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IMPACT OF VEHICLE CONGESTION ON DISTRIBUTION OF PRODUCTS IN NAIROBI: A CASE OF FARMERS CHOICE LIMITED (FCL)

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ABSTRACT

The problem of congestion plagues all the major cities in the world. In Nairobi the problem is even more pronounced. The purpose of this study was to determine the impact of vehicle congestion on the distribution of fast moving consumer goods (FMCG) in Nairobi. This study was guided by the following specific objectives; to investigate the causes of vehicle congestion and the effects of vehicle congestion on distribution of products. The research design adopted in the study was descriptive focusing on Farmers Choice limited (FCL). Stratified sampling technique was used to select 94 from 240 FCL employees. Data was collected using questionnaires and analyzed through univariate analysis. The study found that poor infrastructure planning were two major causes of congestion in Nairobi. The study found that the vehicle congestion affected distribution of products due to the time lost in hold ups, wasted time while looking for parking to offload the cargo. To deal with these the company had implemented distribution strategies such as market segmentation, use of motorbikes and trolleys, direct marketing and linkage with supermarkets. The study recommended that the company needs to join hands with other stakeholders to ensure upgrade of the road network and be involved in campaigns aimed at changing road use attitudes among drivers and residents in Nairobi.

Key Words: *Congestion, Distribution, fast moving consumer goods*

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INTRODUCTION

Cities across the world will continue witnessing rising vehicle congestion over the next decades. This condition will in turn have varied impacts on organization distribution strategies, not only in cities, but over the whole globe (Harrison & Hoek, 2005). The world inventory of cars, trucks, and buses has been rising faster in percentage terms than the population of human beings in both developed and developing nations. The total vehicle population just about doubled from 752 million in 2000 to 1,322 million in 2016. In Kenya the number of vehicles increased from 0.819 million in 2006 to 2.703 million in 2016 (CEIC, 2019).

As the number of vehicles increases, roads and transit system are not expanding in commensurate rates due to limited resources thus a huge infrastructure deficit. This result in disruption and transportation breakdowns which results in lost sales revenue as well as customers. It can also result to plant close from lost sales as well as suppliers not able to supply on time. Development is also affected as a result of wasted man hours not mentioning the fact that large numbers of poor people in developing nations are moving into urban regions from rural areas (Harrison & Hoek, 2005).

With the prevalent vehicle congestion, there is need therefore for organizations that sell FMCG especially in congested metropolitan cities like Nairobi to devise strategies for ensuring that they distribute in the congested cities. Just as companies invest on other strategic tools, a company must begin to develop a distribution position in anticipation of the future (Hamel & Prasad, 1994). Companies today therefore are placing greater emphasis on marketing logistics for ensuring that they are ahead in the competition as distribution is an important customer service. A company driven by distribution method has a unique or distinctive approach to moving tangible or intangible things from one place to another. All opportunity such a company pursues must optimize that distribution method (Robert, 2000).

A major portion of the monthly budget of each household is reserved for FMCG products. The volume of money circulated in the economy against FMCG products is very high, as the number of products the consumer use is very high. Competition in the FMCG sector is very high resulting in high pressure on margins (World Bank, 2008). FMCG companies maintain intense distribution network. Companies spend a large portion of their budget on maintaining distribution networks. New entrants who wish to bring their products in the national level need to invest huge sums of money on promoting brands. Manufacturing can be outsourced. A recent phenomenon in the sector was entry of multinationals and cheaper imports. The market is more pressurized with presence of local players in rural areas and state brands (Kitchen, 2007).

Farmers Choice limited is a private limited company incorporated in Kenya. It is business of processing meat. Meat is a perishable product that calls for efficient distribution. To do this FCL must have a dedicated distribution network, that have to go through the chaotic congestion in Nairobi because of the current increases in the number of vehicle entering the city, FCL main sales area is therefore a serious challenge which call for distribution logistics that would give the organization a competitive advantage over the other organization, and with stiff competition in this very vibrant and turbulent environment, having a competitive edge is a must for organization that would want to survive (www.farmerschoice.co.ke). This study sought to investigate the causes of congestion by exploring the genesis of this problem and how it affects the distribution of products with a case on Farmers Choice Limited.

