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EFFECT OF TECHNOLOGICAL INNOVATION ON THE SUSTAINABILITY OF MOTORCYCLE TAXI BUSINESS IN NAIROBI COUNTY

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ABSTRACT

The operations of the motorcycle taxi business in the country are characterized by a very high rate of fatal accidents and deaths resulting from road traffic accidents and litigations hence raising questions on the sustainability of the motorcycle taxi business. Research on the role of technological development in enhancing the sector in Nairobi County is, however, scanty. The objective of the study was to determine the effect of technological development on the sustainability of the motorcycle business in Nairobi County. The study was conducted among motorcycle taxi operators. The descriptive research design was adopted. A sample of 249 motorcycle taxi operators in Nairobi County was selected using a systematic random sampling technique. Data was collected using questionnaires. Before data collection, piloting, instrument reliability, and validity, a pilot study was conducted. Data were computed for descriptive statistics (frequencies, means, and percentages) and inferential statistics such as Pearson correlations and Regression analysis. The findings were presented using tables, graphs, and charts. The study revealed that technology development did not have a significant influence on Motorcycle Taxi Businesses' sustainability in Kenya. Most motorcycle operators, however, reported that technological innovation had contributed to stiff competition for the motorcycle taxi business which is healthy for business sustainability. Slightly more than 50% of the respondents indicated that technological innovation in the alternative transport sector has enhanced transaction processes between motorcycle taxi operators and their customers. Following this, the study recommended that motorcycle taxi operators should be encouraged to increasingly embrace technology to improve their efficiency and hence business sustainability. The government on the other hand should formulate technological policies that are aimed at improving the sector.

KEYWORDS: ***Technological Development, Motorcycle Business, Motorcycle Operators***

1.0 INTRODUCTION

Globally both in developed and developing countries, the motorcycle business has been reported to contribute favorably to their economies. The number of people in Latin America, Asia, and sub-Saharan Africa utilizing motorbikes as an alternative method of public transit for business purposes has increased significantly during the past ten years (ITDP, 2009). The motorbike taxi company in the United Kingdom began in 1990, and since then, it has built a specialized customer base (Georgano, 2016). Besides giving licenses for London's black cabs, the Public Carriage Office (PCO), a division of Transport for London, is in charge of issuing permits for motorcyclists throughout the city. Rental services for motorcycles began in both California and New York City in 2011. Customers are transported on Honda Gold Wings by skilled riders, many of whom are former police motorcyclists (Charney, 2018).

Asia, notably China, India, Indonesia, and Vietnam, is home to the world's four largest motorbike markets. As a result, motorcycles are a major means of transportation in rural Brazil. Motorcycle sales increased by 6.5% in 2008, despite the general decline in the economy. The number of individuals riding motorcycles has been on the rise in various parts of the country for the previous few years. A 51% rise in new registrations occurred in the United States between 2000 and 2005.

Motorcycles are becoming increasingly popular for both personal and public transportation. As the world becomes more motorized, especially in countries that are ranked as low- and middle-income, and as many developing countries' transportation systems become more disorganized and inefficient, motorbikes are

becoming an increasingly popular method of transportation (Kumar & Barret, 2008). About 33 motorcycles per 1,000 people are the current estimate for the number of motorcycles in use in the world. Motorbikes are a popular mode of personal transportation in several countries in Southeast and East Asia (Krishnan & Smith, 1994).

Most motorbikes in South and East Asia are found in Vietnam, accounting for 95% of the total. In Lagos' transportation industry, motorcyclists account for about 80% of all vehicles. In terms of personal mobility, China has 63 percent of the total number of motorbikes, whereas Taiwan has 67 percent (Tung et al., 2008). Among the countries where motorcycles are commonplace in Thailand; Indonesia; Cambodia; Nigeria; Uganda; Ghana; Cameroon; and Cameroon (Odera, 2015). It is expected to be more than eight million motorbike registrations for individual customers and enterprises involved in commercial activities in 2014 in the United States (BTS, 2019).

