Int Journal of Social Sciences Management and Entrepreneurship 8(3): 514-526 2024

ISSN 2411-7323

www.sagepublishers.com

ENTREPRENURIAL INNOVATION PRACTICES AND PERFORMANCE OF PUBLIC TRANSPORT SERVICE COMPANIES IN NAIROBI CITY COUNTY, KENYA

[1] Kaguchia Cyrus Muiga, [2] Dr. Nyang'au Samson Paul

[1]Masters Student, Jomo Kenyatta University of Agriculture and Technology
[2]Lecturer, Jomo Kenyatta University of Agriculture and Technology

ABSTRACT

Performance involves all processes, operations and human aspect of the organization, innovation is used to improve performance in organizations. This study examined entrepreneurial innovation practices and performance of public transport service companies. The specific objectives were to establish how payment innovation practices and networking affect performance of public transport service companies. The theories that supported this study were stakeholder theory and diffusion of innovation theory. Descriptive research design was used with questionnaire as the instrument for data collection. The target population was 272 public transport service saccos in Nairobi City County. The unit of observation was one operations manager, matatu operator, chairperson from each Sacco. Simple random sampling was used to pick respondents. Data collected was analyzed using SPSS version 28 and presented in form of frequencies, descriptive and inferential statistics which were used to derive conclusions. The study conducted a multiple regression analysis to determine the relationship between entrepreneurial innovative practices and performance. Correlation results revealed that entrepreneurial innovation practices influences performance of public transport service companies. The results indicated there was a positive and significant relationship between payment innovation practices, networking and performance. The study recommends adoption of innovations in the transport sector to improve performance.

Key Words: Entreprenurial Innovation Practices, Payment Innovation Practices and Networking

Background of the Study

Performance in transport means having a balance between the economic, social and environmental aspects. According to Agarwal and Alam (2021), innovations in transport has attracted major concerns globally due to sustainability issues and need for adaptability in transport quality. Agarwal and Alam (2021) assert that transport should be cost effective and lead to economic development of nations. Therefore, innovations in transport should result to reduced accidents, reduce the commuting time, provide safety and convenience to travellers and drivers. Adoption of ICT can help design smarter cities which offer better transport systems which are sustainable and cost effective.

Roman (2022) asserts that public transport system is an essential element for building sustainable cities as evidenced in the study in Poland. A strong correlation was found between public transport systems and sustainability. Innovations in the public transport system is critical to enhance efficient energy consumption and cost reduction. Roman (2022) indicated that adoption of information sharing technology and data mining would transform public transport for sustainability cities. According to Yu, Xu and Yuan (2023), adoption of digital practices in transport had led to growth in the economy in China. Entrepreneurial innovative practices have a significant impact on performance of the transport industry and enhance sustainable development and operational efficiency. Carlan, Sys and Vanelslander (2019) examination of innovative practices in Belgium concluded that innovative practices in the transport sector led to cost effectiveness in transport, reduction of environmental costs and carbon emission and reduction in operational costs which translate to overall reduction in costs of transport. In addition, Çakar et al. (2021) study in Germany found that increased innovations have significant impact in the performance and sustainability of the transport sector.

According to Odiyo, Bikam and Chakwizira (2021) the motivation for innovations in the transport industry is reducing energy intensity and increasing efficiency. The study conducted in South Africa established that green transport was an endeavour to meet local and global mandate for sustainable transport which resulted to the development of The National Transport Master Plan (NATMAP) (2050) and the National Development Plan Vision 2030. These plans would inform the adoption of green transport through adoption of resource efficient innovations. Mohammad (2021) study on entrepreneurial innovation in Nigeria found that innovation has a positive and significant effect on performance. Innovation in product development was found to have significant effect in the performance of firms. According to Mohammad (2021) adoption of innovative practices such as digital systems in all sectors can lead to positive and significant improvement in performance. In addition, Rust and Sampson (2020) examination of innovations and performance of the transport sector in South Africa found that innovations in research and development and digital transformation have significant effect on performance of the transport sector.

In Kenya, Nairobi City County has experienced very rapid population growth in the last 30-40 years. The Country's capital city serves many businesses and individuals who rely on the transport system. However, according to Omwenga (2019), Nairobi City County faces many transport challenges which include poor infrastructural planning, poor transport network system, high cost of transport, inadequate public transport, high traffic accidents and inadequate development of non-motorised infrastructure network. These challenges have constrained the achievement of the Nairobi Metropolitan Area strategic mission for sustainable transport. A report on the 52nd ISOCARP congress held in South Africa in 2016 indicated that Nairobi experienced transport challenges such as congestion, high road fatalities 47% being pedestrians, high cost of traffic jams tuning to ksh 50 million annually (Achwoka, 2016). The adoption of the Nairobi Metropolitan Area Transport Authority strategic plan 2019-2023 sought to solve these issues by enhancing sustainable transport through various transport innovations such as bus rapid transit (BRT), mass rapid transit (MRTs), Non-motorized transportation (NMT). However, these innovations have not been fully realized constraining the achievement of the strategic mission. According to Mwaka and Karugu (2023) entrepreneurial innovation strategies have positive and significant effect on performance.

