets had the lowest carbon footprint (González, Marquès, Nadal, & Domingo, 2020, p. 2). Hence, there has been an upsurge in the PB diet population around the globe, as the vegan and PB diets' statistics depict that meatless diets are soaring and the vegan lifestyle will not dissipate any time soon (Bourassa, 2021: para 1-4). This research, thus, complements the studies conducted abroad pertinent to the health, ethical and environmental concerns in relation to PBP consumption and purchase intention among young consumers, during the climate crisis, from an emerging economy's perspective.

According to Bradbury (2018: para 3-5), Giliver (2021: para 1, 3) and Lupica (2017: para 1-3), the younger generations are now shifting towards a PB diet in order to combat climate change. Consumers today are cognizant of the environmental problems due to heavy industrialization, thus they are now demanding environmentally friendly products that aim to reduce the damages caused by industrialization (Sarumathi, 2014, p. 777). A vegan diet is likely the most significant way to minimise a person's impact on the planet, affecting not only GHG emissions, but also water and land usage (Poore & Nemecek, 2018, pp. 989-992). Veganism and the shift towards a PB diet is the largest growing lifestyle movement in the world right now and is no longer a fringe movement, as it is now becoming mainstream (JVS, 2016: para 7). As a fundamental environmental impact mitigation strategy, a reduction in meat and animal product consumption, by means of shifting dietary patterns, will decrease demand and production quantity (Willett et al., 2019).

Consuming meals derived from fresh fruits and vegetables, whole grains, nuts, legumes and seeds is essential in supporting the individual's overall health and immunity (TheHeartandStrokeFoundationSouthAfrica, 2020, p. 1). Similarly, the growing PB movement focuses more on the health benefits that come from PB proteins, fiber, and nutrients (SPINS, 2020: para 3). Therefore, the overconsumption of meat is linked to negative health as well as environmental outcomes (González et al., 2020, pp. 3-4). The analysis of human health and

climate change dual benefits of diet transition by Oxford researchers in 2016 revealed that when individuals shift towards a PB diet and diets with less animal products, this will lead to "8.1 million avoided deaths" (from reduced stroke and coronary heart disease) per year (Springmann et al., 2016, pp. 2, 6). According to Le and Sabaté (2014, pp. 2140-2141), a vegetarian diet (egg and dairy inclusion) protects against cardiometabolic risk factors, cardiovascular diseases and some cancers, while further protection is provided by the vegan diet for cardiovascular mortality, obesity, type 2 diabetes and hypertension. Similarly, You (2020, p. 299) indicated that previous studies posit that the replacement of animal-based products with PB products decreases the risk of type 2 diabetes and cardiovascular diseases, and includes benefits, namely reduced body mass and lower blood pressure.

A discussion on the C19P and zoonotic diseases is presented next, followed by the influence of a PB diet on COVID-19.

2.10 The COVID-19 Pandemic (C19P) and Zoonotic Diseases

A zoonosis or zoonotic disease is an infectious disease that has jumped from an animal to humans (WorldHealthOrganization, 2020b: para 1). COVID-19, according to Aggarwal, Gupta, and Rawat (2021, p. 255), is a contagious zoonotic disease that is spread from animals to people through contaminated food or direct contact and water or environmental exposure. The COVID-19 outbreak began epidemiologically at a wet market in Wuhan, where several samples extracted from the market's live animal section were found to possess the SARS-CoV-2 virus, responsible for COVID-19 (Mackenzie & Smith, 2020, p. 45). There is a deep connection between the C19P and climate crisis and mankind needs to reduce their carbon footprint in order to prevent future infections and pandemics (Armstrong, Capon, & McFarlane, 2020: para 1).

It is important to note that zoonosis has been part of the human existence since the origin of homo sapiens, however, their emergence seems to be ever-increasing (Holmes, 2022, pp. 1113-1114). Furthermore, land degradation, agricultural intensification and climate change result in the alteration of geographic distributions of wildlife, since natural habitats disappear; and global connectedness and increasing urbanisation are also driving the emergence of infectious disease through the growing human–animal contacts, thereby accelerating transmission rate (Holmes, 2022, p. 1114). These activities must be limited, and climate change

mitigation must be at the forefront in order to avoid future outbreaks (Holmes, 2022, p. 1114). Similarly, according to planetary health experts from Lancet, pandemics, (such as COVID-19) are crises caused by mankind (Whitmee et al., 2015, p. 1991). COVID-19 is the latest infectious disease spurred by mankind's collision with the natural world due to deforestation and loss of habitat, which brings animals closer to humans and increases the risk of zoonotic diseases (Armstrong et al., 2020: para 3-5).

2.11 The COVID-19 Pandemic (C19P) and a Plant-based (PB) Diet

COVID-19 has brought about an upsurge in green food purchase intention and consumption due to the escalating health concerns among consumers (Qi et al., 2020, p. 16) and the past few months, in light of the C19P, has heralded the positive impacts of a PB diet (Selby, 2021: para 1). The pandemic has also been a catalyst for the increased sales of PB products, such as soya sausages, mince and burgers, seitan, tofu, dairy alternatives, and plant-based eggs; moreover, the Beyond Meat company had experienced a 96% increase in their sales during the first half of 2020 (Win, 2020: para 10).

Apart from increasing one's risk in contracting zoonotic diseases, and being prone to increased risk of mortality, there are a plethora of illnesses associated with the high consumption of red meat, which include type 2 diabetes, colorectal cancer and cardiovascular disease (Battaglia Richi et al., 2015, p. 71). According to a survey conducted by TheVeganSociety (2020: para 2-3), in the UK, 43% of the respondents indicated that they have reduced their meat consumption due to health, environment, and animal concerns during the C19P. The 'Danish CoviDiet' study conducted by Giacalone, Frøst, and Rodríguez-Pérez (2020, p. 6) discovered that those respondents with a high Mediterranean diet adherence score increased their consumption of food (such as fruit, fish and olive oil), strongly linked to the Mediterranean diet and reduced their consumption of food (such as red meat), that is incongruent with the diet.

According to Attwood and Hajat (2020, p. 3116), public awareness of zoonoses has increased due to the C19P, which has motivated individuals to engage in reduced meat consumption in the short term, a preference for certain meats, and elevated concern surrounding the health implications of meat consumption. In the high-income countries, the sales of PB meat substitutes have drastically increased in 2020 (Askew, 2020: para 1-3; Purdy, 2020: para 1). Qi et al. (2020, p. 3) indicated that COVID-19 is a novel disease, with an unknown lifespan,

therefore, further information is needed to investigate the pandemic's impact on the everchanging food consumption habits among consumers. Qi et al. (2020, p. 3) also declared that it is critical to investigate consumers' changing attitudes and behaviours towards green food consumption to mitigate the potential long-term health effects of behavioural shifts caused by the pandemic. In the Qatar study by Ben Hassen, El Bilali, and Allahyari (2020, p. 12), which investigated the pandemic's impact on consumer awareness, attitudes and behaviours related to food consumption, the results revealed a shift towards healthier diets among the respondents. The current study attempts to fill the knowledge gap relating to the health concerns surrounding the pandemic from a South African perspective, in relation to PBP consumption and purchase intention.

Moreover, in addition to the global climate crisis, there is the COVID-19 pandemic, and it is unclear what the relative role of the concerns about the pandemic play in influencing young consumers' intentions to purchase PB products. It is also unclear whether these concerns positively or negatively influence their purchase intentions, in relation to the other traditional green behaviour antecedents, and whether young consumers are also concerned about their health in light of the pandemic. Thus, the health concerns surrounding COVID-19 as a possible catalyst for PBP purchase intentions was investigated, therefore, health consciousness was incorporated to determine the relative role it plays in influencing young South African consumers' PBP purchase intentions, in order to fill the gap in green food literature.

Next, a general discussion on the PB revolution among young consumers, in tandem with their intentions to purchase PB products is presented. This is followed by a discussion on young South African consumers' intentions to purchase PB products.

2.12 The Plant-based (PB) Revolution and Plant-based Product Purchase Intention (PBPPI) among Young Consumers

Generation Y or Millennials, born from 1980 to 1994 and Generation Z, born from 1995 to 2009 represented 46% of the global population as of 2021, positioning them as significant consumer cohorts (Ha & Angus, 2021: para 1). For the purpose of this study, young consumers aged 18 to 40 years (specifically university students), have been included in this study, as this research does not primarily focus on the generations in particular, rather young consumers in general. Young consumers are also dubbed the 'PETA generation', apart from the 'green

generation' as previously indicated, and they are now opting to consume meat-free meals (PETA, 2019: para 1-3). The desire to make a positive impact in the world is strong among this cohort and they are passionate about environmental causes, by making more ethical and compassionate choices (Jones, 2020: para 4, 20-24; VegWorldMagazine, 2021: para 9-11).

PB diets have increased in popularity over the past few years, especially among young consumers, and they consciously reduced their meat intake due to campaigns, such as Veganuary, making them aware of the impacts of meat consumption (Driscoll, 2018: para 1-2). Similarly, according to Alcorta et al. (2021, p. 1), it was discovered that young adults and women are less resistant to reduce or avoid meat consumption. Additionally, in an effort to reduce their carbon footprint, as young individuals are being increasingly exposed to data and scientific evidence in the media, in tandem with green campaigns, such as Veganuary and the ProVeg Veggie Challenge, a significant number of individuals are now shifting towards a vegan diet (devoid of animal products) and a vegetarian diet (no meat products, with the inclusion of eggs and dairy) (Alcorta et al., 2021, pp. 1-2; Driscoll, 2018: para 1-2; Grant & Richter, 2020: para 1-3).

The survey by First Insight revealed that 62% of Millennials and Generation Z in the US prefer to purchase from eco-friendly brands and are prepared to pay a premium for eco-friendly products (BusinessWire, 2020: para 3-4). Limited research of this nature has been conducted in SA, hence the need for the current study more so amid the C19P. Since young consumers are growing up in the middle of the climate crisis, they are passionate about climate change and according to Keve and Bryzek (2019: para 1-2), young consumers are an expanding force in the global consumer market. Additionally, this cohort is passionate about animal welfare, the environment, and their health (Hopwood, Bleidorn, Schwaba, & Chen, 2020, pp. 2-3; Rishel, 2019: para 3-6). Due to this, young consumers are willing to pay more for products that are ethically sourced, sustainable, environmentally friendly, organic or natural, or socially responsible (Mullen, 2018: para 6).

As previously stated, global warming, pollution, environmental degradation, drastic weather and zoonoses have spurred young consumers to purchase eco-conscious brands (Jahns, 2021: para 2-5) or consume PB products (Rishel, 2019: para 3-4), as it is the best that these individuals can do for the animals, planet, and their health. However, this has only been ascertained abroad and as previously indicated, data is required from the young South African consumers'

perspective to determine their intentions or motivations towards PBPPI during the global climate crisis and C19P, thereby filling this knowledge gap.

2.13 Young South African Consumers' Plant-based Product (PBP) Purchase Intentions

Of the 60.6 million people in SA, Generation Z individuals represent almost 27.5 million (Lerm, 2022: para 1; StatsSA, 2022a: para 1), whereas, Millennials or Generation Y individuals constitute 27% of the South African population or roughly 14 million people (Pillay, 2020: para 1). Hence, the South African youth market manifests as a significant consumer market segment, representing 35% of the population (Crouth, 2021: para 4).

Sharp and Synodinos (2021, p. 210) declared that the young consumer cohort in SA is considered as environmentally conscious trendsetters and influencers, pioneering the path in the green or ecological movement, and apart from representing the consumers of the future, they are also the future of the environmental movement. Similarly, the study conducted by Fatoki (2020, p. 160) revealed that young South African consumers are more concerned about the natural environment and climate change than ever before and are adopting sustainable lifestyles and consumption. This is supported by the study conducted within another emerging economy, by Bhutto et al. (2019, p. 611) who discovered that young Chinese consumers display strong concern towards the environment, and this has increased their green product purchase intentions. Furthermore, Sharp and Synodinos (2021, pp. 209-210) investigated South African Generation Y university students' organic food purchase behaviour, and it was revealed that this cohort displays positive attitudes towards organic foods and exhibited positive intention and purchase behaviour towards organic food products.

In their McKinsey 2022 Consumer Sentiment Survey, Hattingh and Ramlakan (2022, p. 9), reported that 41% of South African consumers indicated that they purchase natural or organic food products, and this was driven mainly by the Millennials and Generation Z cohorts. Furthermore, the survey revealed that 29% of Millennials follow diets that are rich in minerals and vitamins, and when purchasing food or beverages, 18% of Generation Z consumers search for vegetarian or vegan options; moreover, 64% indicated that they are willing to pay extra for healthier or more nutritious products and 38% indicated that they regularly make sustainable packaging choices (Hattingh & Ramlakan, 2022, p. 9).

According to Fatoki (2020, p. 152), young consumers (specifically the university students) in SA are expected to drive sustainable consumption in the future. The study conducted by Credence Institute in Stellenbosch discovered that 60% of Generation Z individuals and 62% of Millennials are likely to purchase PB meat, such as soy, seitan, and even tofu-based 'meat'; which is more than the older generations (IOL, 2022: para 2-3). Notably, the topic of PBP purchase intentions among young consumers in SA is relatively under-researched as indicated by Fynn-Green, Mason, and Giampiccoli (2019, p. 71), hence the need to explore young consumers' purchase intentions towards PB products and fill the gap in green food literature.

A research gap was established in SA in relation to COVID-19 and the shifting food consumption patterns, therefore, the current study ascertained young consumers' intentions towards PB products and determined the level of importance of the traditional green behaviour antecedents that influence purchase intentions towards PB products during the global climate crisis and C19P. A myriad of fast-food outlets, retailers and coffee houses in SA have already introduced PB options on their menus, following the global trend and with more and more South Africans adopting the vegan lifestyle (FASA, 2022: para 1-4). Retailers, such as Pick n Pay and Checkers indicated that they had experienced increased demand for PB options which is now reflected by the cornucopia of green food products they offer in-store (Adams, 2019: para 1-3; BusinessTech, 2020: para 1-5). However, it is still not established whether these individuals are shifting towards a PB diet due to the global climate crisis and/or the C19P. The current study sought to determine this.

The development of the study's conceptual framework is discussed next.

2.14 The Development of the Conceptual Framework of the Study

To achieve the study's purpose, this research deployed an integrated conceptual framework, customised for this study, which amalgamates various concepts, based on the TPB and derived from the following frameworks, which are an extension of the TPB, namely the extended TPB model by Maichum et al. (2016); the proposed theoretical framework by Yadav and Pathak (2016) and finally, the grounded theory framework by Qi et al. (2020).

2.14.1 The Theory of Planned Behaviour (TPB)

The TPB is an expansion and modified version of the Theory of Reasoned Action (TRA) (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975; Maichum et al., 2016). According to the TRA, individuals tend to behave in a rational manner and explicitly or implicitly consider the implications of their behaviours (Ajzen, 1985, p. 12). The emphasis is on individuals' volitional behaviours where individuals have volitional control, such as the behaviours of everyday life, which include brushing their teeth before going to bed or watching television while eating dinner; and the TRA is designed to predict such behaviours (Ajzen, 1985, p. 12; Ajzen & Fishbein, 1980, pp. 12-13).

On the contrary, the TPB, asserts that three variables, namely "attitude toward the behaviour, subjective norms, and perceived behavioural control, result in the formation of a behavioural intention" (Ajzen, 1985, p. 29). *Attitude toward the behaviour* indicates how much a person holds a positive or negative view of a specific behaviour; *subjective norms* pertain to the perceived social influence to either engage in or abstain from the behaviour (opinions of family and friends), while *perceived behavioural control* refers to how easy or difficult an individual finds it to perform the specified behaviour. (Ajzen, 1991, p. 188). Figure 2.2 depicts the TPB.

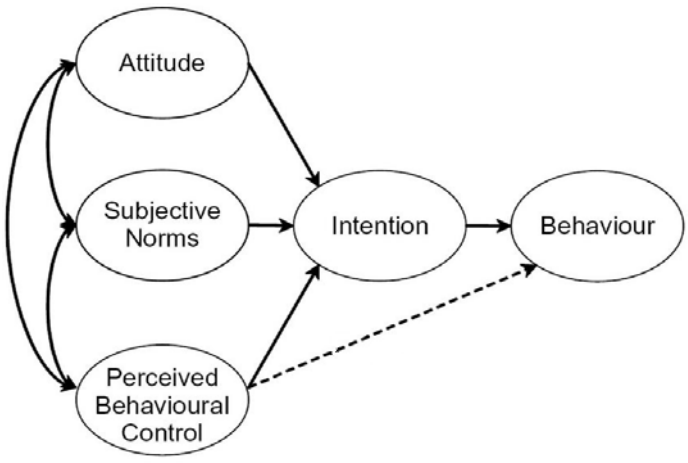

Figure 2.2: Theory of Planned Behaviour (TPB)

(Ajzen, 1991, p. 182)

As indicated by Ajzen (1991, p. 181), the TPB posits that individuals' intentions drive their behaviours and the stronger the intention, the greater the likelihood of behavioural execution.

Maichum et al. (2016, p. 4) highlighted that intentions are the key predictor of behavioural outcomes, as it is the most important component of the TPB model, hence this study investigated young consumers' purchase intentions towards PB products.

Extending the TPB, with the inclusion of other variables offers significantly greater explanatory power than TPB and TRA (Setyawan et al., 2018, p. 146). Consequently, this study, which is based on the TPB, has been extended by adding several explanatory variables, namely moral attitude (MA), environmental concern (EC), concerns about the COVID-19 pandemic (CC19P), environmental knowledge (EK) and health consciousness (HC). Setyawan et al. (2018, p. 146) also posits that the TPB is used to explain the relationship between numerous variables and green product purchase intention. Thus, this study sought to understand the relationship among several explanatory variables and the purchase intentions of young consumers towards PB products during the C19P and global climate crisis, whilst extending the TPB framework to determine the level of importance of the various factors that influence PBPPI, thus filling the gap in green food literature from a South African perspective.

The TPB better predicts behavioural intentions than the TRA (Hassan et al., 2018, p. 9), thus this research focused on the TPB. A plethora of research studies have utilised the TPB model in order to provide insight into how consumers' green purchase intentions are formed (Hameed, Waris, & Amin Ul Haq, 2019; Kumar, 2012; Nekmahmud & Fekete-Farkas, 2020; Saleem, 2019). According to Saleem (2019, p. 14), the TPB is a widely used behavioural model and a surfeit of studies conducted on PEBs were conducted from a Euro-American context, with limited studies from an emerging economy, such as SA. The TPB model has, however, received numerous criticisms due to the insufficiency of the three components, namely perceived behavioural control (PBC), attitude toward the behaviour (ATT) and subjective norm (SN) (Hasbullah, Mahajar, & Salleh, 2014, p. 101). Based on this criticism, the extended TPB frameworks in tandem with the model developed by Qi et al. (2020) have been deployed in this study to provide a more comprehensive model with variables applicable to this study in a developing and emerging economy, such as SA. An illustration and synopsis on the three frameworks that underpin this present research are provided.

2.14.2 The Extended Theory of Planned Behaviour Model by Maichum et al. (2016)

In their study, Maichum et al. (2016) investigated Thai consumers' purchase intentions towards green products by utilising an extended framework of the TPB. Maichum integrated two variables, namely *environmental knowledge (EK)* and *environmental concern (EC)* into the TPB model as variables that influence consumers' green product purchase intentions.

The extended framework of the TPB model was investigated in their study, where EC and EK were added as antecedents of ATT, SN and PBC among Thai consumers and it was reported that green product purchase intention can be predicted by ATT, SN, PBC, EC and EK (Maichum et al., 2016, p. 13). Figure 2.3 depicts this model.

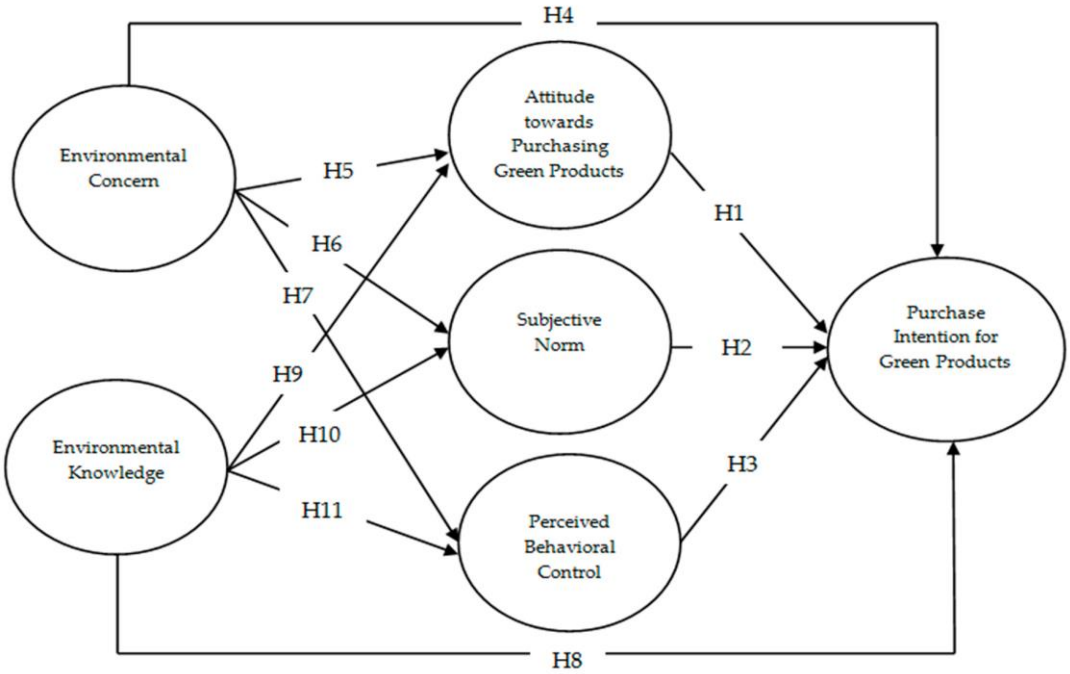

Figure 2.3: Proposed Framework by Maichum et al. (2016)

(Maichum et al., 2016, p. 12)

EC is crucial in influencing consumers' green product purchase decisions and it also has a strong influence on the attitudes of consumers regarding eco-friendly products, which eventually influences their intentions to purchase green products (Maichum et al., 2016, pp. 2, 6). Moreover, it was found that EC was significant and positively influenced attitude, PBC and the green product purchase intentions among consumers (Maichum et al., 2016, p. 14). This

corresponds to the study conducted by Sadiq, Paul, and Bharti (2020, p. 6) where it was discovered that individuals with strong EC tend to prefer green products. Therefore, EC was relevant to the current study, as the researcher wanted to determine whether young South African consumers demonstrate concern towards the current state of the natural environment and whether their concern is strong enough to positively influence their intentions to purchase PB products.

Relating to EK, Maichum et al. (2016, p. 2) indicted that an attitude-behaviour gap forms between consumers' EC and their actual purchasing behaviour when they possess limited knowledge about the environment and green products. Maichum et al. (2016, p. 2) indicated that this might significantly impact buying intention. In their study, it was discovered that EK had no significant influence on consumers' green product purchase intentions; nevertheless, EK demonstrated indirect effects through PBC, SN and ATT (Maichum et al., 2016, pp. 13-14). This insignificant effect of EK on GPI and its indirect effect on GPI, through the three TPB variables, are supported by the study conducted by Indriani, Rahayu, and Hadiwidjojo (2019, p. 633). On the contrary, the study by Pratiwi, Sulhaini, and Rinuastuti (2018, p. 100) revealed that EK significantly and positively affected GPI. The model by Maichum et al. (2016), thus indicates that EC and EK only indirectly affect GPI through ATT, PBC and SN; however, they do still play some role in GPI. Hence, EK was relevant to the current study, as the researcher wanted to determine whether young South African consumers are knowledgeable about environmental issues, PB products and how these products can help to protect the environment. Therefore, EC and EK were selected in this study and the hypotheses of their respective roles and impacts are discussed and justified in the latter part of this chapter.

2.14.3 The Proposed Theoretical Framework by Yadav and Pathak (2016)

Yadav and Pathak (2016) sought to investigate organic food purchase intentions among Indian consumers and utilised the TPB. This framework was adopted in this study due to its congruency in terms of the focus on organic food from the perspective of an emerging economy. Anecdotal evidence suggests that the additional variables enhance the predictive power and utility of the TPB (Yadav & Pathak, 2016, p. 123). The inclusion of the following variables in this study was supported by the extant literature, and they include *environmental concern (EC), moral attitude (MA)* and *health consciousness (HC).*

Yadav and Pathak (2016) included MA in their study, as the authors posit that moral obligation could prove useful with reference to organic foods, as the purchase of organic food demonstrates individuals' concern towards themselves, the environment and society as a whole (Yadav & Pathak, 2016, p. 123). Thus, MA was useful for the present research, relating to young consumers' PBP purchase intentions, as the researcher wanted to determine whether young South African consumers consider it a moral obligation to purchase PB products in light of the climate crisis and the C19P, thereby filling the gap in green food literature. HC was also selected for the purpose of the current study, as consumers who display concern towards their health develop a favourable attitude towards organic food purchase, which is related to PB food products, and good nutritional food in a consumer's diet is associated with organic food purchase (Rana & Paul, 2017, p. 159). Also, with reference to HC, the researcher sought to determine whether young South African consumers are conscious about their health and intend to purchase PB products due to concerns relating to their health (or health concerns surrounding the pandemic), and/or due to environmental concerns, thereby filling the gap in green food literature. Furthermore, out of all the organic foods available on the market, PB products are the most well recognised by consumers (EUFIC, 2019: para 1). The proposed framework by Yadav and Pathak (2016) is portrayed in Figure 2.4.

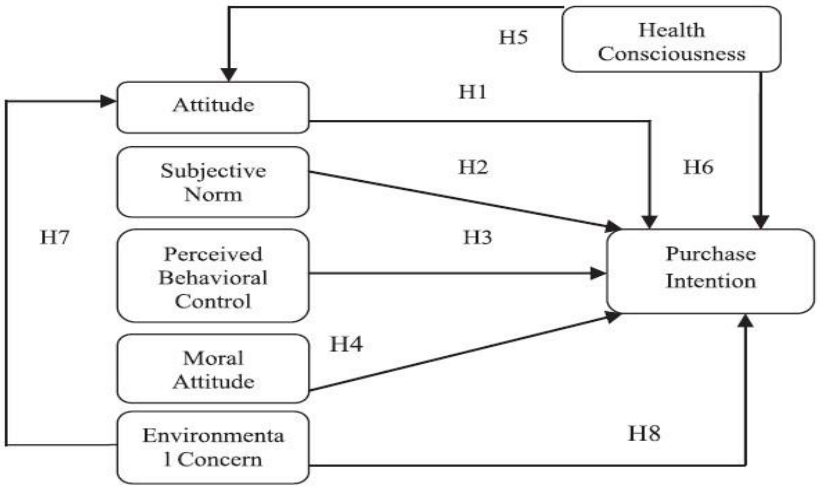

Figure 2.4: Proposed Theoretical Framework by Yadav and Pathak (2016)

(Yadav & Pathak, 2016, p. 124)

The study by Yadav and Pathak (2016), involving consumers' purchase intentions towards organic food, which is recognised as healthier and more environmentally friendly than

'conventionally grown foods' (Yadav & Pathak, 2016, p. 122), is in alignment with the current study that focused on young consumers' purchase intentions towards PB products. Yadav and Pathak (2016, p. 126) discovered that both MA and HC emerged as significant predictors of organic food purchase intention in emerging economies, which is relevant to test from a South African perspective. It was also mentioned by the authors that the inclusion of new variables, such as MA, EC and HC in the TPB model actually led to an improvement in the model fit, which justified and supported these new additions (Yadav & Pathak, 2016, p. 126). Integrating both HC and EC delivers a significant understanding of green purchase intentions, and EC cannot provide enough understanding by itself, since HC is also required (Sadiq, Adil, & Paul, 2021, p. 10). Therefore, HC, EC and MA were relevant to the current study and the hypotheses depicting their respective roles and impacts are discussed and justified later in this chapter.

2.14.4 The Model Developed by Qi et al. (2020)

Qi et al. (2020, p. 1) investigated the factors influencing green food consumption among Chinese consumers. Their study also explored the impact of the pandemic on consumers' purchases towards green food products. The authors utilised semi-structured in-depth interviews to collect data for grounded theory research to unearth the factors influencing green food purchases (Qi et al., 2020, p. 3). Figure 2.5 illustrates this model.

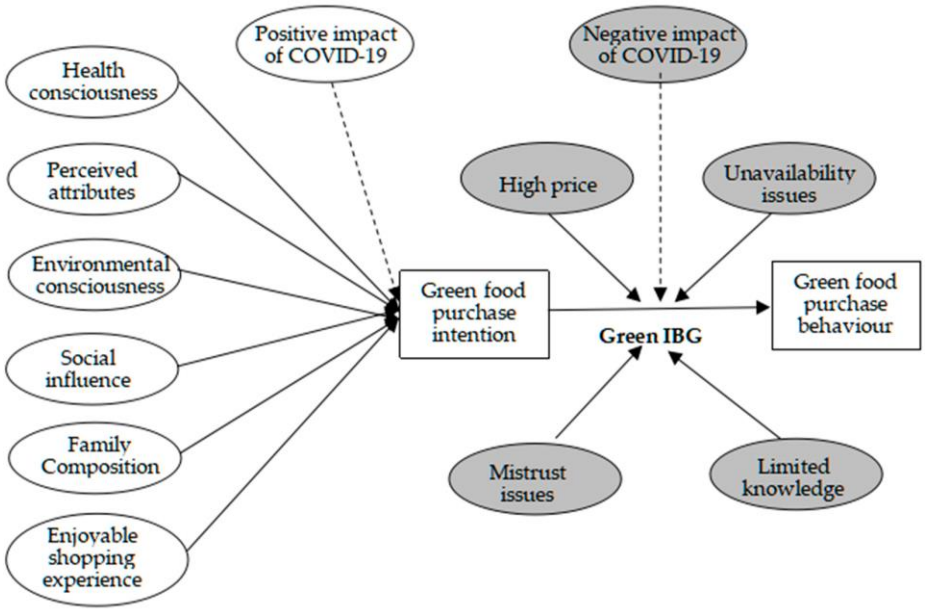

Figure 2.5: Model Developed by Qi et al. (2020)

(Qi et al., 2020, p. 14)

In their study, the authors sought to identify the factors driving green food purchase intention, namely "health consciousness (HC), perceived attributes (PA), environmental consciousness (ECON), social influence (SI), family structure, and enjoyable shopping experience" (Qi et al., 2020, p. 6). The *impact of COVID-19 on green food purchase intentions* and the *intention-behaviour gap* were also explored. It was deduced that the pandemic positively influenced the green food purchase intentions for the majority of the respondents because of their increasing health concerns and some respondents indicated that green food consumption was essential for improving health and immunity during the pandemic (Qi et al., 2020, pp. 12-13).

This is supported by the study conducted by Qi and Ploeger (2021, p. 11), where it was reported that COVID-19 significantly influenced respondents' HC and their purchase intentions. Additionally, Qi et al. (2020, p. 14) reported that due to the pandemic, the respondents were worried about their health and that of their family, hence they decided to purchase green food due to its outstanding nutritional benefits. This notion was supported by research by Ben Hassen et al. (2020, p. 13) and Xie, Huang, Li, and Zhu (2020, p. 10) where it was discovered that the impact of the C19P resulted in a shift towards healthy eating among respondents, as the pandemic influenced their perceptions of health and risk. Similarly, Hu, Bhuiyan, Rahman, Hossain, and Akter (2022, pp. 2-3) declared that the fear of the C19P could affect individuals' health concerns, as they are more inclined to adopt healthy eating to protect themselves from the C19P. Hu et al. (2022, p. 13) established that the fear of the C19P significantly influenced the respondents' health concerns, as they were more willing to purchase green products to safeguard their health.

As an extension of their study by Qi et al. (2020), investigating the pandemic's impact on consumers' green food purchases, it can, therefore, be inferred, that the concerns about the COVID-19 pandemic (CC19P) variable plays a vital role in the current study, by influencing young consumers' purchase intentions towards PB products in order to improve their health and immunity. This construct contributes towards green food literature, thereby filling the knowledge gap, as consumers are increasingly concerned about the food they consume and through their diets, they want to strengthen and protect their immune systems against disease. It was also indicated that consumers tend to increase their consumption of PB and organic foods due to food safety concerns, during the current pandemic, (which could also relate to a future pandemic). Also, as previously mentioned, there is a significantly strong and positive association between green food purchase intentions and COVID-19, hence the inclusion of the

CC19P construct. As such, it was interesting to investigate whether young South African consumers' health concerns surrounding the pandemic (or a future zoonosis or pandemic) influence their PBP purchase intentions or willingness to adopt PBP products, thereby filling the gap in green food literature.

The current study did not employ ECON from the model, as this variable relates to EC, whereby individuals demonstrate their concerns and responsibility towards the environment, which has been reported to positively influence consumers' GPI (Qi et al., 2020, p. 7). The perceived attributes variable was also not employed in the current study, as the current study was not concerned with investigating the attributes relating to PB products. Hence, the following variables from the model by Qi et al. (2020), namely HC and the C19P were selected for this study, however, this study investigated young consumers' concerns about the COVID-19 pandemic (CC19P), specifically. The final variable, social influence, which is a subjective norm (SN), as indicated by Yau and Ho (2015, p. 1) was also selected for the purpose of the current study. The hypotheses depicting their respective roles and impacts are discussed and justified in the latter part of this chapter.

2.14.5 The Mediating Role of Attitude towards Plant-based Products (ATT)

This study hypothesised that ATT might be critical in connecting EC, EK, HC and CC19P with PBPPI. A few studies documented the mediating effect of ATT on the relationships between traditional green behaviour antecedents and purchase intention. For example, Indriani et al. (2019, pp. 632-633) found that attitude towards green products fully mediates the effect of EK and GPI. This was relevant to this study, which hypothesised that ATT mediates the relationships between the independent variables HC, CC19P, EC, EK and the dependent variable PBPPI.

Le and Nguyen (2022, p. 9) also discovered that ATT was a significant mediator between environmental awareness and organic food purchase intention, as well as between knowledge of organic food and purchase intention. In addition, the mediating role of environmental attitude on the impact of EC on GPI was explored by Onurlubaş (2019, p. 13), who found that environmental attitude partially mediates the effect of EC and GPI. In the current study, it was hypothesised that ATT mediates the relationship between EC and PBPPI. Çabuk, Tanrikulu, and Gelibolu (2014, p. 344) discovered that attitude plays an essential role in terms of the

indirect effect as a mediator on how HC, EC and food safety concern influence organic food purchase intentions.

Moreover, in the current study, ATT was hypothesised to mediate the relationship between HC and PBPPI. Another variable of interest in this study, was CC19P, where the mediation effect of ATT on the relationship between CC19P and PBPPI was not previously investigated. However, since it was discovered that the pandemic was found to influence consumers' attitudes towards green food purchase intentions due to rising health concerns among consumers (Qi et al., 2020, pp. 16-17), the mediation effect of ATT on the relationship between CC19P and PBPPI was also investigated. Thus, in this study, mediation analysis was conducted to determine the mediating role of ATT in the relationships between the independent variables of HC, EC, CC19P and EK, and the dependent variable of PBPPI in order to fill the gap in green food literature. Results of the mediation analysis is reported in Chapter Four.

A surfeit of studies looked at the relationship between GPB or GPI and their potential predictors, but none focused specifically on PBPP1. It is also worth noting that previous studies that utilised the TPB model examined the motivations of GPI, with factors common within each study – namely EK and EC; and none focused on all the variables that are pertinent in this study. Figure 2.6 is a depiction of the conceptual framework of the current study, which illustrates the factors influencing young consumers' plant-based product (PBP) purchase intentions during the global climate crisis and C19P, along with the hypothesised relationships. This model also depicts the mediating role of ATT in the relationships between the independent variables of HC, EC, CC19P and EK, and the dependent variable of PBPPI. With this comprehensive model, this research sought to determine young consumers' willingness to purchase and adopt PB products during what is arguably known as the two serious threats faced by humanity, today.

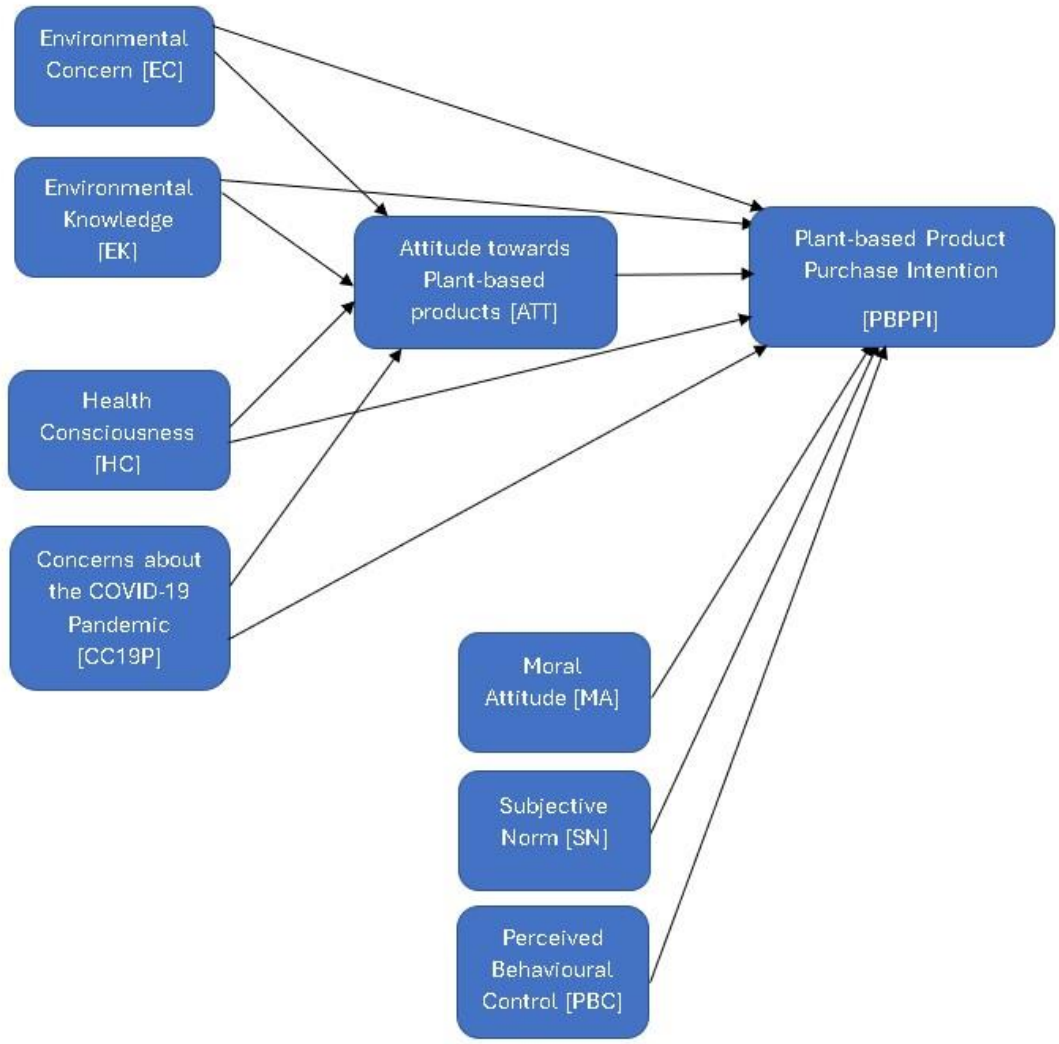

Figure 2.6: Conceptual Model of the Factors Influencing Young Consumers' Plant-based Product (PBP) Purchase Intentions During the Global Climate Crisis and COVID-19 Pandemic (C19P)

To ascertain the significance of these factors that influence young consumers' plant-based product (PBP) purchase intentions during the global climate crisis and C19P, the hypothesised relationships depicted on Figure 2.6 were tested empirically and reported in Chapter Four.

2.15 Variable and Hypotheses Development in the Conceptual Model

The specific hypotheses and relationships depicted within Figure 2.6 are justified in this section. The dependent variable was plant-based product purchase intention (PBPPI). The independent variables were attitude towards plant-based products (ATT), environmental concern (EC), moral attitude (MA), perceived behavioural control (PBC), environmental

knowledge (EK), subjective norm (SN), health consciousness (HC) and concerns about the COVID-19 pandemic (CC19P). The mediating role of ATT in the relationship between the independent variables of EC, HC, EK and CC19P, and PBPPI, was also investigated.

a) Plant-based Product Purchase Intention (PBPPI)

In SA, the shift towards a PB diet is relatively slow, but gradual, albeit gaining momentum, especially among the young consumer cohort (Bambridge-Sutton, 2024: para 10; Thorne, 2024: para 5; Venter de Villiers, Cheng, & Truter, 2024, p. 4). Thus, it was necessary to focus on intentions rather than behaviour in this study. Despite evidence of the intention-behaviour gap, intention has been found to be the best predictor of behaviour (Collins & Carey, 2007; Maichum et al., 2016, p. 4), and thus is most commonly used in TPB similar studies (Auza & Mouloudj, 2021; Maichum et al., 2016; Qi & Ploeger, 2021; Setyawan et al., 2018; Shanmugam, Saththsivam, Yeoh, Sin, & Musa, 2022; Yadav & Pathak, 2016), therefore using intention makes comparison with those findings possible.

As previously mentioned, PB products are food or beverage products where the primary ingredient(s) serve as a replacement for meat or dairy products (Beacom et al., 2021, p. 205). The C19P has resulted in a dietary shift among individuals, as PB food consumption has drastically increased (Loh et al., 2021, p. 4) and individuals have adopted a PB diet (BordBia, 2021, pp. 32, 33). Recently, individuals have become aware of the negative impact of meat consumption, raising concerns about animal welfare, environmental issues and health; due to this, there has been an increase in PBP consumption globally (Hwang, You, Moon, & Jeong, 2020, pp. 1-3). Meat and dairy alternatives are readily available at conventional grocery and health stores in SA, as indicated previously, making it easily accessible and more appealing to consumers. The growth of the PB food sector is attributed to brands, such as Beyond Meat, Oatly, Burger King and Starbucks, who have introduced a myriad of PB options making it easier for consumers to become familiar with the PB lifestyle (SpecialityFood, 2021: para 1-4) and Bloomberg Intelligence predicts that by 2030, the demand for PB products is expected to soar, as consumers' habits are now transforming (SpecialityFood, 2021: para 1-4). In 2021, the survey conducted by nutrition company, *Kerry*, which included consumers from 12 countries revealed that 61% indicated that they preferred PB protein instead of animal protein (Rabb, 2021: para 1-2).

It is worth noting that since June 2022, in SA, the *Department of Agriculture, Land Reform and Rural Development (DALRRD)* planned to seize all PB items containing names linked to processed meats, such as vegan biltong, carrot bacon, vegetarian sausage, mushroom burger and chicken-style strips, but was halted by a court order (Daniel, 2022: para 1-3; Foreman & Buxton, 2022: para 1; Vegconomist, 2022: para 2). The South African Vegan Society (SAVS) had expressed their outrage on this matter, as these PB products have already been on the South African market for years, serving as alternatives for consumers who do not wish to consume animals and animal products (Daniel, 2022: para 8-9). Country Director at ProVeg SA, Donovan Will, indicated that this represents a significant regression in the government's battle against climate change, as this seizure is further endorsing industries that are hazardous to the planetary health (FarmersReviewAfrica, 2022: para 10, 19), especially since SA signed the historic Paris Agreement on Climate Change in 2015, pledging to act on climate change, by reducing domestic carbon emissions by 2030 (Farand, 2021: para 2).

Additionally, the Food Safety Agency in SA was instructed to seize PB products in major South African retailers, as these foods were confusing and misleading customers (Foreman & Buxton, 2022: para 15). Similarly, Woolworths had come under attack to seize all their 'Just Egg' products on their shelves, as it was claimed that the name was misleading and does not hail from 'domestic fowl' (FarmersReviewAfrica, 2022: para 11-12). Nonetheless, the seizure on the PB milk industry has not emerged just yet. PBP consumption is on the rise due to the concerns around GHG emissions produced by the meat industry, animal cruelty, and the awareness of long-term health risks that emerge from traditional meat consumption (Ahlijian, 2022: para 1). Since PB consumption is soaring, it can be deduced from the above, that PB products in SA are threatening the meat and egg industry, as, firstly, the egg industry wants to protect their market share, since consumers have grown fond of PB eggs, and the meat industry is striking back in order to protect their interests through regulatory exclusion (Andrei, 2021; FarmersReviewAfrica, 2022: para 14; FarmingPortal, 2022: para 13).

