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**4/05/2022**

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## **ABSTRACT**

Shopping used to be a key function that defined the Central Business District (CBD) (Evangelista, Low, Nguyen 2019: 150). However, the author believes that the central position occupied by traditional shopping locations as preferred shopping locations has deteriorated. Due to severe urban core traffic congestion, the decline in the dominance of the CBD can be attributed to the decrease in shopping trip frequency (Kusumowidagdo, Sachari, Sachari, and Widobo 2015: 53), as well as the increase in the establishment of nearby shopping locations in the outer areas of the city. Hence the loss of economic viability and the reduction of retail areas (Guimaraes 2018: 128). This study aims to determine the influence of traffic congestion on shopping preference in the Ethekwini area. Quantitative, non-probabilistic research methods, and convenience sampling techniques were used to identify and select the participants that make up the 400 participants. In this study, convenience and accessibility, tenant mix, entertainment, safety, and parking spaces are key attributes of shopping. The results also show that traffic congestion density affects shoppers' perception of shopping location preferences. This study suggests that city decision makers must consider and combine all mitigation measures to eliminate traffic congestion and restore the economic vitality of the CBD. The results cannot be generalised to a wider population and are only applicable to the specific participants under study.

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## **LIST OF ACRONYMS**

KZN - KwaZulu- Natal

CBD - Central Business District

PFA - proposed floor

# CHAPTER ONE

## 1.1 Introduction

Wu, Wilkes, Silver, and Clark (2019: 490) explain that a city is an environment for human interaction, which is established by a unique combination of institutions, culture, economics, and social assets. On a global scale, cities are more diverse than ever, posing great challenges in theory and urban research. Yao, Hong, Wu, Zhang, and Guan (2018: 164) with the continuous development of the city, the challenge of urban traffic congestion is becoming more and more serious. Traffic congestion brings inconvenience in commuting to residents, which affects the location of activities and affects the location of travel chosen for shopping.

According to Yang, Fang, Xu, Yin, Li, and Lu (2019: 2) in cities shopping activities are representative of spatial interaction. The author defines spatial interaction as the dynamic flow of people from one place to another. Space interaction is the result of uneven distribution of resources and elements. People must travel to balance the supply and demand of space. An urban road network is a type of spatial network (Yao *et al.* 2018: 163). However, the author reports that the intensity of urban spatial interaction decreases with the increase of urban spatial network travel challenges, such as traffic network congestion. Du, Yang and Liu (2017: 2) holds a view that people are always concerned about travel discomfort caused by traffic congestion.

Traffic congestion is the main feature of spatial interaction in urban human flow. According to (Yeghikyan, Opolka, Nani, Lepri, and Lio 2020: 1), infrastructure development policies in urban management need to provide for the relationship between urban interaction, economic development and social scenarios related to it. According to the spatial interaction theory of Wang, Li, Bu, and Yu (2020: 1), as well as various flows such as population mobility, the material carrier of urban connections, the author further believes that the scale of the city and the development policy of the establishment of shopping locations and the expansion of urban trunk lines are factors that will affect the spatial interaction in the urban form.

Wirth, Gret-Regamey, Moser, and Stauffacher (2016: 65) state that urbanisation is regarded as an accelerator that promotes innovation and economic growth. At the same time, urbanisation also brings major changes and challenges to the urban environment. Environmental changes include residents' attachment to places, such as increased preference for modern shopping locations. The dependency of these places is affected by many factors, such as traffic convenience and accessibility, location ambition, entertainment, safety and security, tenant mix and availability of parking spaces.

According to Sultan, Tarafder, Pearson and Henryks (2020: 2), personal interest in modern shopping venues and accessories has greatly increased. Motivation that encourages shoppers to increase shopping satisfaction and avoid discomfort (such as traffic jams) supports shopper interest. Satisfaction is an important determinant of behavioural intention, and its degree depends on the level of realisation. Anciaes, Stockton, Ortegon and Scholes (2019: 89) contend that traffic congestion is the main source of stress. In addition, the reduced ability to travel limits the physical activity level of the affected people. The decrease in physical activity is related to poor health. There is ample evidence that traffic jams will have a negative impact on society. Residents have little or no contact with locations that are heavily congested and have a higher preference for convenient locations.

The motivation for this research comes from an urban interaction scenario, in which it is necessary to determine the influence of traffic congestion on shopping location preferences in the eThekweni region. The eThekweni area comprises 2297 square kilometers and is 14% of in KwaZulu-Natal province. It is the third largest city in South Africa and has the busiest port in Africa. The eThekweni area has a population of 3.5 million, with an annual growth rate of 1%. eThekweni City is located in the eastern region of the great KwaZulu Natal province (Zungu, Maseko, Kalle, Ramesh and Downs 2020: 2). In different studies, Wirth, Gret-Regamey, Moser and Stauffacher (2016: 65); Sultan, Tarafder, Pearson and Henryks (2020: 2); Wang, Li, Bu and Yu (2020: 1) traffic congestion and shopping location preferences have been discussed, but the direct and significant relationship is limited. In this study, the researcher focused on traffic congestion and its influence on shopping location preference in the eThekweni region.

## 1.2 Background

The eThekweni metropolis is the main business centre city of KwaZulu -Natal province with a population of 3.5 million people. It is a major shopping and leisure city, with many tourist attractions characterised by modern shopping centres built together with large urban peripheral facilities springing up in all locations and suburbs (Suel and Polak 2017: 147). The size of these centres depends on the number of residents. Over the past few decades, the metropolis's population has increased significantly, creating more intense demand for convenient and accessible shopping destinations. Rapid population increase, high motorization rate and rapid expansion of residential settlements, has intensified a need for more shopping centres, efficient and convenient road infrastructure as put forward by (Mohamad, Al-Katheeri and Salam, 2015: 76). Nonetheless, due to increased establishment and expansion of vicinity shopping locations, commercial and non-commercial functions have gradually shifted from the municipal district to the created shopping venues. As a result, these has resulted into decline of economic viability of the traditional shopping centre.

In addition, Ronse, Boussauw, and Lauwers (2015: 2275) affirm that large-scale scattered organised shopping locations on the periphery of the city have a negative impact on commercial activities in the CBD. Mashaba and Wiese (2016: 39) argued that suburban residents reacted differently to the influx of nearby shopping centres and shifted their shopping activities from the CBD to the vicinity shopping venues. In the eThekweni, organised shopping centres have been embraced by residents and widely used for shopping purposes and have become fast central part of life for urban residents (Kunc *et al.* 2016: 27, Prashar *et al.* 2017: 235). However, the cluster of shopping centres in residential areas is causing a disastrous dimension for shopping trips to the CBD.

Furthermore, according to (Kabadayi and Paksoy 2016: 457), research on shopping location growth, establishment and expansion has not been proportional. Although studies have been conducted in emerging economies such as Kenya, Nigeria, and Botswana. South African cities the eThekweni not exceptional, have been largely excluded with the exception of a few. The eThekweni is a very popular city, and its



development is accelerating, thus there is a need to study and understand social and behaviour patterns of the urban residents.

According to Chakrabarty and Gupta (2014: 43), rapid urbanisation has become a trend since the industrial revolution and has continued in both developed and developing economies up until the 20th century. It is characterised by the rapid expansion of shopping locations, economic prosperity and high demand for consumption and travel. Drawing upon the conception of global economic boom, Sarkar (2019: 3) indicates that in developing economies, rapid urbanisation is not supported by the necessary infrastructure development policies such as those relating to sustainable and efficient transportation networks. It is an established fact that cities have a high level of traffic congestion and equally frustrating travel (Mondschein and Taylor 2017: 1). Moreover, authors expounded that transportation is an important human factor in cities, but in those in developing economies, shopping and work-related travel are made very complicated due to traffic congestion.

Musah, Peng, and Xu (2020: 3), state that urban spatial interaction is a key requirement in human life, but in urban society, due to traffic congestion, spatial interaction is restricted. Traffic congestion, according to Zheng, Wang, Zhu, and Jiang (2020: 1) frustrate commuters because it often causes unexpected delays and lead to waste of resources (time and money). It is generally recognised that the largest source of traffic congestion can be attributed to the deterioration and inadequacy of the road network (Mandlik 2020: 230), the trend and utilisation of private car ownership, the rapid population growth, and the lag of the spatial network (Guo, Tang, and Guo 2020: 2).

Moreover, Guo, Tang and Guo (2020: 2) argue that urban growth is an inevitable trend of social development, which not only promotes huge changes in population patterns and lifestyles, but also brings about social challenges. The challenges that coincide with urban development (mainly traffic congestion) are also spreading. They result in waste of resources, pressure, road damage, accidents, and environmental pollution, and reduce road safety. Traffic congestion also increases the high social and economic costs of residents and businesses (Mondschein and Taylor 2017: 65)

According to the research of Zheng *et al.* (2020: 1) the main causes of traffic

congestion include deterioration and the insufficiency of road networks, poor traffic management systems, high car ownership and utilisation, poor driving habits, and bad weather conditions. In addition, the impact of special events, such as police inspections, road maintenance, vehicle breakdowns and traffic accidents on traffic congestion is also considered. Due to severe traffic congestion in the core city of the eThekweni region, the adverse impact has exceeded the commercial and shopping activities of the CBD.

Sarkar (2019: 9) argues that traffic congestion is a costly urban externality that has an impact on the quality of life and economic viability. Additionally, Musah, Peng and Xu (2020: 3) argue that as the traffic flow in a CBD continues to deteriorate, travel and other activities (such as shopping) are blocked or stopped, leading to a decline in shoppers' shopping preferences. City agents have positioned themselves in spatially accessible and organised shopping locations to enjoy the proximity to customers and avoid traffic congestion and related costs.

### 1.2.1 Shopping

Shopping is an experience-based social activity according to (Erkip and Ozuduru 2015: 2, Kapusy and Logo 2017: 1). Additionally, Makgopa (2018: 121) is of a view that shopping is an important social activity for humans, and shopping is motivated to satisfy needs (Matthysen, Pelser and Prinsloo 2019: 72). Shoppers are motivated internally or externally during the shopping process (Tidwell and Ekici 2016: 292). Shopping involves not only buying household items, but also provides sources of entertainment (Dalziel and Bevan-Dye 2018: 216). Shopping takes time and money and is affected by variables such as time and space (Lloyd, Chan, Yin and Chan 2014: 37). Shopping is the source of fun (Rousseau and venter 2014: 4), entertainment and social experience (Mohamad, Al-kathari and Salaam, 2015: 77). Shopping satisfies many human social and psychological needs (Brochado, Oliveira, Rita, and Oliveira 2019: 484), and has become a way of life (Said, Gambo and Ismail 2016: 139).

Shopping is an instant activity and occupies an important place in the human lifestyle (Parmar and Chauhan, 2018: 1). Aldousari and El-sayed (2017: 144) state that shopping is a daily element of personal behaviour. Schoenau and Muller (2017: 63) argue that shoppers are influenced by different factors, such as the convenience of

traveling to shopping destinations. Since the introduction of local planned shopping locations, the shopping experience has changed. Shopping venues have been transformed in a way that attracts shoppers, which in turn has drawn attention to the preference of shopping venues.

The road network is a common means of transportation for most shopping trips, and shoppers can be sensitive to road traffic when choosing a shopping location (Sarkar 2019: 11). In the process of determining the shopping location preference, preference is influenced by many factors. Therefore, this study aims to determine the influence of traffic congestion on shopping preferences in the eThekweni area.

### 1.2.2 Shopping Behaviour

According to Rani (2014: 52), shopping behaviour can be defined as an individual's choice development and behaviour in purchasing and using products or services. Behaviour, according to Jakka and Matha (2018: 2249), is not constant, while Karami, Olfati, and Dubinsky (2015: 290) infer that individual behaviour is different. In today's consumer-driven world, Upadhyaya (2017: 93) believes that shopping behaviour forms a complex pattern.

According to Erasmus and Mpinganjira (2019: 3), shopper behaviour is a description of a large number of psychological and physical processes related to shopper decision-making. Sevanandee and Damar-Ladkvo (2018: 182) cover pre-purchase, consumption, and post-purchase evaluation. In addition, shopper behaviour according to Lombard and Parumasur (2017: 1) is a combination of activities and influences that occur before, during, and after a purchase.

Kotler and Keller (2016: 179), and Fernandes and Panda (2019: 131) define shopper behaviour as a process in which individuals, groups or organisations choose shopping concepts to achieve complete satisfaction. Panwar, Anand, Ali and Singal (2019: 36) argue that shopper behaviour is a way for shoppers to use their resources to satisfy their desires. Visser, Schoormans, and Vogtlander (2018: 664) attribute shopping satisfaction to many factors. This means that shopping behaviour has an indirect impact on shoppers' decision-making, and the decision-making involves more scope than merely buyers and sellers.

The establishment and expansion of modern shopping locations is one of the most significant changes in South African cities in the past 20 years (Sales 2017: 55). In terms of shopping location choice attributes (Kushwaha, Ubeja, and Chatterjee 2017: 274, Visser, Schoormans, and Vogtlander 2018: 664) indicate in their research that ease of access, tenant mix, ambitious environment, safety, and ample parking spaces are major factors influencing perception of shopping location choice (Belwal and Belwal 2017: 487). A further consideration is highlighted that the new shopping location concept, has generated both positive and negative externalities. Shoppers are spoilt for excellent in their shopping location destination, a result of rapid establishment and expansion of shopping locations that suit their preferences.

Finding by (Matthysen 2019: 73, Kunc, Krizan, Bilkova, Barlik, and Maryas 2016: 27) show that due to economic growth and the continuous acceleration of global transformation, shopping locations concept and human shopping lifestyle are changing rapidly on a global pace. Additionally, authors also stipulate that the new shopping location concept has led to rise of traditional shopping venue obsolescence. Moreover, it is also indicated by (Guimaraes 2018: 128) that traditional shopping locations are outdated.

In South Africa, the new shopping location concept has accelerated sharply in the 25 years since apartheid, in all suburbs and locations of urban areas (Gary and Steyn 2015: 244, Savelli, Cioppi and Tombari 2017: 1214). The eThekweni region is no exception (Meena, Patil and Mondal 2019: 134). All South African cities have a variety of shopping places, such as unplanned (for example, eThekweni CBD) to planned shopping places (such as exhibition halls and Musgrave shopping mall in the eThekweni metropolis). Additionally, most of the planned shopping locations are located outside the city centre, providing different shopping benefits for nearby shoppers (Mittal and Jhamb 2016: 387).

In today's consumer-oriented world, the rise of contemporary shopping lifestyles and the establishment of modern organised shopping venues are characteristics of cities in developing and developed countries (Upadhyaya 2017: 93). South African cities are not exception shopping experience has changed (Mathu 2019: 85), and shopping locations and population lifestyles are changing rapidly (Upadhyaya 2017: 93).

Moreover, with the increase in affluence, the preference of CBD shopping districts has shifted to modern shopping districts, because the traffic congestion in the CBD reduces shopping satisfaction (De and Rajbongshi 2019: 103).

According to Mushirivindi, Prinsloo, and Cloete (2018: 191), shopping locations as products have a life cycle, that is, start-up, growth, and scrap. The shopping location industry has evolved over time and is characterised by innovations ranging from traditional or unplanned shopping streets to planned or modern shopping venues (Guimaraes 2018: 128). It is highlighted by Nilsson, Gärling, Marell and Nordvall Nilsson (2015: 1) that the shopping location structure has undergone gradual changes, with the expansion of organised shopping areas (Khan 2018: 140). Authors also indicate that the new modern shopping location development is suitable for shoppers' preferences and the new global shopping lifestyle. In addition, Guimaraes (2018: 128), indicates that the phenomenon of obsolescence of traditional shopping locations is increasing.

Therefore, this study not only attempts to determine the influence of traffic congestion on location choice in the eThekweni region, but also seeks to determine feasible measures on how to reduce the traffic congestion challenge and restore the economic vitality of the CBD

### 1.3 Problem statement

The eThekweni area comprises 2297 square kilometers and is 14% of in KwaZulu-Natal province. It is the third largest city in South Africa and has the busiest port in Africa. The eThekweni area has a population of 3.5 million, with an annual growth rate of 1%. eThekweni City is located in the eastern region of the great KwaZulu Natal province (Zungu, Maseko, Kalle, Ramesh and Downs 2020: 2). Research on the impact of traffic congestion mainly focuses on the topics of "traffic congestion in developing countries" (Bashingi, Mostafa and Das 2019: 434), questions, opinions, experiences, and satisfaction (Memon, Khilani, Ali, Mustafa, and Pasha 2020: 0254), "factors contributing to traffic congestion" (Mohana, Mhilu, Kihedu and Bwire 2019:

238), and "the economic impact of traffic congestion "(Owogbemile and Obakemi 2018: 2406).

However, there are some related studies on traffic congestion, such as" the relationship between traffic congestion and the economy" (Marshall and Dumbaugh 2018: 1), the variable impact of traffic congestion on travel (Mondschein and Taylor 2017: 65), accessibility (Moya-Gomez and Garcia-Palomares 2017: 148), urban artery recognition (Rao and Rao 2016: 131), and CBD assessment (Acheampong 2016: 1). These studies have not yet determined the influence of traffic congestion on shopping location preferences cities. In their classic essay on traffic congestion (shao, Yang, Xing, and Yang 2016: 91), attributed obsolescence and reduction of shopping preference to CBD, a result of traffic congestion. Furthermore, Kesari and Altakar (2016: 22) agrees that traditional shopping venue lost shopping value due to traffic congestion.

Despite various attempts to alleviate traffic congestion, the city still faces great challenges, and they are increasing (Feikie, Das and Mostafa 2018: 742). The image and economic feasibility of CBD, the huge commercial threats, and challenges to urban business districts, have been accelerating high travel demand. Traffic jams have greatly affected the businesses. Regardless of the research field, the issue of shopping location preference becomes very important. As traffic congestion increases and the emergence of nearby shopping locations increases, it is necessary to focus more on this topic. Therefore, in this study, the researcher recommends determining the influence of traffic congestion on shopping location choice in the eThekwini region.

#### 1.4 Aim

The main aim of the study is to determine the influence of traffic congestion on shopping location choice in the eThekwini Region.

#### 1.5 Objectives

- To study shoppers` behaviour and their shopping experience in the eThekwini region;
- To identify shopping location choice factors in the eThekwini region;

- To study traffic congestion and identify its causes in the eThekweni region;
- To assess the influence of traffic congestion on shopping location choice in the greater eThekweni region;

## 1.6 Research questions

The study addressed the following questions.

- What is shoppers' behaviour and the common shopping experience of shoppers in the eThekweni region?
- What factors influence shopping location choice in the eThekweni region?
- What is traffic congestion and its causes?
- What influence does traffic congestion have on shopping location choice in the eThekweni region?

## 1.7 Justification of the study

The problems of increasing urbanisation, according to (Li, Lai, Sui, Li, Qu, Zhang, and L 2020:1) include increased pressure on urban infrastructure. Among the problems caused by this, traffic congestion is one of the most prominent problems. Mondschein and Taylor (2017: 1) studied the highly variable impact of traffic congestion on travel and accessibility in their research. Studies have found that traffic congestion is the most worrying disease in cities, and it also causes high social and economic costs to the population and businesses. In addition, the existing literature proves that the CBD has a high degree of traffic congestion, which also frustrates social and economic activities and travel. Therefore, determining the influence of traffic congestion on shopping location choice in the eThekweni region, would enhance alleviation of traffic and regain spatial maintaining of both shopping location destinations.

The eThekweni CBD promotes a high level of personal and economic activities, therefore, compared with other shopping locations, eThekweni CBD is more difficult to access due to traffic congestion. Although private cars are owned and used, other shopping locations are less crowded and have convenient transportation. Mondschein and Taylor (2017: 1) acknowledge that the impact of traffic congestion may vary by location. According to TomTom Traffic Index survey (2019: 3), eThekweni region is one

of the most congested cities in the world, with 30.4 hours of global traffic per year, and ranking 158th in the world among most congested cities (Das and Mostafa 2018: 746). Therefore, this study determined the influence of traffic congestion on shopping location preference in the eThekweni region.

Musah Peng and Xu (2020: 3) Urban space interaction is a key requirement for human life, but it is related to many problems such as traffic congestion. The traffic level in the urban core area is getting worse and worse, which hinders travel and other economic activities, resulting in the decline of the economic viability of the CBD, while businessmen and shoppers ignore the business location and shopping preferences, respectively.

Urbanisation is one of the fastest growing forms of landscape transformation. The establishment and expansion of shopping locations are characteristics of urbanisation (Zungu *et al.* 2020: 1). As the traditional CBD has become a forbidden destination due to severe traffic congestion, the establishment of modern shopping districts poses a huge threat to the business operations of traditional shopping districts (Bashingi, Mostafa and Das 2020: 436).

Moya-Gomez and Garcia-Palomares (2017: 149) state that traffic congestion is a challenge to the urban structure. It is accompanied by negative external factors such as increased pressure, accidents, insecurity and environmental pollution, and the impact on the viability of the business enterprise. Traffic congestion is the result of the time difference between demand and the supply of infrastructure capacity. In addition, traffic congestion can cause an overall response from changes in shoppers' behavioral decisions to corporate relocation. Therefore, it is important to understand the impact of traffic congestion on the choice of shopping location in the city eThekweni area. In addition, this research follows the appeal of urban residents and professionals to reinstall the CBD image and commercial feasibility. This study further identified its impact and measures to alleviate traffic congestion to maintain the economic vitality of the business centre.

## 1.8 Summary of research methodology

### 1.8.1 Research design



The research design according to Ngibe (2015: 33) provides a framework for conducting research. The study design outlines the procedures for how to collect the data, the tools to be used and the expected means of analysing the data (Nhleko 2017: 36). In addition, Mbandlwa (2018: 57) defines research design as the means by which researchers choose to integrate the different components of the research to ensure that the research goals are fully achieved. Therefore, the first task of this study is to determine the influence of traffic congestion on the choice of shopping locations in the eThekweni region. This research follows a descriptive research design, that is, a type of descriptive research, which aims to describe the research field accurately and thoroughly (Wiid and Diggins 2015: 67). It provides much information that is easy to understand and explain, as well as suggestions for finding problems and making solutions (Abuatabenjeh and Jaradat 2018: 244).

#### 1.8.2 Population/target population

According to Taherdoost (2020: 18) population is a set of cases from which a sample of researchers is drawn. According to (Ragab and Arisha 2018: 11), the population includes individuals who hold information that researchers hope to obtain to solve research goals. In this study, the target population consisted of families in the wards (North, North central, Inner west, South central, South, and Outer west) that make up eThekweni region, and 400 respondents were selected as samples. It must be understood that if the population size exceeds one million, a sample of 384 respondents is suitable to support the research results because they are considered to provide sufficient input to determine the research results (Tlapana 2019: 34). Therefore, the target population of this study comprised of community members from the six wards that make up the eThekweni region.

#### 1.8.3 Sampling method

Sampling is the process of selecting a part of the population for investigation (Abidin (2017: 2164). According to (Taherdoost 2020: 20), sampling can be defined as drawing a subset from the entire sample. It helps to infer the sample frame. In the study (Ragab and Arisha 2018: 10), it was pointed out that sampling allows the implementation of research within time and budget constraints. Using this sampling concept, Memka and Lekhanya (2017: 162) contend that rationale for adopting, sampling lay in the fact that the researcher is limited by time and cost constraints

Therefore, in the current research, the researcher has adopted a convenience sampling technique, a non-probability sampling method. Wiid and Diggines (2015: 192) believe that non-probability sampling methods are useful, less complex, and cost-effective. Therefore, convenience sampling was used to locate households in the eThekweni region. Respondents are randomly selected.

#### 1.8.4 Sample size

According to (Abidin, 2017: 2164), the sample size is a list of target population elements from which the research sample is extracted. The sample size is sufficient to account for the entire population (Queiros, Faria and Almeida 2017: 369). The sample is sufficient to represent the target population, therefore, according to (Abidin 2017: 2164), the sample size should be carefully selected. In addition, Wiid and Diggines (2016: 202) admitted that to obtain an estimated population value, researchers should choose a large sample size. Taherdoost (2020: 23) added that the sample size must be sufficient to avoid sampling errors and biases. According to (Bujang and Adnan 2016: 1), before conducting any research, proving a sufficient sample size is an important consideration. Since our target population exceeds one million, we chose 400 respondents as the sample size. According to the rule of thumb, if the population exceeds one million, the required sample size should be 384 and above (Abidin 2017: 2164).

#### 1.8.5 Measuring instrument/questionnaire

According to Vencataya, Pudaruth, Dirpal and Narain (2018: 234), the questionnaire is a set of self-developed questions based on research goals and literature reviews. In quantitative research, questionnaires are used to collect numerical data (Rutberg and Bouikidis 2018: 211). It is a widely used data collection method (Ragab and Arisha 2018: 14), applicable to various fields (Regmi, Waithaka, Paudyal, Simkhada and Teijlingen 2016: 641). It is simple, fast, and reliable, and is mostly done for the convenience of the interviewees (Ramirez-Silva *et al.* 2016: 629). Vencataya *et al.* (2018: 234) suggest that researchers should specify the tools used to collect data. In the study, paper self-structured questionnaires with closed-ended questions with appropriate focus were used as data collection tools (Sullivan and Artino 2017: 411). It is used to generate the numerical data description of the sample framework (Rutberg

and Bouikidis 2018: 211), and the model is used to classify people or situations (Ikart 2019: 3).

