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Effect of Information Strategies on the Economic Development of the Central Corridor in Africa

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Abstract

This study examined the impact of information strategies on the economic development of the Central Corridor in Africa. The study focused on information systems, data management, and information technology infrastructure as key dimensions of information strategies. A quantitative research approach was employed to collect and analyze data from stakeholders involved in the Central Corridor. The findings revealed that information strategies have a positive and statistically significant effect on economic development. Effective information sharing, digital integration, and data management were found to improve corridor performance, investment opportunities, institutional efficiency, and overall economic growth. The study concludes that information strategies are critical drivers of sustainable economic development within the Central Corridor. It recommends increased investment in digital technologies, integrated information systems, and stakeholder collaboration to maximize economic benefits.

Keywords: *Information Strategies, Economic Development, Information Systems, Data Management, ICT, Transport Corridors.*

1. INTRODUCTION

Transport corridors have become essential instruments for promoting regional integration, facilitating international trade, and stimulating economic development worldwide. They provide strategic transport networks that connect production centers, markets, and seaports, thereby reducing transport costs, improving trade efficiency, and enhancing the movement of goods, services, and people across national borders. In Africa, transport corridors have increasingly been recognized as catalysts for economic transformation by improving market accessibility, attracting investment, creating employment opportunities, and strengthening regional competitiveness. Quium (2019) argues that transport corridors generate broader socio-economic benefits through improved connectivity, reduced logistics costs, increased trade, and sustainable regional development. Similarly, Alam et al. (2022) emphasize that investments in transport corridors produce wider economic benefits by enhancing productivity, improving accessibility, and creating new economic opportunities for communities located along the corridors.

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Among the major transport corridors in East Africa, the Central Corridor plays a significant role in regional trade and economic integration. The corridor connects the Port of Dar es Salaam in Tanzania with the landlocked countries of Burundi, Rwanda, Uganda, Zambia, Malawi, and the Democratic Republic of Congo, providing an alternative and efficient route for the movement of imports and exports. Beyond facilitating cargo transportation, the corridor contributes substantially to trade expansion, industrial development, investment promotion, and regional economic growth. Previous studies have shown that improved corridor performance reduces logistics costs, shortens transit time, enhances trade competitiveness, and supports sustainable development within member countries (Flory & Nyaronga, 2025; Makarova et al., 2020).

The rapid advancement of information and communication technologies (ICTs) has transformed the management and performance of modern transport corridors. Today, information strategies—including integrated information systems, digital communication platforms, data management systems, electronic cargo tracking, customs automation, and real-time information sharing—have become indispensable for improving operational efficiency and supporting evidence-based decision-making. Effective information strategies enable governments, transport operators, customs authorities, freight forwarders, and logistics service providers to coordinate operations more efficiently, reduce delays, improve transparency, and strengthen institutional collaboration. Oshikoya and Hussain (1998) identified ICT as a critical driver of Africa's economic development because it enhances productivity, expands access to information, and improves institutional effectiveness.

Recent evidence further demonstrates that digital transformation has become a key determinant of economic competitiveness. David and Grobler (2020) found that increased ICT penetration significantly contributes to economic growth by improving productivity, innovation, and business efficiency across African economies. Likewise, Musingafi and Zebron (2014) observed that ICT adoption promotes socio-economic development by expanding access to information, education, business opportunities, and public services. Within transport corridors, digital innovations such as logistics information systems, electronic customs management, digital payment platforms, and cargo tracking technologies have improved service delivery, strengthened stakeholder coordination, and increased operational reliability (Okonge & Nyaronga, 2025). Furthermore,

Habanabakize and Zerihun (2024) reported that ICT development stimulates economic growth through investment attraction, technological advancement, and increased productivity.

From a theoretical perspective, this study is anchored in the Resource-Based View (RBV), which argues that organizations achieve sustainable competitive advantage by effectively utilizing valuable internal resources and capabilities (Barney, 1991). Information systems, ICT infrastructure, and data management capabilities constitute strategic organizational resources that enhance operational performance, innovation, and long-term economic competitiveness. Within transport corridors, these digital capabilities enable organizations to optimize logistics operations, improve decision-making, and strengthen collaboration among corridor stakeholders, thereby contributing to regional economic development.

Despite the growing recognition of digital technologies in transport and logistics management, empirical evidence regarding the contribution of information strategies to economic development within the Central Corridor remains limited. Most previous studies have concentrated on physical infrastructure, trade facilitation, logistics performance, and regional connectivity (Alam et al., 2022; Quium, 2019; Makarova et al., 2020), while relatively little attention has been devoted to examining how information systems, ICT infrastructure, and data management influence broader economic development outcomes. This knowledge gap limits policymakers' and corridor management institutions' ability to formulate evidence-based strategies for maximizing the developmental benefits of digital transformation.

