

**KWAME NKRUMAH UNIVERSITY OF SCIENCE AND  
TECHNOLOGY**

**THE EFFECT OF HIGHWAY BYPASS ON SOCIO-ECONOMIC LIFE OF  
NKAWKAW TOWN,**

**KNUST**

**BY.**

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THE AWARD OF  
MASTER OF SCIENCE**

**IN**

**CONSTRUCTION MANAGEMENT.**

**NOVEMBER, 2014.**

## DECLARATION

I hereby declare that this submission is my own work towards the MSc. and that to the best of my knowledge, it contains neither material previously published by another person nor material which has been accepted for the award of any other degree of the University, except where due acknowledgement has been made in the text.

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## ABSTRACT

The Kumasi – Accra Road is a section of the National highway network (route N6) and like most national road networks in Ghana, it passes through towns. The continuous cluster of these towns and communities along the highways and their attendant negative effects on traffic mobility and safety has increased the demand for bypassing them.

The construction of highway bypasses has resulted in important economic benefits. Perhaps the most significant benefit is the travel time savings of through motorists who avoid the slower speeds, stops, and congestion associated with driving through towns. Highway bypasses also result in benefits for residents of towns with bypasses. For example, by diverting trucks and other through traffic away from the main town, traffic congestion and noise is reduced. Also traffic safety is enhanced due to reduced pedestrian-vehicle conflicts, and the local population is less exposed to health-threatening vehicle emissions and hazardous materials. In addition, highway bypasses enable local motorists to realize travel time savings when driving from one end of the town to the other.

Despite the benefits of highway bypasses, they remain controversial. Some local business owners in the town being bypassed may be concerned that the reduction of traffic passing through the town will adversely affect their sales. This is especially the case for travel related businesses such as hotels, restaurants.

Case studies of the economic impacts of highway bypasses on individual towns are needed since the effects of bypasses may vary a great deal from place to place.

This research identifies the effect of highway bypasses on the socio-economic life of Nkawkaw town. Also it is important to discover which types of businesses are impacted by

Nkawkaw highway bypasses, and the magnitude of the impact. Accordingly, the objectives of this research are;

- a) To identify the economic impact of the bypass on businesses traders
- b) to identify the environmental and safety impact on the local habitats

In achieving the above objective, a case study approach methodology was adopted. The method adopted was mainly qualitative. Questionnaires were administered to the inhabitants of the Nkawkaw town along the old route and in the central business area in an attempt to collect data which comprised the perception of residents, business owners and opinion leaders to assess the impact of the bypass.

The research concluded that the construction of the bypass has served the purpose of improving traffic flow by reducing congestion on the old route but has also brought a reduction of sales and customers to the previously drive through traffic related businesses. It has also resulted in a environmental and safety benefits. On the whole, the bypass has been perceived to have positively affected the entire life of people in Nkawkaw.

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Of course; “thanks for the understanding, all the sacrifice and support” goes to my wife Nana Akosua Owusu Antwi

Finally to Benedicta and my Class mates (2013/2014); I say ‘Thank you more than you can guess’.

## **DEDICATION**

This piece of work is dedicated to My father, Mr J.K. Owusu and My Mother,Madam Victoria Bonah. My Wife , Nana Akosua Owusu Antwi

# KNUST



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## CHAPTER ONE INTRODUCTION

Bypass roads are highways constructed for the purpose of deflecting traffic from certain areas, often from the centres of cities and towns. The principal reasons for their construction are the removal of through-traffic from the regional roads to improve the flow of traffic, shortening travel times, and reducing traffic accidents.

As congestion increases on the regional road, the highway and the regional road need to be separated. Highway bypasses therefore move traffic around Central Business Districts (CBDs) of cities, towns and communities. However, bypass roads also have economic consequences. On one hand, they reduce noise and pollution emissions along the bypassed route. The lower level of traffic can improve the local qualities of the bypassed communities, such as the pedestrian comfort. On the other hand, highway passes often raise severe fears among local businesses along the bypassed route, who worry that their business revenues and the value of their properties will decline with the reduction of passing through traffic. The construction of a highway bypass can be expected to create a certain level of stress and controversy within the affected community. This is most often associated with concerns that local businesses, which are dependent on “drive-through” traffic, will be adversely affected

According to research conducted in Kansas (USA), the construction of highway bypasses has resulted in many economic benefits both for intercity motorists as well as residents of towns bypassed. Perhaps, the most significant of these is the travel time savings resulting from through-town traffic which avoids the slower speeds, stops and congestions associated with driving through the bypassed communities. In spite of the benefits of bypasses, the benefits remain debateable. Local businesses in the communities being bypassed fear that the reduction of traffic passing through the town will adversely affect their sales. This is

especially the case for travel related businesses such as car and truck repair shops, hotels and motels, restaurants, convenience stores and fuel or gas filling stations (Babcock and Davalos, 2004).

In a Canadian Broadcasting Corporation (CBC) News (Friday June 29, 2007: 7:59am NST) captioned “Highway bypass would kill Daniel’s Harbour, Mayor warns”. The Mayor, Steve Carey, was quoted as saying “if there is a bypass of your town..... that would kill every single business in the town, by bypassing this community, what you’ve done is put the headstone on the grave, because you’re going to finish burying us”.

The common contention that highway bypasses negatively affect the economy of local communities by reducing pass-by traffic for businesses has been widely investigated in most of the developed countries (Kockelman 2002). Most of the authors whose literature was reviewed concluded that, analysing the impacts of highway bypasses on the economy of small communities is limited by the lack of community level data for areas with population of less than two thousand five hundred (2,500).

Ghana, as a developing country in West Africa is currently experiencing some period of political steadiness and continuous economic development. The development of road infrastructure is critical to the general development agenda of the country. Most of the National road networks pass through communities which can be classified as emerging or developing townships and cities. The continuous cluster of these towns and cities on various highways and its related negative effects has increased the demand for bypassing them. One such road construction which has bypassed notable suburban communities in Ghana is the Nkawkaw highway bypass which forms part of the Accra-Kumasi trunk road (National Route N6).

As Handy et al (2001, 2002) argued, the effects of bypasses on small communities are both positive and negative. The benefits include reduction in traffic and subsequent reduction in external costs, and development along the relief route. However, the authors noted that there may be negative impacts on businesses along the old route that were dependent on through traffic.

## **1.2 STATEMENT OF THE PROBLEM**

In the 1980s, the reconstruction of National trunk road routes such as N1 resulted in the bypassing of Nchaban and Sekondi in the Western Region and recently the reconstruction of a section of Accra-Kumasi road (a section of National trunk road, Route N6) has resulted in the bypassing of Kibi and Asiakwa, Nsawam as well as Nkawkaw. In the near future, it is envisioned that Anyinam and Konongo bypasses will be constructed. Though the main aim of bypassing these communities is centred around safety and increasing mobility on these road sections, the general economic impact on the communities is given least consideration. Passing through the bypassed towns in Ghana, observation shows that the development of those towns has been stagnant with the effect from the bypass.

The Nkawkaw highway bypass which forms part of the Accra-Kumasi trunk road (National Route N6) was opened to traffic in 2012. Preliminary observations showed that food vendors (Chop bars) at the communities along the old route, the Rest Stop at Nkawkaw, including fuel stations which were known to have enjoyed good patronage from the through traffic, have experienced reduction in sales.