This demonstrates that PB products are gaining momentum in SA, hence this study's focal point, which was to determine young South African consumers' purchase intentions towards and their adoption of PB products. Lian and Yoong (2019, p. 73) reported that young consumers' organic food purchase intentions are lower compared to older consumers in a developing nation – Malaysia, hence this relationship needs to be explored. Whilst the topic of organic food is well researched, numerous studies that have investigated organic food purchase

intentions hailed mostly from the developed nations in the west and emerging economies from the east (Curvelo, Watanabe, & Alfinito, 2019; Gundala & Singh, 2021; Rana & Paul, 2017; Sadiq et al., 2020), as a result, this study supplements the extant literature on the topic from the perspective of a developing nation from Africa and furnishes directions for future research.

b) Attitude towards Plant-based Products (ATT)

Attitude towards the behaviour indicates the degree to which a person has a positive or negative opinion and evaluation of the behaviour in question (Ajzen, 1991, p. 188). According to Maichum et al. (2016, p. 4), a consumer's attitude is expected to indicate their psychological evaluation of a product, and previous research focused on the connection between attitudes and behavioural intentions. Ajzen (1991, p. 188) underscored that an individual's favourable outlook on a specific behaviour enhances the desire to engage in that behaviour. According to Mhlophe (2016, p. 4), the extant literature indicates that attitudes are important predictors of consumers' purchase intentions for organic food. Likewise, a plethora of studies in the past have investigated consumers' attitudes in anticipating ecologically conscious purchasing and energy conservation (Jaiswal & Kant, 2018; Joshi & Rahman, 2017; Mostafa, 2009).

Similarly, Huang, Yang, and Wang (2014, p. 256) indicated that that attitude influences environmentally friendly product purchase intentions among consumers, by applying the TPB. Additionally, Paul et al. (2016, p. 125) stated that attitude is an important predictor of behavioural intention, and according to Kaufmann et al. (2012, p. 54), an individual's opinion shapes attitudes, which is conveyed as a positive and negative assessment. Therefore, when consumers develop a favourable attitude towards an attitude object, such as PB products, the more inclined they will be to engage in purchasing PB products.

Indriani et al. (2019, pp. 632-633) found that attitude towards green products were expressed as perfect mediation and can encourage GPI. A surfeit of studies validates a positive attitude-intention relationship; as the relationship between the intention to purchase organic food and the attitude toward doing so were both favourable and noteworthy (Basha, Mason, Shamsudin, Iqbal-Hussain, & Salem, 2015, p. 447; Mhlophe, 2016, p. 21; Tarkiainen & Sundqvist, 2005, p. 816; Zayed, Gaber, & El Essawi, 2022, p. 11). Correspondingly, Yadav and Pathak (2016, p. 126) and Honkanen, Verplanken, and Olsen (2006, pp. 426-427) found that consumers' organic food purchase intentions were significantly influenced by attitude towards organic food. Qi and Ploeger (2021, p. 10) also discovered that attitude significantly influenced Chinese

consumers' green food intentional behaviour. Drawing from the extant literature and preceding empirical findings, it can be assumed that attitude influences purchase intentions towards PB products, hence the following hypothesis was proposed:

H_1: UKZN students' attitude towards plant-based products positively influences their intention to purchase PB products.

c) Moral attitude (MA)

According to Ajzen (1991, p. 199), it is expected that moral obligations will impact intentions, and are congruent with attitudes. MA or obligation can be used within the context of PB products, as indicated by Yadav and Pathak (2016, p. 123) who utilised this variable in the context of organic foods within an emerging economy. SA, just like several emerging economies, is vulnerable to and threatened by the impacts of climate change (Kreft, Eckstein, & Melchior, 2017, p. 11) and according to Joshi and Rahman (2015, p. 137), it was found that consumers' moral obligations related to environmental welfare and might enhance the attitude-behaviour relationship.

Moreover, Rana and Paul (2017, p. 158) posit that ethical issues are believed to guide individuals' behaviour based on a concern towards animal welfare and the environment. According to Carrington, Neville, and Whitwell (2010, p. 140), ethically conscious consumers strive to demonstrate their values through ethical consumption and purchasing, feeling obligated to society and/or the environment. Environmental or green issues, sustainability concerns and animal welfare are some of the ethical concerns for the ethically minded consumers (Carrington et al., 2010, p. 140). Moral obligation could prove to be valuable under the effect of organic foods and PB products, as purchasing such products illustrates one's concern for their own well-being, the natural environment, and society at large (Yadav & Pathak, 2016, p. 123).

Additionally, Eskine (2013, p. 253) revealed that organic foods and morality share the same conceptual space and when consumers expose themselves to organic foods, it helps to support their moral identities. In the same vein, Honkanen et al. (2006, p. 426) discovered that the greater the concern individuals display towards animal rights and the environment, the more likely they are to hold positive attitudes towards organic food, which, thus significantly influences consumers' intentions to consume organic food. Similarly, Qi and Ploeger (2021, p.

11) reported that MA among Chinese consumers positively impacts green food purchase intensions, as the consumers felt that purchasing green food products is considered as a moral obligation. Likewise, Yadav and Pathak (2016, p. 126) revealed that MA significantly influenced consumers' intentions to purchase organic food in India, a developing nation, such as SA. From these discussions, the following hypothesis was formulated:

H_2: Moral attitude positively influences UKZN students' purchase intentions towards PB products.

d) Subjective Norm (SN)

According to Ajzen (1991, p. 188), SN involves the individual's perceived social pressure that influences them to act in a certain way. Dubihlela and Dubihlela (2017, p. 130) indicated that the two most important social forces influencing young consumers are family members and peers and approval from family members and peers is likely to solidify organic food purchase intention. Peer pressure is a social occurrence whereby individuals in a society and social group exert pressure that affects a person's behaviour and younger consumers are more susceptible to social influences, as they are still trying to form an identity (Gulati, 2017, p. 280). Hameed et al. (2019, p. 15539) indicated that SN is the important predictor that helps individuals to adopt a sustainable product on the recommendations of worthy people in his or her life.

Research by Yadav and Pathak (2016, p. 126) revealed that SN had no significant influence on Indian consumers' organic food purchase intentions and the authors explained that developing nations are yet to embrace organic food as a societal standard. This was also noted by Zayed et al. (2022, p. 11), who discovered that SN did not influence Egyptian consumers' intentions to purchase organic food products. On the contrary, Naidoo and Ramatsetse (2016, p. 84) revealed that there is a fairly small, but significant correlation between SN and organic food purchase intentions in SA. Similarly, Mhlophe (2016, p. 22) discovered that SN positively influences the purchase intentions of organic food and this correlation was also significant. Additionally, Canova et al. (2020, p. 10) discovered that SN has a positive effect on consumers' willingness to purchase organic food.

According to Maichum et al. (2016, p. 4), there are several studies that reported SN as a crucial determinant of consumers' green product purchase intentions and the results from the meta-analysis by Zhuang et al. (2021, p. 12) demonstrated that SN is moderately correlated with

green purchase intention. Additionally, the effectiveness of SN in explaining intention has sparked much debate in the literature, and the results from previous studies are mixed. Consequently, the following hypothesis was devised in order to determine the relative role that SN plays in the PBPPI of young consumers from a South African perspective:

H_3: Subjective norm positively influences UKZN students' purchase intentions towards PB products.

e) Perceived behavioural Control (PBC)

According to Ajzen (1991, p. 183), PBC is a person's assessment of how easy or difficult it is to engage in the desired behaviour. PBC is an element extending the TRA and explains a person's view of their own abilities or limitations (such as money, time and chance) to execute a particular behaviour (Godbersen, Hofmann, & Ruiz-Fernández, 2020, p. 4). Hardin-Fanning and Ricks (2017, p. 44) declared that behavioural performance is shaped by the access to sufficient resources and control over the obstacles that impact behaviour. The authors further stated that the more resources the individual has and the fewer the obstacles in the individual's path, as perceived by the individual, the higher their PBC and the more likely they are to intend to take action (Hardin-Fanning & Ricks, 2017, p. 44). Therefore, individuals possessing stronger perceived control over their actions are more likely to intend to take them (Maichum et al., 2016, p. 5).

The meta-analysis by Zhuang et al. (2021, p. 12) revealed that PBC is moderately correlated with GPI, which is related to PBPPI. Furthermore, Yadav and Pathak (2016, p. 126) revealed that PBC significantly influenced purchase intentions towards organic foods among Indian consumers. Likewise, Saleki, Quoquab, and Mohammad (2020, p. 196) discovered that PBC was the second most significant factor of purchase intention of organic food, after attitude. This significance was also captured by Boobalan, Nawaz, Harindranath, and Gajenderan (2021, p. 10) where it was indicated that PBC significantly related to organic food purchase intentions. Similarly, Qi and Ploeger (2021, p. 10) found that PBC significantly influenced Chinese consumers' green food purchase intentions, and the authors also indicated that PBC was an influential antecedent of green food purchase intentions during the pandemic.

Additionally, Naidoo and Ramatsetse (2016, p. 84) discovered that a moderate, but significant association exists between PBC and organic food purchase intentions among South African

consumers, thus it may be expected that PBP marketers in SA will increase the variety of PB products and expand the supply channels of such products. However, Teixeira, Barbosa, Cunha, and Oliveira (2022, p. 10) established that PBC was not significant in determining purchase intentions of organic food, albeit its importance was based on the theoretical implications. Hence, further research is required to explore this lack of significance. Based on this, the following hypothesis was proposed:

H_4: Perceived behavioural control positively influences UKZN students' purchase intentions towards PB products.

f) Environmental Concern (EC)

EC indicates the extent to which people are cognisant of environmental issues and support initiatives to address them or express a willingness to personally contribute to resolving them (Yadav & Pathak, 2016, p. 123). EC positively influences purchase intention towards eco-friendly products and EC is significant in influencing the intention to purchase organic food (Yadav & Pathak, 2016, p. 123). Kim and Choi (2005, p. 593) declared that EC directly influences green buying behaviour and this finding is crucial for the current study.

According to Bisschoff and Liebenberg (2016, p. 179), concern towards environmental issues has a strong influence on consumers' eco-friendly or green product purchase intentions, which also relates to PBP purchase intentions, however this concern is not exclusively taken into consideration during buying decision-making when purchasing green products, as there are also other determinants that spur green purchasing behaviour. Through empirical observation, individuals from developed nations display greater EC than those from emerging economies and to avert additional environmental degradation, further research should be conducted to better understand consumers' GPI in developing countries (Paul et al., 2016, p. 124). Zheng et al. (2020, p. 7) indicated that EC significantly influenced GPI among consumers in Malaysia and the meta-analysis by Zhuang et al. (2021, p. 12) revealed that EC was moderately correlated with GPI.

Furthermore, studies have declared EC as an important predictor of consumers' PEBs and individuals' concern towards environmental issues is useful in predicting environmentally conscious behaviour (Kaufmann et al., 2012, pp. 53-54). Additionally, in their study, Saleki et al. (2020, p. 196) found that EC had a substantial and favourable impact on customers'

intentions to purchase organic food. This discovery was also supported by Mhlophe (2016, p. 22) and Zayed et al. (2022, p. 10). Likewise, Zheng et al. (2020, p. 17) reported that EC was the second most powerful predictor of GPB of consumers from a developing country. The current study hypothesised that EC will positively influence purchase intentions towards PB products, hence the following hypothesis was proposed:

H_5: Environmental concern positively influences UKZN students' purchase intentions towards PB products.

The Mediating Effect of Attitude Towards Plant-based Products (ATT) on the Relationship between Environmental Concern (EC) and Plant-based Product Purchase Intention (PBPPI)

As previously indicated, this study hypothesised that ATT mediates the relationship between EC and PBPPI. Apart from the direct influence of EC on green and organic food purchase intentions, some studies have discovered an indirect effect through the influence of attitude as a mediator (Ibrahim, Mariapan, Lin, & Bidin, 2021, p. 9). Hast, Alimohammadisagvand, and Syri (2015, pp. 75-76), Khaola, Potiane, and Mageza-Mokhethi (2014, pp. 361-362) and Paul et al. (2016, p. 126) found that individuals who display concern towards environmental issues are highly motivated to purchase eco-friendly products and possess a positive attitude towards green products; also a significant effect of ATT on intention was found in these studies. These significant relationships were also revealed by Joo et al. (2020, p. 16) where EC positively influenced the attitudes of young Chinese consumers and in turn attitudes affected intentions. Maichum et al. (2016, p. 14) also found that EC had a significantly positive impact on attitudes and intentions to purchase green products, among consumers. Similarly, Miftari, Haas, Meixner, Imami, and Gjokaj (2022, p. 10) discovered that EC had a positive impact on consumers' attitudes towards organic products and these findings may indicate that attitude mediates the relationship between EC and intentions, hence the hypothesis below:

H_6: Attitude towards plant-based products mediates the effect of environmental concern on UKZN students' plant-based product purchase intentions.

g) Environmental Knowledge (EK)

According to Maichum et al. (2016, p. 6), EK is referred to the awareness of the facts, essential connections that impact the environmental, and personal accountability towards the

environment that fosters sustainable development. In addition, Fryxell and Lo (2003, p. 45) defined EK as a broad understanding of information, ideas, and connections pertinent to the natural environment and its primary ecosystems. D'Souza, Taghian, and Khosla (2007, p. 71) declared that EK relates to individuals' awareness of the environment and their opinions regarding major environmental issues or effects. In their research, Scott and Vigar-Ellis (2014, p. 647) discovered that South African consumers require appropriate education and extensive information in terms of environmental awareness and knowledge of environmental concerns. The authors also indicated that South African consumers tend to possess an average knowledge about climate change, which is well below the knowledge levels of consumers in first-world countries. According to a survey conducted by South African design and manufacturing studio, *Love Milo*, it was revealed that many individuals are still unaware of the small things they could do in their daily lives in order to lead an eco-friendlier lifestyle (EcoHarvester, 2017: para 4-5); this may be due to them being oblivious about the global climate crisis.

Mostafa (2009, p. 11031) discovered that EK significantly influences consumers' green product purchase intentions. Similarly, D'Souza et al. (2007, p. 71) indicated that individuals who are knowledgeable about the major environmental issues (global warming, pollution, loss of biodiversity, deforestation for animal agriculture, among others), will be motivated towards green purchase intention and behaviour. On the contrary, Indriani et al. (2019, p. 633) found that EK had no significant effect on consumers' GPI; nonetheless, the type of green product was unspecified, hence the current study, which specifically involves PB products, was conducted to address this deficiency.

However, Shamsudin et al. (2018, p. 9915) found that the incorporation of EK in the TPB model significantly influenced purchase intention towards organic food. Additionally, Kanchanapibul, Lacka, Wang, and Chan (2014, p. 533) found that university students in the UK were more inclined to participate in GPB, such as consuming PB products, if they have sufficient ecological knowledge or are eco-literate. Moreover, Pratiwi et al. (2018, p. 100) discovered that EK significantly and positively affected Indonesian consumers' green purchase intentions. Drawing from the extant literature and preceding empirical findings, the following hypothesis was proposed:

H_7: Environmental knowledge positively influences UKZN students' purchase intentions towards PB products.

The Mediating Effect of Attitude Towards Plant-based Products (ATT) on the Relationship between Environmental Knowledge (EK) and Plant-based Product Purchase Intention (PBPPI)

As previously indicated, this study hypothesised that ATT mediates the relationship between EK and PBPPI. Apart from the direct relationship between EK and green or organic food purchase intentions, established in previous studies, some studies have discovered an indirect effect through the influence of attitude as a mediator (Putri, Wahyuni, & Suyatna, 2021, p. 207). Maichum et al. (2016, p. 14) indicated that individuals with extensive EK foster positive attitudes towards the purchasing of green products and ATT was also found to have a significant effect on GPI. Setyawan et al. (2018, p. 148) found a positive influence of EK on green product purchase intention, as EK positively influenced consumers' attitude towards green products, which ultimately influenced purchase intention. Additionally, Indriani et al. (2019, p. 633) revealed that ATT mediates the effect of EK on GPI, and EK was also found to have a significant influence on consumers' attitude towards green products, while Pratiwi et al. (2018, p. 100) also discovered that EK significantly influenced environmental attitude, as consumers of green products possess EK that positively affects attitudes. Given the mediation finding by Putri et al. (2021) and other significant EK to ATT and ATT to intention findings it is hypothesised that:

H_8: Attitude towards plant-based products mediates the effect of environmental knowledge on UKZN students' plant-based product purchase intentions.

h) Health Consciousness (HC)

HC refers to the extent to which an individual's everyday activities incorporate health concerns (Yadav & Pathak, 2016, p. 123). The survey conducted among Malaysian academics found that HC had the strongest relationship with organic food purchase intentions, as it strongly motivated consumers to purchase organic foods (Salleh, Ali, Harun, Jalil, & Shaharudin, 2010, p. 127).

Recently, the health impacts of meat consumption have raised many concerns within the scientific community and public consumers (He, Evans, Liu, & Shao, 2020, p. 2641), and several studies involving organic food products, which are related to PB products, have revealed that consumers believe organic food products are a healthier and superior option compared to foods that are grown conventionally. Furthermore, an individual's health concern

is a primary driver of positive attitudes and intentions to purchase organic food (Yadav & Pathak, 2016, p. 123). Mhlophe (2016, p. 11) postulated that if consumers perceive there to be health-related benefits from consuming organic food, they will probably develop positive purchase intention for such products. Rana and Paul (2017, p. 160) also indicated that for many consumers, HC serves as the foundation for purchase intentions and is positively associated with consumers' purchase behaviour and attitude.

Likewise, Teixeira et al. (2022, p. 4) declared that numerous previous studies have identified a significant relationship between HC and intentions to purchase organic food. Paradoxically, Zayed et al. (2022, p. 12) revealed that HC did not influence organic food purchase intention, which contradicted previous studies. Yadav and Pathak (2016, p. 126) discovered that HC positively influenced organic food purchase intentions among Indian consumers. Similarly, Qi and Ploeger (2021, p. 11) found that HC emerged as a key determinant of consumers' intentions to purchase green food products, which is congruent with earlier research indicating that individuals' willingness to purchase organic food is determined by HC (Yilmaz, 2023, p. 12). Additionally, Salleh et al. (2010, p. 127) reported that HC plays a significant role in influencing organic food purchase intention. With reference to the preceding discussion, the following hypothesis was developed:

H_9: Health consciousness positively influences UKZN students' purchase intentions towards PB products.

The Mediating Effect of Attitude Towards Plant-based Products (ATT) on the Relationship between Health Consciousness (HC) and Plant-based Product Purchase Intention (PBPPI)

As previously indicated, this study hypothesised that ATT mediates the relationship between HC and PBPPI. Apart from the direct effect of HC on green or organic food purchase intentions, some studies have discovered an indirect effect through the influence of attitude as a mediator (Tuan, Lam, & Linh, 2021, p. 221). Teixeira et al. (2022, p. 4) indicated that consumers who display greater concern towards their health develop a positive attitude towards organic food and their study found that ATT had a significant and positive influence on organic food purchase intention. Likewise, consumers who demonstrated higher concern about health-related issues possessed a more favourable attitude towards organic products and intention (Rana & Paul, 2017, p. 159). In their study, Nguyen, Nguyen, Trinh, Tran, and Cao (2020, pp. 209-210) found that HC positively influenced consumers' attitudes toward green products and

ATT was also found to have a positive impact on GPI. Correspondingly, Yazar and Burucuoğlu (2019, p. 188) found that HC positively influences consumers' attitude towards organic food, while ATT had the strongest impact on organic food purchase intention.

Aksoy, Kabadayi, and Alan (2021, p. 6) discovered that, within the context of fear of COVID-19, HC positively influenced individuals' attitudes towards stopping unhealthy foods and healthy nutrition. Likewise, Teixeira et al. (2022, p. 9), who also found that ATT had a significant impact on organic food purchase intention, revealed that health concerns foster a favourable attitude towards organic food among consumers. In the study by Fleșeriu, Cosma, and Bocăneț (2020, p. 14) HC was found to directly affect ATT and GPI, and ATT influenced GPI. Thus, these findings may indicate that attitude mediates the relationship between HC and intentions, hence the hypothesis below:

H_{10}: Attitude towards plant-based products mediates the effect of health consciousness on UKZN students' plant-based product purchase intentions.

i) Concerns about the COVID-19 Pandemic (CC19P)

The COVID-19 pandemic (C19P) resulted in a 'new normal' life, where individuals have become concerned about their health, spurring a shift in attitudes and product purchase decisions (Latip, Newaz, Latip, May, & Rahman, 2021, p. 951). Espinosa et al. (2020, p. 1036) highlighted the advantage of reducing meat consumption to lower zoonotic disease risks, thus this variable was included in the current study to determine if young consumers' concerns about the C19P significantly influence their PBP purchase intentions. According to Mackenzie and Smith (2020, pp. 45-46), after SARS-CoV and MERS-CoV, SARS-CoV-2 is the third zoonotic coronavirus, but it seems to be the only one with the potential to spread like a pandemic.

Espinosa et al. (2020, p. 1020) declared that about 75% of emerging infectious diseases are zoonotic and consumers have always been concerned about the congruence between a non-vegetarian diet and the vulnerability towards zoonoses (Aggarwal et al., 2021, p. 255). Foreman (2023: para 2) indicated that 2023 saw the most amount of individuals signing up for Veganuary, as individuals had chosen to start the year by going vegan, in the quest to curtail zoonoses, improve health and immunity and repel the climate crisis anxiety (Campbell, 2021: para 2). According to the UN (2020: para 8), "COVID-19 is not only a wake-up call, but also a dress rehearsal for the world of the challenges to come", and it has taught humanity crucial

lessons. COVID-19 is a zoonotic disease, which has highlighted how environmental degradation can have catastrophic consequences; and humanity cannot allow biodiversity loss to continue (Creecy, 2020: para 11).

According to Qi et al. (2020, pp. 16-17), consumers' green food purchase intentions had increased as a result of the C19P and this is because of consumers' growing health concerns. In their study, within the context of fear of COVID-19, Uysal (2023, p. 157) discovered that more health conscious individuals display positive attitudes towards food supplements, and this influences their intention to purchase such products in a positive way. Ben Hassen et al. (2020, p. 12) and Qi and Ploeger (2021, p. 11) revealed a shift in individuals' consumption patterns toward a healthier diet during the C19P, as consumers have reduced their consumption of unhealthy foods and incorporated more fresh fruits and vegetables in their diet. Similarly, due to the C19P, individuals tend to consume environmentally friendly food products as they are concerned about food safety, hence consumers have increased their consumption of green food products (Qi & Ploeger, 2021, p. 5). Nevertheless, Latip et al. (2021, p. 952) indicated that there is limited research relating to this 'new normal' after the pandemic, because of the rather unfamiliar situation. Hence, within this 'new normal' context, and drawing from the extant literature and empirical findings, the following hypothesis was proposed:

H_{11}: Concerns about the COVID-19 pandemic positively influence UKZN students' purchase intentions toward PB products.

The Mediating Effect of Attitude Towards Plant-based Products (ATT) on the Relationship between Concerns about the COVID-19 Pandemic (CC19P) and Plant-based Product Purchase Intention (PBPPI)

As previously indicated, this study hypothesised that ATT mediates the relationship between CC19P and PBPPI. Apart from investigating the direct effect of CC19P on young consumers' PBP purchase intentions, this research explored its relationship with attitude as a mediator, which was previously not investigated, thus filling the gap in green food literature. Latip et al. (2021, p. 956) discovered that individuals' health concerns during the C19P positively influenced their attitudes towards organic food and purchase intentions, and as COVID-19 is associated with health risks, organic food has been found to be a much safer and healthier food choice. This was also supported by the research carried out during the C19P by Cheah and Aigbogun (2022, p. 4), where Malaysian consumers who displayed health concerns developed

a more favourable attitude towards purchasing and consuming organic food, and ATT was also found to significantly impact organic food purchase intention. Qi et al. (2020, pp. 16-17) reported that the C19P had influenced consumers' green food purchase intentions due to rising health concerns among consumers.

Moreover, Palau-Saumell, Matute, Derqui, and Meyer (2021, p. 293) reported that the perceived risks associated with COVID-19 influenced consumers' attitudes towards locally produced foods and consumers' attitude towards locally produced foods had a positive influence on purchase intentions. Similarly, Muresan et al. (2021, p. 11) found that consumers' attitudes towards sustainable food consumption during the C19P was positively influenced by health issues, however purchase intention during the pandemic was not investigated. Preceding studies have already established that the pandemic has increased individuals' health concerns (Ben Hassen et al., 2020, p. 12; Qi & Ploeger, 2021, p. 11). Thus, determining whether these health concerns during the pandemic influence consumers' attitudes towards PB products and purchase intentions needs to be explored in order to fill the gap in green food literature.

Similarly, in the Turkish study conducted by Uysal (2023, p. 156) it was discovered that individuals' fear about COVID-19 significantly influenced their attitudes towards food supplements, as the fear surrounding the C19P fuelled their interest in such products. Correspondingly, Aksoy et al. (2021, p. 6) discovered that the fear of COVID-19 positively influenced individuals' attitudes towards stopping unhealthy foods, however the impact of ATT towards organic, PB or green food, and purchase intention during the pandemic was not investigated. The majority of earlier research investigating the pandemic's impact on organic and green food purchase intentions did not focus specifically on its relationship with attitude, more specifically how the health concerns during the C19P influenced consumers' attitude towards PB products and purchase intentions. Only Latip et al. (2021, p. 957) found that food safety and health concerns during the C19P influenced consumers' attitudes towards organic food and purchase intention, in Malaysia. Hence, the following hypothesis was proposed to fill the gap in the existing green food marketing literature, from a developing country's perspective:

H_{12}: Attitude towards plant-based products mediates the effect of concerns about the COVID-19 pandemic on UKZN students' plant-based product purchase intentions.

2.16 Conclusion

This chapter provided a detailed discussion on the global climate crisis, C19P and zoonosis, the PB sector in SA, PB products and the impact of adopting a PB diet on the environment, animal welfare and human health. It was established that young consumers are driving the PB movement in SA and abroad. The mounting interest and awareness about the environmental and health benefits of adopting PB products is considered a critical motivating factor, which has started to burgeon the demand for more sustainable products by consumers both locally and globally. Fast-food outlets and restaurants are including PB options, even introducing whole PB menus, and there is also a plethora of PB products available in supermarkets.

Preceding studies on green and organic food purchase intentions were also presented in order to support the proposed hypotheses and identify the deficiencies in the extant literature. The traditional green behaviour antecedents, namely ATT, PBC, SN, EC, EK, and MA, which has sparked great debate among researchers in the field, in tandem with the variables that have specific relevance to the study, namely HC and CC19P, were also delineated and justified. The results from previous research, conducted abroad and in SA, that have shaped organic and green food purchase intention and consumption were also deliberated followed by a detailed discussion and justification of the hypotheses, as depicted in the conceptual model.

The topic of PBP purchase intention among young consumers, in light of the global climate crisis and C19P, in SA, is relatively under-researched or limited with a handful of studies that relate to PB products among young consumers. Hence, young consumers' food choices during and post COVID-19 need to be explored in SA to fill the gap in existing green food literature.

Chapter Three outlines the research methods employed in this study. The unit of analysis, sampling procedure, ethics requirements, data collection instrument, and the statistical analysis techniques applied in this study are discussed. The research methodology that was utilised to empirically test the traditional green behaviour antecedents of EK, EC, ATT, SN, PBC, MA in tandem with the following variables – HC and CC19P on PBPPI, and the mediating effect of ATT in the relationship between the independent variables of EC, EK, HC and CC19P, and PBPPI, are also presented.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

In Chapter Two, the various hypotheses and the conceptual model of the factors influencing PBP purchase intentions among young consumers during the global climate crisis and C19P, based on the extant literature, were presented. Chapter Three describes the research methods that were followed to empirically test this model with young South African consumers in accordance with this study's overarching research question.

This chapter begins by reminding the reader of the research objectives, thereafter a brief deliberation on the stages that constitute the marketing research process follows, where the research problem and hypotheses are reiterated. The research paradigm is then discussed, which leads into the research design and approach. This is followed by the sampling procedure, along with an explanation of the ethics requirements. The data collection instrument and a justification of the scale items for each construct are presented. The pre-testing of the questionnaire is explained, which leads into data screening. Afterwards, the statistical analysis is presented, and this features the various statistical techniques that were employed to analyse the data.

3.2 Research Objectives

As indicated in Chapter One, the overarching research question of this study sought to answer the extent to which young South African consumers have adopted plant-based (PB) products and how environmental knowledge (EK), environmental concern (EC), attitude towards plant-based products (ATT), moral attitude (MA), subjective norm (SN), perceived behavioural control (PBC) and health consciousness (HC) affect intentions to purchase these products amidst the global climate crisis and COVID-19 pandemic (C19P).

Furthermore, the study's purpose was to understand the PBP purchase intentions among young South African consumers and determine the level of importance of the traditional green behaviour antecedents that influence young consumers' intentions to purchase PB products during the global climate crisis and C19P, compared to HC and CC19P and determine whether these two variables are catalysts for sustainable change in lifestyle and dietary habits. The

purpose was also to investigate the mediating effect of ATT in the relationship between the independent variables of EC, EK, HC and CC19P, and PBPPI. Thus, five research objectives were formulated, which sought to:

1. ascertain UKZN students' perceptions about plant-based (PB) products.
2. determine the extent to which UKZN students have adopted and are willing to adopt plant-based (PB) products.
3. assess the role played by traditional green behaviour antecedents, such as environmental knowledge (EK), environmental concern (EC), attitude towards plant-based products (ATT), moral attitude (MA), subjective norm (SN) and perceived behavioural control (PBC) on plant-based product purchase intention (PBPPI).
4. examine the relative roles of health consciousness (HC) and concerns about the COVID-19 pandemic (CC19P) on plant-based product purchase intention (PBPPI).
5. explore the mediating effect of attitude towards plant-based products (ATT) on the relationships between environmental knowledge (EK), environmental concern (EC), health consciousness (HC) and concerns about the COVID-19 pandemic (CC19P) and plant-based product purchase intention (PBPPI).

The next section highlights the steps in the marketing research process.

3.3 Steps in the Marketing Research Process

''Life without inquiry is not worth living for a human being'' (Socrates cited in Naidoo 2011, p.47). According to Naidoo (2011, p.47), research involves the meticulous systematic enquiry into nature and society in order for the verification and improvement of extant knowledge and new knowledge generation. Thus, the knowledge gathered from research involves developing "new concepts or advancing the existing body of knowledge and theories, leading to new insights and perspectives that were formerly unknown". Hyman and Sierra (2015, p. 1) stated that research is a multi-stage process and although there is a plethora of different stages that encompass what the research process is, the six universal stages were adopted for the current study, conceptualised by Malhotra (2010, pp. 9-10). Figure 3.1 illustrates these six stages.

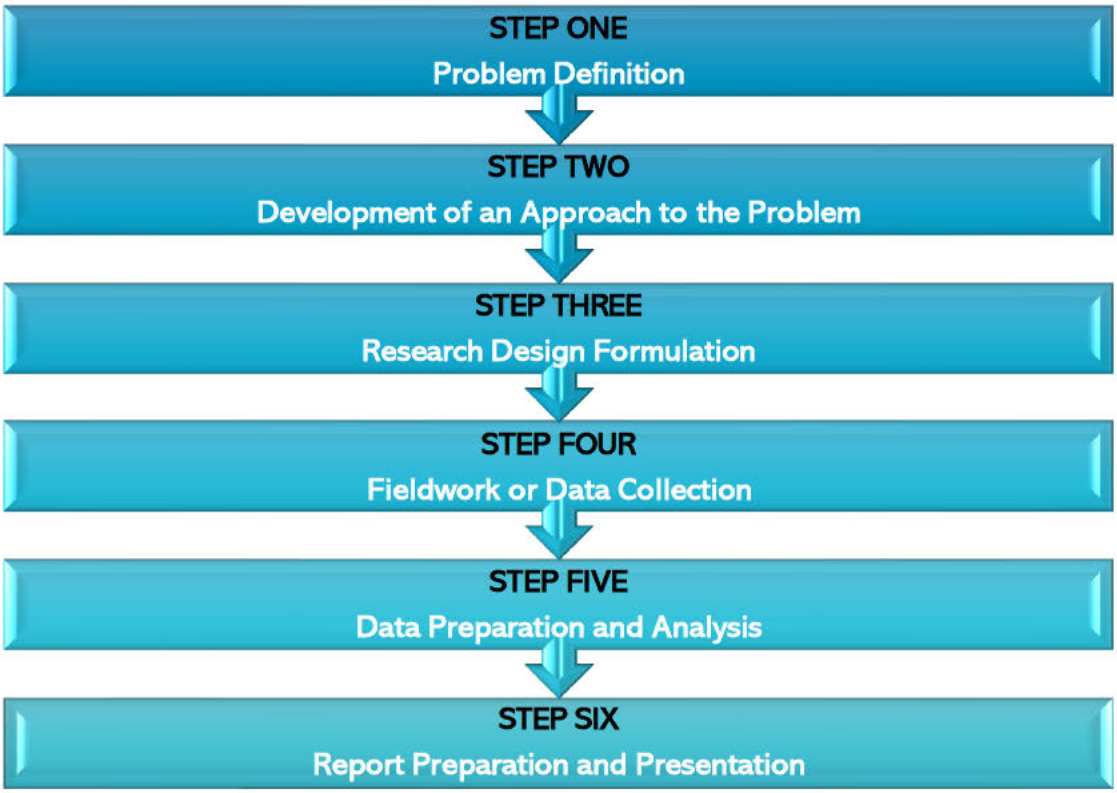

Figure 3.1: The Marketing Research Process

(Malhotra, 2010, pp. 9-10)

Figure 3.1 depicts the systematic sequence of steps that researchers need to follow when conducting a research project. According to Malhotra (2010, pp. 9-10), these steps include defining the research problem or the area of concern that needs to be investigated, then developing an approach to the research problem by devising the research objectives, leading to the development of the hypotheses to be achieved in the study. The formulation of the research design follows, leading to the procedures necessary to obtain the required information, collecting, coding and analysing the data; and the final stage, which entails reporting and presenting the research findings (Malhotra, 2010, pp. 9-10).

A summary of the research problem is discussed next.

3.3.1 Research Problem

Formulating the research problem is the first step in the research process, which is also the most important, as it serves as the foundation for research (Pardede, 2018, pp. 1-2). The

research problem, presented in Chapter One, was to bridge the gap in extant literature, which has already discovered that young consumers are green, however now there is the C19P on top of the global climate crisis, and it is unclear regarding the relative role CC19P plays in influencing young consumers' PBP purchase intentions. Furthermore, the health concerns surrounding COVID-19 as a possible catalyst for PBPPI need to be addressed in relation to the traditional green behaviour antecedents affecting young consumers' purchase intention towards PB products, which previous studies conducted in SA did not consider. Moreover, the dire state of the environment and the beneficial effects that PB products can have for individuals and the planet, in addition to the limited research on young consumers in a developing nation in Africa, within the green food context resulted in the research problem. In addition to the research problem, one overarching research question and five research objectives were formulated. Moreover, 12 hypotheses were developed and a detailed justification and rationale for each were discussed in Chapter Two; nonetheless a reiteration of these hypotheses are provided below.

3.3.2 Hypotheses

To bridge the gap in extant literature relating to young South African consumers' purchase intentions towards PB products in light of the global climate crisis and C19P, the following hypotheses were formulated. The conceptual framework, which sought to understand UKZN students' PBP purchase intentions and determine the level of importance of the traditional green behaviour antecedents that influence PBPPI during the global climate crisis and C19P provides a detailed overview of these hypotheses in Chapter Two. The hypotheses were:

H_1: UKZN students' attitude towards plant-based products positively influences their intention to purchase PB products.

H_2: Moral attitude positively influences UKZN students' purchase intentions towards PB products.

H_3: Subjective norm positively influences UKZN students' purchase intentions towards PB products.

H_4: Perceived behavioural control positively influences UKZN students' purchase intentions towards PB products.

H_5: Environmental concern positively influences UKZN students' purchase intentions towards PB products.

H_6: Attitude towards plant-based products mediates the effect of environmental concern on UKZN students' plant-based product purchase intentions.

H_7: Environmental knowledge positively influences UKZN students' purchase intentions towards PB products.

H_8: Attitude towards plant-based products mediates the effect of environmental knowledge on UKZN students' plant-based product purchase intentions.

H_9: Health consciousness positively influences UKZN students' purchase intentions towards PB products.

H_{10}: Attitude towards plant-based products mediates the effect of health consciousness on UKZN students' plant-based product purchase intentions.

H_{11}: Concerns about the COVID-19 pandemic positively influence UKZN students' purchase intentions toward PB products.

H_{12}: Attitude towards plant-based products mediates the effect of concerns about the COVID-19 pandemic on UKZN students' plant-based product purchase intentions.

The specific procedures used to identify, select, process, and analyse information relating to the topic and to address the study's research problem, objectives, and hypotheses, are discussed in the subsequent sections. These include the paradigm, design, and approach of the research.

3.4 Research Paradigm

Guba and Lincoln (1994, p. 105) indicated that the research paradigm is an essential belief system or world view fundamentally guiding an investigation, in selecting the research methods and, also in ontologically and epistemologically ways. When undergoing research, several ontological, epistemological and axiological related assumptions are made, which underpin the choice of methodology, data collection and analysis procedures (Junjie & Yingxin, 2022, p. 10). Ontology, according to Al-Saadi (2014, p. 1), relates to individuals' beliefs about the nature of existence and what exists. Whereas epistemology focuses on developing knowledge as well as the nature of objects concerned with how researchers view the world around them (Junjie & Yingxin, 2022, p. 11). Axiology, on the other hand, is concerned with examining the values and basis upon which researchers make value judgments, and the personal beliefs, values, and experiences of the researcher can influence their research (Guraya, Harkin, Yusoff, & Guraya, 2023, p. 3).

This research was conducted through the lens of a positivist objectivist philosophy, as according to Stephens (2008, p. 71), this philosophy is rooted in an objectivist epistemology, whereby knowledge is gained using quantifiable observation. Positivism, the term coined by Auguste Comte in the 19th century, is frequently connected to quantitative research and is a form of progression (Ryan, 2018, p. 4). It is one of the research philosophies, which is a name given to scientific studies – the systematic quest for knowledge, through quantifiable observations, within the social world (Park, Konge, & Artino, 2020, p. 690; Saunders, Lewis, Thornhill, & Bristow, 2019, p. 130). This paradigm directed the researcher's choice of research strategy, data collection and analysis methods. According to Keong, Md Husin, and Kamarudin (2023, p. 5860), positivism utilises hypotheses to accept or reject the causality between the variables. The research strategy utilised in the current study, in the quest to collect credible data, was based on existing frameworks (discussed in Chapter Two), which were applied to develop the 12 hypotheses, conceptual framework and identify targets for proposing inferences.

Park et al. (2020, p. 691) asserted that positivism favours larger sample sizes over smaller ones, as objective data collected from larger samples are superior to the data obtained from smaller samples, and larger samples improve data consistency. In accordance with the positivistic approach, the sample size in this study was based on the method of analysis – SEM and in

accordance with the Table by Krejcie and Morgan (1970, p. 608), to ensure rigor and sufficient power for the data analysis.

Additionally, according to Dudovskiy (2024: para 1), under the positivism philosophy, the researcher is restricted to collecting data and interpreting it objectively. Moreover, it is vital for researchers to remain emotionally neutral and objective to arrive at clear distinctions between personal experience and science or logic. In this study, self-administered questionnaires were delivered in-person by the researcher, to 381 respondents at the five UKZN campus sites, independent of personal biases however, despite the researcher having minimal interaction with the respondents (to address respondents' queries, only), there was a potential for bias, albeit marginal; nonetheless, this limitation was addressed in Chapter Five. Jansen (2023: para 3) indicated that answers to research questions or knowledge can be obtained by meticulously measuring and analysing numerical data. In this study, according to the positivistic approach, quantitative methods were utilised to analyse the data through SPSS and AMOS version 27 and ensure an objective stance. This, therefore, represented an application of the positivism research philosophy.

3.5 Research Design

According to Sekaran and Bougie (2016, p. 95), the research design serves as a blueprint for the data collection, measurement, interpretation and analysis of data, that address the research questions of the study. Since this research sought to understand young South African consumers' PBP purchase intentions and determine the level of importance of the traditional green behaviour antecedents that influence PBPPI during the global climate crisis and C19P, a descriptive-correlational research design was applied. According to Davis (2021: para 3), a descriptive-correlational study outlines the variables and the naturally occurring associations between and among these variables. In addition, Lemboye (2019, p. 38) indicated that correlational research is effective when the objective is to analyse the connections between two or more variables in a single population or between the same variables across two different populations.

In the current study, the researcher sought to describe the relationship or correlation among the various potential green behaviour antecedents and PBPPI among young South African consumers. Relationships between the various independent variables, namely subjective norm

(SN), attitude towards plant-based products (ATT), perceived behavioural control (PBC), moral attitude (MA), environmental knowledge (EK), environmental concern (EC), health consciousness (HC), and concerns about the COVID-19 pandemic (CC19P), and the dependent variable – plant-based product purchase intention (PBPPI), were explored to examine the relationships among these variables and determine which variable best predicts PBPPI. This was executed by utilising a validated survey instrument to examine the relationships.

This study utilised an empirical research design to gather the relevant data based on the real-life experiences and perceptions of students or young consumers, who were the unit of analysis (UKZN students). Additionally, there is limited research available involving young South African consumers' perceptions towards PBP purchase intentions during the global climate crisis and C19P, with little research that supports the relationships among the aforementioned variables, thus indicating a gap in extant literature. Hence, a descriptive-correlational empirical method was employed in this study.

3.6 Research Approach

According to Apuke (2017, p. 41), the quantitative research approach encompasses the quantification of variables to obtain results; and utilising and analysing numerical data by employing statistical techniques to answer questions relating to what, how, when, where, and who. Quantitative research generally focuses on the measurement of social reality to establish research numerically, hence rigid guides for the process of data collection and analysis are paramount (Sukamolson, 2007, p. 4). Therefore, in this study, in accordance with the positivist approach, a structured questionnaire with closed-ended questions, based on several multiple-item measurement scales, that were previously validated, was formulated in order to collect the data and make them quantitative. Apuke (2017, p. 41) described quantitative research methods as the process of explaining a phenomenon by collecting and analysing numerical data utilising mathematical methods, particularly statistics. Furthermore, according to Apuke (2017, p. 43), the quantitative approach involves testing hypotheses, which looks at cause and effect in tandem with formulating predictions.

This study examined the relationships among the variables, specifically investigating the direct and indirect relationships between multiple latent variables, namely SN, ATT, PBC and MA towards PBPPI. It also investigated the indirect relationship between EK, EC, HC and CC19P

to ATT and finally, their direct relationship towards PBPPI. Since this research investigated the relationships between the dependent and independent variables, by utilising a questionnaire for the collection of numerical data, quantitative research was appropriate, as it utilised this numerical data to explain the phenomenon.

Time Horizon - A cross-sectional study, also known as a one-shot study, occurs when data is collected for one time only, throughout a few weeks or months (Sekaran & Bougie, 2016, p. 104). On the contrary, longitudinal studies occur when researchers want to collect data before and after a phenomenon (more than one point in time) or over long periods of time (Chat, 2016: para 2). According to Setia (2016, p. 261), participants are recruited in a cross-sectional study based on the study's inclusion and exclusion criteria, whereas for case-control studies, participant selection is based on the outcome status and in cohort studies, participant selection is founded on the exposure status. In the research by Khattab, Al Ammar, and Sebastian (2020, p. 114), who investigated Saudi consumers' perceptions towards organic foods, a cross-sectional study design was adopted whereby data was collected from individuals over 18 years of age, residing in Saudi Arabia, at the same point in time. Similarly, the study conducted in SA by Anvar and Venter de Villiers (2014, p. 189) who investigated the green product purchase behaviour among Generation Y individuals, adopted this design, as data was collected once from students aged 18 to 25 years from the University of the Witwatersrand.

The time horizon adopted for the current study was cross-sectional, as data was collected once from students aged 18 years to 40 years who were registered at UKZN.

3.7 Sampling Procedure

The sampling procedure employed in this study is portrayed in this section, which includes the target population, sampling frame, sampling method, and sample size.

3.7.1 Target Population

Yadav and Padak (2016, p. 124) indicated that young consumers display more concern towards the current environment situation than the older consumers and are suitable for such investigations directed towards green products. Maichum et al. (2016, p. 6) indicated that the sustainability or green phenomenon under scrutiny can be complex for minors to comprehend, as it involves complex decision-making, therefore the most suitable target population for

research of this nature consists of adults, 18 years and older. In the same vein, Maichum et al. (2016, p. 6) indicated that several researchers proclaimed that individuals who possess a lower level of education find it challenging to comprehend research topics within the green context in comparison to those with higher education. According to Dubihlela and Dubihlela (2017, p. 131), among the young South Africans, university students, constitute a significant portion of total consumers within the South African consumer market. Additionally, D'Amico (2018: para 5) indicated that students are in fact consumers, as they compare the smorgasbord of product options prior to purchase, evaluate the return on potential investments and are brand-conscious. Another justification for focusing on the student population, according to Kumar (2012, pp. 16-17), is that students have the ability to transform consumption habits in the coming years and are likely to continue their consumption habits as they age.

Furthermore, according to Lucarelli, Mazzoli, and Severini (2020, p. 5), students are valuable stakeholders in the climate change crisis, as they will be most affected by climate change in the future, and they already possess the technical and specialised knowledge required to create appropriate solutions for addressing climate change. According to Badat (2020, p. 8), who conducted a study on social diversity at UKZN, the tertiary environment in SA is vibrant, comprising of students from diverse backgrounds representing a myriad of cultural nuances. The rationale for the selection of UKZN as the study site, for the present research, stems from the diverse student population, which represents regional demographics and all campus sites are multicultural, with students from assorted ethnic classifications, namely Black, White, Coloured, and Indian (Khumalo, Mabaso, Makusha, & Taylor, 2021, p. 2).