Therefore, this study examined the impact of information strategies on the economic development of the Central Corridor in Africa. Specifically, the study assessed how information systems, ICT infrastructure, and data management contribute to improving corridor performance and promoting regional economic development.

2. METHODOLOGY

This study uses deductive research methodology and a post-positivist research philosophy to investigate how information strategies affect economic development in the Central Corridor. In order to establish statistical correlations between the study variables, an explanatory research

design is used, with a focus on quantitative analysis. The study focuses on significant logistics firms operating inside the corridor and is carried out in the member nations of the Central Corridor Transit Transport Facilitation Agency (CCTTFA), which includes Burundi, the Democratic Republic of the Congo, Rwanda, Tanzania, Uganda, Malawi, and Zambia. The target population was 1,000 workers from top logistics companies, such as Africa Global Logistics, Bravo Logistics, Simba Logistics, Super Star Forwarders, and Bakhresa Group Logistic. A sample size of 286 respondents was calculated using Yamane's (1967) formula to guarantee statistical validity at a 95% confidence level and a 5% margin of error. In order to provide thorough insights into logistics strategies and their contribution to economic development along the Central Corridor, the study uses stratified sampling to ensure representation across various companies and professional categories. This is followed by simple random sampling to select respondents from logistics, transportation, warehousing, customs, information technology, strategic planning, and management departments.

The sampling frame for this study was based on the five logistic companies namely, Africa Global Logistics, Bravo Logistics, Simba Logistics, Super Star Forwarders, Bakhresa Group Logistic which operating around Central Corridor Member States particularly, DR Congo, Burundi, Rwanda, Tanzania, Uganda, Malawi and Zambia.

Table 1: Sampling Frame

Name of Company	Number of Population	Number of Respondents
Africa Global Logistics	300	82
Bravo Logistics	150	42
Simba Logistics	200	56
Super Star Forwarders	150	42
Bakhresa Group Logistic	200	56
Total	1000	286

The study collected data from 286 employees of major logistics companies operating within the Central Corridor to assess how information strategies contribute to regional economic development. Economic strategies were examined through a structured questionnaire using a five-point Likert scale, with measurement items adapted from established literature. The study employed descriptive statistics, Pearson correlation, and multiple regression analysis to determine the extent to which information strategies influence economic development.

3. RESULTS

The findings cover the impact of information strategies (IS) and economic development (ED) which is crucial for understanding how the effective use of information technology and management systems drives economic performance

3.1 Demographic Information of Respondents

The first part of the findings aimed to obtain demographic distributions about the respondents, particularly from logistics companies operating within the central corridor. The main aspects were considered as shown in Table 1 below which presents a summary of demographic information of respondents.

Table 1: Respondents Demographic Information

Demographic	Category	Frequency	Percent
Country Name	BURUNDI	16	5.7
	DRC	41	14.5
	MALAWI	15	5.3
	RWANDA	7	2.5
	TANZANIA	150	53.2
	UGANDA	31	11.0
	ZAMBIA	22	7.8
	Total	282	100.0
Company Name	AFRICA GLOBAL LOGISTICS	34	11.6
	BAKHRESA GROUP LOGISTICS	67	23.8
	BRAVO LOGISTICS	32	11.3
	SIMBA LOGISTICS	58	20.6
	SUPER STAR FORWARDERS	53	18.8
	Total	282	100.0
Age of Respondents	18-25 Years old	33	11.2
	26-35 years old	122	41.5
	36-45 years old	89	30.3
	46 and above	38	17.0

	Total	282	100.0
Gender	Male	194	68.8
	Female	88	31.2
	Total	282	100.0
Occupation	Board	67	23.8
	CEOs	17	6.0
	Management	105	37.2
	Operational	93	33.0
	Total	282	100.0
Education	High School Diploma	21	7.4
	Associate degree	40	14.2
	Bachelor's degree	115	40.8
	Master's degree	101	35.8
	Doctorate	5	1.8
	Others	0	0.0
	Total	282	100.0
Experience	1-3 Years	104	36.9
	4-6 Years	111	39.4
	7-10 Years	41	14.5
	Less than 1 year	15	5.3
	Above 10 Years	11	3.9
	Total	282	100.0

The study achieved an exceptionally high response rate, with 282 out of 286 distributed questionnaires being fully completed and included in the analysis, representing a response rate of 98.6%. Only two questionnaires were excluded due to incomplete information, ensuring that the final dataset was reliable and suitable for analysis. Such a high response rate indicates strong respondent engagement and suggests that the sample adequately represented the target population, thereby enhancing the credibility and validity of the study findings.