The general effect of the Nkawkaw highway bypasses on the Nkawkaw town in economic terms must be known to be able to estimate the overall impact of such bypasses and measures to undertake to find solutions to the negative impacts.



With other communities earmarked to be bypassed, there is the need to evaluate how bypasses could impact on a community in particular and the economy in general.

This research therefore aims to identify some key economic, safety, environmental and traffic flow issues that characterize highway bypassed communities, using the Nkawkaw highway bypass as a case study.

### **1.3 AIM**

The aim of this study was to identify the impact of bypass on the socio economic life of the inhabitants of Nkawkaw.

### **1.4 OBJECTIVES**

- ❖ To identify the Impact of Highway Bypass on Retail Trade.
- ❖ To identify the environmental, safety and traffic impact of the locals in Nkawkaw town.

### **1.5 JUSTIFICATION FOR THE RESEARCH**

Case studies of the impact of bypasses are useful since the effects may vary a great deal from place to place. Moreover, case studies reveal which types of businesses are impacted by highway bypasses and the quantitative and qualitative magnitude of the impact.

Though enough literature abounds internationally especially in the United States on impact of highway bypasses on their communities, such studies are not commonly reported in developing countries. Between developed and developing countries, the social structure, road designs and standards are completely different and therefore the results of these studies reported in United State literature may not be applicable to Ghana and other African States. For example, a study in the United States showed that “very little retail flight has occurred in



bypassed communities”, and that “over a long term, average traffic levels on the old routes in medium and large bypassed communities are close to or higher than pre-bypass counts” (Leong & Weisbrod, 2000). This might be as a result of the much diversified business entities in such communities. Thus information gathered from such assessments could be useful in guidance, but its recommendations cannot be applied in total to the Ghanaian situation; as most of the communities bypassed are predominantly farming communities which heavily depend on the satellite markets along such highways.

It is therefore important that a research into the effects of highway bypass construction in Ghana is carried out to know how and to what extent they impact on communities.

The outcomes of this study will help Ministry of Roads & Highways (MRH), Ghana Highway Authority (GHA), Department of Urban roads, other road agencies and communities to understand the economic impact, thus benefits of bypasses and their adverse impacts, so that mitigation measures can be planned. It will not only add to the body of knowledge in academia but also outline a modifying checklist for such highway bypasses and ultimately increase the effectiveness of highway bypasses in Ghana’s development agenda.

## **1.6 SCOPE OF STUDY.**

The study is focused on Nkawkaw town on the N6 highway from Accra to Kumasi. The research is also limited to the qualitative assessment of perceived impacts of the bypass on the economic development of the town. The impacts will be based on qualitative assessments through structured questionnaire.

## CHAPTER TWO LITERATURE REVIEW

### 2.1 INTRODUCTION

The literature review was conducted in order to understand methods and concepts used by other researchers in the field of transportation economics and to give insight as to new methods that might be used to better identify the effects of highway bypass on small economies.

The method most often used by transportation economists in measuring the impact of highway bypasses on rural communities was regression analysis in a quasi-experimental framework that compares economic effects in communities with bypasses to those without bypasses. Most researchers used regression to get an understanding of the effects of highway bypasses.

The conclusion of most of the studies indicated that the effects of highway bypasses on rural communities were, for the most part, undetermined.

Researchers observed that, Highway Planners and Engineers consider the construction of highway bypass as the remedy to solving congestion and safety problems. However, in many small and medium-sized communities, there was indications from the researches that highway bypass can bring damaging change.

Some members of the bypassed community may see the bypass as an opportunity for economic growth with new businesses locating on the bypass while others believe that construction of the bypass is the death knell for small businesses.

In a CBC News (Friday June 29, 2007: 7:59am NST) captioned “Highway bypass would kill Daniel’s Harbour, Mayor warns”. The Mayor, Steve Carey, was quoted as saying “if there is a bypass of your town..... that would kill every single business in the town, by Bypassing this community, what you’ve done is put the headstone on the grave, because you’re going to finish burying us”

Collins and Weisbrod (2000) also talked on variables such as the economic base of the community, the community's geographical situation, the population's demographic features, the regional highway network, the distance from large urban areas and the community's spatial situation relative to the bypass road to determine the direction and the degree of the impact of the bypasses.

It was also observed from the literature that, in situations where the bypass road interfaces with the bypassed communities and a highway network, greater accessibility is created to the communities and hence new businesses are drawn to them. Again the size of the bypassed communities greatly has impacts on the degree of development within and therefore the bypass roads get considerably more impact on the strengthening and promotion of businesses located in larger communities than they do in relatively smaller ones. Collins and Weisbrod (2000)

In similar studies it was observed that bypasses that are located within city limits, because the city centre to become stronger and the areas adjacent to the bypass road attract new businesses. Collins and Weisberg (2000),

## **2.2 SOCIO-ECONOMIC IMPACTS ON BYPASSED COMMUNITIES**

On the studies of the economic impact of highway bypasses, Comer and Finchum (2001) in their studies examined the economic impacts on 14 bypassed Oklahoma towns, ranging in

population from 732 to 13,187. According to their studies, the impacts varied in the respect to the nature of the business. In the study, three different types of businesses were identified that showed distinct levels of impact: traffic dependent businesses (such as restaurants and gas stations); traffic related businesses (such as downtown shops and professional services); and non-traffic related businesses (such as factories and mines). The conclusions drawn from the study was that, the size and overall economic strength of the town had a principal factor in whether or not a town suffers economically as a result of a bypass. It was also observed that, the smaller the town, the more negative the economic impacts. In the case of medium (populations of between 2,500 and 7,500 people) and large (populations over 7,500 people) towns, it was found that where there were negative economic impacts associated with a bypass, the impacts were not as severe.

Again, Comer and Finchum (2003) identified the impacts of highway bypasses in more rural areas using data from Oklahoma towns ranging in population from 2,500 to 25,000. The study provided insight into the long-term effects of a bypass, as most towns examined had bypasses constructed before 1990. Incorporating economic (income growth rate) and demographic (race, home ownership and age) variables, the study concluded that income growth rates are statistically lower in bypassed towns compared to non-bypassed towns.

Clapp et al. (2003) used 20 years of data in a study on the effects on retail sales in bypassed Iowa towns. The study covered three towns that were to be bypassed, compared with six towns that were bypassed in the 1980s and that were of comparable structure, size and distance from metropolitan centres. All the towns examined had a rural, farm-based economy. From the study, the presence of an active economic development agency in the community and the ability of the town to attract new businesses to the area were identified as

factors that helped the bypassed towns adjust to the changes and remain economically vibrant.

Another study by Thompson et al.(2001), that was reviewed, also examined communities in Kentucky and matched 21 bypass routes in eight counties that were bypassed with eight counties of similar demographic and economic structure that had not been bypassed. The study analyzed economic data of 5years before and after studies of the bypass to make comparisons between the matched counties. Factors that were compared included:

1) Total employment growth rates; 2) retail sales growth rates; and 3) retail employment growth rates.

The overall conclusions of Thompson *et al.* (2001) study was that,

- The construction of a bypass has either no effect or a modest negative effect on the community;
- The opening of a bypass route reduces aggregate retail sales, but does not have a significant effect on retail employment, total employment or population levels;
- The bypass is more likely to encourage total employment growth if the bypass has partial access control, and is located close to the downtown sector;
- The presence of a bypass influences the business mix in the downtown area; and
- Many of the government officials, media representatives and business people agreed that the bypass promoted growth and improved quality of life.