#### 1.8.6 Data collection

According to North Dakota Compass (2015: 04), It was pointed out that before the start of the data collection phase, researchers should determine the appropriate tools and how to manage them during the data collection process. When planning and conducting research, data collection tools play an important role. Therefore, it makes sense to choose a suitable data collection tool in quantitative research methodology, the main data source is the most influential technology (Abidin 2017: 2164). Therefore, the study used the closed five-point Likert scale questionnaire as a data collection tool (Memka and Lekhanya 2017: 162) because it is a common tool for measuring observations and attitudes, the reason being that it is easy for respondents to understand and enables them to respond to their views in a better way (Abidin 2017: 2165). Researchers and assistants provided questionnaires to nearby respondents who were easy to access.

#### 1.8.7 Data analysis

Zyphur and Pierides (2017: 11) state that data analysis is an estimation process in which samples are used to calculate statistics, and these statistics are used to estimate the parameters that define the population (such as covariance or chance effects). The latest version of the IBM SPSS statistical software package (version 24) was selected to analyse, interpret, and draw conclusions from the collected data (Abuatabenjeh and Jaradat 2018: 243). As shown in (Memka and Lekhanya 2017: 162), the data has been exported to SPSS as response codes and variable names. From which descriptive statistics such as frequencies, means and standard deviations were computed and findings presented using charts and tables (Tinonetsana, 2017: 8).

#### 1.8.8 Ethical consideration

Research ethics implies the extent to which standards of conduct are enforced, which guide behaviours related to the rights of all affected persons in the research. Research ethics guidelines include principles that any research should follow theoretically to

ensure ethical behavior (Saunders, Lewis, and Thornhill, 2014: 252). The role of abiding by ethical standards will reserve the rights of participants in certain aspects, which may be violated during the research process. Any participant under the age of 18 cannot participate in the study.

#### 1.8.9 Validity and reliability

Validity is the extent to which researchers can draw correct and useful inferences from using questionnaires as survey tools (Creswell and Creswell, 2018: 251). The researcher submitted the questionnaire to skilled experts in the research field of Durban University of Technology in order to test the viability of the tool. Meanwhile Wiid and Diggines (2015: 249) define reliability as the consistency of a set of measurements of a measuring instrument. The study adopted these concepts accordingly.

#### 1.8.10 Delimitation of the study

The research focuses on determining the influence of traffic congestion on shopping location choice in the eThekweni region (North, North central, Inner west, South central, South, and Outer south) since it is the epi centre of business in the Kwazulu-Natal province. And also, participants only included adults above 18 years of age.

#### 1.8.11 Limitations of the study

The study only involved the eThekweni area. Researcher faced the problem of lack of sufficient financial resources and time to conduct research effectively, as well as nonresponse of participants due to a language barrier.

### 1.9 Organisation of the study

The study is organised into five chapters. Chapter one entails the background of the study, problem statement, aim and objectives of the study, hypothesis, justification of study and summary of chapters.

This chapter also outlines the organisation of the remaining chapters of the study as follows:

Chapter two: Review's literature relevant to the study on shopper behaviour, shopping location choice factors, congestion effect and gap analysis in the current literature.

Chapter three: Presents the research design applied in data collection, research methods employed, target population researched, data collection methods applied, data analysis, validity, and reliability.

Chapter four: Presents the record of results and findings that are presented because of fieldwork.

Chapter five: Presents data analysed and results, recommendations, and conclusions.

#### 1.10 Summary of Chapter

This chapter expresses the influence of traffic congestion on the choice of shopping locations in eThekweni region. It includes the purpose, objectives, and problems of the research. This chapter also introduces the problem statement, the reason for the research, and the structure of the research. The next chapter summarises the relevant theoretical literature, aiming to conduct a comprehensive exploration and analysis of the theoretical basis related to the research.

## CHAPTER TWO: LITERATURE REVIEW

### 2.1. Introduction

This chapter introduces and discusses a review of academic literature related to this research. Firstly, it defines shopping and shopping value, and reviews the concept of shopping places, as well as describing the evolution of shopping locations. In addition, it discusses shopper behaviour and shopping location selection factors. Traffic congestion causes of traffic congestion, traffic congestion influence on shopping location choice. Shopping locations/complex/centres are used interchangeably. Finally, the chapter summary summarises the main highlights of the literature review.

### 2.2 Shopping

Shopping is a social activity, an important concept of urban life and entertainment activities. Due to global changes, it has become a way of life (Said, Gambo and Ismail 2016: 139) and constitutes a part of consumer life (Wu, Wang, and Zhang 2019: 553), and is an important human activity (Makgopa 2018: 121), with symbolic and entertaining purposes (Dalziel and Bevan-Dye 2018: 216). It satisfies numerous social and psychological needs (Brochado *et al.* (2019: 484). Shopping is driven by satisfying needs (Matthysen 2019: 73) and involves more than just buying household items, such as clothes. Electronics and shopping have also become a way of life (Juwaheer, Pudaruth and Ramdin 2013: 180), are seen as a source of fun (Rousseau and Venter 2014: 4, Woods, Skeie and Haase 2016: 12), entertainment and social experience. According to (Mohamad, Al Katheeri, and Salam 2015: 77), due to changes in global lifestyles (Sikos 2019: 139), shopping has been modernised and has significantly changed people's shopping habits phenomenon (Parmar and Chauhan 2018: 328).

According to Kapusy and Logo (2020: 1), shopping is an experience-based activity. This takes time and money (Lloyd *et al.* 2014: 37). It is affected by many variables, such as time and space. Consumers' geographic preferences depend on experience (Kunc *et al.* 2016: 28). In shopping location decision making, shoppers are guided by hedonistic and utilitarian motives. Hedonic motivation as explained by (Makgopa 2016: 53) is the shopping pleasure expected by shopping activities. In contrast, Utilitarian shopping motivation focuses on task completion (Vieira, Santini, and Araujo 2018: 426).

Sirgy, Lee, Yu, Garel-Atay, Tidwell, and Ekici (2016: 292) report that shoppers have intrinsic or extrinsic motivation when engaging in shopping activities or processes. Intrinsic motivation is when shoppers go to shopping places simply to buy the products and services they need, and at the same time, they are driven to regard the shopping experience as a source of fun out of extrinsic motivations. Moreover, shopping is considered the major trip generating activity among households according to (Meena, Patil and Mondal 2019: 133, Suel and polka 2017: 148), and it is attributed to economic growth and exponential growth of household spending power (Attri and Jain 2018: 1). According to (Rao, Dovey and Pafka, 2017: 132), shopping is an urbanisation concept, and shopping malls have attracted the attention of shoppers in a modern way (Hunneman, Verhoef and Sloot, 2017: 132). In addition, (Savelli, Cioppi and Tombari 2017: 1217) conducted a study and their findings depict that shoppers' desire for one-stop shopping destinations has increased.

Said, Gambo and Ismail (2016: 139) believe that shopping is a form of entertainment, and it has become a way of life due to global changes. Older people go shopping for leisure social interaction (Rousseau and Venter, 2014: 3), while millennials regard shopping as a source of entertainment. (Nasdaq OMX's press release channel 2019: 1). In a study by (Mittal and Jhamb 2016: 386) show that the South African household rate of consumerism has increased, as a result of economic improvement conditions mainly among the majority black race that make up of 50% of the rising middle-income group (Mkwizu *et al.* 2018: 22). Middle-income group according to (Mashaba and Wiese 2016: 37), is a group of household individuals with monthly income between R5600 and R40000.

According to the research of Erkip and Ozuduru (2015: 2), the influence of new global shopping modern lifestyle, has made shopping more desirable among household individuals. It plays a vital role in economic growth (Wadud and Chen 2018: 122) and the expansion of shopping locations. However, (Shao *et al.* 2016: 91) show that traffic congestion problems in many cities disrupt shopping activities in the traditional shopping location. Thus, enticing establishment and expansion of convenient and accessible vicinity shopping centres with all auspicious necessities that attract shopper choice and derived shopping value (Kesari and Altukar 2016: 22). In addition, (Visser, Schoormans and Vogtlander 2018: 664) explains that most shoppers will choose

shopping locations with good accessibility, for comfortable shopping experience, fun and social cohesion (Makgopa 2016: 22).

The section that follows presents and discusses shopping location evolution.

### 2.3 Shopping location

According to Hussain and Siddiqui (2019: 74), one of the key decisions that shoppers face is where to shop in terms of shopping location. Different shoppers have different and important choices. A shopping location is a planned, developed area with many shops (Mathu 2019: 85), which can provide customers with what they want (Woods, Skeie and Haase 2016: 12). According to Ceccato and Tcacenca (2018: 215), shopping locations vary in size and design and have existed for centuries (Makgopa 2016: 22). They are the core of the urban landscape (Jones, Al-shasheen and Dunse 2016: 495). According to Rao, Dovey, and Pafka (2017: 544), shopping locations are divided into unplanned/evolved and planned/created shopping locations.

In South Africa, all cities have a variety of shopping venues, ranging from unplanned shopping venues (such as the Central Business District in the Greater eThekweni region) to planned shopping centres such as Gateway theatre of shopping, The Pavilion, Musgrave Centre, Westwood mall and the Galleria mall in the great eThekweni region. It is highlighted that most of the planned shopping venues are developed outside the city, providing different shopping benefits to nearby shoppers (Mittal and Jhamb 2016: 387). According to (Sevtsak 2014: 374) vicinity shopping locations have been embraced because they have improved living standards and shopping lifestyle of urban residents (Said, Gambo and Ismail 2016: 138).

In the past 25 years, the growth of shopping venues has been accelerating in South African cities mainly in suburbs and townships according to (Gary and Steyn, 2015: 244, Zanini, Filardi, Villaca, Migueles and Melo 2019: 141, Savelli, Cioppi and Tombari 2017: 1214). The Greater eThekweni area is no exception (Meena, Patil and Mondal 2019: 134). In addition, Nilsson *et al.* (2015: 3) confirmed that planned shopping



locations are suitable for shopper's choice and arise complete shopping experience (Prashar *et al.* 2017: 236, Rao, Dovey and Pafka 2017: 544).

According to Mushirivindi, Prinsloo, and Cloete (2018: 191) shopping location as a product, has a life cycle, namely startup, growth, and scraping. Due to social and economic factors such as household income growth, population growth. Shopping location structure has changed significantly from traditional or unplanned shopping streets to planned vicinity shopping locations (Guimaraes 2018: 128). Most literature reveal that evolution has led to the obsolescence of traditional shopping venues and the formation of private motorised shopping venues.

In addition, Kunc *et al.* (2016: 27) state that continuous acceleration of economic growth and global transformation, have resulted into the rapid change in the shopping venue structure and continues to evolve continuously on a global pace (Matthysen 2019: 73). This has completely changed the shopping lifestyle and as a result, this change has escalated concerns to urban stakeholders in business in the evolved city core shopping centre.

According to Nilsson *et al.* (2015: 1), with the expansion of organised shopping locations (Khan 2018: 140), especially with the reduction of CBD shopping activities, the structure of shopping locations has undergone gradual changes (Central Business District). Convenient and shopper-friendly shopping locations are developed in a way that suits global shopping lifestyle trends, and a new shopping experience. As a result, shoppers have a variety of shopping locations to choose from. Therefore, greater pressure must be put on the transformation of the CBD to achieve its previous shopping appeal.

The section below presents and discusses the two categories of shopping locations.

### 2.3.1 Types of Shopping locations

According to Rao, Dovey and Pafka (2017: 544), shopping locations are divided into two categories based on their design, scale, and management style. These are discussed below:

#### 2.3.1.1 Evolved/traditional/unplanned shopping locations

Padila, Hermosilla and Ozores (2017: 277) stated that traditional shopping locations are centres with different sizes and different retail structures. Evolved/Traditional shopping locations are born spontaneous, with decentralised ownership (Migueles and Melo 2019: 142), and no centralised management (Rao, Dovey and Pafka 2017: 545). Shopping used to be a key function that defined the CBD (Evangelista, Low and Nguyen 2019: 150). However, the author believes that the central position occupied by traditional shopping locations as preferred shopping locations has deteriorated. Due to severe urban core traffic congestion, the decline in the dominance of CBD can be attributed to the decrease in shopping trip frequency (Kusumowidagdo, Sachari, Sachari and Widobo 2015: 53), and the increase in reasons for establishing nearby shopping locations in the outer areas of cities. This results in the loss of economic viability and the reduction of retail areas (Guimaraes 2018: 128).

The Great eThekweni CBD area contain the most significant historical commercial buildings and streets. It receives many shoppers every day. The area includes major commercial streets such as Anton Lembede, Dr Pixley Kaseme, Dr Yusuf Dadoo streets, and Dr AB Xuma Street, Margaret Mncadi Avenue, Bertha Mkhize Street, Joseph Nduli Street, Dennis Hurley Street, Monty Naicker Street, Joe Slovo Street Forming the great eThekweni CBD. The CBD features historical preservation areas, shopping stores, banks, restaurants and learning institutions, such as FET College, Child Care Centre, and many public and private businesses. Shopping stores are mainly Indian Muslim shops, Ethiopian and Somalian spaza shops, Senegalese, and Nigerian clothing stores, as well as many department stores, financial service providers, medical practitioners, food courts and municipal local government offices.

In the eThekweni Central Business District, most retail stores are owned by Indians and operate in compact shopping areas with a small tenant mix (Garg and Steyn, 2015: 244). Nevertheless, Siddique and Choudhury (2017: 22) considered the CBD to be the most crowded area in the city. A more contemporary study (Sikos 2019: 142) found that entrants to planned shopping locations greatly influence traditional shopping locations. Gilboa and Mitchell (2020: 1) provided the impetus for this research and confirmed that commercial and shopping activities in the central

business district are decreasing due to fierce competition between convenient and accessible planned shopping locations.

Due to the social changes of population, consumerism, and self-reliance motorisation, eThekweni CBD as a centre for shopping has undergone gradual changes. These changes can be observed in the decline in shopping patronage, closure, and relocation of major shopping stores and financial offices. Many shopping retail stores, and financial institutions have relocated to vicinity shopping location due to low shopper patronage in the CBD. Moreover, and it is an established fact according to (Guimaraes 2018: 128) that limited accessibility and convenience due to traffic congestion, is the reason for restricted shopper patronage in the CBD.

#### 2.3.1.2 Created/modern/planned shopping locations

Matthysen (2019: 73) defines planned shopping locations as clusters of retail and commercial premises that are developed, managed, and owned by a single entity. Organised shopping venues according to (Juwaheer, Pudaruth and Ramdin, 2013: 180) are centres of social interaction, entertainment, and top shoppers' preferences in the 21st century. The created shopping centre is the new consumer cathedral as stated by (Sikos 2019: 139), but unlike traditional shopping centres, created/modern shopping locations mainly caters to the needs of high-income consumers according to (Rosenbaum, Otorora and Ramirez 2016:150). Furthermore, created shopping centres are regarded as centres for social cohesion (Kunc, Reichel and Novotna 2020: 2). In addition, (Suel and Polak 2017: 147, Guimaraes 2018: 161) added that most of planned shopping locations are usually built along city peripherals.

Woods, Skie and Haase (2016: 11) defined the planned shopping location as a modern shopping centre with a comfortable shopping environment. Organised shopping location format variables include convenience, accessibility and tenant mix, security, and site parking. Furthermore, according to (Das and Varshneya 2017: 178, Mohamad, Al Katheeri and Salam 2015: 77) the planned shopping location is a physical creation, covering various shops and commodities under a roof. Research by

According to Kunc, Reichel and Novotna (2020: 2) has indicated that planned shopping location is a concept of modernity and has become a global phenomenon. The planned shopping locations concept continue to succeed in developed and developing economies (Gilboa and Mitchell 2020: 1).

The planned shopping location is a one-stop shopping destination, offering both shopping and leisure activities (Lloyd *et al.* 2014: 39). Das and Varshneya (2017: 177) further identified that planned shopping locations are incorporated with variety of attractive shopping stores, social and leisure centres where people can relax and shop (Mohamad, Al Katheeri and Salam 2015: 76). Moreover, according to (Kunc *et al.* 2016: 27) in their study, affirmed that planned shopping location concept is the most important indicator of the current retail business.

Rao, Dovey and Pafka (2017: 545) point out that planned shopping locations are developed in a coordinated manner, usually under a single private ownership and management (Matthysen 2019: 73, Guimaraes 2018: 161). Accordingly, (Micu 2018: 54) added that planned shopping locations are integrated with an efficient travel network and also provide on-site parking spaces. According to (Suel and Polak 2017: 147, Guimaraes 2018: 161), It is an established fact that planned shopping locations are developed in close proximity of residential areas. Planned shopping locations offer more local, national, and international retail stores than unplanned shopping locations as indicated in the study by (Evangelista, Low and Nguyen 2019: 150; Kusumowidagdo, Sachari and Widobo 2015: 53).

According to Upadhyaya (2017: 93), the transformation of the retail industry and the evolution of the city from modern to post-modern (Guimaraes 2018: 127), has led to the emergence of organised shopping location concepts as a one-stop shopping destination for all shopping activities, social cohesion, and entertainment activities. Said, Gambo and Ismail (2016: 139) defines the planned shopping location as a complex with various shops and joint sidewalks. The planned shopping locations are integrated with entertainment venues, food centres, banking institutions and various shopping stores (Belwal and Belwal 2017: 587), and the entire store is under one roof. They are planned, developed, and managed by experienced developers (Mathu 2019:

86, and Mohamad, Al Katheeri and Salam 2015: 77). Planned shopping locations have special qualities and are more organised than traditional shopping locations (Erkip and Ozuduru 2015: 2). The planned shopping locations are appealing to consumers changing lifestyle and have pushed the traditional shopping location choice out of the shopper's attention. Thus, they are held responsible for limited shopper patronage and decline of the economic viability of the CBD They attracted the attention of shoppers to the former traditional shopping mall (Guimaraes 2018: 160).

The section that follows presents and discusses the different categories of planned shopping locations.

### 2.3.1.2.1 Classification of planned shopping locations

According to the concept of the planned shopping area (Jonker 2016: 8), different types of planned shopping areas have been identified, including convenience (Sikos 2019: 140), community, small regional, and super area shopping regional. In addition, in their classic article on created shopping locations (Padayachee and Sunker 2016: 238), the reported planned shopping locations are based on the total leasable area (Padayachee and Sunker 2016: 238), measured in square metres, the number of shops, land classified by size, average radius of trade zone and travel time to shopping mall.

**Table 2. 1: Planned shopping location classification**

Classification	Size of center (m <sup>2</sup> )	Number of stores	Size of land (hectares)	Average radius of trade area (kilometers)	Travel time to the shopping location (minutes)
Convenience Shopping location	500 to 5000	5 to 25	0.15 to 1.5 ha	1 to 1.5 km	2 to 3 m
Neighborhood shopping location	5000 to 12000	25 to 50	1.5 to 2.6 ha	1.5 to 2.0 km	4 to 9 m

Community shopping location	12000 to 25000	50 to 100	3.6 to 7.5 ha	2.5 to 3.0 km	6 to 14 m
Small regional shopping location	25000 to 50000	75 to 150	7.5 to 15.0 ha	3.0 to 5.0 km	10 to 16 m
Regional shopping location	50000 to 100000	150 to 250	>15.0 ha	5.0 to 8.0 km	14 to 20 m
Super-regional shopping location	>100000	> 250	-	>10.0 km	24 to 30 m

Source. Jonker, 2016:1

➤ **Convenience shopping location**

Convenient shopping locations are located on suburban streets, anchoring five to 25 stores, and providing daily necessities (Gary and Steyn 2015: 245).

➤ **Neighborhood shopping location**

Neighbourhood shopping locations are located on major roads in towns and suburbs. They have 25-50 stores, mainly providing convenience goods and services Sikos (2019: 140), covering an area of 30,000 to 150,000 square metres. The parking standard is seven bays per 100 square metres PFA (Padayachee and Sunker 2016: 238).

➤ **Community shopping locations**

Community shopping venues anchor 75 to 150 stores such as supermarkets, hypermarkets, and electronic stores (Lollin 2014: 17). Covering an area of about 100,000 to 350,000 square metres, there are six bays per 1,000 square metres of PFA (Padayachee and Sunker 2016: 238).

➤ **Small regional shopping location**

The small regional shopping area in a town is connected to the main traffic route (Jonker 2016: 8). There are anchor shops such as large supermarkets and department stores, medium electronic shops, restaurants, and financial service outlets such as banks.

➤ **Regional shopping locations**

Regional shopping locations are shopping centres built along highway intersections that connect the main arterial transport routes of national roads. There are 150 to 250 main stores, including at least two main stores (Matthysen 2019: 74) and grocery stores. It covers an area of 250,000 to 500,000 square metres (Makgopa 2016: 22). Five bays are allocated for every 15,000square metres proposed floor area (PFA) (Padayachee and Sunker 2016: 238)

➤ **Super-regional shopping locations**

According to Gary and Steyn (2015: 245), the super-regional shopping area covers the entire metropolitan shopping facility, with 100 to 250 stores and several departments' stores. Sitting on a building area of about 800,000 square metres, and it is mainly car-based shopping destination (Lollin 2014: 19).

The section presented the different categories of planned shopping locations and their characteristics. The section that follows reviews literature on evolution of planned shopping locations.

#### 2.4 Evolution of planned shopping location concept

After World War two, with the increasing consumerism and income growth in developed and developing economies, the concept of planned shopping venue format was welcomed.

The next section introduces and discusses when, why, and how the planned shopping location concept evolved globally since its inception.

#### 2.4.1 Global perspective

According to Lollin (2014: 12), the concept and growth of modern shopping areas began in the 19th century after the Second World War (Mathu 2019: 96). In 1954 in Valling, Sweden, and in 1956 in Minneapolis, USA, fast shopping venues were established. Since World War II, with post-war income growth, and consumer mobility, the new shopping location concept was accepted globally (Matthysen 2019: 75). Furthermore, (Kunc, Reichel and Novotna 2020: 1) wrote that this trend quickly spread to other economically developed economies, such as Romania, Turkey, Czech Republic, Finland, and Germany (Bogdan 2018: 53, Kabadayi and Paksoy 2016: 456, Kunc, Reichel and Novotna 2020: 1, Salo 2019: 12, Guimares 2018: 160). In 2008, there were 5700 shopping malls in Europe (Woods, Skeie and Haase 2016: 11). The concept of organised shopping locations reached its peak in the 1990s (Mohamad, Al Katheeri, and Salam 2015: 77). However, due to the 2008 global crisis, their expansion halted in Europe (Sikos 2019: 139).

#### 2.4.2 South Africa

Karami, Olfati and Dubinsky (2015: 290) state that South Africa, as a developing country, has become the centre of attention of commercial enterprises, enriching its economic development potential. Therefore, due to changes in the economic climate after joining the BRIC countries (Brazil, Russia, India, China, and South Africa), per capita disposable income has increased (Aldousari and El-sayed 2017: 144). South Africa is experiencing a shift in consumer shopping lifestyles in cities. Since the global increase in global suction power after 1994 (Karami, Olfati and Dubinsky 2015: 290), shopping malls have become an important feature and an integral part of the modern urban landscape (Matthysen 2019: 73).

Bilkova, Krizan, and Barlik (2016: 179) contend that South Africa has undergone changes in the form of shopping centres, from traditional shopping centres to planned locations. The author believes that the planned shopping locations have become popular and have changed the way shoppers' shop. According to (Matthysen 2019: 75), organised shopping locations have become a 20th century phenomenon. South Africa has 1,619 shopping malls (Garg and Steyn, 2015: 244). For many local and international multinational companies, mainly in rural areas, South Africa is a huge potential and attractive market. According to Mohamad, Al Katheeri and Salam (2015: 77), South African cities have witnessed the rapid development of shopping centres.



Mashaba and Wiese (2016: 39) state that cities and towns have attracted much attention due to planned shopping venues because they have sufficient family size to make these centres viable (Garg and Steyn, 2015: 243).

South Africa is undergoing a shift from traditional shopping locations (such as the city centre) to planned shopping locations (such as shopping centres). The modern shopping venue industry in South Africa is accelerating (Botha and Prawlall 2017: 14). South Africa ranks sixth in the world with 1,785 modern shopping venues and has been identified as an important modern shopping center destination due to its rapid economic growth, car ownership, and rapid suburban establishment (Mason, Dobbelstein, Corbishley 2019: 65).

Due to the global demand for smart city concepts, South African cities have adopted a modern shopping location format (Habib and Hardisty 2019: 23), supported by Article 156(1) of the South African Government's Bylaws of 1993, which allowed the development of shopping locations, and enacted the National Credit Law (No. 34 of 2005) to encourage entry into shopping locations. Therefore, these legislations allow the development and growth of various shopping malls (Mathu 2019: 87).