Statement of the Problem

The transport sector plays a critical role in the nation's economic development and sustainability. However, the transport sector in Kenya faces challenges such as congestion, pollution, increased transport costs and increased road fatalities (Oladele, 2021). A report by the National Transport and Safety Authority (2024) indicated that Nairobi City County led in the number of road fatalities experienced in the first 2 months of 2024 which resulted to 649 deaths leading to a 4.6% increase in road fatalities. According to Okwema (2021), 38% of road crashes are caused by public vehicles, 72% of the accidents in Nairobi City County occur along major roads. In 2022, public transport in Nairobi City County had a below average score of 25% against a 51.7% threshold of urban mobility readiness index (Wyman, 2023). The socioeconomic losses in Kenya as a result of road crashes are estimated to be more than Sh450 billion (NTSA, 2024). Despite increased expenditures and funding for sustainable policies and goals, transport challenges in the country's capital city are evident (Omwenga, 2019). The 47th ISOCARP Congress 2011 indicated that the public transport system in Nairobi was expensive and inadequate and recommended adoption of transport innovations. The 52nd ISOCARP Congress in 2016 indicated that Nairobi City County still faced challenges of congestion, increased fatalities among pedestrians tuning to 47%, economic loss from traffic jams tuning to Ksh 50 million annually. Nairobi City County adopted a transport strategic plan, 2019-2023, to achieve sustainable transport. However, transport innovations contained the plan such as bus rapid transit (BRT), mass rapid transit (MRTs), Non-motorized transportation (NMT) are yet to be implemented fully 5 years after its adoption. Previous studies on transport innovations found that adoption of innovations such as information and communication technology contributed significantly to achievement of effective and sustainable transport (Oladele, 2021; Raman, 2022; Odiyo, Bikam and Chakwizira, 2021). Makarova et al. (2023) study found that development of smart cities through transport innovations was a key driver for transport sustainability. Wamwea and Moi (2023) study on transport reforms in Nairobi City County found that use of Saccos and enforcement of safety rules had significant effect on road safety. Araghi (2022) study found that transport innovations such as smart ticketing, electric vehicles and information technologies had significant influence on transport performance.

Previous studies present contextual gaps since majority are conducted in the global scope. In addition, the studies present conceptual gaps since they only assess one or two innovative solutions. Wamwea and Moi (2023) study in the transport sector in Nairobi assess safety rules hence present conceptual gaps. This study sought to fill these gaps by examining innovation practices and performance of public transport service companies in Nairobi City County, Kenya.

Main Objective

The main objective of the study was to establish the influence of entrepreneurial innovation practices on performance of public transport service companies in Nairobi City County, Kenya.

Specific Objectives

i. To establish the influence of payment innovation practices on performance of public transport service companies in Nairobi City County, Kenya.
ii. To establish the influence of networking on performance of public transport service companies in Nairobi City County, Kenya.

Theoretical Review

Diffusion of Innovation Theory

Rogers (1962) developed this theory. It provides insights into how new technology is developed and adopted. When adopting new ideas in an organization, various elements are considered which include the need for an innovative idea, development of effective communication channels and communication of these ideas to the whole organization. Rogers (2003) lists the methods used by organizations to adopt new ideas. Organizations adopt new

technology differently. There are early and late adopters based on organizational needs and capacity. Therefore, when new technology and innovation is developed, it is not implemented in organizations simultaneously.

Different organizations accept and implement new ideas based on their organizational culture hence, some organizations are more innovative. According to Wayne (2016), adoption of new ideas leads to improvements in products, processes and services. The theory demonstrates the link between payment innovations and performance of transport sector. Increased innovation in an organization is expected to enhance performance.

Stakeholder Theory

It was developed by Ian Mitroff in 1983. It posits that there are various stakeholders who can impact a company, hence should be included as interested parties. They include customers, shareholders, suppliers, employees, community, government, competitors and trade groups. Stakeholder theory is based on various assumptions that organizations are considered successful when they are able to deliver value to majority of their stakeholders. It considers sustainability in delivering value to business stakeholders. Therefore, the measure of business success is not solely based on profit but value creation that exceeds monetary element.

Stakeholder theory has evolved out of the need to consider all stakeholders and is fundamentally about managing stakeholder relationships and their divergent interests (Preble, 2018). In this study, the theory explains the importance of enhancing stakeholder relationships through networking. The transport sector is managed by various stakeholders who play essential roles in enhancing safety, adequate service delivery, innovation and regulation. It explains the need for collaborations and cooperation in the transport sector for effective adoption of innovative practices to improve performance.

Conceptual Framework

Conceptual framework is the graphical representation of variables, which are the dependent variable and the independent variables. Figure 2.1 shows the conceptual framework that was used in the study.

