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This Journal aims to publish original research and provide a
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Content

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Editorial

Welcome to volume 30 issue 1 of the *African Journal of Management Research*. In this issue, we publish seven research articles spanning many areas of business, namely, health management, ethics in public institutions, supply chain management practices, financial literacy, competency-based training, loyalty of multinationals to host countries and service quality.

True to our name, research that informed these articles was conducted in Ghana, Tanzania and Ethiopia.

Authors of these articles used varied methodologies for their investigations - Content analysis, cross-sectional regression analysis, factor analysis, tests of association and logistic regressions using primary data in some cases and secondary data in others. The reader will find this useful.

I wish you happy reading and please stay tuned for more interesting research findings in respect of Africa in subsequent volumes and issues.

Determinants of Procurement Ethics Among Public Institutions in Ghana: An Empirical Study

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Abstract
If the public procurement function especially in Sub Saharan Africa (SSA) is ethically conducted, the obvious end result would be prudent use of state resources, transparency within the public procurement process and value for money in all government contracts. This has become pertinent since increasingly significant proportions of government expenditure in developing countries goes into public procurements. This study therefore sought to explore the determinants of procurement ethics among public institutions in the Upper East Region (UER) of Ghana. The study adopted a quantitative research approach using an interviewer-administered questionnaire to collect data from 210 practicing public procurement officials across selected public institutions. The Exploratory Factor Analysis (EFA) was employed as a factor reduction tool to filter out the factors that significantly influence ethical procurement practices among staff of public institutions. The study results showed that transparency, professionalism, integrity and political influence were the major determinants of ethical procurement practices in public institutions within the Upper East Region of Ghana. The study established that transparency, professionalism, integrity and political influence were the major determinants of ethical procurement practices within public institutions in the Upper East Region of Ghana. The findings of this study will serve as a guide for procurement professionals and managers to improve ethical procurement behavior. Training programmes should be tailored towards improving transparency, professionalism, integrity and minimize political influence.

Key words: Procurement ethics, public institutions, procurement process, determinants, Upper East Region, Ghana

Introduction
Public procurement of goods, works and services is a significant and essential component of government functionality involving vast sums of taxpayers' money.

Globally, public procurement is a critical component of governance due to the motivation of addressing community requirements and aspirations through the supply of products, works and services (Agbodzakey & Upshaw, 2018). Governments, particularly those in developing nations, have realized that public procurement has enormous potential to address social and economic problems in Africa, increase productivity, foster innovation, and provide value for money. In the Developing nations, public procurement accounts for an average of 29% of all government spending and 12% of GDP, demonstrating its ability to assist a range of policy goals, including the promotion of innovation (Ogol & Moronge, 2019). The process of acquiring goods, works and services through the public procurement process is vulnerable due to issues of agency and moral behaviour which can result in concerns of abuse (Chidya, 2021). This drive to acquire goods and services for effective operations among public institutions is highly competitive and challenging. In order to enhance the proper use of public funds, government agencies are required by law to observe ethical procurement rules and guidelines such as transparency, honesty, fairness, accountability, anti-corruption, and confidentiality.

Procurement ethics involves the application of transparency, professionalism, impartiality, goodwill and exercise of due diligence in the conduct of public procurements and more importantly not indulging in unfair activities (Ebekozein, 2019).

Although ethical challenges in business management have always existed, the nature, shape, form and scope of such challenges have evolved over the years with most organisations viewing the concept of business ethics as vital to achieving competitive advantage (Ngovi, 2019).

Several studies (Dza, 2018; Abeku, 2021; Awuah et al., 2022) including reports from Ghana's Auditors General (Auditor General report, 2018,2019 and 2020) have highlighted several procurement transgressions or breaches such as non-competitive tendering, improper disposal of unserviceable items, improper warehouse and store practices, failure to prepare scheduled annual procurement plans, use of wrong documentation, contract variations without recourse to the procurement Act among others.

Based on the aforementioned procurement infractions, Essel (2021) believes that greater ethical standards, in conjunction with adherence to procurement legal requirements, will put an end to bribery and corruption in government entities. Ackar (2020), further indicates that the non-adherence to ethical codes of conduct, fairness, transparency and integrity in the procurement process negatively influences on the level of ethical practices which in turn impacts on the overall productivity of public entities. Since the majority of procurement deficiencies highlighted above revolve around unethical practices, a research study is vital in this regard.

Statement of the problem

Globally, corruption and unethical practices during the acquisition of goods, services and works are blamed for financial leakages in the procurement processes of public institutions (Ogbu et al. 2018). In Ghana, procurement and stores irregularities discovered by the Auditor General accounted for 0.12% of total financial irregularities of the accounts of Ghana for the period ended 31st December, 2020. This same report highlighted irregularities such as the

procuring of goods and services without recourse to procurement committees, the deliberate splitting of procurement into lots in order to procure above an entity's threshold and the deliberate use of unauthorized receipts in the purchase of items (Auditor General Report, 2018). Should these procurement irregularities continuously persist, corruption and unethical procurement practices in the public sector will fester resulting in the loss of essential developmental funds (Ogol & Maronge, 2019). According to BouChabke & Haddad (2021), unethical procurement authorities are associated with corruption, extortion, fraud, and cronyism, all of which have a detrimental effect on the quality of services provided to citizens.

In view of the recurring procurement breaches, Abioro, (2021) suggests that improved ethical standards along with adherence to procurement laws and regulations will improve transparency, competition, and integrity of public procurements. Essel (2021), emphasizes further that irregularities resulting from unethical behavior by procurement officials are unquestionably a harmful occurrence that, if not properly controlled, might open up opportunities for theft and misappropriation of valuable public resources. An investigation into the determinants of ethical procurement practices is necessary given the severe effects that unethical behavior among procurement professionals have on public procurements. Despite several research on procurement ethics (Ogbu & Asuquo, 2019; Abouzeid, 2019; Mazibuko & Fourie, 2017 and Essel, 2021), unethical procurement practices continue to remain pervasive. An, indication that previous studies may not have identified the important determinants or elements of ethical procurement that must be addressed. An Explorative Factor Analysis

(EFA) approach was used to examine the determinants of ethical procurement practices among public institutions within the Ghanaian context. This study therefore sought to explore the determinants of ethical procurement practices among public institutions in the Upper East Region of Ghana.

Literature Review

Theoretical review

The theoretical literature review examines management concepts and theories that are relevant to understanding the research study from a developing country's perspective.

Principal - Agent Theory

The principal-agent theory is critical in standardizing and ensuring proper management of administrative power in public institutions has been increasingly applied in the fields of politics and society (Chen, 2018). The principal-agent problem emerges when the agent and the principal have a conflict of interest, which often happens when the agent works purely in his or her own interests. When financial institutions have private information, they are motivated to utilize it to their benefit by engaging in activities that may not necessarily align with productivity and societal efficiency, or the principal's interests (Bon, 2021). The principal's difficulty is to ensure that the agent completes the specified work in an appropriate manner when it cannot necessarily monitor the agent's activities and the agent thus has an informational advantage with respect to its actions (Ramirez & Wood, 2019). Hence, it is expected that procurement professionals as well as all actors within the procurement chain of public institutions act in the best interest of these institutions by adhering to standard rules and regulations when

acquiring goods, works and services from suppliers.

Utilitarian Ethical Theory

Morality, according to Unilateralism, consists entirely in maximizing what is good for everybody. It also argues that moral decisions are simplified by providing a single dimension of rightness: value optimization (Savulescu et al., 2020). According to the influential moral theory of utilitarianism, rather than prioritizing personal gain, the ethical conduct is that which is anticipated to result in the greatest amount of good and value for the majority of people. It offers clear operationalizable principles which requires employees and staff of various institutions to act in a manner that benefits the entire organisation and customers (Savulescu et al., 2020). Utilitarianism therefore argues that decision-making processes should involve a consideration all of the effects of actions, both immediate and long-term as well as direct and indirect. As a result, it is important for employees and staff of public institutions to consider not just the personal advantage of their activities, but also the benefit to the general public who rely on such institutions for a variety of goods, works and services.

Empirical review

Procurement Ethics

Ethics are a collection of moral rules that determine what constitutes suitable and just behavior. Within a business context, ethical procurement refers to the practice of acquiring goods, services and works with transparency and impartiality and devoid of unfair activities (Abouzeid, 2019). The problem of procurement ethics is exacerbated by the fact that public procurement stakeholders are often underpaid, therefore management often turns a blind eye when suppliers come in with gifts for favors. These are often viewed by management and procurement officers as a method of augmented compensation for the low pay (Weissman, 2019). Government institutions preside over commodities that are of value to citizens and as a result, it is expected that public officials manage these commodities in such a way that the savings realized from ethical public procurement practices free up additional resources (Ogunsanya et al., 2019).

The manifestation of unethical procurement practices by public officials mostly relate to uncompetitive bidding, inadequate contract management, and the awarding of bids to employees and their family members (Hashmi, 2020). Other indications of unethical procurement practices relate to the non-disclosure by suppliers, no supporting documents for procurement awards, using incorrect preferential point systems and thresholds. Unethical procurement practices are known to be more prevalent within the public sector as compared to the private sector (Ebekozien, 2019). Procurement officials in the public sector are expected to uphold the highest ethical behavior because they manage the flow of resources meant for national development (Siyal & Xin, 2020). (Mutangili, 2021), however indicates that the incidence of fraudulent practices and unethical conduct in all stages of procurement is higher in the public sector than in the private sector.

Concepts of Procurement Ethics

Writer (2021), offers eight ethical principles to help in decision-making and prevent unethical behavior among staff of public institutions.

Loyalty and Respect for Rules and Regulations: Ordinarily, officers take an oath to uphold the institution's regulations,

and operate in its best interests. They are expected refrain from allowing external pressures to affect any judgement call during the procurement process.

Transparency: Unless there are legislative limits in place, all information pertaining to procurement procedures should be made accessible to all parties involved, including the public at large. Tender notifications must include enough details to let the supplier know they can submit a proposal. Tender documents must be brief and include information on deadlines, assessment standards, and expectations.

Integrity: Employees must constantly uphold the institution's ethical code; they must not behave out of self-interest or with the intention of gaining personal advantage. Employees are also expected to report any instances of unethical behavior that they observe before, during or after the procurement process.

Unbiasedness: Bias toward particular vendors or colleagues should be avoided in order to ensure fairness in procurement operations. Modifications to any document or specification must be communicated to all vendors, and decisions should be made impartially.

Confidentiality: Financial and personal information should be kept private and not made public in any firm because its disclosure could jeopardize procurement operations. To ensure confidentiality of the procurement process, employees are frequently required to sign non-disclosure agreements.

Avoiding the Appearance of Impropriety: Officers need to be aware of outside opinions about their actions that could be interpreted as having a conflict of interest. Irregularities in interaction should be detected and avoided beforehand

because assumptions alone could lead to significant disputes.

Due Diligence: Responsibilities should be performed with extreme caution in order to adhere to all corporate requirements and guidelines while eliminating inefficiencies.

Accountability: Any decisions made throughout the procurement process should be held accountable. Any violations of the institution's regulations should be examined and the necessary remedies taken.

Methodology

A descriptive research design was adopted in this study. The population of the study consisted of all staff of the various public institutions within the Bolgatanga Municipality of Ghana. A purposive sampling method was adopted for this study. The sample consisted of selected staff from various management levels of public institutions within the Bolgatanga Municipality of Ghana who participated in the annually organized Public Procurement Authority (PPA) workshop/training on best practices in ethical procurement. These public institutions were chosen because the majority of their operations centered around the procurement of public goods, works, and services. This was done to ensure that all areas concerned with procurement ethics were covered. From the sample size of two hundred and sixty-eight (268), two hundred and ten (210) responses were retrieved from employees of the selected public entities. A five-point Likert scale interviewer-administered questionnaire was used to gather the quantitative data for this study. The drop off pickup technique was adopted to distribute the questionnaire to procurement professionals at public institutions in the Upper East Region of Ghana. The variables adopted to examine the determinants of

ethical procurement practices in this research study included transparency, professionalism, integrity and political influence which were adopted from available literature. This study's definition of transparency included giving contractors, suppliers, service providers, and the general public access to information about the public procurement process unless there are legitimate and legal reasons to keep certain information private (Kenny & Crisman, 2016). According to Steinfeld (2017), professionalism entails relying on beliefs, principles, and efficient processes while adhering to an operating code of ethics throughout the procurement process. Integrity relates to a strong moral compass, being open to ethical issues, and maintaining high standards throughout the procurement process (Akaninyene & Mark, 2015). Political influence in procurement is described by Nuertey et al. (2018) is a situation where procurement decisions by procurement officers as well as awards are executed based on political preferences or benefits.

Census and Survey Processing System (CSPro) version 7.4 was employed for data input, which was then exported to Statistical Package for Social Sciences (SPSS) version 23 and analyzed. The Exploratory Factor Analysis (EFA) was employed as a factor reduction tool to filter out the factors that significantly determined ethical procurement practices among staff of public institutions in Ghana.

Exploratory Factor Analysis

Exploratory Factor Analysis (EFA) is a multivariate method that seeks to identify as few erroneous constructs as possible that may instinctively explain the covariation observed among a group of measured variables. Specifically, EFA aids in the determination of the common characteristics that account for the arrangement and pattern of the measured variables (Watkins, 2018). The EFA analysis is used to elicit information about the interrelationships between a set of variables (Ogunsanya et al., 2019). The assumption behind factor analysis is that all variables have some level of relationship. Determinants should be evaluated at the ordinal and the sample size for factor analysis ought to be large (Shrestha, 2021). There are several statistical methods that help researchers decide on the number of factors to be extracted, for example, the Kaiser criterion, the scree plot and parallel analysis (Prabhu, 2021). The Kaiser criterion for an eigenvalue greater than 1 is by default set in SPSS and was applied to this study. Factors with high loadings have an eigenvalue greater than 1.

Results and Discussion

The study targeted public institutions within the Bolgatanga Municipality of Ghana. Out of a total two hundred and sixty-eight (268) targeted respondents, two hundred and ten (210) responses were received, constituting a response rate of roughly 78%.

Biographic Data of Respondents

Table 1 presents details of the background of participants of this study. The data shows that out of 210 respondents successfully contacted, 67 (31.9%) belonged to the age group (31-35) years, 54 (25.7%) belonged to the age group (36-40) years, 42 (20%) were above 40 years, 35 (16.7%) belonged to the age group (26-30) years and finally 12 (5.7%) of respondents belonged to the age group (20-25) years. The data from Table 1 also indicates that 123 (59%) of respondents had a Bachelor's degree, 44 (21%) had a Diploma, 34 (16%) had a PhD and 4 (2%) had a certificate as educational qualifications for various programmes pursued at different

institutions of learning. Data from Table 1 further indicates that for working experience, 97 (46%) and 69 (33%) of the respondents have worked at their various institutions for a period between (16-20) years and (6-10) years respectively. An indicator that respondents to this study have several years of procurement experience and therefore provided informed comments on the issues addressed in this study.