The technological innovation of boda-boda as means of public transport has bridged the gap of missing middle which has been a dilemma in the transport sector, especially in Africa. The transport sector in Kenya suffers a great deal with only 13% of Kenyan national roads paved. In the past commuters had to walk for long distances to urban centers or to roadsides where they could get taxi or bus, advancement in technologies has come to play in bridging the gap by the introduction of motorcycles as means of public transport (Auko & Chepken, 2016).

The number of motorcycles on the road in Kenya has steadily increased during the last fifteen years. A report by The National Transport and Safety Authority in February 2018 indicated that 1,393,390 motorcycles were registered. The government's 2008 policy of zero-rating motorcycles with engines smaller than 250cc, which resulted in a significant drop in the price of motorcycles, is one reason for the spike (Nyachieo, 2015). The Motorcycle Assemblers Associations of Kenya reports that there are an estimated 4.8 million individuals in Kenya who rely on commercial motorcycles either directly or indirectly for their livelihood. The contribution to the economy generated by the *Boda Boda* motorbike and transport sub-sector is estimated to be around Ksh.219 billion, yearly (Standard Newspaper, 13th February 2018).

Despite the numerous advantages that are credited to the use of *Boda Bodas* in public transportation, the sector has been linked to an increase in the number of accidents and crimes in the country that are tied to motorcycle taxis and other motorcycles (Manyara, 2013). In 2015, Odera produced a paper titled "Boda Boda Economy," in which they highlighted the rising criminal trends in Kenya that include motorcycle taxis. The National Police Service has recognized *Boda Boda* vehicles as a major security danger in the country. A siege mentality and a culture of impunity among *Boda Boda* drivers have also been observed, which has raised serious concerns about the industry.

Motorcycle Taxi Business in Kenya

In Kenya, motorcycle taxis account for 13.5 percent of the total number of people killed in traffic accidents, according to the country's official statistics (NTSA, 2014). A rise in accidents has been recorded within this sector, which suggests that the situation is getting worse rather than better. Between January and September of 2016, there was a 20.4 percent decrease in the total number of road accidents, but the accidents caused by motorcycles rose from 7.96 percent to 10.6%. The National Transportation Safety Board (NTSB, 2016). It is because of this that motorcycle taxis have exacerbated the financial hardships faced by families whose loved ones have been afflicted by the disease.

Legal suits and disputes about the acceptability of commercial motorcycles in Kenya's metropolitan centers have been sparked by the increasing number of traffic accidents caused by commercial motorcyclists that have resulted in fatalities, particularly in densely populated regions. The disputes have centered on the safety of the drivers and their customers most of all. According to new traffic regulations, motorcycle riders in Kenya are required to wear protective gear and their vehicles must be registered with the National Transport and Safety Authority. Passenger and rider helmets are included in the protective gear. The rider should also always wear a neon jacket to make themselves more visible to other motorists. All parties involved in a motorcycle accident need to be protected from financial ruin by having current, valid driver's licenses and insurance on the motorcycles themselves (NTSA Report, 2016).

Statement of the Problem

Business sustainability of the motorcycle taxi business entails the effective management and coordination of social, financial, and environmental demands as well as concerns to ensure the responsible, ethical and ongoing success of the businesses. However, the sustainability of the motorcycle taxi business in Kenya is certainly affected by various risks. Research conducted by AfCAP (2018) established high rates of crashes and injuries among motorcycle taxi riders as a major factor hindering the sustainability of the motorcycle taxi business in Africa. Attempts by the government of Kenya to effectively regulate the operations of motorcycle taxis – both for safety and other reasons – have largely failed, with authorities often unable to keep pace with the

rapid influx of motorcycles into the country as well as the ever-increasing demand for motorcycle services in the country.