### **2.3 TRAFFIC (CONGESTION)**

According to Handy et al (2000), a study in England indicated that Okehamp Bypass failed to attract heavy vehicles and that traffic volumes through town centre were higher than predicted.



It was observed from their studies that there was an initial drop in traffic volume on the original route but after some time, traffic volumes returned to the pre-bypass levels over time. This was identified in another study that, traffic volumes on the old route do not always decline when a bypass road is constructed.

## 2.4 SAFETY

According to Handy et al (2000), improvements in safety resulting from highway investments or the construction of bypasses generate a positive economic impact by reducing the costs of personal injury and vehicular damage. But while safety enhancements are frequently cited as benefits and justification of highway bypasses, studies have suggested that, highway bypasses do not necessarily improve safety on the bypassed routes.

In another assessment Cena, Keren and Wen (2007), on the effects of highway bypasses on crashes and crash rates the conclusion was that the construction of bypasses increases traffic safety on both old route and the bypass.

Elvik, Amundsen, and Hofset (2001) summarized in their studies from around the world including 93 evaluations of the impact of bypass roads on the number of road accidents that, on average, the decrease in the number of road accidents with casualties was around 25%. This analysis seemed to mirror a related study in Norway carried by the same authors on the effect of bypass roads on road accidents on 20 bypassed projects. The results indicated that the construction of bypass roads led to a decline in the number of reported road accidents with casualties. The effects were evaluated by a before-and-after study.

The researchers explained that the smaller decrease in the percentage of road accidents involving pedestrians was due to the fact that moving the traffic crossing the city's main road

to the bypass road increased the attractiveness of that street, and increased the number of pedestrians along that road. Otherwise, the pedestrians began to use the road surface.

# KNUST





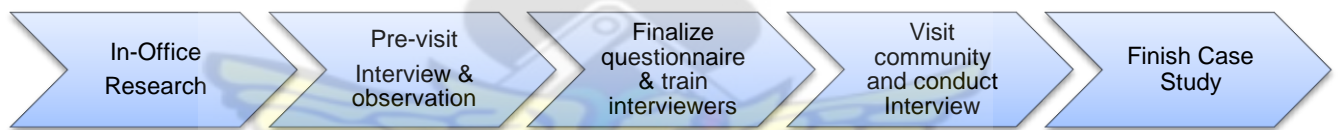
## CHAPTER THREE RESEARCH METHODOLOGY

### 3.1 INTRODUCTION

This research is a study in two phases. The first phase covers the exploratory studies which includes literature review and the research proposal. The second stage covers the actual research study. The impact assessment methodology employed in the studies is a case study approach.

### 3.2 APPROACHES TO THE CASE STUDY

The case study process is summarized below in Figure 3.1 and elaborated in the following paragraphs.



*Figure 3.1: Approach to Case Study*

#### 3.2.1 In-Office Research

The first activity involved extracting information from reports and books on highway bypasses and the impacts on communities.

The second activity undertaken was the design of suitable questionnaires and piloting it to test the accuracy, adequacy and sufficiency of the questionnaire with respect to the literature review and the objectives of the research study.

Section A for general information about respondent and their work; Section B contained questions that enable the respondent to identify the effect of the bypass on the economic life of the Nkawkaw town and Section C contained questions leading to the identification of the impact of the bypass on environmental, safety and traffic condition of e Nkawkaw town.

### **3.2.2 Pilot Survey**

A pre-visit to the site was undertaken to test the questionnaire to assess the adequacy of the various questions with respect to the existing conditions of the communities and to remove any ambiguity. During the visit it came to light that for a very good response, the interviewer should be able to translate the questions into Twi, the predominant language spoken in the area. This pre-visit was therefore very important for the selection of the team which administered the final questionnaire.

### **3.2.3 Study Population and Sampling**

The study population consisted of residents, retail businesses and focus groups sampled from the Nkawkaw town along the old route and within the business centre. In view of the limited time for the study Convenience Sampling was used to select a total of 100 residents and retail businesses as well as government officials. The questionnaires administered are shown in the appendix.

### **3.2.4 Questionnaire Administration and Interviews**

Four research assistants were engaged in the administration of the structured questionnaires. The sampling method used was a simple convenience sampling.

The simple convenience sampling was applied to the residents, retail businesses and government officials located along the road and within the Nkwakaw business centre. Thus, business along the old road were sampled randomly and interviewed. The stratified random sampling was applied to inhabitants and businesses identified in the literature to be highway/traffic dependent (Fuel Filling Stations and Hotels and restaurants). Thus, these businesses were specifically looked out for and interviewed. The managers of the various fuel stations, hotels and restaurants were interviewed during this exercise. Staffs of Municipal

Assembly, officials of Ghana Highway Authority, Drivers, Opinion Leaders and Residents were also interviewed.

### **3.3 DATA PROCESSING AND ANALYSIS**

In this study, the data analysis was a blend of the quantitative and qualitative analysis. In Quantitative Data Analysis, descriptive analysis of the data collected using Descriptive Statistics was used to compare and contrast the data gathered with the set objectives. The data from the structured questionnaire was presented in bar charts, to bring out the Descriptive Statistics of the Qualitative Variables of the impact of the bypass using the Statistical Package for the Social Scientists (SPSS).



## CHAPTER FOUR ANALYSIS AND DISCUSSION OF RESULTS

### 4.1 INTRODUCTION

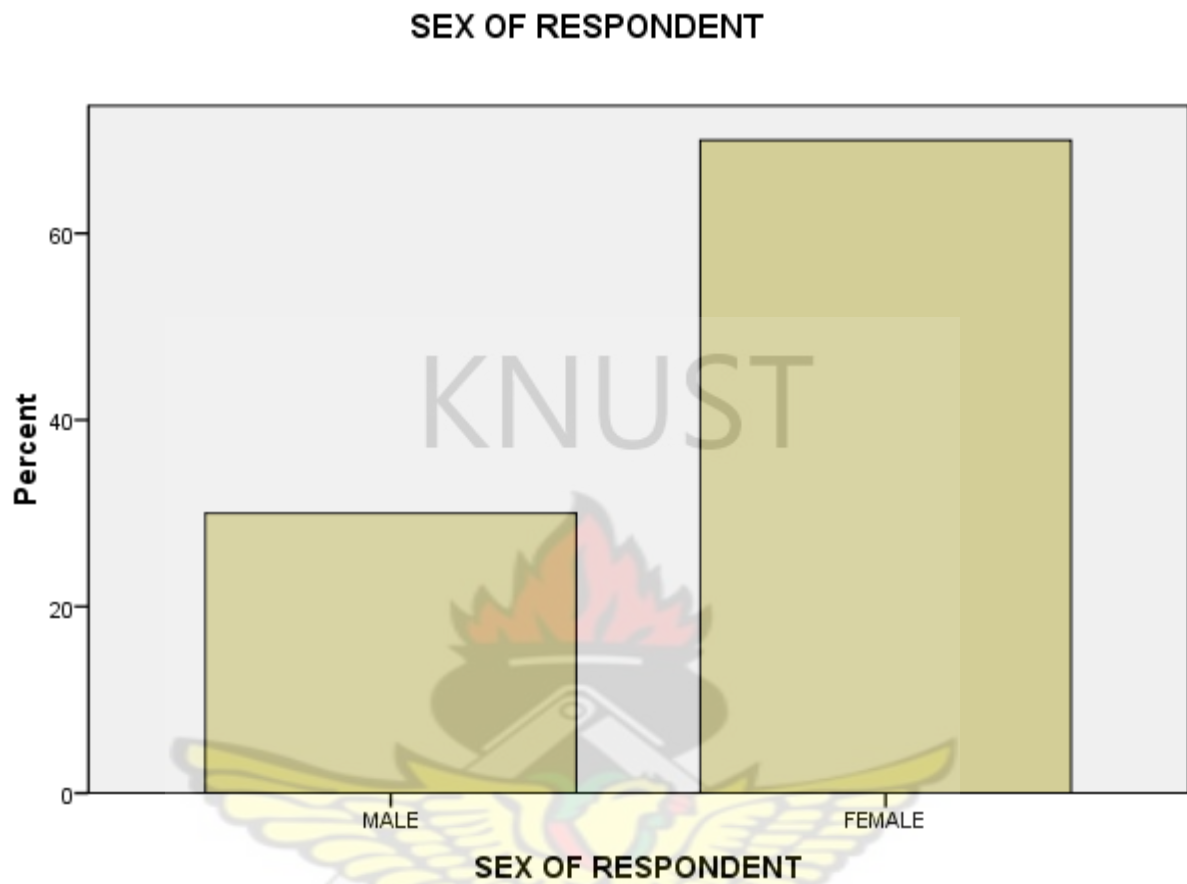
The initial aspect deals with demographic information of the respondents which consists of status and years of experience in the construction industry. The analysis consists of cross tabulation and ranking of identified variables or factors which have been widely used in the presentation of results.