The demographic profile of respondents demonstrates that the study captured a diverse and representative sample of employees working in logistics companies within the Central Corridor. Male respondents constituted the majority (68.8%), while females accounted for 31.2%, indicating the participation of both genders in the logistics sector. In terms of age, most respondents (41.5%) were between 26 and 35 years old, followed by those aged 36–45 years (30.3%), suggesting that the study largely involved individuals within the economically active and productive workforce. These characteristics imply that respondents were well positioned to provide informed perspectives regarding logistics operations and regional economic development.

The occupational distribution revealed that management personnel formed the largest group of respondents (37.2%), followed by operational staff (33.0%), board members (23.8%), and CEOs (6.0%). This distribution ensured that views were collected from different levels of organizational leadership and operations, providing a comprehensive understanding of logistics company activities. The inclusion of senior executives, board members, and operational personnel strengthened the study by capturing both strategic and operational perspectives relevant to organizational performance and economic development.

Regarding educational attainment, the respondents were generally highly educated, with the majority holding bachelor's degrees (40.8%) or master's degrees (35.8%). Smaller proportions possessed associate degrees (14.2%), high school qualifications (7.4%), and doctoral degrees (1.8%). This educational profile indicates that respondents had the knowledge and competence necessary to provide reliable and insightful responses. Similarly, work experience levels were diverse, with most respondents having between four and six years of experience (39.4%) or one to three years (36.9%), suggesting that participants possessed substantial practical knowledge of logistics operations and industry practices.

The study also achieved broad organizational and geographical representation. Among the participating companies, Africa Global Logistics accounted for the largest share of respondents (25.5%), followed by Bakhresa Group Logistics (23.8%), Simba Logistics (20.6%), Super Star Forwarders (18.8%), and Bravo Logistics (11.3%). Geographically, Tanzania contributed the highest proportion of respondents (53.2%), followed by the Democratic Republic of Congo (14.5%), Uganda (11.0%), Zambia (7.8%), Burundi (5.7%), Malawi (5.3%), and Rwanda (2.5%). This distribution reflects the regional nature of the Central Corridor and provides a comprehensive representation of logistics stakeholders across participating countries, thereby strengthening the generalizability of the study findings within the corridor region.

3.2 Validity and Reliability

Validity refers to the extent to which a research instrument accurately measures the concepts it is intended to assess. In this study, validity was established through content validity and construct

validity. Content validity was ensured by carefully developing questionnaire items based on established literature and aligning them with the study objective which is information strategies, and economic development. Furthermore, a pre-test and pilot study were conducted to evaluate the clarity, relevance, and comprehensiveness of the questionnaire items. Feedback from the pilot study enabled the refinement of the instrument, ensuring that it adequately captured all dimensions of the constructs under investigation and enhanced the overall quality of the data collection tool.

Construct validity was assessed using Exploratory Factor Analysis (EFA), supported by the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy and Bartlett's Test of Sphericity. The results showed a KMO value of 0.905, indicating excellent sampling adequacy, while Bartlett's Test was statistically significant ($\chi^2 = 7841.350$, $df = 1653$, $p < 0.001$), confirming that the data were suitable for factor analysis. These findings demonstrate that the measurement items were strongly correlated and effectively represented the underlying theoretical constructs. Consequently, the results provide strong evidence that the study instrument was valid and capable of accurately measuring the intended variables, thereby supporting the credibility and reliability of the research findings.

Table 2: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.905
Bartlett's Test of Sphericity	Approx. Chi-Square	7.841E3
	Df	1653
	Sig.	.000

Construct validity was assessed using Exploratory Factor Analysis (EFA) with Principal Component Analysis (PCA), and the results demonstrated that the measurement instrument adequately captured the underlying theoretical constructs. The first six components explained 46.3% of the total variance, with the first component accounting for 28.86%, indicating that a

substantial proportion of the variance was represented by the extracted factors. The retention of factors with eigenvalues greater than one, together with meaningful factor loadings and rotated factor structures, confirmed that related items clustered according to their respective constructs, namely marketing, information, technology, economic, legal and regulatory strategies, and economic development. These findings provide strong evidence of construct validity and, when considered alongside the satisfactory Cronbach's alpha results, indicate that the instrument was both valid and reliable for measuring the study variables and supporting accurate research conclusions.