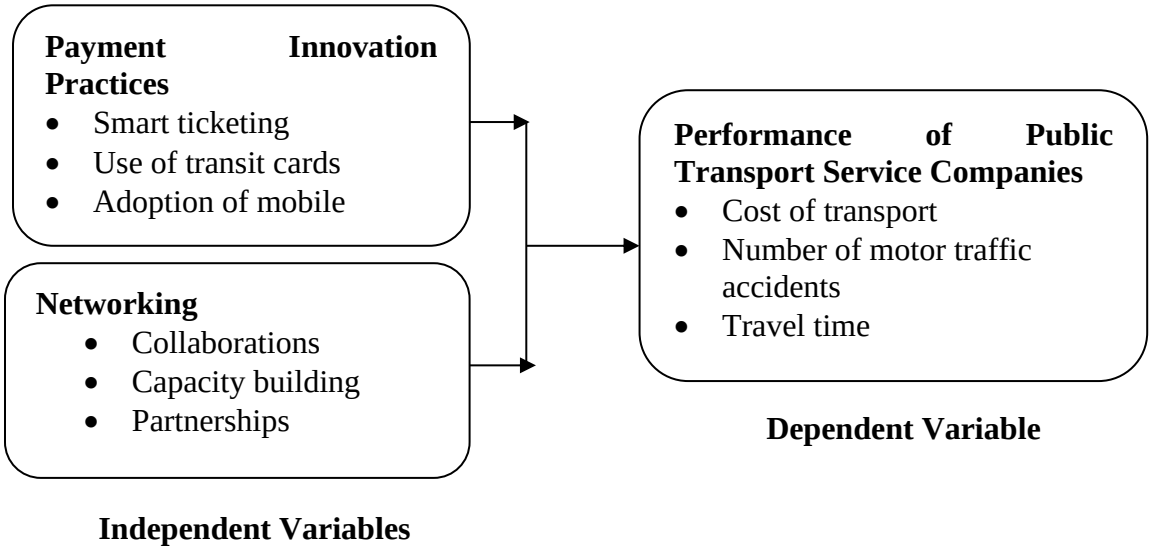

Figure 2. 1: Conceptual Framework Model

Payment Innovation Practices

Payment innovation help companies improve their capability to offer products and services in the market. It is the utilization of technology to make digital payments which are efficient. Payment innovations have improved business conduct by enabling customers purchase and make payments from any region at any time. Payment innovation affects the effectiveness of service delivery by using smart gadgets and mobile payment systems (Gubareva et al., 2021).

Payment innovations include use of mobile payments and integration of mobile applications with bank functionality.

In the transport sector, payment innovations include use of smart ticketing which enables customers to book tickets using online platforms. It eliminates the need for physical visits to booking offices which has enhanced efficiency in the transport sector. Other innovation includes mobile payments which provides users with alternative payment methods. According to Rust and Sampson (2020) payment innovation practices have improved performance of the transport sector by improving efficiency and accountability. Okundi (2021) posits that the advancement of technology has increased payment innovations in the transport sector. The use of computers and smart gadgets to link financial institutions have led to increased access to finances by customers. Customers can book tickets through smart payment applications which improves the effectiveness and efficiency of service delivery in the transport sector.

Networking

Ma1, Jia1 and Kuang (2022) assert that government policies and regulations affect adoption of innovations in the transport sector. Public policy plays a crucial role in determining innovation adoption and development of green technologies and transport systems. According to Ma1, Jia1 and Kuang (2022) adoption of innovative practices in the transport sector requires collaboration and cooperation among various stakeholders to improve performance of the transport sector and reduce the adverse effects of the transport sector on the environment.

According to Oladele (2021) cooperation and collaboration in the transport sector affect adoption of smart innovation. However, excessive interference from the government could hinder adoption of technology innovation which can affect development. Therefore, collaborations in technology innovation are required to achieve development in the transport sector. Salfore, Ensermu and Kinde (2023) assert that value creation through innovative business models and collaborations had a positive and significant impact on performance. Therefore, networking to improve skills and knowledge is essential for sustainable adoption of innovations in the transport sector.

Empirical Review

Payment Innovation Practices and Performance of Public Transport

Rust and Sampson (2020) studied innovation and performance of the transport sector in the global context. They found that innovations in the transport sector such as payment innovations improved performance and created value for stakeholders. They concluded that innovations such as integration of technology systems in transport systems had significant influence on performance of the transport sector. The study recommended implementation of systems approach in the transport sector to improve performance.

Gubareva et al. (2021) examined innovative transport technologies in Russia. They found that implementation of digital technologies such as payment systems and automation of information systems in the transport sector improved performance of the transport sector. In addition, the study found that digital transport systems led to improved transport management and performance. The study recommended implementation of innovative systems to improve performance of the transport sector.

Gubová (2020) conducted a study on adoption of innovations and performance of companies in Slovakia. The study found that green logistics systems led to improved performance among service and products firms. Adoption of information systems such as smart payment technologies, logistics applications and green innovations had significant influence on performance. The study recommended adoption of green innovations to improve performance.