KwaZulu-Natal has the second largest population in SA, with an estimated 11.54 million residents out of the 60.6 million inhabitants (StatisticsSouthAfrica, 2022a: para 6). This study was conducted in the eThekwini and Msunduzi Local municipalities within KwaZulu-Natal. eThekwini is the largest city in the province by population, comprising of 3 262 128 individuals, as of 2024 and with over 51% of the residents that are Black African (WorldPopulationReview, 2024: para 1-3). This study's sample was based on the 2022 UKZN student registration intake and in 2022, as depicted in Table 3.1, Black Africans were the dominant racial group within UKZN and there were 9 068 more female students than males registered at UKZN (UKZN, 2022a).

Table 3.1: UKZN Institutional Intelligence Reports: Student Head Counts by Race and Gender for the Academic Year 2022

Gender	Race	2022
Female	African	22 226
Male	African	15 039
Female	Coloured	522
Male	Coloured	235
Female	Indian	3 832
Male	Indian	2 346
Male	White	294
Female	White	413
Female	Other	51
Male	Other	62
TOTAL		**45 020**

(UKZN, 2022a)

In the current study, the target population constituted the undergraduate (UG) and postgraduate (PG) students registered at the University of KwaZulu-Natal's five campus sites, namely Westville Campus, Howard College, PMB, Edgewood, and the Medical School, during 2022. As previously indicated, the student population constitutes a well-defined sample within the South African context, and they are insightful individuals. The 2022 registration figures were adopted for the sample, as the 2023 registration figures were not finalised when data collection was conducted during the months of March 2023 until May 2023.

Table 3.2 depicts the figures of the registered UG and PG students at UKZN, in 2022, across the five campus sites, which represents the total population of this study.

Table 3.2: UKZN Institutional Intelligence Reports: Student Registration by College and Campus (2022)

College	UG	PG	Howard	PMB	Med. School	Westville	Edgewood	TOTAL
COLLEGE OF AGR., ENG & SCIENCE	6 828	1 934	2 317	2 655		3 790		8 762
COLLEGE OF HEALTH SCIENCES	4 265	2 244	1 082		2 585	2 842		6 509
COLLEGE OF HUMANITIES	17 781	3 691	9 405	4 520			7 547	21 472
COLLEGE OF LAW & MAN. STUDIES	5 518	2 754	1 853	1 867		4 552		8 272
TOTAL	**34 392**	**10 623**	**14 657**	**9 042**	**2 585**	**11 184**	**7 547**	**45 015**

(UKZN, 2022b)

3.7.2 Sampling Frame

A sampling frame, according to Kabir (2016b, p. 169), is a frame comprising of a list of the units used for sampling from which the sample is obtained. The sample is then selected from a list of elements within the population and the sampling frame manifests in different structures, such as a telephone or city directory, class register or a list of all students attending a university (Feinberg, Kinnear, & Taylor, 2013, p. 302; Kabir, 2016b, p. 171). The researcher did not have a usable sampling frame to work with even though a list of registered students exists. At UKZN, due to the *Protection of Personal Information Act (POPIA)*, researchers are not allowed to utilise this list; as a result, stratified random sampling was not possible. According to Futri, Risfandy, and Ibrahim (2022, p. 2) and Iliyasu and Etikan (2021, p. 25), "quota sampling is similar to stratified random sampling", therefore, quota sampling was employed in this study.

Maichum et al. (2016, p. 6) and Torres (2020, p. 1476) indicated that utilising the data from a survey of students provides a convenient sample of young consumers, who are considered more knowledgeable than non-college young individuals regarding the topic that is within the green context. The sampling frame of this study, therefore, included the UG and PG students enrolled at the five campus sites at UKZN, where students were selected from each site (Table 3.3), through the application of quota sampling; thereby reflecting their proportional representation in the population, which was the total student body at UKZN.

The inclusion criteria, (students who were 18 to 40 years old, UG and PG students registered at UKZN), determined which students were eligible to participate in this study. Also, as previously mentioned, this study included individuals from the Millennial category aged from 28 up to 40 years old and individuals from the Generation Z cohort aged from 27 up to 18 years old, not younger, even though young consumers are narrowly defined from 18 to 30 or 35 years of age (Marokhu & Fatoki, 2024, p. 355). Thus, this study broadly encompassed individuals from both cohorts to capture their shared perceptions, attitudes and expectations regarding PBP purchase intentions, as young individuals from the Millennial and Generation Z cohorts are more likely to be affected by climate change than older generations (Petrescu-Mag, Petrescu, Ivan, & Tenter, 2023, p. 4). Moreover, many studies deemed individuals aged 18 to 40 years old as 'young consumers' or consumers born between 1981-2000 – encompassing both Generation Z and Millennials, since these young consumers are acknowledged as a significant and profitable market niche for companies worldwide (e.g. Correia, Cunnningham, & Roberts-

Lombard, 2024, p. 4; Das & Kunja, 2024, p. 103771; Heyns & Kilbourn, 2022, pp. 3,5; Manley, Seock, & Shin, 2023, p. 317; Thangavel, Pathak, & Chandra, 2021, p. 2). With reference to the exclusion criteria, students under 18 years of age and not enrolled at UKZN were ineligible.

3.7.3 Sampling Method

The selection of a sampling method for a particular study is a crucial feature within research (Synodinos, 2014, p. 96). According to Taherdoost (2016, p. 20), sampling techniques are divided into two major categories, which include non-probability or non-random sampling and probability or random sampling. Figure 3.2 is an illustration of the non-probability and probability sampling methods.

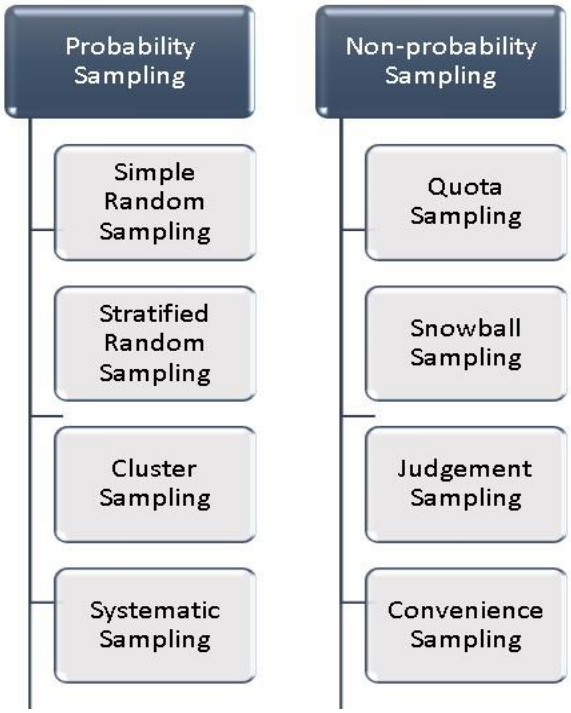

Figure 3.2: Probability and Non-probability Sampling Methods

(Taherdoost, 2016, p. 20)

According to Figure 3.2, probability sampling methods constitute stratified random sampling, cluster sampling, simple random sampling and systematic sampling, whereas non-probability sampling methods entail quota, snowball, judgement and convenience sampling (Taherdoost, 2016, p. 20). In this study, the quota sampling method was utilised. According to Futri et al. (2022, p. 2) and Iliyasu and Etikan (2021, p. 25), the quota sampling technique involves selecting a sample from a population divided into quotas or subgroups. Taherdoost (2016, p.

22) indicated that quota sampling is a non-random sampling method in which participants are chosen according to predetermined characteristics to ensure that the entire sample has the same distribution of traits as the general population. Quota sampling employs the convenience method in each quota or subgroup; thus to represent the population's key characteristics or obtain more representative sample results, a proportion of the sample needs to be determined (Futri et al., 2022, p. 3).

To apply the quota sampling technique, the population is divided into quotas or subgroups; therefore, in this study, the categorisation of the total student body at UKZN was divided according to the five campus sites at which the students were registered – Howard College, the Medical School, PMB, Westville Campus and Edgewood. To obtain more representative sample results, the number of respondents in each of the five campus sites was distributed proportionally according to the percentage of registered students at UKZN. Then, the proportion results within each campus site were multiplied by the target sample of 381. The rationale behind the selection of the quota sampling technique was to attain the "best representation in the final sample of respondents" and ensure the reflection of the full population by the survey (Iliyasu & Etikan, 2021, p. 25).

3.7.4 Sample Size

According to Oribhabor and Anyanwu (2019, p. 2), a sample refers to a small group of people or objects that have been selected from a larger population for the purpose of investigation. Given that the total population constitutes 45 015 registered students at UKZN, across the five campus sites, the sample size employed in this study, according to Krejcie and Morgan (1970, p. 608), depicted in Table 3.3, was 381. Table 3.3 illustrates the populations and the sample size that is suitable for each. Boon (2013, p. 97) indicated that in order to conduct structural equational modelling (SEM) analysis, a sample that lies between 100 and 200 is ideal and is recommended for the analysis to be satisfactory and adequate in obtaining goodness of fit measures that are valid.

Similarly, according to Hair, Black, Babin, and Anderson (2010, p. 662), SEM models that comprise of seven or more constructs (in this study there are nine), should have a sample size of between 300 and 500, hence the current study's sample size was considered sufficiently large and adequate. Therefore, this study's sample size, which employs SEM analysis was

appropriate. With reference to Table 3.3 and according to the requirements of SEM analysis, the sample of 381, (as opposed to 380, since 45 015 is closer to 50 000), was selected from a total population of 45 015 students. The sample of 381 students was proportionately allocated to the different campus sites based on the 45 015 students registered at UKZN during 2022.

Table 3.3: Sample Size Determination from a Given Population

N	*S*	*N*	*S*	*N*	*S*
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	132	1000	278	75000	382
210	136	1100	285	1000000	384

(Krejcie & Morgan, 1970, p. 608)

The sample of 381 students was proportionately allocated to the different campus sites based on the 45 015 students registered at UKZN during 2022. Table 3.4 depicts the proportional allocation of the sample per campus based on the UKZN student registration figures for 2022 across the five sites. The sample size of each quota was made proportional to the number of elements present in each quota.

Table 3.4: Proportional Allocation of Students per Campus Based on the UKZN Student Registration Figures for 2022

Campus	Registered Student Numbers	Registered Student Percentages	Sample Proportion
Howard	14 657	32%	122*
PMB	9 042	20%	76
Medical School	2 585	6%	23*
Westville	11 184	25%	95
Edgewood	7 547	17%	65*
TOTAL	**45 015**	**100%**	**381**

**Figures have been rounded off.*

As per Table 3.4, the number of respondents from each campus site was distributed proportionally according to the percentage of registered students at UKZN. Therefore, based on the calculation, 122 respondents were apportioned to Howard College, 76 respondents to PMB, 23 respondents to the Medical School, 95 respondents to the Westville Campus and 65 to Edgewood, which amounted to a sample size of 381.

3.8 Meeting UKZN Ethics Requirements

A gatekeeper's permission letter from the UKZN Registrar was obtained (Appendix C), prior to obtaining ethical clearance. The structured questionnaire was then submitted to the *Humanities and Social Sciences Research Ethics Committee at UKZN*, for ethical clearance. Once the ethical clearance approval letter was obtained (Protocol Reference Number: **HSSREC/00005159/2023**) (Appendix H), the researcher personally administered the questionnaires to students at the five campus sites. In addition, before the administration of questionnaires to the Medical School students, permission was sought from Prof. Ndlovu, the Dean and Head of the School of Clinical Medicine (Appendix D). An informed consent form (Appendix A) was attached to the questionnaire, which highlighted the study's characteristics and purpose. Respondents were requested to sign the informed consent form and were assured of their anonymity and that participation was voluntary. They were also informed that all published results would only be in summary form.

3.9 Data Collection and the Data Collection Instrument

Kabir (2016a, p. 202) stated that data collection involves the methodical process of gathering and evaluating data on variables of interest, allowing researchers to address specified questions,

examine hypotheses and assess results. A quantitative method was applied through the use of a self-administered survey questionnaire, which was also adopted in previous organic food studies conducted in SA (Anvar & Venter de Villiers, 2014, p. 189; Naidoo & Ramatsetse, 2016, p. 83; Sharp & Synodinos, 2021, p. 205). According to Houston (2022: para 6) and Synodinos (2014, p. 96), the most popular data collection method is a survey. Data collection was conducted from March 2023 until May 2023, in the current study, where the researcher randomly approached students at the communal areas of the five campus sites, such as the cafeteria, library, campus gardens, and after lectures were conducted, to ensure that academic learning time was not disrupted.

Students were asked if they wanted to participate in a survey. The researcher explained the nature and purpose of the research, and upon agreement, the questionnaire was given to respondents, who were requested to sign the informed consent form and were assured of their anonymity and that participation was voluntary. Thereafter, the respondents completed the questionnaire within a specified timeframe, while the researcher was available to clarify any queries. Upon completion, the researcher thanked respondents for their participation and collected the questionnaires on the same day. At times, some respondents declined participation, which only led to the researcher moving on to other students, to reach the quota for each campus site. Also, no incentives were offered to students for participation, despite this, a 100% response rate was achieved.

Questionnaires with closed-ended questions were utilised to obtain the empirical data, as questionnaires are easier and quicker for respondents to answer (Hyman & Sierra, 2016, p. 2); considering that there were 10 sections in the instrument, designed to measure all constructs. The questionnaire (Appendix B) was utilised to obtain a comprehensive understanding of UKZN students' perceptions towards PBPPI in light of the C19P and global climate crisis. The questionnaire was founded on several multiple-item measurement scales that were validated and extracted from previous studies. It was also pre-tested prior to full-scale administration. There were 12 sections in the research instrument, Section A to Section L. Sections A-I pertained to the key variables of the study and included the following:

Section A: Plant-based Product Purchase Intention (PBPPI)
Section B: Attitude towards Plant-based Products (ATT)
Section C: Moral Attitude (MA)

Section D: Subjective Norm (SN)

Section E: Perceived Behavioural Control (PBC)

Section F: Environmental Concern (EC)

Section G: Environmental Knowledge (EK)

Section H: Health Consciousness (HC)

Section I: Concerns about the COVID-19 Pandemic (CC19P)

Meanwhile, **Section J** and **Section K** were developed to measure respondents' **Perceptions about COVID-19** and their **Food Consumption Behaviours** respectively. These two constructs were not part of the model in this study; however, they were included to reveal additional findings pertinent to this research. These sections related to Research Objectives One and Two respectively.

Section L measured the respondents' biographical information. This section included a series of closed-ended questions pertaining to respondents' biographical characteristics, namely gender, age, ethnicity, and current year of study. A nominal scale was used to measure all the items in Section L.

The five-point Likert scale that ranged from 1 (strongly disagree) to 5 (strongly agree) was used within Sections A-J and the utilisation of this scale type also featured in the green product studies by Maichum et al. (2016, p. 8), Kumar (2012, p. 18) and Paul et al. (2016, p. 127). Aaker et al. (2013, p. 271) postulated that when using a Likert scale, each respondent is required to indicate the degree of agreement or disagreement with an assortment of statements relating to the attitude or subject.

The scale items for measuring SN, EK, MA, PBC, EC, ATT, HC and PBPPI were extracted from the extant literature. Modifications to the wordings were done to better capture the PBP purchase intentions of the UKZN students in light of the C19P and global climate crisis. This study proposed an extension of the TPB, which incorporated five salient variables, namely MA, EC, HC, EK and CC19P, into the framework. To obtain information on the phenomenon at hand, the measuring instrument, a self-administered questionnaire, was employed. The scale items that featured in the instrument are discussed in the next section.

3.9.1 Plant-based Product Purchase Intention (PBPPI)

Takaya (2019, p. 2) cited Belch (2008) who defined purchase intentions as consumers' propensity to purchase a brand or engage in purchasing behaviours that are assessed by the degree of likelihood of consumers making purchases. With regard to organic products (it was highlighted in Chapter Two that PB products are the most well recognised organic products by consumers), purchase intention is influenced by elements, such as health perception, environmental awareness, nutritional value, among others (Curvelo et al., 2019, p. 199). Thus, this study explored young consumers' intentions to purchase PB products during the C19P and global climate crisis. Kopplin and Rausch (2022, p. 1336) indicated that purchase intention and behaviour towards PB food substitutes are still not fully understood, hence this research will contribute to the extant organic, green and PB food literature.

To measure green product purchase intention, Paul et al. (2016, p. 127) utilised the five-item scale on a five-point Likert scale in their study, which was developed by Taylor and Todd (1995), and employed in the current study. Maichum et al. (2016, p. 8) also adapted this multiple-item scale and utilised a three-item scale on a five-point Likert scale. The five-item scale that Paul et al. (2016, p. 131) utilised to measure green product purchase intention had been re-worded to adapt to the current study and included the following:

1. 'I will consider purchasing plant-based products because they are less polluting'.
2. 'I will consider switching to plant-based brands for ecological reasons'.
3. 'I plan to spend more on plant-based food products rather than animal-based food products'.
4. 'I expect to purchase plant-based products in the future because of its positive environmental contribution'.
5. 'I definitely want to purchase plant-based products in the near future'.

Section A: Questions 1-5 measured the respondents' perceptions about their intentions to purchase PB products. The Cronbach's alpha (α) values which were revealed by Paul et al. (2016, p. 128) and Maichum et al. (2016, p. 10) were 0.908 and 0.943 respectively. Maichum et al. (2016, p. 9) cited Nunnally and Bernstein (1994) who postulated that Cronbach's α level should ideally be beyond 0.7 in order to ensure that constructs are internally consistent and reliable. The composite reliability (CR) values for Maichum et al. (2016, p. 10) and Paul et al.

(2016, p. 128) were both 0.946 and 0.902 respectively, which surpassed the respective recommended level of 0.7. Also, Paul et al. (2016, p. 128) and Maichum et al. (2016, p. 10) analysed the average variance extracted (AVE) values to be 0.649 and 0.856 respectively, which evidenced strong convergent validity, as both AVE values were above 0.5. This justified the scale being utilised in the current study.

3.9.2 Attitude towards Plant-based Products (ATT)

Ajzen (1991, p. 188) proposed that attitude toward the behaviour refers to the extent to which an individual holds a positive or negative assessment of the behaviour in focus. Mhlophe (2016, p. 4) indicated that attitudes are important predictors of consumers' organic food purchase intentions, hence the measurement of this construct in the current study.

The four-item scale employed in the current study, used to measure ATT, was based on the multiple-item scale developed by Taylor and Todd (1995) and adapted from the three-item scale by Paul et al. (2016, p. 127) and the four-item scale by Yadav and Pathak (2016, p. 125). These were both on a five-point Likert scale. The multiple-item scale by Paul et al. (2016, p. 127) and Yadav and Pathak (2016, p. 125) was re-worded for the purpose of the current study and stipulated below.

1. 'I like the idea of purchasing plant-based products'.
2. 'Purchasing plant-based products is a good idea'.
3. 'I have a favourable attitude towards purchasing plant-based products'.
4. 'Purchasing plant-based products would be good'.

Section B: Questions 1-4 measured the respondents' attitudes towards PB products. The Cronbach's alpha (α) values defined by Paul et al. (2016, p. 128) and Yadav and Pathak (2016, p. 126) where internal consistency among the items were measured, stood at 0.897 and 0.902 respectively. This is above the acceptable limit of 0.7, so this construct is reliable. Furthermore, the composite reliability (CR) values for Paul et al. (2016, p. 128) and Yadav and Pathak (2016, p. 126) were 0.898 and 0.89 respectively, implying that this construct has exceeded the recommended level of 0.7. Paul et al. (2016, p. 128) and Yadav and Pathak (2016, p. 126) analysed the average variance extracted (AVE) values, which were 0.747 and 0.69

respectively, higher than the acceptable limit of 0.5, thus possessing strong convergent validity. This provided justification for utilising this scale in the current study.

3.9.3 Moral Attitude (MA)

Yadav and Pathak (2016, p. 123) indicated that moral obligation is useful within the organic food context, as the purchase of organic food exhibits an individual's concern for themselves, the environment and society, hence the measurement of this construct in the current study. Rana and Paul (2017, p. 158) indicated that ethical issues are believed to guide individuals' behaviour with reference to the individual's concern for the environment and animal welfare.

MA was measured by the three items developed by and adapted from Yadav and Pathak (2016, p. 125), where items were measured by utilising a five-point Likert scale. The three-item scale adapted from Yadav and Pathak (2016, p. 125) was re-worded for the purpose of the current study and is reflected below.

'Purchasing plant-based food products instead of the conventional products would make me':

1. 'Feel like I am personally contributing to something better'.
2. 'Feel like I am doing the morally right thing'.
3. 'Feel like a better person'.

Section C: Questions 1-3 measured the respondents' moral attitude towards PBP purchase intentions. The Cronbach's alpha (α) value established by Yadav and Pathak (2016, p. 126) was 0.802, higher than the acceptable limit of 0.7, and indicates that the MA construct is reliable. The composite reliability (CR) value was 0.69, which implied that this construct met the recommended criterion of 0.6 (Yadav & Pathak, 2016, p. 126). Yadav and Pathak (2016, p. 126) also analysed the average variance extracted (AVE) value to be 0.54, which was also within the acceptable limit of 0.5. Thus, this scale proved to be valid and reliable, which justified its use in the current study.

3.9.4 Subjective Norm (SN)

SN refers to the perceived pressure from social groups to engage in or refrain from engaging in the behaviour (Yadav & Pathak, 2016, p. 123). According to Paul et al. (2016, p. 125), within the context of consumer behaviour and marketing, a constellation of studies have recognised

SN as an important variable in determining intention, including organic food purchase intention, and these studies portrayed a positive association between purchase intention and SN. Subjective norm or SN was measured by the four-item scale, developed by Lee (2008) and extracted from the four-item scale used by Sinnappan and Rahman (2011, p. 134) and Zheng et al. (2020, p. 11). This four-item scale was altered to better capture the PBP purchase intentions among young consumers and included the following:

1. 'I learn about plant-based products from my family and friends'.
2. 'My family and friends interact with me on environmental issues'.
3. 'I often buy plant-based products based on my family member's and friend's reference'.
4. 'I often share the information about plant-based products with my family and friends'.

Section D: Questions 1-4 measured the respondents' perceptions about their subjective norms towards PBP purchase intentions. The Cronbach's alpha (α) value determined by Zheng et al. (2020, p. 13) was 0.842, which exceeds 0.7, and implies that the measurement is accurate and reliable. The composite reliability (CR) value determined by Zheng et al. (2020, p. 13) was 0.904, which exceeds 0.7, indicating that the measurement is accurate and reliable. Zheng et al. (2020, p. 13) also calculated the average variance extracted (AVE) value to be 0.759, which is greater than 0.5, thus indicating strong convergent validity, which provided justification for utilising this scale in the current study.

3.9.5 Perceived Behavioural Control (PBC)

Ajzen (1991, p. 183) indicated that perceived behavioural control or PBC refers to a person's perception on how easy or challenging it is to perform the behaviour in question. According to Paul et al. (2016, p. 126), a plethora of research has demonstrated that a positive relationship exists between PBC and intention, within several contexts of research, namely conservation, recycling, organic food and green products, in general.

PBC was measured on the validated seven items on a five-point Likert scale, extracted from Paul et al. (2016, p. 131) and developed by Sparks, Guthrie, and Shepherd (1997). This seven-item scale was altered for the purpose of the current study and is stated below.

1. 'I believe I have the ability to purchase plant-based products'.

2. ‘If it were entirely up to me, I am confident that I will purchase plant-based products’.
3. ‘I see myself as capable of purchasing plant-based products in future’.
4. ‘I have resources to purchase plant-based products’.
5. ‘Plant-based products are generally available in the stores where I usually do my shopping’.
6. ‘There are likely to be plenty of opportunities for me to purchase plant-based products’.
7. ‘I feel that purchasing plant-based products is totally within my control’.

Section E: Questions 1-7 measured the respondents’ perceptions about their perceived behavioural control towards PBP purchase intentions. The Cronbach’s alpha (α) value revealed by Paul et al. (2016, p. 128) was 0.819, which exceeds 0.7, and indicates that the measurement is reliable and accurate. Additionally, the composite reliability (CR) value determined by Paul et al. (2016, p. 128) was 0.831, which surpassed the recommended level of 0.7. Paul et al. (2016, p. 128) also determined the average variance extracted (AVE) value to be 0.502, which evidenced convergent validity, thereby providing justification for utilising this scale in the current study.

3.9.6 Environmental Concern (EC)

According to Dunlap and Michelson (2002, p. 485), environmental concern refers to the extent to which individuals recognize environmental issues and support initiatives to address them or express a willingness to contribute personally to their resolution. Yadav and Pathak (2016, p. 123) indicated that EC has a direct and positive influence on individuals’ green product purchase intentions, and it is an important determinant of organic food purchase intention.

EC has been measured through the five-item scale on a five-point Likert scale, which was developed from the original six-item scale by Kilbourne and Pickett (2008, p. 892) and used by Maichum et al. (2016, pp. 8-9) who used four out of the five items and Paul et al. (2016, p. 131) who utilised all five items. The five-item scale was altered to better capture the PBP purchase intentions of young consumers and included the following:

1. ‘I am very concerned about the state of the world’s environment’.
2. ‘I am willing to reduce my meat consumption to help protect the environment’.
3. ‘Major social changes are necessary to protect the natural environment’.

4. ‘Major political change is necessary to protect the natural environment’.
5. ‘Anti-pollution laws should be enforced more strongly’.

Section F: Questions 1-5 measured the respondents’ perceptions about EC towards PBP purchase intentions. The Cronbach’s alpha (α) values established by Paul et al. (2016, p. 128) and Maichum et al. (2016, p. 10) were 0.787 and 0.892 respectively, which exceeds 0.7. The composite reliability (CR) values determined by Paul et al. (2016, p. 128) and Maichum et al. (2016, p. 10) were 0.762 and 0.893 respectively, which also exceeded the recommended level of 0.7. Therefore, these values suggest that this construct was internally consistent and reliable. Paul et al. (2016, p. 128) and Maichum et al. (2016, p. 10) also determined the average variance extracted (AVE) values, which were 0.526 and 0.735, respectively, thus surpassing the recommended level of 0.5. Hence, the measurement is accurate, reliable, and valid, justifying the utilisation of this scale within the current study.

3.9.7 Environmental Knowledge (EK)

According to Fryxell and Lo (2003, p. 45), environmental knowledge refers to a broad understanding of facts, concepts, and connections pertinent to the natural environment and its vital ecosystems. Consumers become more informed when EK increases, which enhances the likelihood of high purchase intention (Maichum et al., 2016, p. 6). However, a substantial number of individuals are still unaware about environmental problems, as they possess poor knowledge about environmental issues and their green purchase behaviour is considerably influenced by their level of environmental knowledge (Rahman, Hossain, & Hossain, 2019, p. 368).

EK has been measured through the validated four-item scale on a five-point Likert scale adapted from Rahman et al. (2019, p. 378), which was developed by Mostafa (2006). This four-item scale was altered to better capture the PBP purchase intentions among young consumers and is stipulated below.

1. ‘I know more about environmental issues than the average person’.
2. ‘I know the reasons why plant-based products help to protect the environment’.
3. ‘I understand the environmental phrases and symbols on the packaging of plant-based products’.

4. ‘I know that buying plant-based products is environmentally safe’.

Section G: Questions 1-4 measured the respondents’ perceptions about EK towards PBP purchase intentions. The Cronbach’s alpha (α) value determined by Rahman et al. (2019, p. 372) was 0.752. The Cronbach’s α value was above the general benchmark value of 0.7, thus the EK construct is reliable. The composite reliability (CR) value determined by Rahman et al. (2019, p. 372) was 0.863, exceeding 0.7, indicating that the measurement is accurate and reliable. Rahman et al. (2019, p. 372) also analysed the average variance extracted (AVE) value to be 0.613 and since AVE values should be above 0.5, this indicates strong convergent validity, thus justifying the utilisation of this scale within the current study.

3.9.8 Health Consciousness (HC)

Individuals who are health-conscious partake in healthy behaviour and prevention of disease, because they are concerned about their well-being and possess an elevated knowledge of nutrition (Kopplin & Rausch, 2022, p. 1340). According to Yadav and Pathak (2016, p. 123), health is an important factor while purchasing food products and consumers are generally interested in issues pertaining to health and food. Salleh et al. (2010, p. 127) revealed that HC is a strong motivator in organic food purchase.

HC was measured through the validated three-item scale on a five-point Likert scale used by Yadav and Pathak (2016, p. 125), developed by Tarkiainen and Sundqvist (2005). For the purpose of the current study, this three-item scale was modified and is reflected below.

1. ‘I choose food carefully to ensure good health’.
2. ‘I often think about health-related issues’.
3. ‘I consider myself as a health-conscious consumer’.

Section H: Questions 1-3 measured the respondents’ perceptions about HC towards PBP purchase intentions. The Cronbach’s alpha (α) value revealed by Yadav and Pathak (2016, p. 126), measuring the internal consistency among the items, was 0.833 which exceeded the acceptable limit of 0.7, which indicated that the HC construct is reliable. Additionally, the composite reliability (CR) value, determined by Yadav and Pathak (2016, p. 126) was 0.82, which is also above the recommended level of 0.7. Yadav and Pathak (2016, p. 126) calculated

the average variance extracted (AVE) value to be 0.61, which exceeded the acceptable limit of 0.5, and thus evidenced strong convergent validity. Therefore, the measurement is accurate, valid, and reliable, justifying the use of this scale in the current study.

3.9.9 Concerns about the COVID-19 Pandemic (CC19P)

The scale items for the other key variables of the study were adapted from previous studies relating to green and organic food purchase intention to ensure validity and reliability. However, the items for the CC19P variable were developed by the researcher, while adopting some literature surrounding the items relating to individuals' fear, health concerns and the impact of COVID-19, and its relationship with PBP purchase intentions.

Just like Ebola, the Black Death, HIV, Zika, SARS and TB, COVID-19 is a zoonotic infectious disease spawned by the transfer of bacteria, viruses, or parasites from animals to humans (Kannan, 2020: para 2). Esobi, Lasode, and Barriguete (2020, pp. 1-2); Meixner and Katt (2020, p. 7); Qi, Tian, and Ploeger (2021, p. 1); Qi et al. (2020, p. 13) and Xie et al. (2020, p. 12) indicated that concerns about food safety increased due to the C19P; consumers are the increasingly concerned about the food they consume and through their diets, they want to strengthen and protect their immune systems. Consequently, individuals tend to increase their consumption of PB and organic foods as a result of the increasing food safety concerns (Xie et al., 2020, p. 10).

Doctor Shireen Kassam, the Director of Plant-Based Health Professionals UK, indicated that "there is an urgent need to reduce meat consumption to safeguard human and planetary health" (Frost, 2020: para 6). COVID-19 has brought about an upsurge in the purchase intentions towards green food due to the increasing health concerns among consumers (Qi et al., 2020, p. 16) and the past few months, in light of the C19P, has heralded the positive impacts of a PB diet (Selby, 2021: para 1). According to Toliver (2020: para 9), deadly zoonotic viruses, such COVID-19, accelerating climate change, destructive forest fires and animal consumption have "apocalyptic consequences", thus becoming vegan or following a PB diet could heal humanity from more than just the coronavirus. Xie et al. (2020, p. 12) found that the pandemic's impact on consumers' health and risk is substantial and could result in an increase in the consumption of organic food and a decline in the consumption of game meat among consumers in the future. The pioneering study by Qi et al. (2020, p. 13) reported that COVID-19 had a positive effect

on the transformation of consumers' green food purchase intentions to behaviours as a result of their health consciousness and some believed that in order to improve their health and immunity during the pandemic, it was necessary to consume green food. Similarly, the study conducted by Qi et al. (2021, pp. 10-11), which explored the impact of COVID-19 on green food purchase behaviour, revealed a significantly strong and positive association between green food purchase intentions and COVID-19.

The current study measured the CC19P variable by adopting a similar question asked in the qualitative study conducted by Qi et al. (2020, pp. 12-13), where the authors asked respondents whether the C19P influenced their green food purchase intentions. Thus, based on the question in the qualitative study by Qi et al. (2020, pp. 12-13), the researcher wanted to investigate young consumers' health concerns, specifically, during the pandemic (item 3). In addition, two items from the seven-item 'Fear of COVID-19' scale, by Ahorsu et al. (2020, p. 1542), were also adopted, albeit modified, in the current study, to capture young consumers' concerns about the pandemic in terms of them being afraid of losing their lives due to the pandemic and the pandemic being serious and often irreversible (items 1 and 4). While the scale by Ahorsu et al. (2020) was found to be valid and reliable, it was not used in its entirety because the rest of the items focused on the psychological and physiological fear of the pandemic, such as experiencing sleep deprivation due to the pandemic and becoming anxious when watching news and stories relating to COVID-19, which was not the focal point of the current study. Nonetheless, the scale items from Ahorsu et al. (2020) and Qi et al. (2020), which were items 1, 3, 4, were revised for the purpose of this study and items 2 and 5 were formulated by the researcher to better understand young consumers' concerns surrounding the pandemic. Thus, this five-item scale measuring the CC19P variable in this study is new, as there is currently no scale that exclusively encapsulates pandemic concerns, that were already utilised and tested by previous researchers, apart from those measuring pandemic impact and fear.

The five-item scale included the following items:

1. 'I am scared of dying from COVID-19'.
2. 'I am concerned that COVID-19 is just one of many zoonotic diseases we will experience'.
3. 'I am concerned about my health due to the COVID-19 pandemic'.

4. ‘I am afraid of having long-term health problems as a result of the COVID-19 pandemic’.
5. ‘I need to protect myself against the COVID-19 virus’.

Section I: Questions 1-5 measured the respondents’ concerns about the C19P.

3.9.10 Perceptions about COVID-19

Questions within Section J of the questionnaire measured respondents’ perceptions about the C19P. As previously indicated, these questions were not part of the model in this study; however, they were included to reveal additional findings pertinent to this research, as they related to Research Objective One, relating to respondents’ perceptions about PB products. The questions for Section J were developed to provide further insights relating to how young South African consumers perceived COVID-19 in terms of whether the pandemic had increased their PBP purchase intentions, whether they agree that consuming PB products is necessary to improve their health and immunity and whether PB food consumption will help to reduce future zoonotic outbreaks.

3.9.11 Food Consumption Behaviours

The questions for Section K of the questionnaire measured respondents’ food consumption behaviours. Just like with Section J of the questionnaire, these questions were not part of the model in this study; however, they were included to reveal additional findings pertinent to this research, as they related to Research Objective Two, which captured the extent to which the respondents’ have adopted and are willing to adopt PB products. The questions for Section K were developed to determine how often young consumers consume animal-based foods, whether they have tried PB food products and how often they consume this type of food product.

A pre-test of the survey instrument was conducted among 12 individuals to ensure that the items were meaningful to the unit of analysis, since some scale items for the key variables of the study, within Sections A to I, were not previously tested nor validated. Further discussion pertinent to this is included in the next section.

3.10 Pre-testing the Questionnaire

Malhotra (2010, p. 322) defined pre-testing as the process of testing the questionnaire on a limited group of participants to identify and eliminate potential issues. According to Nixon, Fox-Rushby, Nyandieka, and Wanjau (2002, p. 323), pre-testing is a vital opportunity for researchers to "gauge the meaning attributed to survey questions before it is too late". With pre-testing, researchers are able to weed out any problems early, thus preventing researchers from having to undergo the costly and time-consuming process of formulating a new survey instrument (Fisher, 2020: para 7-8).

The instrument was pre-tested on 12 individuals, namely an expert in eco-conscious consumerism and experienced academic researcher, the other was an expert statistician and the remaining 10 were a sample of student respondents who represented the target population. These respondents were excluded from the actual data collection. Self-administered questionnaires were delivered to the respondents, by the researcher, who clearly outlined the key points of the research as well as the instructions and procedures. Respondents' reactions towards the questionnaire throughout the pre-test were observed and they were asked to read the questions out aloud to ensure accurate interpretation. Pre-testing was conducted to obtain respondents' opinions pertinent to the item wording and layout of the questionnaire to identify and mitigate the risks associated with misinterpretation. This test also determined the duration needed to measure all the constructs satisfactorily. While the timeframe provided to the respondents, for questionnaire completion, was 15 minutes, some completed the questionnaire under 10 minutes, thus demonstrating an acceptable timeframe for questionnaire completion. After pre-testing was conducted, feedback was requested from the respondents regarding their overall perceptions of the questionnaire and the researcher thanked the respondents for their time and participation in the test. No-one encountered difficulties whilst answering the questionnaire nor complained about the duration it took them to complete the questionnaire. Thus, there were no amendments to the questionnaire, prior to actual data collection.

3.11 Data Screening

According to Lawan (2011, p. 11), it is imperative to conduct data screening in any multivariate analysis, as data screening serves as the foundation for any meaningful outcome from quantitative research and if this stage is overlooked, it will result in the poor quality of output. Boon (2013, p. 112) declared that data is examined to ensure that all recorded responses are

coherent aside from identifying outliers, while also ensuring that the responses' distribution adheres to the normality assumptions required for multivariate analysis. Outliers are data points that are far from other data points; they are unusual values within a dataset and are problematic for statistical analyses, as they can distort real results (Frost, 2020: para 1). When conducting SEM analysis, data screening and preliminary analysis provide researchers with the opportunity to explore and obtain an early glimpse on the interrelationship between the research variables (Abdulkadir, Saidin, & Ahmi, 2017, p. 20). Data screening was conducted via IBM SPSS AMOS version 27 prior to data analysis and modelling to ensure the integrity of the data.

3.12 Statistical Analysis

The data collected was processed, analysed, and interpreted by employing Statistical Package for Social Sciences (SPSS) and AMOS (Analysis of Moment Structures) version 27 for examining the research questions, testing the proposed hypotheses and model fit.

3.12.1 Descriptive Statistics

According to Yellapu (2018, p. 61), descriptive statistics are used to summarise data in a systematic manner which describes the relationship between variables in a sample. It is used to describe, depict and transmute a substantial amount of data into simplified features for easy understanding and interpretation (Simplilearn, 2022: para 4; Zikmund, Babin, Carr, & Griffin, 2013, p. 364). Three popular techniques of descriptive statistics associated with frequencies were employed in this study, namely *measures of central tendency*, *measures of dispersion* and *measures of shape*, which are outlined below.

Measures of Central Tendency

Also known as a measure of location, the measure of central tendency is the value that represents the whole group of data as a single measurement (Yellapu, 2018, p. 62). According to Manikandan (2011, p. 214), the mean, median and mode are three key measures of central tendency. The measures of central tendency represent the central point or typical value of a dataset and each measure of central tendency calculates the central point using a different method (Frost, 2018: para 1). The medium represents the middle value of the given set of data when ranked in a particular order and the mode refers to the most frequent or common value occurring in a dataset (Yellapu, 2018, p. 62). According to Malhotra (2010, p. 454), the mean or "the arithmetic average is the total sum of all values in a sample divided by the number of

values in the sample". The best measure of central tendency is the mean, as it is robust, if there are no outliers, and it is the most frequently used measure (Malhotra, 2010, p. 454; Manikandan, 2011, p. 215).

The current study employed the mean as the measure of central tendency. Moreover, the one-sample t-test was utilised in this study to test if the average score differed from a specified scalar value (Kumar, 2023: para 1). Al-kassab (2022, p. 134) declared that the one-sample t-test is utilised to compare a sample's mean with an assumed population value. The one-sample t-test test was employed in this study, as it was used to test the average agreement score against the central score of '3', which was also the scalar midpoint (Reed, 2023: para 1). If the result was significant, it meant that the average score was different from '3' and interpreted as significant agreement if the mean was greater than 3 and significant disagreement if the mean was less than 3.

Measures of Dispersion

According to Yellapu (2018, p. 63), measures of dispersion or variation indicate the level in which the values of a variable are similar or different. Measures of dispersion constitute the standard deviation and variation, which depict how close each observed value is to the mean of the entire dataset (Yellapu, 2018, p. 63). A smaller standard deviation and variance are generated in datasets with a small dispersion, where all values are close to the mean (Malhotra, 2010, p. 454; Yellapu, 2018, p. 63). On the contrary, datasets with larger spread of values away from the mean possess a greater standard deviation and variance (Yellapu, 2018, p. 63). The standard deviation was utilised in the current study, which, according to Malhotra (2010, p. 455) is the variance's square root.

Measures of Shape

Apart from the measures of dispersion, measures of shape help to understand "the nature of distribution", and the shape of distribution is measured by observing the *skewness* and *kurtosis* (Malhotra, 2010, p. 456). According to Gawali (2021: para 2), skewness fundamentally measures the symmetry of a distribution, whereas kurtosis assesses the weight of the distribution tails. One of the most popular techniques for assessing distribution shape is Fisher's measure of skewness and kurtosis or the coefficient of excess (Blanca, Arnau, López-Montiel, Bono, & Bendayan, 2013, p. 4).

Skewness – Malhotra (2010, p. 456) indicated that with skewness, the distributions may be symmetric or skewed and in a symmetric distribution, the mean, mode, and median are equal, with identical values on both sides of the distribution's centre. Conversely, when distribution is skewed, the deviations from the mean, both positive and negative, are unequal (Malhotra, 2010, p. 456). Negatively skewed distributions, also referred to as left-skewed, skews to the right (right-tail), whilst positive distributions also known as right-skewed, skews to left (left-tail) (Blanca et al., 2013, p. 4; Malhotra, 2010, p. 456).

Kurtosis – Kurtosis refers to the height and sharpness, or the flatness or peakedness of the curve relative to the rest of the data (Brown, 2011, p. 8; Malhotra, 2010, p. 456). When a kurtosis distribution is zero, this depicts a normal distribution, whereas higher values represent a sharper peak with lower values signifying a flatter peak (Brown, 2011, p. 8; Kline, 2022, p. 74; Malhotra, 2010, pp. 456-457).

3.12.2 Multicollinearity

According to Daoud (2017, p. 1), multicollinearity, or near-linear dependence, is a statistical occurrence where there is a high correlation between two or more predictor variables in a multiple regression model. Hair et al. (2010, p. 21) indicated that multicollinearity acts as a crucial factor when implementing multivariate statistical analysis on a dataset. When the factors in a multiple regression model exhibit substantial inter-correlations, multicollinearity arises and there are various techniques for detecting this phenomenon (Shrestha, 2020, p. 40). The coefficient of determination (R2) from a multiple linear regression model can serve to measure the multicollinearity among variables that are exogenous (Kim, 2019, p. 559). According to Synodinos (2014, p. 110), the tolerance test is a popular measure of multicollinearity, which entails performing a regression analysis whereby each independent variable has the opportunity to function as the dependent variable in relation to the other predictor variables. Another primary technique for detecting multicollinearity is the variance inflation factor (VIF), which measures the degree to which the estimated regression coefficient's variance increases when there is a correlation between the independent variables, and it is the reciprocal of the tolerance (Shrestha, 2020, p. 40).

Multicollinearity becomes a problem when there is a strong correlation among the variables (Tanko, Cheah, & Islam, 2019, p. 8). Hair et al. (2010, p. 208) recommends the use of both

tolerance and VIF to detect if there is a multicollinearity problem among the variables; and when VIF values are > 5 or 10 and tolerance scores are < 1, multicollinearity exists (Kyriazos & Poga, 2023, pp. 409-410). Thus, in the current study, VIF and the tolerance test were used, prior to conducting factor analysis, to assess the extent of multicollinearity among the exogenous variables.

3.12.3 Validity

Heale and Twycross (2015, p. 66) declared that validity is the level of accuracy with which a concept is assessed in a quantitative study. A scale is of no empirical use, when it does not produce good validity, since it is unable to measure what it was intended to do (Synodinos, 2014, p. 112).

According to Heale and Twycross (2015, p. 66), there are three major forms of validity, which are reflected next.

Face validity – involves asking experts about their opinions regarding whether an instrument measures the concept intended (Heale & Twycross, 2015, p. 66). Face validity produces a superficial or subjective assessment to determine whether the research instrument is a valid measure of a particular variable. and an example of a question with a high level of face validity would be the individual's emotional intelligence (Laerd, 2012: para 2). Since it is the easiest form of validity to apply, it is arguably "the weakest form of validity" (McDaniel & Gates, 2010, p. 253).

Content validity – assesses how successfully the instrument covers a construct that it is designed to represent (Heale & Twycross, 2015, p. 66). As recommended by Choudrie and Dwivedi (2005, pp. 517-518) and Zamanzadeh et al. (2015, p. 168), to ensure content validity within the current study, the following was conducted: measurement of the variables were done by utilising pre-validated scales (except for a few scale items that were developed for the purpose of this study); a pre-test was administered with 12 respondents and the questionnaire was examined by an experienced researcher and expert statistician.

Construct Validity – involves the degree to which the measuring instrument provides a logical representation and links the underlying theory (Synodinos, 2014, p. 112). Heale and Twycross

(2015, p. 66) indicated that construct validity involves the researcher's ability to derive at conclusions about test scores that relate to the construct under study. Construct validity consists of convergent and discriminant validity, which are the measures of validity used for this study, and are discussed in Section 3.12.7.3, under Structural Equation Modelling (SEM).

3.12.4 Internal Consistency Reliability

According to Heale and Twycross (2015, p. 66), reliability is the consistency of a measure. Internal consistency is evaluated by utilising "item-to-total correlation, split-half reliability and Cronbach's α" (Heale & Twycross, 2015, p. 66). In split-half reliability, the results of a test or instrument are split in half and relationships are determined based on a comparison on the two halves (Heale & Twycross, 2015, pp. 66-67).