LITERATURE REVIEW

The literature reviewed reveals some causes of traffic congestion. Heggie and Vicker (1998) state that vehicle congestion in many cities is as a result of inadequate planning and poor traffic management. The weather also sometimes affects the transport system. Environmental conditions can lead to changes in driver behavior that affect traffic flow. Due to reduced visibility, drivers will usually lower their speeds and increase their headways when precipitation, bright sunlight on the horizon, fog, or smoke are present. Wet, snowy, or icy roadway surface conditions will also lead to the same effect even after precipitation has ended (Cassidy & Mauch, 2004). Special events occasionally cause "surges" in traffic demand that overwhelm the system (Sankaran, 2007).

Karuga (1993) blames the local governments for failure to implement various planning recommendations. The government keeps forming taskforce which come up with great proposals which can mitigate such as the metropolitan decongestion strategy of 2009 (Government of Kenya, 2009). Obudho (1997) found that Nairobi's transportation problems results from uncoordinated and non-focused urban and regional policy strategies for the city. Butonyi (2004) found that the causes of vehicle congestion are lack of planning and poor traffic management, lack of working traffic lights as well as there is also lack of seriousness from the law enforcers who watch as traffic rules are contravened. King'ori (2007) found that most stakeholders in the *Matatu* industry blame the Transport Licensing Board for the congestion experienced in the Nairobi city.

Several studies have been conducted on the impact of congestion on the supply chain. In the UK McKinnon et al., (2009) noted that the level of traffic congestion on the UK road network keeps steadily increasing and thus impairs the efficiency of logistical activities. Dekker, et al., (2009) argues that congestion increases the costs of delivering goods and services, because of the increased travel times and operating costs incurred on the transportation system. These costs include longer operation hours, delay penalties, spoilage. Congestion affects consumer numbers as transport costs increases and the worsening quality of life (Reeder, et al., 2001; Weisbrod, Vary & Treyz, 2001). This in turn affects firm's profitability and reduces competitiveness due to higher operating costs (Fernie et al., 2004).

METHODOLOGY

The research design employed in this study was descriptive survey. Descriptive studies describe characteristics associated with the subject population. The target population in the study was the 240 sales assistants, sales people and supervisors of FCL. Stratified sampling technique was used to select the 94 respondents as the sample including seven sales supervisors, 27 sales people and 60 assistant's sales persons. Data was collected using a questionnaire and analyzed using descriptive statistics.

RESULTS

Causes of Vehicle congestion

In this section the respondents were provided with several statements on the causes of congestion and requested to rate them according to the given likert scale. The responses were discussed below.

High Number of Cars: The respondents were asked to state the extent to which they agreed that high number of cars in the city was a cause of vehicle congestion. From the results shown in Figure 1, the study found that 5% said it did not, 9% said it did to a very low extent, another 9% said it did to a moderately low extent, 45% cited that it did to a moderately large extent while the remaining 32% cited that it did to a very large extent.

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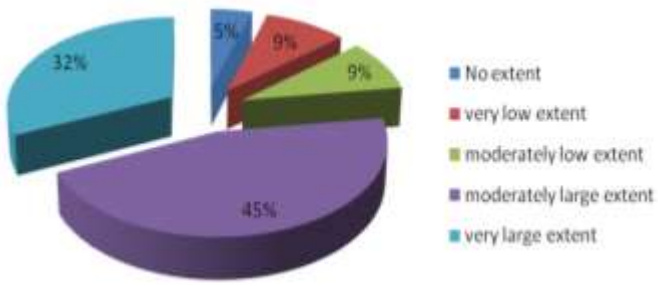

Figure 1: Extent to which number of high cars causes vehicle congestion in Nairobi

The number of cars used by Kenyan emerged as the main cause of congestion in Nairobi. Most employees and small business owners had personal cars which usually carried one or two persons. This contributed to the massive traffic jams. The situation on the Kenyan roads as brought out by the findings of the study can be linked to Nagatan, (2002) who asserted that once roads are overwhelmed by the number of cars on the roads there is abound to be a traffic gridlock. The results of the study inferred that the demand for Nairobi roads was higher than the optimum capacity which the road infrastructure can handle.

Lack of Proper Public Transport Infrastructure: The study was also interested in establishing whether the lack of public transport infrastructure in Nairobi was a cause of vehicle congestion. From the responses summarized and presented in Table 1, the study found that 9% said it did not, 14% said it did to a very low extent, 9% said it did to a moderately low extent, 23% said it did to a moderately large extent while 46% said it did to a very large extent.