The ever-increasing number of motorcycle taxi accidents in Nairobi County is a major threat to the growth and business sustainability in the sector as the accidents have had adverse effects on motorcycle taxi operators as well as making people shun this mode of transport. As a result of the accidents, the victims end up depleting the already scarce resources at their disposal resulting in suffering that is intolerable for the motorcycle taxi operators and the dependent members of the family in their households.

The need of addressing various factors in the motorcycle transport sector to ensure sustainability, as well as competitiveness, is very important. Failure to identify the factors has led to failure by motorcycle taxi entrepreneurs to know the strengths of their business hence unable to match their resources to their strengths to achieve the desired level of business sustainability. When making decisions, entrepreneurs make rational choices among alternatives. The understanding of the key business success factors is important in driving the strategy for the motorcycle taxi business. The motorcycle taxi business is generally a small-scale business that is growing exponentially in Kenya (Pochet et al., 2017).

Efforts by the government in enforcing the regulations of the sector have not been very effective due to the nature of the business. Additionally, no single government agency is specifically mandated to regulate the highly lucrative yet dangerous industry in the country. The regulatory framework that has been put in place by the government through the National Transport and Safety Authority (NTSA) has not been very effective in streamlining the motorcycle industry since most operators have failed to abide by them. In addition, the lack of training for motorcycle operators poses a challenge both for passengers and other road users making technological innovations such as *uber, taxify,* and little cabs to be preferred by passengers since they are safe, reliable, and relatively cheap. Further, little research has also examined the effect of technological innovation on the sustainability of the industry. Locally Oriaro (2017) for example assessed the suitability of a regulatory framework for the operations of businesses in Kenya. This study, therefore, aims to examine the transport sector characteristics and the sustainability of motorcycle taxi businesses.

Study Objective

To determine the effect of technological innovation on the sustainability of the motorcycle taxi business in Nairobi County

Research Hypothesis

$H_{1o:}$ Technological development has no significant effect on the sustainability of the motorcycle taxi business in Nairobi County

Theoretical Orientation

The study was supported by the Functionalism Theory by Alfred Reginald Radcliffe-Brown and Bronislaw Malinowski. This theory provides a sound theoretical basis for explaining the emergence of motorbike taxis and why they are in a state of lawlessness as indicated by various authors and authorities. This theory is relevant to this study as it depicts motorcycle taxis as a significant part of the functioning society and hence the best way to deal with them is to innovate and regulate them so that they can serve their rightful role. The theory upholds the view that technological innovation is one of the major functions of any business setting. This theory therefore explains and interlinks this variable hence explaining fully its effect on the sustainability of motorcycle taxi business

Empirical Literature Review Review

Sustainability of Motorcycle Business

The viability of motorcycle taxi businesses has been the subject of numerous studies in several countries. A study was conducted by Kokwaro and Ajowi (2018) in Kisumu, Kenya, to determine the competitive dynamics that affect the commercial sustainability of bicycle taxis in the city. This investigation was based on the five competitive forces model developed by Michael Potter. By asking respondents to rate how much a variety of influences affected the sustainability of the motorcycle industry, the study found that these pressures have an impact on the long-term viability of businesses. The study, however, lacked clearly defined indicators for assessing sustainability. As part of an investigation into the most important factors of success relating to the operations of the motorcycle taxi business in Nairobi, Mwobobia (2018) also looked at various factors that affect the businesses' sustainability. Factors such as organizational structure, human resources, technology, product innovation, service distribution, finances/budgets, and government direction were included. According to Mwobobia, the success of the motorcycle taxi industry in Nairobi is due to many factors. However, the study examines the amount of money earned daily as well as riders' evaluations of their businesses to evaluate businesses' viability. According to the findings of the study, daily earnings alone were not reliable factors

indicating business sustainability, while the use of self-rating on the subject of company sustainability was prone to bias. When evaluating the long-term viability of motorcycle businesses, the current study takes a different approach than that taken by (Kokwaro et al., 2014).