Çakar et al. (2021) studied innovative technologies and performance of the transport sector in the Mediterranean countries. The study used a comparative analysis of developed and developing countries and found that innovations such as smart technologies in developed countries such as France, Italy and Spain and developing countries such as Algeria, Morocco

and Egypt had significant impact on transport efficiency and reduced carbon emissions. The study found that the impact of innovation on transport efficiency was higher in the developed countries. The study recommended adoption of innovative practices to improve performance of the transport sectors.

Networking and Performance of Public Transport

Ma1, Jia1 and Kuang (2022) examined innovation and efficiency of the transport sector in China. The study found that technology innovation has a significant effect on transport efficiency and reduced carbon emission. In addition, the study found that excessive interference from the government affected adoption of technology innovation which hindered development. The study recommended collaborations in technology innovation to achieve development in the transport sector.

Salfore, Ensermu and Kinde (2023) studied innovations and performance of manufacturing firms. The study found that value creation through innovative business models and collaborations had a positive and significant impact on firm performance. In addition, innovative practices led to more value creation for customers. The study recommended implementation of innovations in business models to improve performance and customer service.

Oladele (2021) conducted a study on smart innovation and sustainability of the transport sector in developing countries including Kenya. The study found that adoption of smart innovation faced sustainability challenges. The study found that cooperation and collaboration in the transport sector affected adoption of smart innovation and recommended networking to improve skills and knowledge for sustainable adoption of smart innovations in the transport sector among African countries.

RESEARCH METHODOLOGY

Research Design

The study used a descriptive design. The purpose of a descriptive research design is to describe the state of affairs as it is in the present (Render et al. 2012). According to Flick (2011), this type of research attempts to describe such things as possible behavior, attitude, values, and characteristics. This research design was suitable since the study focused on the state of affairs as it is in the present (Niyonambaza et al., 2019).

Target Population

Population is a complete set of individuals' cases of objects with some common observable characteristics from whom the researcher gets a sample (Kothari, 2014). The target population was 272 matatu saccos registered to operate in Nairobi City County. According to the National Transport Safety Authority (2023), there are 272 matatu saccos registered to operate in Nairobi City County. The unit of analysis was the saccos registered to operate in Nairobi City County. The unit of observation was one operations manager, matatu operator, chairperson from each Sacco.

Sample and Sampling Techniques

The study adopted simple random sampling technique to pick respondents from the saccos registered to operate in Nairobi City County. The study used Yamane 1967 formula to calculate the sample size where:

$$n= \frac{N}{1+N(e)2}$$

n= sample Size, N= Total Population (272*3), e= 0.05 significance

$$\mathbf{n= \frac{816}{1+816(0.05)2}}$$

$$\mathbf{n=\frac{816}{1.68}}$$

n=268 respondents

Data Collection Instruments

The instrument for data collection was questionnaires. According to Kothari (2014), a questionnaire is a schedule containing various items on which information is sought from respondents. According to Kowalczyk (2015), questionnaires are free from any interviewer's bias and errors, which may undermine reliability and validity of the results emerging from the survey. The use of questionnaires made it easier to approach the respondents since they did not have any distribution bias as they did not show any particular preference or dislike for a certain individual. Secondary data was collected from reports, publications, government census and scholarly journals. Data was recorded in data entry tables.

Data Collection Procedure

The researcher sought a letter of research approval from the university to conduct research. Permission to collect data from all the public transport saccos in Nairobi City County was sought. Questionnaires were administered to operations managers, matatu operators and chairpersons in the public transport service companies in Nairobi City County.

Pilot Test

A pilot study, or, pilot test, or pre-test is defined as small-scale preliminary research that is conducted to evaluate time, cost, and feasibility to improve on the design of a particular study before conducting the actual one or full-scale research project (Kultar, 2017). The researcher carried out a pilot study to ensure the data collection tool was reliable and valid. The pilot test helped to correct some of the challenges encountered before undertaking the final study. The pretesting sample was made of 27 respondents, representing 10% of the sample size. The pilot study was conducted in Embakasi Sub-County within Nairobi City County. The respondents included operations managers, matatu operators, chairpersons from public transport service companies registered under saccos in Nairobi City County. The results from the pilot test were not be used in the main study. In addition, the respondents were excluded from the final study.

Data Analysis and Presentation

This is the process of organizing, interpreting, and presentation of data (Seltman, 2014). Quantitative data was analyzed using descriptive statistics that included means, frequencies, percentages, and standard deviation using SPSS for Windows version 28.0 for analysis. Inferential statistics were used which include regression and correlation analysis. Data was presented in form of tables and diagrams prepared from SPSS. The analysis of variance (ANOVA) was used to check the overall model significance. A multiple regression analysis was used to determine the relationship between performance of public transport service companies and the variables of the study. Multiple regression analysis was used to make a prediction of a dependent variable in relation to the independent variables, and determine the relationship between one dependent variable and one or more independent variables (Hair, 2010). The regression model was:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \varepsilon$$

Whereby;