Table 1: Extent to which lack of public transport infrastructure causes vehicle congestion in Nairobi

	Distribution	
Extent Rating	**Frequency**	**Percent**
No extent	8	9.1
Very low extent	12	13.6
Moderately low extent	8	9.1
Moderately large extent	20	22.7
Very large extent	40	45.5
Total	**88**	**100.0**

Thus, from these findings, it was deduced that to a large extent lack of public transport infrastructure caused vehicle congestion in Nairobi. This finding of the study agreed with other studies findings (Karuga, 1993; Obudho 1997 and Butonyi, 2004) who contended that congestion in Nairobi was largely due to poor urban planning which had resulted in having an inadequate road infrastructure. The road network in Nairobi was overwhelmed by the various feeder roads and this coupled with poor traffic management complicated the fact also noted by Karuga, (1993). This position was also held by Heggie and Vicker (1998), who asserted that vehicle congestion in most cities was an outcome of poor planning and improper traffic administration.

Nature of the Road System: The study also sought to establish from the respondents the extent to which they thought that bad roads and road system caused vehicle congestion in Kenya. The results summarized and presented in Figure 2 indicated that 9% of the respondents said that it did not, 9% said it did to a very low extent, 14% said it did to a moderately low extent, 32% said it did to a moderately large extent, and 36% said it did to a very large extent.

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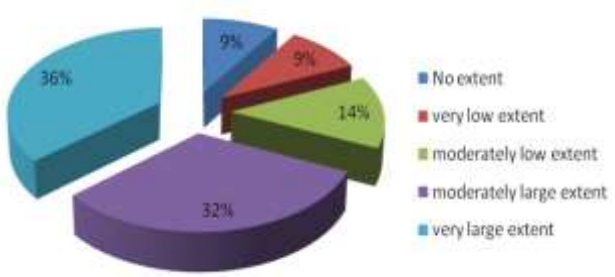

Figure 2: Extent to which bad roads and road system causes vehicle congestion

Rapid Growth of Nairobi

The study sought to establish the extent to which the rapid population growth causes vehicle congestion in Nairobi and the results were shown in Table 2.

Table 2: Extent to which rapid population growth causes vehicle congestion in Nairobi

Extent Rating	Distribution	
	Frequency	Percent
No extent	8	9.1
very low extent	8	9.1
moderately low extent	12	13.6
moderately large extent	24	27.3
very large extent	32	40.9
Total	**88**	**100.0**

As shown in Table 3, the study revealed that 9% of the respondents said it did not, 9% said it did to a very low extent, 14% said it did to a moderately low extent, 27% said it did to a moderately large extent while 41% said it did to a very large extent. The results implied that majority of the respondents agreed that the rapid population growth in Nairobi was a cause of vehicle congestion as shown by 68%.

Ineffective Traffic Management: The study also sought to establish the extent to which ineffective traffic management was a cause of vehicle congestion in Nairobi. From the results summarized and presented in Figure 3, the study found that 36% of the respondents said it did to a very low extent, 23% said it did to a moderately low extent, 14% said it did to a moderately large extent, and 27% said it did to a very large extent. The results in Table 3 implied therefore that majority of the respondents agreed that inefficient management caused vehicle congestion to a low extent as shown by 59% of the respondents.

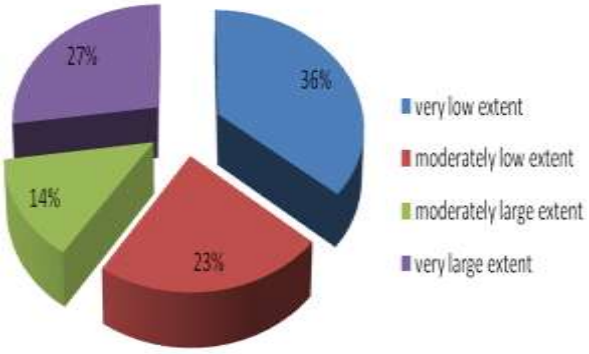

Figure 3: Extent to which ineffective management causes vehicle congestion in Nairobi

Road Accidents and Incidents: The respondents were further asked to state to what extent road incidents and accidents caused vehicle congestions in Nairobi. From the responses summarized and presented in Table 3, the study found that 4% of the respondents cited that it did not, 32% said it did to a very low extent, 32% said it did to a moderately low extent, 23% said it did to a moderately large extent while the remaining 9% said it did to a very large extent.

