

Analysis of Geographical Distribution and Patronage of Fast Food in Calabar Urban, Nigeria

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Abstract

The study examined fast food's geographical distribution and patronage in Calabar urban, Nigeria. Data were acquired from both secondary and primary sources. Inferential and descriptive statistical techniques were used to analyse the acquired data for the study. The findings indicated a clustered pattern of forty-seven operating fast-food outlets scattered across the area. The study also observed that large population density, central city business and shopping districts known as the CBD/tourist attractions and security were the main factors of fast food location. Furthermore, the study revealed a substantial negative correlation between patrons' distance from



the fast food outfits and their frequency of patronage, meaning that the larger the distance between patrons and fast-food establishments, the lower the degree of patronage. The study further showed that fast food patronage fluctuates substantially depending on the time of day. The study recommended that fast food proprietors and government evaluate the critical factors of the geographical distribution of fast food in the area for the long-term viability of the business.

Keywords: Fast food; geographical distribution; patronage; spatial distribution pattern; sustainability

Introduction

Several scholars feel culinary tourism is a thriving business hub, and the notion of boosting culinary-based tourism, particularly regional culinary tourism, is prevalent (Dancausa-Millan & Huete-Alcocer, 2022; Park & Widyanta, 2022; Stone et al., 2022; Ullah et al., 2022). According to some studies, cosmopolitan cities host over half of all the people living in the world (Eneyo et al., 2018; Goel & Vishnoi, 2022; Zhang et al., 2022). Several researchers believe that most fast-food patrons eat at locations close to their operational environment (Beck & Hensher, 2020; Kassouri & Okunlola, 2022; Munir & Ameer, 2022). Consequently, most people wish to participate in culinary tourism because of the economic advantages (Eneyo et al., 2018; Eneyo & Edward, 2018). As a result, the scale and speed with which culinary tourism spreads in most parts of the globe provide problems to other industries functioning within the ecosystem. As a consequence of this advancement, urbanisation has become a propelling factor in economic and human expansion on most continents. However, in contrast to economic progress, the rate of urbanisation in Africa does not increase in lockstep (Chen et al., 2022; Kassouri & Okunlola, 2022; Munir & Ameer, 2022). Again, urbanisation is necessary for long-term development because it increases productivity, creativity, and new ideas.

Conversely, Eneyo and Edward (2018) consider urbanisation as a significant demographical phenomenon within which a rising percentage of the global population dwells in major cities around the globe. Further studies discovered that urbanisation helps to reduce poverty on most continents (Goel & Vishnoi, 2022; Liu et al., 2022). However, the reverse is the case in some African counties. Consequently, several academics, governments, and nonprofit organisations (NGOs) concur on creating consistent policy initiatives in urban governance and planning, especially in Africa's growing cities (Chen et al., 2022; Ekong & Eneyo, 2018; Munir & Ameer, 2022). Therefore, understanding the relationship between industrialisation, economic development, and urbanisation is essential for efficient planning. Again, urbanisation may impact infrastructure development, related services and economic growth, particularly in most urban areas. Also, some urban areas directly contribute to most developing countries' socio-economic structure by offering job opportunities, free healthcare, and recreational activities, education, among other things.

Urbanisation encourages establishing hospitality services in most urban areas to satisfy the nutritional demands of both residents and visitors (Eneyo et al., 2018; Musolino & Pellegrino, 2022). Fast food served has its origins in the simultaneous of these. The fast food revolution was an immediate success and quickly engulfed the world within a few years of its inception. It should be noted that fast food operated to some extent before rapid urbanisation and modernisation. It was only later that their significance and growth skyrocketed. The extraordinary growth of most industries today demonstrates a rapid growth in urbanisation. Thus, most fast food provides meals in a few minutes, and they have become the preferred eating spot, particularly for wealthier urban residents and visitors (Akin, 2013; Liu et al., 2022; Wiegand & Moloney, 2013; Sadahiro, 2022; Üsküplü et al., 2020). Also, fast food has been situated in most cities, which Eneyo et al. (2021) attribute to contemporary restaurant development. However, as time passes, we may discover fast food outfits in distant and central locations, as provided in several food directorates. In Sweden, for instance, restaurants



were located in Stockholm and later spread across the country (Tellström et al., 2006; Walter et al., 2022).

Fast food has recently been identified as a place that draws many prospective tourists to a specific region. In context, fast food is described as typically quick-service restaurants that offer arenas for visitors and residents to experience different quick-service meals. The business is often located near shopping malls, planned communities, highway crossroads, and central-city business and shopping areas. Some scholars often regard fast food as a byproduct of tourism (Ayatac & Dokmeci, 2017; Eneyo et al., 2017; Liu et al., 2019). In contrast, few scholars believe that fast food is one of the components of the tourism and hospitality industry (Effiom, 2012; Jones, 2022; Song et al., 2022). Most of its services are produced and consumed in the exact location, making them geographically dependent. Fast food needs patrons, who may be residents, part-time residents, visitors, and tourists from within and outside the area for business or pleasure, to build an area's market potential (Eneyo et al., 2018; Isaacs et al., 2022; Trigo & Silva, 2022; Walter et al., 2022). In most developing countries, fast food outlets are often located in conjunction with other services, such as galleries, religious centres, shopping centres, financial institutions, and schools, among other places (Eneyo et al., 2017; Liu et al., 2019; Tahiri et al., 2022). Again, in some developing countries, the locational patterns of some fast food outlets vary because most countries show less attention to the location of the fast food business within the area (Calero & Turner, 2020; Méjean & Recchia, 2022; Wu et al., 2021). One example is in the capital city of Calabar, where proprietors of fast food locate their fast food wherever they feel like locating them.

In addition to the above, fast food's abrupt rise is often associated with the need for ready-made meals for instant consumption suitable for the rushed lifestyle of the world's congested cities. Other potential customers take packed meals and dine off-site. Most fast-food outlets also offer on-demand delivery and catering services from dawn to dusk (Eneyo et al., 2018). Most fast food outlets do not provide weighty dishes or alcoholic beverages; instead, they serve relatively bland cuisine, juice, pastries and soft drinks to their patrons who place an order from them. However, owing to the significant expansion of the hospitality establishment and significant areas of the sectors of the national economy, most countries have experienced the rapid spread of fast food outlets. Thus, fast food's fast-paced rise and spread have attracted spatial interest, prompting geographic research. This study focused on the geographical distribution and patronage of fast food in Calabar urban, Nigeria.

According to Reiffenstein (2017) and Akin (2013), most countries have seen substantial growth and clustering of cafes around significant infrastructures. Other studies demonstrated the clustering of fast-food restaurants near residential areas, major highway crossings, and tourist attractions to attract many consumers (Ayatac & Dokmeci, 2017; Eneyo et al., 2022; Simon et al., 2008). Some researchers revealed random and uniformly dispersed patterns in some locations (Wiegand & Moloney, 2013; Eneyo et al., 2017; Liu et al., 2022; Sadahiro, 2022; Tian et al., 2022). Again, a preliminary study of the distributional pattern of fast food in the research area found that most streets seem congested with fast food outlets. In contrast, just a few streets are underserved. However, there are no readily available maps and coordinates of fast food outlets in the area, making it possible for patrons of the business to trace the location of the fast food outlet they choose using a map and Global Positioning System. This research addressed the gap by presenting statistical information and exact location showing the geographical distribution of fast food in Calabar urban, Nigeria, by identifying factors influencing the location pattern. It also investigated the nature of patronage of fast food in the area.