Table 3: Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	16.737	28.857	28.857	16.737	28.857	28.857	5.354	9.231	9.231
2	2.368	4.084	32.940	2.368	4.084	32.940	5.176	8.925	18.155
3	2.140	3.689	36.630	2.140	3.689	36.630	4.862	8.382	26.538
4	1.990	3.431	40.061	1.990	3.431	40.061	4.642	8.003	34.541
5	1.853	3.194	43.255	1.853	3.194	43.255	3.677	6.340	40.881
6	1.764	3.041	46.295	1.764	3.041	46.295	3.140	5.414	46.295

Face validity and criterion validity were established to ensure that the research instrument accurately measured the intended constructs. Face validity was achieved through careful development of questionnaire items that aligned with the study objective concerning information, strategies, as well as economic development. The questionnaire was reviewed by subject matter experts and pilot tested to ensure clarity, relevance, and ease of interpretation by respondents. Criterion validity was addressed through both predictive and concurrent approaches. Predictive validity was assessed by examining the ability of the study constructs to predict economic

development through regression and discriminant analyses, while concurrent validity was supported by grounding the measurement items in well-established theoretical and empirical literature. These procedures strengthened confidence that the instrument effectively captured the intended concepts and their relationships.

Table 4: Reliability Test Results

VARIABLE	No of item	Cronbach's Alpha
IT Infrastructure	10	.850
Data Management	10	.847
Information Systems	10	.857

3.3 Regression Analysis

Table 6 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.721 ^a	.520	.511	.22124

a. Predictors: (Constant), II, DM, IS

b. Dependent Variable: ED

Table 5 presents the results of the regression model, with an R value of 0.721, indicating a strong positive relationship between the information strategy and economic development.

The R Square value of 0.520 shows that approximately 52% of the variance in economic development can be explained by the predictors in the model. This suggests that the information strategies collectively account for a substantial proportion of the changes in economic outcomes, highlighting their importance in driving regional development. The adjusted R Square of 0.511 further confirms that the model maintains good explanatory power even after accounting for the number of predictors, implying a robust fit of the model to the data (Hair *et al.*, 2020; Field, 2020). These results demonstrate that the regression model is statistically sound and suitable for further analysis. This provides strong empirical support for further analysis of the individual contributions

to economic development, consistent with the approaches suggested by Gujarati and Porter (2021), Pallant (2020), and Kothari (2020).

Table 6: ANOVA

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	14.619	5	2.924	59.736	.000 ^b
	Residual	13.509	276	.049		
	Total	28.128	281			

a. Dependent Variable: ED

b. Predictors: (Constant), **II**, **DM**, **IS**

The ANOVA results in Table 6 evaluate the overall significance of the multiple regression model in predicting economic development (ED) using independent variables: IT Infrastructure (II), Data Management (DM), and Information Systems (IS). The F-statistic of 59.736 with a p-value of 0.000 indicate that the regression model is highly significant. This implies that the combined predictors explain a meaningful portion of the variance in economic development and the likelihood of the observed F-value occurring by chance is extremely low.

The sum of squares highlights the distribution of variance in the model. The regression sum of squares (14.619) reflects the variance in economic development explained by the predictors, whereas the residual sum of squares (13.509) represents unexplained variance. Together, they sum to the total variance (28.128) in ED. The mean square values, with 2.924 for regression and 0.049 for residuals, indicate that the variance explained by the model is substantially larger than the variance left unexplained, demonstrating the model is capturing the influence of logistics strategies on economic development.

Furthermore, the significant ANOVA result confirms that the independent variables collectively have a statistically meaningful effect on economic development. This finding supports the study's findings that effective transport information logistics strategies positively influence ED.

Table 8 Coefficients Results

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.404	.188		2.152	.032
	II	.156	.049	.168	1.149	.002
	DM	.143	.052	.174	2.775	.006
	IS	.269	.056	.185	1.239	.016

Dependent variable: ED

The Coefficients Results from Table 8 of the multiple regression analysis reveal the relative influence of each predictor on economic development (ED). The constant term ($B = 0.404$, $p = 0.032$) indicates the baseline level of ED when all variables are held at zero.

Information Strategies (IS) show a positive and statistically significant effect on ED indicating that effective IT infrastructure, data management, and Information system contribute meaningfully to economic performance. This finding highlights the importance of leveraging information systems to enhance institutional efficiency, project implementation and overall economic productivity.