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Table 3: Extent to which road incidents/accidents causes vehicle congestion in Nairobi

Extent Rating	Distribution	
	Frequency	Percent
No extent	4	4.5
very low extent	28	31.8
moderately low extent	28	31.8
moderately large extent	20	22.7
very large extent	8	9.1
Total	**88**	**100.0**

The results in Table 3 implied that majority of the respondents were in agreement that road incidents/accidents were not a major cause of vehicle congestion in Nairobi as shown by 68%.

Work Zones: The study sought to establish to what extent work zones caused vehicle congestion in Nairobi. As noted in Figure 4,

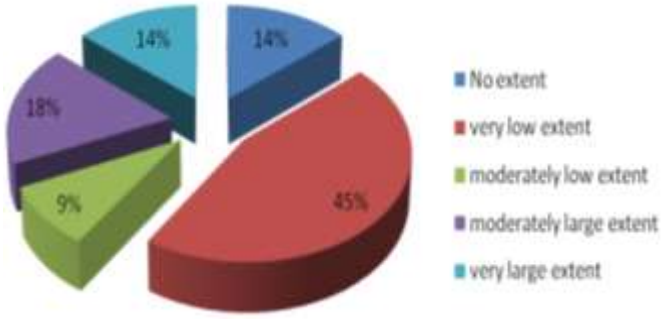

Figure 4: Extent to which work zones cause vehicle congestion in Nairobi

The study found that 14% said work zone did not cause vehicle congestion, 45% said it did to a very low extent, 9% said it did to a moderately low extent, 18% said it did to a moderately large extent, while 14% said it did to a very large extent. The results implied therefore that the respondents concurred that work zones to not cause vehicle congestions in Nairobi as shown by 68%. Traffic congestion was also attributed to work zones. As noted by Cohen and Southworth, (1999) the issue of work zones whereby there is ongoing construction going on in the roads also contributes to congestion experienced in Kenya roads.

Weather Conditions: The study further sought to investigate the extent to which weather events caused traffic jams in Nairobi. From the responses summarized and presented in Table 4, the study found that 18% of the respondents cited that weather events did not cause vehicle congestion. Further, 41% said they did to a very low extent, 27% said they do to a moderately low extent, 9% said they do to a moderately large extent while 4% said they did to a very large extent.

Table 4: Extent to which weather events cause vehicle congestion in Nairobi

Extent Rating	Distribution	
	Frequency	Percent
No extent	16	18.2
very low extent	36	40.9
moderately low extent	24	27.3
moderately large extent	8	9.1
very large extent	4	4.5
Total	**88**	**100.0**

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The results in Table 5, indicated that the respondents agreed that weather did not influence vehicle congestion in Nairobi as shown by 83%. The weather conditions which contributed to the congestion in Nairobi included rains which may be a heavy downpour or a drizzle. When rain falls especially during the rush hours (morning and evening) there results congestions in the roads of Nairobi.

Special Events: The sought to know the extent to which special events caused vehicle congestion in Nairobi with results being shown in Figure 5. The study found that 31% said it did not, 41% said it did to a very low extent, 14% said it did to a moderately low extent, 9% said it did to a moderately large extent while 4% said it did to a very large extent.

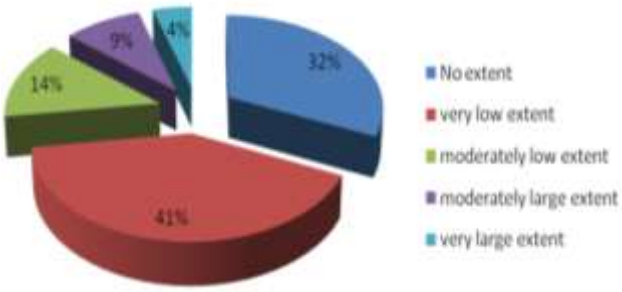

Figure 5: Extent to which special events cause vehicle congestion in Nairobi

The results in Figure 5 revealed that majority of the respondents were in agreement that special events did not cause traffic jams in Nairobi as shown by 87% of the respondents. These results were also summarized and presented. There were various special events which led to congestion in Nairobi. These included such events such as graduations, wedding and funeral processions as well as presidential and state motorcades. These events caused traffic hold ups in the city roads.

Effects of Vehicle Congestion on Operations and Product Distribution

The respondents were asked to rate the degree to which they felt vehicle congestion affected business operations as well product distribution.