Y = Performance of Public Transport Service Companies
$\beta_1, \beta_2, \beta_3, \beta_4$ = Coefficients of determination
β0 = Constant
X1 = Payment innovations practices

X2 = Networking

ε = Error term

PRESENTATION, ANALYSIS AND INTERPRETATION OF DATA

Descriptive Statistics Analysis

Payment Innovation Practices

The first objective was to establish the influence of payment innovation practices on performance of public transport service companies in Nairobi City County, Kenya. The respondents were asked to indicate the extent to which the agree with the statement on payment innovation practices based on a Likert scale where Strongly agree -5, Agree -4, Moderate -3, Disagree -2, Strongly disagree -1. The results of the study were as shown in table 4.1.The findings revealed that majority of the respondents, 60.5%, indicated that they agreed that the organization has adopted smart ticketing systems, 31.2% strongly agreed (mean=4.23). The study findings also showed that majority of the respondents, 56% agreed that the organization has high smart ticketing rates, 10.8% strongly agreed (mean=4.63).

Moreover, majority of the respondents, 65%, agreed that the organization uses mobile payment systems while 25% strongly agreed. Further, the results of the study were not clear on whether the respondents agreed that the organization has adopted use of transit cards, 47.4% of the respondents agreed, 19.2% were neutral while 6.7% strongly disagreed (mean=3.29). Finally, the results of the study showed that 30.8% of the respondents agreed mobile payment has improved service efficiency,18.6% strongly agreed, 30.3% were neutral while 20.3% disagreed.

The results showed that majority of the respondents indicated that they agree with the statements on payment innovation practices as shown by a mean of 4.02. The responses given by the respondents had little variation (standard deviation=0.89). The findings are of the study are consistent with the results of a study by Gubareva et al. (2021) which concluded that digital technologies such as payment systems and automation of information systems in the transport sector improved performance of the transport sector.

Table 1: Payment Innovation Practices

Statements	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Mean	Std Dev
The organization has adopted smart ticketing systems	0.0%	7%	1.3%	60.5%	31.2%	4.23	0.91
The organization has high smart ticketing rates	0.0%	4.0%	29.2%	56.0%	10.8%	4.63	0.78
The organization uses mobile payment systems	0.0%	5.0%	5.0%	65.0%	25.0%	4.84	0.35
The organization has adopted use of transit cards	6.7%	11.7%	19.2%	47.4%	15.0%	3.29	1.15
Mobile payment has improved service efficiency	0%	20.3%	30.3%	30.8%	18.6%	3.13	1.24
Average						**4.02**	**0.89**

Networking

The second objective was to establish the influence of networking on performance of public transport service companies in Nairobi City County, Kenya. The results as shown in table 4.2 indicated that majority of the respondents agreed that organization maintains high engagement with industry players as shown by a mean of 4.13. Majority of the respondents agreed that the organization collaborates with other stakeholders to implement technology as shown by a mean of 4.62 (80.8% strongly agreed). Moreover majority of the respondents strongly agreed that

organizations participate in networking initiatives in the transport sector as shown by a mean of 4.85 (85% strongly agreed).

Results indicated that organizations have flexible structure that allows for cooperations among stakeholders, majority of the respondents strongly agreed (60%). Results also showed that 46% of respondents agreed that organization has adequate capacity building initiatives while 13% strongly agreed. Finally, results indicated that majority of the respondents agreed that collaborations have improved adoption of innovation practices (mean=4.11). The results showed that majority of the respondents indicated that they agree with the statements on networking as shown by a mean of 4.02 (standard deviation=0.96). The findings are of the study are consistent with the results of a study by Oladele (2021) which concluded that cooperation and collaboration in the transport sector affected adoption of smart innovation.

Table 2: Networking

Statements	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Mean	Std Dev
The organization maintains high engagement with industry players	0.0%	0.0%	10.0%	40.0%	50.0%	4.13	0.94
The organization collaborates with other stakeholders to implement technology	0.0%	0.0%	19.2%	0.0%	80.8%	4.62	0.79
The organization participates in networking initiatives in the transport sector	0.0%	0.0%	0.0%	15.0%	85.0%	4.85	0.36
The organization has flexible structure that allows for cooperations among stakeholders	0.0%	0.5%	5.5%	34.0%	60.0%	3.28	1.16
The organization has adequate capacity building initiatives	0.0%	18.0%	23.0%	46.0%	13.0%	3.11	1.26
Collaborations have improved adoption of innovation practices	0.0%	0.0%	0.0%	56.0%	44.0%	4.11	1.22
Average						**4.02**	**0.96**

Performance of Public Transport Service Companies

The study established the percentage changes in the number of traffic accidents, cost of transport and travel time. The results shown in Fig 1 indicate that there was a slight decrease in the number of traffic accidents in 2020. However, the percentage changes in the number of accidents and travel cost rose gradually between 2021 to 2024. The travel time increased between 2021 and 2022 and stagnated. The percentage change in number of traffic accidents increased by 12% while cost of transport increased by 15% in 2024. These changes can be attributed to poor infrastructural development in Nairobi City County, high congestion due to poor utilization of traffic systems and lack of innovative practices to curb congestion and encourage non-motorized transport.