Table 1: Biographic Data of Respondents

Biographic Factors	Frequency	Percent (%)
Age of Respondents		
20-25 years	12	5.7
26-30 years	35	16.7
31-35 years	67	31.9
36-40 years	54	25.7
Above 40 years	42	20
TOTAL	**210**	**100**
Educational Qualification		
Certificate	4	2
Diploma	44	21
Bachelors	123	59
Masters	34	16
PhD	5	2
TOTAL	**210**	**100**
Working Experience		
1-5 years	10	5
6-10 years	69	33
11-15 years	22	10
16-20 years	97	46
Above 20 years	12	6
TOTAL	**210**	**100**

Source: Field Survey, 2023

Measures of Goodness of Fit

The results of the goodness of fit test for the Factor Analysis model is as presented in Table 2.

Cronbach's Alpha Reliability Coefficient		**0.942**
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.925
	Chi-Square	2719.719
Bartlett's Test of Sphericity	Degree of freedom	253
	p-value	**0.000**

Cronbach's alpha reliability coefficient was employed to examine the questionnaire's internal consistency. A coefficient value of 0.942 was determined, indicating that if the research questionnaire is used again in a similar environment, the results are almost 94% certain to be identical. The reliability coefficient is comparable with the findings of Adeniran (2019) study, which revealed that a range of 0.70 to 0.90 or above indicates good internal consistency of the research instrument. An Assessment of the Bartlett's Test also revealed a Chi- Square value of 2719.719, degree of freedom of 253 and a p-value of $0.00 < \alpha -$ value of 0.05 which is highly significant at 5% level of confidence, confirming that the correlation matrix has significant correlations among some of the variables. Also, the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy value of 0.925 indicates that the sampling is adequate (Shrestha, 2021) and Factor Analysis is appropriate for the empirical data.

Determinants of Procurement Ethics

Table 3 presents the eigenvalues and total variance explained. Principal component analysis was the type of factor analysis extraction method used in this study. Before extraction, twenty-three components were identified within the data set. After extraction and rotation, there were four distinct linear components within the data set for the eigenvalue greater than one (1). The four factors extracted accounted for a combined 61.64% of the total variance. It is recommended that the fraction of total variation explained by the retained components be at least 50% (Hoque et al., 2018). The result as depicted in Table 3 below shows that 61.64% common variance shared by twenty-three variables can be accounted by four ethical procurement factors. The first ethical procurement factor explained 20.73% of the total variance with eigenvalue 10.351. The second ethical explained 19.03% of the total variance with eigenvalue 1.478. The third ethical factor explained 12.34% of variance with eigenvalue 1.323 whiles the fourth ethical procurement factor explained 9.53% of variance with eigenvalue 1.025.

Table 3: Eigenvalues (EV) and Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cum. %	Total	% of Variance	Cum. %	Total	% of Variance	Cum. %
1	10.351	45.003	45.003	10.351	45.003	45.003	4.767	20.727	20.727
2	1.478	6.428	51.431	1.478	6.428	51.431	4.376	19.027	39.754
3	1.323	5.752	57.183	1.323	5.752	57.183	2.843	12.359	52.113
4	1.025	4.457	61.64	1.025	4.457	61.64	2.191	9.527	61.64
5	0.878	3.817	65.456						
6	0.832	3.617	69.073						
7	0.699	3.04	72.113						
8	0.682	2.963	75.076						
9	0.626	2.72	77.796						
10	0.597	2.597	80.393						
11	0.549	2.385	82.778						
12	0.508	2.208	84.986						
13	0.471	2.049	87.035						
14	0.446	1.94	88.975						
15	0.37	1.61	90.585						
16	0.365	1.589	92.174						
17	0.346	1.506	93.68						
18	0.31	1.349	95.029						
19	0.277	1.206	96.235						
20	0.269	1.168	97.403						
21	0.236	1.026	98.429						
22	0.21	0.912	99.341						
23	0.152	0.659	100						

Extraction Method: Principal Component Analysis. Cum. means Cumulative

Using a cut-off value of 0.6 (Awang et al., 2018) as a baseline for this study and performing a Varimax Rotated factor loading with Kaiser Normalization, the retained items are presented in the rotated matrix in Table 4 below.

Table 4: Suppressed Rotated Factor Loading

Variables	Factor			
	1	**2**	**3**	**4**
All suppliers subjected to the same standards of evaluation/selection in the procurement process			0.651	
Procurement staffs are discouraged from accepting any form of inducement from suppliers (gifts/meals etc)				
Ethical code of conduct is upheld by procurement staff				
Procurement process is often devoid of any political interference				0.855
Final procurement decisions taken in this institution are devoid of political pressure/interference				0.791
Procurements are competitively based with the award going to the lowest responsive and responsible bidder			0.759	
All stages of the public procurement process in this institution are conducted by well qualified procurement professionals				
All competitive bids in this institution are supervised by qualified professionals				
Procurement officers are experienced in the implementation of the procurement laws		0.648		
Procurement officials understand the rules and regulations pertaining to the procurement process in this organization		0.768		
Procurement officers strictly adhere to the code of ethics used in this company		0.720		
Procurement officers interpret the procurement rules fairly to all competing suppliers		0.760		
Procurement officers in this institution avail bidding related information equally to all bidders				
Data on tender participants is treated confidentially				

Table 4 continued

Variables	Factor			
	1	**2**	**3**	**4**
Only authorized officials in this institution are allowed access to some confidential procurement documentation.				
Procurement procedures in this institution allows for secure transmission of documents.				
Procurement documentation in this institution is properly archived/stored after the close of process.				
All public procurement activities in this institution are conducted openly				
Encouragement of stakeholder participation in all public procurement processes	0.745			
All suppliers bidding for contracts in this institution have access to the same procurement information				
Procurement officials held liable when information is unevenly distributed to suppliers	0.723			
Leakage of confidential information from this intuition to suppliers are quickly investigated and culprits sanctioned	0.670			
Existence of institutional public procurement ethics policy	0.685			

Extraction Method: Principal Component Analysis, Rotation Method: Varimax with Kaiser Normalization, Rotation converged in 6 iterations.

Table 4 presents the results of the Varimax Rotation with Kaiser Normalization for factor loadings suppressed at 0.6. From the results, four measured variables *(Encouragement of stakeholder participation in all public procurement processes, Procurement officials held liable when information is unevenly distributed to suppliers, Leakage of confidential information from this intuition to suppliers are quickly investigated and culprits sanctioned and Existence of institutional public procurement ethics policy)* loaded high on Factor 1. These measured variables on Factor 1 are related to *"Transparency."*

Four measured variables *(Procurement officers are experienced in the implementation of the procurement laws, Procurement officials understand the rules and regulations pertaining to the procurement process in this organization, Procurement officers strictly adhere to the code of ethics used in this company and Procurement officers interpret the procurement rules fairly to all competing suppliers)* scored highly on Factor 2,

and a close examination of the variables reveals *"Professionalism."*

An evaluation of Factor 3 with measured variables *(All suppliers subjected to the same standards of evaluation/selection in the procurement process and Procurements are competitively based with the award going to the lowest responsive and responsible bidder)* that are heavily weighted on it can be considered to depict *"Integrity."* Factor 4 also had two measured variables *(Procurement process is often devoid of any political interference and Final procurement decisions taken in this institution are devoid of political pressure/interference)* loading high on it. These two measured variables represent *"Political Influence".*

The exploratory factor analysis uncovered four major determinants of ethical procurement: *transparency, professionalism, integrity, and political influence*. According to respondents, these four determinants influence ethical procurement practices in public institutions in Ghana. The findings of this study are supported by Essel (2021), who discovered that *"Transparency"* and *"Integrity"* were key determinants of ethical procurement practices among public institutions in Tanzania. Phakiti (2018), further emphasizes that promoting ethical procurement practices such as transparency, integrity, and professionalism improves compliance with procurement regulations in public institutions.

Conclusion

The determinants of ethical procurement practices among public institutions in the Upper East Region of Ghana was examined in this research study. The study established that transparency, professionalism, integrity and political influence were the major determinants of ethical procurement practices among public procurement professionals in the Upper East Region of Ghana.

Implications of findings

The findings of this study will serve as a guide for administrators and managers of public institutions when procuring goods, works, and services for public development. In an effort to improve procurement personnel's ethical behavior, a deliberate focus should be placed on transparency, professionalism, integrity, and political influence. These four determinants have the potential to improve ethical procurement behavior significantly. Furthermore, the conclusions of this study emphasise both the Principal Agent and the Unitarian theories used in this research study. Hence, the implementation of ethical principles such as transparency, integrity and professionalism by procurement professionals enhances the overall performance of public institutions by guaranteeing cost-effective procurements and significant cost savings.

Finally, by identifying the determinants of procurement ethics in public institutions, the current study adds to the body of knowledge on ethical procurement practices. This would be useful information for further study in an effort to enhance ethical behavior when the procurement function is being carried out.

Limitations of the Study

The study was limited to public institutions, similar studies could be conducted to include institutions in the private sector as well. Other factors that may influence the practice of ethical procurement in both public and private institutions across the country should be investigated in future research. From a methodological perspective, it would be possible for future studies to compare the factors that influence procurement ethics in public and private entities.

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The Influence of Service Quality on Customer Satisfaction and Loyalty in Ethiopian Private Banks

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Abstract

In Ethiopia, information on service quality, customer satisfaction, and loyalty in the banking sector in general and in private banks in particular is scarce. The primary objectives of this study were to determine whether customers of private banks in Hawassa, Ethiopia, are satisfied and loyal to their services, and to determine whether customer satisfaction plays a mediating role between service quality and customer loyalty. A self-administered questionnaire was used to collect primary data from 238 customers of nine private banks (response rate of 195 = 81.93%). The questionnaire contained 18 items for the five dimensions (tangibility, reliability, responsiveness assurance and empathy) of the SERVPERF model, and five items each for customer satisfaction and loyalty. Service quality, customer satisfaction, and loyalty were significantly correlated with service quality dimensions. Customer satisfaction was a strong partial mediator between service quality and customer loyalty. Present study showed that greater attention on reliability, responsiveness, and assurance dimensions would increase customer satisfaction and loyalty toward private banks.

Key words: Fiscal Sustainability, Economic Diversification, Nigeria Economy

Introduction

Customers' satisfaction and loyalty are important variables that determine the long-term profitability and survival of a business in an increasingly competitive market (Bhat et al., 2018). Customer satisfaction is influenced by the dimensions of service quality, namely tangibility (physical facilities, equipment, appearance of employees), reliability (ability to consistently deliver the promised service),

responsiveness (willingness to help customers and provide prompt service), assurance (knowledge and courtesy of employees and their ability to inspire trust), and empathy (caring and individualized attention that the company provides to its customers) (Parasuraman et al., 1988). Customers using the same service will nevertheless have different levels of satisfaction because services are intangible, inseparable, perishable, and heterogeneous (Kotler & Keller, 2012).

Several studies have shown that service quality influences customer loyalty through customer satisfaction (Siddiqi, 2011; Ngo & Nguyen, 2016; Kasiri et al., 2017; Pakurár et al., 2019; Supriyanto et al., 2021). The delivery of high-quality services is essential for retaining existing customers as well as attracting new ones. Poor service quality, on the other hand, leads to dissatisfied customers who are more likely to switch to a competitor, and are less willing to recommend the company to others. Thus, it is essential to evaluate and improve service quality in a business environment that is characterized by rapidly growing technologies, unstable economic conditions, fierce competition, and increasingly demanding customers (Kotler & Keller, 2012).

There is limited information about service quality, customer satisfaction, and loyalty in Ethiopian banking sector in general, and in private banks in particular. The findings of this study will help managers to prioritize service dimensions for effective resource allocation and provide valuable information for researchers studying service quality, customer satisfaction, and loyalty in private banks in particular and in the banking sector in general. Therefore, the primary objectives of this study were to determine whether customers of private banks in Hawassa, Ethiopia, are satisfied and loyal to their services, and to determine whether customer satisfaction plays a mediating role between service quality and customer loyalty.

Literature Review
Service Quality

A service is any act or performance offered to another that is essentially intangible and does not result in the possession of anything. The production of a service may or may not involve physical products (Kotler & Keller, 2012). On the other hand, service quality refers to the difference between customers' expectations of the service and their perception of the performance of the service actually provided (Parasuraman et al., 1988). Customers' expectations are influenced by their knowledge of a company's products or services, marketing strategies used by the company, psychological state of the customer at the time of service offering, and customers' norms, values, backgrounds, and their relationships with other companies (Kant & Jaiswal, 2017).

The SERVQUAL model, developed by Parasuraman et al. (1988), is often used to evaluate the quality of services. This model has five dimensions: tangibility, reliability, responsiveness, assurance, and empathy. Each of these dimensions consists of four or five questions, resulting in a total of 22 pairs of questions to test customers' expectations and perceptions simultaneously.

It has been reported that the SERVQUAL model is of limited use in determining the quality of services. According to Brady and Cronin (2001), there is no evidence that customers evaluate service quality using the SERVQUAL gap, which is perceptions minus expectations. In addition, answering similar questions about expectations and

perceptions leads to fatigue, confusion, and low response rates in respondents. Simultaneous rating of expectations and perceptions also influences how respondents view subsequent questions (Tourangeau & Rasinski, 1988). Moreover, respondents generally assign a higher score to the expectations component of the questionnaire than to the perceptions component (Smith, 1995). Therefore, the SERVPERF model, a performance-only instrument, or the service perception component of the SERVQUAL model, was used in this study because it better captures differences in customers' overall perceptions of service quality (Cronin and Taylor, 1992; Brady et al., 2002).

Customer Satisfaction

Customer satisfaction is an emotional response that depends in intensity on how well a customer's expectations were met during or after the use of a particular good or service (Giese & Cote, 2000). Customers' perceptions of products or services performing better than expected leads to positive disconfirmation, inadequate performance leads to negative disconfirmation, and performance that meets expectations leads to zero disconfirmation (Furrer et al., 2000; Sureshchandar et al., 2002). In addition to customer commitment and tolerance for service failures, customer satisfaction also influences positive word of mouth (Gounaris et al., 2003).

Customer satisfaction is influenced by the dimensions of service quality (tangibility, reliability, responsiveness, assurance, and empathy), although the extent of influence of each dimension may vary from one situation to another (Parasuraman et al., 1988; Arasli et al., 2005; Shanka, 2012; Gnawali, 2016; Kant & Jaiswal, 2017; Supriyanto et al., 2021). For example, the

presence of physical equipment and the appearance of employees, as well as their communication skills, politeness, willingness, and ability to provide the promised service in a timely and accurate manner, influence customer satisfaction. However, due to the intangibility, inseparability, perishability, and heterogeneity of services, customer satisfaction is more influenced by the human aspects of service quality than by the tangibles (Parasuraman et al., 1988; Lenka et al., 2009).