Cervero (2000) noted that motorcycles have become "the most quickly developing informal mode of transport" (p.17, 21) in numerous regions across the globe as early as the year 2000 in his fundamental study on informal modes of transport in a worldwide scale. According to a study released in 2000, this was the case. Sub-Saharan Africa's urban and rural environments (SSA) have also witnessed this increasing phenomenon. It is commonly referred to as SSA or the African continent to the south of the Sahara. There has been a "massive" growth described by Ehebrecht et al. (2018, p.251), whereas an "exponential" and "unplanned" increase has been described by Kumar (2011). An increasing number of places outside the sub-Saharan African region are seeing a rise in this trend. Sietchiping et al. (2012) note that motorcycle taxis are now “an important part of the urban mobility equation in several capital cities in Sun-Saharan Africa." A study conducted in Douala, Lagos, and Kampala by Kumar (2011) found that motorbikes are exclusively employed in the taxi industry in Sub-Saharan Africa. To put it another way: In Asian countries, a large percentage of motorbikes are privately owned and driven for personal purposes.

There were initially motorcycle taxis in Nigeria in the 1970s. Then, they extended to neighboring countries like Cameroon and Niger in the 1980s and then to Cameroon and Chad in the 1990s. Mozambique, Malawi, Tanzania, Ghana, Angola, Ethiopia, Ivory Coast, Sierra Leone, and South Africa are just a few countries where they've spread since the turn of the twenty-first century (Diaz et al., 2016; Ehebrecht et al., 2018). According to Black et al. (2018), usage and numbers vary widely among countries, with lower numbers in South Africa and Ghana than much higher numbers in places like Nigeria and Angola. This does not take away from Black et al. (2018) highlighting a general increase, even though it is possible to discern a rise across the continent.

According to current research findings, motorcycle taxis became increasingly common in Sub-Saharan Africa during the second wave of urban mobility revolutions. In the early 1990s, the first rebellion led to the removal of public bus transit. Several factors contributed to this, including a lack of funding for post-decolonization public transportation corporations, poor management, and international structural adjustment initiatives (Kumar 2011). As a result, informal minibusses and shared taxis first appeared to fill the hole in the provision of collective transportation, and then motorcycle taxis began to appear. To some extent, the rise in popularity of motorcycle taxis can be linked to the poor quality of exogenous variables (the "push") and the endogenous advantages of the motorcycle ("pull"). Several theories have been proposed to explain this occurrence. In certain regions, these features may not exist at all; they may be commonplace in others.

Technological Innovation

International Centre for Economic Growth (2001) found that most people who start their businesses do so for practical reasons, such as the availability of funds and opportunities, before learning more about the industry by running their businesses themselves. As a result, the learning curve is steep, and the likelihood of failure rises significantly. An increase in productivity can be achieved by improving one's skill set, allowing the informal sector to adopt new technology. Palacios, Juste, Redondo, and Grünhagen investigated the effects of technological opportunism on IT adoption, internal diffusion, and long-term viability (2014). Evidence from the United States and Spain was used in the study. The results of this study were derived from a survey sent to 100 Spanish and 109 American franchises. The researchers found that a company's level of technological opportunism affects the adoption and internal diffusion of new technologies. This factor also boosts the company's long-term viability. Unlike intra-firm diffusion, which is a driver of sustainability, adoption has no impact on long-term viability.

According to Barney (2018), a company's ability to outperform its competitors is enhanced by adopting new technology. Because of their widespread availability, information technology adoption may not be a source of its competitive advantage. Long-term advantages can be expected from information technology only if it is integrated into business processes (such as strategy formulation). An important factor in the rise of competitive supply chain management has been the growing importance of technology in supply chains. Technology adoption in supply chain management has resulted in the development of new services, new functions, and new alliances, among other things, according to Regan and Song (2001).