Theoretical framework

Tobler's first law (TFL) and distance decay function

Tobler's first law (TFL), proposed by W. R. Tobler, argues that everything is interconnected; however, near things are more related than remote things (Miller, 2004; Tobler, 1970, 2004). This implies that two geographic entities, for instance, can relate negatively or positively. Also, the two entities may possess some relational variables in space. Tobler's law envisages relationships when evaluated in space, which must be discovered for correlation and planning. The law helps us to understand the locational patterns and possible correlations in urban centres. Also, it is essential in explaining the spatiality, distribution and relationship in the geographical distribution of fast food outfits. It further shows the connectivity and oneness of all things in the world. The theory reveals the likely impact of the gravitation of fast food around tourist attractions and CBD in Calabar Urban, Nigeria. The theory, to a large extent, explains that fast food growth at place A, for instance, depend not only on the previous population of fast food at place A but also on the population of fast food in other places. TFL of geography illustrates that the fast food establishment proprietor would be interested in estimating the effectiveness of their establishment in competition with similar traders in other centres near them. Furthermore, it assumes that fast food in Calabar-municipality likely significantly affects the depressed zone peripheral Calabar-south since the city has more facilities such as shopping complexes, recreational parks, hospitals, banks, and accommodations. This gap, therefore, necessitates the need to find out possible factors affecting the geographical distribution of fast food and the nature of patronage in the Calabar urban area.

Similarly, the distance decay function depicts the strength of connectivity between locations. Patrons of fast food or systems decrease as the separation between them increases. Furthermore, the distance decay function indicates that when the distances between two sites rise, their interaction diminishes (Kwate et al., 2009; Mckercher & Lew, 2003; Tan et al., 2022; Xu et al., 2022). Thus, there is a more significant hindrance to two places farther apart. In context, the concept illustrates that people are less likely to patronage or travel a greater distance to patronise or visit a store/business farther away. The concept suggests that demand decays when distance is far apart. This concept recognises that people may only be willing to move a short distance to patronise fast food. The concept predicates that most people are rational patrons who seek the more proximate option between two similar fast food unless there is some compelling reason to patronise fast food farther away. Thus, patronage should decline exponentially as distance increases. Distance decay affects the patron's behaviour. As expected, total time availability significantly impacts fast food destination choice.

Methodology

Calabar urban, the study area, comprises Calabar-south and municipality. The area lies between $4^{\circ}50'$ north to $4^{\circ}54'$ north latitudes north of the equator and $8^{\circ}18'$ east to $8^{\circ}24'$ east longitude of the greenwich meridian (Figure 1). The area has an estimated population of 191,630 persons (Ajake et al., 2022; Eja et al., 2015; Offiong et al., 2022). Calabar urban has numerous tourist attractions and entertainment centres like the tinapa business resort, marina resort, drill ranch, cercopan, botanical garden, cultural centres, nightclubs, swimming pools, sports stadiums other places of interest. In addition, tourism support services include fast centres, accommodation sectors, laundry services, communication facilities, art and craft, car hire services, travel agencies, financial institutions, shopping centres, and markets, among others (Ekong & Eneyo, 2018; Eneyo et al., 2017; Obong et al., 2012).

This study adopted cross-sectional research designs to obtain data for the study. Data were acquired from both secondary and primary sources. Primary sources involved field



observation, questionnaires, participatory research techniques aided by personal interviews and geographic information system (GIS) technique. In contrast, secondary sources included textbooks, journals, maps, online resources, and fast food records with the Cross River State government regulatory authorities. Also, a non-probability sampling approach, notably the purposive sample technique, was adopted to select all the operational fast food and target all the fast food proprietors for the study. An interview session was conducted with each proprietor of the fast food. Moreover, a total of 47 proprietors participated in the interview. Furthermore, a stratified random sampling method was adopted to administer the questionnaires to the fast-food patrons. For the patrons, 30% of the sample size was used to gather data for the study. Similarly, with a population of 2600 frequent patrons, the minimum sample size used was 780.