Effect on Business Operations: The study revealed that 4% of the respondents thought that vehicle congestion impacts on business operations to a moderately low extent, 64% cited that it did so to a moderately large extent while 32% said it did to a very large extent. The results were presented in Table 5. As shown, majority were in agreement that vehicle congestion had a large influence on business operations.

Table 5: Extent to which vehicle congestion impacts on business operations

	Distribution	
Extent Rating	**Frequency**	**Percent**
Moderately low extent	4	4
Moderately large extent	56	64
Very large extent	28	32
Total	**88**	**100**

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Effect on Product Distribution: The respondents were asked to state the extent to which they believed that vehicle congestion affected distribution of products.

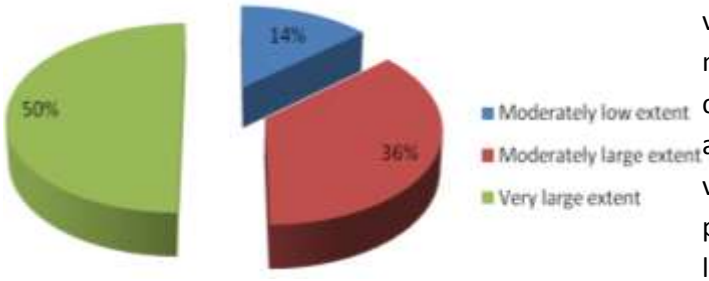

Figure 6: Extent to which traffic affects the distribution of products

From the responses summarized in Figure 6, the study found that 14% said it did to a moderately low extent, 36% said it did to a moderately large extent while 50% said it did to a very large extent. The results implied that majority of the respondents believed that to a large extent, vehicle congestion affected distribution of products.

Vehicle congestion was found to affect distribution of products. This was shown by 86% of the respondents. These respondents cited that vehicle congestion was affected distribution of products to a moderately large and very large extent.

Vehicle congestion was noted to affect distribution of products due to the time lost in the traffic hold ups. So much time was wasted on the roads. The respondents indicated that they wasted even more time while looking for parking to offload the cargo. Second it was noted that with more time being used to deliver a product this meant that more funds had to be invested to enable movement of large volumes of products to various parts in the city. If there was no congestion one vehicle could be used to ply various routes but with the incessant traffic jams it calls for several cars and motor vehicles to take the dispatchments to their destinations.

The respondents indicated that the company was forced to undertake extra investments in the distribution infrastructure as a result of congestion. The company had to invest in special refrigerated vehicles to ensure that the products are fresh. This meant that the cost of the goods supplied by the company had to be adjusted upwards as the costs of additional fuel and additional vehicles as well motor vehicles were factored in. Meat being a perishable product also meant that the longer stay in the roads led to lowering the quality of the products.

The high vehicle congestion led the company to incur higher costs of fuel and high vehicle maintenance costs. More hours spent in the traffic means that more fuel is consumed by the vehicles. The longer working hours for those involved in distribution meant more wages for the overtimes. This increases the operating costs of the company. This means that the cost of the goods supplied by the company had to be adjusted upwards as the costs of additional wages, fuel vehicles and equipment were factored in. the company had also been forced to hire warehouses within the Central Business district at very high rates so as to ensure availability of its products. These findings are in line with Dekker, et al., (2009) who asserted that congestion increases the costs of delivering goods and services, because of the increased travel times and operating costs incurred on the transportation system.

One of them was delays in delivery of products to customers due to long hours on the roads brought about by vehicle congestion on the roads. This complicated the company's financial position as some customers do not honor their debts in time citing such delays. This has even caused cancellation of orders by some customers. The company also suffered from penalties as well as lost business revenue associated with missed schedules. The food industry is built on timed tasks and schedules and missing deadlines is not taken lightly by the players.

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The respondents indicated the customers were usually angry with them in case of late deliveries and this affected their working morale. The company also suffered from penalties as well as lost business revenue associated with missed schedules. The food industry is built on timed tasks and schedules and missing deadlines is not taken lightly by the players.

Distribution Strategies Adopted by FCL to Deal with Congestion

The respondents noted that with increasing purchasing power and a rising middle class, the fast moving consumer goods (FMCG) industry in Kenya had experienced dramatic growth. To leverage opportunities, FCL had developed and implemented deliberate proactive distribution strategies for gaining market access. The company had also segmented the market into three categories namely domestic, international and retail outlets.