Customer Loyalty

Customer loyalty includes both attitudinal and behavioral loyalty. Attitudinal loyalty refers to the positive propensity of customers toward goods and services based on their experiences. These customers are more likely to switch to a competing brand if it offers better quality at a lower price. In contrast, behavioral loyalty refers to customers' commitment to purchasing the particular good or service despite competing alternatives in the market (Dick and Basu, 1994; Lenka et al., 2009). Indicators of loyalty generally include customers' lower intentions to switch to competitors (Chakravarty et al., 2004), as well as repurchase intentions and positive word-of-mouth referrals (Lenka et al., 2009; Supriyanto et al., 2021).Studies have shown that customer loyalty is positively correlated with service quality and customer satisfaction (Siddiqi, 2011; Ngo & Nguyen, 2016; Supriyanto et al., 2021), but not all customers satisfied with service are always loyal (Supriyanto et al., 2021).

Conceptual Model and Hypotheses

Based on the literature review, the conceptual model for the study was presented in Figure 1, which begins with measuring the dimensions of service quality: tangibility, reliability, responsiveness, safety, and empathy. It shows that service quality is an independent variable, customer satisfaction is a mediator, and customer loyalty is a dependent variable. In this study, the following hypotheses were investigated:

1) H_1: Service quality significantly affects customer satisfaction
2) H2: Service quality significantly affects customer loyalty
3) H3: Customer satisfaction significantly affects customer loyalty
4) H4: Service quality significantly affects customer loyalty in the presence of customer satisfaction

Independent variable

Dependent variable
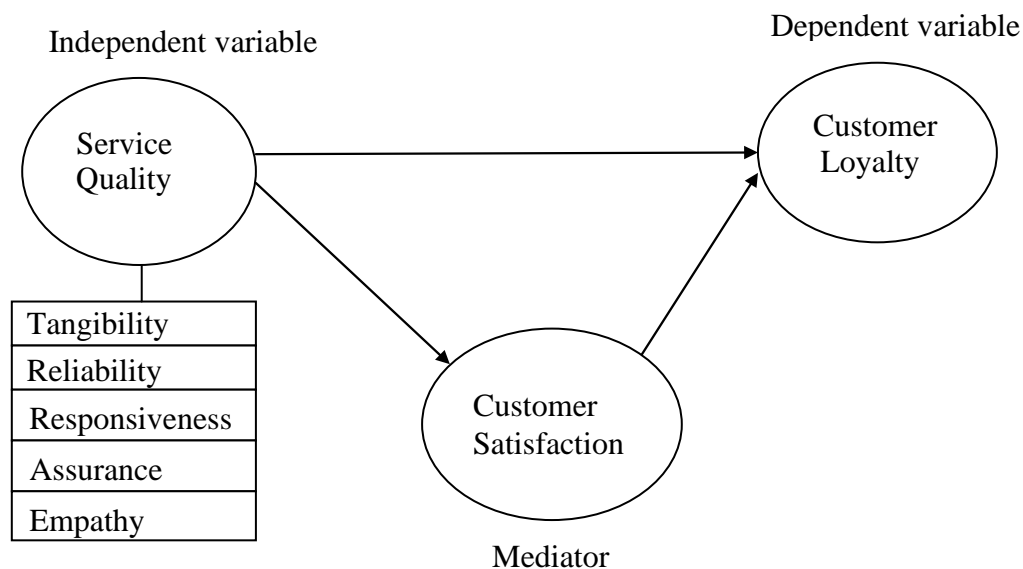
Figure 1. Conceptual framework for the study.

Research Method

Description of the Study Area

This study was conducted in Hawassa, the capital of the regional state of Sidama, which is 275 km south of Addis Ababa, the capital of Ethiopia. The population of Hawassa is estimated at 436,992 (https://www.hawassa.gov.et/en/city/people).At the start of this study in February 2023, there were two public banks (Commercial Bank of Ethiopia and Development Bank of Ethiopia) and 28 private banks in Hawassa. This study was based on conveniently selected customers from main branches of nine private banks,

namely Addis International, Awash International, Bank of Abyssinia, Berhan, Dashen, Debub Global, Hibret, Nib International, and Wogagen banks, which differ in the number of branches they have, the number of years they have been in the market, and their financial performance (https://en.wikipedia.org/wiki/List of banks in Ethiopia). The main branches were selected based on their high level of activity compared to other branches in Hawassa City, Ethiopia.

Sample Size and Data Collection

According to Hair et al. (2019), an acceptable sample size is one that includes at least 50, but preferably 100 or more observations. Alternatively, they recommend a minimum number of 5 to 10 respondents for each questionnaire item. Although a minimum of 140 respondents was required to complete the present questionnaire, which contained 18 items on the dimensions of service quality (Parasuraman et al., 1988) and five items for each of customer satisfaction and loyalty obtained from published works (Lenka et al., 2009; Mohsan et al., 2011; Bhat et al., 2018; Islam et al., 2020), 238 self-administered questionnaires were conveniently distributed to volunteer customers who were able to complete the questionnaires. The questionnaire also included six personal profile questions.

Respondents were selected from each main branch bank based on their proportion of the total number of 198,000 customers in the main branches of nine private banks considered at the start of the study in February 2023. A five-point Likert scale with the options 1=strongly disagree, 2=disagree, 3=neutral, 4=agree, and 5=strongly agree was used to assess customers' perceptions of the services and their satisfaction and loyalty.

Data Analysis

Data were analyzed using Statistical Package for Social Sciences (SPSS) software, version 23. Pearson correlation analysis was performed between service quality, service quality dimensions, customer satisfaction and loyalty. In addition, a regression analysis was performed to determine the effects of the service quality dimensions on customer satisfaction and loyalty. Both simple and multiple regression analyses were conducted to examine the mediating role of customer satisfaction in the relationship between service quality and customer loyalty (Baron & Kenny, 1986).

Results
Response Rates

After excluding incomplete responses, the valid response rate was 195 (81.93%) for 238 questionnaires. Awash International (15.15%), Bank of Abyssinia (12.63%), and Dashen (20.20%) banks accounted for most of the respondents because of their extensive customer base (Table 1).

Table 1. Number of customers, sample size, frequency of responses and response rate for main branches of nine private banks, Hawassa, Ethiopia, 2023

Profiles of Respondents

Respondents' profile information included gender, age, occupation, education, experience with the bank, and type of account (Table 2).

Table 1. Number of customers, sample size, frequency of responses and response rate for main branches of nine private banks, Hawassa, Ethiopia, 2023

Bank	Number of customers	Percent	Frequency in the sample	Frequency of responses	% Response rate
Addis International	15000	7.58	18	13	7.56
Awash International	30000	15.15	36	32	15.13
Bank of Abyssinia	25000	12.63	30	28	12.61
Berhan	20000	10.10	24	17	10.08
Dashen	40000	20.20	48	44	20.17
Debub Global	15000	7.58	18	12	7.56
Hibret	17000	8.59	21	14	8.82
Nib International	16000	8.08	19	17	7.98
Wogagen	20000	10.10	24	18	10.08
Total	198000	100.00	238	195	100

Source: Researcher's survey, 2023.

Male respondents accounted for 64.1% of the sample, while females accounted for 34.9%. The age groups 20-29 (17.9%), 30-39 (37.2%), and 40-49 (22.1%) years accounted for 77.20% of the respondents. 54.4% of respondents were government employees, followed by self-employed (26.7%) and business owners (17.4%), while the majority of respondents had 1-5 years (51.8%) and 6-10 years(25.6%) years of experience in using private banking services, respectively. In terms of education, most respondents held a bachelor's (46.7%) and master's (29.7%) degree, while 10.8% had a diploma. Most respondents had a savings account (52.8%) and a current account (44.6%), while a fixed account (3.6%) was the least common.

Validity and Reliability Tests

A valid measurement accurately measures the concept it is supposed to measure (Hair et al., 2019). A pre-test of the questionnaire was conducted with 20 selected private bank customers where the 18 items of service quality, 5 items of customer satisfaction, and 5 items of loyalty were found to be valid.

When variables measure the same construct consistently, they are said be reliable. The internal consistency of items which measure the same construct should be highly inter-correlated and is commonly evaluated with the minimum Cronbach's alpha value of 0.70 (Hair et al., 2019). In preset study, the service quality dimensions, customer satisfaction and loyalty had Cronbach's alpha values greater than 0.70(Table 3 and Table 4), confirming the internal consistency of items employed to measure these concepts. Perhaps, the reliability of an instrument will be low when there are confusing questions, as well as when the respondents are unfamiliar with or do not care about the questions (Marczyk et al., 2005).

Table 2. Profiles of customers (n=195) of nine private banks, Hawassa, Ethiopia, 2023

Items	Frequency	Percent
Gender		
Male	127	65.1
Female	68	34.9
Age		
Below 20 years	4	2.1
20-29 years	35	17.9
30-39 years	92	37.2
40–49 years	43	22.1
50 years and above	21	10.8
Occupation		
Government employee	106	54.4
Student	3	1.5
Business owner	34	17.4
Self employed	52	26.7
Education		
Primary school	11	5.6
High school complete	14	7.2
Diploma	21	10.8
Bachelor's degree	91	46.7
Master's degree	58	29.7
Experience with the bank		
Less than one year	22	11.3
1- 5 years	101	51.8
6-10 years	50	25.6
10-15 years	17	8.7
More than 15 years	5	2.6
Type of account		
Saving account	103	52.8
Current account	86	44.1
Fixed account	6	3.1

Source: Researcher's survey, 2023.

Service Quality Dimensions

Table 3 showed that the mean scores for tangibility items ranged from 3.74 (the appearance of the physical facilities of the bank is keeping with the type of services provided) to 4.19 (bank's employees are well dressed and appear neat), whereas the mean scores for reliability items ranged from 3.51 (when the bank promises to do something by a certain time, it does so) to 4.08 (the bank is dependable). Similarly, the mean scores of responsiveness items ranged from 3.71(employees of bank are never too busy to respond to customer requests promptly) to 4.06 (employees of bank are always willing to help customers). The mean scores for the assurance items were 3.78 (you can trust employees of the bank), 3.91(you feel safe in your transactions with the bank's employees), and 3.83 (employees of the bank are polite), whereas that of empathy items ranged from 3.35 (the bank has your best interests at heart) to 3.65 (employees of the bank understand what your needs are). The mean score of tangibility, reliability, responsiveness, assurance and empathy was 4.01, 3.78, 3.94, 3.84, and 3.53, respectively.

Customer Satisfaction and Loyalty

Table 4 showed that the mean scores for the customer satisfaction items ranged from 3.71(I am satisfied with individual attention and complaint handling of the bank, and I am satisfied with products and services offered by my bank) to 4.05 (Overall, I am satisfied with the physical setting of the bank), whereas the mean scores for the customer loyalty items ranged from 3.35(I have no intention to switch over to other) to 3.77 (I will continue to use this banking service in the future). The mean score of customer satisfaction and loyalty was 3.87, and 3.59, respectively.

Correlation Analysis

Table 5 showed that the five service quality dimensions were positively correlated with service quality (r = 0.738 to 0.807, p < 0.01), customer satisfaction (r = 0.545 to 0.743, p < 0.01), and customer loyalty (r = 0.513 to 0.649, p < 0.01). The within-service quality dimensions correction coefficients were also positive (r = 0.365 to 0.596, p < 0.01).

Regression Analysis

F-test showed that the effects of tangibility, reliability, responsiveness, assurance and empathy explained 68.9% of the variation in customer satisfaction and was significant (p = 0.000) (Table 6).

Table 3. Cronbach's alpha values, mean, standard deviations of service quality dimensions for customers (n = 195) of nine private banks, Hawassa, Ethiopia, 2023

Dimension	Cronbach's alpha for dimensions	Cronbach's alpha if item deleted	Mean	SD[1]
Tangibility	**0.777**		**4.01**	**0.698**
The bank has up-to-date equipment		0.735	4.09	0.844
Bank's physical facilities are visually appealing		0.718	4.02	0.905
Bank's employees are well dressed and appear neat		0.727	4.19	0.908
The appearance of the physical facilities of the bank is keeping with the type of services provided		0.712	3.74	0.945
Reliability	**0.790**		**3.78**	**0.749**
When the bank promises to do something by a certain time, it does so		0.737	3.51	1.012
The bank is dependable		0.736	4.08	0.870
The bank provides its service at the time it promises to do so.		0.719	3.59	0.987
The bank keeps its records accurately		0.760	3.92	0.949
Responsiveness	**0.834**		**3.94**	**0.807**
You receive prompt service from bank's employees		0.769	4.04	0.946
Employees of bank are always willing to help customers		0.741	4.06	0.871
Employees of bank are never too busy to respond to customer requests promptly		0.802	3.71	0.974
Assurance	**0.850**		**3.84**	**0.818**
You can trust employees of the bank		0.761	3.78	0.966
You feel safe in your transactions with the bank's employees		0.795	3.91	0.895
Employees of the bank are polite		0.813	3.83	0.936
Empathy	**0.873**		**3.53**	**0.819**
The bank give you individual attention		0.825	3.62	0.979
Employees of the bank give you personal attention		0.825	3.49	0.981
Employees of the bank understand what your needs are		0.846	3.65	0.980
The bank has your best interests at heart		0.855	3.35	0.904

[1]SD = standard deviation.

Table 4. Cronbach's alpha values, mean, and standard deviations of customer satisfaction and loyalty for customers (n = 195) of nine private banks, Hawassa, Ethiopia, 2023

Dimension	Cronbach's alpha for dimensions	Cronbach's alpha if item deleted	Mean	SD1
Customer satisfaction	**0.878**		**3.87**	**0.741**
Overall, I am satisfied with the physical setting of the bank		0.843	4.05	0.817
I am satisfied with the banking skills, courtesy and friendliness of bank employees		0.842	4.02	0.861
I am satisfied with individual attention and complaint handling of the bank		0.859	3.71	0.832
I am satisfied with employees' response and prompt services provided by my bank		0.847	3.88	1.023
I am satisfied with products and services offered by my bank		0.867	3.71	0.969
Customer loyalty	**0.857**		**3.59**	**0.807**
I recommend this bank to families, relatives and friends		0.830	3.68	0.931
I will continue to use this banking service in the future		0.812	3.77	0.947
I often tell positive things about my bank to other people		0.819	3.59	1.043
I have no intention to switch over to other		0.852	3.35	1.056
I prefer this bank over other banks		0.820	3.54	1.075

[1]SD = standard deviation.

Table 5. Pearson correlation coefficients among service quality dimensions, service quality, customer satisfaction and customer loyalty for customers (n = 195) of nine private banks, Hawassa, Ethiopia, 2023

Items[1]	REL	RES	ASS	EMP	SQ	CS	CL
TAN	0.596**	0.529**	0.466**	0.365**	0.738**	0.545**	0.513**
REL		0.559**	0.556**	0.469**	0.805**	0.651**	0.578**
RES			0.510**	0.548**	0.807**	0.743**	0.649**
ASS				0.575**	0.800**	0.638**	0.581**
EMP					0.766**	0.601**	0.522**
SQ						0.813**	0.727**
CS							0.821**

[1]TAN = tangibility; REL = reliability; RES = responsiveness; ASS = assurance; EMP = empathy; SQ = service quality; CS = customer satisfaction; CL = customer loyalty; ** = significant at $p < 0.01$ probability level.