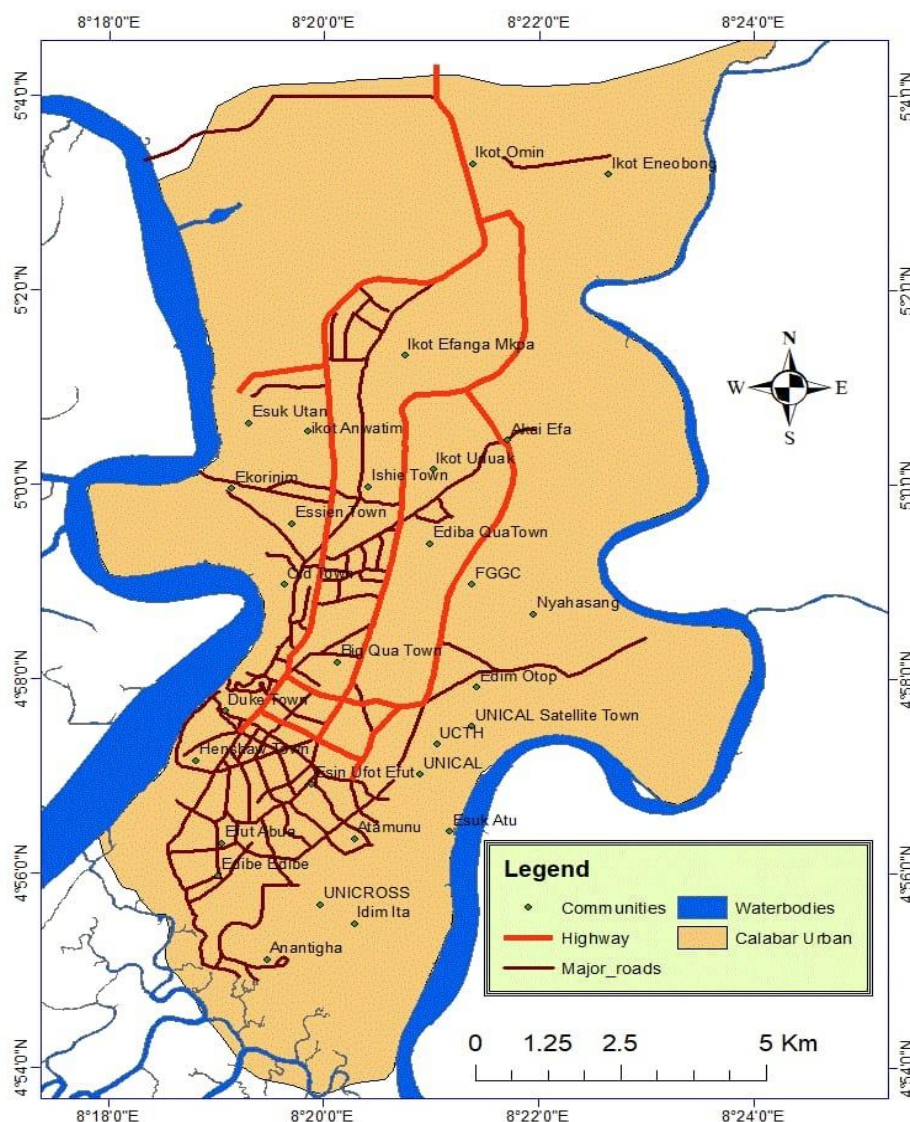


Figure 1: The study area
 Source: Authors

The study also employed two processes for data collection. The first method involved a direct field survey and geo-spatial data collection of fast food locations using GPS. Data was collected on geographical coordinates and stored in excel (CSV) in comma-delimited form,



also known as CSV. Also, the geographical coordinates were afterwards translated to a projected geographical coordinate, the UTM 32 N, to determine the distance inside the GIS. Further, the second approach included the participatory research technique, which involves interviews with all the fast food proprietors using a checklist to elicit information on location description, factors of location, and location attributes. All the fast food proprietors participated in the interview and provided answers that helped the study. The information gleaned from the interview was subsequently translated. The thematic analytical approach was adopted based on the responses obtained from the survey (Effiom, 2012; Leedy & Ormrod, 2015). Also, structured questionnaires were administered to patrons at each fast food. The questionnaires were distributed to each patron on a "first come, first served basis" (Ajake et al., 2022; Eja et al., 2015). The involvement of the patrons was voluntary, and none of them was coerced into it. All 529 copies of the questionnaire were collected and determined to be usable. Their responses enable the researchers to gather information on the nature and pattern of patronage.

Furthermore, quantitative data were presented in maps, graphs, and tables, while qualitative data was discussed in the study. The data were analysed using inferential statistics (vis spearman ranked order correlation, NNA and G-function statistic) and descriptive statistical approaches (vis simple percentages and frequencies). Furthermore, NNA and G-function statistics were used to explore fast food distribution to identify patterns. Also, spearman ranked order correlation analysis was employed to explore the nature and pattern of fast food patronage. Thus, the findings were presented in the results part and discussed in the discussion section

Results and discussion

Geographical distribution of fast food

Table 1 shows the 47 operational fast-food and their coordinates. Similarly, the data in Table 1 is envisaged in Figure 2. Figure 2 depicts the geographical distribution of fast food along significant routes. Also, Figure 3 shows that the fast food outlets gravitate around the CBD/tourist attractions. Figure 3 depicts that four of the twenty-six tourist attractions identified were far from fast food outlets, while twenty-two of the tourist attraction sites were within close range. A 1km buffer was created (see Figure 3). Figure 3 depicts that the operational fast food outlets were within 1km of tourist attraction sites. The inference is that people who visit these tourist attractions would also visit the fast food since they are nearby. Data obtained in Table 1 helps the researchers to obtain the result on the geographical distribution of fast food in the area.

Table 1: Fast food and their coordinates

S/n	Fast food outlets	Latitude	Longitude
1	Apples fried chicken	4.9854	8.3435
2	B system	4.9799	8.3285
3	Beelaj	4.9786	8.3387
4	Beverly heels	4.9714	8.3393
5	Big munch	4.9772	8.3422
6	Boozebelly	4.9749	8.3404
7	Buddyz place	4.9681	8.3415
8	Chellis café	4.9733	8.3401
9	Chinese	4.9840	8.3391
10	Cokers	4.9810	8.3404
11	Crispy chicken	4.9608	8.3229
12	Crunchies fried chicken	4.9685	8.3387
13	Crunchies plus	4.9593	8.3261
14	De choice	4.9612	8.3237
15	De choice	4.9860	8.3321
16	Eme inn	4.9855	8.3492
17	Emerald	4.9623	8.3480
18	Eri's executive	4.9618	8.3235
19	Fiesta fries	4.9804	8.3425
20	Fish and chicken affairs	4.9583	8.3333
21	Five two zero kolanut	4.9616	8.3275
22	Food to go	4.9420	8.3197
23	Freddy's	4.9810	8.3406
24	Frelica place	4.9749	8.3404
25	Fresh chops	4.9556	8.3203
26	Glad tidings	4.9960	8.3451
27	H2o	4.9530	8.3386
28	Happy food	4.9845	8.3434
29	Hunger spot	4.9574	8.3411



30	Jason's pizza hut	4.9819	8.3426	39	Pato's fish garden	4.9814	8.3411
31	Kenny's fried chicken	4.9356	8.3257	40	Pearl kitchen	4.9600	8.3303
32	Mirage Chinese	4.9885	8.3378	41	Pepperoni	4.9928	8.3452
33	Mirage	4.9888	8.3379	42	Pato mass	4.9579	8.3290
34	Mr fans	4.9501	8.3380	43	Quorum lounge	4.9811	8.3400
35	Mr nice	4.9453	8.3111	44	Seven-seven bukke	4.9522	8.3391
36	Mustard seed	4.9784	8.3389	45	Southern fried chicken	4.9830	8.3429
37	Paladium	4.9566	8.3322	46	Tata fish spot	4.9811	8.3422
38	Park one	4.9999	8.3367	47	Urban bar	4.9406	8.3347