A popular test to measure internal consistency is the Cronbach's α technique (Heale & Twycross, 2015, p. 67; Synodinos, 2014, p. 111). According to Malhotra (2010, p. 318), reliability is utilised to assess if multi-item scales consistently yield reliable results when repeated assessments are performed. Scales with "coefficient values ranging between 0.80 and 0.96 are deemed as having excellent reliability, while coefficient values between 0.70 and 0.80 possess good reliability, and values between 0.60 and 0.70 are considered acceptable" or fair (Chen & Chai, 2010, p. 31; Malhotra, 2010, p. 319).

The scale items for the nine constructs were customised for this study and the items reflected in the structural model possessed α values that ranged from 0.875 to 0.780 for six out of the nine constructs, while the latter three had α values of 0.696, 0.691 and 0.674, denoting acceptable reliability. The overall internal consistency attained was 0.777, which is considered a good level of reliability (Ursachi, Zait, & Horodnic, 2015, p. 681). Composite reliability (CR) was also calculated as a measure for reliability as part of the measurement model testing in SEM, and the CR values for the variables, except for EC with a CR level of 0.699 (which is close to 0.7), were higher than the recommended level of 0.7, which also denote good reliability (Barati, Taheri-Kharameh, Farghadani, & Rásky, 2019, p. 226). Table 4.3 of the following chapter reflects the validity and reliability values of the items reflected in the structural model.

3.12.5 Factor Analysis

According to Kyriazos and Poga (2023, p. 405), factor analysis is an approach to statistics that reveals the hidden structure beneath a collection of observed variables. It also confirms the scale's ability to evaluate the construct being measured (Acar Güvendir & Ozer Ozkan, 2022, p. 166). Two primary factor analysis methods exists and they are "confirmatory and exploratory factor analysis" (Pallant, 2010, p. 181).

Synodinos (2014, p. 106) indicated that confirmatory factor analysis (CFA) aims to examine relationships between observed variables and latent factors grounded in theoretical concepts, empirical findings, or a combination of both, whereas exploratory factor analysis (EFA) aims to identify relationships between observed and latent variables that are unknown or uncertain. EFA was applied in the current study, to uncover the underlying relationships between the measured variables. According to Costello and Osborne (2005, p. 1); de Winter and Dodou (2012, p. 1) and Taherdoost, Sahibuddin, and Jalaliyoon (2014, p. 375), EFA is one of the most frequently used and broadly applied statistical technique in social sciences, education, psychology and information systems. A CFA was also conducted in this study, but as it is part of the measurement model testing in SEM, it is discussed later.

To conduct factor analysis, a large sample size is suitable as it produces superior results (Pallant, 2010, pp. 182-183; Taherdoost et al., 2014, pp. 376-377). Having a sample size of at least 300 is needed to conduct factor analysis (Tabachnick, Fidell, & Ullman, 2013, p. 22), which is the case in the current study, with a sample size of 381. Two sample audacity tests, namely Bartlett's Test of Sphericity and the Kaiser-Meyer-Olkin (KMO) measure can be utilised to test the factorability of the data (Shrestha, 2021, p. 6). A significant Bartlett's Test of Sphericity and KMO value exceeding 0.60 is representative of an adequate sample size, rendering the data adequate for reliable and successful extraction (Pallant, 2010, p. 183).

3.12.5.1 Factor Analysis Extraction Method

According to Costello and Osborne (2005, p. 2), there are various factor analysis extraction methods and SPSS has six, namely "Unweighted Least Squares, Generalised Least Squares, Maximum Likelihood, Principal Axis Factoring, Alpha Factoring, and Image Factoring". Moreover, Samuels (2017, p. 1) affirmed that there are different EFA methods, such as Kaiser's

alpha factoring, Maximum Likelihood (ML) and Principal Axis Factoring (PAF), and when conducting further analysis on a sample, PAF should be employed.

However, when developing an instrument which will be utilised with other datasets in the future, a sample-driven EFA technique, such as Kaiser's alpha factoring or ML should be used (Samuels, 2017, p. 1). de Winter and Dodou (2012, p. 1) and Taherdoost et al. (2014, p. 375) determined that PAF and ML are two of the most widely used estimation methods in EFA and "PAF is better able to recover weak factors and that the ML estimator is asymptotically efficient". In addition, Costello and Osborne (2005, p. 2) and Taherdoost et al. (2014, p. 378) indicated that both ML and PAF will yield the best results, depending on the distribution of data. For the current study, the PAF method in SPSS was used, as it is the best extraction method for EFA.

3.12.5.2 Factor Rotation

According to Brown (2009, p. 21), there are two main factor rotation techniques, namely oblique rotation or orthogonal. Brown (2009, p. 21) cited Gorsuch (1983) who indicated that orthogonal rotation techniques presume that the factors analysed are uncorrelated, while oblique rotation techniques indicate that there is correlations among the factors. Orthogonal methods comprise of four different techniques, namely equamax, orthomax, quartimax, and varimax; and direct oblimin and promax are examples of oblique rotation (Brown, 2009, p. 21). The oblique promax rotation was employed in this study, since it is a fast and an efficient oblique method (Grieder & Steiner, 2022, p. 57); it is also more accurate than orthogonal rotation and allows for correlations among factors (Hooper, 2012, p. 9; Taherdoost et al., 2014, p. 380).

After factor analysis with promax rotation was applied to the 40 items measuring the model constructs in the current study, various items were dropped, and nine factors were extracted which accounted for 53.17% of the variance in the data; and rotation converged in 7 iterations. This is explained further in Chapter Four (Section 4.4). Confirmatory factor analysis (CFA) was done to examine the measurement of the latent constructs which was attained by utilising the measured variables. CFA is discussed in Section 3.12.7.2, as it is part of the measurement model testing stage of SEM.

3.12.6 Correlation Analysis

According to Senthilnathan (2019, p. 2), correlation involves exploring the level of association between two variables and the correlation coefficient is useful in quantifying the degree of relationship between the variables. Also referred to as the basic or simple correlation, bivariate correlation, or just the correlation coefficient, the Pearson's Product Moment Correlation Coefficient (r), is the most commonly utilised metric which captures the degree of the relationship between ratio scaled or two interval variables (Malhotra, 2010, p. 530; Senthilnathan, 2019, pp. 2-3). According to Chee (2013, p. 2), Pearson's *r* possesses a value ranging from +1 to -1, where *r* signifies the level of correlation between two variables. Pearson's *r* provides a straightforward method to assess the connection between two variables – whether they share variance (covary), when the relationship is positive or negative and the extent to which they correlate (Chee, 2013, p. 2).

According to Synodinos (2014, p. 115), Pearson's *r* represents a value of -1 when there is a perfect negative relationship between two variables and +1 when two variables have a perfect positive relationship. The Pearson's Product Moment Correlation Coefficient (*r*) was utilised in this study to ascertain how the nine variables were related. Hair et al. (2010, p. 710) and Sharma (2011, p. 16) indicated that the correlation matrix, which displays the correlations between each construct in a study, is used to test nomological validity of all the constructs in the measurement model in SEM. Moreover, the correlation matrix plays an important role in multivariate analysis, as it is designed to portray the levels of connection among various random vector elements (Pham-Gia & Choulakian, 2014, p. 330). In the current study, the correlation matrix was used to test nomological validity of the measurement model in SEM and with reference to the relationships between the variables, there was significant positive correlation, indicating nomological validity. The correlation matrix of this study is presented in Table 4.4, in the next chapter.

3.12.7 Structural Equation Modelling (SEM)

This study employed SEM analysis, which is one of the advanced statistical techniques that is used in order to evaluate a series of multiple dependent relationships among variables (Maiyaki, 2012, p. 9930). According to Setyawan et al. (2018, p. 149), SEM is a multivariate method that allows researchers to simultaneously examine the causal relationships among latent variables by merging factor analysis with multiple regression. SEM differs from other

modelling approaches, since it examines the immediate and indirect impacts on assumed causal relationships (Fan et al., 2016, p. 1). Furthermore, SEM assists in understanding the correlational or covariant patterns among a group of variables (Suhr, 2006, p. 1). When using SEM, the key is to model the correlations between the measured variables and latent variable or the relationships between multiple latent variables (Korstanje, 2021: para 1).

This study investigated the relationship between multiple latent variables, namely SN, ATT, PBC and MA towards PBPPI and the relationship between EC, EK, CC19P and HC to ATT and finally, their relationship towards PBPPI. Therefore, direct as well as indirect (mediated) relationships were tested. SEM was used in this study to evaluate the model fit and conduct the hypothesis testing, as it is an extensive statistical method for evaluating hypotheses regarding associations between latent and observed variables (Suhr, 2006, p. 1).

To construct SEM analysis, Reisinger and Mavondo (2007, p. 52), indicated that a sample size of 200 or more is robust and provides adequate power to analyse the data. According to In'nami and Koizumi (2013, p. 5), a sample size "below 100 is small, a sample size between 100 and 200 is medium, whereas a sample size greater than 200 is large". The sample size of 381, in the current study, was therefore suitable to conduct SEM analysis.

3.12.7.1 Definition of the Individual Constructs

According to Malhotra (2010, p. 697), SEM analysis must be grounded in theory, and researchers must ensure that the precise constructs, the definition and measurement of each construct, and the relationships between constructs must all be specified and grounded in theory. Synodinos (2014, p. 117) indicated that SEM requires construct measures with robust psychometric properties, which have been defined by the extant theory, as failure to do so could generate biased results. All nine constructs utilised in this study were founded on the extant theory and a surfeit of empirical studies.

3.12.7.2 Measurement Model Specification and Identification

After the constructs are defined, specification of the measurement model follows. According to Kline (2022, p. 119), specification is the most significant step in SEM analysis and occurs when researchers express their hypotheses with graphical conceptual models depicting the expected relations among them. Kline (2022, p. 119) also stated that if a computer can

theoretically generate a unique estimate of each model parameter, then that model is identified. In a measurement model, Greek characters are commonly utilised to represent the constructs and Greek alphabets represent the measured variables, for example, ξ = latent variables and δ = errors (Malhotra, 2010, p. 698).

According to Babin and Goran (2012, p. 325), the hypothesised factors are known as the latent factors, and the measurement model is evaluated by utilising CFA; the model also evaluates the overall model fit and depicts the level of variance among the measured items. When the observed variables or indicators are being specified for each latent construct "setting the scale" of the latent construct is required (Malhotra, 2010, p. 698). The observed variables or indicators for each latent construct must be specified; however, since a latent construct cannot be observed, it has no metric scale or range of values, hence "one of the factor loadings can be fixed, usually to a value of one" (Malhotra, 2010, p. 698).

According to Farooq (2022, p. 80), the issue of negative variance is unique to structural equation modelling. Furthermore, Hair et al. (2010, p. 706) indicated that the model must be assessed for negative error variances (Heywood cases) or problematic estimates and standardised factor loadings > 1.0 or < -1.0. In their study, Farooq (2022, p. 86) discovered that when models possess improper solutions, they can be improved by adopting the following protocol: Model identification, factor loadings > 0.5, the model's negative variances, a substantial sample size, and the item in accordance with the construct rule.

In the current study, the model was assessed for negative error variances (Heywood cases) and standardised factor loadings; and there were no problematic estimates or negative error variances, and factor loadings > 1.0 or < -1.0. Moreover, the sample size in this study was large (381 respondents), there were 3 to 5 items per construct, (item per construct is highly associated with model identification) (Farooq, 2022, p. 85), and all factor loadings were above the recommended level of 0.5, with most loadings above 0.7, reflecting convergence and reliable results (Cheung, Cooper-Thomas, Lau, & Wang, 2023, pp. 6-7).

3.12.7.3 Measurement Model for Reliability and Validity

In SEM, validity and reliability are calculated taking into consideration the average variance extracted (AVE) and composite reliability (CR) (Synodinos, 2014, p. 118). In Section 3.12.4,

it was indicated that construct validity encompasses discriminant validity and convergent validity; this section outlines how convergent and discriminant validity are assessed in SEM. Convergent validity and discriminant validity were employed in the current study to assess the measurement model's reliability and validity, which is unique to SEM (Malhotra, 2010, p. 701).

Composite reliability (CR) – CR is defined as the ratio of the overall score variance to the total amount of true score variance (Malhotra, 2010, p. 701). According to Hair et al. (2021, p. 77), in exploratory research, values between 0.60 and 0.70 are deemed acceptable, while values between 0.70 and 0.90 extent from satisfactory to good. The CR values within the current study were between 0.699 and 0.88.

Convergent Validity – According to Malhotra (2010, p. 702), the degree of positive correlation between the scale and other measures of the same construct is measured by convergent validity. Factor loadings that are high imply that the observed variables (indicators) converge on the same latent variable and all factor loadings should exceed 0.5 (Malhotra, 2010, p. 702). In the current study, all factor loadings were > 0.5.

The average variance extracted (AVE) is another measure to assess convergent validity and this is defined as the variation in the observed variables or indicators that the latent construct explains (Malhotra, 2010, p. 702). Hair et al. (2010, pp. 688, 709) indicated that a convergent validity that is acceptable or satisfactory is represented by AVE values of 0.5 or higher. On the contrary, when the AVE values are below 0.5, this implies that the validity of the individual indicators and construct is problematic because the variance, due to measurement error, is higher than the variance captured by the construct (Malhotra, 2010, p. 702). However, Fornell and Larcker (1981, p. 46), indicated that "if AVE is less than 0.5, but composite reliability is higher than 0.6, the convergent validity of the construct is still adequate." In the current study, where some AVE values for the measurement model were below the recommended level of 0.5, they were accepted, as the AVE values were taken together with the CR values (> 0.699 for all constructs), and convergent validity was established.

Discriminant Validity – According to Farrell and Rudd (2009, p. 3), the degree to which a latent variable distinguishes itself from other latent variables is referred to as discriminant validity. In order to establish discriminant validity, it is important to depict that the latent variable is

distinct from other latent variables, thus yielding a unique contribution (Malhotra, 2010, p. 702). Almén, Lundberg, Sundin, and Jansson (2018, p. 328) indicated that when average variance extracted (AVE) exceeds maximum shared squared variance (MSV), discriminant validity is attained. In the current study, adjustments were made to the latent variables whereby some measured items were dropped to achieve reliability, convergent and discriminant validity and obtain an acceptable model fit. Moreover, the MSV values for all variables in this study were lower than the AVE values, which demonstrated discriminant validity (Almén et al., 2018, p. 329; Alumran, Hou, Sun, Yousef, & Hurst, 2014, p. 6).

3.12.7.4 Structural Model Specification

After establishing the validity of the measurement model, the structural model specification follows. According to Reisinger and Mavondo (2007, p. 43), theoretical relationships between dependent and independent variables are demonstrated by the structural model. As previously indicated, it is imperative that the model is judiciously specified for the structural model to be accurate and meaningful. The graphical representation of a structural model is referred to as a path diagram. According to Lei and Wu (2007, p. 34), an unusual addition to SEM is path analysis, which entails estimating multiple regression models or equations simultaneously. As a subset of SEM, path analysis involves finding the causal relationship among variables and quantifying the relationships among multiple variables by creating a path diagram (Fan et al., 2016, p. 2). Furthermore, path analysis helps to analyse complex models and structures and determines the hypothesised models which best fit the dataset (Hox, 2010, pp. 329-330).

3.12.7.5 Measurement and Structural Model Fit

According to Malhotra (2010, p. 704), examining the fit, contrasting the proposed structural model with rival models, and testing structural connections and hypotheses are the three steps involved in determining the validity of the structural model. A myriad of goodness-of-fit indices are employed in SEM to measure how well the model fits the data (Alavi et al., 2020, p. 2209; Synodinos, 2014, p. 120). There are three types of model fit measures, namely incremental fit, parsimonious fit and absolute fit (Synodinos, 2014, p. 121). Absolute fit indices evaluate the overall theoretical model against the study's empirical data, parsimony fit measures model fit relative to model complexity and incremental fit compares the hypothesised model to a baseline model that specifies no relationships between the actual variables (Alavi et al., 2020, p. 2209).

Chi-square ($\chi 2$) is the most frequently used global fit index in CFA and it is also employed to generate other fit indices (Alavi et al., 2020, p. 2210). The incremental fit indices, namely incremental fit index (IFI) and comparative fit index (CFI), as well as the absolute fit indices, namely root mean square of approximation (RMSEA) and chi-square ($\chi 2$) were employed in the current study. Hox (2010, p. 307) indicated that RMSEA values less than 0.8 are deemed satisfactory, while values greater than 0.9 but near 0.95 indicate an acceptable model fit for the CFI and IFI indices (Malhotra, 2010, pp. 731-732). In this study, all fit indices were acceptable for both the measurement and structural models. According to Hair et al. (2010, p. 672), it is not necessary to report on all goodness of fit indices, as it could lead to redundancy; nevertheless, it is recommended to employ, together with the chi-square value, at least one absolute index and one incremental index.

3.13 Mediation Analysis

After the SEM process is completed, further analysis, such as mediation may need to be performed (Synodinos, 2014, p. 121). According to Pesigan and Cheung (2020, p. 1), the goal of the mediation model, a widely used theoretical model in research, is to explain why two constructs have a relationship. When a third variable interacts between two other related variables, mediation occurs (Hair et al., 2010, p. 690). In order to conduct mediation, there must be significant correlation among all three variables (Hair et al., 2010, p. 767). The measurement of the indirect effect, the effect of a variable (the predictor) on another one (the outcome) through one or more mediators is beneficial because it can assist in obtaining the interval estimation of the indirect effect using confidence intervals (Pesigan & Cheung, 2020, p. 2).

According to Synodinos (2014, p. 123), when there is an indirect effect, it is important to ascertain whether this indirect effect has any implication or significance, and this can be determined by executing nonparametric bootstrapping analysis. In this study, nonparametric bootstrapping was employed to assess the relevant indirect effects of the conceptual model, as it is the most widely used technique and has proved to perform satisfactorily for standardised indirect effects (Pesigan & Cheung, 2020, p. 3).

In this study, the mediating role of ATT in the relationship between the independent variables of EC, EK, HC and CC19P, and PBPPI, was also investigated.

3.14 Conclusion

Chapter three presented an overview of the study's research methodology. The research problem, research design, research questions and objectives as well as the hypotheses were highlighted. Additionally, the sampling procedure, ethics requirements and data collection instrument developed for this study were explained, followed by the pre-testing and data screening protocols that were applied in this study. Afterward, the statistical analysis methods utilised in this study were discussed. Thereafter, the identification of the measurement and structural models were presented based on SEM analysis. Moreover, the data was processed, analysed, and interpreted by employing Statistical Package for Social Sciences (SPSS) and AMOS (Analysis of Moment Structures) version 27.

The subsequent chapter will elucidate the empirical findings obtained from the study. Moreover, the hypothesised relationships depicted in the conceptual model of the factors influencing young consumers' plant-based product (PBP) purchase intentions have been tested and presented in Chapter Four.

CHAPTER FOUR: ANALYSIS AND INTERPRETATION OF EMPIRICAL FINDINGS

4.1 Introduction

While Chapter Three presented the research methodology that was employed in this study, this chapter provides an elucidation on the reporting of the empirical findings. Firstly, the demographic analysis, providing the profile of the sample, is portrayed, followed by the food consumption behaviours and perceptions about COVID-19 in relation to PB product consumption. Thereafter, the results obtained by the exploratory factor analysis (EFA) and structural equation modelling (SEM) analysis are presented and this is where the conceptual model of the factors influencing young consumers' plant-based product (PBP) purchase intentions, as projected in Chapter Two, is tested and the results are reported upon. Next, the mediation analysis conducted in the study is presented. Finally, an in-depth descriptive analysis on each of the variables in the model is presented, to gain greater understanding of the levels and impacts of these variables amongst this South African sample.

The following section provides a report on the sample profile.

4.2. Sample Profile

The demographic profile of the respondents is presented in this section. The researcher personally administered 381 questionnaires to registered students on the five UKZN campus sites. A 100% response rate was achieved, as the sample was conveniently selected.

4.2.1 Gender Profile of the Sample

As indicated in Figure 4.1, females constituted a larger percentage (62%) in comparison to their male counterparts, who comprised of 38%. In 2023, when data collection was conducted, there were 61% females and 39% males registered at UKZN (UKZN, 2023), which is similar to the gender distribution of the sample. From the data depicted in Figure 4.1, it is also possible that the female population was more enthusiastic to participate in this research as compared to the male population. This was also evident in other studies conducted on green purchase behaviour and sustainable diets, where females eclipsed their male counterparts in terms of participation

(Brandner, Fyfe, Horgan, & Johnstone, 2022, p. 4; Chen, 2022, p. 7; Li, Wang, & Saechang, 2022, p. 4).

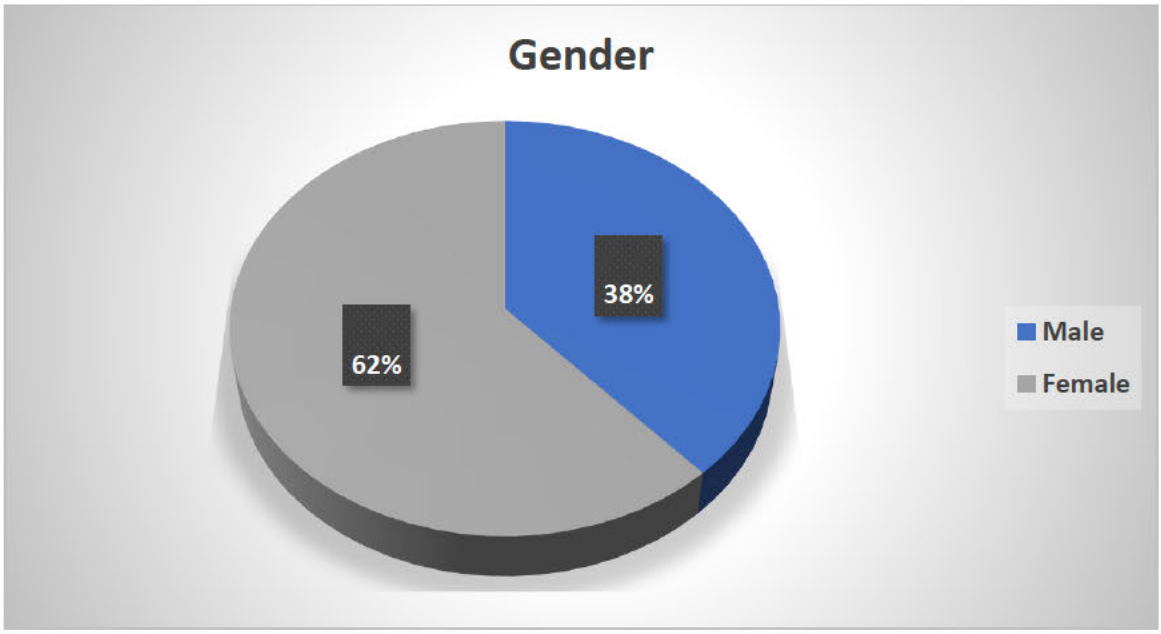

Figure 4.1: Gender Profile

4.2.2 Age Profile of the Sample

As indicated in Figure 4.2, most of the respondents (93%) fell within the age group of 18-25 years. This proves meaningful to this study since the sample profile focused on the young consumer cohort. According to the *United Nations Population Division of the Department of Economic and Social Affairs,* which was last updated in July 2023, the mean age of South Africans in 2023 was 27 years old (Worldometer, 2023b: para 1), which is slightly outside the dominant age group of this study. However, in 2023, 11% of the South African population was between the ages of 18-24 years, whereas 18% where between 25-34 years old; the median age was also 27 (Kemp, 2023: para 5).

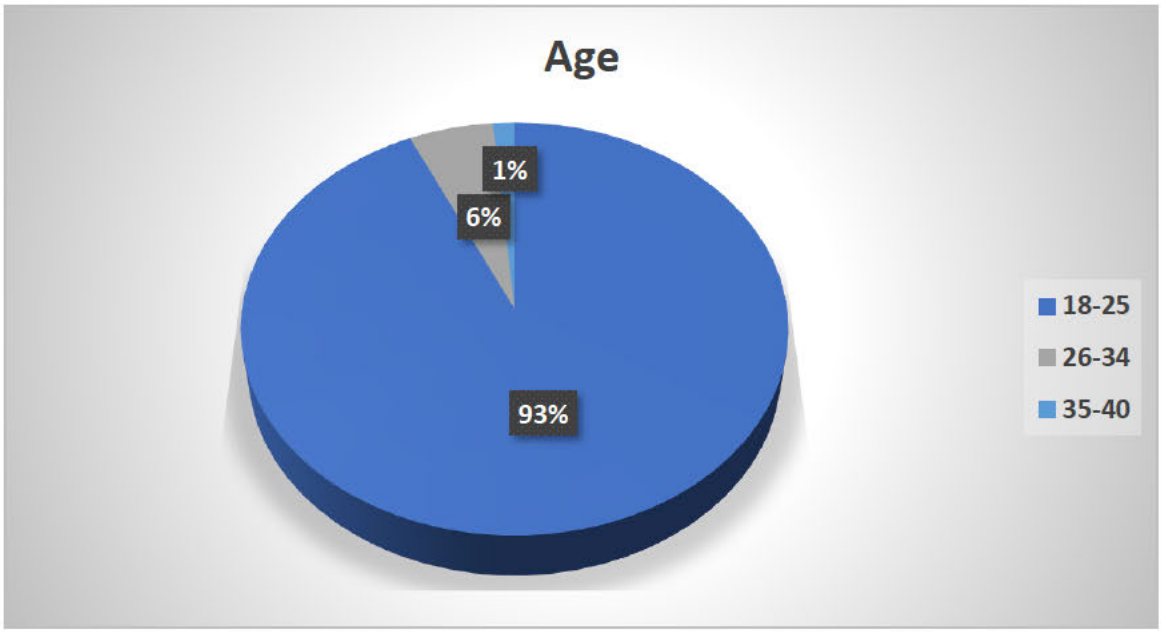

Figure 4.2: Age Profile

4.2.3 Ethnic Profile of the Sample

According to Figure 4.3, most of the respondents were Black, which constituted 78% of the sample, followed by Indians, Coloureds and Whites – with the least representation. This is congruent with the demographic profile of UKZN, in 2023, where the dominant racial group registered at UKZN was Blacks, representing 84% of the student population (UKZN, 2023). Furthermore, according to StatsSA (2022b, p. 7), it was indicated that Blacks constituted 81% of the total population in SA, hence this racial group dominated the study at hand.

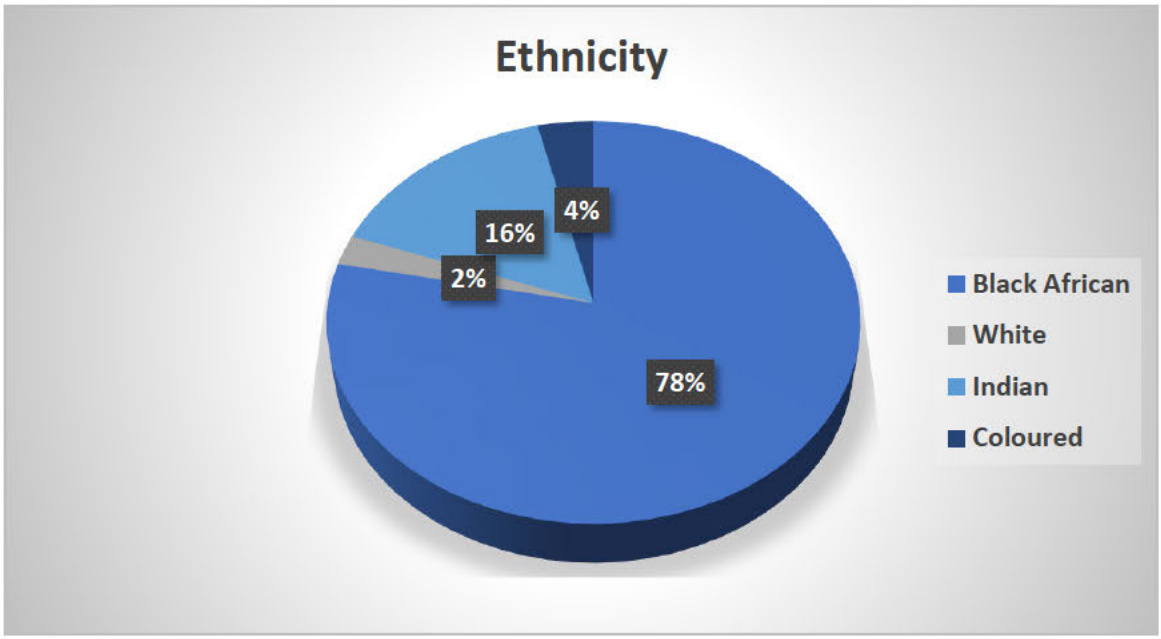

Figure 4.3: Ethnic Profile

4.2.4 Current Year of Study of the Sample

With reference to Figure 4.4, 73% of the sample comprised of students at the undergraduate (UG) level, followed 27% of students pursuing their postgraduate (PG) education at UKZN. In 2023, there was a total of 76% of students pursuing their UG education, followed by 24% pursing their PG education (UKZN, 2023). Hence, the sample is a fair representation of the spread of UKZN students across the UG and PG levels of study at UKZN in 2023.

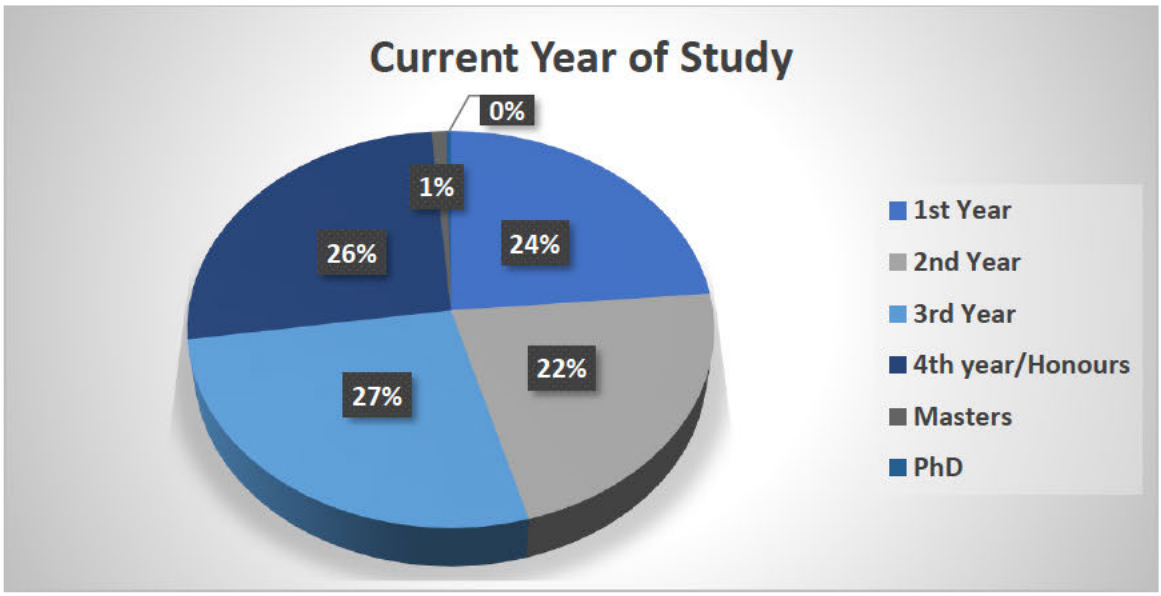

Figure 4.4: Current Year of Study

The following section highlights the results pertinent to the respondents' food consumption behaviours and perceptions about COVID-19 in relation to plant-based product (PBP) consumption. They were included in this study to address Research Objectives One and Two.

4.3 Food Consumption Behaviours and Perceptions about COVID-19 in Relation to Plant-based Product (PBP) Consumption

4.3.1 Food Consumption Behaviours

The results depicted in this section reflect the food consumption behaviours of the respondents, as the researcher wanted to determine how often young South African consumers consume animal-based foods, whether they have tried PB food products and how often they consume this type of food product.

4.3.1.1 Animal-based Food Consumption

A graphical representation of the respondents' animal-based food consumption behaviours portrayed in Figure 4.5. It was discovered that many of the respondents (41.5%) declared that they consume animal-based food products at least once a week, followed by 37% of respondents who indicated that they consume this type of food product every day. Those respondents who consume animal-based food products at least once a month constituted 10.5% of the sample, followed by 8.7% who indicated that they consume this food less than once a month. However, those who have never consumed animal-based food products accounted for 2.4% of the sample.

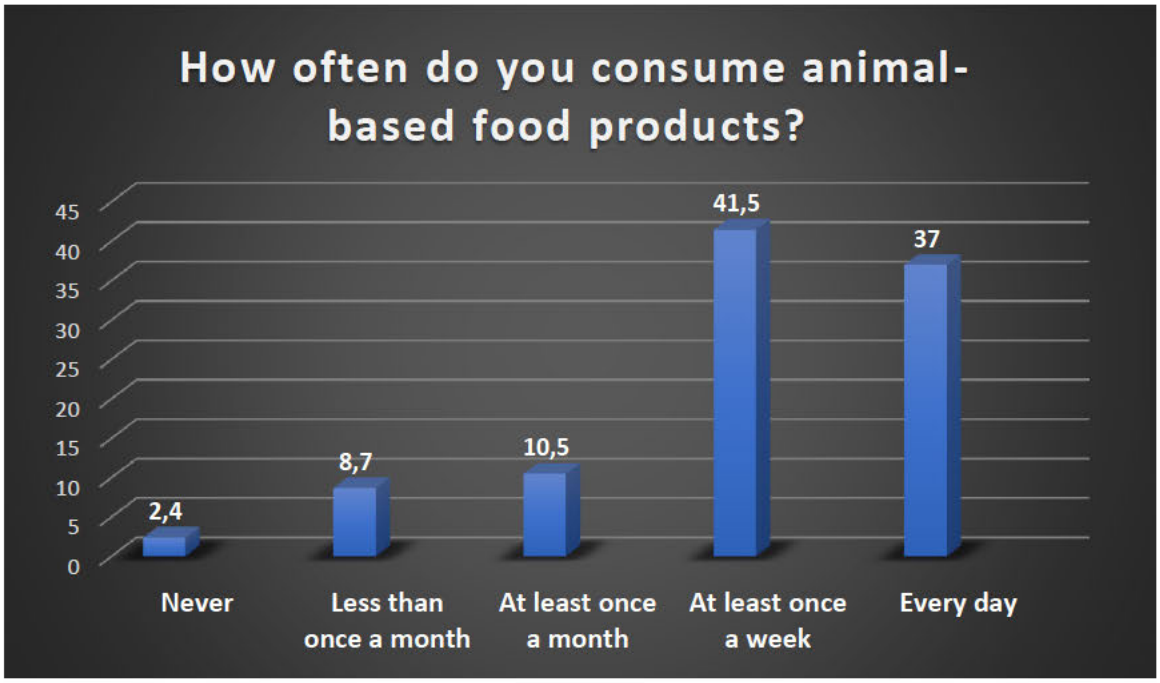

Figure 4.5: Consumption of Animal-based Food Products

4.3.1.2 Plant-based (PB) Food Product Trial

Figure 4.6 illustrates whether the respondents have tried PB food products. The empirical evidence indicates that most of the respondents (91.1%) have tried PB food products, followed by 8.9% who indicated that they have not tried this type of food product.

Figure 4.6: Plant-based (PB) Food Product Trial

4.3.1.3 Plant-based (PB) Food Consumption

Respondents were also asked how often they consume PB food products and many of them (34.1%) indicated that they consume it once a week, followed by 21.3% who declared that they consume this type of food product at least once a month and 20.2% who consume it less than once a month. Those respondents who have never consumed PB food products represented 13.1% of the sample, while 11.3% of the respondents indicated that they consume PB food products every day. Figure 4.7 illustrates the consumption of PB food products among the respondents.

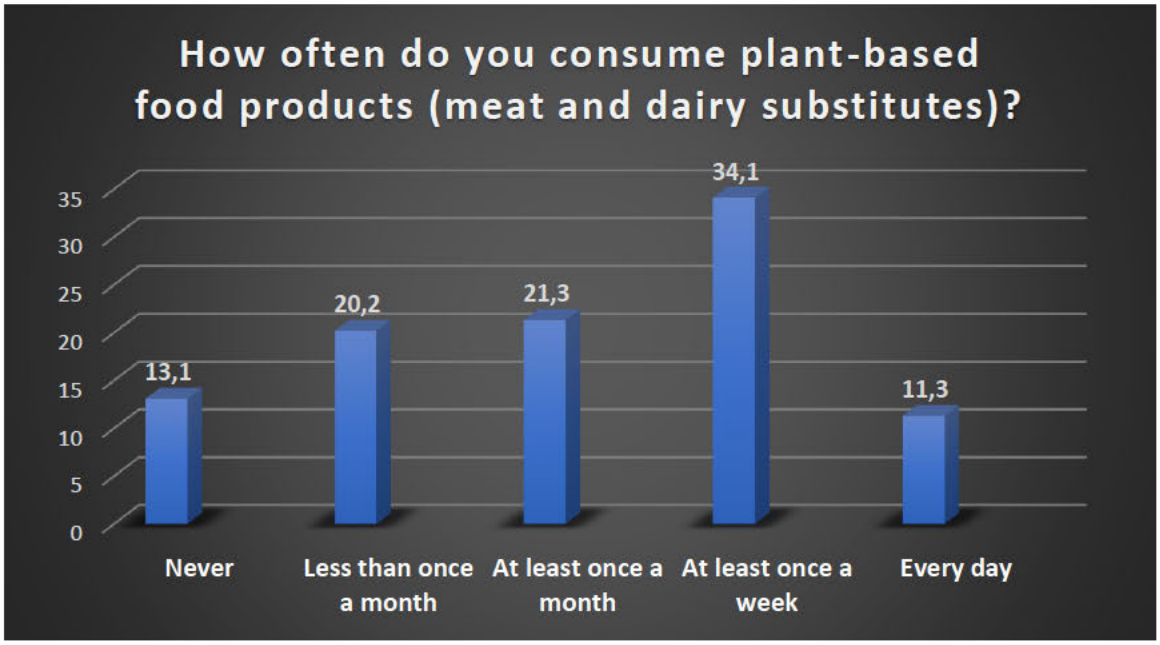

Figure 4.7: Consumption of Plant-based (PB) Food Products

The next section presents the respondents' general perceptions about the COVID-19 pandemic (C19P) and its relationship with a PB diet.

4.3.2 Perceptions about COVID-19 in Relation to Plant-based Product (PBP) Consumption

Table 4.1 reflects the results pertinent to respondents' perceptions about the C19P, followed by a report on the results thereof. These questions were added to the questionnaire to better understand respondents' perceptions about the C19P in relation to PBP consumption. This was included in this study, as it related to Research Objective One, which sought to determine young consumers' perceptions about PB products in light of the global climate crisis and C19P. Moreover, it was also interesting to investigate whether the pandemic had induced interest in

PB products or steered PBPPI among young consumers, due to health concerns surrounding the pandemic, or whether it was the climate crisis.

Table 4.1: Perceptions about COVID-19 in Relation to Plant-based Product (PBP) Consumption

Perceptions about COVID-19	n	Mean / (SD)	T	Df	p-value
'The pandemic has increased my plant-based product purchase intentions'.	381	2.74 / (1.071)	-4.784	380	<.001*
'Consuming plant-based products is necessary to improve my health and immunity'.	381	3.97 / (0.873)	21.767	380	<.001*
'Consuming plant-based products will help to reduce future zoonotic outbreaks such as COVID-19'.	381	3.54 / (1.072)	9.846	380	<.001*

Significance at 95% level

Respondents were also asked about their perceptions of COVID-19, and this item was not a specific construct in the model. However, it was vital to the researcher since it assisted in soliciting valuable information from respondents pertinent to how young South African consumers perceive the C19P in relation to PBP consumption. With the results of this item, the researcher determined how respondents perceived COVID-19 in terms of whether the pandemic has increased their PBP purchase intentions, whether they agree that consuming PB products is necessary to improve their health and immunity and whether PB food consumption will help to reduce future zoonotic outbreaks, such as COVID-19. Mean values for items 2 and 3 were > 3 as depicted in Table 4.1 and the findings indicated that there was significant agreement among respondents who indicated that consuming PB products is necessary to improve their health and immunity, and the consumption of such food products will help to reduce future zoonotic outbreaks, such as COVID-19. However, for item 1, with a mean value < 3 (mean = 2.74), there was significant disagreement among respondents who revealed that the pandemic has increased their PBP purchase intentions.

As a preliminary step before SEM, an exploratory factor analysis (EFA) was applied to explore the structure of the items in each construct and confirm the factorability of the data. Therefore, factor analysis (Principal Axis Factoring – PAF in SPSS) with promax rotation was applied to the items in each construct. The EFA discussion follows.

4.4 Exploratory Factor Analysis (EFA)

The Kaiser-Meyer-Olkin Measure (KMO) test in tandem with the Bartlett's Test of Sphericity were performed to assess the factorability of the data. As indicated in Chapter Three (Section 3.11.2.1), the factor extraction is deemed to be successful if the KMO value exceeds 0.6 and Bartlett's Test of Sphericity is significant (Pallant, 2010, p. 183). According to Taherdoost et al. (2014, p. 378), researchers can proceed with the factor analysis if the KMO shows sample adequacy and Bartlett's Test of Sphericity shows the item correlation matrix is not an identity matrix.

With a KMO value of 0.872 and a significant Bartlett's Test of 5908.469 (666) – chi-square (df), the data was adequate for successful and reliable extraction.

Tolerance and VIF values were examined to test for variable multicollinearity. High tolerance values ranging between 0.70 to 0.85, along with VIF values ranging between 1.1 to 1.4 were generated, which indicated a negligible degree of multicollinearity (Synodinos, 2014, p. 138); as such multicollinearity did not exist among the exogenous variables (Tanko et al., 2019, p. 8). If items do not correlate strongly enough with the other items in the construct and negatively affect the reliability, they may be removed (Acar Güvendir & Ozer Ozkan, 2022, pp. 166-167).

Factor analysis with promax rotation was applied to the 40 items measuring the model constructs. Rotation converged in seven iterations. During the process, some items were dropped, either because they did not load strongly enough onto any factor, or because they cross-loaded onto multiple factors. Items PBC1 and EC2 were dropped because they did not load strongly enough onto any factor; while items ATT3 and PBC3 were dropped because they cross-loaded onto multiple factors. Item PBC2 loaded with the PBPPI construct which makes sense when looking at the meaning of these items. Item PBC2 is stated as follows: "If it were entirely up to me, I am confident that I will purchase plant-based products", hence it loaded with the construct that measured respondents' intentions to purchase PB products – PBPPI.

In line with the literature, nine factors were extracted which accounted for 53.17% of the variance in the data. The structure and loadings of the items during the EFA stage have been summarised and are reflected in Appendix E. The reliability statistics of the latent factors

during the EFA stage are presented in Appendix F. After the items were dropped in the EFA stage, the model was then taken into the SEM stage.

4.5 Structural Equation Modelling (SEM)

SEM was conducted to analyse the structural relationships between the latent constructs and measured variables, by specifying the measurement model and then the path diagram or structural model of the study.

4.5.1 Measurement Model Specification

Specifying the measurement model is the first step in SEM, where analysis is done using confirmatory factor analysis (CFA) to investigate the measurement of the latent constructs as achieved using the measured variables. In line with the conceptual model presented in Chapter Two, the measurement model to be tested for all the hypotheses within this study is specified in Figure 4.8. The latent constructs were adjusted whereby some measured items were dropped to achieve reliability and construct validity – both convergent and discriminant validity and obtain an acceptable model fit.

The following items were dropped: PBPPI1 (this occurred to sort out the validity issue with ATT since these two constructs were strongly correlated); EK4, EC1 and PBC7 were also dropped to improve convergent validity and reliability, as these last three items had low factor loadings.

Figure 4.8 represents the specified measurement model in accordance with the nine constructs, defined in Chapter Two, after all the adjustments were made to the latent constructs whereby some measured items were dropped.