In South Africa, modern shopping centre venture has become a profitable and lucrative investment option for South Africans (Erkip and Ozuduru 2015: 11). In addition, Sevtsuk 2014: 374 added that modern shopping centre has been accepted and adopted. Makgopa 2016: 22 affirm that modern shopping centre design, tenant type, convenience, and accessibility features (Popovich and Handy 2015: 150), have endured to attract shoppers. As a result, they have greatly increased (Suhartanto, Ruhandi and Triyuni 2015: 84)

According to Mkwizu *et al.* (2018: 22) African states, South Africa not exceptional have attained consistent economic growth since 2000`s. Kristina, Frantisek and Barlik (2016: 24) agreed that economic transformation is attributable to change in human shopping lifestyle, increased consumerism, and rapid expansion of modern shopping centres. Furthermore, (Zanini *et al.* 2019: 141) also indicated that economic growth greatly influences living standards of people. Nevertheless, Mason, Dobbelstein and Corbishley (2019: 62) wrote that persistent establishment of planned shopping location in South Africans cities, has intensified fierce competition against the traditional

shopping centre (CBD). As a result, the traditional business centre has been abandoned for shopping purposes, and little research has been highlighted to investigate the scenario.

The section that follows presents and discusses shopper behaviour and how changing social paradigm influence shopper decision making in shopping location preference.

**Table 2. 2 List of planned shopping locations in South African cities**

	<b>Pretoria</b>	<b>Cape Town</b>
<b>Johannesburg</b>	Colonnade,	Blue Route Mall, Tokai
<b>Metropolitan Area</b>	Wonderboom	Constantia Village,
Brightwater Commons,	Menlyn, Menlo Park	Constantia
Ferndale	Menlyn Retail Park,	Canal Walk, Century City
Clear water mall, Northcliff	Menlo	CapeGate, Brakenfell
Cresta Shopping Centre,	Park	Cavendish Square,
Northcliff	Menlyn Maine, Menlo	Claremont
Dobsonville Shopping	Park	Kenilworth Centre,
Centre, Dobsonville	Brooklyn Mall, Brooklyn	Kenilworth
Eastgate, Bedfordview	bridge	N1 City, Goodwood
Fourways Crossings,	Woodlands Boulevard,	Somerset Mall, Somerset
Fourways	Pretoria East	West
Cedar Square, Fourways	North Park, Pretoria	Tyger Valley, Bellville
Bel Air Shopping Centre,	North	Vantage Mall, Heideveld
North Riding	Wonderpark,	Victoria and Alfred
North Riding Square, North	Wonderboom	Waterfront, Cape Town
Riding	Jacaranda Sentrum,	Willowbridge, Bellville
Fourways Mall, Fourways	Reietfontein,	
Hyde Park Corner, Hyde	Hatfield Plaza, Hatfield	
Park	The Grove, Pretoria	
Monte Casino Fourways	The Villa Mall, Pretoria	
Maponye Mall, Soweto	Lynridge Mall, Lynwood	
Gauteng	Ridge	
	Sunnypark, Pretoria	
	CBD	

<p>Nelson Mandela Square, Sandton</p> <p>Northgate Shopping Centre, North Riding</p> <p>Greenstone Shopping Centre, Endenvale</p> <p>Rivonia Crossing, Rivonia</p> <p>Rivonia Square, Rivonia</p> <p>Southgate Shopping Centre, Mondeor</p> <p>Sandton City, Sandton</p> <p>Westgate Shopping Centre, Horizon view</p> <p>The Zone at Rosebank</p> <p>The Glen Shopping Centre, Gleneagles</p>		
<p><b>KwaZulu_Natal</b></p> <p>Gateway Theatre of Shopping, Umhlanga Rocks</p> <p>Musgrave Centre, Musgrave</p> <p>The Pavilion, Westville</p> <p>The Mall, La Lucia</p> <p>Westwood, Westville</p> <p>Chatsworth Centre, Chatsworth</p> <p>The Galleria, South Coast</p>	<p><b>Northern cape</b></p> <p>Diamond Pavilion</p> <p>Horseshoe Centre</p> <p>Kalahari Mall</p> <p>Kathu Mall</p> <p>Kuruman Centre</p> <p>Newpark Centre</p> <p>Riveiro Centre</p>	<p><b>Eastern cape</b></p> <p>Greenacres Shopping Centre</p> <p>Hemingway Mall</p> <p>Circus Triangle Shopping Centre</p> <p>Middleburg Mall</p> <p>Mthatha Plaza</p> <p>Walmer Park</p>
<p><b>Limpopo</b></p>	<p><b>Mpumalanga</b></p>	<p><b>Free State</b></p>

Cycad Centre	Acornhoek Plaza,	Loch Logan Waterfront
Flora Park Centre	Acornhoek	Minosa Mimosa Mall
Game Centre	Riverside Mall,	
Limpopo Mall	Nelspruit	
Savannah Mall	Highveld Mall, Witbank	
Standard Bank Square		
<b>Northwest</b>		
Mooi River Mall		

## 2.5 Shopper behaviour

According to Katrodia, Naude, and Soni (2018: 220), shopper behaviour is a decision-making process, a physical activity that individuals engage in when evaluating, acquiring, using, or disposing of goods or services. Moreover, (Rao, Hymavathi, Mumbai, and Rao 2018: 1) state that shopper behaviour are redefined and complex social phenomenon (Kunc, Reichel and Novotna 2020: 2). Shopping behaviour is considered as an example of change affected by time and space factors (Khan 2018: 142, Schoenau and Muller 2017: 63).

Jakka and Mantha (2018: 2249) further assert that shoppers' behavior is not constant. Therefore, shopper behaviour analysis helps to understand how shoppers perceive and act on alternatives such as shopping destinations, and how traffic congestion influences their shopping location preference.

According to Parmar and Chauhan (2018: 1), shopping is an instant social activity and a daily element of personal behaviour (Aldousari and El-sayed 2017: 144). With this idea in mind (Rani 2014: 52), shopper behaviour is defined as the development and behaviour of individuals involved in the acquisition and use of products or services. Karami, Olfati, and Dubinsky (2015: 290) conducted a study and their findings showed that due to changes in consumer preferences, individual behaviours are different (Yadav and Verma, 2015: 102). Shoppers vary according to economic conditions (Gilboa and Mitchel 2020: 1). Therefore, it is important to understand the factors that

influence shopper behaviour in shopping location selection decisions (Rao *et al.* 2018: 1).

According to Erasmus and Mpinganjira (2019: 3), shopper behaviour is a description of many mental and physical processes related to shopper decision-making. Sevanandee and Damar-Ladkoo (2018: 182) cover pre-purchase, consumption, and post-purchase evaluation. In addition, shopper behaviour is a combination of activities and influences that occur before, during, and after the purchase (Lombard and Parumasur 2017: 1). This means that it has an indirect impact on shoppers' decision-making, and the decision-making involves more scope than buyers and sellers.

The concept of shopper behaviour is defined differently among different social science disciplines such as economics, sociology, and marketing. In their research (Kotler and Keller 2016: 179, Fernandes and Panda 2019: 131), shopper behaviour is defined as the process by which individuals, groups or organisations choose shopping concepts to achieve complete satisfaction. Visser, Schoormans and Vogtlander (2018: 664) attribute shopping satisfaction to many factors. Panwar *et al.* (2019: 36) urge that shopper behaviour is a way for shoppers to use their resources to satisfy their desires.

According to Brenda and Adjnu (2018: 181) there are four different forms of shopping behaviour, namely complex, less discordant, habitual, and diversity-seeking shopping behaviour. Suel and Polak (2017: 148) further pointed out that shopper's experience complex shopping behaviours when there are large differences between shopping locations. Due to the complexity of the selection process, changes in the retail industry, and the complexity of the network, understanding the behaviour of shoppers is very valuable (Kunc *et al.* 2016: 28). The influence on shopping location preference varies (Mokhlis and Spartks 2020: 87). Aldousari and El-sayed (2017: 144) state that shopping is a vital and repetitive component, so it is meaningful to study the shopping behaviour of shoppers and the factors of shopping location selection. However, the literature on the complexity of shopper behaviour and location selection is limited (Newing, Clarke and Clarke 2015: 192).

Mashaba and Wiese (2016: 39) wrote that South Africa has experienced diversified expansion and establishment of shopping locations, as well as changes in shopper behaviour and lifestyle preferences (Bilkova, Krizan and Barlik 2016: 23). As shopping

standards increase, interest in analysing choice behaviour is becoming more and more important. There are multiple factors that play an important role in prompting the client to make the final decision (Auf, Meddour, Saoula and Majid 2018: 178). However, there are few studies aimed at the impact of different shopping locations and traffic congestion problems in the city centre on traditional urban shopping centres (Low and Nguyen 2019: 150, Desai and Phadtare 2017: 437).

According to Kunc *et al.* (2016: 27), new forms of global shopping lifestyle have changed the spatial structure of cities and the shopping behaviour of residents (Sikos 2019: 134). In addition, it is noted by (Kabadayi and Paksoy 2016: 458) that due to change in shopping lifestyle, consumers are more selective and are attracted to shopping locations that meet their needs and preferences.

Accordingly, Gunasekara (2015: 333) added that this is due to the increased standards of consumers and multiple establishments of shopping centres that suit shopper's choice. Shoppers have multiple convenient shopping destinations, and they can choose the most suitable shopping destination according to their needs (Zsuzsanna, Ildiko, Nora and Tivadar 2019: 467). As a result, shopping choice location decisions making have got more emphasis than before. Therefore, consumers' choices need to be understood (Khan, 2018: 142), because shoppers' shopping behaviours and purchasing decisions have changed (Rani, 2014: 58).

According to (Mohanty, Ramesh and Kamat 2020: 6737) consumer behaviour is not constant nor static. Individual behavior will vary according to different situations encountered (Popa, Rothkrantz, Shan, Gritti and Wiggers, 2013: 811). Parmar and Chauhan (2018: 328) state that personal behaviour runs through the process of forming, collecting, purchasing, using, and evaluating effective alternatives. Shoppers may exclude those unattractive options (Kunc *et al.* 2016: 28). Therefore, it is important to understand how shoppers decide how to use their resources (Mashaba and Wiese, 2016: 41). In addition, (Pradhan 2020: 250) states that researching consumer behaviour is crucial for policymakers, economists, and companies. Many studies have reached conclusions in establishing the correlation between shopper behaviour and shopping location attributes (Mokhlis and Spartks 2020: 88).

Consumer behaviour analysis reveals how shoppers think, feel, and select among existing choices (Stankevich 2017: 7). As the research of Attri and Jain (2018:1)

shows, emotions play a key role in purchasing decisions. Mohanty, Ramesh and Kamat (2020: 6737) understand that shopping behaviour has major advantages and has attracted a lot of attention (Popa *et al.* 2013: 809). Another study by (Ramya and Ali 2016: 76) revealed that in the modern shopping lifestyle, it is necessary to analyse and understand the behaviour of shoppers in the choice of shopping location and related attributes to evaluate its impact on traditional shopping locations (Yadav and Verma 2015: 103).

Additionally, Stankevich (2017: 7), reports that shoppers make multiple decisions every day, and decisions are made on broad range (Guo and Peeta 2020: 99). The main focus is on maximising the immediate benefits of self and sustainable choices (White, Habib and Hardisty 2019: 24). Shopping behaviour involves different processes and affects shoppers' purchasing decisions, such as the degree of crowding in traditional shopping locations (Attri and Jain 2018: 1). However, Rani (2014: 53) believes that there are other factors that affect purchases, such as the convenience of location and tenant mix. In addition, White, Habib, and Hardisty (2019: 24) reported that shoppers' judgments of modern shopping locations are more favourable than traditional shopping malls.

The section that follows presents and discusses the different factors influencing shopping location choice.

## 2.6 Factors influencing shopping location choice

According to Brenda and Adjnu (2018: 180) many possible factors will affect the choice of shopping venues. There are many uncontrollable and controllable factors that affect personal shopping location preferences. However, Sevtsuk (2014: 374) reported that there is still little literature available on the factors that explain why shoppers choose some shopping locations over others. According to the research of (Erkip and Ozuduru 2015: 3), diversified shopping places have been established in various cities in the core and peripheral areas. Shopping is part of daily work, and research has been conducted to investigate the attributes of shopping location selection (Aldousari and El-sayed 2017: 144). According to Belwal and Belwal (2017: 487), there are a variety of factors that affect the perception and background of shopping venue choices, such

as convenience, entertainment facilities, the provision of parking spaces, security, and tenant combinations.

The section that follows presents and discusses factors influencing shopping location preference.

### 2.6.1 Convenience

According to Okoro, Okolo, and Mmamel (2019: 405), the convenience of a shopping location is the main criterion that shoppers look for when choosing a shopping location, and it has a positive impact on their satisfaction with the service. The convenience of shopping locations is an important factor attributed to the decision-making process of shopping location selection. Rousseau and Venter (2014: 3) found in their research that the convenience of shopping locations is an important part of the shopper's experience, and it greatly affects shoppers' views on the choice of shopping locations. Subsequent research (Sevtsuk 2014: 374) regarded convenience as the main factor influencing the choice of shopping location. (Mkwizu, Wilbard, Mbilinyi and Maliva 2018: 23) felt that the convenience of shopping locations is highly valued.

Said, Gambo, and Ismail (2016: 140) show in their results that convenience has a great influence on shoppers' choice of shopping location. Makgopa (2016: 23) considers convenience as an important factor in attracting shoppers to shopping locations. (Jones, Al-Shaheen, and Dunse 2016: 496) reached similar conclusions, because the accessibility and convenience of shopping locations are critical to shoppers. According to Garg and Steyn (2015: 248), convenience will occur when traffic jams, congestion are eliminated. Jonker (2016: 8) found that convenient transportation attracts shoppers to shopping locations.

Moreover, Savelli, Cioppi and Tombari (2017: 1215) believe that shopping is a repetitive element, while the convenience of location is an addition, according to Fernandes and Panda (2019: 131). It adds value by saving non-monetary costs (Lloyd, Chan, Yip, Chan 2014: 37). Moreover, (Popovich and Handy 2015: 150, Desai and Phadtare 2017: 437) contend that the choice of location is attributed to convenience and accessibility of the shopping location. Convenience is the consumer's perception of resource effort associated with any shopping location choice decision (Zanini *et al.* 2019: 140). Botha and Prawlall (2017: 16) pointed out that barrier-free environments



make them attractive locations. To ensure sustainable patronage, (Visser, Schoormans and Vogtlander 2018: 664) felt they must attract consumers with good accessibility measures.

Parmar and Chauhan (2018: 1) are of the opinion that convenient transportation and convenience are the basic elements required by shoppers. Prashar *et al.* (2017: 234) identified the factors that influence shoppers' shopping location choices and found that convenience is the most important factor in shopping location preference. Kunc *et al.* (2016: 28) pointed out that the attractiveness of a shopping location increases with increasing accessibility, and shoppers become more loyal and attracted to the shopping location (Kabadoyi and Paksoy, 2016: 458). Compared with the crowded CBD shopping activities, the convenient shopping locations near eThekweni are the reason why they are widely welcomed.

#### 2.6.2 Entertainment

Shopping has evolved into a way of life, and shoppers regard shopping locations as social spaces for entertainment and social cohesion. Shopping venues are both shopping centres and centres of leisure activities (Juwaheer, Pudaruth and Ramdin 2014: 181). According to Mittal and Jhamb (2016: 387), shopping venue selection research found that entertainment facilities include multiplex, restaurants, children's parks, and video game areas, that are critical to influencing shopping choices. Moreover, Belwal and Belwal (2017: 590) report that entertainment is at the core of shopping location choices. Research by Rousseau and Venter (2014: 3) shows that elderly shoppers use shopping venues as entertainment venues. Therefore, they choose to shop in locations with pleasing atmospheres. Entertainment facilities not only attract the attention of the elderly, but young people as well.

Attri and Jain (2018: 2) reported in their research that shopping pleasure affects customers. Entertainment is essential, it must arouse the interest of all audiences (Upadhyaya, 2017: 3). It will generate positive emotions, and thus stimulate the happiness of shoppers (Das and Varshneya, 2017: 179). Juwaheer, Parudaruth, and Ramdin (2013: 180), Mohamad, Al Katheeri, and Salam (2015: 76) emphasised shopping location preferences and reported how entertainment venues attract higher levels of location shopping preferences (Das and Varshneya 2017: 178).

### 2.6.3 Parking

Due to the increase in private car ownership, shoppers prefer shopping places where there are enough parking lots or parking spaces. The provision of parking spaces in shopping venues is a major concern for shoppers. Padayachee and Sunker (2016: 235) suggested that according to the South African National Parking Standard of the Ministry of Transport, all shopping areas must provide adequate parking spaces. In addition, parking spaces are another attraction for shopping venues. Newing, Clarke, and Clarke (2015: 222) also report that the availability of adequate parking spaces has an important impact on shoppers' perceptions of shopping location choices.

Said, Gambo and Ismail (2016: 140) believe that parking is an important factor in the choice of shopping location. Erkip and Ozuduru (2015: 3) and Belwal and Belwal, (2017: 589) concluded that due to the high degree of reliance on cars by shoppers, the availability of parking facilities is an advantage for shopping places for shoppers who rely on cars. Indeed, shopping venues with adequate parking facilities can attract shoppers (Jonker 2016: 8, Agyemang 2017: 149). The trend of shoppers owning cars has increased the desire for shopping trips, thus affecting the choice of shopping locations. Guo and Peeta (2020: 99) state that the availability of parking spaces is a travel-related decision made by shoppers. Kunc *et al.* (2016: 28) conclude that shopping places with ample parking spaces are considered more attractive.

### 2.6.4 Safety

Shoppers attach great importance to personal safety and not having to worry about safety issues during shopping activities. Shoppers are induced to a certain shopping location due to the rate of crime rate in the alternative. Safety is an important part of shopping locations and Ceccato and Tcacenca (2018: 217) report that shopping locations chosen by shoppers are considered safer. In addition, Erkip and Ozuduru, (2015: 5) conclude that shoppers show their choice of shopping locations based on a sense of security. Makgopa (2016: 22) proved in another study that superior security measures in shopping locations will affect shoppers' choices of locations for shopping activities. Rousseau and Venter (2014: 3) concluded that people will show confidence when shopping in locations with obvious safety precautions in place. Kapusy and Logo (2020: 3) state that personal protection and safety are key features of the shopping

experience. Therefore, during the shopping trip decision process, shoppers choose to avoid places that are considered uncomfortable.

#### 2.6.5 Tenant mix

Kyriazis and Cloete (2018: 152), defined tenant mix as having a diversity of retail stores in a complete shopping location. According to Mittal and Jhamb (2016: 387), it is determined that tenant mix will affect shoppers when choosing a shopping destination. Shoppers like to visit shopping locations where there are a variety of shops to suit their tastes and preferences. Mkwizu *et al.* (2018: 23) also reported the positive influence of various stores on the choice of shopping location. In addition, Newing, Clarke, and Clarke (2015: 221) found that numerous range of shopping outlets are essential to attract customers. (Makgopa 2016: 23) reached a similar conclusion. In another study, a location selection attribute study conducted by Gary and Steyn (2015: 245), the authors found that shopping area developers can promote tenant mix in order to attract more shopper patronage intentions. In addition, Kiriri (2019: 151) reported that they strive to attract key anchors that in turn attract shoppers. Desai and Phadtera (2017: 438) developed a shopping location model suitable for multi-store chains and emphasised the importance of tenant mix in today's rapidly changing environment.

Garg and Steyn (2015: 244) define tenant mix as the link between the extents of various anchor store types in shopping locations. According to (Woods, Skeie and Haase 2016: 12) retail agglomeration influences shopper choice and attracts shoppers (Kunc, Reichel, and Novotna 2020: 3). Moreover, Das and Varshneya (2017: 179) affirmed that Shoppers prefer an environment that provides them with multi-purpose shopping opportunities.

This section introduces the definition of shopping, shopping location categories and their evolution, shopper behaviour, and factors that affect shopping location preferences. The following section reviews academic research on traffic congestion and its impact on shopping location preferences in the eThekweni area.

#### 2.7 Traffic Congestion

According to Kozlack and Wach (2018: 2), traffic congestion is a common obstacle to traffic flow because of the interaction between vehicle acceleration and total driving demand during road supply depletion. Traffic jams are characterised by long travel

times and increased costs. When the traffic demand is high, the acceleration speed of the vehicle will decrease, and when the demand exceeds the supply, serious traffic congestion will occur. Traffic congestion is manifested as the loss of travel time and cost due to traffic friction caused by frequent and non-recurring factors. The uncertainty of urban traffic congestion will affect the efficiency of shopping activities.

Traffic congestion is a common phenomenon in all cities, causing waste of resources, and its impact is huge (Angelelli, Arsik, Morandi, Savelsbergh and Speranza, 2016:1). Traffic congestion is a major concern worldwide (Lomendra, Sharmila, Ganess and Vandisha 2018: 231). Kozlak and Wach (2018: 1) believe that traffic congestion is a global phenomenon, so it increases year by year, thus incurring high costs such as car operating costs, delays, omissions, and pressure.

When travel demand exceeds the supply of road space, traffic congestion will occur (Bizcommunity.com 2019: 1). Although the press and media debates encourage measures to combat traffic congestion, the epidemic continues to surge further. In the context of rapid urban growth and car ownership, Sawsan (2018: 1) believes that city managers and stakeholders need to adopt the best solutions to solve the increasingly serious road traffic congestion problem.

Traffic congestion is a major challenge for urban road networks, leading to delays and stress. At the same time, policy opportunities related to the elimination of traffic and congestion remain a thorny issue. In densely populated areas with high car ownership rates, traffic congestion has increased. Road space is insufficient and cannot meet the entire travel demand. According to the TomTom Traffic Index (2019: 1), traffic congestion increased globally by 75% from 2017 to 2018, due to global economic growth. According to Colak, Lima, and Gonzalez (2016: 2) in cities globally, convenience is difficult to sustain because of traffic congestion.

According to Moya-Gomez and Garcia-Palomares (2017: 147), urban traffic congestion is a challenge to the social system and is usually associated with large cities in developed and developing economies as basic economic and social services are concentrated in the urban core. As put forward by Jin and Rufferty (2017: 1) that city centre is the hub of the most important facilities. Accordingly, these facilities can

enjoy the economic benefits of agglomeration. Therefore, the interaction will cause traffic congestion.

Wang, Guo, and Xu (2020: 1) believe that because all socio-economic and social resources are concentrated in the core area of the old city, traffic congestion is easy to occur. Furthermore, authors report that traffic congestion has a profound impact on shopping and other commercial activities. According to Li, Lokhov and Saad (2020: 1), the relentless increase in urban residents has led to excessive travel demand and severe traffic congestion. However, Zhou, Murphy, and Corcoran (2020: 120) argue that inefficient commuting is the result of limited treatment methods for urban traffic congestion. Therefore, this challenge needs to be addressed effectively.

According to Risso, Bhourri, Rubiales and Lotito (2020: 316) many studies have been conducted to effectively understand optimisation tools and methods to mitigate traffic congestion .(for example,) GPS-based citywide traffic congestion forecasting using convolutional neuron networks, recurrent neuron networks (CNN-RNN) and the convolutional 3-dimensional (C3D) hybrid model that provides high-precision large-scale transportation network with timely traffic flow (Guo, Liu, Yang, and Fang 2020: 1). Vehicle active route guidance system (Angellelli *et al.* 2016: 16). Moreover, Sophy and Aroquiaraj (2018: 78) added a vehicle-mounted ad hoc network that allows nodes to connect with other nodes and nearby traffic management equipment (such as traffic lights) to transmit traffic data in time. Control tools and methods have been designed to optimise traffic performance as the best solution to the challenges of traffic congestion. In addition, (Sawsan 2018: 1) reported that alleviating urban traffic congestion requires the joint efforts of city managers, commuters, and public transportation service operators.

Many authors have studied technical tools and systems to alleviate urban traffic congestion, such as (Torabi, Wenkstern, and Saylor 2020: 626), such as the modern Traffic Signal Timing System (TST), which determines effective signal settings by detecting traffic conditions in time. However, in most developing countries, the applicability of technology-based systems is not feasible, and South Africa is no exception, with a lack of sufficient capacity to collect quantitative traffic data, route

carrying capacity, and commuting efficiency to determine and measure total travel demand.

According to Bushingi, Mostafa and Das (2020: 435), traffic congestion exists in both developed and developing economies, but in developing countries with poor roads and management systems that cannot adapt to the surge in total traffic demand, traffic jams are more common.

According to research by Johnstone and Ratanavaraha (2020: 197), traffic congestion is an imbalance between total travel demand and road supply. Rapid economic growth and population growth pose challenges to urban infrastructure. As the current roads in cities cannot accommodate all travel needs, the rapid increase in vehicle mobility due to insufficient road networks poses a challenge to traffic congestion. This is when the road cannot meet travel needs (Haywood, Koning and Monchambert 2017: 215). Traffic congestion is a major problem worldwide.

The section that follows presents and discusses the different types of traffic congestion.

#### 2.7.1 Types of congestion

According to Ankeli, Ankeli, Sule, Nuhu and Kemiki (2018: 115), there exist various definitions of traffic congestion. Owogbemile and Obakemi (2018: 88) conducted a study and found out that congestion assumes two forms; recurrent and non-recurrent, while predictability of occurrence is the main difference between them (Kozlack and Wach 2018: 3). Chow, Santacreu, Tsapakis, Tanasaranond and Cheng (2014: 1000) state that recurrent congestion is a consequence of periodical factors. Meanwhile non-recurrent congestion is a result of unexpected incidences such as accidents, vehicular breakdowns, and police checks. Gabr, Shoaeb and El-Badawy (2018: 149) consider road maintenance, accidents, and bad behaviour of drivers, as well as special events like sport games and strikes, and adverse weather conditions as factors (Sophy and Aroquiaraj 2018: 76).