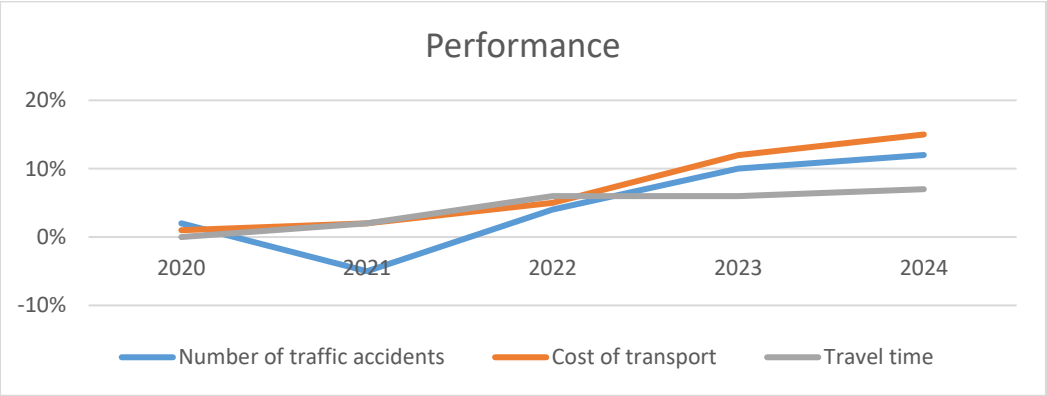

Figure 1 Performance

Further, the respondents were asked to indicate the extent to which they thought payment innovation practices, networking influenced performance of public transport service companies in Nairobi City County. The results showed that 80% of the respondents agreed to a very great extent that payment innovation practices influenced performance, 60% of the respondents agreed to a very great extent that networking influenced performance. The results imply that many operations managers, chairpersons of public transport service companies and matatu operators believed that entrepreneurial innovation practices influenced performance of public transport service companies. The results are shown in figure 2. The results agree with findings by Acciaro a and Sys (2020) study, which concluded that innovation had significant impact on performance of the transport sector.

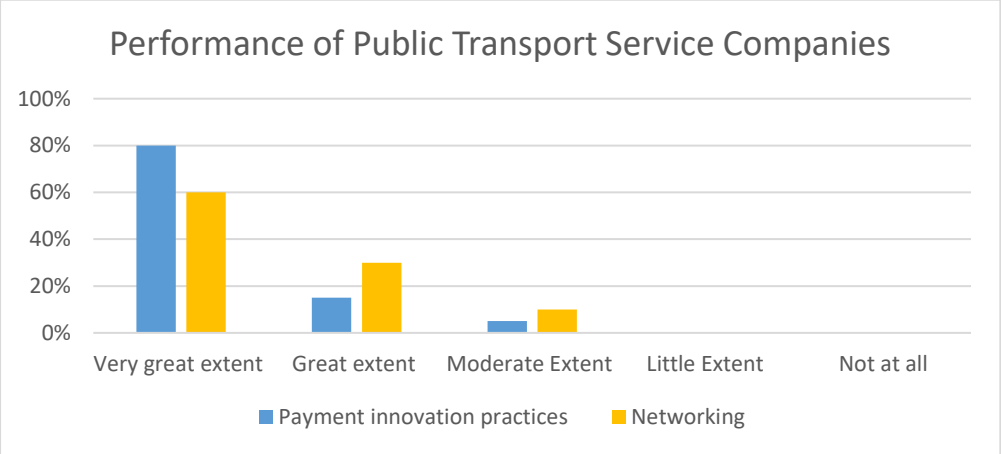

Figure 2 Performance of Public Transport Service Companies

Correlation Analysis

The study carried out correlation tests to determine the relationship between the independent and dependent variables. Pearson correlation, which ranges between -1 and +1 was used because the data was discreet. A positive Pearson correlation value indicates a positive relationship while any negative Pearson correlation value indicates a negative relationship. The association between the variables becomes stronger as the Pearson correlation value approaches either +1 or -1. The results of the correlation analysis are shown in table 3.

Table 3: Correlation Coefficients

Correlations		Payment innovation practices	Networking	Performance
Payment innovation practices	Pearson Correlation	1		
	Sig. (2-tailed)			
Networking	Pearson Correlation	.270**	1	
	Sig. (2-tailed)	0.003		
Performance	Pearson Correlation	.555**	.378**	1
	Sig. (2-tailed)	0.000	0.000	
	N	200	200	200

The findings of the study revealed that there was a positive and significant correlation between payment innovation practices and performance of public transport service companies in Nairobi City County as shown by a Pearson coefficient of 0.555 and significance level of 0.000. This implies that embracing technology, digital payment systems such as smart ticketing and mobile payment lead to a positive and significant effect in performance. The study findings are consistent with the results of a study by Rust and Sampson (2020) which concluded that innovations such as integration of technology systems in transport systems had significant influence on performance of the transport sector.