Table 6. Significance of regression model of service quality dimensions on customer satisfaction for customers (n = 195) of nine private banks, Hawassa, Ethiopia, 2023

Source of variation[1]	Sum of Squares	df	Mean Square	F	P
Regression	73.359	5	14.672	83.606	0.000
Residual	33.167	189	0.175		
Total	106.526	194			

[1]Dependent variable = customer satisfaction (CS); independent variables: tangibility, reliability, responsiveness, assurance, empathy; df = degree of freedom; R^2 = 0.689; standard error of the estimate (SE) = 0.419.

Table 7 demonstrated that each dimension of service quality had a statistically significant effect on customer satisfaction, except for tangibility. This agrees with the correlation analysis except for tangibility. The unit change in reliability, responsiveness, assurance and empathy would increase customer satisfaction by 0.203, 0.385, 0.187 and 0.123 units, respectively. The standardized regression coefficient, or beta coefficients (β), or direct effect of reliability, responsiveness, assurance, and empathy on customer satisfaction was 0.205, 0.420, 0.206 and 0.132, respectively. Moreover, the tolerance and variance inflation factor (VIF) measurements of multicollinearity were more than 0.10 and less than 10, respectively.

F-test showed that the effects of tangibility, reliability, responsiveness, assurance and empathy explained 54.4% of the variation in customer loyalty and was significant (p = 0.000) (Table 8).

Table 7. Regression coefficients for relationship between service quality dimensions and customer satisfaction for customers (n = 195) of nine private banks, Hawassa, Ethiopia, 2023

Model	Unstandardized coefficients		Standardized coefficients			Multicollinearity	
	B	SE	β	t	P	Tolerance	VIF[1]
(Constant)	0.202	0.197		1.022	0.308		
Tangibility	0.059	0.057	0.056	1.040	0.300	0.578	1.729
Reliability	0.203	0.057	0.205	3.587	0.000	0.505	1.979
Responsiveness	0.385	0.051	0.420	7.559	0.000	0.535	1.871
Assurance	0.187	0.050	0.206	3.747	0.000	0.542	1.843
Empathy	0.123	0.048	0.136	2.540	0.012	0.576	1.736

[1]VIF = variance inflation factor.

Table 8. Significance of regression model of service quality dimensions on customer loyalty for customers (n = 195) of nine private banks, Hawassa, Ethiopia, 2023

Source of variation[1]	df	Sum of squares	Mean square	F	P
Regression	5	68.672	13.734	45.017	0.000
Residual	189	57.663	0.305		
Total	194	126.335			

[1]Dependent variable = customer loyalty (CL); independent variables: tangibility, reliability, responsiveness, assurance, empathy; df = degree of freedom; R^2 = 0.544; standard error of the estimate (SE) = 0.552.

Table 9 showed that reliability, responsiveness and assurance dimensions had a statistically significant effect on customer loyalty, except for tangibility and empathy. The unit increase in reliability, responsiveness, and assurance would increase customer loyalty by 0.176, 0.343 and 0.209 units, respectively. The direct effect (β) of reliability, responsiveness, and assurance dimensions on customer loyalty was also 0.163, 0.343, and 0.212, respectively.

Table 9. Regression coefficients for relationship between service quality dimensions and customer loyalty for customers (n = 195) of nine private banks, Hawassa, Ethiopia, 2023

Model	Unstandardized coefficients		Standardized coefficients		
	B	SE	β	t	P
(Constant)	-0.037	0.260		-0.144	0.886
Tangibility	0.115	0.075	0.099	1.538	0.126
Reliability	0.176	0.075	0.163	2.357	0.019
Responsiveness	0.343	0.067	0.343	5.103	0.000
Assurance	0.209	0.066	0.212	3.176	0.002
Empathy	0.099	0.064	0.100	1.548	0.123

Customer Satisfaction as a Mediator

The following three simple linear regressions and one multiple regression were conducted to assess the role of customer satisfaction(mediator) in the relationship between service quality (independent variable) and customer loyalty (dependent variable) (Baron & Kenny, 1986).

1) Model 1: Service quality significantly affects customer satisfaction
2) Model 2: Service quality significantly affects customer loyalty
3) Model 3: Customer satisfaction significantly affects customer loyalty
4) Model 4: Service quality insignificantly affects customer loyalty in the presence of customer

satisfaction

Complete mediation occurs when all four conditions are met, and partial mediation occurs only the first three conditions are significant (Baron & Kenny, 1986). Simple regression analysis showed that the effect of service quality on customer satisfaction and loyalty, and that of customer satisfaction on customer loyalty were significant (p =0.000) and had moderate R-square (R^2 = 0.529 to 0.674) values. Similarly, multiple regression showed that the effect of service quality and customer satisfaction on customer loyalty was

significant (p = 0.000) (Table 10).

Table 11 showed that, in simple regression, a unit increase in service quality would increase customer satisfaction by 0.988 and customer loyalty by 0.962, whereas a unit increase in customer satisfaction would increase customer loyalty by 0.894. The direct (standardized) effects of service quality on customer satisfaction and customer loyalty were 0.813 and 0.727, respectively, while that of customer satisfaction on customer loyalty was 0.821.

Table 10. Significance of regression models to test customer satisfaction as a mediator between service quality and customer loyalty for customers (n = 195) of nine private banks, Hawassa, Ethiopia, 2023

Model[1]	Dependent variable	Independent variable(s)	Source of variation	Sum of Squares	df	Mean Square	F	P	R-square	SE
1	CS	SQ	Regression	70.463	1	70.463	377.1	0.000	0.661	0.432
			Residual	36.063	193	6.187				
			Total	106.526	194					
2	CL	SQ	Regression	66.859	1	66.859	216.957	0.000	0.529	0.555
			Residual	59.476	193	0.308				
			Total	126.335	194					
3	CL	CS	Regression	85.15	1	85.15	399.027	0.00	0.674	0.462
			Residual	41.185	193	0.213				
			Total	126.335	194					
4	CL	CS, SQ	Regression	86.483	2	43.242	208.332	0.000	0.685	0.456
			Residual	39.852	192	0.208				
			Total	126.335	194					

[1]CS =customer satisfaction; CL = customer loyalty; SQ = service quality; df = degree of freedom; SE = standard error of the estimate.

Table 11. Significance of regression coefficients for relationship between service quality, customer satisfaction and customer loyalty for customers (n = 195) of nine private banks, Hawassa, Ethiopia, 2023

Model[1]	Dependent variable	Independent variable(s)		Unstandardized Coefficients		Standardized Coefficients		
				B	SE	β	t	P
1	CS	SQ	Constant	0.099	0.197		0.505	0.614
			SQ	0.988	0.051	0.813	19.419	0.000
2	CL	SQ	Constant	-0.087	0.253		-0.344	0.731
			SQ	0.962	0.065	0.727	14.729	0.000
3	CL	CS	Constant	0.126	0.176		0.715	0.475
			CS	0.894	0.045	0.821	19.976	0.000
4	CL	CS, SQ	Constant	-0.160	0.208		-0.772	0.441
			SQ	0.234	0.092	0.177	2.534	0.012
			CS	0.738	0.076	0.677	9.724	0.000

[1]CS =customer satisfaction, CL = customer loyalty; SQ = service quality; SE = standard error of the estimate

Discussion

Using the criteria of strongly disagree (1.00 -1.80), disagree (1.81- 2.60), neutral (2.61-3.40), agree (3.4-4.20), and strongly agree (4.21-5.00) (Nyutu et al., 20021), the respondents agreed with the presence of tangibility, provision of accurate and dependable services at promised times, less waiting to obtain services, employees' trustworthiness and politeness in handling customers, and presence of individual attentions and understanding customers' needs by private banks and their employees. This study also showed that customers were generally satisfied with the private banks' service offerings and were loyal to them.

The corrections among service quality dimensions were positive suggesting that the improvement in one dimension would have a positive influence on the others. Using the criteria for the interpretation of correlation coefficient (r) as r = 0.1 is small, r = 0.3 is medium, and r = 0.5 or more is large (Gravetter et al., 2020), the

correlation coefficients of service quality with customer satisfaction (r = 0.813, p=0.01) and customer loyalty (r = 0.727, p < 0.01), and that between customer satisfaction and customer loyalty (r = 0.821, p < 0.01) were strong. It has also been reported that improving overall service quality and its dimensions will result in satisfied and more devoted customers (Lenka et al., 2009; Siddiqi, 2011; Shanka, 2012; Ali & Raza, 2015; Slack & Singh, 2020; Supriyanto et al., 2021).

The coefficient of determination (R^2) value for the regression of service quality dimensions on customer satisfaction (R^2=0.689) and customer loyalty (R^2=0.544) was moderate according to the criteria of R^2 value of 0.75, 0.50, and 0.25 is substantial, moderate, and weak, respectively (Hair et al., 2019). The standardized regression coefficients, or beta coefficients (β) use standardized data and show the direct effect of independent variables on dependent variable (Hair et al., 2019). The direct effect of reliability, responsiveness, assurance, and empathy on customer satisfaction was 0.205, 0.420, 0.206 and 0.132, respectively, suggesting that any improvement in these dimensions would increase customer satisfaction. The significant impact of reliability (Ali & Raza, 2015; Gnawali, 2016), and that of responsiveness, assurance and empathy (Shanka, 2012; Ali & Raza, 2015; Gnawali, 2016; Kant & Jaiswal, 2017) on customer satisfaction have also been reported in previous studies.

Despite the fact that poor tangibles would lead to customer disappointment (Parasuraman et al., 1988; Arasli et al.,2005), the insignificant effect of tangibility on customer satisfaction could be because private banks might have similar offers in terms of up to-date equipment, visually appealing facilities, and neat and well-dressed employees. The insignificant effect of tangibility on customer satisfaction has also been reported by other studies (Arasli et al., 2005; Shanka, 2012).

Tolerance and the variance inflation factor (VIF) are commonly used to assess multicollinearity, or the degree of correlation in independent variables. Tolerance is determined as 1-R^2, i.e., the variability of an independent variable that cannot be explained by the other independent variables, after regressing independent variables on another independent variable, and it should be more than 0.10 to demonstrate that the independent variables do not contribute significantly to the variation of that independent variable. Variance inflation factor (VIF), which should be generally less than 10, is an inverse of the tolerance value and its square root indicates the degree to which the standard error would be increased (Hair et al., 2019). Thus, tolerance value of more than 0.10 and variance inflation factor of less than 10, for the preset study, suggested the low multicollinearity problem among service quality dimensions.

The present study showed that customer satisfaction was a partial mediator between service quality and customer loyalty. The substantial reduction in the direct effect of service quality on customer loyalty from the value of 0.727 in simple regression to 0.177 in multiple regression in the presence of customer satisfaction, and the significant indirect effect (0.813 x 0.677 = 0.550) according to Sobel test (Z = 7.776, p = 0.000) would show that customer satisfaction is a more crucial factor for customer loyalty than service quality. The role of customer satisfaction as a mediator between service quality and customer

loyalty has also been reported in previous studies (Siddiqi, 2011; Ngo & Nguyen, 2016; Kasiri et al., 2017; Pakurár et al., 2019; Slack & Singh, 2020; Supriyanto et al., 2021).

Although customer satisfaction is a strong mediator, the significant effect of service quality on customer loyalty in the presence of customer satisfaction would show that multiple mediating factors might occur between service quality and customer loyalty (Baron and Kenny, 1986). It has also been reported that satisfied customers are not always loyal (Bhat et al., 2018; Supriyanto et al., 2021). For instance, Bhat et al., (2018) suggested that satisfaction can lead to loyalty when customers build trust.

Conclusion

This study showed that all service quality dimensions (tangibility, reliability, responsiveness, assurance, and empathy) and overall service quality had positive correlation with customer satisfaction and loyalty. This suggests that enhancing service quality would increase customer satisfaction and loyalty in private banks. However, reliability, responsiveness, and assurance dimensions had significant influence on customer satisfaction and loyalty, indicating that improving them will assist to both keep current customers and attract new ones. The non-significant

effect of tangibility on both customer satisfaction and loyalty, and that of empathy on loyalty would suggest that implementing strategies to differentiate these dimensions would give private banks competitive advantages. Moreover, the strong mediating role of customer satisfaction between service quality and loyalty would suggest that implementing service quality improvement measures which guarantee customer satisfaction will, in return, lead to loyalty.

Limitations and Future Research

This study was limited to private banks in Hawassa, one of the largest cities in Ethiopia. Future research should include more banks and respondents, drawing a sample from different major cities in Ethiopia. Even though customer satisfaction strongly mediated the relationship between service quality and customer loyalty in this study, other factors affecting this relationship should also be studied.

Acknowledgement

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Unlocking Loyalty: The Crucial Role of the Host Country Technological Business Environment for Transnational Corporations

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Abstract:
Foreign companies, including transnational corporations (TNCs), have demonstrated disloyalty toward their hosts in Sub-Saharan Africa (SSA) by, among other things, scaling back strategic expansion plans, closing productions, moving operations and shifting income-generating activities to different countries. Therefore, this study explores the impact of the host country's technological business environment (TBE) on TNC loyalty towards the host country, Tanzania. Data was collected from 131 executives of TNCs in Tanzania using a cross-sectional survey questionnaire. The measurement model was evaluated using confirmatory factor analysis. The hypotheses were empirically tested using hierarchical regression analysis. Findings reveal that a robust TBE significantly enhances TNC loyalty, with specific elements like local production processes, innovativeness, information system infrastructure, IT competency, IT support services, and technological equipment usage having a positive impact. However, TNC loyalty is not affected by R&D or systemic integration. These results not only deepen the theoretical understanding of TNC loyalty but also fill an existing gap by linking it to TBE. The study suggests that policymakers should focus on strengthening key components of the TBE to nurture and maintain TNC loyalty. In Tanzania, this involves ensuring high-quality, knowledge-intensive production systems, well-developed information system infrastructure, elevated computer literacy and competency levels, robust IT support services, advanced technological equipment usage, and a culture of innovativeness.

Key words: Technological business environment, technological factors, transnational corporations loyalty, Host country, Tanzania

Introduction

Technology has been an utterly important component for economic development around the world, and it is even more important in countries where transnational corporations (TNCs) operate in order to maximize financial gains (Kavila & Kilika, 2023). This is because foreign firms, including TNCs, together with foreign direct investments (FDI), come with benefits that overflow over various sectors (Saittakari et al., 2023; Narula & Pineli, 2018). Specifically, the host nation benefits from direct employment, technology transfer, foreign exchange, improved infrastructure, surged government revenues, and boosted gross domestic product (GDP), to mention but a few (Magai, 2021; Narula & Pineli, 2018).

Particularly low-income nations have been characterized as those benefiting much more from the horizontal and vertical overflows of benefits from foreign investments, including TNCs (Xiao & Tian, 2023). Thus, in a low-income country like Tanzania, the continuation of TNC activities in the host country, which is equivalent to TNC loyalty, is essential for economic development. Therefore, to attract, build, and maintain TNC loyalty, these nations must provide a conducive commercial atmosphere, especially in technological business environments (TBE).