Source: Authors

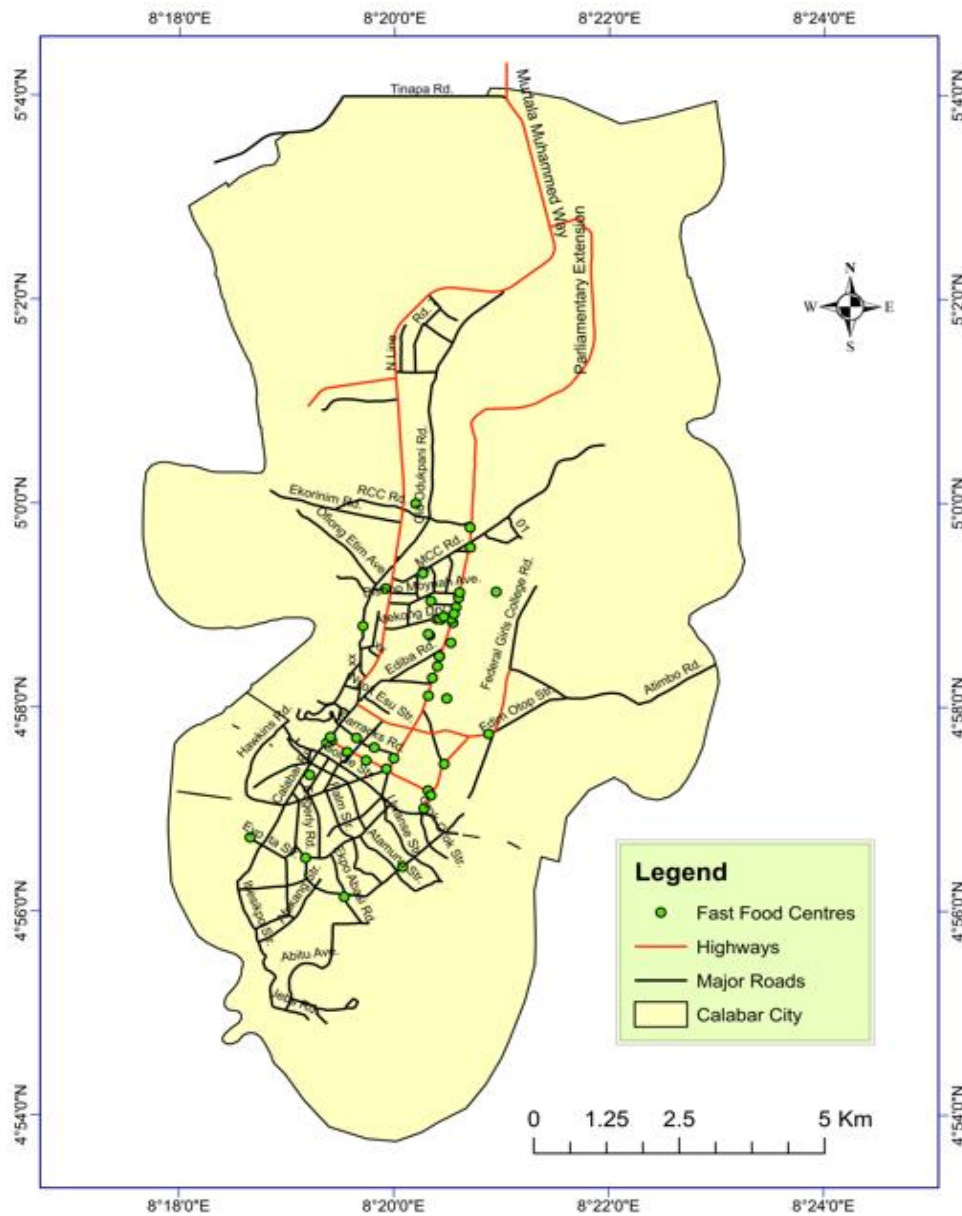


Figure 2: Geographical distribution of fast food in Calabar Urban
 Source: Authors GIS analysis

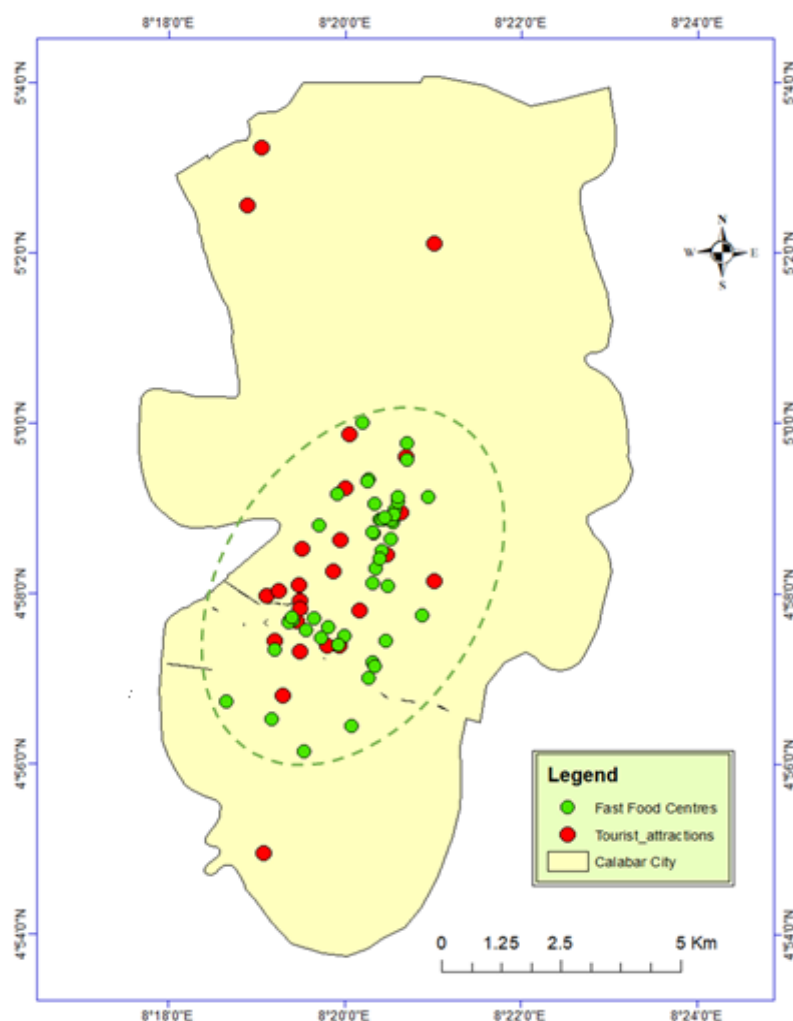


Figure 3: Geographical distribution of fast food along tourist attractions
Source: Authors GIS analysis

The study further observed that fast food outfits were largely declining from the CBD, within an average radius of more than 1km. Again, since the study area comprises two LGAs, the researchers created distribution maps for both LGAs to determine their geographical distribution. Figure 4 depicts the geographical distribution of fast food in Calabar-municipality. While Figure 5 shows the geographical distribution of fast food in Calabar-south. Figure 4 and Figure 5 further illustrate that thirty-eight fast food concentrated in Calabar-municipality, and nine were located in Calabar-south. Furthermore, a statistical analysis using the NNA was conducted to ascertain the distributional pattern of fast food in the two LGA. The result of the NNA reveals that fast food outfits in the area show that fast food in Calabar-municipality assumed a clustered pattern of distribution (see Figure 4) with an R value of 0.3, (z score value of -8.1), while the p value was < 0.05. Figure 4 further shows that streets like Marian, Efio-Ette, Murtala Mohammed Highway (MCC), and Calabar road, among others, have more fast food than other areas in the LGA. In Calabar-south, however, a distinct pattern was observed (see Figure 5). The assumption is that fast food in Calabar-south assumed a dispersed pattern with an R value of 0.6, while the z score value was -2.2; the p value was < 0.05.