The results also showed that there was a positive and significant correlation between networking and performance of public transport service companies in Nairobi City County as shown by a person correlation value of 0.378 and significance level of 0.000. This implies that an improvement in networking through collaborations, capacity building and partnerships leads to a positive and significant effect on performance. The findings are consistent with the results of a study by Salfore, Ensermu and Kinde (2023) which found that value creation through innovative business models and collaborations had a positive and significant impact on firm performance.

Regression Analysis

The multiple linear regression analysis was carried out to determine the combined effect of entrepreneurial innovation practices on performance of public transport service companies in Nairobi City County, Kenya. Multiple regression analysis helped to find out the best predictor variable or the strength of relationship of each independent variable on the dependent variable thus resulting into an optimal model. The results from the regression model were used to establish the coefficient of determination analysis, model fitness analysis and model coefficients.

Table 4: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.840	.673	.569	0.1708

a Predictors: (Constant), payment innovation practices, networking

The findings showed that entrepreneurial innovation practices which comprises payment innovation practices and networking had a high positive correlation with performance of public transport service companies in Nairobi City County as shown by a joint Pearson Correlation value of 0.840. The results showed entrepreneurial innovation practices has a coefficient of determination value of .673. This shows that entrepreneurial innovation practices accounts for up to 67.3% of the variations in performance of public transport service companies in Nairobi City County.

Table 5: Analysis of Variance

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	26.159	2	6.540	53.047	.000[b]
	Residual	12.575	197	.123		
	Total	38.733	199			

a. Dependent Variable: Performance
b. Predictors: (Constant), payment innovation practices, networking

The overall regression model linking payment innovation practices, networking and performance of public transport service companies in Nairobi City County was significant as indicated by a significant F (4, 195) = 53.047) statistic as indicated by (0.000) significance level which was less than 0.05 at 5% level of significance indicating that the predictors collectively explain a substantial amount of variance in performance.

Table 6: Regression Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.236	.246		0.959	.004
	Payment innovation practices	.359	.107	.307	3.355	.000
	Networking	.322	.105	.316	3.067	.000

a. Dependent Variable: Performance

Optimal Regression Model

Performance = 0.236 + 0.359 (Payment innovation practices) + 0.322 (Networking)

The findings showed a constant value of .236. This shows that without considering entrepreneurial innovation practices, the performance of public transport service companies, which are accounted for by other factors, is positive. The findings of the study showed that payment innovation practices had a significant effect on performance of public transport service companies (β = .359, Sig = 0.000). This implies that adoption of digital payment systems can lead to improved performance. The findings agree with the findings of a study by Çakar et al. (2021) which concluded that innovations such as smart technologies had significant impact on transport efficiency.

The findings of the study also revealed that networking had a positive and significant effect on performance of public transport service companies in Nairobi City County (β = .322, Sig = 0.000). This implies that improving networking through collaboration leads to significant improvement in performance of the transport sector. The findings are consistent with the findings of a study by Ma1, Jia1 and Kuang (2022) which concluded that collaborations in technology innovation is essential to achieve development in the transport sector.

Conclusions

The study concluded that payment innovation practices has the most positive significant influence on performance of public transport service companies in Nairobi City County. This shows that when organizations adopt digital payment systems there will be a significant improvement in performance. The study also concluded that attribute of a team plays a key role in improving performance of public transport service companies in Nairobi City County. There is a need for organizations to develop teams since it would lead to a significant improvement in performance.

The study concluded that networking has a positive and significant influence on performance of public transport service companies in Nairobi City County. This shows that organizations

need to collaborate and form partnerships for increased adoption of entrepreneurial innovations to improve performance.

Recommendations

Since payment innovation practices has the most significant effect on performance of public transport service companies, the study recommends that management of these companies should increase usage of mobile transactions and use of digital payment systems. The study found that there was little usage of transit cards. Companies should adopt more digital payment systems and implement efficient mobile payments to achieve improved performance.

The study recommends that the management of public transport service companies should create more networking initiatives to impact knowledge on entrepreneurial innovative practices. There is need for more collaborations and partnerships between the public transport sector and private sectors to increase adoption of technology. The public transport service companies should partner with organizations in telecommunications to improve their payment systems and adopt new technologies.

References

Acciaro, M., & Sys, C. (2020). Innovation in the maritime sector: Aligning strategy with outcomes. *Maritime Policy & Management*, *47*(8), 1045-1063.

Achwoka, F. (2016). *Transportation Challenges Research Objectives Transport Disadvantage & Social Exclusion. Within Cities In Developing Countries*. 52 ISOCARP Congress.

Agarwal, P., & Alam, M. A. (2021). Use of ICT for sustainable transportation. *IOP Conference Series: Earth and Environmental Science*, *150*, 012032.

Amna, A. (2021). Utilization of Balanced Scorecard as a Management Tool in Statistical Institutes. *Sarajevo Business and Economics Review*, 35, 181-205.