Yazici, Kocatepe, and Ozguven (2017: 399), as well as Agyapong and Ojo (2018: 86) discussed congestion in two main categories: recurring and non-recurring. The result of the former is due to excessive travel demand and shortage of road supply (Sawsan

2018: 1), gathering in one place at the same time every day (Gabr, Shoaeb and El-Badawy 2018: 149). These phenomena are usually found during peak hours (Andreas, Jukka, Linfang 2017: 133). Non-recurring congestion accounts for half of the city's global traffic delays (Zheng *et al.* 2020: 2).

The section that follows presents and discusses traffic congestion on a global perspective.

### 2.7.2 Global traffic congestion perspective

Traffic congestion is common in all developed and developing countries. TomTom Traffic index survey (2019: 2) ranked the world's most crowded cities by the extra time spent on traffic, as follows: Mumbai, India 65%, Bogota, Colombia 63%, Moscow, Russia 56%, Mexico City, Mexico 52%, Cairo, Egypt 44 %, 41% in Los Angeles (USA) and 34% in Sydney, Australia. In a view of the study by (Li, Lokhov and Saad 2020: 1) show that Due to traffic congestion, the United States alone is gridlocked with an estimated \$166 billion annual cost.

In addition, (Zheng *et al.* 2020:1), added that half of the cost of traffic congestion in the United States of American cities is attributable to non-recurring congestion. Significant growth and development on a global scale have caused severe challenges in global urban traffic congestion, since social and economic activities are mainly concentrated in cities (Lomendra *et al.* 2018: 232). In cities such as Beijing, Mexico City, Bogota, Dhaka, Anthens, Pune, Mumbai, Moscow, Istanbul, Ras Angel, Lima, New Delhi, Jakarta, Bangkok, Recife, Bucharest, Greece, and Rome, traffic congestion conditions are visible according to (Wu, Wang, and Zhang, 2019: 553, Wadud and Chen, 2018: 124, Kozlak and Wach 2018: 2).

According to the research of Shakil and Juric (2020: 1075), the level of urbanisation in the world is very high. The urban population has grown from 750 million in 1950 to 4.2 billion in 2018. Of the global population, 68% live in cities and towns. Due to the rapid growth of population and car ownership, urban traffic congestion is high. A survey conducted by Madlik (2020: 229) pointed out that car ownership in Pune, India, is 753 cars per 1,000 people, which has greatly increased traffic congestion.

According to Li, Qin, Qu, Zhang, Wang and Ran (2019: 1) global urban traffic congestion has been widely considered. According to a research report, by (Wu, Wang, and Zhang 2019: 552) the rate of traffic congestion in Beijing, China has attracted the attention of intercontinental media. In support of this, Wen, Kenworthy, Guo, and Marinova (2019: 1) state that countless mitigation measures to solve the traffic congestion problem, such as Amman's smart city model (Sawsan 2018: 1) has been explored as a solution to tackle traffic congestion, but little has been attained.

The section that follows presents and discusses traffic congestion in Africa.

### 2.7.3 Traffic congestion in Africa

According to Owogbemile and Obakemi (2018: 87), road transport is the most common mode of transportation in African cities because it makes all locations easily accessible. However, traffic congestion on the roads of African cities is a major challenge. Due to population growth, travel demand and increased private car ownership, coupled with inadequate and inefficient transportation systems, traffic congestion will only increase complexity, scale, and scope (Kozlak and Wach 2018: 1).

Shakil and Juric (2020: 1075) report that transportation exists in both developed and developing countries, and Africa is no exception. In addition, the report of Mohana *et al.* (2019: 238) pointed out that because all workplaces in urban centres are concentrated in developing countries, the city has a high traffic congestion rate.

According to Chakrabarty and Gupta (2014: 44), since the Second World War, rapid urbanisation, motorisation, and economic growth in third world countries have led to severe travel demands. Increased vehicle ownership, insufficient spatial distribution of land use, insufficient infrastructure, poor traffic control and management systems, and improper transportation planning have added to the problem (Gachanja 2015: 1), attracting traffic jams. However, attention to urban core traffic congestion and its impact on traditional shopping malls is relatively limited.

Fraser, Wachira, Flaxman, Lee and Duber (2020: 40) contend that in many African cities, such as Nairobi in Kenya, severe urban traffic congestion is still an important



problem. This needs to be identified, understood, and studied. Traffic congestion affects mobility, and its impact is widespread. Thus, the urban core compared with other locations, face more delays as a result of traffic congestion.

In addition, Bushingi, Mostafa, and Das (2020: 435) believe that cities in sub-Saharan African countries such as Gaborani city in Botswana, Cape Town, Johannesburg, Pretoria, the eThekweni in South Africa, Lagos, Abuja, and Abidjan city of the West African Republic of Côte d'Ivoire have a growing demand for efficient transportation systems. To sustain and manage the rapid urban travel demand and travel inconveniences (Johnstone and Ratanavaraha 2020: 197).

**Table 2. 3 Showing ranking of the most congested cities in Africa with their extra travel time percentages.**

<b>1</b>	<b>Cairo, Egypt</b>	<b>44%</b>	<b>6</b>	<b>eThekweni, S. Africa</b>	<b>18%</b>
<b>2</b>	<b>Cape Town, S. Africa</b>	<b>31%</b>	<b>7</b>	<b>Bloemfontein, S. Africa</b>	<b>12%</b>
<b>3</b>	<b>Johannesburg, S. Africa</b>	<b>30%</b>			
<b>4</b>	<b>Pretoria, S. Africa</b>	<b>25%</b>			
<b>5</b>	<b>East London, S. Africa</b>	<b>20%</b>			

**TomTom traffic index (2019: 3)**

The section that follows presents and discusses the rate of traffic congestion in South African cities.

**2.7.4 Traffic congestion in South Africa**

South African cities have undergone tremendous social and economic changes over the years. Unfortunately, the ongoing conversion is accompanied by an increase in the movement-dependent population. The response to these changes has attracted attention, but the impact of traffic congestion in the core areas of large cities on shopping has always been ignored. In addition, (Feikie, Das and Mostafa 2018: 742), South African cities continue to grow in population and economic growth, which leads to high travel demand. However, due to the deterioration and inefficiency of the public

transportation system, people are turning to self-driving private cars. This causes more road traffic problems.

The section that follows presents and discusses rates of traffic congestion in the South Africa city of eThekweni.

#### 2.7.5 Traffic congestion in the eThekweni region

The eThekweni CBD is the central business district of the eThekweni metropolis, located in KwaZulu-Natal in the eastern part of the Republic of South Africa. eThekweni area covers approximately 2,300 kilometers and accommodates 3.5 million people, accounting for one third of the population of the province according to (Zungu et al. 2020: 2). In a study by (Fan and Rama. 2017: 3) by 2035 population in the eThekweni area is expected to grow by 35 million people. The eThekweni is the largest metropolis in the KwaZulu- Natal province and accounts for 60% of the province's economic activity. Moreover, metropolitan eThekweni is a single-centre city, and most of its important facilities and services are located in the core. The end result of this urban form is high demand for travel demand and city expansion according to (Agyemang 2017: 149)

Over ages the eThekweni region has been the prime mover of economic growth in the KwaZulu-Natal province and South Africa at large. The eThekweni region is the hub of most of economic, political, administrative, and cultural activities in the province of KwaZulu Natal. The eThekweni region has experienced continuous urbanisation and motorisation in the past decade. Furthermore, accordingly, due to increased travel demand among residents in awake of insufficient and inadequate transport infrastructures, the city is highly hit with huge traffic congestion challenge both recurrent and non recurrent. In addition, according to TomTom Traffic Index survey (2019: 3), eThekweni region is one of the most congested cities in the world, with 30.4 hours of global traffic per year, and ranking 158th in the world among most congested cities (Das and Mostafa 2018: 746). As a result, (Kesari and Atulkar 2016: 22) pointed out that traffic congestion arises decrease in shopper patronage and diminishing sale. Thus, for many business owners in cities core, this has become a source of anxiety and worry, which has been expressed in general media, academic papers, and conferences.

Moreover, for many shoppers, traffic congestion in the eThekweni CBD is worrying, angering shoppers, and its sharp rise hinders shopping activities (Upadhyaya 2017: 2). Due to the declining space for sales and shopping habits, business activities have surged. Negatively affecting the historical image of CBD as the fast centre destination for shopping purposes. Nonetheless, shopping malls in the suburbs and regions suddenly pose a threat to the CBD. Concerns have been raised in the news and academic papers, but the challenge has not attracted more attention yet.

The section that follows presents and discusses different causes of traffic congestion.

## 2.8 Causes of traffic congestion

Guo *et al.* (2020: 1) identified five factors that cause traffic congestion; capacity, speed, density, lane management, and temporal and spatial traffic topology. In addition, Fraser *et al.* (2020: 41) attributed urban traffic delays to poor street design, an increase in the number of cars on the road, and a lack of active traffic management. The increase in congestion levels, as cited in Bushingi, Mostafa and Das (2020: 442), is due to population growth and increased vehicle ownership.

Johnstone and Ratanavaraha (2020: 197) attributed traffic congestion to the deterioration and inadequacy of the road network, poor traffic control and management systems, and excessive use of private vehicles. According to Thaller, Niemann, Dahmen, Clausen and Leerkamp (2017: 1076), the limited retail space in the CBD and the high cost of rent have increased inventory delivery, which has led to increased traffic congestion in the CBD.

A study by Rao and Rao (2016: 132) concluded that the causes of traffic congestion have micro and macro effects. Minor impacts are the result of people wanting to travel at the same time and being disrupted by factors such as accidents, strikes, and sporting events. However, the macro impact is the result of factors such as the increase in car ownership, economic growth, and changes in income levels, which

further urge traffic congestion at the micro level and stimulate traffic congestion at the macro level. Mougeot and Schwartz (2018: 190) contend that excessive consumption of the transportation network has led to urban traffic congestion. The metropolitan transportation system cannot maintain the city's traffic flow. In addition, Marshall and Dumbaugh (2018: 5) explained that traffic congestion is the result of traffic flow in the same direction at a given time on a limited road network.

Li, Lo, and Guo (2018: 2) stated that due to the high car ownership rate, the transportation network system is over-utilised. Falcocchio and Levinson (2015: 12) added that the popularity of car-owning lifestyles is attributed to the increase in private car ownership and utilization. Cars provide people with convenient travel, travel freedom, travel reliability and ownership pride. Thus (Jin and Rafferty 2017: 3) attributes increased private car ownership to the increase in household income and employment. In addition, Liu, Shiwakoti, and Bie, (2016: 902), showed in a study that widespread urban traffic congestion is attributed to rapid car ownership and utilisation. In addition, Ankelli and Ankelli (2018: 117) as well as Mohan, Bangdiwala and Villaveces (2017: 63) pointed out that the trend in car ownership does not seem to abate, thus has largely attributed to the increasing rate of traffic congestion challenge in urban traffic flow.

In addition, Sari, Anggraeni, and Purnamadewi (2019: 154) pointed out that if the surge in infrastructure development policies related to urban space interaction is not properly adjusted, the surge in the number of vehicles will cause traffic congestion. Private cars cause more congestion because they can accommodate fewer commuters and take up more road space. The study of Padayachee and Sunker (2016: 238) concluded that the level of car availability used for city-based transportation has a profound impact on urban transportation (Lollini 2015: 16). In addition, Zheng *et al.* (2020: 2) found that compared with people using the public transportation system, private drivers suffer more traffic congestion.

According to (Agyemang 2017: 150, Colak, Lima, and Gonzalez 2016: 2) rapid urbanization process characterized by high population density and concentration of

amenities in city centre, results into high rates of motorization on the scarce and deteriorating road networks (Fergus and Eryk 2018: 1). Thus, provoking severe traffic congestion.

Severe weather conditions characterised by floods, fog, heavy rain, road maintenance works, and accidents are the most critical attributes of urban traffic congestion (Sophy and Aroquiaraj 2018: 76, Shakil and Juric 2020: 1075). Due to the lack of an effective traffic system to detect and provide timely traffic information, drivers find themselves in traffic jams. According to Zheng *et al.* (2020: 2), special events, such as sports and political gatherings, are considered to be drivers of traffic congestion. In addition, (Agyapong and Ojo 2018: 86), traffic congestion is the result of lack of urban transportation facilities and poor traffic management systems, and which cities such as eThekweni have failed to cope with global trends. The transportation authority failed to introduce the latest technological systems, which can provide necessary traffic information in time when needed.

Owogbemile and Obakemi (2018: 86) attributed the cause of congestion to the development of large-scale urban infrastructure and the economic transformation of dynamic areas, which puts excessive demand on the limited road network system, which lacks load during peak hours Capacity management during peak hours of travel. Previous studies on the causes of traffic congestion (Lomendra *et al.* 2018: 230) confirmed that urbanisation and the increase in vehicle ownership are the driving forces of driving tendencies. In addition, Liu, Shiwokoti and Bie (2016: 902) found that parking problems, insufficient road capacity, poor traffic management and poor driving habits are the main causes of urban traffic congestion.

According to Feliu, Pronello and Grau (2018: 1079) past evolution of urban transport systems are the causes of the unfunctional schemes in urban areas. While (Hartanti, Aziza and Siswipraptini 2019: 902) specify congestion as being crucial problem to all cities around the globe. The authors also highlighted that increased car ownership that more than quadruple by year (Nilsson *et al.* 2015: 3), population increase, imbalance between traffic demand and transport infrastructure and inappropriate management traffic control management measures to control or reduce congestion are the main

causes of congestion. Additionally, inefficiency of the existing traffic lights time setting is not enough to handle unexpected situations such as collision.

Furthermore, the physical constraints of road expansion and deterioration of the urban public transportation system, that have greatly affected the city's traffic congestion rate according to (Feliciani and Nishinari 2018: 124, Hu, Xu, Shen, Shi, and Chen 2018: 360). In addition, Mulla and Bester (2016: 559) attributed urban traffic congestion to freight trucks from the port along the harbour in eThekweni inner centre. Additionally, Shakil and Juric (2020: 1075) studied the factors that cause traffic congestion and found that accidents, planned road works, and road parking are the characteristics of urban traffic congestion.

According to Wadud and Chen (2018: 122), shopping and similar retail activities (such as loading and unloading goods in roadside stores) are the main causes of urban traffic congestion in cities. Also, unauthorised on-street parking will exacerbate the situation. Although, huge investments have been devoted in infrastructure development and maintenance, in order to sustain efficient urban mobility, in contrast it is reported that expansion program is not a permanent traffic congestion mitigation method according to (Colak, Lima, and Gonzalez 2016: 2). For example, (Li *et al.* 2019: 1) remarks that in the long run, the expansion of the road network failed to solve the traffic congestion problem, but instead caused high travel demand.

The study that follows presents and discusses literature regarding traffic congestion influence on shopping location preference in the Greater eThekweni area.

## 2.9 Traffic congestion influence on shopping location choice.

The patronage rate of shopping centres has been the focus of many recent studies. In the current study, the literature focuses on how traffic congestion affects shopping location preferences in the eThekweni area. Currently, shoppers are exposed to various organized shopping places and traditional shopping centers. Due to the global transformation, developing economies have accelerated the pace of rapid establishment and expansion of organised shopping malls near homes, and established advanced strategies to attract a large number of shoppers.

According to Agyemang (2017: 149), most residents of the greater eThekweni region live outside the city, and almost all shopping travel to the city's commercial centre is done through the road network. Since road network transportation system is the most used mode of transportation in cities in developing countries according to (Owogbemile and Obakemi 2018: 85). They make it easy for people to reach locations. However, due to excessive traffic congestion on the route to the eThekweni region CBD, shopping patronage in the CBD is difficult and therefore diverts shoppers to other reachable and accessible shopping locations.

According to (Brochado *et al.* 2019: 484) Shopping and the convenience of shopping locations are interrelated and are important shopping location attributes. Parmar and Chauhan (2018: 1) further stress that severe traffic congestion in traditional shopping location (CBD) has greatly changed the shopping lifestyle of shoppers. Due to the complexity of travel, shoppers must abandon shopping activities in the city centre (Guimaraes 2018: 128). Additionally, Gabr, Shoaeb, and El-Badway (2018: 148) report that the number of shopping trips to the city's core commercial centres has declined due to traffic congestion.

Urban expansion and the establishment of adjacent shopping centers has presented shoppers to a huge number of choices (Pradhan 2020: 252). (Nuzzolo, Comi, and Rosati 2014: 201). The pattern that led to a decrease in shopping activities in urban core areas with heavy traffic and the increasing wave of convenience shopping preferences (Mushirivindi, Prinsloo and Cloete 2018: 196), Kapusy and Logo (2020: 1). According to (Attri and Jain 2018: 1), time pressure and perceived traffic congestion will affect shoppers' behaviour and negatively affect shoppers' shopping locations and choices. Also, authors affirm that shoppers will be attracted to astounding venues for shopping activities. Moreover, a further consideration is highlighted that shoppers find that easily accessible shopping venues will inspire future patronage.

According to Kapusy and Logo (2020:1), shopper location preference is based on experience. Shoppers prefer locations that provide a unified shopping experience (Kunc *et al.* 2016: 27) and ensure convenient transportation (Mohamad, Al Katheeri

and Salam 2015: 76). According to Upadhyaya (2017: 2), traffic jams will anger shoppers, limits shopping time and as a result divert shoppers to attention to easily accessible locations. That is, neighbouring shopping locations that meet consumer needs such as time (Kunc, Reichel and Novotna 2020: 2). In modern lifestyles, sense of time shortage has gradually become a human demand, and consumers have a high preference for fast and convenient shopping locations (Lloyd *et al.* 2014: 36).

Furthermore, according to Lloyd *et al.* (2014: 36), high consumer demand for convenient shopping destinations is a trend in modern shopping lifestyles. Shoppers are defecting and familiarising themselves with easily accessible shopping locations, with low apprehension and anxiety accessibility concern. Rosenbaum, Otalora and Ramirez (2016: 150) perceive that ease of shopping location accessibility exhibit encouraging behaviours and in the long run swift imminent patronage future intentions.

Newing, Clarke, and Clarke (2015: 220) have conducted research in many areas of the social sciences, but there are few studies on how traffic congestion affects shopping location choices (Wadud and Chen 2018: 123). In addition, Popovich and Handy (2015: 149) pointed out that a lot of research has been conducted on the influence of the building environment on travel choices, but few people consider how the building environment affects the choice of shopping locations.

Shoppers adopt a culture that facilitates shopping (Erkip and Ozuduru, 2015: 6). These locations have several key competitive advantages in the city's core shopping streets (Desai and Phadtare 2017: 437), such as convenient transportation (Agyemang 2017: 150), and a wide variety of stores (Jin and Rafferty 2017: 2, Advantage Business Media (2018: 2). Related traffic congestion delay costs are limited (Sevtsuk 2014: 374, Shao *et al.* 2016: 92). In addition, Mougeot and Schwarts (2018: 190) discuss how many retail stores choose locations with higher accessibility. Decline in retail sales may be due to fewer shoppers and traffic congestion in core urban areas. This leads to a reduction in the mix of tenants in the city and maximisation of the shoppers' utility.



Traffic congestion causes delays, waste, and irritation (Upadhyaya 2017: 94). It affects people and perceptions (Rao and Rao, 2016: 132). As a result, due to traffic disruptions, shopping in the Greater eThekweni area is severely restricted. Traffic congestion is an inconvenient travel factor that will greatly affect shoppers' perception of shopping location selection. Furthermore, Sardari, Hamidi, and Pouladi (2018: 92) pointed out that traffic congestion will affect route selection, shopping location selection and shopping trip rate frequency as well according to (Wang, Gou, and Xu, 2020: 1). Therefore, shoppers are redirecting shopping activities out of the Central Business District to easily accessible shopping locations.

Wu, Kuang and Lo (2019: 1) explains that traffic density is a main factor in shopping location choice decision making. It has a significant impact on the choice of shopping location according to (Zanini *et al.* 2019: 140; Nuzzolo, Comi and Rosati 2014: 202). Traffic jams reduce the attractiveness of shopping locations (Suhartanto, Ruhandi and Triyuni 2015: 84). Shopping is seen as a social activity that can relieve the daily work pressure, and traffic congestion reduces the quality of urban life and eludes travel pressure (Feliciani and Nishinari 2018: 123). Additionally, traffic congestion affects the individual's perception of further shopping travel intentions, triggering negligence from crowded shopping centers to less crowded and accessible shopping locations (Tirachini, Hurtubia, Dekker, and Daziano 2017: 311).

Traffic Congestion delay costs, huge street parking fees hinder shoppers from doing their shopping in the CBD (Nilsson *et al.*, 2015: 2, Jonker, 2016: 30, Kesari and Atulkar, 2016: 22, Shao, Yang, Xing, and Yang, 2016: 92). In a view of shopping location choice study by (Ceccato and Tcacenca 2018: 217), results show that urban residents think that the CBD is not safe for shopping activities due to traffic congestion. That is, according to (Haywood, Koning and Monchambert 2017: 215) traffic congestions stress the insight of risk to shopper safety and security. Thus, to minimise shopping travel inconvenience, shoppers are switching loyalty to alternative shopping locations with lower traffic congestion disruptions and associated costs as (Angelelli, *et al.*, 2016: 1, Mason, Dobbelstein and Corbishley 2019: 65, Kesari and Atulkar 2016: 22) indicated in their research.

## 2.10 Chapter summary

The eThekweni CBD is a major shopping hub in the eThekweni region, the CBD has many social agency headquarters and is an important tourism valuation of the province of KwaZulu-Natal. The eThekweni CBD is the most crowded area during business hours. Whether traffic disruptions in the area are frequent or infrequent, the likelihood of occurrence is the main difference between them as indicated by (Kozlack and Wach 2018: 3). As a result, severe traffic congestion challenge in the eThekweni region CBD have led to disastrous dimension in rate of shopping frequencies and purposes to the CBD.

Moreover, spatial expansion of formal shopping centres have also presented a danger to the existence of traditional shopping centre since they are traffic free and easily accessible. In support of this, (Sevanandee and Damar-Ladkoo 2018: 180) stated that the establishment and expansion of organised shopping places in nearby communities is a crucial reason for the decline in shoppers' willingness to patronise the traffic congested CBD.

In addition, major anchor stores are being relocated to vicinity shopping destinations to attract shoppers since they cannot operate in the CBD due to limited shopper patronage and low sales. As a result, retailers and shoppers are becoming more and more interested in organised shopping locations due to the increasing traffic congestion challenges in the CBD. Midst rapid city transformation, the eThekweni region CBD image and economic viability restoration and protection is due to all urban stakeholders. Moreover, for the growing epidemic of urban core traffic congestion, an effective strategy is needed to incorporate transformation and sustainability of travel in the huge eThekweni region.

## CHAPTER THREE: RESEARCH METHODOLOGY

### 3.1 Introduction

This chapter introduces and discusses the research design, the methods that will be used for the original data collection, the questionnaire design, and the data validity and reliability of the selected methods. This chapter will also discuss tools, tests and techniques for data analysis and interpretation.

### 3.2 Research Design

The research design, according to Ngibe (2015: 33), provides a framework for conducting research. The study design outlines the procedures for how to collect data, the tools to be used, and the expected means for analysing the data (Nhleko 2017: 36). In addition, Mbandlwa (2018: 57) defines research design as the means by which researchers choose to integrate the different components of the research to ensure that the research goals are fully achieved. Therefore, the first task of this study is to determine the influence of traffic congestion on the choice of shopping locations in the Greater eThekweni region.

The research design, according to Musasa (2015: 81), describes the structure of the implementation of the research plan and shows detailed information of the techniques used to obtain information to achieve the research goals. Moreover, Abutabenjeh and Jaradat (2018: 245) define research design as research plans and procedures, covering decisions from a wide range of assumptions to detailed data collection and analysis methods. In addition, the authors report that research design is categorised into two main tasks, namely the specification of the research objective and how to best solve it.

The research design includes themes, survey tools, research procedures and analysis (Bettany and Whittaker 2014: 1523) and establishes associations between variables for better data evaluation and analysis (Doucette 2017: 53). This research follows a descriptive research design, that is, a type of descriptive research that aims to describe the research field accurately and thoroughly (Wiid and Diggins 2015: 67). It provides a lot of information that is easy to understand and explain, as well as

suggestions for identifying problems and creating solutions (Abuatabenjeh and Jaradat 2018: 244).

### 3.3 Research Approach

According to Wiid and Diggins (2015: 63), research design is determined by research method, which can be qualitative, quantitative, or mixed. The researchers adopted quantitative research methods for this study. According to Doucette (2017: 53), quantitative research methods are a popular method for analysing phenomena that can be measured and represented in a digital format. Apuke (2017: 41) advocates the use of statistical methods to collect and analyse quantitative research digital data. Bettany and Whittaker (2014: 1521) conducted a study and found that quantitative data is divided into standard data, ordered data, interval data and ratio data. Another related paper, (Boeren 2018: 66), reported that the data was collected using predetermined tools in quantitative research methods. It is then measured through a survey, which is processed statistically and finally analysed (Salvador 2016: 115).