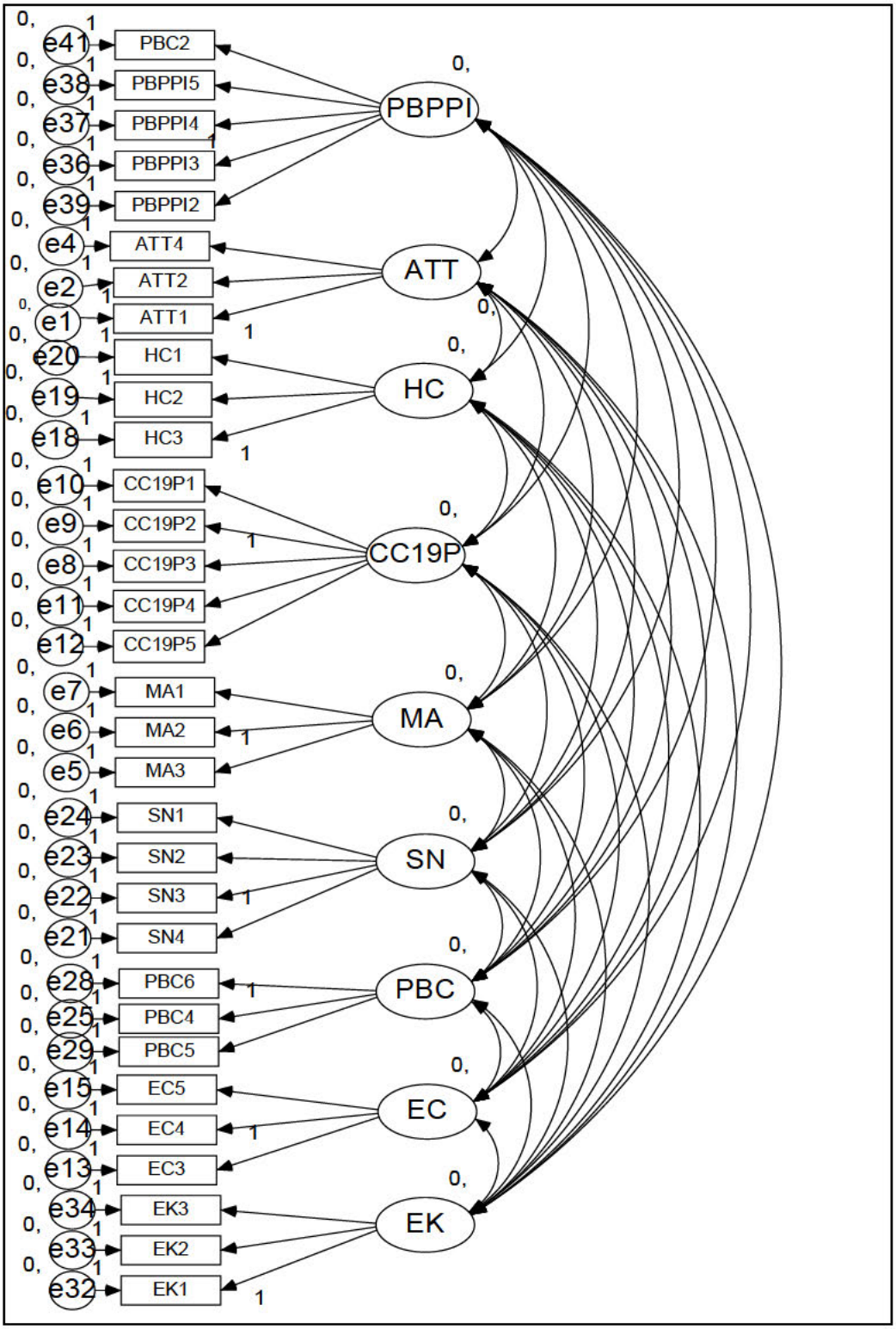

Figure 4.8: Specified Measurement Model

For model identification purposes, the first loading of each latent factor was fixed at 1.0. Accordingly, there were 560 distinct sample moments and 132 distinct parameters to be estimated, which left 428 degrees of freedom (df) (560 - 132 = 428), based on the over-

identified model, and a chi-square value of 768.497 with a probability level equating to $p < .001$. The model was assessed for negative error variances (Heywood cases) and standardised factor loadings which were > 1.0 or < -1.0 (Hair et al., 2010, p. 706). There were no negative error variances, or factor loadings > 1.0 or < -1.0. Moreover, all factor loadings exceeded the recommended level of 0.5 and most loadings were above 0.7. Table 4.2 presents the standardised coefficients of the measurement model.

Table 4.2: Standardised Coefficients of the Measurement Model

Construct	Indicators	Factor Loadings	Error Variance
ATT	ATT1	0.774	0.276
	ATT2	0.724	0.301
	ATT4	0.708	0.313
MA	MA3	0.796	0.415
	MA2	0.809	0.297
	MA1	0.770	0.310
CC19P	CC19P3	0.812	0.409
	CC19P2	0.646	0.583
	CC19P1	0.801	0.682
	CC19P4	0.847	0.356
	CC19P5	0.753	0.352
EC	EC3	0.793	0.211
	EC4	0.570	0.483
	EC5	0.608	0.447
HC	HC3	0.873	0.276
	HC2	0.653	0.498
	HC1	0.835	0.363
SN	SN4	0.709	0.685
	SN3	0.682	0.663
	SN2	0.674	0.776
	SN1	0.680	0.737
PBC	PBC4	0.506	0.836
	PBC6	0.879	0.228
	PBC5	0.576	0.672

Table 4.2: Standardised Coefficients of the Measurement Model (…continued)

Construct	Indicators	Factor Loadings	Error Variance
EK	EK1	0.613	0.608
	EK2	0.731	0.438
	EK3	0.644	0.535
PBPPI	PBPPI3	0.714	0.584
	PBPPI4	0.796	0.366
	PBPPI5	0.717	0.537
	PBPPI2	0.667	0.578
	PBC2 (loaded with PBPPI)	0.720	0.534

4.5.1.1 Reliability and Validity of the Measurement Model

The validation of the hypothesised traditional green behaviour antecedents – moral attitude (MA), environmental knowledge (EK), attitude towards plant-based products (ATT), environmental concern (EC), subjective norm (SN) and perceived behavioural control (PBC) in tandem with health consciousness (HC) and concerns about the COVID-19 pandemic (CC19P) on plant-based product purchase intention (PBPPI), from a South African perspective, was paramount in this study. Hence, the reliability and validity of the measurement model was assessed by computing the composite reliability (CR), average variance extracted (AVE), maximum shared square variance (MSV) and the Cronbach's α values. Table 4.3 depicts the reliability and validity of the final items for each construct within the measurement model.

Table 4.3: Reliability and Validity for the Measurement Model

Construct	CR	AVE	MSV	Cronbach's Alpha
PBPPI	0.846	0.524	0.516	0.844
CC19P	0.882	0.601	0.132	0.875
MA	0.834	0.627	0.303	0.830
HC	0.833	0.629	0.167	0.827
SN	0.781	0.471	0.333	0.782
EC	0.699	0.441	0.141	0.691
PBC	0.701	0.453	0.144	0.674
EK	0.702	0.442	0.212	0.696
ATT	0.780	0.542	0.516	0.780

Table 4.3 reflects that all CR values for the measurement model, except for EC with a CR level of 0.699, were above the recommended CR level of 0.7, which denote good reliability (Cheung et al., 2023, p. 4; Hair et al., 2010, p. 619).

According to Pervan, Curak, and Pavic Kramaric (2017, p. 10), AVE values should be greater than 0.5, the minimum threshold. Some AVE values for the measurement model were below the recommended level of 0.5, but they were accepted, since Fornell and Larcker (1981, p. 46), indicated that "if AVE is less than 0.5, but composite reliability is higher than 0.6, the convergent validity of the construct is still adequate". Similarly, in studies by Huang, Wang, Wu, and Wang (2013, p. 219), Kumar, Shehnaz, and Shiny (2020, p. 531) and Pervan et al. (2017, p. 10), AVE values < 0.5 with CR values > 0.6 were also observed, thus denoting that convergent validity of the constructs was adequate. In the current study, when the AVE values were taken together with the CR values (> 0.6 for all constructs), convergent validity was established. Furthermore, MSV values for all constructs within the measurement model were lower than the AVE values, thus indicating discriminant validity (Almén et al., 2018, p. 329; Alumran et al., 2014, p. 6). The α values ranged from 0.875 to 0.780 for six out of the nine constructs, denoting good reliability, while the latter three each had α values of 0.696, 0.691 and 0.674, which are close to 0.7 and are considered to be acceptable (Chen & Chai, 2010, p. 31; Hair et al., 2010, p. 319). In this study, the overall internal consistency attained was 0.777, which is considered a good level of reliability (Ursachi et al., 2015, p. 681).

The next section presents the correlation analysis to determine whether the relationships between the hypothesised traditional green behaviour antecedents – moral attitude (MA), environmental knowledge (EK), attitude towards plant-based products (ATT), environmental concern (EC), subjective norm (SN) and perceived behavioural control (PBC) in tandem with health consciousness (HC) and concerns about the COVID-19 pandemic (CC19P) on plant-based product purchase intention (PBPPI) were significant.

The Pearson's Product Moment Correlation Coefficient (*r*) was applied in this study to determine how the nine variables are related. According to Hair et al. (2010, p. 710) and Sharma (2011, p. 16), the correlation matrix is utilised to test the nomological validity of the measurement model in SEM. Therefore, Pearson's *r* values between each pair of the constructs were computed. Table 4.4 portrays the correlation matrix of the variables. Thereafter, a report on the correlation analysis follows.

Table 4.4: Correlation Matrix

Construct	1	2	3	4	5	6	7	8	9
PBPPI	1								
CC19P	0.313**	1							
MA	0.441**	0.290**	1						
HC	0.266**	0.212**	0.130*	1					
SN	0.470**	0.233**	0.343**	0.331**	1				
EC	0.271**	0.231**	0.331**	0.072	0.195**	1			
PBC	0.171**	0.084	0.220**	0.078	0.302**	0.176**	1		
EK	0.362**	0.232**	0.305**	0.308**	0.322**	0.314**	0.245**	1	
ATT	0.576**	0.237**	0.431**	0.144**	0.276**	0.340**	0.254**	0.388**	1

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

**** Correlation is significant at the 0.05 level (2-tailed)***

With reference to the relationships between the constructs, there was significant positive correlation at significance levels of $p = 0.01$ and $p = 0.05$, which indicated nomological validity (Synodinos, 2014, p. 144). The strongest relationship occurred between the ATT and PBPPI constructs ($r = 0.576$). This was followed by the relationships between SN and PBPPI ($r = 0.470$), MA and PBPPI constructs with $r = 0.441$, ATT and EK with $r = 0.388$ and EK with PBPPI ($r = 0.362$).

4.5.1.2 Model Fit Indices for the Measurement Model

The model fit of the measurement model was evaluated based on the incremental fit indices, namely comparative fit index (CFI) and incremental fit index (IFI) as well as the absolute fit indices, namely chi-square ($\chi 2$) and root mean square of approximation (RMSEA). Table 4.5 presents the model fit indices for the measurement model.

Table 4.5: Model Fit Indices for the Measurement Model

Fit Indices	Fit Values	Criteria
χ^2 / df (p-value)	1.796 (<.001)	<5
IFI	0.931	>.9
CFI	0.930	>.9
RMSEA	0.046	<.08

With reference to Table 4.5, the measurement model produced good fit indices – chi-square (χ2) = 1.796 and a df / (p-value) equating to < .001. The remaining fit indices displayed an acceptable degree of fit between the measurement model and data, with IFI = 0.931, CFI = 0.930, as well as RMSEA = 0.046. All the fit indices were acceptable for the measurement model; therefore, the measurement model was accepted.

The next section presents the hypothesised structural model.

4.5.2 Structural Model Specification

The measurement model was then converted into a structural model or path diagram depicting the directional paths between the latent variables or constructs. However, before this was done the structural model fit was evaluated based on the incremental fit indices, namely comparative fit index (CFI) and incremental fit index (IFI) and the absolute fit indices of the chi-square (χ2) and root mean square of approximation (RMSEA). The model fit indices for the structural model or path diagram are portrayed in Table 4.6.

Table 4.6: Model Fit Indices for the Structural Model

Fit Indices	Fit Values	Criteria
χ^2 / df (p-value)	1.996 (p<.001)	<5
IFI	0.910	>.9
CFI	0.909	>.9
RMSEA	0.051	<.08

With reference to Table 4.6, the structural model produced good fit indices – chi-square (χ2) = 1.996, with a df / (p-value) < .001. The remaining fit indices depicted an acceptable degree of

fit between the structural model and data, with IFI = 0.910, CFI = 0.909 and RMSEA = 0.051. As such, all the fit indices were acceptable for the structural model.

Table 4.7 displays the regression path estimates of the structural model and illustrates the path direction between the independent and dependent variables in tandem with their respective regression coefficient results and p-values, and a summary of the hypotheses. The results for **H_6**, **H_8**, **H_{10}** and **H_{12}** are included in the next section, where the possible mediating role of ATT is explored.

Table 4.7: Summary of the Structural Model

Path Direction		Regression coefficient	p-value	Hypotheses
Independent variable	Dependent variable			
EC →	ATT	0.383	<.001*	
EK →	ATT	0.351	.001*	
HC →	ATT	-0.009	.940	
CC19P →	ATT	0.181	.007*	
PBC →	PBPPI	-0.038	.626	**H_4** – not accepted
SN →	PBPPI	0.318	<.001*	**H_3** – accepted
MA →	PBPPI	0.209	.001*	**H_2** – accepted
CC19P →	PBPPI	0.068	.237	**H_{11}** – not accepted
HC →	PBPPI	0.068	.280	**H_9** – not accepted
ATT →	PBPPI	0.584	<.001*	**H_1** – accepted
EC →	PBPPI	-0.123	.104	**H_5** – not accepted
EK →	PBPPI	-0.026	.736	**H_7** – not accepted

There are no hypotheses for the independent variables' effects on ATT as these are part of the mediation analyses performed below in Section 4.6. According to Table 4.7, the regression path coefficient for EC's effect on ATT was 0.383 (p = < .001*), indicating a significant path. As EC significantly affects ATT but not PBPPI directly, this may indicate full mediation. The mediation analysis results are presented in the next section.

Similarly, a significant path was obtained for EK's effect on ATT, with a regression coefficient = 0.351 (p = .001*). As EK significantly affects ATT but not PBPPI directly, this may indicate full mediation. The results of the mediation analysis are included in the next section.

For HC's effect on ATT, the regression path coefficient was -0.009 (p = .940), thus implying that the path was not significant. Even though HC did not affect ATT or PBPPI, mediation is still checked in Section 4.6.

For CC19P's effect on ATT, with a regression coefficient of 0.181 (p = .007*), a significant path was attained. As CC19P significantly affects ATT but not PBPPI directly, this may also indicate full mediation. The mediation analysis results are presented in the next section.

For PBC and PBPPI, the regression path coefficient was -0.038 (p = .626), denoting that the path was not significant. Hence, **H_4** is not accepted. Therefore, it can be implied that perceived behavioural control does not significantly positively influence young consumers' purchase intentions towards PB products, and therefore, no causal effect was observed.

The regression path coefficient for SN and PBPPI was 0.318 (p = < .001*), implying a significant path. Therefore, there is enough evidence to support **H_3** and it is accepted. Thus, it can be concluded that subjective norm has a significant positive influence on young consumers' purchase intentions towards PB products.

MA and PBPPI, with a regression coefficient of 0.209 (p = .001*) indicates a significant path, thus **H_2** is accepted. Hence, moral attitude has a significant positive influence on young consumers' PBP purchase intentions.

For CC19P and PBPPI, the regression coefficient was 0.068 (p = .237), which indicates that the path was not significant, thus **H_{11}** is not accepted. Therefore, it can be implied that concerns about the COVID-19 pandemic does not have a significant positive influence on young consumers' purchase intentions toward PB products, and no causal effect was observed.

For HC and PBPPI, the regression coefficient was 0.068 (p = .280), thus implying that the path was not significant. Hence, **H_9** is not accepted. Therefore, it can be deduced that health consciousness does not significantly positively influence young consumers' purchase intentions towards PB products. There was no causal effect.

For ATT and PBPPI, with a regression coefficient of 0.584 (p = < .001*), the evidence accumulated supports **H_1**. Hence, it can be concluded that young consumers' attitude towards plant-based products has a significant positive influence on their PBP purchase intentions.

The regression coefficient for EC and PBPPI was -0.123 (p = .104), denoting that the path was not significant, thus **H_5** is not accepted. Hence, it can be inferred that environmental concern does not significantly positively influence young consumers' purchase intentions towards PB products. There was no causal effect.

For EK and PBPPI, the regression coefficient was -0.026 (p = .736), indicating that the path was not significant, thus **H_7** is not accepted. Hence, it can be implied that environmental knowledge does not significantly positively influence young consumers' purchase intentions towards PB products, and no causal effect was observed.

The structural model or path diagram, depicted in Figure 4.9, illustrates the above-mentioned hypotheses' results. Moreover, the structural model portrayed in Figure 4.9 portrays the covariance lines between the variables and the residuals of the variables including the indicator variables of the latent factors. Possible mediation is also reflected, thus indicating that ATT mediates the relationships between CC19P-PBPPI, EC-PBPPI and EK-PBPPI. Note that the red arrows portray those paths that are significant – significant causal relationships between the dependent and independent variables, which have addressed the hypotheses and research objectives of this study.

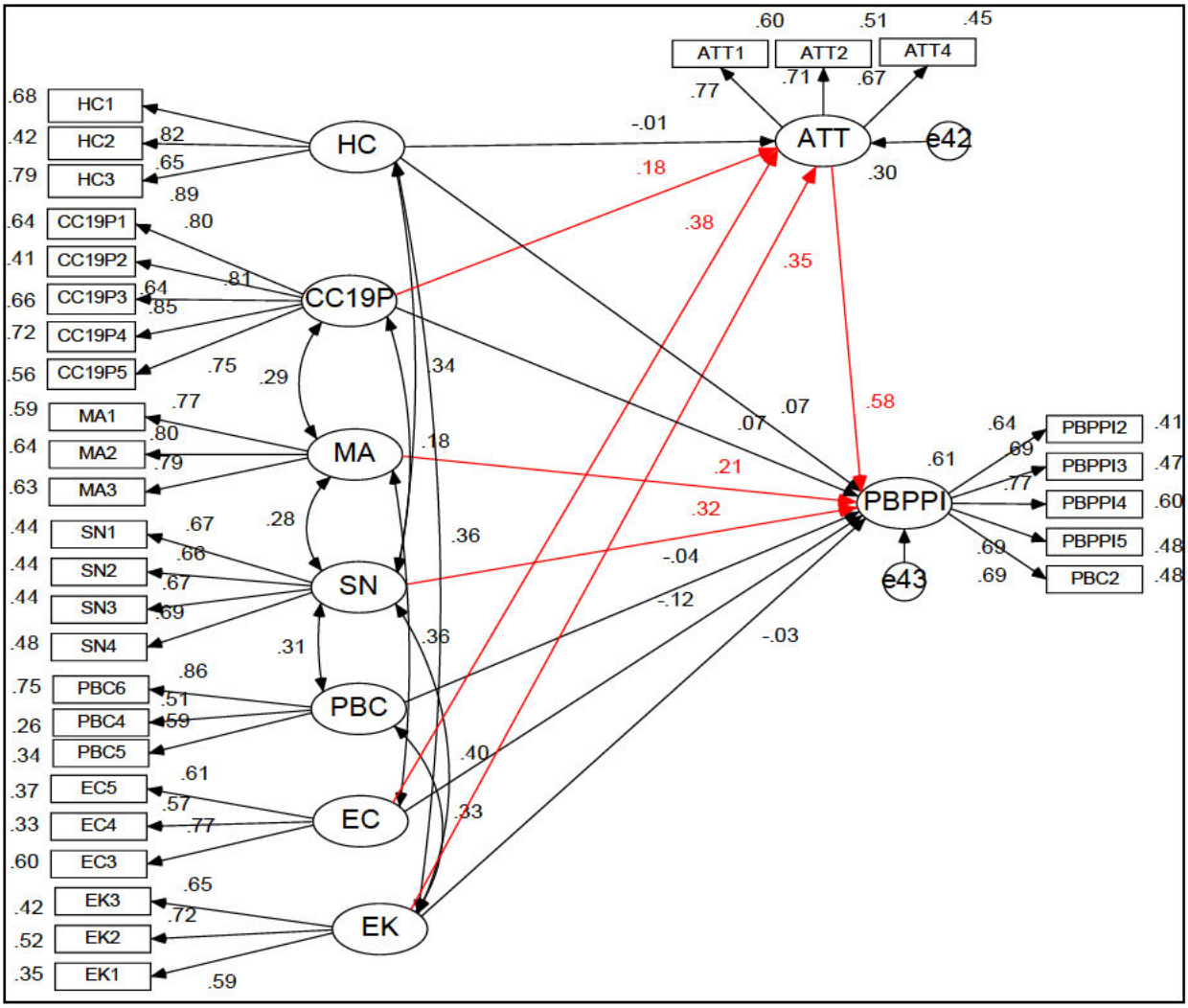

Figure 4.9: Structural Model or Path Diagram

The mediation analysis is presented next, which provides a summary of the mediation results for **H_6**, **H_8**, **H_{10}** and **H_{12}**.

4.6 Mediation Analysis

To assess whether ATT mediates the relationships between the independent variables HC, CC19P, EC, EK and the dependent variable PBPPI, the following was applied. Bias-corrected bootstrapping with a confidence interval of 0.95 and a re-sampling size of 5 000 were performed (Banjanovic & Osborne, 2016, p. 2; Tibbe & Montoya, 2022, pp. 2,7). Table 4.8 depicts the outcome of the mediation analysis.

Table 4.8: Mediation Analysis of ATT on the Variables

Independent variable	Dependent variable	Direct effect		Indirect effect		Mediation
		p-value	Coefficient [95% CI]	p-value	Coefficient [95% CI]	
CC19P	PBPPI	.237	0.068 [-0.045; 0.188]	.006*	0.106 [0.029; 0.205]	Full mediation
HC	PBPPI	.280	0.068 [-0.057; 0.197]	.934	-0.005 [-0.101; 0.086]	No mediation
EC	PBPPI	.104	-0.123 [-0.267;0.023]	<.001*	0.224 [0.129; 0.353]	Full mediation
EK	PBPPI	.736	-0.026 [-0.212; 0.137]	.001*	0.205 [-0.080; 0.381]	Full mediation

With reference to Table 4.8, the results for the direct and indirect effects of the mediating variable – ATT, are portrayed, which indicates that ATT mediates the relationships between CC19P-PBPPI, EC-PBPPI and EK-PBPPI. This denotes full mediation, thus **H_6**, **H_8**, and **H_{12}** are accepted.

A significant mediation effect was achieved between CC19P and PBPPI, with a p-value = 0.237 for the direct effect and p = .006* for the indirect effect. Significant mediation was also observed between EC and PBPPI with a p-value = 0.104 for the direct effect and p = < .001* for the indirect effect. Similarly, a significant mediating effect was also attained for EK and PBPPI with a p-value = 0.736 for the direct effect and p = .001* for the indirect effect.

On the contrary, no significant mediating effect was observed for HC and PBPPI with a p-value = 0.280 for the direct effect and p = 0.934 for the indirect effect, which indicates that ATT does not mediate the effect of HC on PBPPI. Thus, **H_9** is not accepted, likewise **H_{10}** is also not accepted to reflect that there is no mediation effect. Also, to illustrate that ATT does not mediate the relationship between the dependent variable – PBPPI and the independent variable – HC, this non-mediating effect is evident in the structural model or path diagram in Figure 4.9.

The summary of the significant findings in the conceptual framework is presented in Figure 4.10, on the subsequent page.

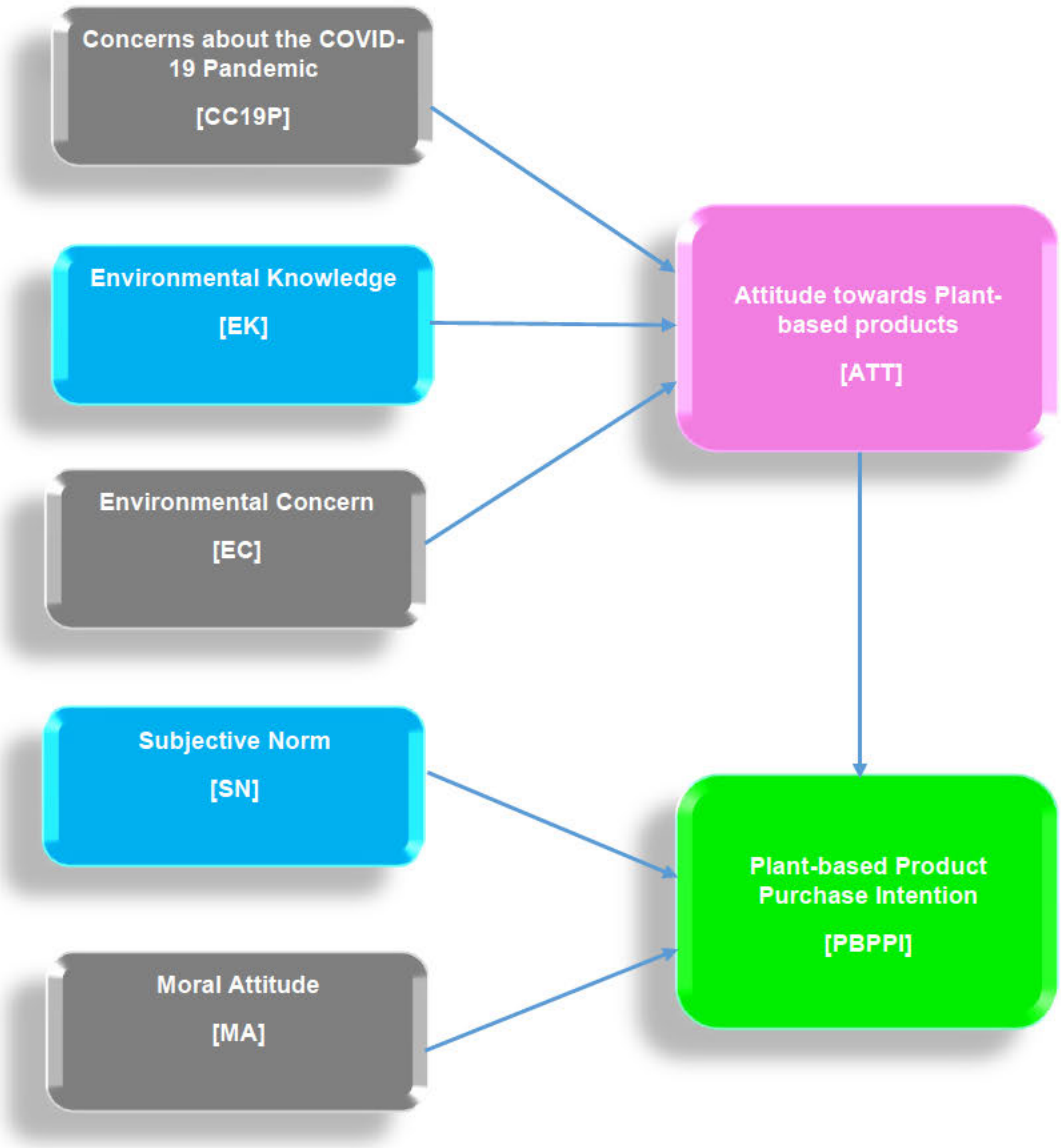

Figure 4.10: Factors Influencing Young Consumers' Plant-based Product (PBP) Purchase Intentions During the Global Climate Crisis and COVID-19 Pandemic (C19P)

A report on the descriptive statistics follows, which presents a discussion on the constructs measured in this study of young consumers' PBP purchase intentions during the global climate crisis and C19P. In this research, several items in the original variables were dropped at either EFA or CFA stages, thus it made more sense to discuss the descriptive statistics relating to the final variables of the accepted structural model, after SEM. These are discussed next, along with their composite scores to provide a more in-depth elucidation of what the findings indicate. Inclusion of detailed discussions of the descriptive statistics of all items, including the dropped items prior to SEM, could confound deeper understanding of the variables.

4.7 Descriptive Statistics

A summary of the results pertinent to each of the nine constructs that were investigated to influence young consumers' intentions to purchase PB products during the global climate crisis and C19P is presented in this section. The one-sample t-test was employed in this study to test if the average score differs from a specified scalar value (Kumar, 2023: para 1). Similarly, Al-kassab (2022, p. 134) declared that the sample mean and an assumed population value are compared using the one-sample t-test. In this case, the scalar value was the central or neutral value of '3' in the Likert scale that was used. Thus, this enabled the researcher to test if the average agreement score was significantly different from the central/neutral score of '3', which was also the scalar midpoint (Reed, 2023: para 1). If it was significantly different from '3', then there was either significant agreement (if mean > 3) or significant disagreement (if mean < 3). As such, the one-sample test is useful to ascertain if there is significant agreement/disagreement to each question and then to each construct (Vieira, 2016, p. 1). Prior to conducting the one-sample t-test, the data was checked to determine whether the assumptions were met or violated. The assumptions, in accordance with LaerdStatistics (2018: para 5) and StatisticsSolutions (2023: para 4), are discussed below.

1. **The data should be continuous.** While the scale used was a Likert scale and so strictly speaking an ordinal one, it can be considered continuous if (a) the scale is symmetric (which this is) and (b) there are at least 5 points to the scale (which is the case in this study). Therefore, applying this test to the scale used was acceptable and is frequently done (Robitzsch, 2020, p. 5).
2. **The data should follow a normal distribution.** While there was some deviation from normality, several aspects were checked to ensure that the results were valid.
    - The sample was considered to be large (> 300) and so the usual test (such as Kolmogorov-Smirnov) was considered unreliable (Kim, 2013, p. 52). Instead, the skewness values were checked to determine if they were less than 2 (and > 2) and the kurtosis values between -7 and 7. This was checked, and the conditions were met for both skewness and kurtosis for all constructs (Kim, 2013, p. 53). The skewness and kurtosis values are featured in Appendix G.
    - The results were checked using the non-parametric equivalent test – Wilcoxon signed-rank test. Both the Wilcoxon signed-rank test and the one-sample t-test arrived at the same conclusions. This was not surprising since the Wilcoxon signed-

rank test is robust to violations of normality (Ahad, Syed-Yahaya, MdYusof, Abdullah, & Fung, 2014, pp. 690-691) and the non-normality in this data was marginal. As such, the results were expected to be consistent.

3. **The data has independence** since all respondents were different and completed the questionnaire independently of other respondents, so this assumption was met.
4. There were **no significant outliers** in this data.

A five-point Likert scale that ranged from 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree and 5 = strongly agree was used to capture the data. Apart from the measures of shape, the measures of central tendency (mean, mode, and median) and measures of dispersion (range and standard deviation) were computed for each scale item. As mentioned previously, the one-sample t-test test was employed to assess the average agreement score against the central or neutral score of '3'. If the result was significant, it meant that the average score was different from '3' and interpreted as significant agreement if the mean was > 3 and significant disagreement if the mean was < 3. Tables depicting the agreement and disagreement for each variable along with their composite scores are presented in the next section and only the items reflected in the structural model are reported upon. The reliability of combining the items into a single latent variable was tested using Cronbach's alpha.

According to Mohajan (2017, p. 13) and Wassan, Memon, Mari, and Kalwar (2023, p. 45), an alpha value of at least 0.7 is considered acceptable. Most of the Cronbach's alpha values of the constructs were above 0.7, and even though three out of the nine items ranged from 0.696 to 0.674, they are close to 0.7 and are considered reliable. In this study, the overall internal consistency attained was 0.777, which is considered a good level of reliability (Ursachi et al., 2015, p. 681). Moreover, the CR values of the constructs, except for EC with a CR level of 0.699 (which is close to 0.7), were above the recommended level of 0.7, which also denote good reliability (Barati et al., 2019, p. 226).

The descriptive statistics relating to the final variables of the accepted structural model are presented next along with their composite scores.

4.7.1 Plant-based Product Purchase Intention (PBPPI)

Table 4.9 reflects the results for the PBPPI construct, followed by a discussion on the findings.

Table 4.9: Plant-based Product Purchase Intention (PBPPI)

PBPPI	n	Mean / (SD)	T	df	p-value
PBPPI 2 – 'I will consider switching to plant-based brands for ecological reasons'.	381	3.42 / (1.022)	8.022	380	<.001*
PBPPI 3 – 'I plan to spend more on plant-based food products rather than animal-based food products'.	381	2.89 / (1.094)	-1.920	380	.056
PBPPI 4 – 'I expect to purchase plant-based products in the future because of its positive environmental contribution'.	381	3.76 / (1.000)	14.749	380	<.001*
PBPPI 5 – 'I definitely want to purchase plant-based products in the near future'.	381	3.73 / (1.053)	13.529	380	<.001*
PBC 2 – 'If it were entirely up to me, I am confident that I will purchase plant-based products'.	381	3.46 / (1.055)	8.549	380	<.001*
Composite PBPPI	381	3.45 (0.821)	10.751	380	<.001*

Significance at 95% level

As evident in Table 4.9, the mean values for items PBPPI 2, PBPPI 4, PBPPI 5 and PBC 2 were all > 3 and significant. Hence, there was significant agreement among the respondents that they will consider switching to PB products for ecological reasons; they 'expect to purchase these products in the future because of its positive environmental contribution; and they definitely want to buy these products in the future'. Respondents also significantly agreed that they are confident that they will purchase PB products if it were entirely up to them. However, for item PBPPI 3 (p = .056), where respondents were asked the extent to which they agree or disagree on whether they 'plan to spend more on PB food products rather than animal-based food products', there was neither significant agreement nor significant disagreement among the respondents. Based on the significant composite score of 3.45 for PBPPI, which reflects an overall weak, but significant agreement among respondents, and a relatively low standard deviation, which indicates that the sample scores were grouped closely around this mean, it can be concluded that this young South African consumer cohort intends to purchase PB products, due to, it seems, their positive environmental contribution.

4.7.2 Attitude towards Plant-based Products (ATT)

Table 4.10 reflects the results for the ATT construct, followed by a report on the results.

Table 4.10: Attitude towards Plant-based Products (ATT)

ATT	n	Mean / (SD)	T	df	p-value
ATT 1 – 'I like the idea of purchasing plant-based products'.	381	3.92 / (0.831)	21.575	380	<.001*
ATT 2 – 'Purchasing plant-based products is a good idea'.	381	4.11 / (0.796)	27.171	380	<.001*
ATT 4 – 'Buying plant-based products would be good'.	381	4.07 / (0.794)	26.208	380	<.001*
Composite ATT	381	4.03 (0.672)	29.923	380	<.001*

Significance at 95% level

With mean values significantly > 3 for all items, as depicted in Table 4.10, the results indicated that there was significant agreement among respondents that they 'like the idea of purchasing PB products and purchasing such products is a good idea'. Moreover, there was significant agreement that purchasing PB products would be good. The significant composite score of 4.03 for ATT reflects an overall significant, albeit moderate agreement among respondents and demonstrates that young consumers in SA have an overall positive attitude towards PB products.

4.7.3 Moral Attitude (MA)

Table 4.11 reflects the results for the MA construct, followed by a report on the findings.

Table 4.11: Moral Attitude (MA)

MA	n	Mean / (SD)	T	df	p-value
'Purchasing plant-based food products instead of the conventional products would make me':					
MA 1 – 'Feel like I am personally contributing to something better'.	381	3.99 / (0.874)	22.111	380	<.001*
MA 2 – 'Feel like I am doing the morally right thing'.	381	3.84 / (0.929)	17.593	380	<.001*
MA 3 – 'Feel like a better person'.	381	3.68 (1.067)	12.485	380	<.001*
Composite MA	381	3.84 (0.830)	19.681	380	<.001*

Significance at 95% level

According to Table 4.11, the mean values for all items were significantly > 3, hence the results revealed that there was significant agreement among respondents that purchasing PB food products instead of the conventional products would make them feel like they are personally contributing to something better, 'doing the morally right thing and feel like a better person'. The significant composite score of 3.84 for MA indicates an overall significant, but moderate agreement among respondents and implies that young South African consumers perceive that purchasing PB products is ethical and the right thing to do. As such, this consumer cohort feels that it is a moral norm to purchase PB food products.

4.7.4 Subjective Norm (SN)

Table 4.12 reflects the results for the SN construct, followed by a report on the results.

Table 4.12: Subjective Norm (SN)

SN	n	Mean / (SD)	T	df	p-value
SN 1 – 'I learn about plant-based products from my family and friends'.	381	2.75 / (1.173)	-4.106	380	<.001*
SN 2 – 'My family and friends interact with me on environmental issues'.	381	2.83 / (1.195)	-2.830	380	<.005*
SN 3 – 'I often buy plant-based products based on my family member's and friend's reference'.	381	2.54 / (1.115)	-7.994	380	<.001*
SN 4 – 'I often share the information about plant-based products with my family and friends'.	381	2.80 / (1.175)	-3.313	380	<.001*
Composite SN	381	2.73 (0.906)	-5.797	380	<.001*

Significance at 95% level

With reference to Table 4.12, it can be deduced that for all four items, with mean values which are < 3, there was significant disagreement among the respondents for the SN construct. As such, there was significant disagreement among respondents that they learn about PB products from their family and friends, their family and friends interact with them on environmental issues, they often buy PB products based on their family member's and friend's reference, and they often share the information about these products with their family and friends. The significant composite score of 2.73 for SN indicates that overall, this cohort has a significant but weak disagreement that they experience subjective norms (social influence from significant

others, such as family members and friends). Also, this cohort is consistent in their belief (low standard deviation) that they have significant, albeit weak disagreement that they experience subjective norms. Taken together this implies that young South African consumers do not believe they experience subjective norms in relation to PBP purchase.

4.7.5 Perceived Behavioural Control (PBC)

Table 4.13 reflects the results for the PBC construct, followed by a report on the results.

Table 4.13: Perceived Behavioural Control (PBC)

PBC	n	Mean / (SD)	T	df	p-value
PBC 4 – 'I have resources to purchase plant-based products'.	381	3.15 / (1.061)	2.704	380	<.007*
PBC 5 – 'Plant-based products are generally available in the stores where I usually do my shopping'.	381	3.82 / (1.004)	15.868	380	<.001*
PBC 6 – 'There are likely to be plenty of opportunities for me to purchase plant-based products'.	381	3.39 / (1.001)	7.577	380	<.001*
Composite PBC	381	3.45 (0.795)	11.059	380	<.001*

Significance at 95% level

All mean values in Table 4.13 were > 3 and the findings indicated that there was significant agreement among respondents that they have the resources to purchase PB products, these products are 'generally available in the stores where they usually do their shopping' and 'there are likely to be plenty of opportunities for them to purchase PB products'. The significant composite score of 3.45 for PBC depicts an overall significant, albeit weak agreement among the respondents, which signifies that young South African consumers generally believe they have the resources and opportunities to purchase PB products, due to the product placement and availability of PB products in the supermarkets that they frequent.

4.7.6 Environmental Concern (EC)

Table 4.14 reflects the results for the EC construct, followed by a report on the results.

Table 4.14: Environmental Concern (EC)

EC	n	Mean / (SD)	T	df	p-value
EC 3 – 'Major social changes are necessary to protect the natural environment'.	381	4.17 / (0.755)	30.335	380	<.001*
EC 4 – 'Major political change is necessary to protect the natural environment'.	381	4.13 / (0.847)	26.005	380	<.001*
EC 5 – 'Anti-pollution laws should be enforced more strongly'.	381	4.40 / (0.843)	32.531	380	<.001*
Composite EC	381	4.24 (0.641)	37.593	380	<.001*

Significance at 95% level

With reference to Table 4.14, items 3-5 obtained mean values of > 3, and the results revealed that there was significant agreement among respondents that 'major social changes are necessary to protect the natural environment, major political change is necessary to protect the natural environment and anti-pollution laws should be enforced more strongly'. The significant composite score of 4.24 for EC depicts an overall significant, albeit moderate agreement among the respondents and implies that young South African consumers are concerned about environmental conservation and sustainability, as they want to initiate change towards addressing environmental issues and climate change mitigation.

4.7.7 Environmental Knowledge (EK)

Table 4.15 reflects the results for the EK construct, followed by a report on the results.

Table 4.15: Environmental Knowledge (EK)

EK	n	Mean / (SD)	T	Df	p-value
EK 1 – 'I know more about environmental issues than the average person'.	381	3.22 / (0.988)	4.304	380	<.001*
EK 2 – 'I know the reasons why plant-based products help to protect the environment'.	381	3.53 / (0.972)	10.702	380	<.001*
EK 3 – 'I understand the environmental phrases and symbols on the packaging of plant-based products'.	381	3.23 / (0.957)	4.763	380	<.001*
Composite EK	381	3.33 (0.767)	8.349	380	<.001*

Significance at 95% level

As evident in Table 4.15, the mean values for all items were > 3, and the findings indicated that there was significant agreement among respondents that 'they know more about environmental issues than the average person and they know the reasons why PB products help to protect the environment'. Additionally, there was significant agreement in terms of respondents indicating that they understand the environmental phrases and symbols on the packaging of PB products. The significant composite score of 3.33 for EK reflects an overall significant, albeit weak agreement among the respondents, which indicates that young South African consumers perceive themselves to be marginally knowledgeable about environmental issues, are aware that PB products can help to reduce their carbon footprint and mitigate climate change, and they can interpret the environmental symbols and phrases found on the packaging of PB products.

4.7.8 Health Consciousness (HC)

Table 4.16 reflects the results for the HC construct, followed by a report on the results.

Table 4.16: Health Consciousness (HC)

HC	n	Mean / (SD)	T	df	p-value
HC 1 – 'I choose food carefully to ensure good health'.	381	3.53 / (1.097)	9.438	380	<.001*
HC 2 – 'I often think about health-related issues'.	381	3.93 / (0.933)	19.430	380	<.001*
HC 3 – 'I consider myself as a health-conscious consumer'.	381	3.50 / (1.080)	9.060	380	<.001*
Composite HC	381	3.65 (0.896)	14.241	380	<.001*

Significance at 95% level

All mean values were > 3 as depicted in Table 4.16 and the results indicated that there was significant agreement among respondents that they 'choose food carefully to ensure good health, often think about health-related issues and consider themself as a health-conscious consumer'. The significant composite score of 3.65 for HC reflects the overall significant, but weak agreement among the respondents and implies that young South African consumers are marginally health-conscious individuals, as they care about protecting their health, due to their concern about health-related issues.

4.7.9 Concerns about the COVID-19 Pandemic (CC19P)

Table 4.17 reflects the results for the CC19P variable, followed by a report on the results.

Table 4.17: Concerns about the COVID-19 Pandemic (CC19P)

CC19P	n	Mean / (SD)	T	df	p-value
CC19P 1 – 'I am scared of dying from COVID-19'.	381	3.83 / (1.382)	11.756	380	<.001*
CC19P 2 – 'I am concerned that COVID-19 is just one of many zoonotic diseases we will experience'.	381	3.88 / (1.002)	17.084	380	<.001*
CC19P 3 – 'I am concerned about my health due to the COVID-19 pandemic'.	381	3.82 / (1.097)	14.666	380	<.001*
CC19P 4 – 'I am afraid of having long-term health problems as a result of the COVID-19 pandemic'.	381	3.96 / (1.125)	16.615	380	<.001*
CC19P 5 – 'I need to protect myself against the COVID-19 virus'.	381	4.35 / (0.904)	29.086	380	<.001*
Composite CC19P	381	3.97 (0.910)	20.761	380	<.001*

Significance at 95% level

With mean values > 3 for all items, as depicted in Table 4.17, there was significant agreement among respondents that they are scared of dying from COVID-19, concerned that COVID-19 is just one of many zoonotic diseases we will experience and concerned about their health due to the C19P. Moreover, there was significant agreement in terms of respondents indicating that they are afraid of having long-term health problems because of the C19P and they need to protect themselves against the COVID-19 virus. The significant composite score of 3.97 for the CC19P construct indicates the overall significant, albeit moderate agreement among the respondents, which demonstrates that young South African consumers are concerned about their health due to the C19P and they feel that they need to protect themselves against this virus and other future zoonoses.

4.8 Conclusion

The empirical findings of the study were presented in this chapter. The demographic characteristics of the sample was firstly reported upon, followed by the results of the food consumption behaviours and perceptions about COVID-19 in relation to PBP consumption. To determine the factorability of the data, EFA was executed, followed by SEM analysis, which was employed to evaluate the hypothesised model, that was developed in Chapter Two. Correlation analysis was conducted, and a significant positive correlation among the constructs

was observed, which indicated nomological validity. Results for the measurement model were presented, and in the measurement model, various items were dropped in order to attain reliability and construct validity – both convergent and discriminant validity and obtain an acceptable model fit. The model was, thus accepted and converted into a structural model, depicting causal relationships between the dependent variables and independent variables, which addressed the hypotheses of this study. The results highlighted that the paths between EK-ATT, EC-ATT, SN-PBPPI, MA-PBPPI, CC19P-ATT and ATT-PBPPI indicated a significant positive relationship, thus generating the explanatory model of the factors influencing young consumers' plant-based product (PBP) purchase intentions (Figure 4.10). Moreover, mediation analysis was conducted to assess whether ATT mediates the relationships between the independent variables HC, CC19P, EC, EK and the dependent variable PBPPI. It was established that ATT mediates the relationships between CC19P-PBPPI, EC-PBPPI and EK-PBPPI, with no significant mediating effect observed for HC and PBPPI.

Since the items in the original variables were dropped at either EFA or CFA stages, the descriptive statistics that related to the final variables of the accepted structural model were discussed after the inferential statistics to obtain a more in-depth idea of what the findings indicate. A summary of the results pertinent to each construct was presented in tables and only the items reflected in the structural model were reported upon, along with their composite scores. The results indicated that the respondents would expect to purchase PB products in the future due to its positive environmental contribution and they like the idea of purchasing PB products, as purchasing PB products over conventional products makes them feel like they are personally contributing to something better.

The results also revealed that respondents believe that major social and political changes as well as anti-pollution laws are necessary for the protection of the natural environment, and respondents indicated that they know the reasons why PB products help to protect the environment. It was also discovered that the respondents are health-conscious, often think about health-related issues and are concerned about their health due to the C19P. The findings also revealed that respondents believe that the consumption of PB products is necessary to improve individuals' health and immunity and help to reduce future zoonotic outbreaks, and there was concern among respondents that COVID-19 is just one of the many zoonotic diseases that humanity will experience. However, it was established that the pandemic did not increase respondents' PB consumption.