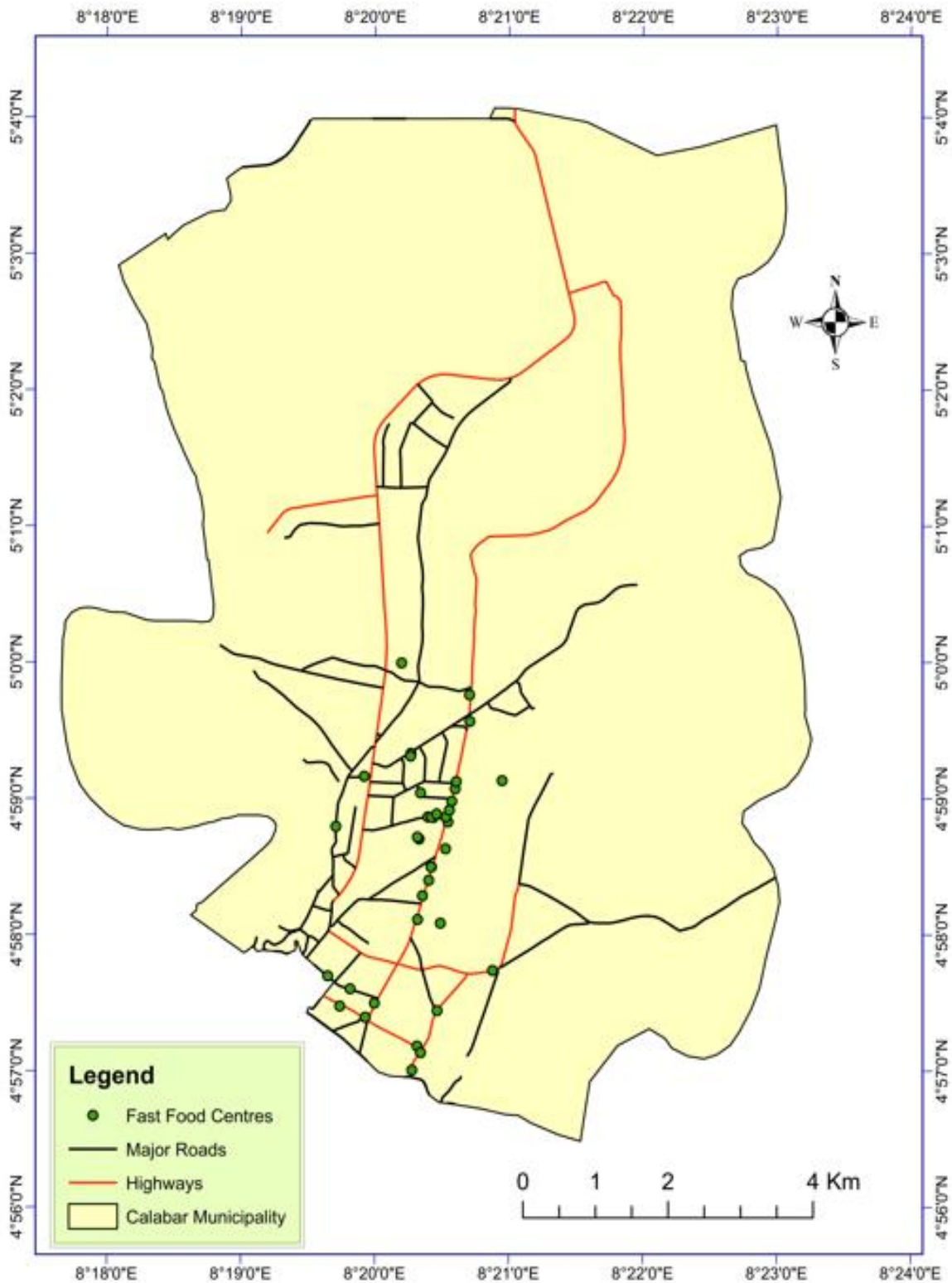


Figure 4: Geographical distribution of fast food in Calabar-municipality
Source: Authors GIS analysis)

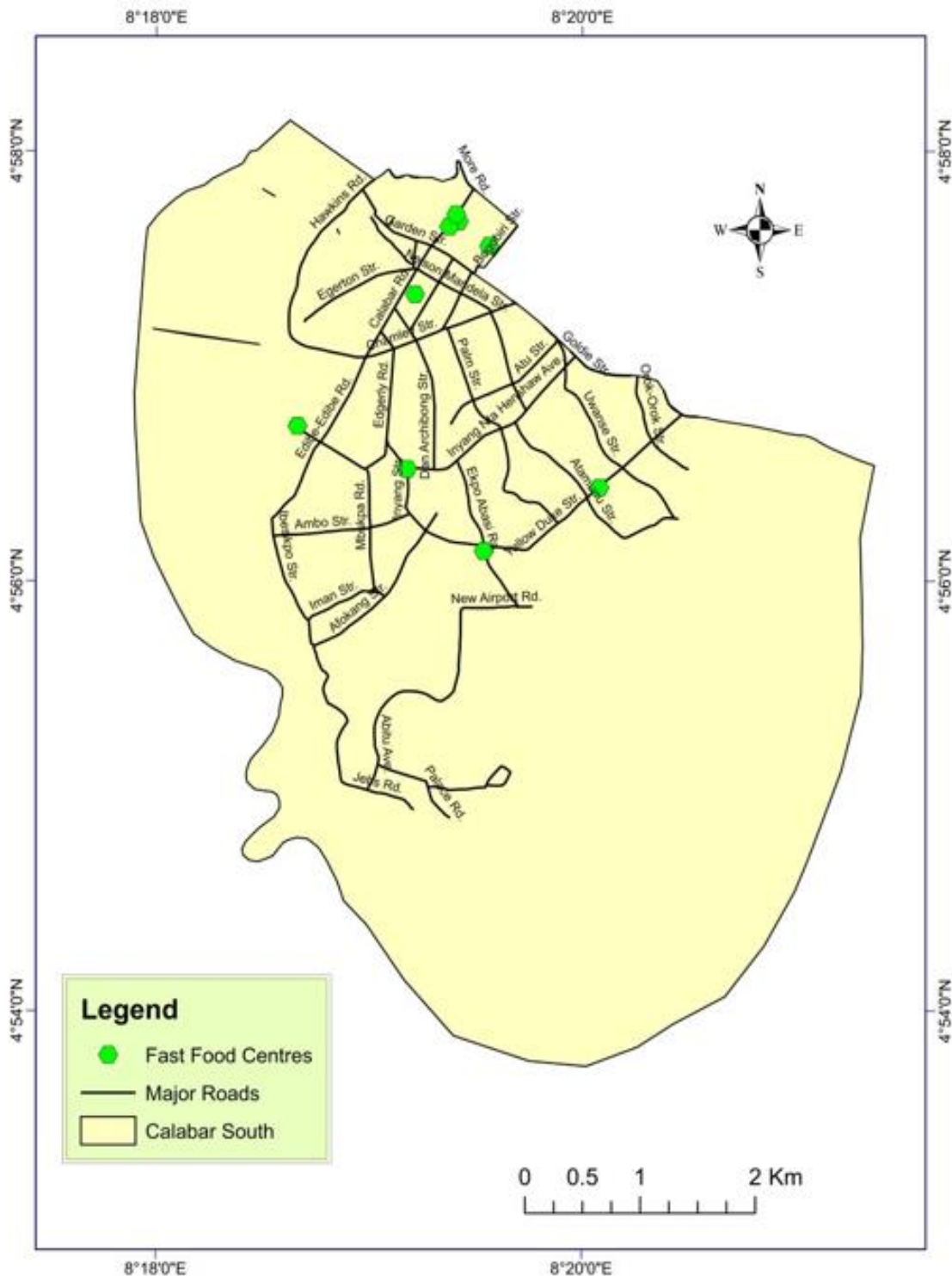


Figure 5: Geographical distribution of fast food in Calabar-South LGA
 Source: Authors GIS analysis

Table 2 shows the NNA of the geographical distribution of fast food in the study area. Figure 6 further envisages the NNA result. It reveals the clustered pattern of fast food in the area with an R value of approximately 0.4 and a z score of -8.2; the P value was <0.05. The observed geographical distribution pattern of fast food was mainly along CBD/tourist attractions (see Figure 3 and Figure 6).