Meanwhile, Mwadime (2020) described TNCs as foreign-owned corporations that conduct businesses outside of their home country and have subsidiaries in different countries as well. These businesses have been supplied with capital and other substantial resources such as products, manufacturing techniques, technological know-how, and professional management (Mwadime, 2020). This demonstrates that TNCs have incentives that offer chances to move these resources to other nations where there are supportive TBE conditions (Belal et al., 2022). Such TBE conditions may include the technological intensity, technological competition intensity, and technological maturity that nurture more innovations, productivity, increased sales, revenues, and profitability (Belal et al., 2022). Likewise, according to Jozef et al. (2019), TNC loyalty is conceptualized as the willingness of a TNC to continue operating in the host country through repeated investments, reinvested earnings, and making helpful recommendations in favor of the host country. In fact, TNCs feel they should continue with operations and diversification plans despite changes in the host country's business environments that might cause them to shift income-generating activities to another country (Jozef et al., 2019; Medioli et al., 2023).

However, Tanzania and other Sub-Saharan African nations have recently experienced the departure of some foreign companies and a rise in TNC disloyalty (Houreld et al., 2016; Kagochi & Durmaz, 2018; Ngowi, 2018). For instance, between 2013 and 20122, TNCs' reinvestment of earnings in Tanzania significantly decreased on average by around 146.92% [Tanzania Investment Centre (TIC), 2018, 2023]. Along with scaling back growth and expansion plans, some TNCs also closed business operations, while others transferred their income to other nations (Houreld et al., 2016; Klinger et al., 2023; Ngowi, 2018; Toloui, 2022). These behaviors point to low levels of TNC loyalty in Tanzania. Additionally, despite the firm's capability to fund investments through retained earnings and tap in foreign savings, foreign firms in the manufacturing sector are not expanding

investments because of poor business environments, including TBE and high electrical outage losses (Klinger et al., 2023).

Scholars have linked the disloyal behaviors of TNCs in Tanzania with low productivity and profitability, which may have been influenced by the TBE (Klinger et al., 2023; Rwamuhuru & Tegambwage, 2021; Toloui, 2022). The host nation level of innovations and creativity, technology systems and infrastructure, technologically cultural orientations, and technological innovation commercialization have been recognized as major factors affecting TNC performance (Klinger et al., 2023; Rwamuhuru & Tegambwage, 2021). Belal et al. (2022) and Okechukwu and Okoronkwo (2018) established that, to a large extent, the host country's TBE has an impact on the performance of TNCs. This means the TBE creates technological capacity advantages through host nation technological equipment usage, information technologies, telecommunications, research and development, innovativeness, and information systems integration, which affect the TNC systems, operations capability, production costs, products, and services, which influence TNC profitability (Bag et al., 2021).

In addition, other researchers have linked the poor performance of TNCs in Tanzania with inadequate technology systems and infrastructure, low computer literacy and competency levels, a lack of consistent technological innovation commercialization policies, and an inability to value the new technology (Liliane, 2022; Rwamuhuru & Tegambwage, 2021). These weaknesses hinder users, including TNCs knowledge and host government institutions and regulatory bodies' systemic integrations, rational decision-making, and

TNCs performance (Belal et al., 2022; Liliane, 2022). However, these studies have not shown how poor performance leads to TNC disloyalty.

Moreover, according to Ismail (2023), TBE in Tanzania is characterized by a lack of ideas, funding, and cultural orientations that value technology to fuel and promote better TBE conditions for facilitating local innovations and creativity, information technology, human capital, data analytics, and collaborative relationships that could boost TNC operations and productivity (Diyamett et al., 2011; Maseko, 2022; Tinali, 2022). These shortcomings are because of the high cost of advanced TBE systems, equipment, and infrastructure (Okechukwu & Okoronkwo, 2018; Tinali, 2022). Furthermore, the Tanzanian TBE is characterized by an underdeveloped technological education and training system, power outages, inadequate technological experts, and the absence of proper technical know-how and skills (Maseko, 2022; Tinali, 2022). The aforementioned problems can obstruct various TNC operations in the country and result in TNC underperformance, which may trigger TNCs and their investors to reduce expansion strategic plans, close operations, and shift income, among other things (Klinger et al., 2023; Medioli et al., 2023).

Frankly speaking, according to Gehl et al. (2015) and Salam et al. (2018), complex, lackluster, inconsistent, and frequent changes in government policies regarding TBE policy in Tanzania adversely affect TNCs ability to keep pace with innovativeness, expansion, technological investment, and competition. This leads to failure in strategic corporate performance outcomes and productivity (Sarumbo, 2022). Meanwhile, the TBE's turbulent conditions may affect foreign firms and

impact the host country's economic growth (Rajala & Kankaanpää, 2023). This underlines the importance of having a relatively intensive and progressive level of TBE as an essential ingredient to grasp the benefits of TNCs in a reciprocity mechanism. Also, the host country TBE conditions in which TNCs operate are apprehended in the aspects of technological intensity, technological competition intensity, and technological maturity. These technological conditions give TNCs differentiation and improve TNC performance. Accordingly, Tanzania is considered to have poor technological intensity (Diyamett et al., 2011). This raises questions about whether low or high TBE intensity stimulates or discourages TNC loyalty. However, less is known about TBE and TNC loyalty.

In fact, TBE uncertainties and turbulence affect foreign operations and performance (Okechukwu & Okoronkwo, 2018) and the host country's competitive advantage (Narula & Pineli, 2018), which is crucial for TNCs continued operations in a host country. But Belal et al. (2022) and Ismail (2023) argued that in a host country with a technology-oriented cultural orientation, TNCs are more likely to perform better. Also, Davireng et al. (2022) documented that better performance keeps TNCs innovative, expanding, technologically advanced, and competitive in the host country. Further, Salam et al. (2018) and Sarumbo (2022) assert that a good TBE situation significantly improves TNC performance. In fact, these authors emphasized that TBE enhances creativity, boosts innovations, and facilitates economies of scale, which can ignite attitudinal and behavioral loyalty (Liliane, 2022). Despite the fact that better TBE conditions can stimulate TNC loyalty in Tanzania, the link between TBE and TNC loyalty has not yet been empirically examined.

Previous studies have investigated the effect of the TBE on the TNC performance. For example, Okechukwu and Okoronkwo (2018), indicated that the TBE has a significant effect on the medium-sized TNC market share. According to Rajala and Kankaanpaa (2023), digital-based TBE has a positive association with Performance. Further, Davireng et al. (2022) reported a significant influence of TBE on firm performance. Likewise, Hennelly et al. (2019) found a direct impact of the level of information technology in the host country on firm performance. Notwithstanding, most previous researchers have found a positive and significant impact of TBE on TNCs performance (Hennelly et al., 2019). Moreover, other studies focused on exploring the impact of the business environment on TNCs performance, and findings show that the business environment has a significant effect on TNC performance (Khornen, 2005; Mwadime, 2020). However, these studies were too broad in scope as they focused on investigating all business environment factors (political, economic, social, cultural, and technological) together in one study (Okechukwu & Okoronkwo, 2018). This study specifically focuses on the impact of TBE on TNC loyalty.

In fact, due to the lack of studies that examined TBE and TNC loyalty and considering the reciprocity benefits of TNC loyalty, this is a crucial objective of both TNC and the host country. This study aims to fill the gap by investigating the impact of the host country's TBE on TNC loyalty to the host country. It is one of the first investigations to explore TNC loyalty towards the host country from the TBE perspective. This study strengthens the

theoretical concept of loyalty by proposing and testing a model of TNC loyalty to the host country, particularly in the TBE context. From a practical perspective, the study will benefit host countries, particularly policymakers in low-income countries, by providing them with an understanding of the differential contributions of the individual dimensions of the TBE on TNC loyalty, enabling them to develop policies that maximize on key TBE dimensions to build and maintain TNCs for economic prosperity. Moreover, the findings on TNC industry sector type and experience, suggest to practitioners (TNCs and their investors) the importance of the industry sector type to invest in and the duration of TNC years of operations in order to realize sufficient gain.

The rest of the paper is organized as follows: first, the introduction; second, the theoretical and literature review; third, the methodology; fourth, the results and discussion of findings; and lastly, the conclusion, recommendations, research limitations, and future study direction.

Literature Review
Theoretical Review
The eclectic paradigm of Dunning (1977, 2001) is employed to elucidate TNCs and related facts about the host country's location conditions, including the level of TBE (Dunning, 1977; Owusu et al., 2023; Saittakari et al., 2023). An eclectic theory explains the motive for TNCs to engage in oversea businesses and suggests the host country business environments, including TBE, which comprise dimensions such as technological equipment usage, information systems, production systems, transportation and communication systems, information systems, information technology, and systemic integrations, to

mention but a few, facilitate successful operations (Dunning, 2001).

The eclectic theory further states the advantages of the host country's technological conditions and the host nations technologically oriented cultural orientations that facilitate TNC performance (Hufbauer, 1970; Owusu et al., 2023). Also, the theory demonstrates the impact of technology-related government decisions, actions, and policies on foreign firm performance (Magai, 2021; Liliane, 2022; Saittakari et al., 2023). In this context, TNCs operate in countries where they feel that TBE facilitate operations and enable them to achieve their strategic objectives (Hufbauer, 1970; Klinger et al., 2023; Medioli et al., 2023), and hence business continuity and sustainability, which equates to loyalty, in a host country. Moreover, an eclectic theory enlightens on the effect of the firm's internal specific advantageous factors, such as size, industry type, and TNC experience, on TNC performance in the host country. Therefore, TNC experience, size, and industry type are controlled to capture the impact of TBE on TNC loyalty, and ensure consistency, accuracy and thoroughness of results (Davireng et al., 2022). The eclectic theory informs this study by providing independent variables that include the host country's information systems, production systems, innovativeness, IS infrastructure, IT competency, IT user support services, and systemic integrations. However, the electric theory does not clearly explain how the location condition like TBE can be linked to TNC loyalty. Therefore, social exchange theory (SET) is employed to explain the connection between TBE dimensions and TNC loyalty towards the host country.

The SET illustrates how exchange principles are sustained when participants

follow the "rules of exchange" (Blau, 1964). According to Cropanzano and Mitchell (2005), these rules combine reciprocity and repayment principles. Relationships develop into mutually beneficial commitments over time (Cropanzano & Mitchell, 2005). As a result, partners establish and uphold relationships because they anticipate delighting in communal trade, which entails a series of transactions that lead to commitments through reciprocal duties (Blau, 1964). This implies that any benefits gained result in debts that may only be settled by restitution. Due to the reciprocity principle, parties will continue to be partners as long as they are given sufficient technological and economic incentives. For the purpose of this study, TNCs will be devoted to a host country whose TBE is advantageous to their ability to conduct business due to reciprocal commitments. SET highlights the potential connection between TNC loyalty and the host country's TBE, which this study seeks to confirm.

Technological business environment (TBE)

According to Okechukwu and Okoronkwo (2018), TBE refers to external or outside the organization technological factors that influence the TNC's ability to use and apply knowledge of humanity, tools, and techniques to produce products and services. Host country TBE plays a crucial role in shaping the TNC strategies and operations (Salam et al., 2018). In this view, favorable host country TBE effects decisions and strengthens the innovation, competitiveness, and adaptability of the foreign firms, including TNCs, which is likely to results into a greater probability of much higher performance of TNCs (Chung et al., 2022). With this regard, better TBE can result to new products or services development, achieving technological innovation in production and organizational innovation in business (Chung et al., 2022). Thus, understanding and harnessing the host country's technological landscape is pivotal for TNCs to flourish in a globalized economy.

In this respect, TBE factors that are expected to affect TNC loyalty include the host country's technological change rate, technological equipment usage, production systems, innovativeness, information technology (IT), information systems (IS), research and development (R&D) level, and systemic integration (Diyamett et al., 2011; Hussein et al., 2007; Khornen, 2005). According to Diyamett et al. (2011) and Salam et al. (2018), these factors affect TNC performance in Tanzania. Moreover, studies show that the TBE embraces the nature and level of national technological changes, productivity, innovativeness, and inventions, information technological advancement, R&D, and information systems integrations within the host country, which affect the strategic decisions, choices, and overall operations of foreign firms, TNCs included (Belal et al., 2022; Okechukwu & Okoronkwo, 2018).

As said earlier, the Tanzanian TBE is characterized as dynamic, characterized by inadequate technological innovations, the absence or insufficient training of young innovators at all educational levels, technical limitations in handling local people's innovations, a lack of national technologically oriented cultural orientations, and poor technology-environment management (Ismail, 2023; Liliane, 2022; Toloui, 2022). These studies have also revealed that Tanzania has an incoherent technology-related regulatory framework, extremely stringent regulations or the absence of regulations in key areas,

limitations on information, communication, and technology (ICT) usage and investments, unpredictable technological innovation commercialization support, the inability of policymakers to forecast and target technological growth trends in industrial development, which hinder innovation endeavors, and individuals who work for TNCs with low innovative capability that affect TNC performance (Gehl et al., 2015: Salam et al., 2018). These shortcomings are likely to result into lack of creativity, discouraging innovations, leading to poor competitiveness and low productivity, as well resulting into TNC performance failure in terms of sales, revenue, profitability, effectiveness, efficiency, market share and economies of scales (Klinger et al., 2023). Under such circumstances, TNCs lose economic incentives for business continuity (Medioli et al., 2023). This might have contributed to the loyalty challenges among TNCs in the country.

However, in addressing the aforementioned TBE challenges, various regimes have been taking inconsistent measures such as improvement of technology regulations and policy through the National Blueprint for Regulatory Reforms (NBRR) in Tanzania in 2018, putting in place innovations commercialization policy, adopting and improving electronic information systems in various government regulatory bodies including automation of all services in order to streamline services to foreign firms, including TNCs (TIC, 2018), and improvement of telecommunications infrastructure (such as adoption and access of mobile telephone, broadband, internet, 4G and 5G), and digital technologies adoption (Klinger etal., 2023; Salam et al., 2018; TIC, 2018, 2023). However, it seems

that TBE has not sufficiently improved since TNCs still experience inefficiency and unsatisfactory performance in terms of competitiveness, productivity, profitability, and market share, among others (Sarumbo, 2022; Tinali, 2022).

Based on the literature presented above, which argues that the TBE significantly influences TNC performance, and considering the SET, it can be generally hypothesized that the host country's TBE dimensions have a positive and significant impact on TNC loyalty to the host country through reciprocity obligations.

Hypothesis development

Meanwhile, in accordance with the reviewed studies, an eclectic paradigm (Dunning, 1977), and SET theory (Blau, 1964), the current study expect that overall host country TBE has a significant impact on TNC loyalty towards the host country. Likewise, Hussein et al. (2007), Salawu et al. (2023) and Ozioko (2021) established that individual elements of the TBE influence TNC performance. Thus, each dimension of the TBE including host country technological equipment usage, information systemic integration, technological competency, information systems (IS) infrastructure, IT user support services, production systems, innovativeness, and R&D level, may have differential impact on TNC loyalty towards the host country (Hussein et al., 2007; Khornen, 2005). Accordingly, in Tanzania, each of these eight TBE factors are expected to have individual differential impact on TNC loyalty. Therefore, the following section provides rationale for the hypotheses of the present study.