Domestic Distribution: All the vehicles were involved in distributing Farmer's Choice products were either refrigerated or specially insulated and operate on a distribution schedule that ensured the most rapid delivery possible to retail stores, hotels, institutions and fast food outlets alike. Nairobi region took up about 70% of the business countrywide. Twenty one routes had been devised to cater for FCL clientele and route segmentation was ideally based on product, customer and geographical location. Careful and hygienic handling of all Farmer's Choice products beginning at the factory, and all through the distribution chain ensures that guaranteed freshness and high quality products are available to all consumers.

International Distribution: The study found that the company exported an average of 2000 Metric tons of processed products annually to about 15 countries across Africa, the GCC (Gulf Cooperation Countries) and the Indian Subcontinent. The international market is segmented into two: COMESA members and Non-COMESA members. The COMESA segment includes Tanzania, Uganda, Eritrea, Ethiopia, Djibouti, Mauritius, The Democratic Republic of Congo, Rwanda and Zanzibar. The Non – COMESA customers included UAE, Bahrain, Ghana, Nigeria, Indian Subcontinent and Oman. Farmer's Choice products were sent by air, road and sea from their factory to destinations worldwide.

Retail Outlets: The respondents indicated that the company had authorized retail outlets which stocked the company's products. These retail outlets are available in six regions namely Nairobi, Coast, Rift Valley, Nyanza, Western and Central. These retail outlets included supermarkets, butcheries and convenience stores. As noted by Sankaran and Wood (2007) to deal with today's increasingly turbulent and complex environments, collaboration among the supply chain players has been widely hailed as a process designed to create competitive advantage.

Use of Large trucks: For long distances and large merchandise, trucks were used. It was noted that the company has its own vehicles and motor bikes that are used by salespeople to distribute the products. Middlemen were also used to distribute products to retailers in major cities and towns. The use of large trucks was seen to be more advantageous as it moved large consignments unlike the vans that move relatively smaller consignments.

Use of Trolleys and Motorbikes: Once the trucks arrive in their destinations they were parked at central places. The products were then distributed by trolleys or by motorbikes. Trolleys were used for transporting light batches within short distances to the customers near the depots and distribution centers. Though most respondents noted that the infrastructure was to blame, they were others who had the view that the company had taken the challenge as an opportunity investing on the use of motor bikes which easily maneuver through traffic jams and ensuring the customer needs are met. The

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ability of company to turn the transport infrastructure challenge into an opportunity may explain the good performance being experienced.

Direct Selling: The company had also started direct selling in the factory whereby distributors, retailers and even consumers can buy directly from the factory. The company has put in place a sales team in the factory to be undertaking this operation. The company was encouraging this mode of operation by offering volume discounts. This saved the company a lot of transportation costs and ensures that the nearby market gets the company's product while marketing efforts are concentrated on other markets.

RECOMMENDATIONS

Stakeholders in the FMCG manufacture and logistics need to join hands with other stakeholders such as driving schools and the media on proper driving etiquette which is lacking in the Kenyan roads. This might go a long way in reducing the congestion experienced on our roads. There was need to change the attitude of Kenyans on the need to have a car. There is need to encourage people hailing from same estates to share cars or use the taxi hailing apps such as Uber, Taxify, Little, Safiri Express and SWVL. This will ensure that there are less cars on the road, the users save fuel and thus increased productivity.

The manufacturing industry stakeholders need to put pressure on the concerned authorities to ensure that the road networks are upgraded to avoid traffic jams. The concerned authorities need to put in place policies encouraging efficient road usage such as having a special lane for cars and vehicles with huge loads and those with over three passengers.

The study recommended that company dealing in FMCG to take note of the effects of congestion on the distribution and integrate these into the decision making concerning the distribution channel. Steps should be taken to reduce the effects and the cost arising out of congestion. On the customer becoming angry, when the deliveries were late the company head office should ensure that it formulates a policy and educates the involved employees on how to handle such cases.

The study recommended that the company needs to add more distribution channels or depots in town so that the distribution can be centralized from the city center. This can help in easing the challenge of delay of distribution. The management can also ensure that the vans for distribution are released very early in the morning so that the congestion cannot affect distribution. The operation should be at times when the traffic is low and moving faster. This will save the company on fuel.

Another recommendation is that the company should consider outsourcing the whole distribution function so that they focus on the core activity of creating the products. This will enhance the company efficiency and reduce on the costs associated with distribution.

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