Additionally, it was found that most of the respondents have tried PB products, with a small portion who consume PB products daily, giving rise to the discernible trend towards PB lifestyles in SA. On the contrary, most of the respondents indicated that they consume animal-based products daily.

Chapter Five sets out to summarise the main findings emanating from the study, in relation to each objective. Moreover, the contributions of the study, which include the theoretical, methodological, and practical implications are discussed. This is followed by the limitations of the study, which provide possible recommendations for future research.

CHAPTER FIVE: CONCLUSION, LIMITATIONS AND RECOMMENDATIONS

5.1 Introduction

There is robust evidence suggesting that a plant-based diet or reduction in meat consumption has a positive impact on both human and planetary health, and reduce carbon emissions, therefore sustainable dietary choices can aid in the preservation of ecosystems and prevent biodiversity loss. Anthropogenic climate change or human-caused climate change has unequivocally affected every biome on earth, with irreversible damage to some ecosystems, and it is only intensifying, during what the IPCC calls the 'critical decade' in which humanity needs to act now to mitigate this existential crisis. At COP27 in 2022, UN Secretary-General, Antonio Guterres, presented 'a warning for world leaders': "We are on a highway to climate hell with our foot on the accelerator. Our planet is fast approaching tipping points that will make climate chaos irreversible. We need urgent climate action" (UN, 2022: para 2). Groundbreaking evidence from a new study, that updated the planetary boundaries framework in September 2023, show how human activities are impacting the planet; consequently, "six out of the nine planetary boundaries have been transgressed", indicating that earth is no longer operating in the safe zone for humanity (Richardson et al., 2023, p. 9). As GHG emissions and global temperatures reach record breaking levels, both governments and firms have pledged to keep global warming to no more than 1.5°C, by reducing carbon emissions to 43% in 2030, then to 60% by 2035 and attaining net-zero carbon emissions by 2050, as declared in the Paris Agreement and IPCC (IPCC, 2023, p. 92; UNEP, 2023a, pp. 28-30). Scientists at NASA's *Goddard Institute for Space Studies*, revealed that July 2023 was the hottest month ever recorded on earth, marginally breaching the 1.5°C global warming threshold framed by the Paris Agreement and above the pre-industrial average for 1850-1900 (Copernicus, 2023: para 1-2; NASA, 2023: para 1). Consequently, this has triggered extreme weather patterns marked by heatwaves, wildfires and heavy rainfall in Europe, North America, Africa, Middle East, and Asia, with 2023 set to become the hottest year in recorded human history, according to climate scientist and energy systems analyst, Zeke Hausfather (Hausfather, 2023: para 1).

SA, like other countries across the world, is vulnerable to natural disasters caused by anthropogenic climate change, and over the years, severe weather including strong winds,

heavy rain, drought, heatwaves, wildfires, flooding, and rising sea levels have been observed, with these conditions exacerbating due to climate change. According to Charitar (2022: para 1) and WitsUniversity (2023: para 1), in April 2022, extreme flooding swept the KwaZulu-Natal province of SA, in what has been coined as the most catastrophic natural disaster in the province, which resulted in 400 fatalities and caused severe damage to homes, businesses, infrastructure, and negatively affected crops and livestock. More recently, in November 2023, SA recorded an all-time national temperature record of 43°C, with "the months of June, July, August, September, and October labelled as the hottest months since the mid-1800s" (CarbonBrief, 2023: para 4; ENCA, 2023: para 1).

The COVID-19 pandemic had a tremendous impact on individuals' purchasing habits and dietary patterns, which initiated the growing trend of plant-based food consumption and meat reduction that intensified during the pandemic. Globally and more notably in SA, the pandemic sparked a wave of plant-based product food consumption among consumers due to the health and nutrition benefits, as individuals became more conscious of a healthy lifestyle and reduced their reliance on animal-derived ingredients – associated with increased disease risk, higher GHG emissions, environmental degradation and animal suffering.

It was indicated in Chapter Three that students constitute a significant portion of the South African consumer market, and it is not surprising that in 2023, the median age in SA was 27.6 years (Worldometer, 2023a: para 3). Hence, the actions of this consumer cohort will play a pivotal role in determining the future of the green movement in SA. According to Meyer (2015, p. 108), research posits that higher education levels are associated with pro-environmental behaviours among individuals. Thus, it may be expected that university students are more likely to influence the environmental awareness and concern about the natural environment among the general youth population in SA. There is also a strong possibility that this cohort will become key opinion leaders, influencers, or trendsetters in society and significant in terms of the country's green purchase intentions and environmental consciousness (Ndofirepi & Matema, 2019, p. 17). In the same vein, this consumer cohort is more likely to become advocates for sustainable change in lifestyle and dietary habits (Orea-Giner & Fusté-Forné, 2023, pp. 336-337; Reddy, 2023: para 1; Zhanda, Dzvimbo, & Chitongo, 2021, p. 11).

Understanding the factors that influence young South African consumers' plant-based product purchase intentions contributes to the establishment of green marketing strategies and the

creation and implementation of environmental and health awareness campaigns and activities that encourage behavioural change at the individual and societal levels. Moreover, understanding these factors may assist in persuading this cohort to be more environmentally friendly, health conscious, foster a more sustainable lifestyle and drive sustainable consumption in the future. Therefore, the purpose of this study was to understand young South African consumers' plant-based product purchase intentions and determine the level of importance of the traditional green behaviour antecedents influencing plant-based product purchase intention during the global climate crisis and COVID-19 pandemic, compared to health consciousness and concerns about the COVID-19 pandemic and determine whether these two variables are catalysts for sustainable change in lifestyle and dietary habits. This research aligns with SDG 12 and SDG 13, and underscores the urgency for governments, enterprises, and society to reduce reliance on meat consumption and carbon emissions in order to reverse the climate crisis, not just for the present but to safeguard the well-being and welfare of future generations.

This concluding chapter begins with the overview of the study, after which the main findings of the study are reviewed in accordance with the research objectives of the study and extant literature. This is followed by a depiction of the explanatory model of the factors influencing young consumers' plant-based product purchase intentions (Figure 5.1). Thereafter, the contributions of the study, discussing the theoretical, methodological, and practical implications and recommendations for governments, policymakers and green marketing practitioners are presented, followed by the recommendations aimed at the producers of plant-based products. This leads into an elucidation on the limitations of the study, where recommendations for future research are provided, followed by the closing remarks.

An overview of the study is presented in the next section.

5.2 Overview of the Study

As stated in Chapter One, the purpose of this study was to understand young South African consumers' plant-based product purchase intentions and determine the level of importance of the traditional green behaviour antecedents that influence plant-based product purchase intention during the global climate crisis and COVID-19 pandemic, compared to health consciousness and concerns about the COVID-19 pandemic, and determine whether concerns about the COVID-19 pandemic and health consciousness are catalysts for sustainable change

in lifestyle and dietary habits. The purpose was also to investigate the mediating role of attitude towards plant-based products in the relationship between the independent variables of environmental knowledge, environmental concern, health consciousness and concerns about the COVID-19 pandemic, and plant-based product purchase intention. To gain insight into these factors, with reference to the purpose, a comprehensive literature review based on the traditional green behaviour antecedents along with health consciousness and concerns about the COVID-19 pandemic was conducted in tandem with a discussion on young consumers, plant-based products, the COVID-19 pandemic and global climate crisis. Essentially, to attain the purpose of the study, this chapter confirms whether the research objectives were achieved.

A synopsis of the preceding chapters is highlighted next.

5.2.1 Synopsis of Each Chapter

Chapter One

Chapter One presented the background to the global climate crisis, COVID-19 pandemic, how a plant-based diet provides an effective defence against zoonosis and is more environmentally friendly than diets rich in animal products, and how young consumers are dubbed the 'green and PETA generation'. The motivation for the study and research problem were also provided, where it was established that several studies revealed that young consumers exhibit green behaviour in light of the global climate crisis, but these studies have been conducted abroad, with limited studies conducted in SA that used the selected traditional green behaviour antecedents for this study. Furthermore, apart from the global climate crisis, there is the COVID-19 pandemic, and it is unclear what role the concerns about the COVID-19 pandemic variable plays in influencing young consumers' plant-based product purchase intentions. Hence, the impetus behind this research is to bridge this gap in extant literature, by taking into consideration the traditional green behaviour antecedents affecting young consumers' plant-based product purchase intentions, which previous studies conducted in SA did not consider, and addressing the health concerns surrounding the COVID-19 pandemic as a possible catalyst for plant-based product purchase intention. Due to this gap in literature, the purpose of the study and overarching research question were developed. Thereafter, five research objectives were formulated and an introduction to the literature review was presented.

The development of the conceptual framework, based on the Theory of Planned Behaviour (TPB) and derived from the following frameworks – the extended TPB model by Maichum et

al. (2016); the proposed theoretical framework by Yadav and Pathak (2016) and the grounded theory framework deduced from the research conducted by Qi et al. (2020), were briefly examined, and a more in-depth discussion was provided in Chapter Two. From these three frameworks, only certain green behaviour antecedents thought to predict plant-based product purchase intention, in tandem with health consciousness and concerns about the COVID-19 pandemic, were selected for the purpose of this study and this selection was investigated since they are currently under-researched in SA. The conceptual framework, depicting the factors that influence young consumers' plant-based product purchase intentions during the global climate crisis and COVID-19 pandemic was developed and features the nine constructs, which formulated the hypotheses. Based on this framework, 12 hypotheses were developed to determine the relationships among these variables. Plant-based product purchase intention was introduced as the dependent variable, with the independent variables being environmental knowledge, subjective norm, moral attitude, perceived behavioural control, attitude towards plant-based products, health consciousness, concerns about the COVID-19 pandemic and environmental concern. Attitude towards plant-based products was introduced as the possible mediating variable for environmental concern, environmental knowledge, health consciousness and concerns about the COVID-19 pandemic. The remainder of the chapter featured an introduction to the research methodology, de-limitations, ethical considerations, and contribution of the study.

Chapter Two

The purpose of Chapter Two was to provide a comprehensive review of the South African and international literature pertinent to the global climate crisis, COVID-19 pandemic and plant-based product purchase intentions among young consumers. The selected traditional green behaviour antecedents that constitute the conceptual framework, which was used to explore the factors that influence the plant-based product purchase intentions of young consumers, were also discussed. The chapter began with a discussion on the global climate crisis, with evidence suggesting that humanity is in a state of planetary emergency and individuals need to act now to ensure sustainable living and the well-being of planet earth. It was also indicated that the high consumption of meat, animal agriculture and deforestation contribute towards global warming. Green consumer behaviour was explained, followed by green purchase intention, the factors affecting green purchase intention and green products. Plant-based products and a plant-based diet were also discussed, and it was revealed that there has been an increase in the plant-based product sales across the globe as more individuals are shifting towards a plant-based diet.

Next, the plant-based sector in SA was discussed, and it was discovered that the interest in veganism and the shift towards a plant-based diet is at an all-time high. Moreover, the plant-based diet and its impact on the environment, animal welfare and human health were highlighted, and previous research indicated that due to environmental issues, apart from health and ethical concerns, individuals are motivated to reduce their meat consumption or eliminate meat and animal products from their diet. Thereafter, the COVID-19 pandemic and zoonotic diseases were discussed, followed by the COVID-19 pandemic and a plant-based diet, where it was established that the COVID-19 pandemic has been a catalyst for the increased sales of plant-based products across the world, as there is a plethora of illnesses associated with a high consumption of red meat and it also increases one's risk of contracting zoonotic diseases. The plant-based revolution and plant-based product purchase intention among young consumers were discussed, which revealed that many young consumers are passionate about animal welfare, the environment, and their health, hence they are willing to reduce or avoid meat consumption. This was followed by a discussion on young South African consumers' plant-based product purchase intentions, with evidence asserting that the topic of plant-based product purchase intentions among young consumers in SA is relatively under-researched, albeit the evidence that was available suggested that young South African consumers are concerned about the natural environment and climate change and are embracing sustainable lifestyles and consumption. Furthermore, the evidence revealed that the South African youth market constitutes a significant and substantial consumer market segment, and they are ecologically aware trendsetters and influencers, the trailblazers in the environmental movement.

Thereafter, a comprehensive discussion on the conceptual framework was presented followed by the variable and hypotheses development in the conceptual model, where each of the 12 hypotheses were discussed and justified. The model proposed that moral attitude, subjective norm, perceived behavioural control, attitude towards plant-based products, health consciousness, concerns about the COVID-19 pandemic, environmental knowledge and environmental concern are significant predictors of plant-based product purchase intention, and attitude towards plant-based products being a possible mediating variable for environmental knowledge, environmental concern, health consciousness, and concerns about the COVID-19 pandemic.

Chapter Three

The research methodology applied in this study was presented in this chapter. A descriptive-correlational empirical research design model guided this study. The research approach adopted was quantitative with a cross-sectional time horizon. The target population comprised of the undergraduate (UG) and postgraduate (PG) students registered at the University of KwaZulu-Natal's five campus sites, namely Westville Campus, Howard College, Pietermaritzburg, Edgewood, and the Medical School, during 2023. The sampling frame comprised of all the UG and PG students enrolled at the five campus sites at UKZN with the inclusion criteria (students who were 18 to 40 years old, UG and PG students registered at UKZN) and the exclusion criteria (those students under 18 years of age and not enrolled at UKZN). It was noted that the researcher did not have a usable sampling frame to work with even though a list exists; because, at UKZN, due to the *POPIA Act*, the researcher was not allowed to utilise the list, therefore, a non-probability sample method was employed.

The non-probability quota sampling method was selected in which the population was divided into five quotas according to the relevant campus sites and the respondents were proportionately drawn from the different campus sites based on the 45 015 students registered at UKZN during 2022. The sample size was 381, and based on the application of quota sampling, samples were drawn from each of the five campus sites. A self-administered questionnaire comprising of existing validated scales was used to collect data; however, the scale items were modified to better capture the plant-based product purchase intentions of young consumers; also, the scale items for the concerns about the COVID-19 pandemic construct were developed for the purpose of this study. Since some items have not been tested nor validated previously, the instrument was pre-tested.

To reveal additional findings pertinent to this research, two constructs were included in the data instrument – *Perceptions about COVID-19* and *Food Consumption Behaviours*; these constructs were not a part of the model in this study, albeit they revealed additional data about the respondents and related to Research Objectives One and Two. The statistical methods employed in this study were discussed and included descriptive statistics, factor analysis, multicollinearity, validity, internal consistency reliability, correlation analysis, structural equation modelling (SEM) and mediation analysis.

Chapter Four

Chapter Four provided a report on the current study's empirical findings. These findings are congruent with the research objectives formulated in Chapter One.

The main findings of the study are explored next.

5.3 Main Findings of the Study

The main findings of the study are discussed in this section, which are consistent with the research objectives specified in Chapter One. A closing discussion on each of the five objectives is presented next.

5.3.1 Young Consumers' Perceptions about Plant-based Products – Addressing Research Objective One

Research Objective One: To ascertain UKZN students' perceptions about plant-based products.

In terms of respondents' perceptions about plant-based products, there was significant agreement that the consumption of plant-based products is necessary to improve their health and immunity, which is consistent with human nutrition studies by Calder (2020, p. 13), Moszak, Szulińska, and Bogdański (2020, p. 12) and Samira et al. (2023, p. 185). Similarly, Arshad et al. (2020, p. 3975), Kim et al. (2021, p. 8) and Loh et al. (2021, pp. 9-10), revealed that a plant-based diet protects against the novel coronavirus by improving immunity. Respondents also indicated that the consumption of plant-based products will help to reduce future zoonotic outbreaks, as reinforced by Hayek (2022, pp. 3-4). In the same vein, multiple environmental epidemiology synthesis reports from the UNEP, in association with the *International Livestock Research Institute* (UNEP, 2020, p. 15) and the *UNEP Frontiers 2016* Report (UNEP, 2016, p. 22) have highlighted the correlation between zoonotic disease emergence and increased animal-based food consumption.

It is worth noting that although the respondents agreed that the consumption of plant-based products would help curtail future zoonosis and improve human health, these perceptions do not seem to influence their consumption habits, as there was disagreement that the pandemic had increased their plant-based product purchase intentions. Contrary to this finding, in their

study, Récky, Kádeková, Tkáč, and Košičiarová (2023, p. 671) found that during the pandemic, a plant-based diet was preferred over an animal-based one, among many Slovenian consumers, and there was also an increase in sales of plant-based foods and a decrease in animal meat. Upadhyay, Pal, Pandey, and Singh (2022, pp. 39-40) also found a statistically significant reduction in the consumption of fish, meat, and chicken during the pandemic, among consumers in the northeastern region of India. Similarly, in their study on Turkish consumers' eating habits during the COVID-19 pandemic, Bölek (2021, pp. 19-20) discovered that many respondents tried to consume more fruit and vegetables, however, the majority of them did not try to reduce their red meat consumption. Thus, based on the empirical evidence of this study, for these young South African consumers, the pandemic did not prompt an increase in plant-based product purchase intention, even though respondents perceived plant-based products as necessary to gain immunity and are effective in the prevention of the next zoonotic outbreak.

While the respondents agreed that the consumption of plant-based products is necessary to improve health and immunity and help to reduce future zoonotic outbreaks, such as COVID-19, they disagreed that the pandemic had increased their plant-based product purchase intentions. Moreover, these young South African consumers intend to purchase plant-based products in the future, due to, it seems, its positive environmental contribution and they are also willing to adopt plant-based brands for ecological reasons. The results also indicated that this cohort is keen to adopt a plant-based diet, but not at the expense of animal-based foods. Additionally, although very few consumers in this cohort have abandoned a meat-based diet in favour of a plant-based diet, the market for plant-based products does exist and has potential to grow within the South African consumer market.

To conclude in terms of Research Objective One, it seems that the global climate crisis might be a greater reason for interest in plant-based products than the COVID-19 pandemic, among South African consumers. However, this cohort believed that plant-based products would improve their health and prevent future pandemics, so this could also partially drive their plant-based product purchase intentions, but the COVID-19 pandemic did not drive immediate purchase intentions. Perhaps these young consumers did not perceive the pandemic to be a real threat to their health, because in SA it was perceived that the pandemic affected the elderly and immuno-compromised individuals rather than the young (Gordon, 2020: para 4; Vries, Mthembu, & Wegner, 2023, p. 55), but as they age, they intend to shift to plant-based products because they recognise both the health and the prevention of future pandemic benefits. Thus,

the shift towards plant-based product consumption seems to be driven more by ecological reasons rather than the pandemic. The specific roles of these variables – health consciousness and concerns about the COVID-19 pandemic, on plant-based product purchase intention, are covered in more detail in Section 5.3.4, addressing Research Objective Four.

5.3.2 The Extent and Nature of Young Consumers' Plant-based Product Adoption and Consumption – Addressing Research Objective Two

Research Objective Two: To determine the extent to which UKZN students have adopted and are willing to adopt plant-based products.

In relation to Objective Two, the results revealed that plant-based product adoption among the respondents is relatively low, while their meat consumption is high, with 41.5% who consume animal-based food at least once a week and 37% who consume this type of food product every day. The empirical evidence is consistent with the Scottish study conducted by Macdiarmid, Douglas, and Campbell (2015, p. 490) where it was revealed that respondents demonstrated reluctance to reduce meat consumption despite awareness of the negative environmental impacts of increased meat consumption. Pure plant-based food consumption, whereby respondents never consume animal-based food, represented only 2.4% of the sample, while 19.2% of respondents indicated that they consume animal-based food occasionally, that is, they have a predominately plant-based diet. The evidence thus reinforces the fact that SA is a meat-loving nation. In alignment with the evidence and according to the third instalment of the *Plate of the Nation 2022* report by Knorr and compiled by NielsenIQ, it was discovered that South African households are eating less vegetables and fill their plates with 27% meat, which has increased by 1% since 2021 (FoodStuffSA, 2023: para 2; StatisticsSouthAfrica, 2022b, p. 18). Moreover, Naidoo (2023: para: 3) stated that South African individuals consume 58kg of meat per annum, on average, and globally, SA ranks the 9th highest per capita consumption of beef, and the 11th highest per capita consumption of poultry.

Additionally, with reference to the plant-based food consumption, the results revealed that 11.3% of respondents consume plant-based products every day, whereas 34.1% indicated that they consume plant-based products once a week. Combining these figures with the 2.4% of respondents, who have never eaten animal-based food products, represents the market for plant-based products (47.8%), as they already regularly consume plant-based products, within this consumer cohort. With 91.1% of respondents who have tried plant-based products and

considering that 34.1% consume plant-based food once a week, this reflects an attempt, by young consumers, to incorporate plant-based products in their diets (embarking on movements, such as Meatless Monday or Meat-free Monday or abstaining from meat or animal-based food during some days of the week). Plant-based product trial is a significant finding in this study, indicating that plant-based products are slowly gaining popularity among this consumer cohort and there is a high interest in plant-based products, hence they are open to trying these products, which is congruent with other South African studies by Szejda et al. (2021, p. 10) and Tsvakirai, Nalley, Rider, Van Loo, and Tshehla (2023, p. 726). However, one in five respondents indicated that they consume plant-based products less than once a month, which demonstrates that plant-based products may be at the early stages of diffusion, even though this cohort is more environmentally concerned than the older generations, as evident in the studies by Fullerton and McCullough (2023, p. 14); Gomes, Lopes, and Nogueira (2023, p. 5); Kowalska, Ratajczyk, Manning, Bieniek, and Macik (2021, p. 1) and Witek and Kuźniar (2021, p. 12).

Furthermore, in the study conducted by Bryant, Szejda, Parekh, Deshpande, and Tse (2020, p. 4) who investigated the nature of acceptance and familiarity of plant-based meat alternatives in the US and emerging economies – India and China, it was discovered that plant-based consumption is relatively low in India and China where many consumers in these two countries indicated unfamiliarity towards plant-based meat alternatives, as they are not widely available or reported upon. Similarly, in the US, over 35% of the respondents were unfamiliar with plant-based meat alternatives. The lack of familiarity with plant-based food products needs to be addressed in order for individuals to adopt plant-based products, as familiarity was identified as one of the key factors that drive consumer acceptance of plant-based products (Onwezen, Bouwman, Reinders, & Dagevos, 2020, p. 9; Viroli, Kalmpourtzidou, & Cena, 2023, p. 7). According to Rickerby and Green (2024, p. 18), the lack of familiarly with and knowledge about plant-based products were also established as a barrier for individuals to adopt a plant-based diet in Australia.

Although very few consumers in this cohort have abandoned a meat-based diet in favour of a plant-based diet, the market for plant-based products does exist and has potential to grow within the South African consumer market. The empirical evidence depicts a higher percentage of respondents declaring their intentions towards plant-based food consumption (47.8%) compared to the study conducted in 2023, on plant-based meat alternatives in Italy, which amounted to 31.6% - the combined figure for daily and once a week plant-based consumption,

along with no meat consumption (Rizzo et al., 2023, p. 4). Similarly, plant-based consumption was also revealed to be relatively low in the 2021 study conducted in the UK (Alae-Carew et al., 2021, p. 5).

Table 4.9, in Chapter Four, depicts an overall positive intention to purchase plant-based products, among respondents and based on the composite score of 3.45 for plant-based product purchase intention, it can be deduced that young South African consumers intend to purchase plant-based products in the future, due to, it seems, its positive environmental contribution and they are also willing to adopt plant-based brands for ecological reasons. Therefore, young South African consumers intend to adopt plant-based products due to its reduction in environmental impact indicators, such as GHG emissions, and this is consistent with the narrative review that addressed the advantages of a plant-based diet on human and planetary health by Viroli et al. (2023, p. 5). The respondents also indicated confidence towards purchasing plant-based products; however, based on the significant composite score, the overall intention to purchase plant-based products is still weak among the young South African consumer cohort. If above 3 is the cutoff for agreement, there are 2 points between 3 and 5. Weak, but significant agreement = 3-3.66, moderate agreement = 3.67-4.33 and strong agreement = 4.34-5. So, although there is significant agreement that young South African consumers intend to purchase plant-based products, this intention is not strong, but there is at least intention which is a positive sign for the plant-based product sector in SA and the environment as a whole.

What is interesting to note is that the respondents were not sure on whether they agreed or disagreed on planning to spend more on plant-based products rather than animal-based food products, which could denote that they are keen to adopt a plant-based diet, but not at the expense of animal-based foods. Many South Africans cannot afford to eat healthily, which is in line with the difficult economic climate that SA is currently in; youth spending has decreased, predominantly on food, bringing the level of spend down (Isaacs, 2023: para 3; Ramalepe, 2023: para 1). Rizzo et al. (2023, p. 5) and Viroli et al. (2023, p. 5) indicated that the transition towards a plant-based diet may be more affordable in high income countries, as higher income increases the likelihood of plant-based product purchase intentions. Correspondingly, Mhlophe (2016, p. 21) also found that premium pricing of plant-based products discouraged individuals in developing countries, such as SA, from purchasing plant-based products. South Africans, also, consume large amounts of meat and the study published

in the journal, *Appetite*, revealed that meat consumption is not only a status symbol in SA, but also important for socialisation, since SA is a 'braai nation' where braai culture is a lifestyle, a part of South Africa's heritage (Bambridge-Sutton, 2023: para 3-4; Shea, 2023: para 4-5). Hence, their diet includes both plant-based and animal-based food products.

To conclude, in terms of Research Objective Two, plant-based product adoption among young South African consumers is still in its infancy, albeit gaining momentum, as this consumer cohort intends to purchase plant-based products due to, it seems, ecological reasons. Moreover, taken together, the conclusions of Research Objectives One and Two seem to indicate that the global climate crisis might be a greater reason for interest in plant-based products than the COVID-19 pandemic, among South African consumers.

5.3.3 The Role of Traditional Green Behaviour Antecedents on Plant-based Product Purchase Intention – Addressing Research Objective Three

Research Objective Three: To assess the role played by traditional green behaviour antecedents, such as environmental knowledge, environmental concern, attitude towards plant-based products, moral attitude, subjective norm and perceived behavioural control on plant-based product purchase intention.

Exploratory factor analysis (EFA) was conducted, and nine factors were extracted, namely plant-based product purchase intention, concerns about the COVID-19 pandemic, moral attitude, health consciousness, subjective norm, environmental concern, perceived behavioural control, environmental knowledge, and attitude towards plant-based products. These nine factors explained 53.17% of the total variance. SEM analysis was conducted to test the model for all the hypotheses and the relationships among the variables, as specified in Chapter Four, (Figure 4.8), which was converted into a structural model depicted in Figure 4.9, illustrating the directional paths, that were significant, between the latent variables or constructs. Moreover, this model also addressed the last two research objectives. The findings from the SEM analysis indicate that this integrated model, illustrated in Figure 5.1, is useful in predicting young consumers' plant-based product purchase intentions during the COVID-19 pandemic (or a future zoonosis or pandemic) and the global climate crisis. It is also useful for future studies measuring plant-based product purchase intention and consumption during future global health and climate crises, within the context of an emerging market, such as SA.

A closing discussion on each construct, based on the empirical findings and in relation to addressing Research Objective Three, is provided below. Thereafter, a discussion on Research Objective Four is presented in Section 5.3.4.

a) Attitude towards Plant-based Products

The composite score of 4.03 for attitude towards plant-based products demonstrates that young consumers in SA have an overall positive attitude towards plant-based products. This is authenticated by the green product studies by Alam et al. (2023, p. 10) and Lestari, Hanifa, and Hartawan (2020, p. 5). Correspondingly, in the study that measured Taiwanese consumers' attitudes towards plant-based food products, Chen (2022, p. 8) found that the respondents liked the idea of consuming plant-based products, as it was a good idea and wise choice to do so. Furthermore, Ajzen (1991, p. 188) observed that when an individual has a favourable attitude towards a particular behaviour, the stronger the individual's intention to perform that behaviour.

From the SEM analysis, attitude towards plant-based products, one of the core variables of the TPB, had a significant positive influence on plant-based purchase intention, and it was also the strongest predictor of plant-based product purchase intention of the nine constructs. This was also observed in the green purchase behaviour studies conducted in Malaysia and India, by Ogiemwonyi et al. (2023, p. 7) and Paul et al. (2016, p. 129). The findings from the current study echo the extant research on green purchase behaviour, conducted in other emerging economies, namely in Iraq, by Abdulsahib et al. (2019, p. 876), in Indonesia, by Aisyah, Suroso, and Suwandari (2020, p. 806), in Vietnam, by Le and Nguyen (2022, p. 11), in Thailand, by Maichum et al. (2016, p. 12), in Malaysia, by Pang, Tan, and Lau (2023, p. 140) and in Bangladesh, by Zheng et al. (2020, p. 17).

The evidence from the current study also resonates with the findings of Naidoo and Ramatsetse (2016, p. 84) who discovered that attitude towards organic food had a significant relationship with the purchase intention of organic food among South Africans. Similarly, Dilotsotlhe (2021, p. 11) discovered that attitude had a significant impact on green purchase intention among South African consumers. Moreover, the findings from the current study is in line with the findings of Fatoki (2023, p. 572) who found that attitude towards green products is significantly positively related to green product purchase intention and behaviour, among university students in SA. Conversely, the South African study conducted in 2020, pre-

pandemic, revealed that attitude did not have a significant positive influence on purchase intention towards environmentally friendly products (Koloba, 2020, p. 44). Contradictory research by Alalei and Jan (2023, p. 59) and Setyawan et al. (2018, p. 151) also observed that attitude did not influence consumers' green purchase intentions in Algeria and Indonesia, respectively.

Nonetheless, in this study, it can be inferred that young South African consumers appear to be concerned about the environment; as they indicated that purchasing plant-based products would be good, thus firms should target this cohort due to their significantly positive attitudes towards plant-based products, and attitude being the greatest predictor of purchase intentions. The changing impact compared to past studies may be because young South African individuals have been found to no longer be willing to be passive bystanders when their lives are at risk, being negatively impacted by climate change and environmental degradation (UNICEF, 2023: para 5). Hence, the findings suggest that when young consumers develop a positive attitude towards plant-based products, they are likely to have the intention to purchase plant-based products.

It can be concluded that attitude towards plant-based products significantly impacts young South African consumers' intentions to purchase plant-based products and as their attitudes were positive, this is an important variable for marketers to focus on for increasing the market for plant-based products. Thus, with reference to Research Objective Three, the evidence confirms that attitude towards plant-based products has a significant positive influence on plant-based product purchase intention among young South African consumers.

b) Moral Attitude

Moral attitude refers to an individual's self-evaluation that results from their anticipated adherence to their moral values (Qi & Ploeger, 2021, p. 4). In this study, moral attitude had a composite score of 3.84, thus indicating that when young consumers purchase plant-based food products, they feel like they are personally contributing towards something better and doing the morally right thing. Alam et al. (2023, p. 6) postulated that there is a significant connection between consumers' willingness to use environmentally sustainable products and moral obligation. According to Hwang, Lee, and Diddi (2015, p. 4), a sense of ethical obligation may influence consumer decision-making, especially when social and environmental issues are very important. Thus, it can be declared that young consumers may feel guilty for not purchasing

plant-based products because of their ethical and moral obligations towards society and possibly the environment. They believe that purchasing plant-based products is the right thing to do, and it makes them feel good. Moral attitude also had a significant, albeit small, positive influence on plant-based product purchase intention. As such, young South African consumers have a moral attitude towards plant-based products, which positively influences their purchase intentions.

Alam et al. (2023, p. 11) and Ogiemwonyi and Jan (2023, p. 8) discovered that moral obligation has a positive impact on consumers' willingness to utilise green products, which ultimately influences green consumption, and this is congruent with the empirical evidence of the current study. Similarly, previous research conducted by Imani, Allahyari, Bondori, Al, and Sawicka (2021, p. 8) and Yadav and Pathak (2016, p. 126) also affirms a linkage between moral attitude and green purchase intention, where moral attitude was found to have a significant effect on young consumers' intentions to consume organic food products, within emerging markets. In the same vein, Tian, Sun, Wang, Su, and Li (2022, p. 9) revealed that moral judgment had a significant positive influence on green purchase intention, thus indicating that during their decision-making, consumers use their own moral standards to determine whether buying green products is morally right or wrong. Moral attitude also demonstrates consumers' proclivity to consume green or PB products, as it not only contributes towards environmental sustainability, but also has a favourable effect on consumers' health and well-being and conjures up feelings of ethics and philanthropy concerns surrounding the welfare of people, animals, and the environment, as Hain (2017, p. 74) posits.

The small impact of moral attitude on plant-based product purchase intention may be because, at this stage, many of the young South African consumers are not actually substituting plant-based products for meat products, and it was also discovered that this cohort is keen to adopt a plant-based diet, but not at the expense of animal-based foods. Subsequently, it can be deduced that the purchase of plant-based products, over animal-based products, among young consumers, is consistent with positive moral factors. Likewise, in their study, Lima, Costa, and Félix (2019, p. 76) discovered that consumers feel guilty when not choosing sustainable or green products. Thus, it is likely that young South African consumers may feel guilty when they do not purchase or use plant-based products or engage in responsible consumption, which is driven by their moral obligation towards society and possibly the environment.

It can be concluded that when young consumers think that purchasing plant-based products is the right thing to do, they are more likely to perform the behaviour, thus reflecting altruism among this cohort. Therefore, this consumer cohort feels that it is a moral norm to purchase PB food products. The moderately high moral attitude aggregate, therefore, indicates that there should be relatively good purchase intention towards plant-based products, among young consumers and the future market potential for these products.

Hence, with reference to Research Objective Three, it can be concluded that moral attitude has a significant positive influence on plant-based product purchase intention among young South African consumers.

c) Subjective Norm

According to Ham, Jeger, and Ivković (2015, p. 740), subjective norms refer to the conviction that a significant individual or group of individuals will support and endorse a specific behaviour. With a composite score of 2.73 for subjective norm, the other core TPB variable, this low aggregate implies that the respondents significantly disagree that the important social influences (family members and friends) play a significant role when it comes to influencing their decisions to purchase plant-based products. Likewise, Irawan and Darmayanti (2012, p. 9) also discovered that university students in Indonesia did not engage in discussions with their family members and friends about environmental issues nor environmentally friendly products. Thus, the overall disagreement with the subjective norm statements could perhaps indicate that plant-based product purchasing is more an individual decision than a social one, as young consumers do not interact with their family members and friends about plant-based products and environmental issues, and they do not feel that there is social pressure or influence from family members and friends to perform the behaviour of purchasing plant-based products. Taken together with the moral attitude results above, it could also indicate that young consumers do not believe that society (family members and friends) generally approves or supports their decision to purchase plant-based products, but perhaps, this makes them feel they need to personally take action. As such, young South African consumers do not believe they experience subjective norms (social influence from significant others, such as family members and friends), in relation to plant-based product purchase.

As previously discussed under the moral attitude construct section, young consumers feel that they have a moral obligation to purchase PB products, as it makes them feel good, thus

prompting intention to purchase. Similarly, young consumers could also, perhaps, not believe that subjective norms for this behaviour exist, so, they feel that they must do this themselves (a moral and altruistic motive), which ultimately affects their purchase intention. The interrelationship between social norms and moral attitudes and their links to purchase intentions is something that should be investigated further in future research.

Despite the significant disagreement with the statements, when investigated alongside the other independent variables in the SEM analysis, subjective norm had a significant positive influence on plant-based product purchase intention, although it had a lower impact on plant-based product purchase intention than attitude towards plant-based products, environmental concern, and environmental knowledge. This finding supports previous studies conducted in emerging economies by Abdulsahib, Eneizan, and Alabboodi (2019, p. 1211); Aisyah, Suroso, and Suwandari (2020, p. 807); Alalei and Jan (2023, p. 60); Imani et al. (2021, p. 7); Maichum et al. (2016, p. 12); Pang, Tan, and Lau (2023, p. 140); Setyawan et al. (2018, pp. 151-152) and Synodinos (2014, p. 169), as well as previous research conducted in the highly developed, UK (McInnes, Carstairs, & Cecil, 2023, p. 6). The study by Ogiemwonyi et al. (2023, p. 6) also validates this finding, where it was established that subjective norm accelerates the green purchase behaviour of Malaysian consumers. Consistent with this finding, Mhlophe (2016, p. 22) and Naidoo and Ramatsetse (2016, p. 84) found that there was a significant correlation between subjective norm and the purchase intention of organic food among South African consumers.

However, this finding contradicts the research by Pandey, Ritz, and Perez-Cueto (2021, p. 8); Paul et al. (2016, p. 129) and Yadav and Pathak (2016, p. 126) where subjective norm failed to influence the purchase intention of plant-based yogurt alternatives in Denmark and organic and green food in India. The research by Alam et al. (2023, p. 14) is also incongruent with the finding of the current study, where it was discovered that social influence (or subjective norms) did not influence Nigerian consumers' willingness to use green products. The same was confirmed by Hasan and Suciarto (2020, pp. 141-142), where subjective norm had no significant influence on organic food purchase intention among consumers in Indonesia. Likewise, the South African study conducted in 2020, prior to the pandemic, by Koloba (2020, pp. 44-45) found that subjective norm did not influence the purchase intentions of environmentally friendly products among consumers. Fatoki (2023, p. 572) also found an insignificant relationship between subjective norms and green product purchase intention,

among South African university students. This inconsistency in the findings reflected in the subjective norm construct could be due to the different research variables and methodology employed in this study, the different target respondents or the different country and cultural settings in comparison to other researchers, thus depicting the multifaceted nature of green food purchase intention.

It can be concluded that, with reference to Research Objective Three, although there was significant overall disagreement with the subjective norm statements (possibly due to purchase intention being an individual decision devoid of social influence or pressure), subjective norm has a significant positive influence on plant-based product purchase intention among young South African consumers.

d) Perceived Behavioural Control

Perceived behavioural control refers to "the perceived ease or difficulty of performing the behaviour" (Ajzen, 2002, p. 665). With a composite score of 3.45 for perceived behavioural control, this implies that young South African consumers believe that they have the resources and opportunities to purchase plant-based products, due to the product placement and availability of plant-based products in the supermarkets that they frequent. This supports the research by Gupta (2021, pp. 130-131) who found that the ability to buy and the availability of green products among university students in India influenced their perceived behavioural control. Witek and Kuźniar (2024, p. 3) indicated that consumers are less likely to engage in green food product purchase if they feel that the process of buying a green food product is challenging or that neither the buyer nor the environment will benefit from the effort involved. However, in the current study, it was discovered that the respondents perceived limited difficulty when it comes to purchasing plant-based food products, as they are not faced with the internal and external hinderances that influence their plant-based product purchasing, namely not having the resources or opportunities to purchase plant-based products, which is contradictory to previous research where consumers complained about the lack of availability and resources (Barbarossa & Pastore, 2015, p. 201; Fatoki, 2023, p. 572). So, when it comes to the purchase intentions of plant-based products, price and availability were not perceived as deterrents among the respondents in the current study.

Thus, an assumption can be made that young consumers in SA can easily purchase plant-based products, which contradicts the South African study by Fatoki (2023, p. 572), where it was

found that university students are unlikely to purchase green products due to perceived barriers related to costs and availability. However, perceived behavioural control was not found to be strong enough to prompt plant-based product purchase intention, as the influence is very slightly negative, but not significant. Consequently, having the ability to purchase plant-based products is not enough to predict purchase intention among young South African consumers.

Even though there was significant overall agreement with the perceived behavioural control statements among the respondents in this study, this variable did not significantly affect plant-based product purchase intention. From the three core TPB variables, perceived behavioural control was not significant in motivating plant-based product purchase intention among young consumers. Likewise, Onel (2016, p. 13) revealed that perceived behavioural control was of no substantial relevance to consumers' intentions to purchase green products. Correspondingly, the study by McInnes et al. (2023, p. 6) in the UK, discovered that there was a lack of independence and parental control over dietary choices, an inadequate knowledge of a plant-based diet, and an inconvenience when following a plant-based diet, among young consumers, which acted as potential deterrents to a plant-based diet. Similarly, in the study conducted by Pang et al. (2023, p. 140), in Malaysia, it was revealed that self-efficacy, which is similar to perceived behavioural control, according to Ajzen (2002, p. 668), had no significant impact on organic food purchase intention among consumers. Conflicting research conducted in Iran, by Imani et al. (2021, p. 7), in Thailand, by Maichum et al. (2016, p. 12), and in India, by Paul et al. (2016, p. 129) and Yadav and Pathak (2016, p. 126) discovered that perceived behavioural control was a significant predictor of organic and green food purchase intention. Likewise, Fatoki (2023, p. 572) also found that perceived behavioural control was positively related to green product purchase intention among university students in SA, despite availability and cost issues. According to Setyawan et al. (2018, p. 151), empirical findings about green product intention and consumption are indeed varied, especially due to differences in research settings, thus there is opposing research to this finding.

Therefore, it can be concluded that even though the respondents in this study believe they have the resources and opportunities to purchase plant-based products, they did not respond to it by turning this into the act of purchase intention – perceived behavioural control was not strong enough to spur purchase intention. The evidence thus confirms that, with reference to Research Objective Three, perceived behavioural control does not have a significant influence on plant-based product purchase intention among young South African consumers.

e) Environmental Concern

Dunlap and Michelson (2002, p. 482) define environmental concern as the extent to which individuals are aware of environmental issues and support initiatives to address them or express a willingness to personally contribute to their resolution. In this study, environmental concern had a high composite score of 4.24, which implies that these young South African consumers are concerned about environmental conservation and sustainability, as they believe that major political, social, and legal changes are needed for environmental perseveration.

Despite respondents having high levels of environmental concern, this did not significantly impact or predict their purchase intentions towards plant-based products. In their studies on green purchase behaviour, Ogiemwonyi et al. (2023, p. 7) and Yadav and Pathak (2016, p. 126) observed that environmental concern did not possess any significant influence on consumers' intentions to purchase organic food in Malaysia and India, respectively. Likewise, Setyawan et al. (2018, p. 151) also observed that environmental concern did not positively influence consumers' green purchase intentions among university students in Indonesia. This contradicts previous research by Hoang Yen and Hoang (2023, p. 12); Imani et al. (2021, p. 8) and Siyal, Ahmed, Ahmad, Khan, and Xin (2021, p. 14), where environmental concern demonstrated a significant positive influence on green purchase intention among consumers in Vietnam, Iran and Pakistan, respectively. According to Koloba (2020, p. 46) and Setyawan et al. (2018, p. 151), research findings on green purchase behaviour is varied across nations, especially due to cultural differences and diverse research settings.

In this study, environmental concern did not significantly impact purchase intention because the environmental concern measures reflected societal changes (society, politics, and laws) needed in society to ensure environmental preservation and climate change mitigation. So, while respondents significantly agreed that these changes need to be made, this, alone, does not affect their individual intentions, perhaps, because they do not believe society (family members and friends) feels the same way. Young South African consumers do not believe societal norms for these behaviours exist; therefore, they feel that they must do this themselves, a moral obligation, which affects their intentions to purchase plant-based products. They feel that society is not doing enough to mitigate climate change and preserve the environment, hence their need for political, social, and legal changes, so they must take it upon themselves to act. Even if it is not a complete transition towards or an adoption of plant-based products, it

is, at least doing something to initiate a change – a step in the right direction; for example, embarking on Meat-free Monday or Veganuary.

It is interesting that only the societal items of the environmental concern scale were retained for this variable, after EFA and CFA, as the item that related to the individual, about whether they are willing to reduce their meat consumption to help protect the environment was statistically insignificant with a p-value = .682. This supports the discussion in Section 5.3.2, addressing Research Objective Two, pertaining to the actual levels of the consumption of plant-based food products and animal-based food products among the respondents. It was revealed that almost 70% of the respondents are incorporating plant-based products into their diets, at least once a month, but only 2.4% have transitioned completely to cut out meat from their diet; many respondents were unsure about how willing they were to reduce their meat intake, or by how much they were prepared to reduce it to help protect the environment. So, with the retention of the societal items for the environmental concern variable, this could, perhaps, be the explanation for why the respondents' high environmental concern levels did not affect their individual purchase intentions. Moreover, although the respondents are aware of the environmental issues, as they scored highly on the items for this variable, they did not respond to it, as they remained at the level of concern towards the environment, based on the societal changes. They did not actualise their concern into the act of purchase intention, as only the societal items were retained.

Together with the mediation effect this implies that when young consumers are concerned about the state of the environment and knowledgeable about environmental issues, they will have positive attitudes towards plant-based products, which in turn impacts purchase intentions. Consequently, it can be inferred that young consumers in SA are concerned about the state of the environment and this concern is expressed through their favourable attitudes towards plant-based products, which in turn impacts their purchase intentions. This could also explain respondents' shift to adopt plant-based products in their diet, which is driven more by ecological reasons, rather than the pandemic.

Thus, it can be concluded that, with reference to Research Objective Three, environmental concern does not have a significant direct influence on plant-based product purchase intention among young South African consumers, as it was not strong enough to influence purchase

intentions. However, environmental concern has a significant indirect influence through attitude towards plant-based products.

f) Environmental Knowledge

Environmental knowledge relates to having a broad understanding of the relationship between individuals and the environment, including facts about the natural environment and key ecosystems (Kim & Lee, 2023, p. 3). According to Tian et al. (2022, p. 3), when consumers are consciously aware of the impact and consequence of their green purchase behaviour and acknowledge the value of their purchase decisions, consumers' green purchase intentions will increase. With a composite score of 3.33 for environmental knowledge, this denotes that young South African consumers perceive themselves to be marginally knowledgeable about environmental issues, aware that plant-based products can help to reduce their carbon footprint and mitigate climate change, and they can interpret the environmental symbols and phrases found on the packaging of plant-based products. Even though respondents consider themselves to be marginally knowledgeable about environmental issues and plant-based products, this impact on purchase intention is not significant, and this knowledge does not predict young South African consumers' plant-based product purchase intentions.