Araghi Y. (2022). Technological innovation systems and transport innovations: Understanding vehicle electrification in Norway. *Introduction to Innovations in Transport*, 131-163.

Chakwizira, J. (2022). Stretching resilience and adaptive transport systems capacity in South Africa: Imperfect or perfect attempts at closing COVID -19 policy and planning emergent gaps. *Transport Policy*, *125*, 127-150.

Demircan Çakar, N., Gedikli, A., Erdoğan, S., & Yıldırım, D. Ç. (2021). A comparative analysis of the relationship between innovation and transport sector carbon emissions in developed and developing Mediterranean countries. *Environmental Science and Pollution Research*, *28*(33), 45693-45713.

Flick, U. (2011). *Introducing Research Methodology: A Beginner's Guide to Doing a Research Project*. Thousand Oaks, Calif: Sage Publication.

Gikonyo, P. K., Ngugi, P. K., & Nyanga'u, S. P. (2022). Logistics innovation and its influence on performance of building and construction manufacturing firms in Kenya. *International Journal of Supply Chain and Logistics*, *6*(3), 1-15.

Goldratt, E. M., & Cox, J. (1984). *The goal: excellence in manufacturing*. North River Press

Gubareva, L., Petrukhina, E., Aleksakhin, A., & Pianova, N. (2021). Innovative transport technologies in Russia. *MATEC Web of Conferences*, *341*, 00067.

Gubová, K. (2020). Green innovations in logistics supporting the development of innovative green technologies, processes, products and services in companies in Slovakia. *SHS Web of Conferences*, *83*, 01018.

Hair, J. (2010). *Multivariate Data Analysis*, 7th Edition. Upper Saddle River, New Jersey: Prentice Hall.

Huk, K., & Kurowski, M. (2021). Innovations and new possibilities of vehicle tracking in transport and forwarding. *Wireless Networks*, *28*(1), 481-491.

Kothari, C. R. (2014). *Research Methodology: Methods and Techniques*, 2nd Edition. New Delhi: AGE International.

Kowalczyk, D. (2015). *Survey Research: Definition, Methods & Types*. Retrieved from http://www.study.com

Ma, Q., Jia, P., & Kuang, H. (2022). The impact of technological innovation on transport carbon emission efficiency in China: Spillover effect or siphon effect? *Frontiers in Public Health*, *10*.

Makarova, I., Buyvol, P., Shubenkova, K., Fatikhova, L., & Parsin, G. (2023). Editorial: Sustainable transport systems. *Frontiers in Built Environment*, *9*.

Moore, H.M. (1995). *Creating Public Value: Strategic Management in Government*. London: Harvard University Press.

Nairobi Metropolitan Area Transport Authority. (2019). *Nairobi Metropolitan Area Transport Authority Strategic Plan 2019-2023*. Nairobi City County Government.

Negrutiu, C., Vasiliu, C., & Enache, C. (2020). Sustainable entrepreneurship in the transport and retail supply chain sector. *Journal of Risk and Financial Management*, *13*(11), 267.

Negrutiu, C., Vasiliu, C., & Enache, C. (2020). Sustainable entrepreneurship in the transport and retail supply chain sector. *Journal of Risk and Financial Management*, *13*(11), 267.

Odiyo, J. O., Bikam, P. B., & Chakwizira, J. (2021). *Green economy in the transport sector: A case study of Limpopo province, South Africa*. Springer Nature.

Oladele, A. (2021). Smart Innovation And Sustainable Transportation Technology Transfer Framework For Interconnectivity In Developing Countries. *Journal of Construction Project Management and Innovation*, *11*(1), 114-122.

Omwenga, M. (2019). *Integrated Transport System for Liveable City Environment: A Case Study of Nairobi Kenya*. 47th ISOCARP Congress 2011.

Render, B., Stair, R.M & Hanna, M.E. (2012). *Quantitative Analysis for Management*, 11th edition. New Jersey: Prentice Hall.

Roman, M. (2022). Sustainable transport: A state-of-the-Art literature review. *Energies*, *15*(23), 8997.

Rust, F. C., & Sampson, L. R. (2020). A systems-based R&D management model for the road and transport engineering sector applied to a community access roads and transport research programme. *African Journal of Science, Technology, Innovation and Development*, *12*(5), 547-560.

Salfore, N., Ensermu, M., & Kinde, Z. (2023). Business model innovation and firm performance: Evidence from manufacturing SMEs. *Heliyon*, *9*(6), e16384.

Seltman, H.J. (2014). *Experimental Design and Analysis*. Carnegie Melon University.

Sovacool, B. K., Daniels, C., & AbdulRafiu, A. (2022). Transitioning to electrified, automated and shared mobility in an African context: A comparative review of Johannesburg, Kigali, Lagos and Nairobi. *Journal of Transport Geography*, *98*, 103256.

Wamwea C., & Moi E. (2023). Influence of Transport Sector Reforms on Performance of Public Transport Sector, A Case Study of Nairobi City County. *International Journal of Public Administration and Management Research*, *8*(5), 17-29.