Technology-enhanced mobility services have hastened the process of rewriting transportation-related rules. Because of this, established procedures and social norms and practices, such as the state's role in transportation, have had to be revised. Thus, ride-sharing platforms are part of the transition to smart mobility. This is the case. This transition is significant as part of a larger shift reshaping the way we shop, travel, and consume goods and services (Marsden & Reardon, 2018).

The choices that technological change brings in terms of multigenerational welfare, distributional matters, public value, and environmental sustainability to steer these changes toward agreed-upon societal goals

must be identified first. Finding and understanding these options is essential to guiding these changes. Because even seemingly insignificant decisions can lock change processes into a negative trajectory for many years, it is essential to have such an understanding (Docherty, 2018). According to Docherty (2018), smart mobility innovations tend to typically

According to Lembaga Demografi (2018), a survey of 3,886 Gojek driver-partners in nine major Indonesian cities found that those who joined the Gojek fleet increased their earnings. After conducting face-to-face interviews with 898 Grab driver-partners, both Tenggara Strategics and the Centre for Strategic and International Studies (2019) concluded that driver-partners incomes increased after they began working with the platform. In support of the digital economy's expansion, platforms and the government frequently cite these studies for their positive findings, a wide range of participants sampled, and the use of multiple methods.

Bharat looked into online taxi driver-partners who both rode motorcycles and drove automobiles. According to his research, he conducted interviews with 80 drivers from Grab and correlated those interviews with data from previous surveys to gain a better understanding of the drivers' previous jobs and why they decided to join Grab. According to Bharat's research, the poor employment prospects in the formal sector and the higher earnings provided by the platforms are the primary motivators for driver-partners to join online transportation fleets.

Uber's launch in London in 2012, according to a study by Rose et al. (2017), was the catalyst for a shift in taxi transportation, which had its beginnings nearly three centuries ago. Uber Taxis' entry into the taxi and private-hire taxi market disrupted a significant number of these businesses, resulting in significant losses. It has become easier for customers and businesses alike to hail cabs thanks to the rise of digital platforms, such as Uber and Lyft, making it easier for people to get around. Because of the widespread adoption of technology by taxi drivers, the transportation industry has been transformed, and as a result, an increasing number of people are downloading taxi apps and using them to get around (MacDonald, 2016).

2.0 MATERIALS AND METHODS

Philosophical Orientation

The study adopted the positivism philosophy. With positivism philosophy, real facts of social phenomena that are considered neutral, predictable, and objective with little regard for the individuals' subjectivity are sought.

Research Design

This study adopted a descriptive survey research design that aimed at collecting data from motorcycle taxi operators in Nairobi County.

Target Population

The target population comprised 726 motorcycle taxi operators in Nairobi County (NTSA, 2021).

Sampling Frame and Technique

A sample size of 249 was arrived at by undertaking a calculation of the target population of 726 having a confidence level of 95% as well as an error of 0.05 through the use of the formula below.

$$n = \frac{z^2.N.\partial_p^2}{(N-1)e^2 + z^2\partial_p^2}$$

$$n = \frac{z^2.N.\partial_p^2}{(N-1)e^2 + z^2\partial_p^2} n = \frac{z^2.N.\partial_p^2}{(N-1)e^2 + z^2\partial_p^2}$$

Where; n = Size of the sample,

N = Size of the population and given as 726,
e = Acceptable error and given as 0.05,
∂p = The standard deviation of the population and given as 0.5, where it is not known,
Z = Standard variate at a confidence level given as 1.96 at 95% confidence level.

Respondents for the study were sampled using the stratified proportionate random sampling technique.

Research Instrument

Primary data was used for the study with self-administered questionnaires were used for the collection of the research data. The research questionnaire comprised both open-ended as well as closed-ended questions which covered each of the variables of the study.

Pilot Study

The pilot testing was conducted using a questionnaire that was administered to 20 respondents. The participants in the pilot study were randomly selected and comprised of motorcycle taxi operators in Nairobi Central Business District.