According to Bettany and Whittaker (2014: 1523), quantitative research methods are descriptive or experimental. Abidin (2017: 2163) added that quantitative research methods focus on numerical data collection and analysis to establish relationships between variables. It is noted by (Apuke 2017: 43) that in qualitative research, statistical methods are applied for use to test the strength and importance of the relationship and drawing appropriate conclusions between variables (Doucette 2017: 54). In order to arrive at a confirmatory result (Ragab and Arisha 2018: 7). Quantitative research methods use controlled design (Rutberg and Bouikidis 2018: 209), applicable mathematical models and statistical techniques for data analysis to quantify and analyse variables to obtain results (Ragab and Arisha 2018: 7).

Further consideration is highlighted by (Queiros, Faria and Almeida 2017: 369) that quantitative methodology seeks to obtain accurate and reliable measurement results for statistical analysis (Rutberg and Bouikidis 2018: 209), adding that it uses numbers, accuracy, and quantitative methods (Salvador 2016: 108). Questioning the

relationship between variables produces verifiable results (Ragab and Arisha 2018: 7). In addition to Apuke (2017: 43) research shows that quantitative research also involves testing hypotheses, focusing on causality, and making predictions. Considering this idea, Bettany and Whittaker (2014: 1521) believe that when conducting quantitative research, researchers will accept experimental hypotheses and refute or reject the null hypothesis. Quantitative methods have been widely used in many studies. However, this is disputed by (Abidin 2017: 2163) claims that qualitative research methodology cannot reveal the potential means of social phenomena in the human variables such as feelings and emotions.

#### 3.4 Population/ Target population

According to Taherdoost (2020: 18) population is a set of cases from which a sample of researchers is drawn. Further, according (Ragab and Arisha 2018: 11) added that population includes individuals who hold information that researchers hope to obtain to solve research goals. Target population according to (Ngibe 2015: 34) is a group of people who have the expected information that researchers presume to collect. In this study, the target population will include household or people living in the eThekweni region and selected locations and suburbs, and 400 respondents will be selected as samples. It must be understood that if the population size exceeds one million, a sample of 384 respondents is suitable to support the research results as this number is considered to provide sufficient input to determine the research results (Tlapana 2019: 34).

According to Abutabenjeh and Jaradat (2018: 243), target population is the group that researchers want to draw conclusions about. Moreover, Nhleko (2017: 38) defines the target population as the entire population from which researchers intend to draw samples for research. According to Ragab and Arisha (2018: 11), the population will include individuals who hold information that researchers hope to obtain to solve research goals. Therefore, for this study, the target population is 400 household or people living in the eThekweni region and selected locations and suburbs.

### 3.5 Sampling method

Abidin (2017: 2164) states that sampling is the process of selecting a part of the population for investigation. According to Taherdoost (2020: 20), sampling can be defined as drawing a subset from the entire sample. It helps to infer the sample frame. In the study by Ragab and Arisha (2018: 10), it was pointed out that sampling allows the implementation of research within time and budget constraints. Using this sampling concept, Memka and Lekhanya (2017: 162) believe that the reason for sampling is that researchers are limited by time and cost constraints. Nhleko (2017: 38) emphasised that studying samples and understanding their characteristics will make it possible to summarise such demographic elements and assess people's beliefs and attitudes (Abidin 2017: 2164).

In the current study, the researchers used the convenience sampling technique, a non-probability sampling method. According to Abidin (2017: 2164), convenience sampling is a data collection process from a nearby population that researchers can visit. In addition, Ragab and Arisha (2018: 11) define the convenience sampling technique as the process of selecting the individuals most easily accessed randomly until the required sample size is reached.

Wiid and Diggins (2015: 192) believe that non-probability sampling methods are useful, less complex, and cost-effective. Compared with the probabilistic methods implemented in practice, the non-probabilistic sampling method takes less time, is more convenient, and cheaper, which makes the non-probabilistic method the first choice in research. Therefore, in this study convenience sampling was used to target shoppers browsing in the eThekweni city centre (workshop, smith street and west street) and interviewees were randomly selected.

### 3.6 Sample size

According to Abidin (2017: 2164), the sample size is a list of target population elements from which the research samples are drawn. The sample size is sufficient to account for the entire population (Queiros, Faria and Almeida 2017: 369). The sample is sufficient to represent the target population, therefore, according to Abidin (2017: 2164), the sample size should be carefully selected. In addition, Wiid and Diggins (2016: 202) noted that to obtain an estimated population value, researchers should

choose a large sample size. Taherdoost (2020: 23) added that the sample size must be sufficient to avoid sampling errors and biases. According to Bujang and Adnan (2016: 1), before conducting any research, proving a sufficient sample size is an important consideration. Since the target population exceeds one million, 400 respondents as the sample size is selected. Nonetheless, it is demonstrated that if the population exceeds one million, the required sample size should be above 384 according to the rule of thumb (Abidin 2017: 2164).

### 3.7 Questionnaire

According to Vencataya, Pudaruth, Dirpal, and Narain (2018: 234), the questionnaire is a set of self-developed questions based on research goals and literature reviews. In quantitative research, questionnaires are used to collect numerical data (Rutberg and Bouikidis 2018: 211). It is a widely used data collection method (Ragab and Arisha 2018: 14), applicable to various fields (Regmi *et al.* 2016: 641)). It is simple, fast, and reliable, and most of it is done at the convenience of the interviewee (Ramirez-Silva *et al.* 2016: 629).

In addition, Queiros, Faria and Almeda (2017: 3810) pointed out that it is important to draft a questionnaire that reflects the attitudes, opinions, and behaviours of the research target population (Ikart 2019: 3). In addition, it is recommended that a good questionnaire design is essential (SAGE 2017: 2), and it should be created on a repeatable scale comparing respondents (Kelley-Quon 2018: 365). It is pointed out that the questionnaire should be produced according to best practices to minimize answer errors (Krosnick and Presser 2016: 1).

Vencataya *et al.* (2018: 234) suggest that researchers should specify which instrument to use to collect data. Therefore, researchers used a paper self-organised questionnaires with closed-ended questions with appropriate focus as a tool for data collection in the research (Sullivan and Artino 2017: 411). It was used to generate the numerical data description of the sample framework (Rutberg and Bouikidis 2018: 211), and the model used to classify people or situations (Ikart 2019: 3).

### 3.7.1 Pilot test

Before collecting data using the research questionnaire, Nhleko (2017: 38) believes that a pilot test should be conducted. The purpose of the pilot test is to assess whether the language used is unclear and to improve it so that the respondent will not encounter any problems when answering questions. In addition, it will allow for evaluation of the validity and reliability of the data collected (SAGE 2017: 2).

### 3.7.2 Pre-testing

According to Kelley-Quon (2018: 365), before distributing formal survey tools, it is crucial to ensure that the respondent's answers are fast and effective. Pre-testing involves managing survey instruments to a set of selected sample frames to establish the content validity of the instrument scores and improve the design and format of the instruments (Nhleko 2017: 38).

## 3.8 Data collection

It was pointed out that before the start of the data collection phase, researchers should determine the appropriate tools and how to manage them during the data collection process. These will be discussed below.

### 3.8.1 Data collection instrument

When planning and conducting research, data collection tools play an important role. Therefore, it makes sense to choose a suitable data collection tool (North Dakota Compass, 2015: 04). In quantitative research methodology, the main data source is the most influential technology (Abidin 2017: 2164). Therefore, the study uses the closed five-point Likert scale questionnaire as a data collection tool (Memka and Lekhanya 2017: 162) because it is a common tool for measuring observations and attitudes. The reason is that it is easy for the interviewees to understand and enables them to respond to their views in a better manner (Abidin 2017: 2165).



### 3.8.2 Administration of the instrument

The researcher and assistants administered the questionnaires to the respondents who were close at hand and easily accessible.

## 3.9 Data analysis

According to Zyphur and Pierides (2017: 11), data analysis is an estimation process in which samples are used to calculate statistics that are used to estimate the parameters that define the population (such as covariance or chance effects). The latest version of the IBM SPSS statistical software package (version 24) was selected to analyse, interpret, and draw conclusions from the collected data (Abuatabenjeh and Jaradat 2018: 243). The data collected was exported to SPSS as response codes and variable names, as shown in Memka and Lekhanya (2017: 162). From it, descriptive statistics such as frequency, mean and standard deviation were calculated, and the findings were displayed using graphs and tables (Tinonetsana, 2017: 8). The next section introduces and discusses the tests used for statistical analysis.

### 3.9.1 Tests used for statistical analysis

#### 3.9.1.1 Correlation analysis

According to Gogtay (2016: 78), correlation is a statistical tool used to measure the relationship between two quantitative variables. These variables are measured in each associated company in the cluster. Graphical methods and scatter plots are used to represent the two variable values of each element in the cluster. According to Wiid and Diggins (2015: 287), correlation produces a correlation coefficient "r", defined as a measure of the linear relationship between two continuous variables. The correlation coefficient "r" ranges from +1 to -1 and has a certain magnitude (Aggarwal and Ranganathan 2016: 1). According to Schober, Boer, and Schwarte (2018: 1), the size change of one variable is the same or opposite to the size change of another variable. A positive correlation indicates that as the value associated with one variable increases, the value associated with another variable also increases (and vice versa) (Nhleko 2017: 38).

#### 3.9.1.2 Chi-square test

In one study, the chi-square test was used to determine the relationship between two or more independent variables (Kilic 2016: 1). It has been widely used to discover

whether there is a relationship between two categories of responses (Shih and Fay 2017: 822, Boduszek 2016: 2). The test only provides evidence of association or disassociation (Pandis 2016: 898). In this study, a chi-square test was performed on all variables to test whether there was evidence of association or irrelevance between the variables.

#### 3.9.1.3 Inferential statistics analysis

According to Doucette (2017: 54), inferential statistics are used to study the variance between the average scores of the two groups, explore the factors that lead to the variance, and draw conclusions based on statistical evidence, such as decisions in the manufacturing process (Zhang, Wang, Zhao, and Cai 2018: 107). The typical content of inferential statistical analysis is to estimate parameters and test hypotheses (Sulistyani 2019: 2).

#### 3.9.1.4 Cronbach's coefficient alpha

According to Taber, (2018: 1274), when selecting research tools, the quality of relevance, validity and reliability should be considered. According to statistical data (Kilic 2016: 47), Cronbach's alpha coefficient is used as an estimate of test reliability. (Najafabadi and Najafabadi 2016: 2417) Cronbach's alpha value is one of the most popular coefficients for measuring the reliability or internal consistency of a test composed of multiple measurements. Vakse, Beaman and Sponarski, (2017: 165) Cronbach's alpha value is probably the most common estimate of the internal consistency of the scale. If the coefficient is found to be equal to or greater than 0.70, the reliability of the scale is considered good (Kilic 2016: 47). Therefore, the researchers used the Cronbach coefficient  $\alpha$  to calculate the internal consistency coefficient of the questionnaire through a pilot study of 40 respondents from the eThekweni area.

#### 3.9.1.5 Descriptive statistical analysis

Sulistyani (2019: 2) states that descriptive statistical analysis involves tabulating, depicting, and describing quantitative data sets. Nhleko (2017: 42) uses descriptive statistical analysis to aggregate collected data to facilitate the use of graphs and frequency analysis to understand information. The descriptive statistical techniques of Simelane (2017: 45) include determining values such as median, mean, range, and standard deviation from raw data, and summarising and displaying them in tables,

graphs, and charts (Wyllys 2020: 5). Data must usually be organised and summarised before it can be understood (Sulistyani 2019: 2).

#### 3.9.1.6 Frequency analysis

According to Nhleko (2017: 43), the study also uses frequency analysis to examine the demographic information of respondents. In this study, frequency was used to determine how often respondents made a specific answer to a question, and to cross-check data encoding. If the response is not equal to the total number of samples, it means that the data was not captured correctly.

#### 3.10 Validity

Validity is the degree to which researchers can draw correct and useful inferences generated using survey tools (Creswell and Creswell, 2018: 251). Effectiveness ensures that the survey tools used are suitable for the research being conducted. According to Nhleko (2017: 44), the validity assessment questionnaire is measuring what it intends to measure (Raqab and Arisha 2018: 15, Schrepp, Hinderks and Thomaschewski 2017: 41). Therefore, to test the validity of this research, the instrument was pre-tested. A copy of the actual questionnaire was used to conduct a pilot study on a small number of respondents with the same characteristics as the expected sampling frame.

#### 3.11 Reliability

Wiid and Diggins (2015: 249) define reliability as the consistency of a set of measurements of a measuring instrument. According to Tinonetsana (2017: 65), reliability is related to the accuracy, predictability, and consistency of scales (Schrepp, Hinderks, and Thomaschewski 2017: 41). The reliability of survey data largely depends on the survey structure and the accuracy of the answers provided by respondents (Queiros, Faria and Almeida (2017: 381). Cronbach's alpha test was used to measure consistency, which is a common method used to measure consistency (Raqab and Arisha 2018: 15).

#### 3.12 Anonymity and Confidentiality

Anonymity is the release of the data part of the interviewee's information without revealing sensitive information. It is very important to maintain the privacy of interviewees during research. Mukhithi (2016: 38) affirms that all sensitive information should never be associated with its source, since confidentiality is a legal and ethical

principle and was adjusted accordingly in this research. Therefore, the researcher used a unique identifier to encode the collected data, and there was no link to connect the interviewee's information to its source.

### 3.13 Ethical Considerations

Research ethics implies the extent to which standards of conduct are enforced, which guide behaviours related to the rights of all affected persons in the research. Research ethics guidelines include principles that any research should follow theoretically to ensure ethical behaviour (Saunders, Lewis, and Thornhill, 2014: 252). The role of abiding by ethical standards will reserve the rights of participants in certain aspects, which may be violated during the research process. In addition, accordingly any participant under the age of 18 was not allowed to participate in the study.

### 3.14 Delimitations/Scope

The research focuses on determining the influence of traffic congestion on shopping location choice in the eThekweni region. Therefore, it was not generalized beyond this area.

### 3.15 Limitation

The study covered only the eThekweni region. The researcher was affected with the lack of enough financial resources and time to carry out the research efficiently.

### 3.16 Conclusion

This chapter clearly outlines the methods used in this study to collect and analyse data. The target population, sampling methods and measuring instruments were critically identified to provide appropriate and relevant information related to the research. This chapter discusses the boundaries and intellectual limitations. In addition, this chapter also outlines the reliability and validity of the information collected in this study. This chapter explains anonymity and confidentiality, as well as ethical considerations, and emphasises the importance of both.

# CHAPTER FOUR: STATEMENT OF FINDINGS, INTERPRETATION AND DISCUSSION OF THE DATA

## 4.1 INTRODUCTION

This chapter presents the results and discusses the findings obtained from the questionnaires in this study. The questionnaire was the primary tool that was used to collect data and was distributed to members of the public in the eThekweni area including North, North Central, Inner Central, Inner West, South Central, South, and Outer West. The data collected from the respondents was analysed with SPSS version 26.0. The results were presented in descriptive statistics in the form of graphs, cross tabulations and other figures for the quantitative data that was collected. Inferential techniques included the use of correlations and chi-square test values, which are interpreted using the p-values. The traditional approach to reporting a result requires a statement of statistical significance. A p-value is generated from a test statistic.

A significant result is indicated with " $p < 0.05$ ".

## 4.2 The sample

This study targeted a total of 400 responses from residents in the eThekweni region. In total, 400 questionnaires were despatched and 400 were returned which gave a 100% response rate.

## 4.3 The research instrument

The research instrument consisted of 38 items, with a level of measurement at a nominal or an ordinal level. The questionnaire was divided into 17 questions which measured various themes as illustrated in Table 4.1.

**Table 4. 1 Layout of measuring instrument**

QUESTION	STATEMENT
A1	Age group
A2	Gender
A3	Ethnicity
A4	Level of education
A5	Marital status
A6	Occupation

A7	Suburb/Location
B8	Preferable shopping location
B9	Shopping frequency
B10	Modes of transport to a shopping location
B11	Travel distance to shopping location
B12.1- 12.5	Shopping location choice attributes
C13.1-13.6	Effects of traffic congestion
C14.1-1410	Traffic congestion causes
C15	Is traffic congestion a major barrier for shopping travel to the CBD?
C16	Traffic congestion density affects shopper perception on shopping location preference
C17.1-17.4	Traffic congestion mitigation measures

#### 4.4 RELIABILITY STATISTICS

The two most important aspects of precision are reliability and validity. Reliability is computed by taking several measurements on the same subjects. A reliability coefficient of 0.60 or higher is considered as “acceptable” for a newly developed construct.

**Table 4. 2 The table below reflects the Cronbach’s alpha score for all the items that constituted the questionnaire.**

	Section	Number of Items	Cronbach's Alpha
B12	Shopping location choice attributes	5	0.739
C13	Factors that affect traffic congestion	6	0.617
C14	Traffic congestion causes	10	0.684
C17	Mitigation factors that impact traffic congestion	4	0.653

The reliability scores for all sections exceed the recommended Cronbach’s alpha value. This indicates a degree of acceptable, consistent scoring for these sections of the research.

#### 4.5 Factor Analysis

Factor analysis is a statistical technique whose main goal is data reduction. A typical use of factor analysis is in survey research, where a researcher wishes to represent several questions with a small number of hypothetical factors. For example, as part of a national survey on political opinions, participants may answer three separate questions regarding environmental policy, reflecting issues at the local, state, and national level. Each question, by itself, would be an inadequate measure of attitude towards environmental policy, but together they may provide a better measure of the attitude. Factor analysis can be used to establish whether the three measures do, in fact, measure the same thing. If so, they can then be combined to create a new variable, a factor score variable that contains a score for each respondent on the factor. Factor techniques are applicable to a variety of situations. A researcher may want to know if the skills required to be a decathlete are as varied as the ten events, or if a small number of core skills are needed to be successful in a decathlon. You need not believe that factors exist to perform a factor analysis, but in practice the factors are usually interpreted, given names, and spoken of as real things.

The matrix tables are preceded by a summarised table that reflects the results of KMO and Bartlett's Test. The requirement is that the Kaiser-Meyer-Olkin Measure of Sampling Adequacy should be greater than 0.50 and Bartlett's Test of Sphericity less than 0.05. In all instances, the conditions are satisfied which allow for the factor analysis procedure.

Factor analysis is done only for the Likert scale items. Certain components were divided into finer components. This is explained below in the rotated component matrix.

**Table 4. 3 KMO and Bartlett's Test**

<b>KMO and Bartlett's Test</b>		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.790
Bartlett's Test of Sphericity	Approx. Chi-Square	1438.915
	Df	300
	Sig.	0.000

Based on table 4.3, all the conditions are satisfied for factor analysis, that is it. the Kaiser-Meyer-Olkin Measure of Sampling Adequacy value should be greater than 0.500 and the Bartlett's Test of Sphericity sig. value should be less than 0.05.

**Table 4. 4 Rotated Component Matrix**

	Component			
	1	2	3	4
Convenience and accessibility	0.574	-0.034	0.269	0.059
Tenant mix	0.729	0.028	0.052	0.169
Entertainment	0.547	-0.077	0.225	0.279
Security and safety	0.741	0.117	-0.084	0.156
Parking	0.722	0.112	-0.041	0.047
Resource wastage (time and money)	0.020	0.012	0.278	0.547
Stress	0.128	0.080	-0.006	0.429
Road dilapidation	0.005	-0.069	0.247	0.628
Accidents	0.274	0.097	-0.020	0.523
Environmental pollution	0.120	0.267	-0.142	0.458
Reduced safety	0.070	0.141	-0.147	0.441
Deteriorating and sufficient road network	0.300	0.279	0.408	0.021
Poor traffic control management system	0.249	0.347	0.256	0.067
Rapid car- ownership and utilisation	0.229	0.281	0.446	-0.041
Poor driving habits	0.160	0.547	0.084	0.076
Bad weather conditions	0.052	0.467	0.148	0.119
Special events (strikes, games)	0.122	0.569	-0.036	0.018
Police checks	-0.062	0.481	-0.015	0.290
Road maintenance	-0.025	0.531	-0.042	0.122
Vehicle breakdown	-0.050	0.611	0.120	-0.011
Accidents	-0.027	0.474	0.133	-0.003
Transit capacity expansion	0.030	0.046	0.716	0.064
Road expansion	-0.071	-0.014	0.536	0.027
Installation of quality traffic control management system	0.255	0.282	0.374	-0.163
Congestion charges	0.106	0.326	0.503	0.091
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.				
a. Rotation converged in 8 iterations.				

Factor analysis is a statistical technique, the main goal of which is data reduction. A typical use of factor analysis is in survey research, where a researcher wishes to represent several questions with a small number of hypothetical factors. With reference to the table above:

- The principal component analysis was used as the extraction method, and the rotation method was Varimax with Kaiser Normalization. This is an orthogonal rotation method that minimizes the number of variables that



have high loadings on each factor. It simplifies the interpretation of the factors.

- Factor analysis/loading show inter-correlations between variables.
- Items of questions that loaded similarly imply measurement along a similar factor. An examination of the content of items loading at or above 0.5 (and using the higher or highest loading in instances where items cross-loaded at greater than this value) effectively measured along the various components.

The statements that constituted sections B12, C13 and C17 loaded perfectly along a single component. This implies that the statements that constituted these sections perfectly measured what it set out to measure.

It is noted that the variables that constituted Section C14 loaded along 2 components (sub-themes). This means that respondents identified different trends within the section. Within the section, the splits are colour coded. (i.e. component yellow, green, pink, and blue respectively). It is also noted that a few statements had, as its highest loading factor, values slightly less than 0.500.

#### 4.6 Section A: Biographical Data

This section summarises the interviewee’s biographical characteristics. Personal characteristics play an important role in the way shoppers choose shopping locations (Stankevich 2017: 7), pointing out that the choice of shopping location depends on personal characteristics (i.e. age, gender, race, education, marital status, occupational status, and suburb/location).

Table 4.5 describes the overall distribution by age.

##### 4.6.1 Gender Distribution by Age

**Table 4. 5 The table below describes the overall gender distribution by age.**

Age (years)		Gender		Total
		Male	Female	
< 20	Count	25	43	68
	% within Age	36.8%	63.2%	100.0%
	% within Gender	18.7%	16.2%	17.0%
	% of Total	6.3%	10.8%	17.0%

20 – 29	Count	31	66	97
	% within Age	32.0%	68.0%	100.0%
	% within Gender	23.1%	24.8%	24.3%
	% of Total	7.8%	16.5%	24.3%
30 – 39	Count	33	74	107
	% within Age	30.8%	69.2%	100.0%
	% within Gender	24.6%	27.8%	26.8%
	% of Total	8.3%	18.5%	26.8%
≥ 40	Count	45	83	128
	% within Age	35.2%	64.8%	100.0%
	% within Gender	33.6%	31.2%	32.0%
	% of Total	11.3%	20.8%	32.0%
Total	Count	134	266	400
	% within Age	33.5%	66.5%	100.0%
	% within Gender	100.0%	100.0%	100.0%
	% of Total	33.5%	66.5%	100.0%

**TABLE 4.5: Gender Distribution by Age**

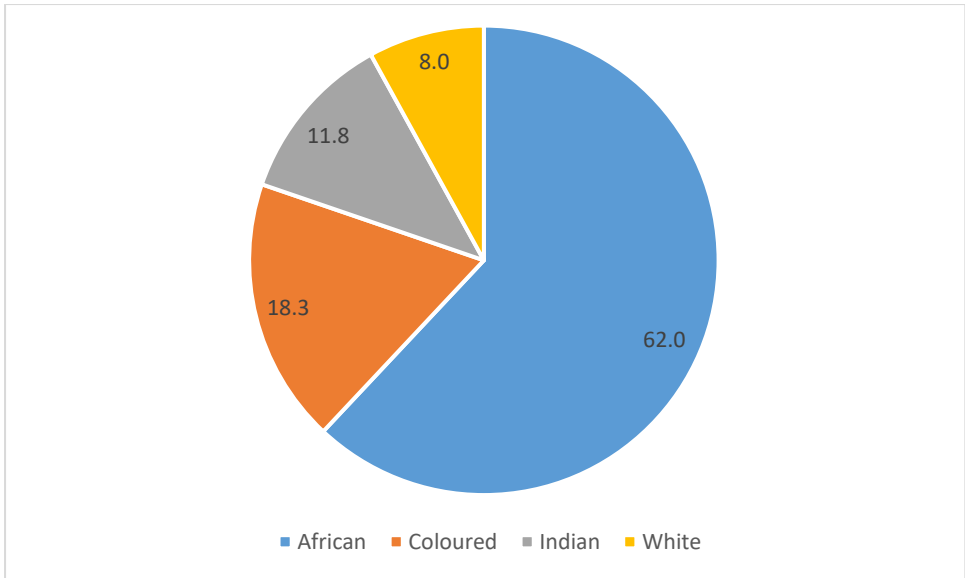
Overall, the ratio of males to females is approximately 1:2 (33.5%: 66.5%) ( $p < 0.001$ ). This indicated that women are **more** than men. Within the age category of 30 to 39 years, **30.8%** were male. Within the category of males (only), **24.6%** were between the ages of 30 to 39 years. This category of males between the ages of 30 to 39 years formed **8.3%** of the total sample.

A further analysis of age ranges of (>20, 20-29, and 30-39 years) represented a major collective percentage of 68.1% (i.e., 17.0%+24.3+26.8) of the total sample. This is because this study was conducted in areas that make up the eThekweni city where middle to young, aged people have a preference to live, work or study.