### 4.2 BACKGROUND INFORMATION

#### 4.2.1 SEX OF RESPONDENT

**TABLE 4.1: SEX OF RESPONDENT**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	MALE	30	30.0	30.0	30.0
	FEMALE	70	70.0	70.0	100.0
	Total	100	100.0	100.0	100.0

**Figure 4.1**

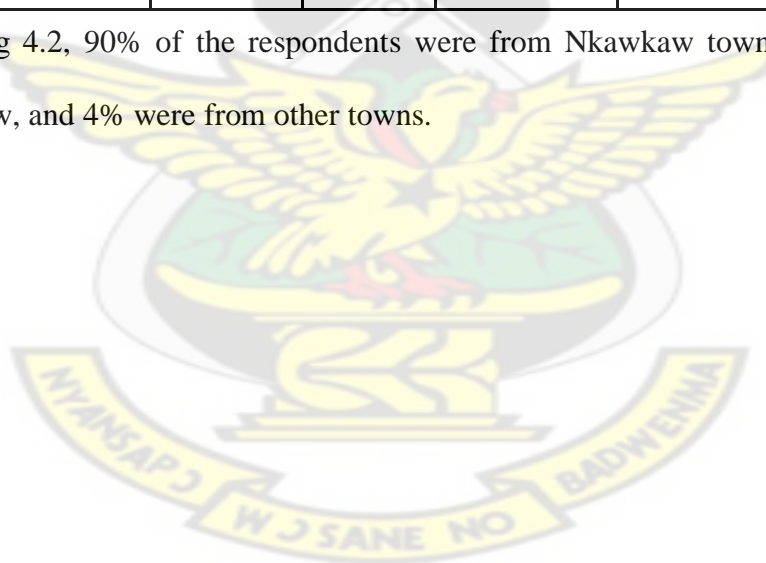
*Figure 4.1 above shows that, 70% of respondents were females while the remaining 30% were males.*

#### 4.2.2 RESPONDENTS AREA

**TABLE 4.2: RESPONDENTS AREA**

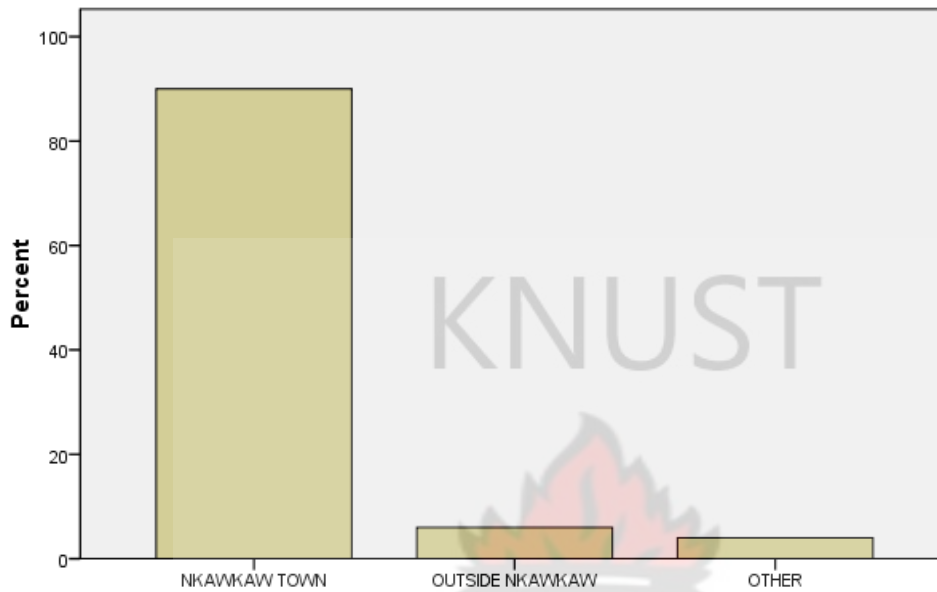
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	NKAWKAW TOWN	90	90.0	90.0	90.0
	OUTSIDE NKAWKAW	6	6.0	6.0	96.0
	OTHER	4	4.0	4.0	100.0
	Total	100	100.0	100.0	

According to Fig 4.2, 90% of the respondents were from Nkawkaw town, 6% were from outside Nkawkaw, and 4% were from other towns.



**Figure 4.2**

WHICH OF THE FOLLOWING BEST DESCRIBES THE AREA YOU STAY ?



WHICH OF THE FOLLOWING BEST DESCRIBES THE AREA YOU STAY ?