Host country TBE and TNC loyalty

In agreement with reviewed studies above (Davireng et al., 2022; Hennelly et al., 2019;

Okechukwu & Okoronkwo, 2018; Rajala & Kankaanpaa, 2023), overall host country TBE have significant effect on TNC performance. Also, drawing from an eclectic paradigm, the host country business environment including TBE determine successful operations in countries where they operate (Dunning, 2001; Kimiagari et al., 2023). Besides, basing on SET theory (Blau, 1964), the host country effort to provide conducive TBE should be perceived by TNCs that the host country has having their best interests at heart, by offering them a conducive TBE climate. That is, TNCs are expected to behave favorably by being loyal to the host country, though reciprocity principle. Therefore, it is generally expected that TBE has a significant impact on TNC loyalty towards the host country, as hypothesize that:

H1:   The host country technological business environment has a strong positive and significant impact on TNC loyalty to the host country

Host country production systems and TNC loyalty

The host country's processes and capacity to transform input into output can be characterized as the nation's production systems (Netland & Aspelund, 2013). Hill (2006) provided evidence that a host country's production systems include methods for creating goods and services from a wide range of resources. Jozef et al. (2019) and Hennelly et al. (2019) assert that quality comes first when discussing TNC performance. Therefore, a host nation with manufacturing systems that are well-aligned and distinguished for their high process and product quality cuts costs and facilitates productivity and profitability (Netland & Aspelund, 2013). Based on SET effort of ensuring quality production systems in the

host country benefits both parties and thus TNCs and their investors should behaving favorably to the host country by being loyal in a reciprocal manner (Blau, 1964). This is because, conducive production systems climate set by the host country enables TNCs to fulfill their roles in the market with sufficient quantity, quality, price, and timing. Similarly, Hill (2006) indicated that the host country's production systems result in maximum use of resources, facilitate exchange of best practices, and improve human and industrial flexibility, which foster TNC effectiveness and efficiency. Since host country production systems influence TNC productivity and profitability, and drawing on SET, TNCs operating in countries with simple, modifiable and knowledge-intensive production systems are expected to demonstrate positive reciprocal responses by being loyal. Hence, it is proposed that:

H2 (a): The host country production systems have a positive and significant impact on TNC loyalty.

Host country innovativeness and TNC loyalty

According to Salam et al. (2018), the host country innovativeness is the capability of a host nation to introduce inventions or innovations that result in products. It is characterized by ability to create and introduce new products, services, or improvements to already-existing products or services in the market (Gehl et al., 2015). Also, innovativeness of the nation tends to inspire TNCs to add originality to the already-existing product line or process, thus, increasing market share, revenues, and customer satisfaction (Tanev & Frederiksen, 2014). Additionally, innovativeness acts as a function of the different actors in the interactive business environment in the host country which

surround the customer such as rival companies, other clients, rival technologies, regional distributors, and local customer and technical support providers (Gehl et al., 2015). This interaction affects TNCs' financial performance and might eventually affect how loyal they are to the host nation (Belal et al., 2022). Considering SET, a conducive innovativeness environment brings about economies of scale among different actors, including TNCs, resulting into long-term competitive advantage (Salawu et al., 2023). Hence, SET suggest that the host country's endeavor to create conducive innovativeness environment at the TNCs and their investors' best interest at heart favor TNC productivity, customer satisfaction, and profitability. The host country may be repaid by behaving favorably by being loyal through TNC continuous investments, reinvestment of revenues and positive recommendation in favor of the host country that equals to TNC loyalty to the host country via the reciprocity principle (Tanev & Frederiksen, 2014). Accordingly, this study hypothesizes that:

H2 (b): The host country innovativeness has positive and significant impact on TNC loyalty.

Host country research and Development level and TNC loyalty

The research and development (R&D) level refers to the process through which the host nation develops new knowledge that it may then employ to produce new technologies, goods, or systems for its own use or to sell (Li & Jian, 2023). Its activities are designed to develop new knowledge and enhanced services, boost corporate efficiency, cut costs, and attract both domestic and foreign investments (Xiao & Tian, 2023). Li & Jian (2023) assert that the host country's high level of R&D produces more incentives for innovation and

knowledge spillovers, which lower TNC R&D expenditures and increase productivity and profitability. Besides, in agreement with SET, TNCs continue operations in countries were they reap technological and economic incentives (Tegambwage & Kasoga, 2022b, 2022c). This implies that, high level of a host country R&D encourages more innovations, output and profits which can stimulate TNC loyalty to the host nation through reciprocal obligations. Accordingly, this study hypothesizes that:

H2 (c): The host country R&D level has a positive and significant impact on TNC loyalty.

Host country information system (IS) infrastructure and TNC loyalty

Host country IS infrastructure refers to the availability of IS resources and facilities such as computers, the internet, digital infrastructures, etc. in the host country during the provision of services that support TNC businesses (Hussein et al., 2007). It is the base of shared information service delivery within the host country, which is established around IT and specific skills and experience (Mlimbila & Mbamba, 2018). According to Yates et al. (2022), IS infrastructural facilities were found to have a significant influence on TNC performance. Also, Hussein et al. (2007) asserts that the host country IS infrastructure influences innovativeness in the country and supports government bodies in developing high-quality IT plans that smooth service delivery to its users, including TNCs. By doing so, unnecessary bureaucracy, delays, corruption, and costs are eliminated (Gehl et al., 2015). Additionally, Hussein et al. (2007) found a significant effect of IS infrastructure on firm satisfaction and performance. Mlimbila and Mbamba (2018) also

documented a significant effect of IS on business performance in Tanzania. In view of this, based on SET and empirical evidence above suggest that modern IS infrastructure cultivate loyal behaviors among TNCs (Salam et al., 2018), and likely to result into TNC loyalty by performing reciprocal duties. Moreover, the availability of sufficient and advanced IS infrastructure results to better host government service delivery to TNCs, which may stimulate TNC satisfaction and thus likely to result into a great possibility of high TNC loyalty level towards the host country through reciprocation principle. Accordingly, this study hypothesizes that:

H2 (d): The IS infrastructure has a positive and significant impact on TNC loyalty.

Host country information technology (IT) competency and TNC loyalty

The host country IT competency is described as the number of skills and knowledge possessed by people in the host country to perform service-related tasks (Pérez-López & Alegre, 2012). It includes how much local people know about computers and how well they can perform tasks using computers (Hussein et al., 2007). Pérez-López and Alegre (2012) discovered that IT competency has a significant effect on organizational performance through the management process. Previous studies (Rossi & Hirama, 2022) show that IT competency leads to quality, cost effectiveness, efficiency, productivity, and profitability. This suggests that a host country whose people have computer, information system, and information technology knowledge and skills can help the TNCs recruit and maintain competent managers to form a highly technical team that enables the organization to perform well. Furthermore, the IT-competent TNC employees are

flexible and capable of solving problems and administering TNCs (Salam et al., 2018; URT & UNIDO, 2012). Similarly, if a host country has many technically qualified populations, they tend to have better IT infrastructure flexibility and are able to influence TNC competitive advantage in key TNC management areas (Salawu et al., 2022). For instance, having sufficient computer-knowledgeable and IT-competent people in Tanzania helps the TNCs not outsource or recruit experts from abroad; by doing so, they reduce costs and boost profitability (URT & UNIDO, 2012). Drawing from SET, sufficient and justified availability of IT competent individuals ensure TNC business growth and development, and thus, it can result into more strategic growth and expansions plans, reinvestments and good word of mouth in favor of a host country, which equates to TNC loyalty to the host country (Cropanzano & Mitchell, 2005; Tegambwage & Kasoga, 2022c). Therefore, based on SET, host country IT competency may guarantee TNC continuity through reciprocity principle, as this study hypothesizes that:

H2 (e): The host country IT competency has a positive and significant impact on TNC loyalty.

Host country IT user support services

The host country IT user support refers to the ability of the host country to provide technical support and assistance to users, including TNCs, regarding their information, digital, and electronic services (Berger & Hatton, 2013; Salam et al., 2018). Also, it may include having enough in-country IT technical experts who can provide IT user support services instead of TNCs outsourcing from abroad (Sausi et al., 2021). This service extends to sufficient ICT technical assistance services in the country regarding computer hardware,

software, computer equipment, networks, databases, the internet, machines, equipment, etc. (Klinger et al., 2023). Accordingly, the host government's technical support services are essential on their IS or IT systems that reinforce compliance regarding electronic or virtual fiscal devices, electronic or online registration, payments, business registration, and work permit processing, among others (URT & UNIDO, 2012). Berger and Hatton (2013) argued that the sufficiency of these services in the host country helps the TNCs reduce the costs of seeking technical support from other countries and increase operational efficiency. Also, regarding Berger and Hatton (2013) findings and SET in-country efficient and sufficient ICT user support services have a significant impact on firm performance, which is likely to stimulate TNC loyalty through reciprocal obligations. Furthermore, foreign firms, including TNCs, are likely to seek help in using the systems or devices in their daily operations. The host country IS and IT experts facilitate the business environments that enable TNC profitability objectives, and hence, meeting TNCs and their investors' expectations. Basing on SET, making TNCs and investors happy may lead to a higher level of loyal behaviors in the country where TNCs operate, and there is a supper possibility of catalyzing TNC loyalty towards the host country via reciprocity and repayment principle as long as the TNCs continue gaining technological and economic incentives, as the hypothesis is developed as follows:

H2 (f): The host country IT user support services have a positive and significant impact on TNC loyalty.

Host country information systemic integration and TNC loyalty

Host country information systemic integration can be explained as the integration of various host country technologies of different regulatory bodies in terms of data, functionality, and access for facilitating service delivery to its customers, including TNCs (Hussein et al., 2007). It is an aggregation of different systems of the host government institutions and regulatory bodies cooperating together so that the system is able to deliver the overarching functionality and ensure that the various systems function together to provide the required services (Seiler et al., 2023). According to Seiler et al. (2023), the host country IS integration creates a complex information system that may include building a customized architecture or application, integrating it with new or existing hardware, packaged and custom software, and communications (Seiler et al., 2023). Information systemic integration eliminates the need for data storage and management and provides a centralized system based on a scalable and secure architecture (Chen & Zhao, 2010). In regard to this, information systemic integration can helps host government and TNCs to avoid unnecessary transaction costs (Egbunike and Okerekoite 2018). Similarly, digitalization has nurtured a number of network, process and system integrations that enhance business (Shashi et al., 2020). As well, adoption of platform-based digital technologies and processes in Tanzania, for example, e-government, e-business, etc enable host government regulatory bodies and TNCs to access, acquire and share knowledge and real-time information. Thus, increased operational efficiency and improved TNC satisfaction which can result into a greater probability of strong affinity and loyalty via a

reciprocity principle (Cenamor et al., 2019; Cropanzano & Mitchell, 2005; Rajala & Hautala-Kankaanpää, 2023). Furthermore, Bhatt (2000) discovered that host country information systemic integration has significant effects on process quality and satisfaction of TNCs. Findings suggest that the integrated technology environment is a very important aspect in creating a favorable TNC operating environment in Tanzania (Klinger et al., 2023; Salam et al., 2018).

In fact, information system integration allows a smooth and cost-effective information flow across all business sectors. Moreover, along with other advantages, the better data collection and retrieval procedure enables the host country to gain operational and economic efficiency while boosting the smooth delivery of services to its clients, including TNCs (Rajala & Kankaanpaa, 2023). This implies that host government regulatory bodies' systemic integration facilitates data accuracy, enhances user services, increases collaboration with business partners, speeds up decision-making, optimizes IT resources, and significantly supports TNC productivity and profitability (Rajala & Kankaanpaa, 2023). Based on SET, the empirical evidence above suggests that effective host country information systemic integration is a crucial factor for TNC loyalty through reciprocal obligations. Thus, it is proposed accordingly that:

H2 (g): The host country information systemic integration has a positive and significant impact on TNCs loyalty.

Host country technological equipment usage and TNC loyalty

Technological equipment describes a variety of types of tools, machines, and aided devices that are used in different sectors, such as agriculture, manufacturing, mining, construction, transportation, and hospitality, to make work completion faster in an easy way (Salawu et al., 2022). According to Salam et al. (2018) and Salawu et al. (2022), advanced technological equipment usage in the host country reduces completion time, saves costs, and improves productivity. Similarly, Klinger et al. (2023) documented that better technology usage boosts productivity. Moreover, Salam et al. (2018) found that advanced technological equipment usage has a significant effect on firm performance. These findings suggest that equipment efficiency determines familiarity with the type of work, incentives, quantity and quality of products or output, etc. This imply that the host country technological equipment usage and the technical know-how enhance the foreign firms, TNCs included, operational performance in countries where TNCs operate (Klinger et al., 2023; Salawu et al., 2022; Salisu et al., 2019). In return, drawing from SET, the TNCs will behave in favor of a host country by being loyal through reciprocation process (Tegambwage & Kasoga, 2022b, 2022c). Consequently, advanced technological equipment usage in the host country seems to be a crucial factor in elevating the host country's productivity, employment, income, and economic prosperity (Salawu et al., 2022). This results in an increase in consumer purchasing power and consumption of TNC goods and services. Hence, making TNCs have a better performance in terms of more sales, revenues, and profitability (Liliane, 2023). Based on SET, TNCs and their investors perceive that host country has having their best interest at heart by providing favorable TBE in terms of technological equipment usage. Therefore, they are expected to behave favorably by being loyal to the country where they operate through

reciprocity principle. Consequently, this study assumes that:

H2 (h): The use of technological equipment has a positive and significant impact on TNC loyalty.

Methodology
The study area
All of TNC head offices are located in Tanzania's commercial cities of Dar es Salaam, Arusha, and Mwanza, including Morogoro Municipality. Therefore, the current study was conducted in these cities (TIC, 2023). The population of the present study consisted of all 161 TNCs registered at TIC under the law of the United Republic of Tanzania (TIC, 2023), that are currently carrying out business activities in Tanzania.

Research design, sample size, and data collection
This study adopted an explanatory cross-sectional design in order to examine and explain the link between the study variables (Cohen et al., 2018). This approach enabled the researcher to investigate the relationship between TBE and TNC loyalty, collection of large amount of data using preset questions at a single point in time (Forza, 2002). Also, this study was anchored to the positivist paradigm as it look to discover objective facts and causal relationship, and cross-sectional research (Cohen et al., 2018). This positivist's perspective was suitable for testing hypotheses and study the relationship between TBE and TNC loyalty, which can be measured at a specific point in time by focusing on study objectivity and evidences from empirical researches (Saunders et al., 2019).