Thus, the findings revealed that environmental knowledge was not a significant motivator of the purchase intentions for plant-based products among young consumers, however it had a significant indirect influence on plant-based product purchase intention through attitude towards plant-based products. The insignificant link between environmental knowledge and plant-based product purchase intention coincides with previous research conducted in Indonesia by Indriani et al. (2019, p. 633) and Simanjuntak et al. (2023, p. 11). This finding contradicts previous research also conducted in Indonesia by Fabiola and Mayangsari (2020, p. 102); Pratiwi et al. (2018, p. 100) and in Malaysia, by Putri et al. (2021, p. 207), who observed that environmental knowledge significantly and positively influenced green purchase intention. Similarly, according to Nguyen, Nguyen, Nguyen, Lobo, and Vu (2019, p. 12), when consumers have inadequate knowledge about plant-based products, they would be less inclined to purchase such products. Moreover, Kuźniar, Surmacz, and Wierzbiński (2021, p. 15) indicated that knowledge is important in determining the purchasing behaviour of young consumers. A significant indirect effect on plant-based product purchase intention through attitude towards plant-based products was, however, found.

The findings also suggest that even though environmental knowledge was marginally positive, the respondents did not act on it, as they stayed at the level of knowing and did not actualise their knowledge into the act of purchase intention. Thus, it can be concluded that, with reference to Research Objective Three, environmental knowledge does not have a significant influence on plant-based product purchase intention among young South African consumers, but it has a significant indirect influence through attitude towards plant-based products.

5.3.4 The Relative Roles of Health Consciousness and Concerns about the COVID-19 Pandemic on Plant-based Product Purchase Intention – Addressing Research Objective Four

Research Objective Four: To examine the relative roles of health consciousness and concerns about the COVID-19 pandemic on plant-based product purchase intention.

a) Health Consciousness

According to Kaur, Gangwar, Dash, Khan, and Alkhoraif (2024, p. 1193), health consciousness refers to the perception, awareness, knowledge, and motivation of individuals surrounding health-related issues. In this study, health consciousness obtained a composite score of 3.65, which indicates that the young South African consumers are marginally health conscious, and they care about protecting their health, due to their concerns about health-related issues. Similarly, in their study on organic food purchasing behaviour among South African consumers, Mkhize and Ellis (2019, pp. 6-7) also discovered that consumers considered themselves health conscious, however health consciousness had limited influence on organic food purchasing behaviour. Moreover, Devi, Singh, Roy, and Cúg (2023, p. 26) found that higher health consciousness levels increase the purchase intention of organic food among consumers in New Zealand and Fiji. However, in the current study, although, respondents perceived themselves to be marginally health consciousness, this had no bearing on purchase intention and attitude.

Previous research on the connection between health consciousness and organic and green food purchase intentions reported mixed findings, with a surfeit of studies declaring health consciousness as an important predictor of organic and green purchase intentions (Achchuthan & Velnampy, 2016, p. 94; Bryant et al., 2020, p. 7; Iqbal et al., 2021, p. 8; Katpia & Nuangjamnong, 2022; Kusumaningsih, Irianto, & Antriyandarti, 2019, p. 4; Qi & Ploeger,

2021, p. 11), while some refute it as a motive for prompting organic and green food purchase intentions (Alshammari, 2020, p. 6; Shrestha, 2020, p. 48; Zayed et al., 2022, p. 12).

In the current study, health consciousness had no significant influence on plant-based product purchase intentions either directly or indirectly through the mediator, attitude towards plant-based products. This could indicate that health consciousness did not develop a favourable attitude towards improving health through the consumption of plant-based products among the respondents, which could be attributed to the lack of information and promotional activities, available, pertinent to plant-based products (Alshammari, 2020, p. 6). The findings of the current study also reinforce those of Mhlophe (2016, p. 21), where it was revealed that the relationship between health consciousness and the purchase intention for organic food was not significant among South African consumers and the author attributed this to consumers relying more on dietary supplements and less on healthy food. According to Michaelidou and Hassan (2008, p. 177), this could suggest that health consciousness, as a predictor of organic and green purchase intentions, is declining. Thus, it can be assumed that health consciousness, cannot be considered as a strong motive to induce the green purchase intentions, among young South African consumers.

This finding contradicts that of Abdulsahib et al. (2019, p. 1211); Imani et al. (2021, p. 8) and Yu, Zubair, Rasheed, Khizar, and Imran (2021, pp. 7-8), who found that health consciousness was highly influential on consumer's purchase intentions and attitudes toward organic and green food in emerging nations. Likewise, Yadav and Pathak (2016, p. 126) and Zheng, Akter, Siddik, and Masukujjaman (2021, p. 10) also investigated health consciousness and found that it is a significant predictor of organic food purchasing among Indian and Bangladeshi consumers. Yang, Reza, Yang, Al Mamun, and Hayat (2024, p. 9) also found that health consciousness had a significant effect on Indonesian consumers' purchase intentions towards plant-based meat. The incongruency in the findings of this research indicate that the respondents in this study did not view health consciousness as an important driver of plant-based product purchase intention, although they consider themselves to be health conscious.

Given that Yount-André and Zembe (2023, p. 37) stated that, although veganism and vegetarianism are at an all-time high in SA, meat still remains as a national symbol of status, power and wealth. As such, the propensity to consume PB products was not as high as expected among the respondents and health may be viewed as an insignificant parameter when it comes

to food purchase decisions among young South African consumers. Although the respondents in this study were marginally health conscious, this has no bearing on purchase intention nor attitude and could indicate that the shift towards plant-based products among young South African consumers is more environmental than health related. It appears that climate change mitigation is more important to them than their health concerns. Moreover, since the respondents significantly disagreed that COVID-19 increased their plant-based product purchase intentions, they perceived that plant-based products improved health and immunity and would help prevent future pandemics. Hence, they believe in the link between health and plant-based products, but this association is not their impetus for starting to incorporate plant-based products into their diet, as, it was established under Research Objective Two, that they intended to consider switching to plant-based products for ecological reasons. This could explain why health consciousness was not a significant predictor for plant-based product purchase intention and attitude towards plant-based products among the respondents.

Thus, with reference to Research Objective Four, it can be concluded that health consciousness does not have a significant influence on plant-based product purchase intention among young South African consumers, nor was it a significant predictor for attitude towards plant-based products.

b) Concerns about the COVID-19 Pandemic

With a composite score of 3.97 for concerns about the COVID-19 pandemic, this indicates that young South African consumers are significantly concerned about their health due to the COVID-19 pandemic and feel that they need to protect themselves against this virus and other future zoonoses. The health concerns among the respondents, due to the pandemic, is consistent with that of Katpia and Nuangjamnong (2022, p. 40), where it was found that the pandemic had also influenced Thai consumers' health concerns.

However, in the current study, this concern about the COVID-19 pandemic did not spur plant-based product purchase intention among the respondents. Qi and Ploeger (2021, p. 10) found there was a strong and significant association between the impact of the pandemic and Chinese consumers' health concerns and that the pandemic had significantly influenced the green food purchase intentions among these consumers. Although the respondents in the current study were concerned about their health due to the pandemic, this concern did not significantly influence their plant-based product purchase intentions. Thus, the findings of this study

contradicts the research by Chen et al. (2021, p. 7); Hu et al. (2022, p. 13) and Jian, Yu, Yang, and Zeng (2020, p. 10), where it was established that the fear of the COVID-19 pandemic had a significant influence on Chinese and Malaysian consumers' green product consumption and behavioural intentions. Likewise, Katpia and Nuangjamnong (2022, p. 40) found that the pandemic had a significant influence on Thai consumers' green food purchase intentions, which is inconsistent with the findings of the current study. Contrary to this study, where it was revealed that the pandemic did not increase respondents' plant-based product purchase intentions, previous research conducted in the US and India revealed that the pandemic prompted a surge in healthy eating among individuals, galvanising an increase in fruit and vegetable consumption and a reduction in animal products (Jaeger, Vidal, Ares, Chheang, & Spinelli, 2021, p. 4; Valiyaveettil, 2020, p. 15).

With reference to Research Objective One, the respondents' perceptions of plant-based products revealed significant agreement that plant-based products would improve their health and prevent future zoonotic outbreaks. However, respondents disagreed that the pandemic had increased their plant-based product purchase intentions. Thus, it seems possible, as mentioned above, that the global climate crisis might be a greater reason for young South African consumers' interest in plant-based products, rather than the current COVID-19 pandemic, but, also, that future pandemic prevention might be the reason for the growing interest in plant-based products among young South African consumers. Additionally, respondents also indicated that they were unsure whether they would shift spend from animal-based food products to plant-based food products, but they did indicate that they intended to consider switching to plant-based products for ecological reasons. Paradoxically, in the current study, the evidence relating to respondents' perceptions about the link between the pandemic and plant-based product consumption and intention highlights that the pandemic did not increase their plant-based product purchase intentions, which could denote that young South African consumers are less likely to purchase plant-based products due to health concerns, as the pandemic did not galvanise healthy eating habits among them; the pandemic was not a primary reason for intentions. This reinforces the assumption that young South African consumers' plant-based product consumption is driven more by ecological reasons rather than by their concern for their health during the pandemic.

Thus, in this study, the respondents have high intentions to consume plant-based products, but it seems this is more due to their environmental concern and environmental knowledge

affecting their attitudes towards PB products, rather than the pandemic. Thus, young South African consumers believe in the correlation between health and PB products, however this is not their reason for starting to incorporate PB products into their diet.

The findings also suggest that even though the respondents scored marginally high on the concerns about the COVID-19 pandemic measures, they did not respond to it by actualising their concerns into the act of purchase intention. Therefore, it can be concluded that, with reference to Research Objective Four, concerns about the COVID-19 pandemic and health consciousness are not catalysts for sustainable change in lifestyle and dietary habits, as these variables have no significant effect on young South African consumers' plant-based product purchase intentions.

5.3.5 The Mediating Role of Attitude Towards Plant-based Products (ATT) – Addressing Research Objective Five

Research Objective Five: To explore the mediating effect of attitude towards plant-based products (ATT) on the relationships between environmental knowledge (EK), environmental concern (EC), health consciousness (HC) and concerns about the COVID-19 pandemic (CC19P) and plant-based product purchase intention (PBPPI).

The mediating role of attitude towards plant-based products in the relationship between the independent variables of environmental knowledge, environmental concern, health consciousness and concerns about the COVID-19 pandemic, and plant-based product purchase intention, was also investigated. A discussion on the mediation results is presented next.

The Mediating Role of Attitude Towards Plant-based Products on the Relationship between Environmental Knowledge and Plant-based Product Purchase Intention

In this study, a significant mediating effect was observed between environmental knowledge and plant-based product purchase intention, with a p-value=0.736 for the direct effect and p=.001* for the indirect effect. Environmental knowledge significantly and positively impacted consumers' attitudes towards plant-based products, thus serving as a predictor of plant-based product purchase intention entirely through attitude towards plant-based products, with full mediation. Indriani et al. (2019, pp. 632-633) also discovered full mediation with the role of

attitude and environmental knowledge towards green purchase intention among young consumers in Indonesia. Moreover, Zaremohzzabieh, Ismail, Ahrari, and Abu Samah (2021, p. 740) found that attitude performed partial mediation with environmental knowledge on green purchase intention. This is consistent with previous research from emerging economies, where environmental knowledge had a significant positive effect on attitude towards plant-based products (Maichum et al., 2016, p. 14; Putri et al., 2021, p. 207; Simanjuntak et al., 2023, p. 10). Moreover, understanding consumers' attitudes towards green products is a significant driver of environmentally conscious consumer behaviour and consumers with higher environmental knowledge have a higher ecological attitude than those without environmental knowledge (Maichum et al., 2016, p. 14; Simanjuntak et al., 2023, pp. 10-11).

Therefore, the findings indicate that the more knowledgeable or aware about environmental issues and green products young South African consumers are, the more environmentally conscious they are, and this will influence their attitudes toward plant-based products, which will ultimately lead to plant-based product purchase intention. Thus, the evidence confirms that, although environmental knowledge does not have a significant influence on plant-based product purchase intention among young South African consumers, it has an indirect influence through attitude towards plant-based products, where this influence is significant. Respondents in the current study demonstrated that they knew more than most individuals about the environment, why plant-based products protect the environment and understood the environment phases and symbols on plant-based products. The mediation shows that their knowledge contributes significantly to their positive attitudes toward plant-based products. Indriani et al. (2019, p. 633) indicated that environmental knowledge was important in influencing Egyptian consumers' attitudes to be more environmentally friendly, which positively impacted green purchase intention.

Thus, to conclude in terms of Research Objective Five, there is significant mediation between environmental knowledge and plant-based product purchase intention, denoting full mediation.

The Mediating Role of Attitude Towards Plant-based Products on the Relationship between Environmental Concern and Plant-based Product Purchase Intention

In this study, a significant mediation effect was observed between environmental concern and plant-based product purchase intention, with a p-value=0.104 for the direct effect and p=<.001*

for the indirect effect. Environmental concern significantly and positively impacted consumers' attitudes towards plant-based products, thus serving as a predictor of plant-based product purchase intention entirely through attitude towards plant-based products, with full mediation. Environmental concern had the strongest influence on attitude towards plant-based products, greater than environmental knowledge and concerns about the COVID-19 pandemic. This significant positive effect of environmental concern on attitude towards green products had also been captured in previous research from other emerging economies by Fontes, Moreira, and Carlos (2021, p. 258); Maichum et al. (2016, p. 14); Nguyen et al. (2019, p. 12); Paul et al. (2016, p. 129) and Yadav and Pathak (2016, p. 125).

This implies that the higher the concern towards the environment, the more positive the attitude towards plant-based products among young South African consumers and this attitude then impacts intentions to purchase plant-based products. Lestari et al. (2020, p. 5) underscored that when individuals have a greater concern for the environment, they are likely to have a positive attitude towards green products, which could eventually lead to green purchase intention. The significant mediation of environmental concern and plant-based product purchase intention by attitude towards plant-based products in the current study supports the research by Khaola et al. (2014, p. 367) where attitude towards green products fully mediated the relationship between environmental concern and green purchase intention among consumers in Lesotho. Similarly, Imani et al. (2021, p. 8) found that environmental concern significantly influenced the attitudes of young consumers towards the purchase of organic food, which is consistent with the current study.

Thus, to conclude in terms of Research Objective Five, there is significant mediation between environmental concern and plant-based product purchase intention, denoting full mediation.

The Mediating Role of Attitude Towards Plant-based Products on the Relationship between Health Consciousness and Plant-based Product Purchase Intention

In this study, no significant mediating effect was observed for health consciousness and plant-based product purchase intention, with a p-value=0.280 for the direct effect and p=0.934 for the indirect effect. The findings of the current study support the research by Michaelidou and Hassan (2008, p. 174) and Tarkiainen and Sundqvist (2005, p. 816) where health consciousness was found to be the least important motive shaping attitude towards organic food, signifying

the relationship between health consciousness and the attitude towards organic food as not significant. This finding also coincides with the study on young consumers' purchase intentions towards organic food by Su, Khaskheli, Raza, and Qamar (2022, p. 13) who found that health consciousness was not positively associated with attitude among young consumers in Pakistan. Kopplin and Rausch (2022, p. 1344) also found that health consciousness had no significant influence on young German consumers' attitudes and purchase intentions towards plant-based products.

Thus, to conclude in terms of Research Objective Five, no significant mediating effect was observed for health consciousness and plant-based product purchase intention. Moreover, health consciousness did not influence consumers' attitudes towards plant-based products, proving not to be a predictor of plant-based product purchase intention through attitude towards plant-based products.

The Mediating Role of Attitude Towards Plant-based Products on the Relationship between Concerns about the COVID-19 Pandemic and Plant-based Product Purchase Intention

In the current study, a significant mediation effect was found between concerns about the COVID-19 pandemic and plant-based product purchase intention, with a p-value=0.237 for the direct effect and p=.006* for the indirect effect. Although, the concerns about the COVID-19 pandemic variable was unable to provide any significant thrust concerning young consumers' purchase intentions towards plant-based products, an indirect influence on plant-based product purchase intention through attitude towards plant-based products was found. Thus, this variable serves as a predictor of plant-based product purchase intention through attitude towards plant-based products, with the weakest effect on attitude towards plant-based products, compared to environmental knowledge and environmental concern.

Research on the effect of the COVID-19 pandemic on attitude was conducted by Palau-Saumell et al. (2021, p. 293) in Spain, where it was established that the perceived risk of COVID-19 positively influenced consumers' attitudes towards locally produced foods, with an indirect influence on purchase intention through attitude. Based on the results of the current study, it can be concluded that the concerns about the pandemic positively influenced young South African consumers' attitudes towards plant-based products. This correlates with the Columbian

research by Gómez-Bayona, Valencia-Arias, García-Salirrosas, Espinoza-Requejo, and Moreno-López (2023, pp. 11-12), where it was discovered that the pandemic enhanced consumers' attitudes towards green products, due to individuals becoming more aware about the importance of such products.

Thus, to conclude in terms of Research Objective Five, attitude towards plant-based products proved to be a strong mediator for the relationship between concerns about the COVID-19 pandemic and plant-based product purchase intention, denoting full mediation.

The model portrayed in Figure 5.1 depicts that not all the explanatory variables have a significant positive influence on young South African consumers' purchase intentions toward plant-based products in light of the global climate crisis and COVID-19 pandemic. Based on the evidence, moral attitude, attitude towards plant-based products and subjective norm have a significant positive and direct influence on plant-based product purchase intention. Whereas attitude towards plant-based products significantly and fully mediated the impacts of environmental knowledge, environmental concern, and concerns about the COVID-19 pandemic.

Figure 5.1 represents the model of the factors influencing young consumers' plant-based product purchase intentions during the global climate crisis and COVID-19 pandemic.

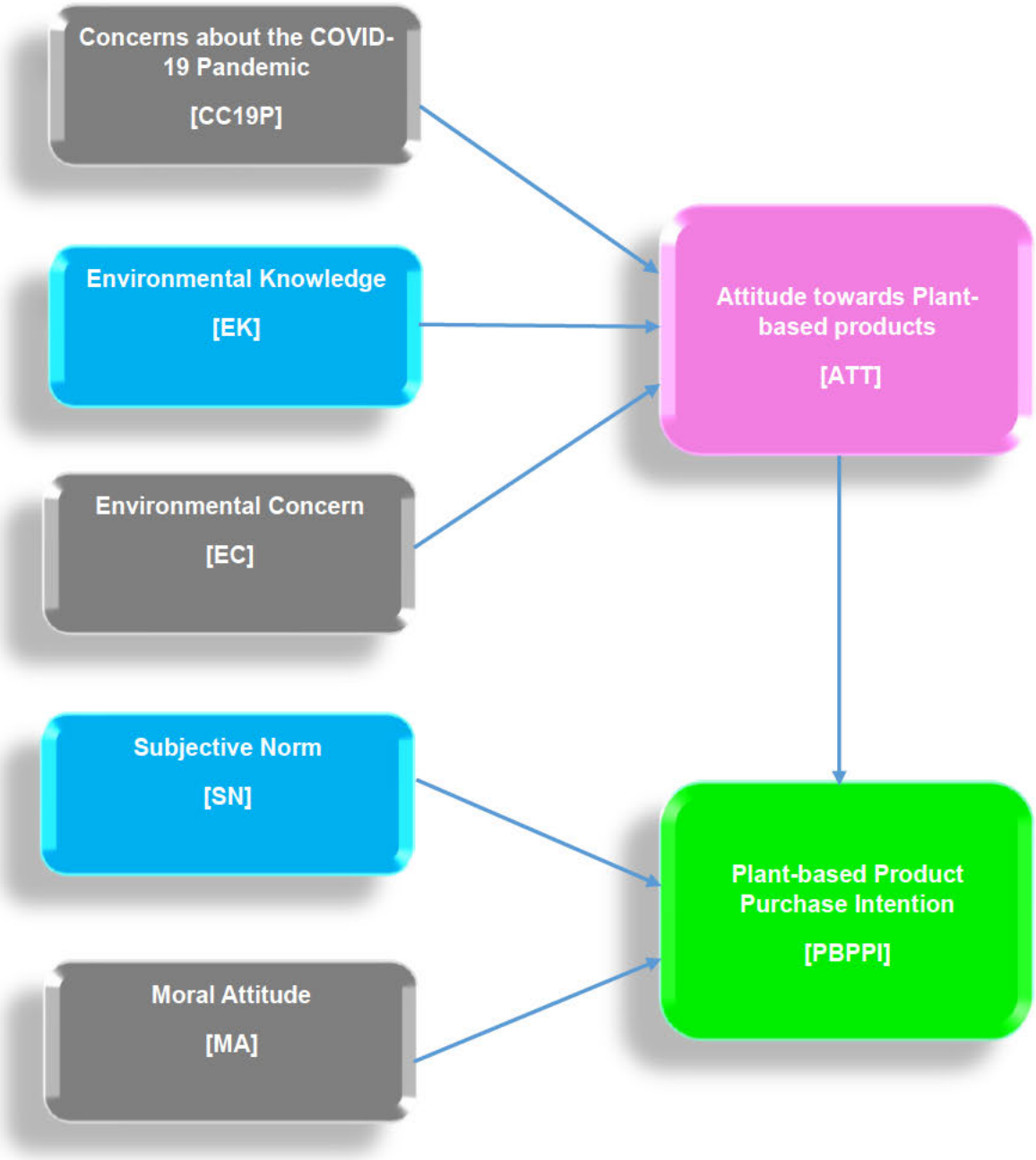

Figure 5.1: Factors Influencing Young Consumers' Plant-based Product (PBP) Purchase Intentions During the Global Climate Crisis and COVID-19 Pandemic (C19P)

A discussion on the contributions of the study is presented in the next section, which include the theoretical, methodological, and practical implications, in tandem with the recommendations for governments, policymakers and green marketing practitioners.

5.4 Contributions

This section outlines the contributions of this study, by presenting the theoretical, methodological, and practical implications of the research findings. The recommendations for governments, policymakers and green marketers are also presented.

5.4.1 Theoretical Implications

This study has crafted a significant theoretical contribution and provides an important direction for future research. It balances the disproportionately Western-focused research with research from a developing and emerging market, such as SA, which contributes to the expanding knowledge on green consumer behaviour and purchase intention towards plant-based products, from the perspective of young consumers in a developing nation. Purchase intention for plant-based products in SA has been largely unexplored, with only a few noteworthy studies that have been published within the area of plant-based, green, or organic purchase intention.

Contribution to Green Food Literature from a South African Perspective

This study enriches the extant body of knowledge relating to young consumers' green, plant-based, or organic food purchase intentions from an emerging economy, thus contributing significantly by explaining the nuances of the factors that influence purchase intentions. From the SEM analysis, attitude towards plant-based products had a significant positive influence on plant-based purchase intention, and it was also the strongest predictor of plant-based product purchase intention of the nine constructs. Moreover, the concerns about the COVID-19 pandemic variable was unable to provide any significant thrust concerning young consumers' purchase intentions towards plant-based products, however, an indirect influence on plant-based product purchase intention through attitude towards plant-based products was found. Thus, this variable serves as a predictor of plant-based product purchase intention through attitude towards plant-based products, with the weakest effect on attitude towards plant-based products, compared to environmental knowledge and environmental concern, which had the strongest influence on attitude towards plant-based products.

The current study also helps to fill the research gap in previous studies conducted by Dilotsotlhe (2021); Koloba (2020); Mhlophe (2016); Mkhize and Ellis (2019); Naidoo and Ramatsetse (2016); Synodinos (2014) and Szejda et al. (2021), pertinent to green purchase intention and green consumption behaviour in SA. Thus, this study investigated young consumers' purchase

intentions towards plant-based products during the global climate crisis and incorporated health concerns in light of the pandemic, which generated a new extension of TPB model, that was validated.

Expansion of the TPB Model

The original TPB model was expanded and found to incorporate six salient variables into the framework, namely attitude towards plant-based products, subjective norm, environmental concern, environmental knowledge, moral attitude, and concerns about the COVID-19 pandemic, to investigate their direct relationship with plant-based product purchase intention, also investigating the mediating role of attitude towards plant-based products in relation to plant-based product purchase intention. Only three direct paths were significant – attitude towards plant-based products, moral attitude and subjective norm had a positive relationship with plant-based product purchase intention; with environmental knowledge, concerns about the COVID-19 pandemic and environmental concern positively influencing attitude towards plant-based products and serving as predictors of plant-based product purchase intention through attitude towards plant-based products. Various other studies have investigated extensions to the TPB model by adding environmental concern (Maichum et al., 2016; Setyawan et al., 2018; Yadav & Pathak, 2016; Zheng et al., 2020), environmental knowledge (Bouarar & Mouloudj, 2021; Maichum et al., 2016; Setyawan et al., 2018), health consciousness (Jonathan & Tjokrosaputro, 2022; Liang, Wu, & Du, 2024; Qi & Ploeger, 2021; Yadav & Pathak, 2016) and moral attitude (Qi & Ploeger, 2021; Yadav & Pathak, 2016). The current study not only applies the TPB model to a new context of plant-based product consumption, but also extended the model to incorporate variables valid in the new era of climate crisis and pandemic scares.

Based on the research outcomes, it can be assumed that the extension of the TPB model is valuable in understanding young South African consumers' purchase intentions towards plant-based products. This validated model, generated, improves predictive power and theoretical clarity by providing an opportunity to uncover the factors that influence young consumers' plant-based product purchase intentions during a pandemic and the climate crisis. Therefore, the extended TPB model is appropriate to explain and predict young South African consumers' purchase intentions towards plant-based products during future global health and climate crises.

Concerns about the COVID-19 Pandemic (CC19P) Reinforces the Importance of Attitude towards Plant-based Products (ATT)

Interestingly, in terms of the TPB, concerns about the COVID-19 pandemic reinforces the importance of attitudes, since attitude towards plant-based products had a large effect on plant-based product purchase intention (0.58), along with subjective norm (0.32), albeit not with perceived behavioural control. In contrast to the other models for green food purchase intention, where consumers indicated price and availability as barriers to purchase (Fatoki, 2023, p. 572; Onel, 2016, p. 13); in the current study, the respondents believed that they had the ability and opportunities to purchase plant-based products, due to the availability of plant-based products, however, this did not increase their purchase intention. Consequently, the ability and accessibility of plant-based products may not necessarily influence plant-based product purchase intention among young South African consumers.

The Mediating Role of Attitude towards Plant-based Products (ATT)

Unlike other studies, this study hypothesised that attitude towards plant-based products might be a significant mediator when it comes to connecting concerns about the COVID-19 pandemic and plant-based product purchase intention, environmental concern and plant-based product purchase intention, environmental knowledge and plant-based product purchase intention, and health consciousness and plant-based product purchase intention. Also, not many studies had investigated the role of attitude as a mediator on these added factors on green purchase intention (Ogiemwonyi et al., 2023, p. 6), in this case, plant-based product purchase intention. Thus, the results of the mediation analysis revealed that the relationships between concerns about the COVID-19 pandemic and plant-based product purchase intention, environmental knowledge and plant-based product purchase intention, as well as environmental concern and plant-based product purchase intention were significantly mediated by attitude. No significant mediating effect was observed for health consciousness and plant-based product purchase intention.

Insights Obtained from the Critical Factors and Antecedents of Young Consumers' Plant-product Purchase (PBP) Intentions from a South African Perspective

Moreover, the basic knowledge and supportive information relating to the critical factors and antecedents of young consumers' intentions to purchase plant-based food products in SA, in accordance with the renowned socio-psychological approach, the TPB (except for perceived behavioural control, which did not have an influence on plant-based product purchase intention), is underscored. Multiple relationships pertinent to plant-based product purchase

intention were tested, within the context of a sample of university students in SA, who, according to Dubihlela and Dubihlela (2017, p. 131), constitute a significant portion of total consumers within the South African consumer market.

Contribution to Green Food Marketing Literature in light of the Global Climate Crisis and COVID-19 Pandemic (or a Future Zoonosis or Pandemic)

The present research provides a contribution to green marketing literature by investigating the factors affecting intentions to purchase plant-based products in light of the global climate crisis and COVID-19 pandemic (which could also be used in the context of another newly emerging zoonosis that may affect humanity in the future). It also sheds light on environmental concern, moral obligation or moral attitude, green product knowledge (in this case, plant-based products and their positive environmental impact) and attitudinal factors that shape the plant-based product purchase intentions of young and educated consumers within an emerging market.

Incorporating Concerns about the COVID-19 Pandemic (CC19P) as a Predictor of Green Food Purchase Intention

A myriad of studies have investigated the link between the impact of a plant-based diet on the severity of COVID-19, and each concluded that plant-based consumption is associated with a reduction in infection and severity (Acosta-Navarro et al., 2024, p. 8; Kahleova & Barnard, 2022, p. 911; Kim et al., 2021, p. 264; Samira et al., 2023, p. 185). While the studies that investigated the impact and fear of COVID-19 on consumers' green food purchase intentions found that the pandemic had influenced consumers' purchase intentions (Alam et al., 2023, p. 16; Angwyn, Soelasih, & Ho, 2022, p. 118; Hu et al., 2022, p. 13; Qi et al., 2020, p. 16), none of these studies investigated plant-based product purchase intention among young consumers by incorporating concerns about the COVID-19 pandemic as a predictor of purchase intentions. Thus, this study introduced a new variable – concerns about the COVID-19 pandemic, which has been found to influence purchase intentions through attitude towards plant-based products.

Young South African Consumers are More Concerned about the Environment than their Own Health

Studies have shown that health consciousness has a significant influence on green food purchase intentions (Achchuthan & Velnampy, 2016, p. 94; Bryant et al., 2020, p. 7; Iqbal et al., 2021, p. 8; Katpia & Nuangjamnong, 2022; Kusumaningsih et al., 2019, p. 4; Qi & Ploeger, 2021, p. 11). However, in the current study, within the context of plant-based products, health

consciousness was found to be insignificant. This is noteworthy for those models that emphasise the link between plant-based products and health. As indicated previously, perhaps the motive for plant-based product adoption among young South African consumers is more related to moral attitude, as it the right thing to do, more so for the planet, rather than for health reasons. This may also indicate that young individuals, in general, have a nonchalant attitude towards pandemics, believing that since they are young and healthy, health-related issues surrounding pandemics are for the elderly or immuno-compromised individuals, hence they may feel that they are not at risk.

Also, the shift towards plant-based product consumption among young consumers, in the current study, seems to be driven more by ecological reasons rather than the pandemic, thus young people believe that it is up to them to save the planet. It is also a moral norm to purchase plant-based products, as it is the right thing to do for the planet and society. This supports the results from the latest 2023 poll findings by UNICEF SA, which reflected positive attitudes among young people towards their ability to influence climate policies, environmental and climate action (UNICEF, 2023: para 1). Consequently, models looking to understand plant-based, organic and green food purchase intentions, especially among young consumers, should also focus more on the environmental and altruistic motivators rather than the health-related one.

Including Environmental Knowledge (EK), Environmental Concern (EC) and Concerns about the COVID-19 Pandemic (CC19P) to the TPB Model for Models Investigating the Influence of Future Pandemics on Green Food Purchase Intention

With reference to the antecedents of attitude towards plant-based products – environmental knowledge, environmental concern and concerns about the COVID-19 pandemic, these could help to create and influence young consumers' attitudes towards PB products, which could then have an impact on plant-based product purchase intention, as demonstrated in this study. The TPB model should be updated to include environmental knowledge, environmental concern and perhaps, concerns about the COVID-19 pandemic – for models investigating the influence of a future pandemic (or future zoonosis) on green food purchase intention, during the climate crisis. Moreover, especially in the current environment, where concern and knowledge about the natural environment, including the concern about the pandemic (or future pandemics), are at an all-time high, but do not directly impact plant-based product purchase intentions; they do, however, affect attitudes and those attitudes, in turn, affect purchase intentions.

5.4.2 Methodological Implications

Exploratory Scale for Concern for Pandemics

Although the full scale development process was not followed, a new scale has been developed from literature and its psychometric properties were measured. The measure was found to be reliable and valid, making it a useable scale to be used in multivariate analysis. This scale was used to capture the attitudes of young consumers' concerns surrounding the pandemic and this scale could be useful for measuring consumers' attitudes towards other zoonotic diseases, apart from COVID-19, such as the newly emerging and deadly Nipah virus (Paul, Mohanty, Shah, Kumar Padhi, & Sah, 2023, p. 57) or the avian influenza virus – H5N1 (Sah et al., 2023, p. 576). Nonetheless, it is recommended that this scale be further tested qualitatively and in other contexts to evaluate its robustness, however it was found in the current study to be a suitable and usable measure for the construct in question where no other scales have been developed. Thus, the current study provides scaffolding for future studies relating to concerns about the COVID-19 pandemic as well as other zoonoses, which, considering the predictions about the frequency that these epidemics and pandemics are expected, will no doubt be common and even deadlier than the COVID-19 pandemic (Haileamlak, 2022, p. 228; Poorolajal, 2021, p. 2).

Environmental Concern (EC) Found to be More Social than Individual

Moreover, the items of the environmental concern variable were found to be more social than individual. These items included the following:

1. 'I am very concerned about the state of the world's environment'.
2. 'I am willing to reduce my meat consumption to help protect the environment'.
3. 'Major social changes are necessary to protect the natural environment'.
4. 'Major political change is necessary to protect the natural environment'.
5. 'Anti-pollution laws should be enforced more strongly'.

The environmental concern items in the chosen scale only featured two items that related to individuals' actual concern about the environment (items 1 and 2), and these items were not retained in the final model. The other three items, retained in the final model, related to the individual's perceptions about broader societal changes they perceive to be necessary for environmental preservation, such as social, political, and legal changes (items 3, 4 and 5). The lack of direct impact of the environmental concern variable may be due to the lack of individual

perspective in the variable itself. Thus, a more individually worded set of items may yield a more significant effect on an individual's purchase intention or perhaps a separation of societal or social versus individual concerns should be employed.

5.4.3 Practical Implications

The contributions from this study provide green marketing practitioners, policymakers and governments with vital insights pertinent to young South African consumers' purchase intentions towards plant-based products under the effect of the global climate crisis and COVID-19 pandemic. Since the Paris Agreement in 2015, where global governments have articulated ambitions to reduce their carbon footprint (UNEP, 2023a, pp. 28-30; UNFCCC, 2024: para 1). progress towards stabilizing the natural environment and reducing levels of global warming have been slow, not only in SA, but globally. The practical implications and recommendations for green marketing practitioners and governments, on how to strengthen the factors influencing young consumers' plant-based product purchase intentions during future global health and climate crises, are featured next. This is followed by the recommendations aimed at the producers of plant-based products.

Strengthening Attitude towards Plant-based Products to Increase Plant-based Product Purchase Intention

Attitude towards plant-based products played a significant role in driving consumers' intentions towards purchasing plant-based foods, in this study – it was also the strongest predictor of plant-based product purchase intention. Practical implications and recommendations for governments, policymakers and green marketers, on how to strengthen and maintain a high level of attitude towards plant-based products are presented next.

Recommendations for Governments and Policymakers: The results revealed that the more positive an individual's attitude towards plant-based products, the more likely they will plan to purchase plant-based products. To strengthen and maintain the high level of attitude, governments need to encourage the use and consumption of plant-based products through the implementation of social marketing campaigns, directed at the youth, that target local cinema screens, print and broadcast media, social media channels, educational institutions, libraries and major retail stores, to communicate the health and environmental benefits and strengthen young consumers' attitudes towards plant-based products, leading to plant-based product purchase intention. According to Bogueva, Marinova, and Raphaely (2017, p. 154), social

marketing that focuses on voluntary behavioural changes are effective and can help foster a transition towards diets that are healthier and respect the environment (such as a plant-based diet).

Governments and policymakers should also implement policies to influence both consumer behaviour and business practices, such as an environmental or green tax, subsidies and tax rebates for green products, and the regulation of waste management and energy efficiency (Santosh, 2024: para 2), that support SDG 12, which focuses on sustainable production and consumption practices by manufacturers (UN, 2023b, p. 36). These are important because consumers' attitudes towards green products do not operate in isolation from the firm's concern towards the natural environment (Situmorang, Indriani, Simatupang, & Soesanto, 2021, p. 497). Moreover, as proposed by Ndlela and Murcott (2021, p. 5), a meat tax should be introduced in SA to secure ecologically sustainable development and consumption. Hence, a meat tax could be implemented to regulate meat consumption in SA and change consumers' attitudes towards meat consumption (England, 2022: para 6), thereby leading to plant-based product purchase intention.

Additionally, reducing meat and dairy consumption and production could help curtail GHG emissions in SA, as consumers will become more conscious of their consumption habits, thereby supporting SDG 12 and SDG 13. With reference to SDG 12, according to Djekic (2021, p. 243), there has been extensive research on the climatic impact of food with both production and consumption, and studies have shown that a sustainable diet, which is associated with no animal product consumption, has the least impact on the environment. In terms of addressing SDG 13, "which calls for urgent action to combat climate change" (UN, 2023b, p. 38), diets that replace emission-intensive foods (such as animal products), with plant-based products, is associated with a reduction in food-related GHG emissions (Chen, Chaudhary, & Mathys, 2022, p. 11), thereby addressing climate change. Hence, a decrease in meat consumption and production, and a shift towards a plant-based diet will eventually assist in the reduction of methane emissions due to animal agriculture, help to mitigate climate change and improve the overall health of the planet and humanity.

Recommendations for Green Marketers: Since attitude towards plant-based products exerted the strongest influence on plant-based product purchase intention, green marketers should maintain this strong influence by considering young consumers' needs and expectations and

motivating them to create a positive attitude towards plant-based products, through their communications, which will ultimately increase plant-based product purchase intention. Green marketers could also attract the attention of young consumers towards plant-based products, through the implementation of infomercials and promotions (Maichum et al., 2016, p. 14), which could help to positively influence and increase plant-based product purchase intention. Thus, firms will be encouraged to improve the environmental performance of their products, incorporate sustainable business practices, and offer environmentally friendly products. Firms should also align themselves to worthy causes and support green initiatives, by donating their profits to environmental charities to create a more positive influence on consumers' attitudes towards PB products and towards the organisation itself. According to Rohit and Rajesh (2018, p. 65), cause-brand association (linking a brand to a social cause) has a positive impact on consumers' attitudes and purchase intentions. Therefore, cause-brand association among green firms is imperative to strengthen attitude towards plant-based products, which will ultimately lead to plant-based product purchase intention among young South African consumers.

Young consumers also demonstrated their interest in plant-based products, with price and availability not being a deterrent, thus firms should capitalise on this opportunity by engaging in product line expansion and enhancing their public image by emphasising their commitment to sustainability, which will positively influence consumers' attitudes towards plant-based products, ultimately leading to plant-based product purchase intention. Gazi et al. (2024, p. 6) indicated that a green brand's favourable image and consumers' attitudes towards the brand influence their purchase decisions and boost sales. According to Reddy et al. (2023, p. 12), consumers are concerned about the effects of a firm's production processes on the environment, and they are more likely to purchase green products if they are shown how they are superior to conventional products; thus being a green or environmentally sustainable firm should also extend to the firm's production and logistics processes, which influences consumers' attitudes towards green products. Situmorang et al. (2021, p. 497) found that consumers' attitudes towards green products cannot be isolated from a firm's concern for the environment, thus consumers' demands for green products have prompted manufacturers to modify their production processes in a bid to become more environmentally friendly. Therefore, manufacturers could embrace better sustainability and achieve a smaller carbon footprint by utilising renewable energy instead of fossil fuels (hydro, solar and wind power), reducing toxins released in the atmosphere and striving to achieve net-zero emissions by 2050, thereby

aligning their activities with the Paris Agreement (UNEP, 2023a, pp. 28-30; UNFCCC, 2024: para 1-2), and addressing SDG 12 and SDG 13.

Additionally, social media platforms (Instagram, X and Facebook) are highly influential in shaping consumers' attitudes towards green products, as validated by Pop, Săplăcan, and Alt (2020, p. 11). According to Alkhatib, Kecskés, and Keller (2023, pp. 10-11), firms can also encourage the use of and further strengthen consumers' attitudes towards plant-based products on various digital marketing platforms. Thus, firms should apply a common theme (plant-based products and their role in environmental protection), for advertising storyboards aimed at forming positive attitudes towards plant-based products (Hoang Yen & Hoang, 2023, p. 13), thereby motivating consumers to purchase plant-based products. Green marketers could, therefore, implement a suitable marketing strategy for attracting young consumers toward the purchase of plant-based products. Hence, the higher consumers' attitudes towards plant-based products, the higher their plant-based product purchase intentions. According to Qi and Ploeger (2021, p. 10), green marketers need to make a concerted effort to enhance consumers' perceptions of and attitudes towards plant-based products, with communications that focus on emphasizing and reinforcing the health and environmental benefits of green products. Consequently, this will lead to a more positive attitude among young consumers, because they also enhance environmental concern and environmental knowledge.

Strengthening Environmental Knowledge to Increase Plant-based Product Purchase Intention

The results revealed that environmental knowledge, with a marginally high composite score, leads to positive attitudes, thus leading to plant-based product purchase intention, and this marginally positive level for environmental knowledge needs to be increased among the young consumer cohort. Practical implications and recommendations for governments, policymakers and green marketers, on how to strengthen the level of environmental knowledge, are presented next.

Recommendations for Governments and Policymakers: To strengthen the level of environmental knowledge among the young consumer cohort, curriculum reform from primary to tertiary education can strengthen the knowledge and awareness about climate change and develop climate conscious individuals. This will, therefore, strengthen young consumers' knowledge about the natural environment, as this could meet the needs of youth, not only in

SA, but also globally, who "are demanding climate action and quality climate education to prepare them for a greener future" (Tapia, 2024: para 6; UNICEF, 2024, p. 15). Governments and policymakers should emphasise the importance of the implementation of green and sustainable education at school and tertiary institutions, which also focuses on a plant-based diet, a reduction in meat consumption and its association with health and planetary benefits, to raise a new generation of eco-conscious and health-conscious individuals. According to Kutywayo et al. (2022, p. 5) and Irlam, Razzak, Parker, and Rother (2023, p. 4), a negligible amount of space is allocated to climate change education within the school and tertiary curriculum in SA, and youth lack environmental knowledge.

Enhancing and focusing on climate change education in educational institutions is paramount in the fight against climate change and also a target of SDG 13, specifically goal 13.3, which seeks to "improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning" (UN, 2023a: para 1). South African schools are not on track to meet the target of SDG 13, as more effort is required within secondary schools to address the gaps in the awareness and knowledge around climate change, among students (Kutywayo et al., 2022, pp. 6-7). In line with this, Irlam et al. (2023, pp. 4-5) discovered that university students in SA claim to be aware of climate change, however they possess limited real understanding about this concept. Thus, while the young consumers in the current study perceived that they have environmental knowledge, it is possible that their objective, real knowledge is not as high as expected and as the current study found that environmental knowledge positively affects attitudes towards plant-based products, and these impact purchase intentions, enhancing knowledge should be a national imperative.

Furthermore, to strengthen the level of environmental knowledge among the youth, governments and policymakers could also implement public awareness campaigns in local communities, by collaborating with various stakeholders, such as NGO's (SA Climate Change Champions, groundWork, Earthlife Africa and the South African Climate Action Network), academics, community organisations, local businesses, media personalities and journalists who are concerned about climate change (UNEP, 2006, p. 18). Public awareness activities could include the distribution of educational material (explaining climate change and its implications) around local communities and on various social media platforms, conducting workshops and seminars at local educational institutions to educate both the students and academics, and hosting exhibitions and public rallies that showcase climate change mitigation strategies. These

activities would seek to encourage behavioural change at the individual and societal levels, motivating the youth to be more climate conscious and educating them about the benefits of plant-based alternatives as opposed to animal-based food products, which are beneficial for human and planetary health.

Governments and green marketers could also work concurrently to implement various strategies to strengthen public awareness and knowledge about climate change and plant-based products among the youth in rural communities, which could include utilising local community radio stations, mobile phones and local television stations, at the grassroots level (Fombad, 2024, p. 13). Therefore, public awareness campaigns, curriculum reform and capacity building programs are needed in SA, to not only address the climate crisis, but also strengthen environmental knowledge among the youth, thereby increasing attitude towards plant-based products, ultimately leading to an increase in plant-based product purchase intention.

Recommendations for Green Marketers: To increase environmental knowledge among young consumers, green marketers should make use of the findings of this research, which is pertinent to ethical and green consumerism, to assist them in designing effective advertising strategies that could potentially increase ethical and green consumption pertinent to plant-based products over animal-based food products. Marketers can take tangible steps to explain climate change concepts and address climate-related issues by using their websites and social media platforms to reach and educate consumers on how to adopt sustainable consumption habits. Firms could also assign sustainability ambassadors, from among the staff, who receive special training in environmental sustainability and are available to educate consumers and other staff members about environmental sustainable practices and climate-related issues (Balan, 2020, p. 11). To promote sustainability and increase environmental knowledge among young consumers, firms can also showcase products in biodegradable packaging and utilise eye-catchy signages to emphasise environmentally friendly products (Yang, 2024, para: 3).