#### 4.2.3 RESPONDENT'S AGE

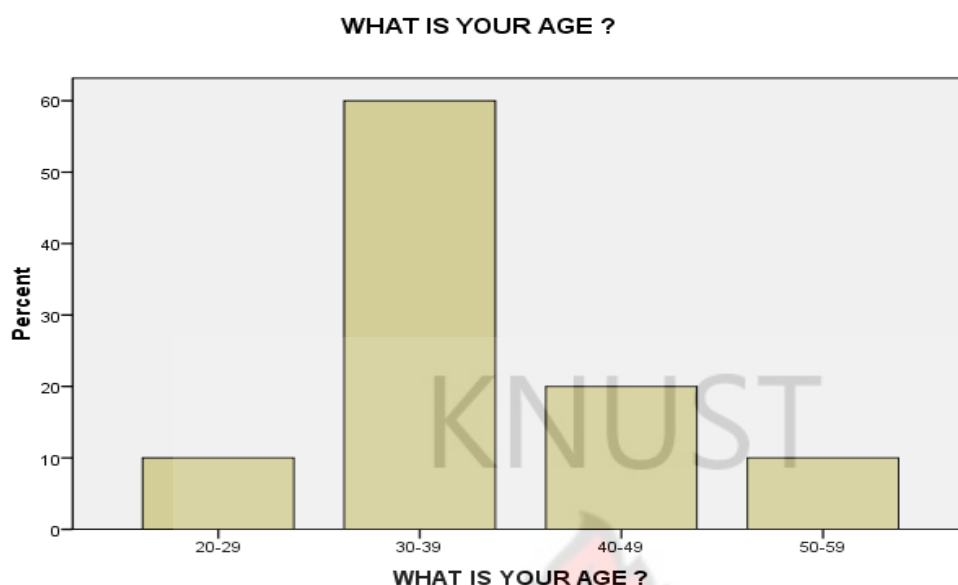
**TABLE 4.3: RESPONDENT'S AGE**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	20-29	10	10.0	10.0	10.0
	30-39	60	60.0	60.0	70.0
	40-49	20	20.0	20.0	90.0
	50-59	10	10.0	10.0	100.0
	Total	100	100.0	100.0	

From Table 4.3, 10% of the respondent were of ages 20-29, 60% were of ages 30-39 , 20% were of ages 40-49 , and 10% were of ages 50-59 .

**Figure 4.3**





#### 4.2.4 RESPONDENT'S AREA OF BUSINESS

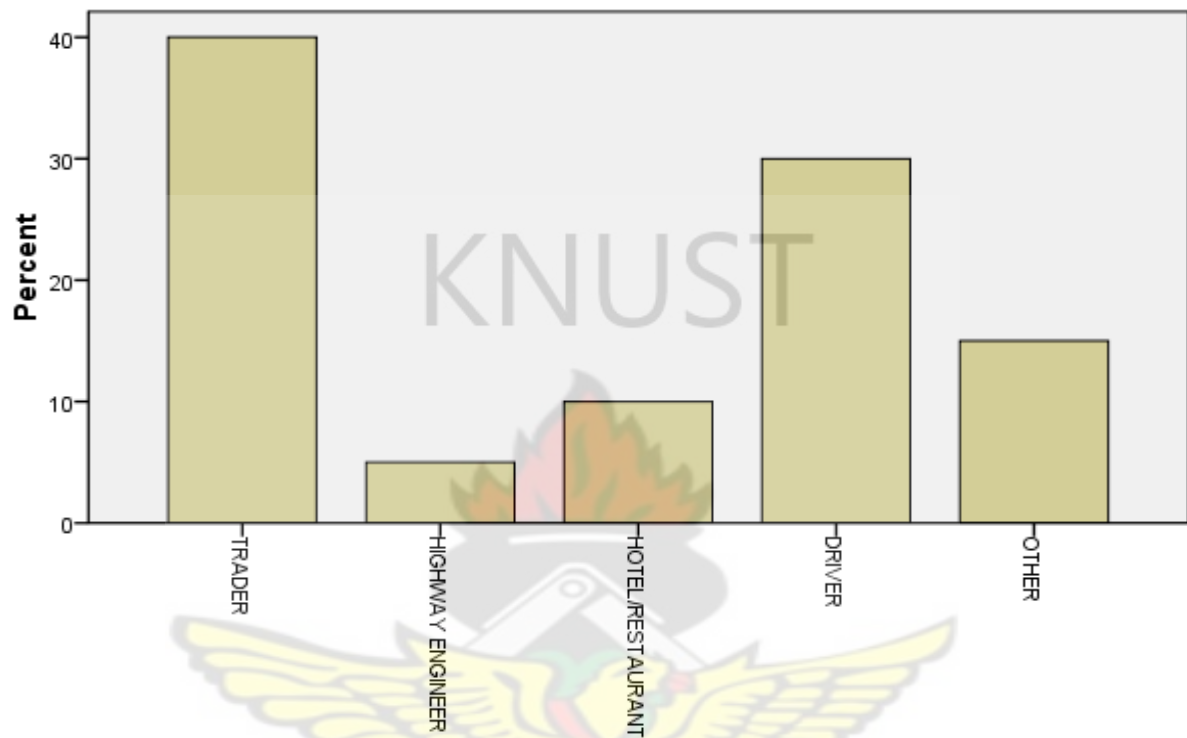
**TABLE 4.4: RESPONDENT'S AREA OF BUSINESS**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	TRADER	40	40.0	40.0	40.0
	HIGHWAY ENGINEER	5	5.0	5.0	45.0
	HOTEL/RESTAURANT	10	10.0	10.0	55.0
	DRIVER	30	30.0	30.0	85.0
	OTHER	15	15.0	15.0	100.0
	Total	100	100.0	100.0	

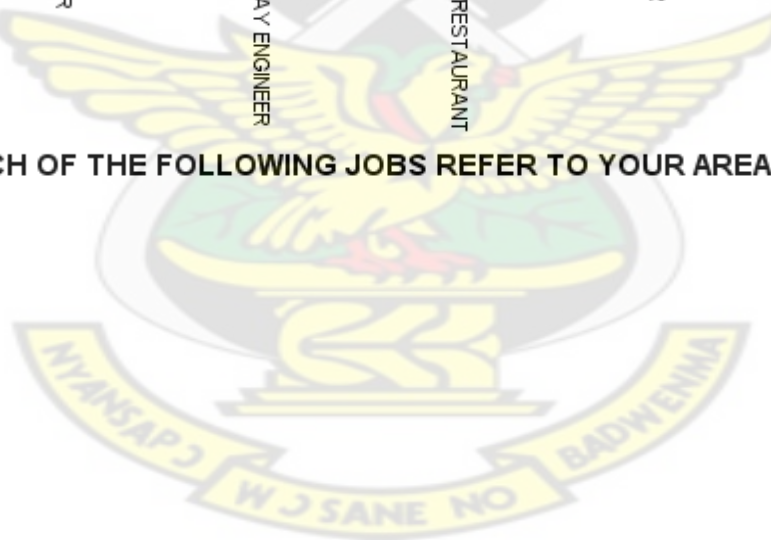
According to Fig 4.4, majority of the respondents forming 40% were traders , 30% of the respondents were drivers , 10% of the respondents worked in hotels or Restaurants , 5% of the respondents were highway engineer and 15% of the respondents worked at other places .

*Figure 4.4*

WHICH OF THE FOLLOWING JOBS REFER TO YOUR AREA OF BUSINESS ?



WHICH OF THE FOLLOWING JOBS REFER TO YOUR AREA OF BUSINESS...