In fact, the current study adopted a quantitative research approach because the study put more emphasis on the quantitative methods and the objectives of this study was examined quantitatively (Creswell, 2014). Largely, the deductive approach in the current study was applied as a main approach, as it needed to collect data and test the existing theories (Saunders et al., 2019). In this view, the eclectic theory and SET and empirical literature, were used to provide and link examined variables. Hypotheses were developed basing on eclectic theory and SET, and literature. The collected relevant information was used to test the proposed hypotheses regarding TBE and TNC loyalty to the host country. The statistics posted by TIC indicated that, 161 TNCs in Tanzania were registered with TIC in Arusha, Dar es Salaam, and Mwanza commercial cities, including Morogoro municipal council. Therefore, based on the study objective, this study identified 161 TNCs to be the target population (Cohen et al., 2018; TIC, 2023). The study area was chosen because the executives of TNCs are found at the head offices located in these regions. With this regard, all 161 TNCs in Tanzania were individually visited and given survey questionnaires during the data collection exercise conducted between December 2022 and January 2023. An investigator used the drop-and-pick technique as it involve personally submission and collection of survey questionnaires by the investigator (Matto, 2021). This strategy was suitable as it helped the researcher to provide the introduction regarding the purpose and objective of the study, ensured quick submission and collection of completed questionnaire from the office of chief executive officers. The strategy also helped in checking for incomplete questionnaire as the approach offers an opportunity to request the executive to respond to the unattended question(s). Practically, the strategy ensured a higher response rate. With this regard,

TNCs executives filled out the questionnaire and only top executive from each TNC provided the information. An 81.4% response rate was recorded from the 131 questionnaires. Almost about 54.62% of the collected questionnaires were filled by chief executive officers on the same day of submission and the investigator collected them immediately. While 45.38% of the collected questionnaires were personally collected by the investigator on the regular follow-ups from chief executive officers at the head offices of TNCs. However, 25 questionnaires were not collected from 25 TNCs despite many follow-ups due to uncooperative executives. The study emphasized free participation and anonymity throughout the process of data collection (Saunders et al., 2019).

Measurement of study variables

Existing items from empirical literature were used, and the variables were built with multiple items (Hair et al., 2019) in order to maximize the construct's validity and reliability. TBE elements were specifically derived from an eclectic theory and empirical literature. Thus, among the TBE factors, host country production system, host country innovativeness, and host country R&D level were adapted from Khornen (2005), while host country IS infrastructure, host country IT competency, host country IT user support, host country information systemic integration, and technological equipment usage were obtained from Hussein et al. (2007). The TNC loyalty items, however, were modified from Tegambwage and Kasoga (2022a, b) and Swoboda and Hirschmann (2016), respectively. Both the attitudinal and behavioral elements of loyalty were operationalized based on these researchers' findings.

A five-point Likert scale was used for all variables, with (1) very poor to (5) very good being employed to assess the situation of the TBE (Diyamett et al., 2011), while (1) strongly disagree to (5) strongly agree was applied for TNC loyalty (Tegambwage & Kasoga, 2022a, b). Five international business experts verified the questionnaire items after they had been contextualized for TNCs in order to ensure their validity and clarity (Kpolovie, 2016). The expert review's modifications and other suggestions were taken into account. Before the final version for data collection was approved, the modified questionnaire underwent a pilot test among five distinct TNC chief executive officers in Dar es Salaam. Due to their removal from the actual list of TNCs, the TNCs that took part in the pilot study did not participate in the main study.

Data analysis

Stata version 17 was used to conduct confirmatory factor analysis (CFA) using the hierarchical multiple regression (HMR) model (Hair et al., 2019). CFA was used in the first stage to evaluate the reliability of the measurement variables, and the HMR model was used in the second stage to test the study hypotheses. The HMR model was chosen because it allows for the examination of numerous variables at various stages of analysis and makes it simple to evaluate the causal relationship between predictors and dependent variables (Kpolovie, 2016). Specifically, three models were created and tested, particularly using the HRM model. Model (1) tests the impact of TBE on TNC loyalty in the presence of control variables. However, to increase the consistency, accuracy and thoroughness of the investigation, Model (2) examines the impacts of TBE dimensions on TNC

loyalty in the absence of the control variables, and Model (3) examines the impact of TBE dimensions on TNC loyalty in the presence of statistically control factors, namely, years of operations in Tanzania measured as TNC experience (E), number of employees measured as TNC size (S), and TNC industry-sector type (I) in order to eliminate the counterfeit relationship. These variables have impact on performance (Saridakis et al., 2019).

Results and discussion
Assessment of measurement variables
Exploratory factor analysis (EFA) was conducted for TBE dimensions and TNC loyalty using principal component analysis (PCA) (Kpolovie, 2016). The link of items to the extracted factors using a rotated component matrix sufficiently proved the association between variables and confirmed that eight itemized factors were used to measure the independent variable and five itemized factors were used to measure the dependent variable (Table 1). The suitability of the data for factor analysis was checked by using Kaiser-Meyer Olkin's (KMO), a measure of sampling adequacy, and Bartlett's test of sphericity (BTS) for each factor (Hair et al., 2019). The outcomes in Table 1 reveal KMO values for TBE and TNC loyalty, within the acceptable ranges (above 0.5) (Hair et al., 2019), suggesting the adequacy of the sample size for factor analysis. Moreover, the factor loadings for all items were significant and above 0.5, demonstrating a definite structure and attesting to the reliability of the measurements (Hair et al., 2019).

Model 1:   Testing the impact of TBE on TNC loyalty with control variables

$$LOY_i = \beta_0 + \beta_1 TBE_i + \beta_2 E_i + \beta_3 I_i + \beta_4 S_i + \varepsilon_i$$

Model 2:   Testing the impact of dimensions of TBE on TNC loyalty without control variables

$$LOY_i = \beta_0 + \beta_1 HCPS_i + \beta_2 HCI_i + \beta_3 HCRD_i + \beta_4 HCII_i + \beta_5 HCIC_i + \beta_6 HCIUS_i + \beta_7 HCISI_i + \beta_8 HCTEU_i + \varepsilon_i$$

Model 3: Testing the impact of dimensions of TBE on TNC loyalty with control variables

$$LOY_i = \beta_0 + \beta_1 HCPS_i + \beta_2 HCI_i + \beta_3 HCRD_i + \beta_4 HCII_i + \beta_5 HCIC_i + \beta_6 HCIUS_i + \beta_7 HCISI_i + \beta_8 HCTEU_i + \beta_9 E_i + \beta_{10} I_i + \beta_{11} S_i + \varepsilon_i$$

where, i = 1, 2, 3, …, n for n observations; and ε = the random error term

LOY = TNC loyalty; β_0 = constant coefficient; β_{1-11} = Regression coefficients; TBE = Technological business environment; HCPS = Host country production systems; HCI = Host country innovativeness; HCRD = Host country R&D level; HCII = Host country IS infrastructure; HCIC = Host country IT competency; HCIUS = Host country IT user support services; HCISI = Host country information systemic integration; HCTEU = Host country technological equipment usage; E = TNC experience; S = TNC size; I = Industry

type

Additionally, a Bartlett's test significance below 0.5 and a KMO value above 0.5 suggest the existence of a considerable correlation in the data (Hurley et al., 1997). Consequently, the reliability was confirmed by Cronbach alpha (CA) and composite reliability (CR) coefficients above the advised limit of 0.70 (Hair et al., 2019): TBE (CA = 0.861, CR = 0.790) and TNC loyalty (CA = 0.739, CR = 0.836), as indicated in Table 1. The results show that the 8 itemized factors of TBE and the 5 items of TNC loyalty have high internal consistency. In addition, the results in Table 3 reveal that all individual TBE itemized factors have positive correlations with the TBE construct, above the standard limit of 0.30 (Hair et al., 2019), thus providing evidence that each TBE element contributes significantly to the TBE scale.

The degree of convergent validity was established by factor loadings, composite reliability and average variance extracted (AVE) (Fornell & Larcker, 1981) in Table 1. Specifically, the values of factor loading, CR, and AVE are greater than 0.50, 0.70, and 0.50, respectively, suggest convergent validity (Podsakoff et al., 2003). Further, the greater the square root of AVE than the correlations between the constructs (Table 3), the more evidence that there is discriminant validity (Fornell & Larker, 1981). Generally, the investigation of the CA and CR coefficients, correlations, and AVE of the TBE and TNC loyalty variables indicates that the overall measurement scale has sufficient reliability. Moreover, the Swilk test results in Table 2 demonstrate non-significant values (p>0.05), which suggest that there is a normal data distribution within the sample (Snijders & Bosker, 2012).

Descriptive statistics

Table 2 shows that host country Tanzania has a fair TBE in terms of production systems, innovativeness, IT competency, information systemic integration, user support services and technological equipment usage as illustrated by mean values ranging from 3.120 to 3.803. However, the TBE conditions were unsatisfactory in terms of research and development and IS infrastructure, with mean values of 2.809 and 2.969, respectively. Consequently, TNC loyalty to Tanzania was just fair, with an average mean value of 3.803. These findings are slightly different from the reports of Diyamett et al. (2011), Ngowi (2018), and Toloui (2022), who documented a very poor business environment, including TBE, in Tanzania. This could be explained by the recent changes in the top leadership of the Tanzanian government, which took place in the year 2021 and emphasize, encourage, and support technological innovations.

Multicollinearity test

In addition, Table 2 also presents the Multicollinearity test results. The multicollinearity among the loaded factors was examined by the variance inflation factor (VIF) for each of the measurements (Hair et al., 2019). Table 2 shows that VIF values are below 5, which is ideal (Hair *et al.*, 2019). Hence, the components are not intensively correlated with one another.

Table 1: Measurement model assessment

Standardized Measurement	Factor loading	t-value	CA	KMO	BTS	CR	AVE
Technological business environment (TBE)			**0.861**	**0.815**	**674.506*****	**0.790**	**0.530**
HCPS: Host country production systems	0.705	5.27***		0.898			
HCI: Host country innovativeness	0.526	7.85***		0.884			
HCRD: Host country R&D level	0.602	10.09***		0.838			
HCII: Host country IS infrastructure	0.751	17.59***		0.884			
HCIC: Host country IT competency	0.904	42.13***		0.79			
HCIUS: Host country IT user support services	0.920	46.36***		0.797			
HCISI: Host country information systemic integration	0.723	15.87***		0.914			
HCTEU: Host country technological equipment usage	0.811	16.62***		0.908			
TNCs Loyalty			**0.739**	**0.676**	**174.054*****	**0.836**	**0.621**
LOY1: New investments and reinvestments of earnings in the host country	0.879	7.84***		0.672			
LOY2: Considering the host country as first choice of investments, reinvestments, and expansion plans	0.877	6.16***		0.802			
LOY3: Positively recommending the host country to other TNCs and international investors	0.573	7.83***		0.728			
LOY4: Willingness to exert considerable effort to promote the host country's investment opportunities to potential international investors	0.842	15.61***		0.628			
LOY5: Strong desire to maintain current business operations in the host country	0.726	13.02***		0.641			

Overall: KMO = 0.767; CA=0.831; Bartlett's Test of Sphericity (BTS): Chi-Square = 906.927, *df* = 91; ***= p-value < 0.001

Table 2: Descriptive statistics of host country technological business environment

Factors / Statistics	Mean	SD	Swilk Test	Min	Max	VIF
LOY: TNC loyalty towards the host country	3.803	0.586	0.093	1.900	5.000	
TBE: Technological business environment	3.107	0.307	0.147	2.000	5.000	2.570
HCPS: Host country production systems	3.176	0.650	0.374	1.000	5.000	1.520
HCI: Host country innovativeness	3.237	0.753	0.717	1.000	5.000	1.560
HCRD: Host country R&D level	2.809	0.735	0.490	1.000	5.000	2.000
HCII: Host country IS infrastructure	2.969	0.794	0.989	1.000	5.000	2.580
HCIC: Host country IT competency level	3.160	0.753	0.989	1.000	5.000	4.610
HCIUS: Host country IT user support services	3.160	0.742	0.882	1.000	5.000	4.730
HCISI: Host country information systemic integration	3.321	0.694	0.517	2.000	5.000	2.320
HCTEU: Host country technological equipment usage	3.120	0.745	0.999	2.000	5.000	3.750

Correlation between constructs

Table 3 presents correlations between the research variables. These Tables show that the intensity of correlations between constructs and variables were not strong ($r<0.80$), indicating that this study was not affected by the common method bias (Podsakoff *et al.*, 2003). Additionally, results in Table 3 reveal that TNC loyalty has positive and significant ($p<0.05$) correlations with most of the measurement variables. This implies that the TNC loyalty to the host country is determined by the TBE. However, the correlation between TNC loyalty and TBE is stronger than its correlations with dimensions of TBE. This suggest that the TNC loyalty to the host country is strongly determined by the TBE in greater extent than individual dimensions of TBE. These results are coherent with the electric theory (Dunning, 2001; Kimiagari et al., 2023).

These results are coherent with the eclectic theory that TNC success in the host country is determined by location-based business environment conditions, including TBE (Saittakari et al., 2023).

Common method bias test

To determine if a single component accounts for the majority of the variance, Harman's single-factor test was used (Podsakoff & Organ, 1986). The principal axis factoring approach and Promax rotation were used to load all factors (Podsakoff et al., 2003). The number of factors that contribute to the variance of the variables was ascertained by looking at the unrotated factor's solution. The results demonstrated that no one factor predominated and that the explained variance was 27.56%, which is significantly less than the 50% threshold limit, demonstrating that there was no common method bias problem (Podsakoff et al., 2003).

Hypotheses testing results

Table 4a-c presents the findings of hypothesis testing. Results for Model 1 show that TBE ($\beta = 0.425$, $p<0.001$) have a strong positive and significant impact on TNC loyalty in Tanzania, supporting the H1. Additionally, findings for Model 3 indicate that TBE dimensions: host country production systems ($\beta = 0.202$, $p<0.001$), host country innovativeness ($\beta = 0.098$, $p<0.05$), host country IS infrastructure ($\beta = 0.128$, $p<0.05$), host country IT Competency ($\beta = 0.381$, $p<0.001$), host country IT user support services ($\beta = 0.102$, $p<0.001$), and technological equipment usage ($\beta = 0.101$, $p<0.001$), have a positive and significant impact on TNC loyalty, supporting H2 (a, b, d, e, f and h). Host country R&D level ($\beta = 0.054$, $p>0.1$), and host country information systemic integration ($\beta = 0.062$, $p>0.1$) have positive and insignificant effect on TNC loyalty; thus, H2 (c and g) are not supported.