Table 2: Summary of the NNA in meters (m)

Statistic	Value for Calabar urban
Observed mean distance (OMD)	318 m
Expected mean distance (EMD)	853 m
NNA (R value)	0.4
Z score value	-8.2
P value	0.0

Source: Authors fieldwork

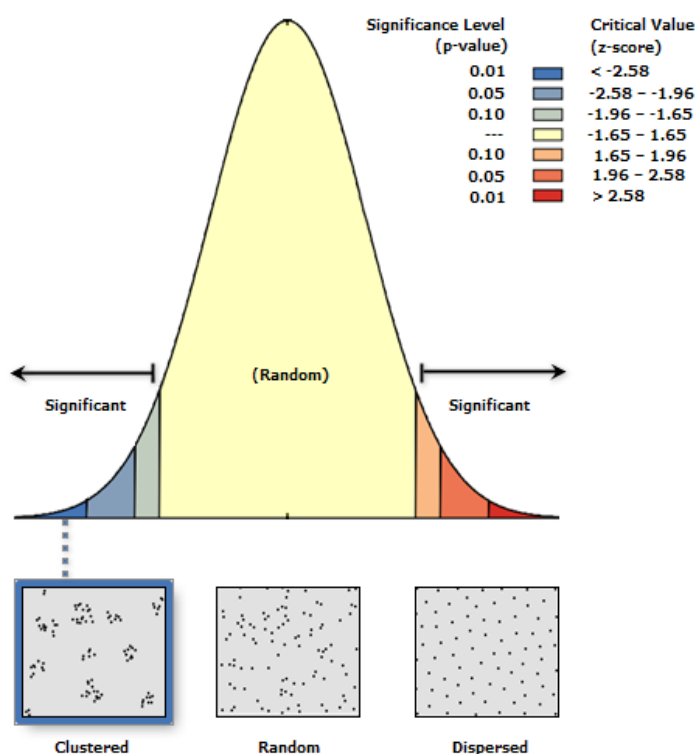


Figure 6: Summary of nearest-neighbour statistics (Source: Authors analysis)

Furthermore, alternative measures such as G-function statistics was also adopted to determine the geographical distribution of fast food and to corroborate the research findings in Table 2. Figure 7 shows the G-Function statistics of the spatial pattern of fast food distribution. The G-Function is the virtual extension of the average nearest neighbour statistic. If we count the number of the nearest neighbours in a point distribution within a certain distance, we could expect the value to rise as distance increases. Also, the increase rate indicates point interaction and can be summarized graphically. If the line climbs very steeply, there is a proclivity for point interaction (clustering). If it climbs more slowly, there is a tendency of point repulsion (regularity). For the present study, the graph in Figure 7 rises very steeply between 0 and 200m with over 40% of fast food occurrence. It slows down a little and rises very steeply again to a distance of about 400m with about 80% of the occurrences. Therefore, 100% of fast food occurred between 0 and 1100m.

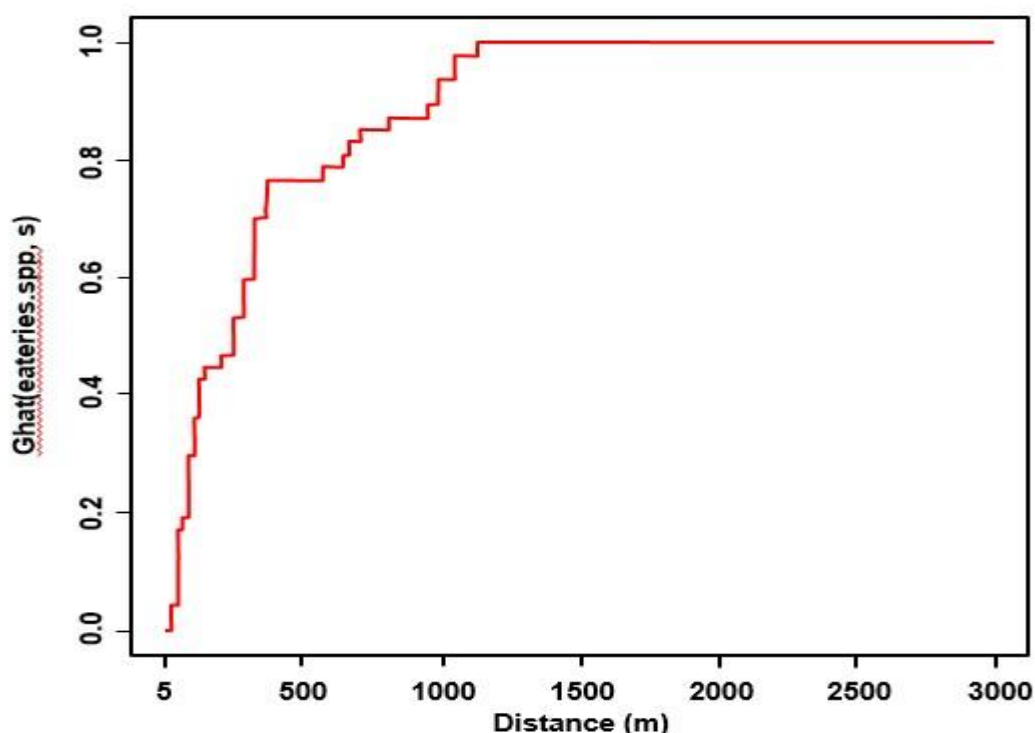


Figure 7: G- Function statistics for fast food in Calabar urban, Nigeria
 Source: Authors analysis

Factors of the location of fast food in Calabar urban based on mean ranked

Data was collected on the factors of fast food location from all the proprietors. Their responses were presented in the mean rank table (Table 3). The basis behind the mean rank table is that the respondents ranked the highest mean value of 1.0 first. All the proprietors of the fast food business in the area affirmed that the significant factor of the location of fast food was the availability of large population density and proximity to CBD/tourist attractions. All the proprietors further stated that another primary reason for the location of the business was because the area is the CBD. Thus, all these major location factors have a mean value of 1.0 respectively. Furthermore, the interview with the proprietors further unravelled that security was another factor for the location of fast food. Security has a mean rank value of 0.8. The proprietors affirmed that proximity to the CBD/tourist attraction sites, large population density and adequate security has the highest mean value of 1.0. Again, the proprietors further reaffirmed closeness to other fast food outlets/competitors as another significant factor. Their responses indicate that closeness to other fast food outlets/competitors has a mean value of 0.7. Correspondingly, from the interview, personal consideration and closeness to significant facilities have a mean value of (0.6) and (0.4). The proprietors further accentuated that other essential facilities that motivated the location of fast food include, among other factors, recreational sites, banks, motels, hotels, schools, companies, and telecommunication firms. They emphasised good road networks (0.4), availability of inexpensive land (0.4), and nearness to the market (0.3) as other factors of location. In contrast, none of the respondents considers government regulations/zoning constraints a factor (0.0). Therefore, the summary of the mean value indicates that the closeness of fast food to a good security network, large population density, and CBD/tourist attraction sites could lead to high patronage and profitability.