#### 4.2.5 LOCATION OF BUSINESS IN RELATION TO THE BYPASS

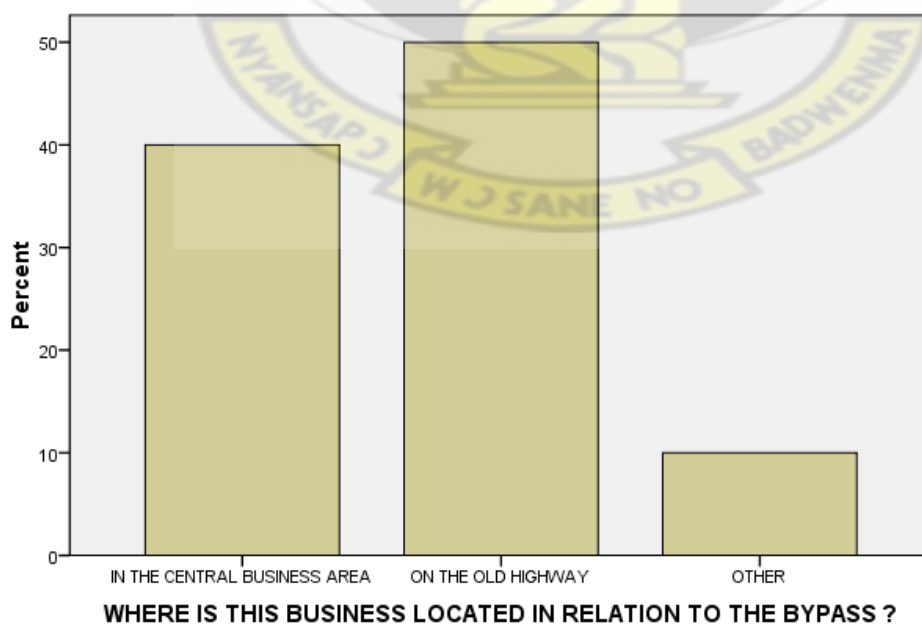
**TABLE 4.5 LOCATION OF BUSINESS IN RELATION TO THE BYPASS**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	IN THE CENTRAL BUSINESS AREA	40	40.0	40.0	40.0
	ON THE OLD HIGHWAY	50	50.0	50.0	90.0
	OTHER	10	10.0	10.0	100.0
	Total	100	100.0	100.0	

According to Fig 4.5, majority of the respondents forming 50% had their businesses located on the old highway, 40% of the respondents had their businesses located in the central business area , and 10% of the respondents had their businesses located in other areas .

**Figure 4.5**

**WHERE IS THIS BUSINESS LOCATED IN RELATION TO THE BYPASS ?**



**4.2.6 HOW LONG RESPONDENT HAS BEEN IN THE JOB****TABLE 4.6: HOW LONG RESPONDENT HAS BEEN IN THE JOB**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	LESS THAN 6 MONTHS	5	5.0	5.0	5.0
	1-2 YRS	19	19.0	19.0	24.0
	3-5 YRS	51	51.0	51.0	75.0
	MORE THAN 5YRS	25	25.0	25.0	100.0
	Total	100	100.0	100.0	

From Table 4.6 above, majority of the respondents forming 51% had been in the job for 3-5 years, 25% of the respondents had been in the job for more than 5 years, 19% of the respondents had been in the job for 1-2 years and 5% of the respondents had also been in the job for less than 6 months.

#### 4.2.7 DEPENDENCE OF BUSINESS ON NON-RESIDENT AUTO TRAFFIC PASSING THROUGH NKAWKAW TOWN

**TABLE 4.7: DEPENDENCE OF BUSINESS ON NON-RESIDENT AUTO TRAFFIC  
PASSING THROUGH NKAWKAW TOWN**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	VERY DEPENDENT	40	40.0	40.0	40.0
	SOMEHOW DEPENDENT	40	40.0	40.0	80.0
	NOT DEPENDENT	20	20.0	20.0	100.0
	Total	100	100.0	100.0	

According to Table 4.7 above, 40% of respondents conceded that business was very dependent on non-resident auto traffic passing through Nkawkaw town. Yet another 40% of the respondents said that business was somehow dependent on non-resident auto traffic passing through Nkawkaw town while 20% of the respondents said that business was not dependent on non-resident auto traffic passing through Nkawkaw town.

**TABLE 4.8: Descriptive Statistics**

	N	Minimum	Maximum	Mean	Rank
HIGHWAY NOISE	100	1	4	2.05	2
TRAFFIC VOLUME	100	1	4	2.02	1
DIRT AND DUST	100	1	4	2.35	5
ACCIDENT RATE	100	1	4	2.91	9
TRUCK TRAFFIC	100	1	4	2.84	8
TRAVEL TIME OF PERSONS COMING TO/ LEAVING YOUR PLACE OF BUSINESS	100	1	4	2.55	6
GROWTH OF RETAIL SALES	100	1	4	2.25	4
EMPLOYMENT RATE	100	1	4	2.61	7
OVERALL QUALITY OF LIFE	100	1	4	2.24	3
GRAND MEAN				<b>2.42</b>	

On a likert scale of 1 to 4 where; 1 = very important, 2= important, 3 = somewhat important and 4 = not important, the effect of the Nkawkaw bypass on 9 factors were examined. Table 4.8 shows that the bypass greatly affected Traffic Volume which was ranked first with a mean score of 2.02. Highway Noise was second with a mean score of 2.05 while the effect of the bypass on Overall Quality of Life was third with a mean of 2.24. The effect of the bypass on the Growth of Retail Sales was fifth with a mean score of 2.25. The effect of the bypass on Travel time of persons coming to or leaving places of business came sixth with a mean score of 2.55. The effect of the bypass on Employment Rate was ranked seventh with a mean score of 2.61. The effect of the bypass on Truck Traffic was ranked eighth with a mean score of 2.84 whereas the effect of the bypass on accident Rate was ranked ninth with a mean score of 2.91.

Thus, in order of importance, the effect of the bypass on Traffic Volume was the highest ranked while the effect of the bypass on Accident Rate was the least ranked.

### 4.3 IMPACT OF HIGHWAY BYPASS ON RETAIL TRADE

#### 4.3.1 WHAT HAS HAPPENED TO RESPONDENT'S BUSINESS SINCE THE OPENING OF THE BYPASS

**TABLE 4.9: WHAT HAS HAPPENED TO RESPONDENT'S BUSINESS SINCE THE OPENING OF THE BYPASS?**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SIGNIFICANT INCREASE IN SALES	10	10.0	10.0	10.0
	SIGNIFICANT DECREASE IN SALES	50	50.0	50.0	60.0
	NO SIGNIFICANT EFFECT	40	40.0	40.0	100.0
	Total	100	100.0	100.0	

Table 4.9 above shows that, 50% of the respondents had significant decrease in sales since the opening of the bypass, 40% of the respondents had no significant effect on their business since the opening of the bypass and 10% of the respondents had a significant increase in sales on their business since the opening of the bypass .

#### 4.3.2 RESPONDENT'S KNOWLEDGE OF BYPASS AND SUBSEQUENT DECISION

**TABLE 4.10: IF YOU KNEW OF THE BYPASS WHICH OF THE FOLLOWING OPTONS WOULD YOU HAVE CHOSEN?**



		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	RELOCATE TO THE BYPASS	10	10.0	10.0	10.0
	CHANGE BUSINESS AND REMAIN AT OLD LOCATION	30	30.0	30.0	40.0
	REMAIN IN THE OLD BUSINESS AND LOCATION	50	50.0	50.0	90.0
	RELOCATE TO ANOTHER PLACE IN GHANA	5	5.0	5.0	95.0
	OTHER	5	5.0	5.0	100.0
	Total	100	100.0	100.0	

According to Table 4.10 above, majority of the respondents forming 50% decided to remain in the old business and location, 30% of the respondents decided to change business and remain at old location, 5% of the respondents also decided to relocate to another place in Ghana, and another 5% of the respondents decided to do other business and be at other location.