The age distributions are not similar as there are more respondents younger than 40 years ( $p < 0.001$ ).

#### 4.6.2: Racial composition of the sample

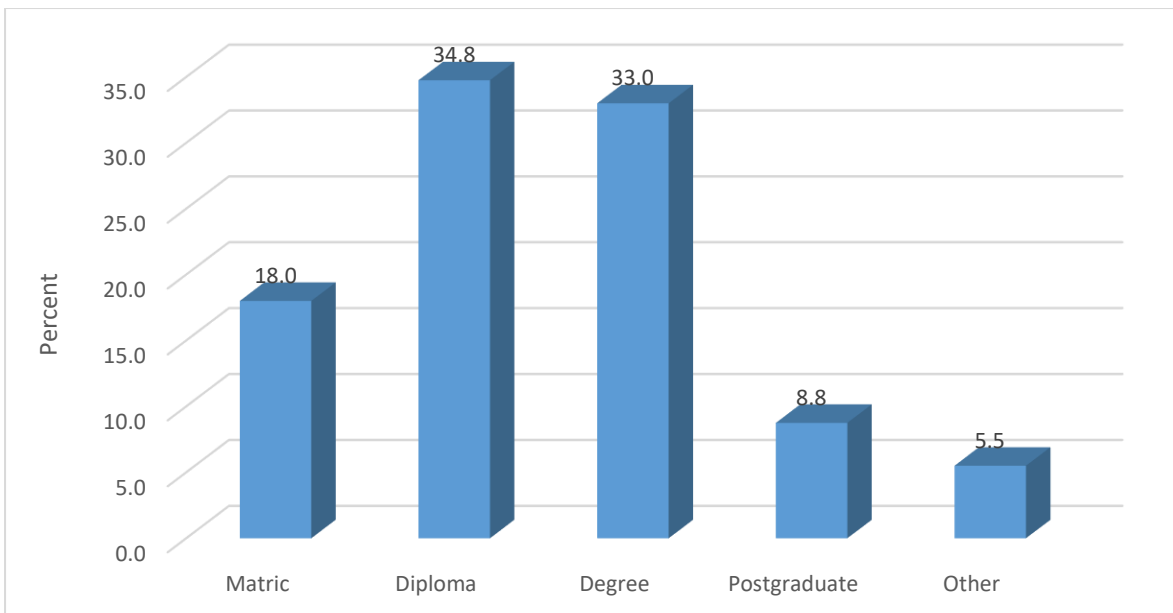
The figure below indicates the racial composition of the sample.



**Figure 4. 1 Racial composition of the sample**

Figure 4.1 indicates that the majority (62.0%) of the respondents are Africans, followed by 18.3% coloured, (11.8%) Indians and (8.0%) whites, respectively.

4.6.3: Education levels of the Respondents



**Figure 4. 2 Education Level of Respondents.**

Figure 4.2 shows that most respondents (82.0%) have post-school qualifications. Approximately 9% of respondents have a graduate degree. One-third of respondents

have completed their studies. A total of 94.6% (18.0% + 34.8% + 33.0% + 8.8%) of samples have at least a matric certificate. This is useful statistical data, because it shows that a considerable number of respondents have high qualifications. This indicates that the collected responses will come from an informed source.

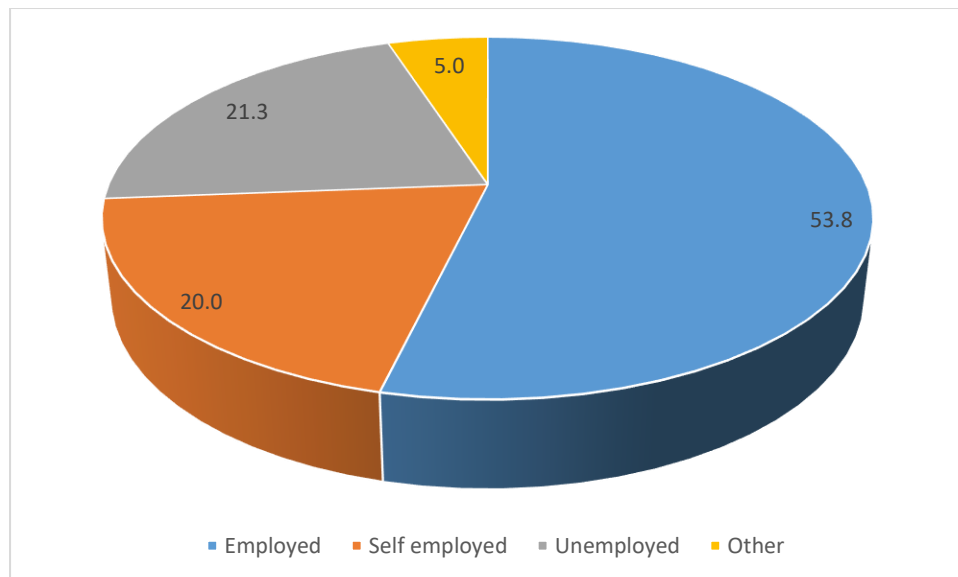
#### 4.6.4 Marital Status of the Respondents

	Frequency	Percent
Married	169	42.3
Single	173	43.3
Divorced	48	12.0
Widowed	10	2.5
Total	400	100.0

**Table 4. 6 Marital status of the respondents**

**Table 4.6** indicates that there were similar and significantly higher numbers of married and single respondents. Despite data highlighting a high number of singles among respondents, this might be attributed to the location where the study was conducted.

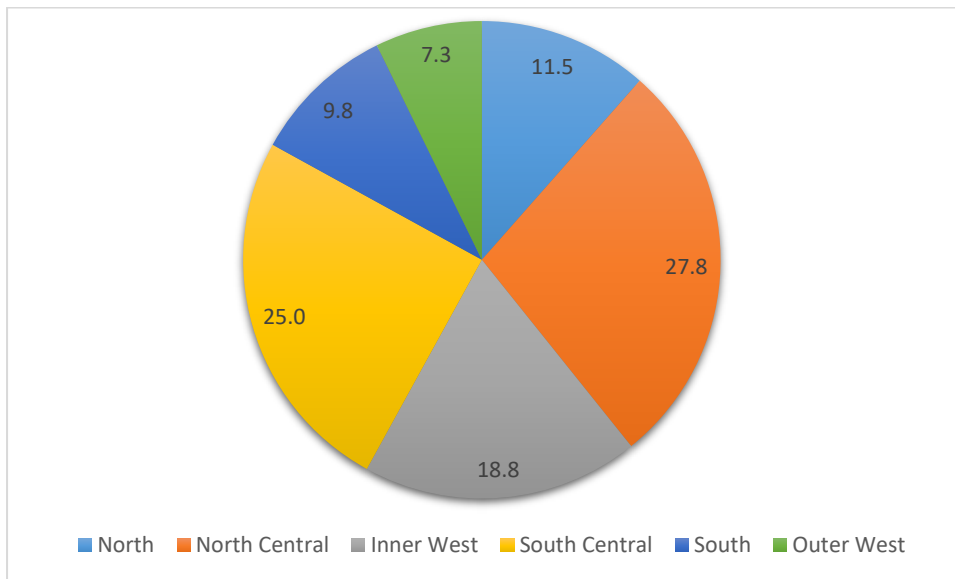
#### 4.6.5 Occupation Status of Respondents



**Figure 4. 3 Occupation Status of Respondents**

Figure 4.3 indicates that more than half of the respondents were employed (53.8%), with similar numbers of self-employed and unemployed respondents.

#### 4.6.6 Residence of Respondents



**Figure 4. 4 Response of the respondents**

In Figure 4.4, 27.8% of the respondents live in the north-central part of eThekweni, 25.0% in the central and southern regions, 18.8% in the inner-western regions, 11.5% in the northern regions, 9.8% in the southern regions and 7.3% in the Western region. This shows that the interviewees are from different regions.

#### 4.6.7 Preferable Shopping Location

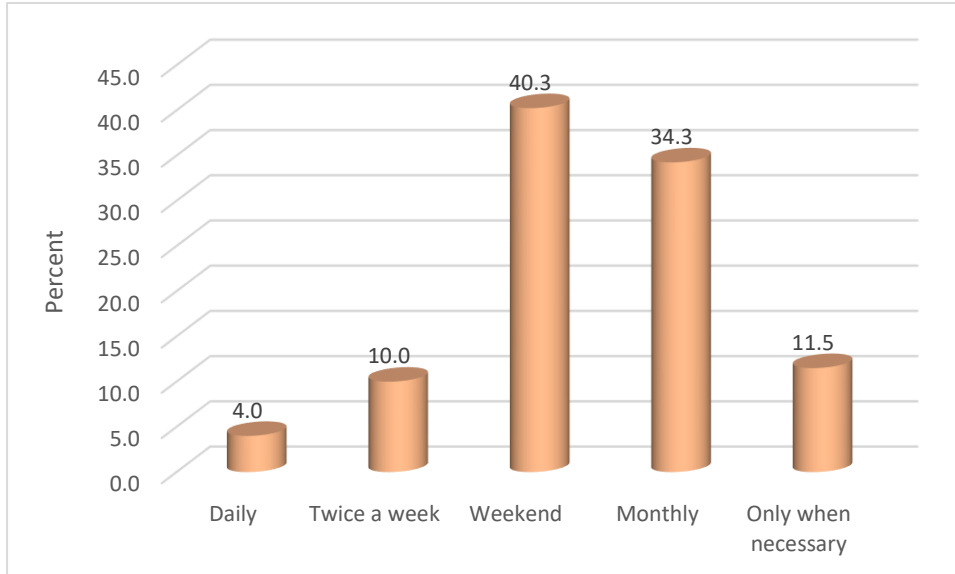
	Frequency	Percent
Central business district (CBD)	109	27.3
Area shopping centre/Complex/Mall	291	72.8
Total	400	100.0

**Table 4. 7 Preferable Shopping Location**

As shown in Table 4.7, more respondents (72.8%) prefer shopping centres/complex. This statistical data shows that the shopping preference for the CBD is low, which is not conducive to business entities in the CBD. This also reinforces the reason why shop owners moved to a vicinity shopping location. Wang, Li, Bu, and Yu (2020: 1) proved that the intensity of interaction between residential areas and adjacent

shopping areas is positively correlated with convenience and negatively correlated with distant locations.

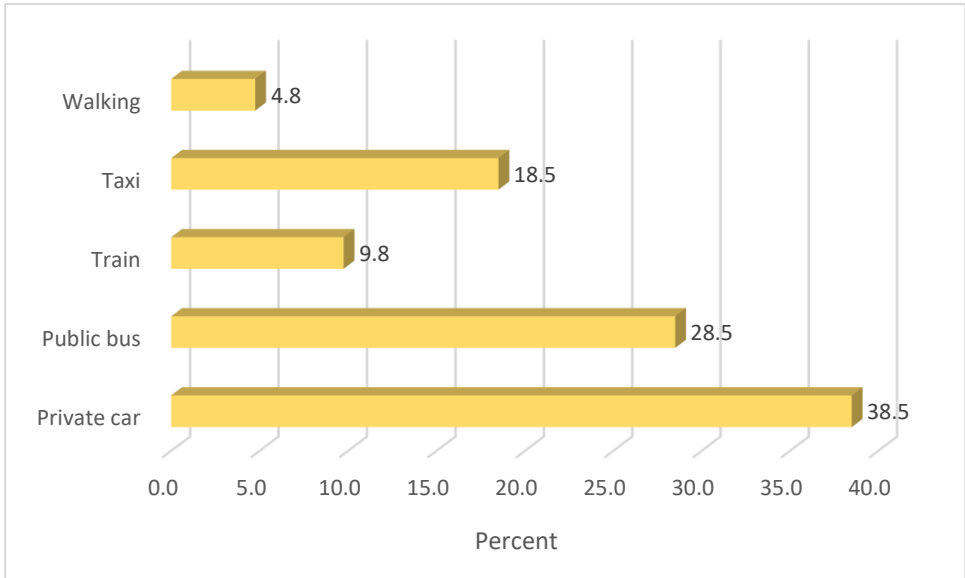
#### 4.6.8 The Shopping Frequency of Respondents



**Figure 4. 5 The Shopping Frequency of Respondents**

To determine the shopping frequency of respondents, they were asked to indicate their shopping frequency. The results showed that 40.3% of regular shopping took place on weekends, 34.3% of regular shopping was per month, 10.0% took place twice a week, 4.0% per day, and 11.5% only when necessary. Figure 4.5 shows that 86.0% of the respondents are not frequent visitors to shopping malls and do not shop more than four times a month.

#### 4.6.9 Mode of Transport to Shopping Location



**Figure 4. 6 Mode of Transport to Shopping Location**

Figure 4.6 shows more dependence on more than one mode of transportation. It also shows that private cars are the most used mode of transportation (38.5%), followed by public buses (28.5%), taxis (18.5%), train (9.8%) and walking (4.8%). The dominant position of private cars as a means of transportation is obvious. Public buses are the second most popular means of transportation in shopping trips. Figure 4.6 also shows that there are significant differences in the modes of transportation used.

**4.6.10 Travel Distance to Shopping Location**



**Figure 4. 7 Travel Distance to shopping location**

In figure 4.7, 32.0% of respondents travel between 5-9km, followed by 28.5% who travel 10-19km, 20.8% who travel less than 5km, 13.0% who travel 20-29km and 5.8% who travel 30km and above respectively. Figure 4.7 indicates that significantly more respondents travelled less than 20 km.

#### 4.6.11 Mode of Transport and Distance travelled

Travel distance to shopping location		Modes of Transport to a shopping location					Total
		Private car	Public bus	Train	Taxi	Walking	
Less than 5km	Count	33	16	6	11	17	83
	% within Travel distance to shopping location	39.8%	19.3%	7.2%	13.3%	20.5%	100.0%
	% within Modes of Transport to a shopping location	21.4%	14.0%	15.4%	14.9%	89.5%	20.8%
	% of Total	8.3%	4.0%	1.5%	2.8%	4.3%	20.8%
5 - 9 km	Count	56	40	10	21	1	128
	% within Travel distance to shopping location	43.8%	31.3%	7.8%	16.4%	0.8%	100.0%
	% within Modes of Transport to a shopping location	36.4%	35.1%	25.6%	28.4%	5.3%	32.0%
	% of Total	14.0%	10.0%	2.5%	5.3%	0.3%	32.0%
10 – 19 km	Count	38	42	10	24	0	114
	% within Travel distance to shopping location	33.3%	36.8%	8.8%	21.1%	0.0%	100.0%
	% within Modes of Transport to a shopping location	24.7%	36.8%	25.6%	32.4%	0.0%	28.5%
	% of Total	9.5%	10.5%	2.5%	6.0%	0.0%	28.5%
20 – 29 km	Count	15	13	9	14	1	52
	% within Travel distance to shopping location	28.8%	25.0%	17.3%	26.9%	1.9%	100.0%
	% within Modes of Transport to a shopping location	9.7%	11.4%	23.1%	18.9%	5.3%	13.0%
	% of Total	3.8%	3.3%	2.3%	3.5%	0.3%	13.0%
30 km and above	Count	12	3	4	4	0	23
	% within Travel distance to shopping location	52.2%	13.0%	17.4%	17.4%	0.0%	100.0%
	% within Modes of Transport to a shopping location	7.8%	2.6%	10.3%	5.4%	0.0%	5.8%
	% of Total	3.0%	0.8%	1.0%	1.0%	0.0%	5.8%
Total	Count	154	114	39	74	19	400
	% within Travel distance to shopping location	38.5%	28.5%	9.8%	18.5%	4.8%	100.0%
	% within Modes of Transport to a shopping location	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	% of Total	38.5%	28.5%	9.8%	18.5%	4.8%	100.0%

**Table 4. 8 Cross tabulation Between Mode of Transport and Distance Travelled.**

From table 4.8, it is noted that respondents who had to travel furthest used their private vehicles (52.2%). There is a significant relationship between the variables ( $p < 0.001$ ).

#### 4.7 Section Analysis

The section that follows analyses the scoring patterns of the respondents per variable per section. The results are first presented using summarised percentages for the



variables that constitute each section. Results are then further analysed according to the importance of the statements.

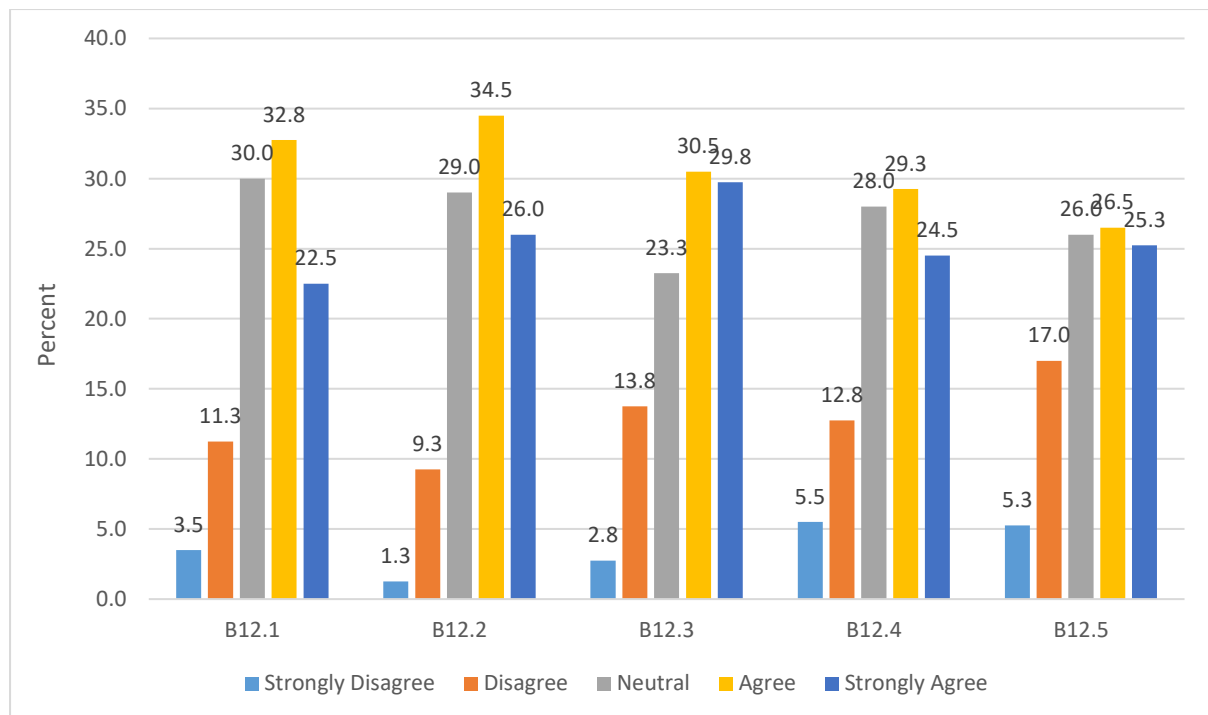
#### 4.7.1 QUESTION 12: SHOPPING LOCATION CHOICE ATTRIBUTES

This section of the questionnaire deals with shopping location attributes that may influence shopping location preference of shoppers. It measures levels of perception of shoppers regarding convenience and accessibility, tenant mix, entertainment, security and safety, and availability of parking space service quality and their experience during shopping location preference.

**Table 4. 9 Summarises the scoring patterns.**

		Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree		Chi Square p-value
		Count	Row N %	Count	Row N %	Count	Row N %	Count	Row N %	Count	Row N %	
Convenience and accessibility	B12.1	14	3.5%	45	11.3%	120	30.0%	131	32.8%	90	22.5%	< 0.001
Tenant mix	B12.2	5	1.3%	37	9.3%	116	29.0%	138	34.5%	104	26.0%	< 0.001
Entertainment	B12.3	11	2.8%	55	13.8%	93	23.3%	122	30.5%	119	29.8%	< 0.001
Security and safety	B12.4	22	5.5%	51	12.8%	112	28.0%	117	29.3%	98	24.5%	< 0.001
Parking	B12.5	21	5.3%	68	17.0%	104	26.0%	106	26.5%	101	25.3%	< 0.001

**Figure 4. 8 Percentage Scoring Patterns (Shopping location choice attributes)**



#### 4.7.1.1 Convenience and accessibility

According to Table 4.9 and Figure 4.8, the survey results show that 90 (22.5%) and 131 (32.8%) of the respondents strongly agree and agree respectively, that Convenience and accessibility are attributes of shopping location selection. In their research (Rousseau and Venter 2014: 3), the convenience of shopping locations is an important part of the shopper's experience, and it greatly influences shoppers' perceptions of shopping location choices. However, 120 (30%) of the respondents expressed neutrality, of which 45 (11%) and 14 (3.5%) expressed opposition and strongly disagreed with the statement.

#### 4.7.1.2. Tenant mix

According to Table 4.9 and Figure 4.8, overall 60.5% (26.0% + 34.5%) agree with the result of mixed use of tenants. According to Mittal and Jhamb (2016: 387), it is determined and analysed that tenant mix will affect shoppers when choosing a shopping destination. Shoppers prefer an environment that encourages one-stop shopping (Lloyd, Chan, Yip, and Chan 2014: 39). Twenty-nine per cent of the respondents remain neutral, with 9.3% and 1.3% opposed and strongly opposed to the statement, respectively.

#### 4.7.1.3. Entertainment

According to Table 4.9 and Figure 4.8, the survey results show that 29.8% and 30.5% respectively of the respondents strongly agree and agree that entertainment facilities are crucial on shopping location selection as indicated in the study by (Mittal and Jhamb 2016: 387, Upadhyaya 2017: 95). In addition, (Belwal and Belwal 2017: 590) states that entertainment is at the core of shopping location choices. 23.3% of the respondents remained neutral, 13.8% and 2.8% opposed and strongly opposed the statement respectively.

#### 4.7.1.4. Security and safety

Table 4.9 and Figure 4.8 show that 24.5% and 29.3% of the respondents strongly agree and agree that the safety of shopping locations will affect consumers' decisions about shopping locations. According to Ceccato and Tcacenca (2018: 217) Safety is

an important component of a shopping location, and shoppers choose shopping locations that are perceived to be safer. Moreover, (Erkip and Ozuduru, 2015: 5) added that shoppers show their choice of shopping locations based on a sense of security. However, 28.0% of the respondents remained neutral, and 12.8% and 5.5% respectively opposed and strongly opposed the statement.

#### 4.7.1.5. Parking

Table 4.9 and Figure 4.8 respectively show that 25.3% and 26.5% of respondents strongly agree and agree, that parking has an important impact on shoppers' perception of shopping location choices (Newing, Clarke and Clarke 2015: 222, Erkip and Ozuduru, 2015: 3). Due to the high degree of reliance on cars by shoppers, the availability of parking facilities is a source of advantage for shopping places for shoppers who rely on cars (Belwal and Belwal, 2017: 589). Facilities with adequate parking spaces can attract shoppers, but 26.0% of the respondents remain neutral, 17.0% and 5.3% of the respondents respectively disagree and strongly disagree with the statement.

The following patterns are observed:

- All statements show (significantly) higher levels of agreement whilst other levels of agreement are lower (but still greater than levels of disagreement)
- There are no statements with higher levels of disagreement
- There are also fairly high levels of neutrality because they identified different trends or simply did not understand well with certain statements.

The significance of the differences is tested and shown in Table 4.9.

To determine whether the scoring patterns per statement were significantly different per option, a chi-square test was done. The null hypothesis claims that similar numbers of respondents scored across each option for each statement (one statement at a time). The alternate states that there is a significant difference between the levels of agreement and disagreement.

The results are shown in Table 4.9. The highlighted sig. values (p-values) are less than 0.05 (the level of significance), implying that the distributions were not similar.

That is, the differences between the way respondents scored (agree, uncertain, disagree) were significant.