Table 3: Factors of the location of fast food outfits in Calabar Urban

Factors	Number of fast food outlets	Sum	Mean rank
Proximity to tourist attraction/CBD	47	47	1.0
large population density	47	47	1.0
Security	47	36	0.8
Closeness to other fast food outlets/competitors	47	34	0.7
Personal considerations	47	30	0.6
Closeness to major facilities	47	19	0.4
Good road network	47	12	0.3
Availability of inexpensive land	47	10	0.2
Nearness to market	47	5	0.1
Government regulations/zoning constraints	47	0	0.0
Others	47	0	0.0

Source: Authors fieldwork

The pattern and nature of the patronage

Table 4 depicts the frequency of patronage of fast food at various times of the year. The respondents revealed that public holidays had the most considerable patronage (22%), followed by those who eat every other day (20%). However, 33% of respondents further revealed that they prefer fast food at least once a week and daily. While 16% of the respondents further indicated that they go to fast food on weekdays and twice a week. Their responses further revealed that 6% of the patrons go there once a month. In contrast, the least number (3%) claimed they patronise the business thrice a week.

Table 4 Frequency of patronage

Frequency	Frequency	Percent
Daily	52	13
Weekdays	32	8
Every other day	76	20
Once a week	76	20
Public holidays	87	22
Twice a week	30	8
Once a month	22	6
Thrice a week	13	3
Total	388	100

Source: Authors fieldwork

The structured questions aimed to assess the pattern and nature of patrons' patronage of fast food in the area. Their responses revealed information about the pattern and nature of patronage. As a result, Table 5 shows statistics on patrons' distance from fast food outlets and their patronage frequency. Thus, 19% of the respondents indicated that their distance to fast food outlets was approximately 0.5km. Also, 36% of respondents said that the distance between their operating environment and fast food outlet was between 500m and 1km on average. In comparison, 21% of the respondents stated that their distance was between 1km and 3km. Furthermore, 24% of respondents further stated that they travelled between 3 and 5 kilometres. Also, the respondents further emphasised that their distance was at most 5 kilometres.

Table 5: Distance of patrons

Distance	Frequency	Percent
< 0.5km	72	19
500m – 1km	141	36
1km – 3km	82	21
3km – 5km	93	24
Total	388	100

Source: Authors fieldwork



The data in Tables 4 and 5 were used to perform spearman's ranked order correlation analysis to determine the patrons' distance from the fast food outfits and their frequency of patronage. The results findings, as presented in Table 6, revealed a substantial negative correlation between patrons' distance from the fast-food outfits and their frequency of patronage, meaning that the larger the distance between patrons and fast-food establishments, the lower the degree of patronage. Thus, patrons are less inclined to eat at fast food distant from their operating environment. Therefore, fast food closest to patrons profits the most from their business.

Table 6: Summary of correlation analysis showing patrons' distance from the fast-food outfits and their frequency of patronage

Statistics	Value
r _s value	-0.7**
Sig. -(2-tailed)	0.0
N	388.0

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

The researchers further served questionnaires to the fast food patrons to determine the time of the day the business received the highest patronage. Their responses revealed that the afternoon period had the most significant frequency of patronage (51%), followed closely by the evening period, which had 40%, and the morning period, which had 9%. From the interview, the researchers concluded that the afternoon time has the highest degree of patronage. This means that more people prefer to eat in the afternoon and evening. The study further shows that fast food patronage changes significantly depending on the time of day.

Discussion

The attraction of people to Calabar urban, Nigeria, due to educational institutions, health facilities, city water supply, security services, power supply and other basic social amenities significantly influence the establishment and concentration of culinary outlets. The possible relationship between people and fast food consumption is noticeable in the locational behaviour of fast food around institutions, public facilities and attractions. This development has made urbanisation a driving factor in economic and human growth in the area. Nevertheless, urbanisations in Calabar urban have a corresponding growth with economic development and benefit in the area. The study finding has revealed that the prolific growth of fast food around CBD/tourist attractions (Figure 3) could be attributed to urbanisation and the availability of significant facilities in the area, such as shopping complexes, hospitals, recreational parks, banks and accommodations. Findings further revealed forty-seven operational fast food and twenty-six tourist attraction sites clustering around the CBD (Figure 2). The research also revealed that the geographical distribution of fast food assumed a clustered pattern with an R value of approximately 0.4, the z score value constituting -8.2, and the P value was <0.05 (Table 2). In addition, Figure 4 depicts the geographical distribution pattern of fast food in Calabar-municipality. Also, the NNA result for fast food in the area shows an R value of 0.3, with a z score value of -8.1, while the p value was < 0.05. The assumption is that fast food in Calabar-municipality assumed a clustered pattern (Figure 4). In contrast, In Calabar-south, however, a distinct pattern was observed (see Figure 5). The assumption is that fast food in Calabar-south assumed a dispersed pattern with an R value of 0.6, while the z score was -2.2; the p value was < 0.05.

Again in Figure 2, it was observed that fast food clustered mostly near major roads and highways, including Marian Road, State Housing, Calabar Road, Murtala Mohammed



Highway (MCC), Etta-Agbor, and Efio-Ette Junction. The study results agree with TFL and the concept of threshold (Brown et al., 2022; DeMarco & Matusitz, 2011; Díaz-Lanchas, 2022; Mathenge et al., 2022; Sui, 2004; Van Meeteren & Poorthuis, 2018). Conversely, other minor streets, including Mount Zion Street, Mayne Avenue, Ikot Ansa, and Federal Housing Estate, have a comparatively limited number. Again, fast food in Calabar urban tends to cluster around essential facilities in the area, such as recreational spots, churches, financial houses, institutions, and security service sites, among other places (Figure 2).