Validity

Both content and construct validity were used in the study to ascertain the validity of the research instruments. Content validity usually enables a researcher to draw an inference from test scores to a large domain of items that are similar to those on the test.

Reliability

Instruments reliability was computed based on a guide by Rousson, Gasser & Seifer (2012). According to Rousson, *et al.* (2012), if all the constructs yield a construct composite reliability coefficient (Cronbach alpha) with a value of 0.6 or above then it is considered to be adequate for a given study. In the assessment of the reliability coefficient of the research instrument, Cronbach's alpha (α) was used, and it was computed as follows:

$A=k/k\text{-}1\times [1-\sum (S^2)/\sum S^2 sum]$

Where:

α= Cronbach's alpha
k = The frequency of responses
$\sum (S^2)$ = Variance of items summed up individually
$\sum S^2 sum$ = Variance of summed up scores

Data Collection Procedure

A research permit was obtained from the research from National Commission for Science, Technology, and Innovation (NACOSTI), with the help of a letter of introduction from the university. This was followed by the acquisition of a letter of authorization from the management of the motorcycle SACCOs. The questionnaires were administered through the drop and pick method, over 3 days.

Data Analysis and Presentation

Data were analyzed using descriptive statistics such as frequencies, means, and percentages, and inferential statistics such as Pearson correlation and Regression analysis. The Statistical package for social sciences (SPSS) software was used in the analysis. The multiple regression model with the variables was presented as follows:

$$Y= \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

Where:-

Y= Sustainability of Motorcycle Taxi Business
β_0=constant
$\beta_1, \beta_2, \beta_3$ and β_4, = Beta coefficients
X_1= Business support services
X_2= Training
X_3= Entrepreneurial Orientation
X_4 = Technological Innovation
ε = Error term

3.0 RESULTS AND DISCUSSIONS

Respondents Demographic Information

Based on the data presented, it was established that 74.8 % were males while the females were 25.2%. The findings imply that both genders were involved in the motorcycle taxi business in Nairobi County.

From the results, 45.5% of the respondents were aged below 25 years, 34% were aged 25-35 years, 14.3% were aged 36-50 years and 6.3% were aged between 51-60 years. The findings imply that it is the youthful population that is greatly involved in motorcycle taxi business operations in Nairobi County.

From the findings 37.9% of the respondents had O-Level education qualifications, 29.4% of the respondents had college diplomas, 25.6% had bachelor's degrees and 7.1% had postgraduate qualifications. It is implied by the findings that those who participated in the study had attained adequate education levels, which was significant in helping to appreciate the motorcycle taxi business, and therefore they provided accurate and

relevant information necessary for the study. it was also observed that over 50% had been operating for over 3 years. The findings imply that motorcycle taxi operators record significant revenues per day.

Descriptive Analysis

Technological Development

The variable Technological Development data file contained several factors representing the aspects of the same variable. As shown in Table 1, the respondents agreed with the following statements based on the findings: Technological innovation in the alternative transport sector has enhanced transaction processes between motorcycle taxi operators and their customers (Mean=3.74; SD=0.870); and motorcycle taxi Business owners possess the knowledge that is needed for the adoption of the emerging technologies in the transport sectors (Mean=4.34; SD=0.580). However, the respondents were neutral to the following statements: Technological innovation has contributed to stiff competition for the motorcycle taxi business (Mean=3.11; SD=0.840), and that motorcycle operators are also embracing technology to improve their business (Mean=3.04; SD=0.696). The findings of technological development have enhanced transaction processes for motorcycle taxi operators since the operators have adopted emerging technologies and this is significantly enhancing business sustainability. The findings support those of Wamalwa (2009) whose findings indicated that technology has been adopted in the taxi business that eases the ordering process, navigation, and payment. The majority of taxi businesses embraced M-PESA payments, credit cards, and jumbo pay as a mode of transaction hence influencing the better performance of taxi businesses. The findings further concur with those of Olatunji (2015) who established that the application of technology in the operations of taxi businesses leads to business competitiveness, enabling businesses to compete on similar grounds with large well-established organizations. Moshi (2018) also established that the application of technology and innovation avail businesses with valuable information that if well utilized could lead to better performance.