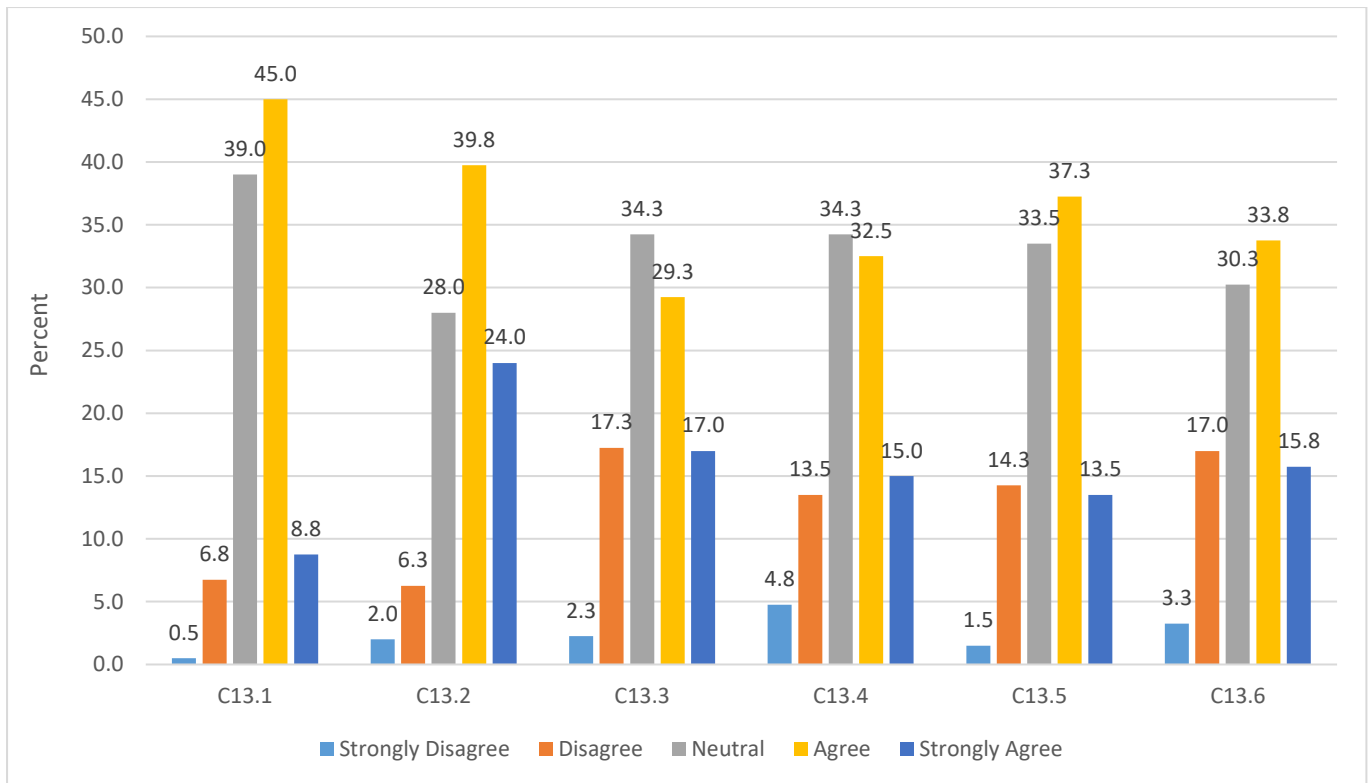
#### 4.7.2 EFFECTS OF TRAFFIC CONGESTION

This section of the questionnaire deals with effects of traffic congestion. It measures levels of perception of individuals regarding resource wastage (time and money), stress, road dilapidation, accidents, environmental pollution, and reduced safety.

**Table 4. 10 Summarises the scoring patterns.**

		Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree		Chi Square p-value
		Count	Row N %	Count	Row N %	Count	Row N %	Count	Row N %	Count	Row N %	
Resource wastage (time and money)	C13.1	2	0.5%	27	6.8%	156	39.0%	180	45.0%	35	8.8%	0.001
Stress	C13.2	8	2.0%	25	6.3%	112	28.0%	159	39.8%	96	24.0%	0.001
Road dilapidation	C13.3	9	2.3%	69	17.3%	137	34.3%	117	29.3%	68	17.0%	0.001
Accidents	C13.4	19	4.8%	54	13.5%	137	34.3%	130	32.5%	60	15.0%	0.001
Environmental pollution	C13.5	6	1.5%	57	14.3%	134	33.5%	149	37.3%	54	13.5%	0.001
Reduced safety	C13.6	13	3.3%	68	17.0%	121	30.3%	135	33.8%	63	15.8%	0.001

**Figure 4. 9 Percentage scoring patterns (Effects of traffic congestion)**



#### 4.7.2.1 Resource wastage

Table 4.10 and Figure 4.9 respectively show that 8.8% and 45.0% of the respondents strongly agree and agree that waste of resources (money and time) is an effect traffic congestion. This statement is supported by (Angelelli, Arsik, Morandi, Savelsbergh and Speranza 2016: 1) who maintains that traffic jams cause delays and waste in the form of time and money. However, 39.0% of the respondents held a neutral attitude, 6.9% and 0.5% of the respondents disagree and strongly disagree respectively with the statement.

#### 4.7.2.2 Stress

According to Table 4.10 and Figure 4.9, the survey results show that 24.0% and 39.8% of the respondents strongly agree and agree that pressure is the effect of traffic congestion. Traffic congestion can cause irritation (Upadhyaya 2017: 94) and affect the reality and perception of people (Rao and Rao 2016: 132). As (Feliciani and Nishinari 2018: 123) also affirm that traffic congestion can reduce the quality of urban life and eludes travel stress. Although 28.0% of respondents remained neutral, 6.3% and 2.0% of respondents disagree and strongly disagree respectively with the statement.

#### 4.7.2.3 Road dilapidation

According to Table 4.10 and Figure 4.9, the survey results show that 17.0% and 29.3% of the respondents respectively strongly agree and agree that road damage is the effect of traffic congestion. However, 34.3% of the respondents remained neutral, and 17.3% and 2.3% of the respondents disagreed with the statement.

#### 4.7.2.4 Accidents

According to Table 4.10 and Figure 4.9, the survey results show that 15.0% and 32.5% of the respondents strongly agree and agree that traffic jams will cause traffic accidents, but 34.3% of the respondents remain neutral, 13.5% and 4.8% respectively of the interviewees disagreed and strongly disagreed with these statements

#### 4.7.2.5 Environmental pollution

According to Table 4.10 and Figure 4.9, the survey results show that 13.5% and 37.3% of the respondents respectively strongly agree and agree that environmental pollution is the impact of traffic congestion. Meanwhile 33.5% of the respondents remain neutral, 14.3% and 1.5% respectively of the respondents opposed and strongly disagreed with the statement.

#### 4.7.2.6 Reduced safety

The survey results in Table 4.10 and Figure 4.9 show that 15.8% and 33.8% of the respondents strongly agree and agree that traffic congestion is related to reduced commuter safety. Haywood, Koning and Monchambert (2017: 215) agrees that traffic congestion stress the insight of shopper's safety and security risks. Thus, shoppers avoid shopping locations that they perceive to be unsafe for shopping activities (Ceccato and Tcacenca 2018: 217). Moreover, 30.3% of the respondents remained neutral, 17.0% and 3.3% respectively opposed and strongly opposed this statement, The following patterns are observed:

- All statements show (significantly) higher levels of agreement whilst other levels of agreement are lower (but still greater than levels of disagreement)
- There are no statements with higher levels of disagreement
- There are also fairly high levels of neutrality because they identified different trends or simply did not understand well with certain statements.

The significance of the differences is tested and shown in the Table 4.10.

To determine whether the scoring patterns per statement were significantly different per option, a chi-square test was done. The null hypothesis claims that similar numbers of respondents scored across each option for each statement (one statement at a time). The alternate states that there is a significant difference between the levels of agreement and disagreement.

The results are shown in Table 4.10. The highlighted sig. values (p-values) are less than 0.05 (the level of significance), implying that the distributions were not similar. That is, the differences between the way respondents scored (agree, uncertain, disagree) were significant.

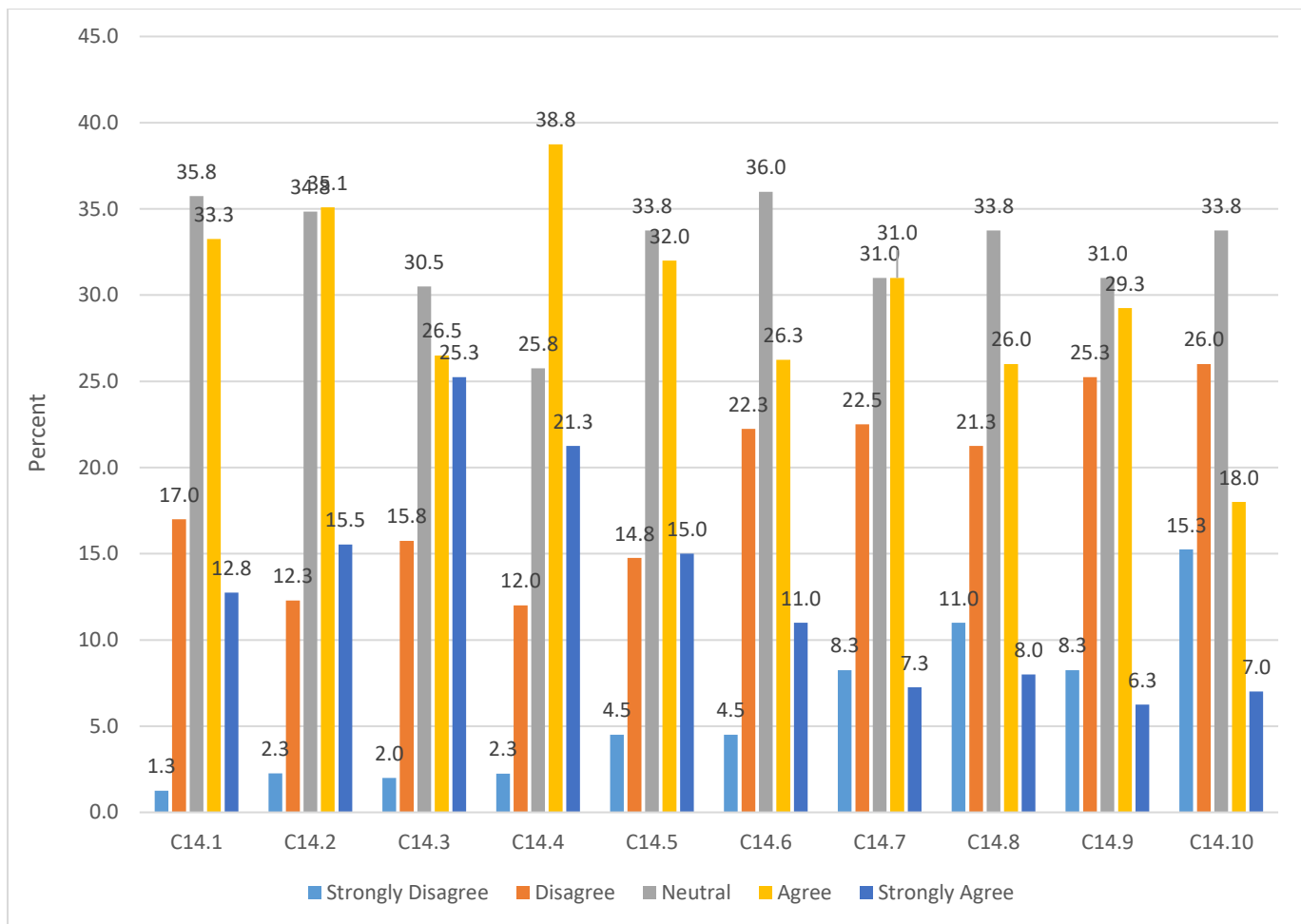
#### 4.7.3 TRAFFIC CONGESTION CAUSES

This section of the questionnaire deals with traffic congestion causes, it measures levels of individual perception regarding deteriorating and sufficient road network, poor traffic control management, rapid car-ownership and utilisation, poor driving habits, bad weather conditions, special events (strikes, games), police checks, road maintenance, vehicle breakdown, and accidents.

**Table 4. 11 Summarises the scoring patterns**

		Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree		Chi Square p-value
		Cou nt	Row N %	Cou nt	Row N %	Cou nt	Row N %	Cou nt	Row N %	Cou nt	Row N %	
Deteriorating and sufficient road network	C14.1	5	1.3%	68	17.0%	143	35.8%	133	33.3%	51	12.8%	< 0.001
Poor traffic control management system	C14.2	9	2.3%	49	12.3%	139	34.8%	140	35.1%	62	15.5%	< 0.001
Rapid car- ownership and utilization	C14.3	8	2.0%	63	15.8%	122	30.5%	106	26.5%	101	25.3%	< 0.001
Poor driving habits	C14.4	9	2.3%	48	12.0%	103	25.8%	155	38.8%	85	21.3%	< 0.001
Bad weather conditions	C14.5	18	4.5%	59	14.8%	135	33.8%	128	32.0%	60	15.0%	< 0.001
Special events (strikes, games)	C14.6	18	4.5%	89	22.3%	144	36.0%	105	26.3%	44	11.0%	< 0.001
Police checks	C14.7	33	8.3%	90	22.5%	124	31.0%	124	31.0%	29	7.3%	< 0.001
Road maintenance	C14.8	44	11.0%	85	21.3%	135	33.8%	104	26.0%	32	8.0%	< 0.001
Vehicle breakdown	C14.9	33	8.3%	101	25.3%	124	31.0%	117	29.3%	25	6.3%	< 0.001
Accidents	C14.10	61	15.3%	104	26.0%	135	33.8%	72	18.0%	28	7.0%	< 0.001

**Figure 4. 10 Percentage Scoring Patterns (Traffic congestion Causes)**



#### 4.7.3.1 Deteriorating and sufficient road network

According to Table 4.11 and Figure 4.10, the survey results show that 12.8% and 33.3% of the respondents strongly agree and agree that the deterioration and shortage of the road network will cause traffic congestion. Johnstone and Ratanavaraha (2020: 197) attributed traffic congestion to the deterioration and inadequacy of the road network, poor traffic control and management systems, and excessive use of private vehicles. However, 35.8% of the respondents remained neutral, and 17.0% and 1.3% respectively opposed and strongly opposed this statement.,.

#### 4.7.3.2 Poor traffic control management system

Table 4.11 and Figure 4.10 show that 15.5% and 35.1% of the respondents respectively strongly agree and agree that the traffic congestion in eThekweni area is caused by poor traffic control and management systems. According (Agyapong and Ojo 2018: 86) due to high urbanisation, traffic congestion assessment models such as



(traffic lights) in developing cities cannot cope up or control the trend of car ownership and utilization accurately (Wang, Guo, and Xa (2020: 2). In addition, (Bashingi, Mostafa, and Das 2020: 435) agrees that traffic congestion assessment models in developing megacities have adequately failed to adapt to the sudden traffic situations, as a result this leads to congestion problems in cities. Nonetheless, 34.8% of the respondents remained neutral, 12.3% and 2.3% opposed and strongly opposed.

#### 4.7.3.3 Rapid car-ownership and utilisation

Table 4.11 and Figure 4.10 show that 25.3% and 26.5% of the respondents respectively strongly agree and agree that eThekweni's traffic congestion is attributable to the surge in private car ownership and the surge in utilisation of private cars. The rate of private car ownership and utilization does not seem to abate, as a result, this has greatly attributed to the increasing rate of traffic congestion in the cities (Mohan, Bangdiwala and Villaveces 2017: 63). The rapid increase in the number of vehicles, if appropriate adjustments are not made with the increase of the spatial network, will cause traffic congestion (Liu, Shiwakoti and Bie, 2016: 902). Moreover, 30.5% of the respondents remained neutral, 15.8% and 2.0% respectively disagreed with the statement.

#### 4.7.3.4 Poor driving habits

Table 4.11 and Figure 4.10 show that 21.3% and 38.8% of the respondents respectively strongly agree and agree that the traffic congestion in eThekweni area is the result of bad driving habits. In support of this, (Shakil and Juric 2020: 1082, Gabr, Shoaeb, and El-Badawy 2018: 149) stated that individual drivers are the cause of urban traffic congestion. However, 25.8% of respondents remain neutral, 12.0% and 2.35% disagreed and strongly disagreed respectively with the statement.

#### 4.7.3.5 Bad weather conditions

Table 4.11 and Figure 4.10 show that 15.0% and 32.0% of respondents respectively strongly agree and agree that traffic congestion in the city of eThekweni is a result of unexpected incidences such as adverse weather condition like flood, fog, and heavy

rains. However, 33.8% of the respondents remained neutral, with 14.8% and 4.5% respectively opposed and strongly opposed.

#### 4.7.3.6 Special events (strikes, games)

Table 4.11 and Table 4.10 show that 11.0% and 26.3% of the respondents respectively strongly agree and agree that traffic congestion is the result of special events such as sports games and strikes (Gabr, Shoaeb and El-Badawy 2018: 149). However, 36.0% of the respondents remained neutral, 22.3% and 4.5% of the respondents disagreed and strongly disagreed respectively with the statement.

#### 4.7.3.7 Police checks

Table 4.11 and Figure 4.10 show that 7.3% and 31.0% of the respondents strongly agree and agree, respectively, that numerous traffic stop overs and inspections in the city is the cause of severe traffic delays in the city. Metro police inspections on major city roads and intersections interfere with the function of the assessment traffic model systems and thus cause traffic congestion (Memon et al. 2019: 490). However, 31.0% of the respondents remained neutral, and 22.5% and 8.3% respectively disagreed with the statement.

#### 4.7.3.8 Road maintenance

Table 4.11 and Figure 4.10 show that 8.0% and 26.0% of the respondents strongly agree and agree that road maintenance work leads to traffic congestion. Shakil and juric (2020: 1075) conducted a study on traffic congestion causes and their findings depict that planned road works are attributes of traffic congestion in cities. Moreover, 33.8% of the respondents remained neutral, and 21.3% and 11.0% of the respondents disagreed with the statement.

#### 4.7.3.9 Vehicle breakdown

Table 4.11 and Figure 4.10 respectively show that 6.3% and 29.3% of the respondents strongly agree and agree that traffic congestion is caused by incidents such as vehicle breakdowns (Gabr, Shoaeb, and El-Badawy 2018: 149). However, 31.0% of the

respondents remained neutral, and 25.3% and 8.3% respectively opposed and strongly opposed the statement.

#### 4.7.3.10 Accidents

The results in Table 4.11 and Figure 4.10 show that 15.3% and 26.0% of the respondents strongly disagree that traffic jams are not caused by accidents. Although 33.8% of the respondents remain neutral, 7.0% and 18.0% respectively strongly agree and agree with the statement that traffic congestion is attributable to accidents (Rao and Rao 2016: 132). In addition, Zheng *et al.* (2020: 2) state that when an accident occurs on the road network, congestion will spread and affect adjacent road sections.

The following patterns are observed:

- All statements show (significantly) higher levels of agreement whilst other levels of agreement are lower (but still greater than levels of disagreement)
- There are no statements with higher levels of disagreement
- There are also fairly high levels of neutrality because they identified different trends or simply did not understand well with certain statements.

The significance of the differences is tested and shown in Table 4.11.

To determine whether the scoring patterns per statement were significantly different per option, a chi-square test was done. The null hypothesis claims that similar numbers of respondents scored across each option for each statement (one statement at a time). The alternate states that there is a significant difference between the levels of agreement and disagreement.

The results are shown in Table 4.11. The highlighted significant values (p-values) are less than 0.05 (the level of significance), implying that the distributions were not similar. That is, the differences between the way respondents scored (agree, uncertain, disagree) were significant.

#### 4.7.4 TRAFFIC CONGESTION MITIGATION MEASURES

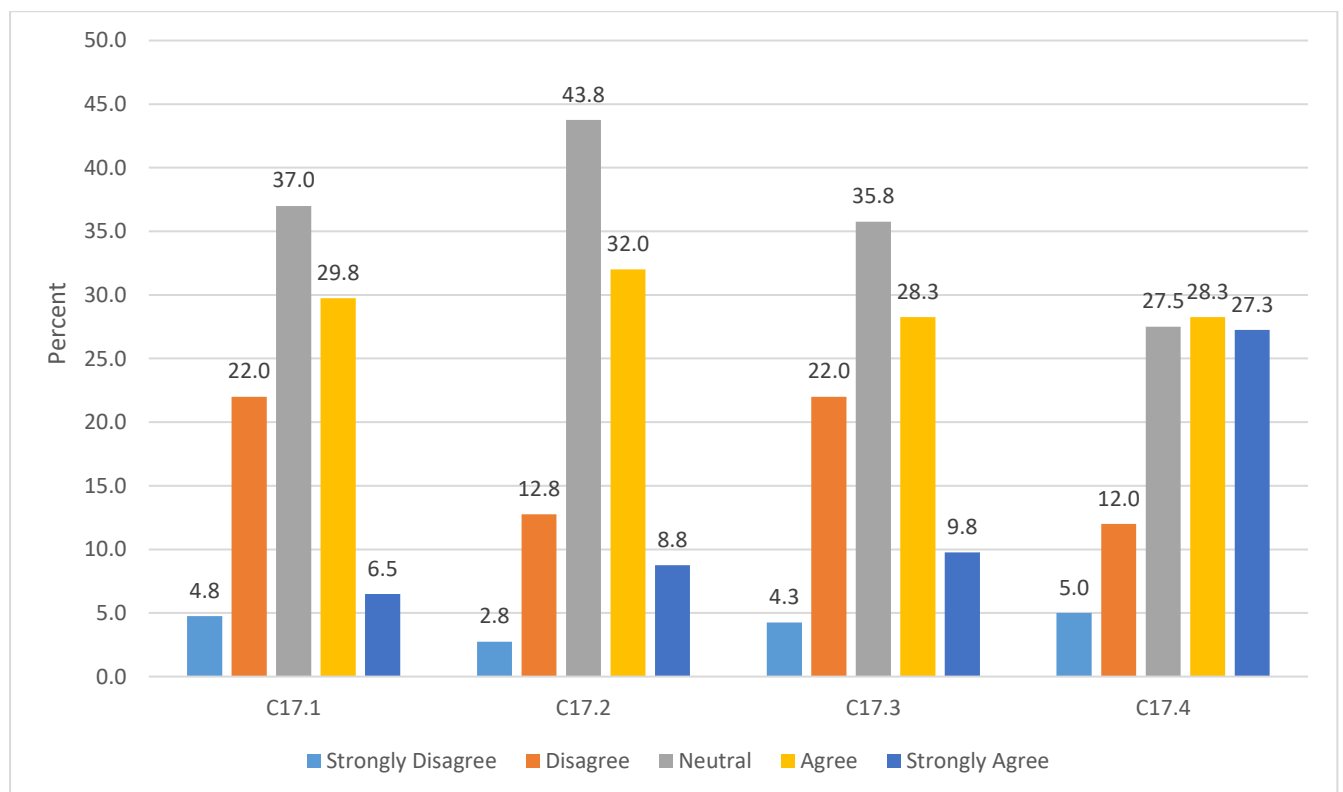
This section of the questionnaire measures levels of perception of individuals regarding traffic congestion mitigation measures, i.e., transit capacity expansion, road

expansion, installation of quality traffic control management systems and congestion charges.

**Table 4. 12 Summarises scoring patterns**

		Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree		Chi Square p-value
		Co unt	Row N %	Co unt	Row N %	Co unt	Row N %	Co unt	Row N %	Co unt	Row N %	
Transit capacity expansion	C1 7.1	19	4.8%	88	22.0 %	148	37.0 %	119	29.8 %	26	6.5%	< 0.001
Road expansion	C1 7.2	11	2.8%	51	12.8 %	175	43.8 %	128	32.0 %	35	8.8%	< 0.001
Installation of quality traffic control management System	C1 7.3	17	4.3%	88	22.0 %	143	35.8 %	113	28.3 %	39	9.8%	< 0.001
Congestion charges	C1 7.4	20	5.0%	48	12.0 %	110	27.5 %	113	28.3 %	109	27.3 %	< 0.001

**Figure 4. 11 Percentage Scoring Patterns (Traffic Congestion Mitigation Measures)**



4.7.4.1 Transit capacity expansion

According to Table 4.12 and Figure 4.11, the survey results show that 6.5% and 29.8% of the respondents respectively strongly agree and agree that the expansion of transportation capacity can alleviate traffic congestion. However, 37.0% of the respondents remained neutral, and 22.0% and 4.8% of the respondents disagreed and fully agreed with the statement.

#### 4.7.4.2 Road expansion

According to Table 4.12 and Figure 4.11, the survey results show that 8.8% and 32.0% of the interviewees respectively strongly agree and agree that road expansion is a measure to alleviate traffic congestion. However, Li *et al.* (2019: 1) believe that the expansion of the road network has failed to solve the problem of traffic congestion and will cause higher travel demand in the long run.

#### 4.7.4.3 Installation of a quality traffic control management system

According to Table 4.12 and Figure 4.11, the survey results show that 9.8% and 28.3% of the respondents respectively strongly agree and agree that the installation of a quality traffic control management system can alleviate traffic congestion. Intelligent transportation is an effective traffic congestion measure driven by technological development and big data trends. The rise of the concept of smart city travel has created many traffic control management systems to deal with traffic congestion, such as artificial intelligence cloud computing and vehicle road partnerships (Wang, Guo, and Xa 2020: 2). However, 35.8% of the respondents remained neutral, with 22.0% opposed and 4.3% strongly opposed.

#### 4.7.4.4 Congestion charges

According to Table 4.12 and Figure 4.11, overall, 55.6% (27.3% + 28.3%) can accept the fact that congestion charging can alleviate traffic congestion in the eThekweni area. However, 27.5% of the respondents remained neutral. The statement was opposed by 12.0% and 5.0% respectively.

The following patterns are observed:

- All statements show (significantly) higher levels of agreement whilst other levels of agreement are lower (but still greater than levels of disagreement)
- There are no statements with higher levels of disagreement

- There are also fairly high levels of neutrality because they identified different trends or simply did not understand certain statements.

The significance of the differences is tested and shown in the table 4.12.

To determine whether the scoring patterns per statement were significantly different per option, a chi-square test was done. The null hypothesis claims that similar numbers of respondents scored across each option for each statement (one statement at a time). The alternate states that there is a significant difference between the levels of agreement and disagreement.

The results are shown in Table 4.12. The highlighted sig. values (p-values) are less than 0.05 (the level of significance), implying that the distributions were not similar. That is, the differences between the way respondents scored (agree, uncertain, disagree) were significant.