In addition, G-function was used to support the NNA. As illustrated in Figure 7, the G-function showed that the graph rises very steeply between 0 and 200m with over 40% of fast food occurrence. It slows down a little and rises very steeply again to a distance of about 400m with about 80% of the occurrences. Therefore, 100% of fast food occurred between 0 and 1100m. (Figure 5). The research observed that the clustering pattern of these fast food might strain existing infrastructural facilities, cause traffic congestion, a high turnover of garbage, and create disparities in living conditions between clustered areas and other parts of the study area. The findings also ascribed the clustering trend to the fact that most business owners seek to place their businesses where they may achieve the threshold population, allowing profitability. This finding is similar to the research of Eneyo et al. (2022), which showed that eateries cluster in cities' central areas to attract high patronage, resulting in high profitability. This study, however, contradicts the findings of several researchers who discovered that most food outlets and other service sectors assumed random and uniformly dispersed patterns in some locations (Smith, 1985; Ali & Abdullah, 2012; Wiegand & Moloney, 2013; Eneyo et al., 2017; Xue et al., 2017; Eneyo et al., 2018; Liu et al., 2022; Sadahiro, 2022; Tian et al., 2022).

Furthermore, the research revealed the primary factors of the location of fast food in Calabar urban, Nigeria. All respondents agreed that the availability of large population density and closeness to CBD/tourist attractions was crucial in fast food locations. As a result, these significant location variables have a mean value of 1.0. Since fast food outfits are located in densely populated areas, more people are likely to patronise the establishment. The findings are compatible with TFL, which holds that everything is interconnected; however, near things are more related than remote things (Tobler, 2004; Zheng et al., 2010). Without a doubt, as distance increases, the intensity and frequency of patronage reduce. The study also opines that the distance of patrons affects patronage. The results further revealed that locating fast food in the area is a good marketing strategy that can help the proprietors of the business gain access to potential patrons. The location could also lead to more significant accessibility and a high degree of patronage.

Also, the study uncovered that proprietors of fast food considered the safety and security of their potential patrons, most notably given the state's heightened insecurity, such as abduction, robbery, and theft, among other things. This explains why most fast foods are situated in core urban areas and other security-conscious zones, such as police stations and army camps. According to the research, proximity to other competitors and necessary amenities such as schools, banks, parks, laundry services, internet, markets, and other hospitality industries, affected the business's location. This indicates that proximity to these places of interest draws prospective patrons and maintains a significant market share and profit from other facilities. These facilities draw patrons who can afford the food prices at the fast food. Several studies have shown that fast food often clusters close to CBD, urban areas, residential areas and essential infrastructure to attract potential customers at all hours of the day (Porac & Thomas, 1994; Tiesdell & Slater, 2006; Simon et al., 2008; Nixon & Doud, 2011; Dunn et al., 2012; Mulky, 2013; Ayatac & Dokmeci, 2017; Reiffenstein, 2017; Jung & Jang, 2019; Ergun et al., 2020; Widaningrum et al., 2020; Drezner. et al., 2022). The fast



food business is consumer-focused and market-driven; it requires many patrons to break even and sure future expansion, growth and sustainability.

The respondent further affirmed inexpensive land availability and a robust transit system as a factor of fast food location. Therefore, the consequence is that fast food outlets close to transit networks and inexpensive property attracts prospective patrons and high patronage. Nonetheless, the participatory research assessment study found that most fast food outfits are situated along major thoroughfares and have relatively high land rent. These tendencies were restricted to a few fast foods. The proprietors chose locations where they could afford to pay their rent. However, the research revealed that the closeness of these fast foods to traffic intersections, Calabar carnival routes, and significant markets in the area (which was the most negligible crucial geographical factor) also contributed to the high patronage and profitability of the business. Nonetheless, despite the spatial agglomeration of most fast food, zoning or legislation constraints, as well as other criteria such as the type and style of the menu, among others, were not a substantial factor in the proprietors' site of choice.

Nevertheless, the study revealed a substantial negative correlation between patrons' distance from the fast food outfits and their frequency of patronage, meaning that the larger the distance between patrons and fast-food establishments, the lower the degree of patronage. The study further showed that fast food patronage fluctuates substantially depending on the time of day. This finding aligns with that of Olumide & Amobichukwu (2013) and Mbanza et al. (2020) who discovered that patronage reduces with increasing distance from fast food. Hence, fast food outfits nearest to patrons are patronised most. This study also supports the distance decay function, which states that patrons' interactions tend to diminish once their distance is far from where the business is located (Mckercher & Lew, 2003; Kwate et al., 2009; Eja et al., 2015; Hooper, 2015; Yu et al., 2017; Tan et al., 2022; Xu et al., 2022). The study further aligned with Brown et al. (2022) and Eneyo et al. (2018), who found that patrons of any business patronise the business within their operational environment. Based on the research, patronage declines as businesses get further distant. Thus, by implication, while patronising any company, individuals evaluate the expense of transportation. The study further revealed that most people prefer to eat fast food near their operational environment.

In line with the above assertion, the assumption is that distance influences the nature and pattern of patronage. However, when fast food experiences low patronage, this indirectly influences its sustainability, viability and growth. Accordingly, the study revealed that business owners should consider closeness to patrons when locating their business; when this is done, such a business runs efficiently. The study's most noticeable and substantial change included three distinct eras of patronage (vis the morning, afternoon and evening period). It further revealed that people prefer to eat fast food in the afternoon and evening. This research found that fast food consumption was exceptionally high in the late afternoon and evening, thereby enhancing the income of proprietors of the business. The study affirms that most businesses obtained the most extraordinary patronage in the afternoon and evening/night.

Conclusion

The study demonstrated the proliferation of fast food in Calabar Urban, which has resulted in a rising demand for fast-food consumption and a rise in the number of fast-food establishments. Also, the geographical distribution of fast food and its proximity create the basis of patronage. The study showed that fast food outfits assumed a clustered pattern around CBD/tourist attraction sites, security-conscious areas, large population density, and other significant facilities. The clustered pattern of distribution strategy may be due to its tremendous influence on its functionality and success. The current research also found that



one crucial aspect affecting the rapid spread of fast food in Calabar urban is the proprietors' emphasis on attracting prospective patrons. Similarly, the study showed that the clustered pattern of fast-food locations played a significant role in developing and expanding fast food. The study is essential for researching the geographical distribution of fast food and other tourist sector byproducts in related environments. Thus, fast food outlets should be located where there are constant patrons since this would increase profit and the long-term sustainability of the business. Again, the study proposes that the Cross River state government must implement a policy to regulate the introduction of fast food. The plan should also include a method for regulating the number of fast food outfits in a particular area. The study recommended that fast food proprietors and government evaluate the critical factors of the geographical distribution of fast food in the area for the long-term viability of the business. Again, urban planners should develop more CBDs to lessen the patrons' distance. Again, this research demonstrated that the proliferation of fast food in the area is integral to tourism development. The findings suggest that fast food outlets are a suitable development approach, primarily in locations that have already established themselves as tourist destinations. However, to fully comprehend fast food distribution in-depth, more research should be carried out to determine the socioeconomic reasons fueling the location of fast food in Calabar urban. Why fast food patrons eat near security zones and tourist attractions/CBD is worth looking at. More study is needed to determine why most fast food patrons eat in the afternoon and evening rather than in the morning.

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