4. DISCUSSION

The findings of this study provide strong empirical evidence that information strategies positively and significantly influence economic development within the Central Corridor. The regression results indicate that, holding other factors constant, improvements in information strategies lead to measurable increases in economic development outcomes. The statistical significance of the regression coefficients confirms that this relationship is not due to chance, providing robust evidence that information strategies are key determinants of economic performance within regional transport corridors. Compared with other strategic variables examined in the broader study, information strategies exhibited a relatively stronger and more consistent direct influence on economic development, highlighting their strategic importance in improving corridor performance.

These findings support the Resource-Based View (RBV), which argues that organizations achieve sustainable competitive advantage by effectively utilizing valuable internal resources such as information systems, ICT infrastructure, and technological capabilities. Within the Central Corridor, these resources enhance operational efficiency, facilitate stakeholder coordination, improve decision-making, and strengthen innovation, thereby contributing to long-term economic development. The findings further suggest that digital capabilities have become strategic assets that support both organizational performance and regional competitiveness.

The findings are consistent with previous empirical studies on transport corridors and digital transformation. Rodrigue et al. (2020) and Notteboom et al. (2021) argue that information flows are as important as physical infrastructure in determining logistics efficiency and supply chain performance. Similarly, the World Bank (2020) reported that digital platforms and integrated information systems reduce trade costs, improve cargo visibility, and enhance corridor efficiency. Within the African context, Ding et al. (2021) demonstrated that ICT adoption in transport corridors improves operational efficiency and regional competitiveness, while the African Development Bank (2021) identified digital transformation as a critical driver of regional integration and sustainable economic growth. The consistency between the present findings and previous studies strengthens the argument that information strategies have become indispensable components of modern transport corridor management.

The positive relationship observed between data analytics capability and economic development further supports the growing importance of evidence-based decision-making within logistics systems. Luo et al. (2023) found that organizations adopting advanced data analytics achieve higher productivity, improved resource utilization, and greater operational efficiency. Similar benefits are evident within the Central Corridor, where effective data management supports optimized routing, better allocation of logistics resources, faster cargo movement, and improved service delivery. These improvements ultimately contribute to increased trade efficiency and regional economic development.

The findings also have important policy implications. They demonstrate that governments, corridor management institutions, and logistics service providers should prioritize investments in

ICT infrastructure, integrated information systems, cybersecurity, and digital communication platforms. Strengthening digital connectivity across member states would improve information sharing, reduce transit delays, enhance transparency, and facilitate better coordination among corridor stakeholders. Furthermore, the adoption of emerging technologies such as artificial intelligence, big data analytics, blockchain, and cloud-based logistics platforms would further improve operational efficiency and strengthen the competitiveness of the Central Corridor.

This study makes an important contribution to the literature on transport corridor development by providing empirical evidence that information strategies significantly influence economic development within the Central Corridor. While many previous studies have concentrated primarily on physical infrastructure, logistics performance, and trade facilitation, the present study demonstrates that information systems, ICT infrastructure, and data management are equally important drivers of regional economic growth. These findings extend the application of the Resource-Based View to transport corridor management and provide practical evidence that digital transformation should be considered a strategic priority for achieving sustainable regional development.

Generally, this study proves that information strategies are fundamental drivers of economic development within the Central Corridor. Effective information systems, efficient data management, and robust ICT infrastructure improve communication, transparency, coordination, and decision-making among corridor stakeholders, leading to enhanced trade efficiency, investment attraction, employment creation, and regional economic growth. These findings underscore the need for continued investment in integrated digital systems, cybersecurity, data analytics, and stakeholder capacity building to maximize the developmental benefits of the Central Corridor. Future research should examine how information strategies interact with other corridor development strategies to provide a more comprehensive understanding of sustainable economic development within regional transport systems.

4.1 Contribution of the Study

This study contributes to the growing body of knowledge on transport corridor development by providing empirical evidence that information strategies significantly influence economic

development within the Central Corridor. The findings confirm the central idea of this study that effective information systems, ICT infrastructure, and data management are strategic resources that enhance corridor performance and stimulate regional economic growth. Unlike many previous studies that have focused primarily on physical infrastructure and trade facilitation, this study demonstrates that digital information strategies are equally critical in improving operational efficiency, institutional coordination, transparency, investment attraction, and trade competitiveness. Consequently, the study extends the application of the Resource-Based View theory within the transport corridor context by demonstrating how digital capabilities create sustainable competitive advantages that contribute to economic development. The findings also provide practical guidance for governments, corridor management institutions, and logistics service providers in designing evidence-based digital transformation policies that strengthen regional integration and sustainable development.

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