#### 4.8 Hypothesis testing

A second Chi-square test was performed to determine whether there was a statistically significant relationship between the variables (rows vs columns).

The null hypothesis states that there is no association between the two. The alternate hypothesis indicates that there is an association.

The tables below summarise the results of the chi-square tests.

##### 4.8.1 Shopping location choice attributes and preferable shopping location

**Table 4. 13 Convenience and accessibility \* Preferable shopping location**

			Preferable shopping location		Total
			Central business district	(Durban CBD) Area shopping Centre/Complex/Mall	
Convenience and accessibility	Strongly Disagree	Count	8	6	14
		% within Preferable shopping location	7.3%	2.1%	3.5%
	Disagree	Count	22	23	45
		% within Preferable shopping location	20.2%	7.9%	11.3%
	Neutral	Count	32	88	120
		% within Preferable shopping location	29.4%	30.2%	30.0%

Agree	Count	26	105	131
	% within Preferable shopping location	23.9%	36.1%	32.8%
Strongly Agree	Count	21	69	90
	% within Preferable shopping location	19.3%	23.7%	22.5%
Total	Count	109	291	400
	% within Preferable shopping location	100.0%	100.0%	100.0%

#### Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	21.277	4	0.000
Likelihood Ratio	19.583	4	0.001
Linear-by-Linear Association	13.572	1	0.000
N of Valid Cases	400		

The results in Table 4.13 show that there is a significant relationship between convenience and accessibility and ideal shopping locations, as evidenced by the significance value (P value = 0.000). This shows that convenience and accessibility are an attribution factor among shoppers when choosing a shopping location. Shoppers will consider the accessibility and convenience of shopping locations. Therefore, we accept the assumption that there is a significant relationship between convenience, accessibility, and desirable shopping locations. In the study by Hussain and Siddiqui (2019: 79), the results also show that there is a significant relationship between convenience and accessibility and shopping location preference.

**Table 4. 14 Tenant mix and preferable shopping location**

		Preferable shopping location		Total	
		Central business district	(Durban CBD) Area shopping Centre/Complex/Mall		
Tenant mix	Strongly Disagree	Count	1	4	5
		% within Preferable shopping location	0.9%	1.4%	1.3%
	Disagree	Count	19	18	37
		% within Preferable shopping location	17.4%	6.2%	9.3%

Neutral	Count	45	71	116
	% within Preferable shopping location	41.3%	24.4%	29.0%
Agree	Count	30	108	138
	% within Preferable shopping location	27.5%	37.1%	34.5%
Strongly Agree	Count	14	90	104
	% within Preferable shopping location	12.8%	30.9%	26.0%
Total	Count	109	291	400
	% within Preferable shopping location	100.0%	100.0%	100.0%

#### Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	30.859	4	0.000
Likelihood Ratio	30.697	4	0.000
Linear-by-Linear Association	25.688	1	0.000
N of Valid Cases	400		

The results in Table 4.14 show that there is a significant relationship between tenant mix and shopping location preference, as confirmed by the significance value (P value = 0.000). This shows that when choosing a shopping location, the tenant mix is an attribution among shoppers. Shoppers will consider the tenant mix of the shopping location. Therefore, we accept the hypothesis that there is a significant relationship between tenant mix and shopping location preferences.

**Table 4. 15 Entertainment and preferable shopping location**

Entertainment		Count	Preferable shopping location Central business district	(Durban CBD) Area shopping Centre/Complex/Mall	Total
			Strongly Disagree	5	6
	% within Preferable shopping location	4.6%	2.1%	2.8%	
	Disagree	25	30	55	
	% within Preferable shopping location	22.9%	10.3%	13.8%	
	Neutral	31	62	93	



	% within Preferable shopping location	28.4%	21.3%	23.3%
Agree	Count	30	92	122
	% within Preferable shopping location	27.5%	31.6%	30.5%
Strongly Agree	Count	18	101	119
	% within Preferable shopping location	16.5%	34.7%	29.8%
Total	Count	109	291	400
	% within Preferable shopping location	100.0%	100.0%	100.0%

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	22.028	4	0.000
Likelihood Ratio	22.019	4	0.000
Linear-by-Linear Association	21.542	1	0.000
N of Valid Cases	400		

The results in Table 4.15 show that entertainment factors have a significant relationship with shopping location preference, as shown by the significance value (P value = 0.000). This shows that entertainment is an attribution among shoppers when choosing a shopping location. Shoppers believe that entertainment is an attribution that induces them to choose a shopping location among other choices. Therefore, we accept the hypothesis that there is a significant relationship between entertainment and shopping location preference.

**Table 4. 16 Security and safety and preferable shopping location**

		Preferable shopping location Central business district	(Durban CBD) Area shopping Centre/Complex/Mall	Total	
Security and safety	Strongly Disagree	Count	11	11	22
		% within Preferable shopping location	10.1%	3.8%	5.5%
Disagree	Count	23	28	51	
		% within Preferable shopping location	21.1%	9.6%	12.8%
Neutral	Count	27	85	112	
		% within Preferable shopping location	24.8%	29.2%	28.0%

	Agree	Count	31	86	117
		% within Preferable shopping location	28.4%	29.6%	29.3%
	Strongly Agree	Count	17	81	98
		% within Preferable shopping location	15.6%	27.8%	24.5%
Total		Count	109	291	400
		% within Preferable shopping location	100.0%	100.0%	100.0%

#### Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	19.378 <sup>a</sup>	4	0.001
Likelihood Ratio	18.440	4	0.001
Linear-by-Linear Association	14.764	1	0.000
N of Valid Cases	400		

The results in Table 4.16 show that security and safety have a significant relationship with shopping location preference, which is proved by the significance value (P value = 0.001). This shows that security is an attribution factor among shoppers when choosing a shopping location. Shoppers consider the safety of shopping locations when choosing a shopping destination. Therefore, we accept the assumption that there is a significant relationship between security and shopping location preferences.

**Table 4. 17 Parking and preferable shopping location**

**Parking \* Preferable shopping location**

#### Crosstab

			Preferable shopping location Central business district	(Durban CBD) Area shopping Centre/Complex/Mall	Total
Parking	Strongly Disagree	Count	9	12	21
		% within Preferable shopping location	8.3%	4.1%	5.3%
	Disagree	Count	30	38	68
		% within Preferable shopping location	27.5%	13.1%	17.0%
	Neutral	Count	29	75	104

	% within Preferable shopping location	26.6%	25.8%	26.0%
Agree	Count	26	80	106
	% within Preferable shopping location	23.9%	27.5%	26.5%
Strongly Agree	Count	15	86	101
	% within Preferable shopping location	13.8%	29.6%	25.3%
Total	Count	109	291	400
	% within Preferable shopping location	100.0%	100.0%	100.0%

**Chi-Square Tests**

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	20.589 <sup>a</sup>	4	0.000
Likelihood Ratio	20.501	4	0.000
Linear-by-Linear Association	18.841	1	0.000
N of Valid Cases	400		

The results in Table 4.17 show that parking spaces and shopping location preferences have a significant correlation, which is proved by the significance value (P value = 0.000). This indicates that the availability of parking spaces is an attribution among shoppers when choosing a shopping location. Shoppers believe that parking spaces are attributable to preferences regarding choice of shopping location. Therefore, we accept the hypothesis that there is a significant relationship between parking and shopping location preferences.

**Table 4. 18 Traffic congestion density affects shopper perception on shopping location preference and is traffic congestion a major barrier for shopping travel to the CBD**

	Is traffic congestion a major barrier for shopping travel to the CBD?		Total
	Yes	No	

Traffic congestion density affects shopper perception on shopping location preference	Strongly Disagree	Count	19	21	40
		% within Is traffic congestion a major barrier for shopping travel to the CBD?	6.3%	21.6%	10.0%
	Disagree	Count	42	14	56
		% within Is traffic congestion a major barrier for shopping travel to the CBD?	13.9%	14.4%	14.0%
	Neutral	Count	108	43	151
		% within Is traffic congestion a major barrier for shopping travel to the CBD?	35.6%	44.3%	37.8%
	Agree	Count	89	14	103
		% within Is traffic congestion a major barrier for shopping travel to the CBD?	29.4%	14.4%	25.8%
	Strongly Agree	Count	45	5	50
		% within Is traffic congestion a major barrier for shopping travel to the CBD?	14.9%	5.2%	12.5%
Total		Count	303	97	400
		% within Is traffic congestion a major barrier for shopping travel to the CBD?	100.0%	100.0%	100.0%

#### Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	30.760 <sup>a</sup>	4	0.000
Likelihood Ratio	30.016	4	0.000
Linear-by-Linear Association	24.894	1	0.000
N of Valid Cases	400		

The results in the Table 4.18 show that there is a significant relationship between the two variables as evidenced by the significance value (P-value = 0.000). Therefore, we accept the hypothesis statement.

#### 4.9 Correlations

Bivariate correlation was also performed on the (ordinal) data. The results are found in the appendix (2). The results indicate the following patterns.

- Positive values indicate a directly proportional relationship between the variables and a negative value indicates an inverse relationship.
- All significant relationships are indicated by a \* or \*\*.

**Table 4. 19 Correlation between traffic congestion mitigation measures and causes of traffic congestion.**

	Transit capacity expansion	Road expansion	Installation of quality traffic control management system	Congestion charges
Deteriorating and sufficient road network	0.202**	0.087	0.216**	0.236**
Poor traffic control management system	0.168**	0.047	0.171**	0.135**
Rapid car-ownership and utilization	0.203**	0.133**	0.235**	0.162**
Poor driving habits	0.109*	0.060	0.180**	0.181**
Bad weather conditions	0.098*	0.129**	0.120*	0.144**
Special events (strikes, games)	0.084	-0.012	0.138**	0.152**
Police checks	0.046	-0.021	0.106*	0.203**
Road maintenance	0.084	0.012	0.129**	0.092
Vehicle breakdown	0.064	0.110*	0.152**	0.234**
Accidents	0.165**	0.052	0.127*	0.148**

Correlation values of (0.202, 0.087, 0.216, and 0.236) between "deteriorating and adequate road network" and "transit capacity expansion, road expansion, installation of quality traffic control management systems, and traffic congestion charges". This shows that there is a direct proportional relationship. In addition, the correlation value (0.168, 0.047, 0.171, and 0.135) between the statement "poor traffic control management" and "transit capacity expansion, road expansion, quality traffic management system installation, and traffic congestion charges" indicates a direct proportional relationship.

A direct proportional relationship ( $p = 0.203, 0.133, 0.235, \text{ and } 0.162$ ) is shown between "fast ownership and utilisation of cars" and "transit capacity expansion, road expansion, installation of quality traffic control management systems, and traffic congestion charges". Another trend shows that there is a direct proportional relationship between poor driving habits and "transit capacity expansion, road expansion, quality traffic control management system installation, and congestion charges" ( $P = 0.109, 0.060, 0.180, \text{ and } 0.181$ ).

The correlation between severe weather conditions and "transit capacity expansion, road expansion, installation of quality traffic control management systems, and traffic congestion charges" is 0.098, 0.129, 0.120, and 0.144. This is a direct relationship between statements. Similarly, the correlation values recorded between special events (games and strikes) and "transit capacity expansion, installation of quality traffic control management systems and congestion charges" ( $P = 0.084, 0.138$  and  $0.152$ ). There is a directly proportional relationship between police inspection and "transport capacity expansion, installation of quality traffic control management system and congestion charges", and the relevant values are ( $p = 0.046, 0.106,$  and  $0.203$ ). There is another direct proportional relationship between Road maintenance and "transit capacity expansion, road expansion, installation of quality traffic control management system, and traffic congestion charges", and has related values ( $p = 0.084, 0.012, 0.0129,$  and  $0.092$ ).

Another trend shows that there is a direct proportional relationship between vehicle failures and "traffic capacity expansion, road expansion, installation of quality traffic control management systems, and traffic congestion charging" ( $p = 0.064, 0.110, 0.152,$  and  $0.234$ ). Similarly, there is a direct proportional relationship ( $0.165, 0.052, 0.127,$  and  $0.148$ ) between accidents and related values of "traffic capacity expansion, road expansion, quality traffic control management system installation, and traffic congestion charges". Essentially, all measures to reduce traffic congestion are related to the causes of these phenomena, which means that all mitigation measures can alleviate the causes of traffic congestion in the eThekweni area.

#### 4.10 Conclusions

This chapter presented an analysis of data collected in this study. Quantitative analysis procedures were presented to determine descriptive and inferential statistics that contain aim and objectives of this study. Tables and charts were used to provide a well analysis of data.

Additionally, results showed significant relationships and differences between variables of this study. In summary, results of this chapter can be condensed as follows:

- Shopper perception of shopping location preference was found to be motivated with the current trend of shopping lifestyle. Significantly majority of shoppers indicated that they prefer modern shopping locations.
- Shopper experiences were analysed and multiple associations to their shopping behaviour were highlighted, based on the results.
- Results indicated a relationship between convenience and accessibility, tenant mix, entertainment, security and safety and parking and shopping location preference
- Furthermore, results also indicated a relationship between traffic congestion density in the CBD and influence on shopper perception on shopping location preference.

In the following chapter, research findings will be discussed based on current literature.

## **CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS**

### 5.1 Introduction

This chapter provides a summary, conclusions, and recommendations on the impact of traffic congestion in the Greater eThekweni area on shopping location preferences. The summary and conclusions include the main findings of the research, while the recommendations provide strategies that help ease traffic congestion and ensure that the city can restore economic vitality.

### 5.2 Summary of research objectives.

Through analysis of the results obtained in this study, the following summary of objectives is shown:

#### 5.2.1 To study shopper's behaviour and their shopping experience in the greater eThekweni region

The literature has been reviewed and conclusions have been drawn on the shopping behaviour and shopping experience of individuals in the eThekweni area. Due to the gradual changes in the society and of urban growth, the shopping cultural lifestyle according to (Meena, Patil, and Mondal 2019: 134) is characterised by a gradual increase in population, increased household income and expenditure, rapid increase in car ownership, and utilization, establishment, and expansion of the closest and favourite modern shopping place.

Since the post-apartheid, South African shoppers' behaviour, preferences, shopping lifestyle and geographic location have undergone many changes (Mashaba and Wise, 2016: 39). The diversity of individual behaviour changes and the improvement of shopping standards play an important role in the shopping experience and shoppers' decision-making; therefore, choice behaviour analysis has become the central (Bilkova, Krizan, and Barlik 2016: 23). In addition, (Kunc, Reichel, and Novotna 2020: 2) acknowledge that behaviour is a complex social phenomenon, which is affected by many factors in the selection process (Khan 2018: 142).

There are multiple factors that play an important role in prompting the customer to make the final decision. However, the modern and prosperous shopping lifestyle and



shopping locations have had different and significant influences on these preferences, behaviours, and shopper experience of shopping locations in eThekwini. (Kunc *et al.* 2016: 27). A new form of global shopping lifestyle has changed the spatial structure of cities and the shopping behaviour of residents (Sikos 2019: 134). Shoppers have a variety of shopping destinations to choose from to ascertain which best suits their needs. Shoppers are more selective and will be attracted to locations that meet their needs and preferences (Kabadayi and Paksoy, 2016: 458).

According to Zsuzsanna *et al.* (2019:467) decision-making and choice are increasingly valued, and shoppers make multiple decisions in a wide range every day (Stankevich 2017: 7, Guo and Peeta 2020: 99), Shoppers are primarily concerned with maximizing the immediate benefits of self and sustainable choices (White, Habib and Hardisty 2019: 24).

5.2.2 To identify shopping location choice factors in the greater eThekwini region.

According to research (Rani 2014: 53), shoppers will be affected by many factors in the process of shopping location preference. In the literature review, a list of shopping location attributes and their influence on shopping location preferences is established. They include convenience and accessibility, tenant mix, entertainment, security, and parking spaces. The analysis results show that all attributes have a significant relationship with shopping location preference.

5.2.3 To study traffic congestion and identifying its causes in the greater eThekwini region.

According to the Global Traffic Index (TomTom Traffic Index 2019: 3), the eThekwini city is one of the most traffic congested cities in the world, ranking 158, which is related to an estimated 30.4 hours spent in traffic per year. A set of definitions of traffic congestion is defined. In addition, the causes of traffic congestion and its impact on shoppers in the eThekwini area are also established, and the traffic congestion, its causes, and its impact on individuals in the eThekwini area are described. This study successfully defined and described traffic congestion, its causes, and effects, and analysed and provided a large number of traffic congestion mitigation measures.

5.2.4 To assess the influence of traffic congestion on shopping location choice in the greater eThekwini region.

Theory of urban spatial interaction guides the theoretical basis of this research goal. Based on the theoretical information and personal cognition in the literature review, the influence of traffic congestion on shopping location preference in eThekweni area is analysed. For many years, shopping has been a key function that defines the eThekweni CBD. However, due to severe traffic congestion and emergency situations in nearby shopping venues, it seems that shoppers' shopping preference for the CBD has been severely frustrated (Okoro, Okolo and Mmamel 2019: 403).

In cities, traffic congested is a source of worry and irritation, and discourages shopping activities. Due to severe urban core traffic congestion, the decline in the dominance of the CBD can be attributed to the decrease in shopping trip frequency (Kusumowidagdo, Sachari, Sachari and Widobo, 2015: 53). The crowded conditions of traditional shopping locations will affect shoppers' behaviour and decision-making (Attri and Jain 2018: 1). Analysis and feedback considering the results show that a significant relationship between traffic congestion density and shoppers' perception of shopping location preference, and traffic congestion is the main obstacle to shopping in the CBD.

Regarding the research method, a quantitative data collection method was used. The data used are from secondary and primary sources. Secondary sources include data journals, papers, and conference reports. With respect to primary data, quantitative data was collected. Quantitative data is obtained by managing questionnaires that help collect responses. According to the research goals, the main finding is that nearby shopping places have the highest preference perception rate for shopping purposes, reaching 72.8%. In addition, it is found that the ownership and utilisation of private cars is increasing, with an average of (38.5%). Furthermore, a significant relationship was found to exist between is traffic congestion a major barrier for shopping travel to the CBD and traffic congestion density affects shopper perception on shopping location preference.

### 5.3 Conclusion

#### **Chapter 1.**

This chapter introduces and explains the research topic, namely the impact of traffic congestion on the choice of shopping locations in the greater eThekweni area. The

researcher explained the purpose of the research. It also illustrates the urban spatial interaction and its representation, such as shopping activities, spatial interaction barriers, such as traffic congestion and its impact on shopping location selection. This chapter also gives a problem statement, reasons, an overview of the research method and the organisation of the research.

## **Chapter 2**

The researchers studied the literature of shopping location concept, shopper behaviour and traffic congestion causes, effects, and mitigation measures. On a global scale, all cities are facing the challenge of urban traffic congestion. Although the authorities are trying to maintain the economic vitality of traditional shopping malls and alleviate the epidemic, traffic congestion has continued to rise. It is determined that due to changes in global lifestyles, shopping locations have also increased.

It also illustrates the main attributes of shopping behaviour and shopper location preferences, including convenience, parking spaces, tenant mix, safety, and entertainment. In addition, it has been determined that traffic congestion is a major global epidemic in developed and developing economies, and its impact is huge. The main causes of traffic congestion identified include deteriorating road networks, poor traffic control and management systems, and rapidly growing car ownership constitute a high proportion of traffic congestion causes. Other causes of traffic congestion, poor driving habits, bad weather conditions, special events, police inspections, road maintenance, vehicle breakdowns and accidents.

The impacts caused by traffic congestion include waste of resources (time and money), stress, dilapidated roads, accidents, environmental pollution, and reduced safety. It also mentions the types of traffic jams, the types of causes and their influence on the choice of shopping locations.

In addition, the literature shows that eThekweni central business centre is facing a challenging neglect problem due to traffic congestion and the establishment of nearby shopping malls. The competent authority of eThekweni can learn from developed cities how to manage the traditional shopping centres. Modern shopping venues face huge

urban traffic challenges and competition from the expansion of nearby shopping venues.

### **Chapter 3**

This is the research methodology section, which determines the type of quantitative research or qualitative research. To explore the response of target respondents to the influence of traffic congestion on the choice of shopping locations in the eThekweni region and recommendations for mitigating traffic congestion, researchers must adopt appropriate research designs to conduct high-quality research.

The chapter explores the respondents' suggestions (the influence of traffic congestion on the choice of shopping locations in the eThekweni region). Residents in the eThekweni region are interested stakeholders. Data comes from households in the eThekweni region. SPSS was used to classify, compare, synthesise, and explain the collection of the data. The researcher used interview questionnaires and question respondents to construct a good questionnaire survey goal to understand the theme, address these goals and allow stakeholders to explore suggestions on how traffic congestion influences shopping location selection in eThekweni region.

### **Chapter 4**

To represent the entire population, a selection of eThekweni residents was randomly nominated for interview. The questionnaire consists of three parts (demographics and research objectives). The different issues raised in Section A and Section B are shopping location, shopping frequency, transportation to the shopping location, and shopping location selection attributes. In addition, the questions in Section B: the impact of traffic congestion, the cause of traffic congestion, and is traffic congestion an important obstacle to shopping in the CBD? The density of traffic congestion affects shoppers' perceptions of shopping location preference and measures to relieve traffic congestion.

The data collected in Part B of the questionnaire shows that more respondents (72.8%) tended to shop in vicinity shopping location, and that they shop four times a month or less. The results also show that most shopping trips are carried out by private cars. Most respondents travelled less than 20 kilometres. In addition, the interviewees

reached a high level of agreement on the attributes of shopping location selection (i.e. convenience and accessibility, tenant mix, entertainment, safety and security, and parking spaces).

In addition, most respondents agree that traffic congestion is the main obstacle to shopping in the eThekweni region CBD, and they also strongly agree and agree that the density of traffic congestion will affect shoppers' perception of shopping locations. In addition, the interviewees strongly agreed and agreed that expanding traffic capacity, expanding roads, installing high-quality traffic control management systems, and traffic congestion charging are measures to alleviate traffic congestion.

## **Chapter 5**

This chapter discusses the findings from data analysis and links them to other research chapters. It deals with research objectives and responses from the respondents. The chapter identifies traffic congestion as a major challenge to cities globally and as a major barrier for shopping travels with enormous impacts on traffic congested city cores. Analysis shows that transit capacity expansion, road expansion, installation of a quality traffic control management system and congestion charges are possible traffic congestion mitigation measures that should be undertaken in order to eradicate traffic congestion and also thereby sustaining the economic viability of the CBD in the eThekweni region.

### **5.4 Recommendations**

Based on the results and conclusions of the research, the following suggestions are put forward to help decision makers understand decisions and plans to alleviate the challenges caused by traffic congestion in the eThekweni region.

#### **5.4.1 Transit capacity expansion**

The increase in private car ownership and use by residents for work and shopping-related purposes is the main reason for the huge traffic congestion challenge in the eThekweni area. In order to reduce the number of private vehicles used, the authorities should encourage the expansion of transportation capacity, such as carpooling, car and bicycle sharing. These may be a major factor in reducing congestion and improving the sustainability of transportation in the region.

#### **5.4.2 Road expansion**

The road network system is a common form of transportation in the eThekweni region. Due to rapid urbanisation and high travel demand, road infrastructure lags behind the rapid ownership and utilisation of cars in emerging economies. Demand for travel exceeds supply of road infrastructure, causing long traffic delays. It is recommended that the road network be expanded by widening roads, building flyovers, and adding lanes to improve operational efficiency and ease traffic congestion on travel routes in the eThekweni region.

#### 5.4.3 Installation of a quality traffic control management system

The most important mitigation measure is to install high-quality traffic control management systems to alleviate traffic congestion in cities in developed and developing economies (Wang, Guo, and Xu, 2019: 1). With the development of a new generation of big data and information technology, incorporating ICT into the transportation system is a possible factor to improve the sustainability of urban transportation. Technologies such as vehicle self-organising network and traffic signal controller (Shakil and Jaric 2020: 1) can always be used to collect, change, update and implement traffic management in critical routes. Effective traffic management largely depends on the timely response of the traffic management system (Zheng *et al.* 2020: 8).

#### 5.4.4 Congestion charges

Congestion charging is a method used to solve traffic congestion at key traffic points (such as urban cores). This is a scheme implemented by transportation agencies to charge a certain fee for all cars entering key areas in order to reduce car traffic. This is a most reliable measure because it can generate revenue and reduce traffic congestion (Metz 2018: 495). In addition, discounts and tax exemptions should be offered to certain groups, such as taxis, to encourage public transportation. This method is strongly recommended because it initially achieved good results in cities such as Stockholm and London (Bashingi, Mostafa and Das 2020: 442, Shakil and Jaric 2020: 1).

### 5.5 Scope for future studies

- The researcher only focused on participant's perception of traffic congestion on shopping location choice in the eThekweni region. An in-depth study on the

decision-making process can be done. The information will go a long way in assisting decision makers in the eThekweni region.

- The study only focused on participants in the eThekweni region. Broad research can be conducted in other municipalities and provinces. The conclusions can assist policy makers in South Africa.
- The study employed a quantitative research methodology. Future studies can be done using quantitative or mixed methods. Such approach can give a deeper understanding of traffic congestion in South Africa

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## Appendices

Research questionnaire [Research Questionnaire \(Original\).pdf](#)

Output [Dennis - Output.xlsx](#)

Faculty research ethics committee clearance [Mr SD Kasirye.pdf](#)