Table 1:
Technological Development

	N	Min.	Max.	Mean	Std. Dev
Technological innovation has contributed to stiff competition for the motorcycle taxi business	238	2	5	3.11	.840
The motorcycle operators are also embracing technology to improve their business	238	2	4	3.04	.696
Technological innovation in the alternative transport sector has enhanced transaction processes between motorcycle taxi operators and their customers.	238	2	5	3.74	.870
Motorcycle taxi Business owners have the knowledge needed to adopt the emerging technologies in the transport sectors	238	3	5	4.34	.580
Valid N (listwise)	238				

Sustainability

The researcher instructed the respondents to indicate the extent to which they were agreeing with statements relating to the sustainability of the motorcycle taxi business, from Table 2, the following statements were agreed with: Motorcycle taxi operators who follow NTSA regulations realize high levels of profits (Mean=4.39; SD=0.639); High revenues are being realized by entrepreneurs with increased adoption of technology in the motorcycle taxi business (Mean=4.39; SD=0.577); The government has put in place policies that have enhanced the profitability of motorcycle taxi business (Mean=4.49; SD=0.541); Enhanced training among motorcycle taxi operators has improved the levels of profitability in the sector (Mean=4.37; SD=0.572) and that generally, increased levels of innovation in the public transport sector has enhanced profitability of motorcycle taxi business (Mean=4.52; SD=0.525).

Table 2
Sustainability

Sustainability	N	Min.	Max.	Mean	Std. Dev
Motorcycle taxi operators who follow NTSA regulations realize high levels of profits	238	3	5	4.39	.639
High revenues are being realized by entrepreneurs with increased adoption of technology in the motorcycle taxi business	238	3	5	4.39	.577
The government has put in place policies that have enhanced	238	3	5	4.49	.541

the profitability of the motorcycle taxi business					
Enhanced training among motorcycle taxi operators has improved the levels of profitability in the sector	238	3	5	4.37	.572
Generally, increased levels of innovation in the public transport sector have enhanced the profitability of the motorcycle taxi business	238	3	5	4.52	.525
Valid N (listwise)	238				

Inferential analysis

Inferential statistics were used in the study to make inferences from data to more general conditions. Inferential analysis was used in determining the relationships existing between the research variables that were studied.

Correlation Analysis

Pearson's correlation was applied in establishing the direction and magnitude of the relationship existing between the research variables that were being studied. A positive Pearson correlation of .084 (or 8.4%) was established between technological Development and Sustainability. The study findings are in tandem with those of Chepchieng (2011) who revealed the existence of a positive and significant relationship between the adoption of technology and the sustainability of the transport business. The researchers concluded that the ability of entrepreneurs in the transport sector to effectively adopt emerging technologies is critical to the success and sustainability of such businesses.

Table 3
Correlation Analysis

		Sustainability	Business support services	Training	Entrepreneurial orientation
Technological Development	Pearson Correlation	.084	.178**	.075	1

Regression Analysis

This section presents the results of the Regression Analysis

Table 4
Model Summary- Technological Development

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.084[a]	.407	.403	.33022

Predictors: (Constant), Technological Development

Table 5
ANOVA- Technological Development

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.183	1	.183	1.675	.197[b]
	Residual	25.735	236	.109		
	Total	25.917	237			

a. Dependent Variable: Sustainability
b. Predictors: (Constant), Technological Development