### 4.3.3 THE EFFECT ON YOUR CUSTOMERS SINCE THE OPENING OF THE BYPASS

**TABLE 4.11: THE EFFECT ON YOUR CUSTOMERS SINCE THE OPENING OF THE BYPASS**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	INCREASE IN CUSTOMERS	10	10.0	10.0	10.0
	DECREASE IN CUSTOMERS	50	50.0	50.0	60.0
	NO CHANGE	40	40.0	40.0	100.0
	Total	100	100.0	100.0	

From Table 4.11, 50% of respondents indicated that there had been a decrease in the number of customers since the opening of the bypass, 40% of respondents indicated that there had been no change in the number of customers since the opening of the bypass , and 10% of respondents indicated that there had been an increase in the number of customers since the opening of the bypass .

#### 4.3.4 DESCRIPTION OF THE EFFECT OF THE BYPASS ON EMPLOYMENT

**TABLE 4.12: DESCRIPTION OF THE EFFECT OF THE BYPASS ON EMPLOYMENT**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	INCREASE IN EMPLOYMENT RATE	5	5.0	5.0	5.0
	DECREASE IN EMPLOYMENT RATE	15	15.0	15.0	20.0
	NO CHANGE	80	80.0	80.0	100.0
	Total	100	100.0	100.0	

From Table 4.12, 80% of the respondents indicated that there had been no change in employment, 15% respondents indicated that there had been a decrease in employment rate and 5% of respondents indicated that there had been an increase in employment rate.

#### 4.4. IMPACT OF HIGHWAY BYPASS ON ENVIRONMENT, SAFETY AND TRAFFIC

**TABLE 4.13 Descriptive Statistics**

	N	Minimum	Maximum	Mean	Rank
THE BYPASS HAS POSITIVELY REDUCED THE TRAFFIC CONGESTION ON THE OLD HIGHWAY	100	1	5	1.89	1
THE BYPASS HAS IMPROVED SAFETY ON THE BYPASSED ROUTE	100	1	5	2.06	2
THE BYPASS HAS REDUCED VEHICLE EMISSIONS IN LOCAL ENVIRONMENT	100	1	5	2.37	5
THE BYPASS HAS IMPROVED ACCESS FOR THE TOWN BUSINESSES	100	1	5	2.45	6
THE BYPASS HAS REDUCED TRUCK TRAFFIC ON THE BYPASSED ROUTE	100	1	5	2.07	3
THE BYPASS HAS REVITALIZED THE NKAWKAW TOWN	100	1	4	2.61	7
THE BYPASS HAS REDUCED NOISE POLLUTION IN NKAWKAW TOWN	100	1	4	2.35	4

THE BYPASS HAS NO BENEFIT ON NKAWKAW TOWN	100	1	5	3.97	8
<b>GRAND MEAN</b>				<b>2.47</b>	

On a scale of 1 to 5 where; 1 = strongly agree, 2 = agree, 3 = neutral, 4 = disagree and 5 = strongly disagree, the impact of the bypass on traffic, safety and environment were examined using 8 factors.

Reduction of the traffic congestion on the old highway was ranked first with a mean score of 1.89, which is approximately 2.0. This on the scale shows that respondents agreed that the bypass had a positive impact on the traffic congestion on the old highway.

Improved safety on the bypassed route ranked second with a mean score of 2.06. This on the scale shows respondents agreed that the bypass had improved safety on the bypassed route.

Reduction of Truck Traffic was ranked third with a mean score of 2.07. This also indicates that respondents were in agreement that the bypass had reduced truck traffic on the bypassed route.

Reduction in noise pollution was ranked fourth with a mean score of 2.35. Again, respondents agreed that the bypass has reduced noise pollution in Nkawkaw town.

Reduction in vehicle emissions in local environment was ranked fifth with a mean score of 2.37. This shows that respondents agreed that the bypass had reduced vehicle emissions in local environment.

Improved access to businesses was ranked sixth with a mean score of 2.45. This indicates that respondents agreed that the bypass had improved access to businesses in the town.

Revitalization of the town ranked seventh with a mean score of 2.61, approximately 3.0. This implies that respondents on the average remained neutral as to whether the bypass had revitalized Nkawkaw town

Finally, benefit to the town ranked eighth with a mean score of 3.97, approximately 4.0. This indicates that respondents disagreed that the bypass had no benefit to the Nkawkaw town.

An overall mean of 2.47 indicates that, almost all eight factors were positively affected by the bypass.

#### 4.4.2 ATTRACTION FOR NON-RESIDENTS TO THE COMMUNITY

**TABLE 4.14: ATTRACTION FOR NON-RESIDENTS TO THE COMMUNITY**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	TOURIST ATTRACTIONS	10	10.0	10.0	10.0
	HOSPITALS	40	40.0	40.0	50.0
	FESTIVALS	50	50.0	50.0	100.0
	Total	100	100.0	100.0	

From Table 4.14, 50% of the respondents agreed that festivals attracted non-residents to the community, 40% of the respondents agreed that hospitals attracted non-resident to the community, and 10% of the respondents agreed that tourist attractions attracted non-residents to the community.

#### 4.4.3 THE RATE AT WHICH NON-RESIDENTS COME TO THE COMMUNITY SINCE THE OPENING OF THE BYPASS IN 2012

**TABLE 4.15: THE RATE AT WHICH NON-RESIDENTS COME TO THE COMMUNITY SINCE THE OPENING OF THE BYPASS IN 2012**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	INCREASED	30	30.0	30.0	30.0
	DECREASED	60	60.0	60.0	90.0
	NO CHANGE	10	10.0	10.0	100.0
	Total	100	100.0	100.0	

According to Table 4.15, majority of the respondents forming 60% observed a decrease in the rate at which non-residents come to the community since the opening of the bypass in 2012, 30% of the respondents observed an increase in the rate at which non-residents come to the community since the opening of the bypass and 10% of the respondents observed that there were no change in the rate at which non-residents come to the community since then opening of the bypass in 2012 .



#### 4.4.4 THE OVERALL EFFECT OF THE BYPASS ON THE QUALITY OF LIFE OF THE LOCALS IN NKAWKAW

**TABLE 4.16: THE OVERALL EFFECT OF THE BYPASS ON THE QUALITY OF LIFE OF THE LOCALS IN NKAWKAW**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	HIGHLY POSITIVE	10	10.0	10.0	10.0
	POSITIVE	80	80.0	80.0	90.0
	NEGATIVE	6	6.0	6.0	96.0
	NO EFFECT	4	4.0	4.0	100.0
	Total	100	100.0	100.0	

According to Table 4.16, 90% of respondents agreed that the bypass positively affected the quality of life of locals in Nkawkaw. 6% of respondents were of the view that the bypass negatively affected the quality of life of locals of Nkawkaw and the remaining 4% of respondents were of the view that the bypass had no effect on the quality of life of locals of Nkawkaw.

## CHAPTER FIVE SUMMARY CONCLUSION AND RECOMMENDATIONS

### 5.0 INTRODUCTION

This research aimed at evaluating the effect of Highway bypass on the socio-economic life of Nkawkaw. Chapter one of the research outlined the introduction of the study. Chapter two consists of relevant literature within the limits of total quality management systems in road construction with chapter three outlining the methodology of the research. Chapter four discussed the analysis of data obtained for the study. Chapter five looks at the conclusion drawn from the research and the recommendations made.