Firms should also engage in green advertising that not only promotes environmentally friendly consumption behaviours, but also focuses on climate change mitigation (Hartmann, Marcos, Castro, & Apaolaza, 2023, p. 449), such as the promotion of low-carbon alternatives to conventional products (home renewal energy systems and plant-based food consumption) and discouraging behaviours that are harmful towards the environment (consuming meat and littering). Thus, it is recommended that green marketers strengthen the knowledge about and

awareness of plant-based foods among the young consumer market. Firms could focus more on informing young consumers about plant-based products and persuading them to purchase such products, based on the merits of plant-based food consumption and a reduction in meat consumption on environmental health, which could assist in the sustainable development of the society.

Green marketers should also make use of social media platforms, such as X, Instagram and Facebook, to create awareness about plant-based products and their merits, among young consumers, as these platforms are important communication channels for climate change (León, Negredo, & Erviti, 2022, p. 977). According to Ummar, Shaheen, Bashir, Ul Haq, and Bonn (2023, p. 12), consumers tend to purchase more environmentally friendly products from firms that engage in online green marketing and promote environmental sustainability through green product and environmental literacy, thus green digital marketing is crucial in shaping consumers' attitudes towards green products, which will eventually increase plant-based product purchase intention. Green marketers can also utilise these online communication channels to inform young people about the climate crisis and educate them on conservation efforts, such as engaging in pro-environmental behaviours, for example, reducing meat, energy, and resource consumption.

According to Kambuno, Shrishti, Jasmine, and Anggarina (2022, p. 1837), young consumers are the major users of social media and influencers on social media platforms have a great amount of persuasive power among young individuals, as postulated by Lajnef (2023, p. 19373). Thus, green marketers could also utilise influencers with expertise and the ability to persuade young consumers, such as the world-famous YouTube influencer, Mr Beast, with an expanding audience of younger viewers, to create awareness about climate change and how a reduction in meat consumption can help to reduce their carbon footprint, thereby rendering young consumers a lucrative and desirable market for plant-based products. Mr Beast has already used his platforms to drive various climate change initiates, such as Team Trees, tackling deforestation and the ocean cleanup initiative – Team Seas (Deza, 2022: para 2-3). Climate activist influencers, such as Greta Thunberg, can also be utilised to serve as role models, focusing on climate related issues (Hartmann et al., 2023, p. 449). Alkhatib et al. (2023, p. 12) indicated that COVID-19 galvanised the increase in interest in digitisation among business and the usage of digital marketing, hence firms can utilise digital marketing platforms to inform, persuade, and remind consumers about their plant-based products, including the

cornucopia of health and environmental merits, especially during future global health and climate crises.

Strengthening Environmental Concern to Increase Plant-based Product Purchase Intention

The results revealed that environmental concern, has a high composite score, and leads to positive attitudes, thus leading to plant-based product purchase intention. The high level of environmental concern needs to be maintained among the young consumer cohort. Since Africa's youth will bear the brunt of climate change impacts, it is imperative that they are more involved in climate-related policy and decision-making, as climate change engagement is currently dominated by voices beyond SA. Practical implications and recommendations for governments, policymakers and green marketers, on how to further strengthen and maintain a high level of environmental concern, are presented next.

Recommendations for Governments and Policymakers: Since the young consumers in this study indicated that major political, social, and legal changes are necessary for the protection of the natural environment, governments are expected to take action to protect the natural environment through the implementation of green practices. According to the latest youth study by Deloitte (2023, pp. 30-31), which surveyed a globally-representative sample of youth across 44 countries, the majority of the youth, who are now entering the workforce, are pressuring their employers to take action against climate change. As such, governments should support and encourage environmental sustainability in the workplace, specifically relating to enhancing environmental concern, by encouraging recycling, reducing printing, switching to renewable energy, and promoting plant-based meal options in the cafeteria. This could be achieved through the implementation of green incentives that motivate employees to minimise their carbon footprint (Derchi, Davila, & Oyon, 2023: para 1) and tax rebates, tax reliefs and environmental incentives for those businesses that engage in eco-friendly behaviour (Rajapakse, Azam, & Khatibi, 2022, p. 1178). Among the youth, and overtime, these sustainability practises should diffuse into the individual's home life, eventually becoming a way of life. Governments and policymakers should also encourage and increase meaningful youth participation in policy and decision-making processes in SA, which is crucial to ensure more robust climate change action and implementation (SAIIA, 2020: para 1). Thus, involving youth in climate mitigation strategies can seek to maintain the high level of environmental

concern among young South Africans, which will increase attitude towards plant-based products, and ultimately lead to plant-based product purchase intention.

Governments could also invest in public awareness interventions showcasing how the consumption of plant-based products could help curtail the adverse impacts on the environment. Governments could also produce documentaries to convince young consumers about the importance of plant-based product use and consumption and confront this cohort about the practical problems pertinent to environmental issues, and then provide them with recommendations and guidelines to follow (Liao, Wu, & Pham, 2020, p. 14). This could assist in increasing young consumers' attitudes towards plant-based products, thereby increasing plant-based product purchase intentions, which could have a positive ripple effect on the natural environment in SA.

Recommendations for Green Marketers: Similar to the strategies for increasing environmental knowledge, green marketers can strengthen public concern about climate change or maintain a high level of environmental concern among the youth. This could be achieved through the promotion of their plant-based products on various social media platforms, mobile phones, local community radios and television stations, which demonstrates the effects of climate change and how youth's climate change action through diet (adoption of plant-based food products), as well as the costs of inaction (not reducing meat consumption) can affect climate change. Therefore, climate change communication, which includes images, such as photographs, graphics, and videos about this phenomenon, and the fostering of public engagement and adoption action, are vital to maintain a high level of environmental concern among young consumers (León et al., 2022, p. 977).

Strengthening Moral Attitude to Increase Plant-based Product Purchase Intention

Moral attitude was found to have a significant positive influence on plant-based product purchase intention among young South African consumers, as this cohort feels that purchasing plant-based products is the right thing to do, thus reflecting altruism. To enhance and strengthen the marginally high level of moral attitude, green marketers, governments and policymakers can appeal to consumers' moral judgement, motivation, values, and emotions by incorporating moral and justice issues in their promotional strategies, as moral attitude directly impacts purchase intention. The practical implications and recommendations for governments, policymakers and green marketers, on how to strengthen moral attitude, are presented next.

Recommendations for Governments and Policymakers: The moderately high level of moral attitude highlights the importance for governments and policymakers to implement and execute social marketing campaigns, aimed at environmental protection. According to Wymer (2011, p. 18), social marketing is aimed at helping individuals to change their unhealthy behaviours to healthy behaviours, which is attained through educational campaigns. Social marketing programs do not only change individuals' attitudes or enhance the awareness of a particular problem or social issue, they also seek to empower and motivate individuals to fully adopt the desired behaviour in their daily lives (Bach & Alnajar, 2016, p. 17). Rodriguez-Sanchez (2023, p. 561) declared that social marketing can offer a successful strategy for creating and executing environmental initiatives, and this could contribute to the way governments and policymakers develop and select public policies.

Young consumers in this study indicated that purchasing plant-based products makes them feel like they are contributing to something better, and this may indicate that they, themselves, want to be a part of the solution, the change, and not the problem; thus, governments can capitalise on this feeling. Consequently, governments can execute social marketing campaigns to engage the public on climate change, loss of biodiversity, environmental sustainability, animal welfare, and actions to execute (including the adoption of plant-based products) to reduce carbon emissions, in an effort to inspire consumers' moral obligation and contribution towards the environment, thereby increasing their intentions to purchase PB products.

Recommendations for Green Marketers: Similar to the recommendations for environmental knowledge and environmental concern, firms could implement vigorous green marketing campaigns that emphasise the environmental merits of plant-based product consumption to enhance moral attitude and ultimately reinforce plant-based product purchase intentions among young consumers in SA. Green marketers could also use this as an opportunity to target and focus on the environmental emotions of consumers to get their intentions to transform into plant-based product purchase intentions (Kaur, Gangwar, & Dash, 2022, p. 12). Firms could use the marketing of plant-based products to strike an emotional chord with consumers, which could possibly lead to plant-based product purchase intentions. According to Kautish, Paul, and Sharma (2019, p. 1433), consumers who are sensitive and emotional are highly likely to participate in the green movement and in the current study, it was revealed that young consumers feel that purchasing plant-based products is the right thing to do and it also makes them feel like a better person; it is a moral norm to purchase plant-based products, thus

reflecting altruism. It was also established that the shift towards plant-based product consumption seems to be driven more by ecological reasons rather than health concerns and the pandemic. In this study, environmental concern was found to significantly affect intentions, but health consciousness did not. This may indicate that it is not health concerns that drive intentions to purchase plant-based products, but rather a concern about the climate crisis. Therefore, this reinforces the reason why green marketers need to capitalise on this and strengthen moral attitude among young South African consumers, as it is an important predictor of plant-based product purchase intention.

Strengthening Concerns about the COVID-19 Pandemic to Increase Plant-based Product Purchase Intention

The concerns about the COVID-19 pandemic did not galvanise the intention to consume PB products directly, albeit it significantly affected (although marginally) attitude towards plant-based products. The practical implications and recommendations, on how to enhance and strengthen concerns about the COVID-19 pandemic, for both governments and green marketers, are presented in the paragraph below.

Recommendations for Governments and Green Marketers: Governments and firms should synchronise their efforts to inform the public about how a reduction in meat consumption can reduce COVID-19 (or a future zoonosis or pandemic) severity and prevent mortality from any cause, including a future zoonosis or pandemic. This could seek to influence consumers' attitudes towards plant-based products, thereby leading to plant-based product purchase intention. According to Jodalli, Basheer, Nagarsekar, Gaunkar, and Ramya (2020, p. 2), the adoption of a plant-based diet can assist in reducing zoonotic disease concerns inherent in animal-based food. Thus, in this study, future health and pandemic prevention was found to be the reason (apart from the climate crisis), for the growing interest in plant-based products among young South African consumers, not the previous pandemic. As such, messages, conveyed through news and social media, as well as public health experts, pertinent to the impact of meat consumption on planetary and human health, and animal welfare should be effectively devised and disseminated to sway young consumers' purchase decisions. Hence, increasing consumers' knowledge about the correlation between a plant-based diet and future global health and pandemic prevention will seek to enhance the performance of the concerns about the COVID-19 pandemic variable, increase attitude towards plant-based products, which will ultimately lead to plant-based product purchase intention.

Strengthening Subjective Norm to Increase Plant-based Product Purchase Intention

In this study, subjective norm played an important part in propelling young consumers' intentions towards purchasing plant-based foods. The following recommendations have been devised for governments, policymakers and green marketers, below, to encourage and facilitate interpersonal interactions among young consumers and their significant others pertinent to plant-based products and environmental issues. This will seek to reinforce their interest and purchase intention towards PB products, as well as strengthen and enhance subjective norm among this cohort.

Recommendations for Governments and Policymakers: To strengthen subjective norm and address the climate crises in SA, there must be synergy among the government, firms and individuals, as climate change mitigation is a group effort, and according to Chatrath (2022: para 1), there is an urgent need for collective climate action. Thus, to further strengthen subjective norm, the South African government could emphasise and capitalise on the 'uBuntu' philosophy to tackle climate change, by encouraging the shared spirit of community and solidarity among young individuals, as well as their communities, as climate change is a collective responsibility, which requires collective action and mitigation (Hormio, 2023, p. 11). Moreover, governments should also encourage teambuilding projects (Zheng et al., 2020, p. 19), such as tree planting and beach clean-ups to foster empowerment among individuals, thereby increasing subjective norm. Thus, the formation of consumer associations could help young consumers to reduce their carbon emissions, by engaging in green purchase decisions and finding solutions to tackle climate change, collectively.

Therefore, to encourage collective action and strengthen subjective norm, ultimately leading to plant-based product purchase intention, governments and policymakers could establish large-scale environmental protection activities or utilise social media for the diffusion of norms that encourage more plant-based product purchase intentions among young consumers, as well as their social networks (Zhuang et al., 2021, p. 11).

Recommendations for Green Marketers: Firms should also encourage word-of-mouth (WOM) of their PB products offline and on social media platforms, as a positive relationship between WOM and subjective norms was observed by Aziz, Afaq, Muhammad, and Khan (2020, p. 124). WOM would be essential to positively influence and strengthen subjective norm, ultimately leading to plant-based product purchase intention, among young consumers. Green

marketers could also influence young consumers' plant-based product purchase intentions, by improving green social standards and creating social forces that could affect individuals' plant-based product consumption actions. To achieve this, firms could persuade consumers to address sustainable and green consumer practices in various social groups or consumer associations and openly circulate plant-based or green food products among their family and friends (Zheng et al., 2020, p. 19). These practices seek to address the 'uBuntu' philosophy, which attempts to strengthen subjective norm, through collective action, ultimately leading to plant-based product purchase intention among young consumers.

Below are a few recommendations aimed at the producers of plant-based products.

Recommendations for Plant-based Product Producers Encouraging Plant-based Product Trial and Consumption

More work is needed to not only increase awareness (at public and commercial levels) about the positive impact of a reduction in meat consumption on environmental and human health, but also to support and encourage an individual's shift and interest towards plant-based products. Thus, certain activities should be embraced and encouraged, at the individual level, which will seek to strengthen environmental knowledge, environmental concern, moral attitude, concerns about the COVID-19 pandemic, attitude towards plant-based products, and subjective norm on plant-based product purchase intention, among young consumers. These activities, based on the results of this study, have been crafted for the producers of plant-based products to encourage trial and consumption of plant-based products among young consumers. The activities include the following:

1) Produce a plant-based recipe book, showcasing easy recipes, thoughtfully curated to be approachable for beginners.
2) Host plant-based or vegan exhibitions, expos, day and night markets, and trade fairs to galvanise an interest in and enhance the familiarity with plant-based products.
3) Offer taste testing opportunities to evaluate plant-based food items based on their taste, appearance, smell, texture, mouthfeel and even the sound they make while cooking and eating the item.
4) Distribute free samples at local retail stores, educational institutions, and shopping malls. Samples could also be attached to another product to encourage trial.

5) Host competitions to determine whether individuals are able to differentiate between a plant-based and conventional or animal-based product.
6) Offer plant-based cooking courses (online or in-person) to enable individuals to prepare flavourful, easy, and simple meat-free dishes; thereby encouraging individuals to share experiences and inspire each other by cooking healthy food together. This could eventually boost individuals' skills and confidence in cooking meat-free meals, which will assist in reducing anxiety or uncertainty when preparing these novel dishes and enhance familiarity with plant-based products.

Moreover, plant-based product producers could perhaps include meat-free recipes on the packaging of their plant-based products and provide free recipes on their websites or social media pages, thereby encouraging young consumers to expand their cooking skills, boost confidence when cooking plant-based meals and enhance familiarity with plant-based products, thus increasing the acceptance of plant-based products among young consumers. The rationale for these recommendations seeks to encourage plant-based product trial and increase regular consumption and adoption of plant-based products, thereby strengthening plant-based product purchase intention among young South African consumers.

This study aligns with the SDG 12 and SDG 13 targets, which are associated with responsible consumption and production as well as urgent climate change mitigation, respectively. Hence, it is recommended that governments, policymakers, green marketing practitioners and plant-based product producers stimulate and encourage young consumers to engage in sustainable consumption behaviour. Tangible action is needed to address climate change in an emerging economy, such as SA and encourage young consumers to understand the importance of purchasing and consuming plant-based products (over animal-based food products) under the effect of the global climate crisis and a zoonosis, such as COVID-19.

A summation on the limitations of the study and recommendations for future research is provided in the next section.

5.5 Limitations of the Study and Recommendations for Future Research

All research is bound by limitations and insurmountable challenges, which are beyond the researcher's control, thus in this study there are certain limitations, which could present

opportunities for future research. Next, the limitations of the study are presented along with how they can be addressed through appropriate recommendations for future research.

This study only measured young consumers' purchase intentions towards plant-based products, without measuring actual purchase behaviour. Future research could, perhaps, use the frequency of plant-based product consumption as a dependent variable, thus incorporating both actual buying behaviour along with purchase intention.

Young consumers' actual knowledge (objective knowledge) was not measured, rather the assessment of young consumers' perceptions of their knowledge (subjective knowledge) was assessed. Hence, future research could unearth what this cohort actually knows about the natural environment, its current state and what they can do to help. Future research could also measure how much young consumers actually know about plant-based products and their impacts on the planet versus animal-based food products to fully determine what changes to climate change education and curriculum reform are required.

In this study, most of the environmental concern statements related to societal items (political, social, and legal changes) – they were more social than individual. Therefore, the lack of direct impact of the environmental concern variable may be due to the lack of individual perspective in the variable itself. Consequently, future research could incorporate a more individually worded set of items to yield a more significant effect on young consumers' purchase intentions.

Another interesting finding stems from the subjective norm variable. Generally, strong influence from others influences or increases purchase intention. However, in this study, although there was overall disagreement with the subjective norm statements, subjective norm had a significant positive impact on plant-based product purchase intention, albeit lower than attitude towards plant-based products. This could denote that plant-based product purchase intention is more an individual decision rather than a social one, as young consumers do not interact with family and friends about plant-based products and environmental issues; and there is no social pressure or influence from family and friends to perform the behaviour of purchasing plant-based products. Young consumers are now taking it upon themselves to make the change. Hence, future research could investigate this anomaly.

With reference to the moral attitude variable, there was a significant positive influence on plant-based product purchase intention – young consumers think that purchasing plant-based products is the right thing to do, it is a moral norm to do so, which indicates an altruistic motive, thus encouraging purchase intention. This is aligned with the subjective norm variable, where young consumers believe that social influences or pressures for this behaviour do not exist, that is why they must initiate purchase intention themselves, ultimately affecting their purchase intention. Models looking to understand plant-based, organic and green food purchase intentions should focus on the altruistic motives of young consumers.

Only selected factors were investigated in this study (attitude towards plant-based products, subjective norm, moral attitude, perceived behavioural control, environmental knowledge, health consciousness, environmental concern and concerns about the COVID-19 pandemic) that may influence young consumers' plant-based product purchase intentions. However, plant-based product purchase intention could be influenced by a myriad of other factors that were not explored in this study. Future research should broaden the scope of research and, could perhaps, include factors, such as price, service quality, sensory attributes (taste, mouthfeel, smell, appearance, and texture), animal welfare concerns, self-image in environmental protection, green trust, perceived value, altruism, social media utilisation and health benefits, amongst others.

Moreover, plant-based product purchase intention could also be influenced by a myriad of biographical factors that were not investigated in this study, such as level of education, income level, marital status, job level and location. To address this gap, the inclusion of these factors and their impact on purchase intention and behaviour should be explored in future studies.

The sample utilised in this study was relatively homogeneous, as it constituted university students who are young and highly educated, thus the findings may be predominantly valid to this segment of the population. To address this limitation, future research should include individuals from diverse socio-economic demographics and not focus on those enrolled at tertiary institutions, to further understand the plant-based product purchase intentions of young individuals from the general populace.

For sample selection within this study, quota sampling was utilised, which is a non-probability sampling technique. Although quota sampling yields greater generalisability in comparison to

other non-probability sampling techniques, as it is "the non-probability based equivalent of the stratified random sample" (Mujere, 2016, p. 116), it is still not robust in generalising the results. Future research should employ a probability sampling technique. Perhaps, future researchers could employ simple random sampling, for example, by obtaining a list of individuals' details to enable the random distribution of questionnaires or the random selection of respondents. This study recruited 381 respondents. Notwithstanding, being an appropriate sample size for SEM analysis (between 300 to 500, as stipulated in Chapter Three, Section 3.7.4), expansion of this sample size is recommended to increase the generalisability of the findings.

Since this was a cross-sectional study, it is recommended that future research utilise a longitudinal study, as this can seek to justify the cause-and-effect relationships among the constructs and make comparisons over time. This could also provide a much more accurate reflection of the extent to which the traditional green behaviour antecedents, as well as health consciousness and concerns about the COVID-19 pandemic influence young consumers' plant-based product purchase intentions. According to Caruana, Roman, Hernández-Sánchez, and Solli (2015, p. E537), cross-sectional studies are static in nature as they provide no information regarding the influence of time on the variables being measured. Thus, longitudinal studies may provide a more comprehensive approach to the research, by applying continuous measures to follow research participants over a prolonged period.

Only two municipalities, within one province in SA, were selected as the study location, thus the perceptions of the respondents may not necessarily represent the young South African consumer cohort in its entirety. To address this limitation, future research should expand the scale of research to include respondents from other provinces in SA. Also, the study could be broadened to compare the findings with other emerging economies, such as Vietnam, China, Thailand, Indonesia, Turkey, South Korea, Mexico, Argentina, Saudi Arabia, India, Pakistan, Russia, Poland, as well as other African countries.

Since the researcher personally administered the questionnaires to respondents and in explaining the nature of the research, addressed them about climate change, plant-based products, the contributions of this study, as well as how they can contribute towards the survival of the planet, there was a potential for bias. Consequently, respondents who were approached in this study could have had a natural bias towards plant-based products, which could have resulted from possible response bias. To address this limitation of subconsciously stimulated

socially desirable answering, future researchers should not explain the nature of the study to respondents, themselves, as this could be done without the researcher being present. According to Cook (2010, p. 63), in order to counteract the issue of bias, researchers should employ an independent party to explain the purpose of the study. However, the sample of this study did not only include plant-based product consumers and in fact only 2.4% were purely plant-based product consumers. The others all included animal-based food products in their diet, so it is believed that this limitation does not negatively impact the quality of the research findings.

Self-selection bias was also another weakness, which may have led to research bias, since only those individuals who volunteered participated in this research. Thus, the current research may have attracted respondents who regarded themselves as eco-conscious, knowledgeable about the environment and/or health conscious and thus may have led to the relatively high levels of agreement with the statements representing these variables – environmental knowledge, environmental concern, and health consciousness. However, relatively high levels of environmental knowledge, environmental concern, and health consciousness are not uncommon in similar studies, as evident in the research by Qi et al. (2020, p. 14); Siyal et al. (2021, p. 14); Yadav and Pathak (2016, p. 126) and Zheng et al. (2020, p. 17). To avoid this potential bias, future research could utilise proper randomization in sample selection, such as obtaining a list of individual respondents – a usable sampling frame, to enable randomisation.

This was a quantitative study that lacked in-depth insights, thus providing merely a snapshot of the phenomenon and existing relationships. Future research could engage in mixed-method research to yield more robust inferences and provide a more complete picture of the evidence. According to Shiyanbola et al. (2021, p. 798), the mix method research technique involves integrating qualitative and quantitative results that produce enhanced and comprehensive answers to research questions. Thus, a mixed method study certainly might have helped to explain the somewhat confusing results relating to the low levels of agreement on the impact of others within the subjective norm construct, despite subjective norm influencing plant-based product purchase intention. A qualitative study could also understand why there was low plant-based product consumption among respondents, albeit high plant-based product trial. Therefore, qualitative research, which involves in-depth interviewing, open-ended questions, focus groups and observation (Daniel, 2016, pp. 92-93) could be employed to generate a broader understanding of young South African consumers' plant-based product purchase intentions.

This study was limited to plant-based food products. Other product categories could be explored, such as green fashion, green vehicles, green appliances, green household cleaning products, green cosmetics or toiletries as well as eco-friendly dinnerware, which serve as potential fields of research within the South African context, and which require further investigation. Hence, future researchers can expand the framework of this research to other industries.

Future research could also explore the variations in perceptions and plant-based product purchase intentions across different segments within the young consumer group. Gender differences, for example, based on perceptions and purchase intentions towards plant-based products could be investigated, however with caution due to the multifaceted manner or variances in gender and sex today (Steinfield, Hutton, & Cheded, 2024, pp. 4-5).

5.6 Conclusion

This study investigated young South African consumers' plant-based product purchase intentions and determined the level of importance of the traditional green behaviour antecedents such environmental knowledge, environmental concern, attitude towards plant-based products, subjective norm, moral attitude and perceived behavioural control that influence plant-based product purchase intention during the global climate crisis and COVID-19 pandemic. Furthermore, concerns about the COVID-19 pandemic and health consciousness were investigated, as catalysts for sustainable change in lifestyle and dietary habits, to determine the level of influence they exert on young consumers' plant-based product purchase intentions.

This study developed and validated a model which extends key elements from the TPB to include other variables potentially relevant in explaining the factors influencing young consumers' plant-based product purchase intentions during the global climate crisis and COVID-19 pandemic. This serves as scaffolding for future studies investigating plant-based product purchase intention and consumption during future global health and climate crises. Overall, the direct positive and significant predictors of plant-based product purchase intention were subjective norm, moral attitude, and attitude towards plant-based products, as they were the main drivers of young South African consumers' plant-based product purchase intentions, with environmental concern, environmental knowledge and concerns about the COVID-19 pandemic serving as predictors of plant-based product purchase intention through attitude

towards plant-based products. These findings support previous research on plant-based, organic and green food purchase intention, conducted in other emerging economies. Hence, the research contributes evidence of young consumers' purchase intentions towards plant-based products and underscores the need for climate change education, plant-based product awareness along with their merits and government intervention, thereby strengthening young consumers' knowledge and willingness to purchase plant-based products under the effect of the global climate crisis and a zoonosis, such as the COVID-19 pandemic.

This study also found that plant-based product adoption among young South African consumers is still in its infancy, albeit gaining momentum, as this cohort intends purchasing plant-based products for ecological reasons. While only 2.4% of the respondents are completely converted (pure plant-based product consumers), many are trying the weekly incorporation of plant-based products, and more are trying the monthly incorporation. This is a start in a predominantly meat-eating country, such as SA. Since global warming is accelerating at unprecedented levels, humanity should be encouraged, through targeted policy intervention, to reduce meat consumption to avoid further environmental degradation and even address health issues.

The findings from this study put forth some mechanisms to encourage the purchase intentions of plant-based products among young consumers in SA. By understanding the factors that influence plant-based product purchase intention among young consumers, green marketing practitioners and plant-based product producers can leverage them to devise relevant, effective, and appropriate tactics that support and promote plant-based product purchase intention among young consumers.

Governments, policymakers and firms should ameliorate their climate change action plan by expanding their business model to become more socially and environmentally responsible and ensuring sustainable development and a green economy – one that fosters environmental protection and preservation, and the security of human and social well-being, for future generations. However, robust strategies, by governments and firms to date, to achieve these goals, have been lacking and fell short of what is required. Since a negligible progress was observed, COP28 has now revised these climate goals to bring GHG emissions in 2030 to realistic and attainable levels "consistent with 2°C and 1.5°C pathways" (UNEP, 2023a, pp. 20-21; 2023b: para 1-2). Thus, governments should shift their focus on and tackle climate

change before it is too late and especially in SA, where there is still a strong reliance on fossil fuel-powered energy generation, greater investment in renewable energies should happen. According to Zhou (2023: para 1), SA is not going to reach its 2030 climate target of reducing GHG emissions by 50%, unless it improves its climate change policies and commitments to meet the Paris Agreement's 1.5°C temperature limit. Hence, this study is also an appeal to the South African government to synchronise its climate change policies, develop and implement a robust climate action plan, and commit to it, for effective emission control.

Humanity has been at the forefront of innovation on earth, the most influential and intelligent species on the planet. Paradoxically, this intelligence and influence have come with consequences – a dispersion of catastrophes ranging from nuclear explosions, environmental degradation, wars, loss of biodiversity, oil spillages, pollution, environmental disasters, all occurring throughout history; and there is only so much that the planet can endure. With the extreme weather events intensifying in SA, leaving destruction in their wake, there is an unprecedented need for individuals to be more conscious about their food purchase decisions, by striving to purchase plant-based food products, rather than conventional products and reducing their reliance on animal products – this can also be galvanised through government and business intervention and tangible action to help raise public awareness about climate change and how a plant-based diet can help to diminish carbon emissions.

Humanity is on autopilot when it comes to nature and climate change, and this needs to stop. Thus, the time has come for accelerated action to counter human-caused or anthropogenic climate change, where mankind must strive, collectively, for more ambitious climate targets and emission reductions over the next critical decade, to prevent the consequence of their influence on earth – to prevent the catastrophic effects of anthropogenic climate change. Since the planet is at the forefront of an existential climate crisis, a reduction in carbon emissions through diet is an essential element of survival. In this study, it was discovered that although, plant-based product adoption among young South African consumers is still in its infancy, it is gaining momentum, and a significant percentage of the sample have engaged in plant-based product trial and are incorporating plant-based products in their diet. Moreover, the model, generated from this study, could be applied to predict purchase intentions across a wide range of green product categories and different market segments, and these could be tested and explored, considering the global climate crisis and a future zoonosis or pandemic. Studies have shown that plant-based products have a significantly smaller carbon footprint than animal-

based food products, proving essential towards human and planetary health. Therefore, the adoption of plant-based products will help nations to tackle diet-related issues and reduce their environmental impact. Earth is fragile and under immense strain – on the verge of a climate catastrophe and changes should happen sooner than expected. After all, the survival of humanity and the 8.7 million species on earth depends on how mankind utilises and preserves earth's natural resources, now.

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APPENDICES

Appendix A: Informed Consent

UKZN HUMANITIES AND SOCIAL SCIENCES RESEARCH ETHICS COMMITTEE (HSSREC)

APPLICATION FOR ETHICS APPROVAL

For research with human participants

Information Sheet and Consent to Participate in Research

Date: 2023

Greetings,

My name is Mrs. Jenasha Tooray (Pillay) from the School of Management, Information Technology and Governance, College of Law and Management Studies (Mobile: [redacted], E-mail: pillayj@ukzn.ac.za). My supervisor is Prof. Debbie Ellis (E-mail: vigard@ukzn.ac.za).

You are being invited to consider participating in a study that involves research on the impact that the global climate crisis and COVID-19 pandemic have on young consumers' plant-based product purchase intentions.

The aim and purpose of this research is to gain insight and assess how the various factors such environmental concern, environmental knowledge, health consciousness, moral attitude, social norms, perceived behavioural control, attitude and the concern for the COVID-19 pandemic influence young South African consumers in purchasing plant-based products. Furthermore, this study seeks to determine whether the concern for the COVID-19 pandemic, and health consciousness are catalysts for sustainable change in lifestyle and dietary habits.

The study is expected to include 381 respondents from the five campus sites at the University of KwaZulu-Natal, South Africa. It will involve the personal administration of questionnaires to respondents via quota sampling, who are 18 to 40 years old and enrolled at UKZN. The duration of your participation if you choose to participate and remain in the study is expected to be 15 minutes.

This study has been ethically reviewed and approved by the UKZN Humanities and Social Sciences Research Ethics Committee (approval number: HSSREC/00005159/2023).

In the event of any problems or concerns/questions you may contact the researcher on 0[redacted] or the UKZN Humanities & Social Sciences Research Ethics Committee, contact details as follows:

HUMANITIES AND SOCIAL SCIENCES RESEARCH ETHICS ADMNISTRATION
Research Office, Westville Campus
Govan Mbeki Building
Private Bag X 54001
Durban 4000 KwaZulu-Natal, South Africa
Tel: 27 31 2604557- Fax: 27 31 2604609
Email: HSSREC@ukzn.ac.za

Your participation in the study is voluntary and by participating, you are granting the researcher permission to use your responses. You may refuse to participate or withdraw from the study at any time with no negative consequence. Your anonymity will be maintained by the researcher and the School of Management, I.T. & Governance and your responses will not be used for any purposes outside of this study.

All data, both electronic and hard copy, will be securely stored during the study and archived for 5 years. After this time, all data will be destroyed.

If you have any questions or concerns about participating in the study, please contact me or my research supervisor at the numbers listed above.

Sincerely,

Mrs. Jenasha Tooray (Pillay)

CONSENT TO PARTICIPATE

I _____have been informed about the study entitled: 'Young consumers' purchase intentions towards plant-based products during the global climate crisis and Coronavirus pandemic' by Jenasha Tooray (Pillay).

I understand the purpose and procedures of the study.

I have been given an opportunity to ask questions about the study and have had answers to my satisfaction.

I declare that my participation in this study is entirely voluntary and that I may withdraw at any time without affecting any of the benefits that I usually am entitled to.

I have been informed about any available compensation or medical treatment if injury occurs to me as a result of study-related procedures.

If I have any further questions/concerns or queries related to the study, I understand that I may contact the researcher at - (Mobile: [redacted] or E-mail: pillayj@ukzn.ac.za).

If I have any questions or concerns about my rights as a study participant, or if I am concerned about an aspect of the study or the researchers then I may contact:

HUMANITIES & SOCIAL SCIENCES RESEARCH ETHICS ADMINISTRATION
Research Office, Westville Campus
Govan Mbeki Building
Private Bag X 54001
Durban
4000
KwaZulu-Natal, SOUTH AFRICA
Tel: 27 31 2604557 - Fax: 27 31 2604609
Email: HSSREC@ukzn.ac.za

_____ _____

Signature of Participant **Date**

Appendix B: Questionnaire

Please rate these statements on a scale from 1 (strongly disagree) to 5 (strongly agree).

Section A: Plant-based Product Purchase Intention [PBPPI]

	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
1. I will consider buying plant-based products because they are less polluting.					
2. I will consider switching to plant-based brands for ecological reasons					
3. I plan to spend more on plant-based food products rather than animal-based food products.					
4. I expect to purchase plant-based products in the future because of its positive environmental contribution.					
5. I definitely want to purchase plant-based products in the near future.					

Section B: Attitude towards Plant-based Products [ATT]

	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
1. I like the idea of purchasing plant-based products.					
2. Purchasing plant-based products is a good idea.					
3. I have a favourable attitude towards purchasing plant-based products.					
4. Buying plant-based products would be good.					

Section C: Moral Attitude [MA]

	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
Purchasing plant-based food products instead of the conventional products would make me:					
1. Feel like I am personally contributing to something better.					
2. Feel like I am doing the morally right thing.					
3. Feel like a better person.					

Section D: Subjective Norm [SN]

	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
1. I learn about plant-based products from my family and friends.					
2. My family and friends interact with me on environmental issues.					
3. I often buy plant-based products based on my family member's and friend's reference.					
4. I often share the information about plant-based products with my family and friends.					

Section E: Perceived Behavioural Control [PBC]

	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
1. I believe I have the ability to purchase plant-based products.					
2. If it were entirely up to me, I am confident that I will purchase plant-based products.					
3. I see myself as capable of purchasing plant-based products.					
4. I have resources to purchase plant-based products.					
5. Plant-based products are generally available in the stores where I usually do my shopping.					
6. There are likely to be plenty of opportunities for me to purchase plant-based products.					
7. I feel that purchasing plant-based products is totally within my control.					

Section F: Environmental Concern [EC]

	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
1. I am very concerned about the state of the world's environment.					
2. I am willing to reduce my meat consumption to help protect the environment.					
3. Major social changes are necessary to protect the natural environment.					
4. Major political change is necessary to protect the natural environment.					
5. Anti-pollution laws should be enforced more strongly.					

Section G: Environmental Knowledge [EK]

	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
1. I know more about environmental issues than the average person.					
2. I know the reasons why plant-based products help to protect the environment.					
3. I understand the environmental phrases and symbols on the packaging of plant-based products.					
4. I know that buying plant-based products is environmentally safe.					

Section H: Health Consciousness [HC]

	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
1. I choose food carefully to ensure good health.					
2. I often think about health-related issues.					
3. I consider myself as a health-conscious consumer.					

Section I: Concerns about the COVID-19 Pandemic [CC19P]

	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
1. I am scared of dying from COVID-19.					
2. I am concerned that COVID-19 is just one of many zoonotic diseases we will experience.					
3. I am concerned about my health due to the COVID-19 pandemic.					
4. I am afraid of having long-term health problems as a result of the COVID-19 pandemic.					
5. I need to protect myself against the COVID-19 virus.					

Section J: Perceptions about COVID-19

	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
1. The pandemic has increased my plant-based product purchase intentions.					
2. Consuming plant-based products is necessary to improve my health and immunity.					
3. Consuming plant-based products will help to reduce future zoonotic outbreaks such as COVID-19.					

Section K: Food Consumption Behaviours

Please select the most appropriate response from the options below.

1. **How often do you consume animal-based food products?**

Never	**1**
Less than once a month	**2**
At least once a month	**3**
At least once a week	**4**
Every day	**5**

2. **Have you ever tried plant-based food products (meat and dairy substitutes)?**

Yes	**1**
No	**2**

3. **How often do you consume plant-based food products (meat and dairy substitutes)?**

Never	**1**
Less than once a month	**2**
At least once a month	**3**
At least once a week	**4**
Every day	**5**

Section L: Biographical Variables

Please select the most appropriate response from the options below.

1. **Gender**

Male	**1**
Female	**2**

2. **Age**

18-25	**1**
26-34	**2**
35-40	**3**

3. **Ethnicity**

Black African	**1**
White	**2**
Indian	**3**
Coloured	**4**

1. **Current Year of Study**

1st year	**1**
2nd year	**2**
3rd year	**3**
4th year / Honours	**4**
Masters	**5**
PhD	**6**

Thank you for your participation!

Appendix C: Gatekeeper's Permission Letter – Registrar

UNIVERSITY OF KWAZULU-NATAL
INYUVESI YAKWAZULU-NATALI

1 December 2022

Jenasha Tooray (SN 200104989)
School of Management, IT & Technology
College of Law and Management Studies
Pietermaritzburg Campus UKZN
Email: Pillayj@ukzn.ac.za vigard@ukzn.ac.za

Dear Jenasha

RE: PERMISSION TO CONDUCT RESEARCH

Gatekeeper's permission is hereby granted for you to conduct research at the University of KwaZulu-Natal (UKZN), towards your postgraduate degree, provided Ethical clearance has been obtained. We note the title of your research project is:

"Young consumers' purchase intentions towards plant-based products during the global climate crisis and Coronavirus pandemic."

It is noted that you will be constituting your sample by handing out questionnaires to students (Zoom, Skype or telephone interviews recommended) at UKZN

Please ensure that the following appears on your notice/questionnaire:

- Ethical clearance number;
- Research title and details of the research, the researcher and the supervisor;
- Consent form is attached to the notice/questionnaire and to be signed by user before he/she fills in questionnaire;
- gatekeepers approval by the Registrar.

You are not authorized to contact staff and students using the 'Microsoft Outlook' address book. Identity numbers and email addresses of individuals are not a matter of public record and are protected according to Section 14 of the South African Constitution, as well as the Protection of Public Information Act. For the release of such information over to yourself for research purposes, the University of KwaZulu-Natal will need express consent from the relevant data subjects. Data collected must be treated with due confidentiality and anonymity.

Yours sincerely

[redacted]

Dr KE CLELAND: REGISTRAR

Appendix D: Gatekeeper's Permission Letter – School of Clinical Medicine

UNIVERSITY OF KWAZULU-NATAL
INYUVESI YAKWAZULU-NATALI

COLLEGE OF HEALTH SCIENCES

15 May 2023

Dear Jenasha

RE: PERMISSION TO CONDUCT RESEARCH

Prof Dlova (Dean and Head of School of Clinical Medicine) hereby grants you permission to conduct research at the University of KwaZulu-Natal (UKZN), towards your postgraduate degree, provided Ethical clearance has been obtained. We note the title of your research project is:

"Young consumers' purchase intentions towards plant-based products during the global climate crisis and Coronavirus pandemic."

It is noted that you will be constituting your sample by handing out questionnaires to students (Zoom, Skype or telephone interviews recommended) at UKZN.

Please ensure that the following appears on your notice/questionnaire:

- Ethical clearance number;
- Research title and details of the research, the researcher and the supervisor;
- Consent form is attached to the notice/questionnaire and to be signed by user before he/she fills in questionnaire;
- gatekeeper's approval by the Registrar.

You are not authorized to contact staff and students using the 'Microsoft Outlook' address book. Identity numbers and email addresses of individuals are not a matter of public record and are protected according to Section 14 of the South African Constitution, as well as the Protection of Public Information Act. For the release of such information over to yourself for research purposes, the University of KwaZulu-Natal will need express consent from the relevant data subjects. Data collected must be treated with due confidentiality and anonymity.

Kind regards.

[redacted]

Prof Ncoza Dlova
Dean & Head of School: Clinical Medicine
Nelson R. Mandela School of Medicine
University of KwaZulu-Natal

School of Clinical Medicine
College of Health Sciences
Postal Address: P/Bag X54001, Durban, 4000, South Africa
Telephone: +27 (0) 31 260 4216 **Facsimile:** +27 (0) 31 260 4041 **Email:** dean_scm@ukzn.ac.za **Website:** www.ukzn.ac.za
Founding Campuses: Edgewood Howard College Medical School Pietermaritzburg Westville

INSPIRING GREATNESS

Appendix E: Structure and Loadings of Items During the EFA Stage

	Factor								
	1	2	3	4	5	6	7	8	9
PBPPI2	0.896								
PBPPI4	0.776								
PBPPI1	0.693								
PBPPI3	0.672								
PBPPI5	0.596								
PBC2	0.396								
CC19P4		0.851							
CC19P1		0.825							
CC19P3		0.811							
CC19P5		0.764							
CC19P2		0.603							
MA2			0.860						
MA3			0.804						
MA1			0.757						
HC3				0.923					
HC1				0.796					
HC2				0.664					
SN1					0.723				
SN3					0.716				
SN2					0.712				
SN4					0.482				
EC3						0.724			
EC5						0.620			
EC4						0.615			
EC1						0.454			
PBC6							0.793		
PBC5							0.687		
PBC7							0.501		
PBC4							0.433		
EK2								0.771	
EK1								0.651	
EK3								0.553	
EK4								0.360	
ATT2									0.768
ATT1									0.665
ATT4									0.505

Appendix F: Reliability Values of Items During the EFA Stage

Factor	Construct	Items included	Variance extracted	Cronbach's alpha	Average inter-item correlation
1	Plant-based product purchase intention (PBPPI)	PBPPI: 1 – 5; PBC: 2	22.357	0.856	0.499
2	Concerns about COVID-19 pandemic (CC19P)	CC19P: 1 - 5	6.676	0.875	0.594
3	Moral attitude (MA)	MA: 1 - 3	5.864	0.830	0.626
4	Health consciousness (HC)	HC: 1 - 3	4.720	0.827	0.613
5	Subjective norm (SN)	SN: 1 - 4	3.891	0.782	0.473
6	Environmental concern (EC)	EC: 1, 3-5	3.218	0.707	0.382
7	Perceived behavioural control (PBC)	PBC: 4 – 7	2.721	0.699	0.370
8	Environmental knowledge (EK)	EK: 1 – 4	2.225	0.696	0.361
9	Attitude towards plant-based products (ATT)	ATT: 1 – 2, 4	1.497	0.780	0.541

Appendix G: Measures of Shape for All Constructs

Item	Skewness	Kurtosis
PBPPI1	-0.893	0.591
PBPPI2	-0.452	-0.223
PBPPI3	0.118	-0.609
PBPPI4	-0.811	0.505
PBPPI5	-0.789	0.254
ATT1	-1.036	1.826
ATT2	-0.983	1.837
ATT3	-0.385	0.037
ATT4	-1.038	2.059
MA1	-0.861	0.745
MA2	-0.602	0.031
MA3	-0.489	-0.367
SN1	0.195	-0.969
SN2	0.059	-1.038
SN3	0.400	-0.715
SN4	0.148	-0.979
PBC1	-1.186	1.931
PBC2	-0.468	-0.292
PBC3	-1.040	1.143
PBC4	-0.137	-0.778
PBC5	-0.863	0.424
PBC6	-0.364	-0.307
PBC7	-0.620	-0.126
EC1	-1.071	1.217
EC2	-0.107	-0.976
EC3	-0.962	1.990
EC4	-0.953	1.049
EC5	-1.726	3.557
EK1	-0.004	-0.443
EK2	-0.577	-0.182
EK3	-0.175	-0.477
EK4	-1.002	1.428
HC1	-0.336	-0.608
HC2	-0.834	0.393
HC3	-0.407	-0.558
CC19P1	-0.852	-0.615
CC19P2	-1.030	0.874
CC19P3	-0.994	0.454
CC19P4	-1.097	0.525
CC19P5	-1.837	3.942

Appendix H: Ethical Clearance Approval Letter

UNIVERSITY OF KWAZULU-NATAL
INYUVESI YAKWAZULU-NATALI

CORRECTED LETTER

16 February 2023

Mrs Jenasha Tooray (**200104989**)
School of Management, IT & Governance
Westville Campus

Dear JTooray,

Protocol reference number: HSSREC/00005159/2023
Project title: Young consumers' purchase intentions towards plant-based products during the global climate crisis and Coronavirus pandemic
Degree: PhD

Approval Notification – Expedited Application

This letter serves to notify you that your application received on 14 December 2022 in connection with the above, was reviewed by the Humanities and Social Sciences Research Ethics Committee (HSSREC) and the protocol has been granted FULL APPROVAL.

Any alteration/s to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form, Title of the Project, Location of the Study, Research Approach and Methods must be reviewed and approved through the amendment/modification prior to its implementation. In case you have further queries, please quote the above reference number. PLEASE NOTE: Research data should be securely stored in the discipline/department for a period of 5 years.

This approval is valid until 16 February 2024.
To ensure uninterrupted approval of this study beyond the approval expiry date, a progress report must be submitted to the Research Office on the appropriate form 2 - 3 months before the expiry date. A close-out report to be submitted when study is finished.

HSSREC is registered with the South African National Health Research Ethics Council (REC-040414-040).

Yours sincerely,

[redacted]

Professor Dipane Hlalele (Chair)

/ms