Table 6
Coefficients- Technological Development

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.127	.238		17.332	<.001
	Technological Development	.086	.067	.084	1.294	.197

a. Dependent Variable: Sustainability

In complementing the ANOVA findings on the Technological Development and Sustainability of the motorcycle taxi business in Kenya, Person's regression coefficients were also generated. The coefficients are presented in Table 6. It was shown by the results that Technological Development brings a value (p-value = .197) of .086 to the model which is significant. The variable Technological Development is therefore not statistically significant since p > .05. Based on the data presented in Table 4.31, the fitting of a linear regression model was done as shown below:

Y = 4.127 + 0.086 + 0.3302.....*Equation 1*

The model indicates that Technological Development positively influences the sustainability of the motorcycle business in Kenya. Implying that an increase in the mean index of Technological development results in an increase in the sustainability of the motorcycle taxi business by a positive unit Mean index value of 0.086 or 8.6 %. This means that the null hypothesis that Technological Development has an insignificant effect on the sustainability of the motorcycle taxi business in Nairobi County, Kenya was accepted.

Hypotheses Testing

Individual tests of all independent variables were performed using regression analysis to determine the influence of the independent variable on the dependent variable. The conclusion was made based on the p-value where if the null hypothesis was accepted, then the overall regression model was insignificant and if the alternative hypothesis was accepted then the overall model was significant. Alternatively, a p-value of less than 0.05, meant that the overall model was significant and had very good predictors of the dependent variable. A p-value above 0.05 implies that the model was insignificant and could not be applied in explaining how dependent variables vary implying a significant relationship between the dependent and independent variables.

H_{1o}: Technological development does not significantly affect the sustainability of the motorcycle taxi business in Nairobi County

The P-value was greater than 0.05 hence the hypothesis was accepted and it was concluded that technological development does not significantly affect the sustainability of the motorcycle taxi business in Nairobi County. The findings contradict those of Palacios et al., (2014) who established that the level of technological opportunism in any business has an influence on the adoption and intra-firm diffusion of technology as well as a positive impact on sustainability.

Summary of the Major Findings

The research study sought to investigate how technology development influences the Sustainability of Motorcycle Taxi Businesses in Nairobi County, Kenya. The study tested the hypothesis that technology development did not significantly affect the motorcycle taxi business sustainability in Nairobi County. This hypothesis was accepted and it was inferred that technology development did not have a significant influence on motorcycle taxi businesses' sustainability in Kenya. A greater proportion of the respondents however reported that technological innovation had contributed to stiff competition for the motorcycle taxi business which is healthy for business sustainability. Slightly more than 50% of the respondents also reported that technological innovation in the alternative transport sector has enhanced transaction processes between motorcycle taxi operators and their customers.

4.0 CONCLUSIONS

The findings indicate that very few motorcycle taxi businesses in Nairobi County have embraced modern technologies to improve their efficiency. The motorcycle taxi operators that are currently using taxi-hailing apps such as Uber, and Bolt among other delivery mobile phone applications are very few hence technology has not had a very significant impact on the sustainability of the business. Technological development and innovation continue to transform the motorcycle taxi industry as operators begin to automate their processes, and accept mobile app bookings and mobile electronic payment methods. The digital requests, as well as dispatches, have brought optimization to independent motorcycle taxi operations allowing them to compete more effectively with other transport operators. The study also concludes that while technological development has made motorcycle taxi operators and customers feel safer through tracking services as customers can receive notifications with details of the motorcycle taxi registration as a security measure as well as the details of operators before the services are used its impact on sustainability is yet to be realized.

Based on the research findings, a further conclusion was made that technological development had a statistically insignificant effect on the sustainability of the motorcycle taxi business. This could be since the operators of motorcycle businesses and owners have not effectively embraced technology to improve their efficiency and hence business sustainability.

5.0 RECOMMENDATIONS

Technological Innovation

Motorcycle taxi operators should be encouraged to increasingly embrace technology to improve their efficiency and hence business sustainability.

The government of Kenya should consider formulating appropriate technological policies that are aimed at improving the motorcycle transport business sector.

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