### 5.1 SUMMARY OF RESEARCH FINDINGS

Two objectives were outlined for this study namely; impact of highway bypass on retail trade and impact of highway bypass on environment, safety and traffic.

#### **OBJECTIVE 1: Impact of Highway Bypass on Retail Trade**

In assessing the impact of bypass on retail business, the effects of the bypass on respondent's businesses were assessed and the effects of the bypass on customers were also considered. Results from Table 4.9 showed that 50% of respondents recorded significant decrease in sales whereas 40% had no significant change in sales. Although some respondents recorded a significant increase in sales, they were only 10%. This shows that on the whole, the bypass had an adverse effect on the sales of respondents. With regards to the effect of the bypass on customers, just like in the effect on sales, results from Table 4.11 showed that 50% of respondents had a decrease in the number of customers whereas 40% had no change in the number of customers. Once again, though some recorded an increase in the number of customers, they were only 10%. On the effect of the bypass on employment, according to Table 4.12, 80% of respondents perceived no change in employment rate. 15% perceived a decrease in the employment rate and 5% perceived an increase in the employment rate.

**OBJECTIVE 2: Impact of highway bypass on environment, safety and traffic.**

In the assessment of the impact of highway bypass on environment, safety and traffic, eight factors were considered. These factors were; traffic congestion, safety on bypassed route, vehicle emissions in local environment, access for town businesses, truck traffic on the bypassed route, revitalization of the town, noise pollution in the town and overall benefit to the Nkawkaw town. Results from Table 4.13 indicated that, Reduction of the traffic congestion on the old highway had a mean score of 1.89, approximately 2.0. Meaning that respondents agreed that the bypass had a positive impact on the traffic congestion on the old highway.

Improved safety on the bypassed route had a mean score of 2.06. This meant respondents agreed that the bypass had improved safety on the bypassed route.

Reduction of Truck Traffic had a mean score of 2.07. This indicated that respondents were in agreement that the bypass had reduced truck traffic on the bypassed route.

Reduction in noise pollution had a mean score of 2.35. Reduction in vehicle emissions in local environment had a mean score of 2.37. This showed that respondents agreed that the bypass had reduced vehicle emissions in local environment.

Improved access to businesses had a mean score of 2.45. This indicated that respondents agreed that the bypass had improved access to businesses in the town.

Revitalization of the town had a mean score of 2.61, approximately 3.0. This implied that respondents on the average remained neutral as to whether the bypass had revitalized Nkawkaw town. Benefit to the town had a mean score of 3.97, approximately 4.0. This indicated that respondents disagreed that the bypass had no benefit to the Nkawkaw town.

In conclusion, from Table 4.13, it was observed that the highway bypass positively affected environment, safety and traffic.

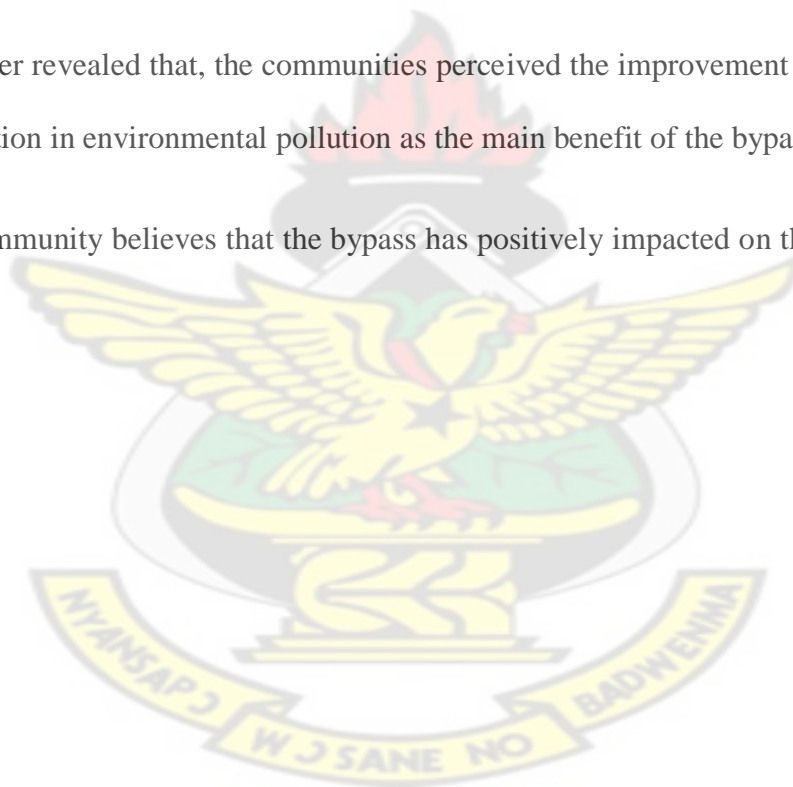
An overall mean of 2.47 indicates that, almost all eight factors were positively affected by the bypass.

## 5.2 CONCLUSION

From the analysis of the interview responses, it was concluded that the bypass has brought about reduction in sales for retail businesses, food vendors, hotels and fuel stations operators

The study further revealed that, the communities perceived the improvement of safety, traffic flow and reduction in environmental pollution as the main benefit of the bypass.

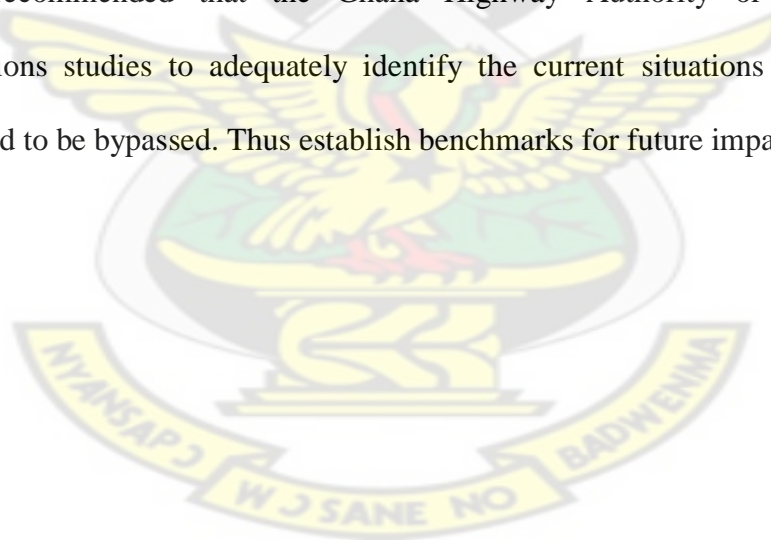
In total, the community believes that the bypass has positively impacted on the inhabitants of Nkawkaw.



### 5.3 RECOMMENDATIONS

Based on the findings of this research work on the effect of Highway bypass on the socio-economic life of Nkawkaw, the following recommendations were made;

- The old road should be maintained periodically by the Ghana Highway Authority to improve safety and attract continues usage by transit small vehicles.
- Increased signage of available businesses by business owners (Hotels), second cycle schools and Institutions, the tourist attractions in the communities (the Municipal Assembly) along the newly constructed route would improve the customer base and local economy and thus attracting small vehicles back to the road.
- With the construction of the Anyinam and Konongo bypasses being envisaged, it is further recommended that the Ghana Highway Authority or the University commissions studies to adequately identify the current situations of communities earmarked to be bypassed. Thus establish benchmarks for future impact assessment.



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