In the meantime, the overall TBE (Model 1) explains 23.6% of the variance in the construct of TNC loyalty. This implies that there are other dimensions of business environments, such as political, economic, and socio-cultural factors, that explain TNC loyalty in Tanzania. The findings additionally reveal that the dimensions of the TBE exert different effects on TNC loyalty, with host country IT competency having the biggest impact, followed by host country production systems, host country IS infrastructure, host country IT user support services, host country technological equipment usage and host country innovativeness

Table 3: Pearson's correlations between TBE, TBE dimensions, and TNC loyalty

Measurement factors	TBE	HCPS	HCI	HCRD	HCII	HCIC	HCIUS	HCTEU	HCISI	LOY
Technological business environment (TBE)	**0.863**									
Host country production system (HCPS)	0.646***	**0.695**								
Host country innovativeness (HCI)	0.361**	0.420***	**0.705**							
Host country R&D level (HCRD)	0.470***	0.376**	0.329**	**0.726**						
Host country IS/IT infrastructure (HCII)	0.365***	0.370**	0.264**	0.458***	**0.812**					
Host country IT competency (HCIC)	0.333**	0.319**	0.383***	0.450***	0.640***	**0.791**				
Host country IT user support services (HCUS)	0.476***	0.366*	0.319***	0.394***	0.529***	0.678***	**0.904**			
Host country technological equipment usage (HCTEU)	0.369***	0.399**	0.340***	0.482***	0.522***	0.648***	0.567***	**0.92**		
Host country information systemic integration (HCISI)	0.415***	0.368**	0.318***	0.443***	0.362***	0.535***	0.638***	0.661***	**0.723**	
TNC loyalty (LOY)	0.689***	0.444***	0.498***	0.384**	0.306**	0.300***	0.317**	0.481**	0.342**	**0.788**

Notes: Diagonal elements are the square root of AVE between the constructs and their measures. The off-diagonal elements are correlations between the constructs. Correlation is significant at 2-tailed; **=p-value<0.05; ***=p-value<0.001

Table 4a: Direct effect on TNC loyalty

Measurement factors	Model 1		
	Coefficient	Std. err.	t-value
TBE: Technological business environment	0.425	0.083	5.120***
E: Years of operations (Experience)	0.072	0.032	2.250***
I: Industry sector type (TNC Industry)	0.019	0.018	1.055***
S: Number of employees (TNC size)	0.020	0.034	0.588
R²	0.276		
Adjusted R²	0.236		
F-Statistics	11.8***		

* = p<0.05; *** = p<0.001

Table 4b: Direct effect on TNC loyalty

Measurement factors	Model 2		
	Coefficient	Std. err.	t-value
TBE: Technological business environment			
HCPS: Host country production systems	0.167	0.071	2.352***
HCI: Host country innovativeness	0.089	0.040	2.171**
HCRD: Host country R&D level	0.059	0.052	1.135
HCII: Host country IS infrastructure	0.117	0.028	4.179**
HCIC: Host country IT Competency	0.380	0.039	3.949***
HCIUS: Host country IT user support services	0.101	0.014	27.929***
HCISI: Host country Information systemic integration	0.061	0.010	5.922
HCTEU: Host country technological equipment usage	0.103	0.011	9.364***
E: Years of operations (Experience)			
I: Industry sector type (TNC Industry)			
S: Number of employees (TNC size)			
R²	0.182		
Adjusted R²	0.120		
F-Statistics	6.9***		

* = p<0.05; *** = p<0.001

Table 4c: Direct effect on TNC loyalty

Measurement factors	Model 3		
	Coefficient	Std. err.	t-value
TBE: Technological business environment			
HCPS: Host country production systems	0.202	0.063	3.206***
HCI: Host country innovativeness	0.098	0.041	2.390**
HCRD: Host country R&D level	0.054	0.063	0.857
HCII: Host country IS infrastructure	0.128	0.030	4.267**
HCIC: Host country IT Competency	0.386	0.042	4.310***
HCIUS: Host country IT user support services	0.102	0.024	16.583***
HCISI: Host country Information systemic integration	0.062	0.014	4.429
HCTEU: Host country technological equipment usage	0.101	0.013	7.769***
E: Years of operations (Experience)	0.091	0.023	3.957***
I: Industry sector type (TNC Industry)	0.025	0.023	1.087***
S: Number of employees (TNC size)	0.019	0.038	0.500
R²	0.210		
Adjusted R²	0.190		
F-Statistics	8.9***		

** = $p<0.05$; *** = $p<0.001$

Robustness checks

The robustness check was run to confirm the study findings (Table 4a-c). Specifically, in Model 1 and 3, a regression analysis was run to find the predictive powers of TBE factors on TNC loyalty in the presence of the control variables (TNC experience in the host country, TNC industry type, and TNC size). Results indicate that TNC experience in Tanzania and TNC industry type, have a significant impact on TNC loyalty. TNC size has a positive and insignificant impact on TNC loyalty. Also, Model 3 results are similar to those of Model 2 in terms of significance levels, but with changes in the magnitudes of the coefficients. This is due to the effects of the control variables on TNC loyalty. Thus, this confirms the robustness of the main findings.

Discussion of findings

The objective of this study was to empirically examine the impact of the TBE on TNC loyalty to the host country. Findings in Table 4a indicate that TBE has a strong positive and significant impact on TNC loyalty to the host country, confirming hypothesis H1. Also, TBE dimensions such as host country production systems, innovativeness, IS infrastructure, IT competency, IT user support services, and technological equipment usage have positive and significant impact on TNC loyalty towards the host country, hence, supporting H2a-h. However, as indicated in Table 4a-c, TBE explains more variance in TNC loyalty (23.6%) than TBE elements (19%), suggesting that the impact of TBE on TNC loyalty is higher at the aggregate level rather

than the individual element level. The results suggest that better and higher-quality production systems, high IT competency, quality IS infrastructure, quality host nation IT user support services, and sophisticated and advanced technological equipment usage all together elevate TNC loyalty towards the host country. Moreover, the host country R&D level and information systemic integration have a positive and insignificant effect on TNC loyalty. Generally, results are consistent with the findings of Bag et al. (2021) and Okechukwu and Okoronkwo (2018), who found a significant effect of TBE on TNC competitiveness, productivity, and performance. The current study findings additionally imply that the host country TBE significantly affects TNC strategic decisions that influence their continued operations in the host country (Belal et al., 2022). Moreover, these results support the eclectic theory, which argues that, among other business environments, the host country TBE conditions determine TNC competitiveness, productivity, and profitability, which are crucial for successful TNCs in countries where they operate (Davireng et al., 2019).

Furthermore, the findings in Table 4a-c indicate that host country IT competency is the best predictor of TNC loyalty in Tanzania. Next are host country production systems, host country IS infrastructure, host country IT user support services, host country technological equipment usage, and host country innovativeness. The emergence of IT competency as the paramount predictor is because of its essential role in enabling unified transnational and global business integration (Perez-Lopez & Alegre, 2012). Also, it could be explained by the fact that in Tanzania business landscape, IT competency emerges as the kingpin that

bring into line TNC strategies with local and neighboring countries' market dynamics, and solidify TNCs long-term loyalty (Hussein et al., 2007; Klinger et al., 2023). In addition, in Tanzania, effective coordination and data-driven decision-making are made possible by a proficient IT environment, which improves operational effectiveness, reduces costs, and allows for more agility. Furthermore, IT competency empowers TNCs the ability to successfully engage Tanzanian customers through customized experiences and efficient customer service, fostering higher satisfaction and loyalty (Salam et al., 2018).

In view of this, findings suggest that simple, modifiable, and knowledge-intensive production systems of the host country, a high host country innovativeness, high level of host country IT competency, quality IS infrastructure, quality IT user support services, and sophisticated and advanced technological usage are crucial for stimulating and sustaining TNC loyalty in Tanzania.

Similarly, the findings are consistent with Davireng et al. (2019) and Hennelly et al. (2019), who confirm the direct impact of TBE on the performance outcomes of foreign subsidiaries. Therefore, the better the host country's TBE, the more profitable TNCs will be, resulting in continued investment and reinvestments, which equate to TNC loyalty to the host country. Hence, the study underlines the importance of better host country TBE conditions as a necessary component to achieving TNC loyalty (Salam et al., 2018). A foreign firm's internal technology can be efficiently utilized in the host country only if local TBE conditions are supportive of such technology (Diyamett et al., 2011). Additionally, Diyamett et al. (2011) assert that to a large extent, technology spillover

occurs if there exists a reasonable technological gap between the technological capabilities of local and foreign firms, including TNCs. This implies that the host country must have a substantial level of technology that facilitates TNC operations and enables technological transfer through a reciprocal mechanism. This is to say, creating conducive TBE enables host government regulatory bodies and other stakeholders to provide quality services that meet expectations of TNCs and their investors, and thus bringing about satisfaction which is likely to results into greater probability of strong affinity and loyalty towards the host country (Ismail, 2023). In other words, the loyal behaviors of TNCs can be frequently displayed in countries with higher and better TBE intensity and maturity elements than ones with a large technological gap (Belal et al., 2022). Therefore, in agreement with SET, through mutually beneficial collaborations, reciprocal mechanisms between TNCs and the host country, TBE can promote loyalty of TNCs towards the country where they operate. For example, trained local labor force from TNC investments in technology and infrastructure training programmes within the host country, may be advantageous to both parties (Ozioko, 2021). Between TNCs and host government institutions, collaborative research projects and innovation partnerships can result in new technologies and products, boosting competitiveness and fostering TNC loyalty towards the host country (Klinger et al., 2023). TNCs can also provide simple and accessible services by utilizing the technical infrastructure of the host nation for market expansion and consumer interaction, which will improve customer loyalty (Salam et al., 2018). Each time, the reciprocal

relationship fosters loyalty since both the TNCs and the host country see the benefits and value in working together (Alasady et al., 2023). In each scenario, that cost-effective reciprocity fosters TNC loyalty towards the host country as both TNCs and the host country know the value and benefits derived from their cooperation (Tegambwage & Kasoga, 2022b, 2022c).

Conclusion
The study examined the impact of the TBE on TNC loyalty to the host country. The findings show that the TBE exerts a positive and significant impact on TNC loyalty through host country production systems, host country innovativeness, host country IS infrastructure, host country IT competency, and host country IT user support services. However, host country R&D, and host country information systemic integration have an insignificant impact on TNC loyalty. Among all predictors, host country IT competency is the greatest predictor of TNC loyalty, followed by host country production systems, host country IS infrastructure, host country IT user support services, technological equipment usage and innovativeness. This implies that a high level of IT competency in the country, simple, modifiable, and knowledge-intensive production systems, advanced IS infrastructure, quality country IT user support services, advanced technological equipment usage and innovativeness are crucial for determining and sustaining TNC loyalty for sustainable economic development in Tanzania.

The findings of this study have important implications for academics as well as practitioners. For academics, the study employs SET to strengthen the theoretical

concept of loyalty by proposing a model of TNC loyalty to the host country, particularly in the TBE context. No prior study has linked the host country's TBE and TNC loyalty. From a practical perspective, the study will benefit host countries, particularly policymakers in low-income countries, by providing them with an understanding of the differential contributions of the individual dimensions of TBE on TNC loyalty, enabling them to develop policies that focus on key technological business dimensions to attract, maintain, and sustain TNC loyalty and hence achieve economic growth. More specifically, policymakers should ensure consistent policy addressing host country IT competency, quality host country production systems, host country advanced IS infrastructure, and better host country IT user support services, usage of advanced and modern technological equipment, and high level of innovativeness in order to stimulate, build, and sustain TNC loyalty. In this regard, policymakers in the host country, particularly in low-income countries like Tanzania, among other things, can take targeted actions to facilitate host country IS infrastructure and IT competency (Ozioko, 2021). This includes TNCs collaboration with a host country in capitalizing wide-range IT education and training programs, incentivizing technology by means of grants and tax breaks, and prioritizing technological infrastructure developments, mostly in broadband and data centers. Policymakers can also create robust technologically oriented legal framework and related facts (such as innovation commercialization policy, intellectual property rights, among others), promote technology hubs and clusters, and encourage TNCs collaboration and trade agreements to boost technological capabilities of the host low-income

countries like Tanzania. Furthermore, in order to nurture IT user support services and place the host country as a regional technology leader, encouraging green technologies can additionally attract foreign investments, including TNCs, ultimately driving economic innovations, growth and development.

Moreover, TNCs can link findings to strengthen collaboration with countries where they operate and elevating IS infrastructure, production systems, IT competency, and IT user support services, thereby promoting reciprocity benefits. This encompasses carrying out comprehensive assessments of IT needs in the host country, forming partnerships with key local stakeholders in order to enable technological spillover and foster TNC technology transfer, providing skills and knowledge transfer and training programs, investing in centers which are dealing in research and development, and sponsoring sustainable IT practices (Alasady et al., 2023; Hussein et al., 2007; Ozioko, 2021; Salam et al., 2018). In view of this, it is crucial to integrate cultural sensitivity, monitor progress, and manage risks while ensuring intellectual property rights and fostering a collaborative environment in the host country. Thus, based on SET, such strategic collaboration enhances TNCs to access competent employees, markets, and constructive public perception, while host countries benefit from technological innovations, advancement and economic growth and development through reciprocation mechanism.

In general, based on the findings from TBE and TNC loyalty, host country governments including the government of the URT, and TNCs managements and their investors, must understand that the more improved TBE, the better TNCs can perform in terms of productivity, sales,

revenues, profitability, economies of scale and market share. This mean that implementing these measures boost TNC operations in the host country and result in better TNC performance, which may trigger TNCs and their investors to implement growth and expansion strategic plans, continue operations in the host country, and make new and reinvestments of earning, among other things (Klinger et al., 2023; Medioli et al., 2023).

This study focused on the effect of the TBE on TNC loyalty. Therefore, future studies should investigate the impact of other factors in the business environment, such as economic, social-cultural, and political, on TNC loyalty. This research was also restricted to eight TBE dimensions; future studies should focus on other dimensions such as transportation systems, communication networks, and digitalization (Rajala & Kankaanpää, 2023). Moreover, the TBE intensity varies from one country to another (Belal et al., 2022); hence, future studies should validate the proposed model in other countries, particularly low-income ones.

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Should Financial Literacy in Ghana be in Levels?

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Abstract

According to survey reports, a significant number of individuals lack the financial literacy necessary to participate actively in the financial market. This study examines survey data from 532 individuals to explore the importance of financial literacy levels. We also investigate how socioeconomic factors and financial investments affect basic financial literacy. The findings indicate disparities in test scores between basic and advanced financial literacy, highlighting the need for a tiered financial literacy approach. Logistic regression analysis revealed that marital status, employment status, utilization of bank loans, education level, and number of financial investments influenced higher levels of basic financial literacy. Based on these results, this study recommends a deliberate and committed provision of tiered financial literacy targeted at the general population by financial institutions and service regulators in Ghana. Providers of financial literacy programs should assess the existing financial literacy levels of their target markets and audiences to allocate resources effectively and address crucial financial literacy requirements.

Introduction

Active participation and advantageous involvement in the financial market necessitates a comprehensive understanding of financial transactions. Financial independence, which refers to the ability to sustain oneself financially based on accumulated funds without relying on income-generating activities, is a common aspiration among many individuals. However, according to Fisher et al. (2009), many individuals do not achieve financial independence One significant contributing factor to this lack of financial independence is an insufficient understanding of the basic financial literacy concepts, specifically in areas such as interest, compounding,

inflation, and diversification (Lusardi & Mitchell, 2014).

The lack of financial literacy among individuals has significant consequences, leading to misallocation of investable funds, suboptimal retirement plans, inadequate or excessive borrowing, incorrect debt contracts, and subsequent challenges in managing debt obligations. Extensive evidence suggests that individuals with low financial literacy are prone to debt-related issues (Lusardi & Tufano, 2009). Moreover, individuals with low financial literacy are vulnerable to becoming victims of fraudulent investment schemes, including Ponzi schemes (Amoah, 2018). Familiarity with financial concepts attained through financial literacy can foster a sense of confidence and comfort among consumers of financial services, as they engage with financial service providers. Empirical evidence from around the world indicates that financial literacy contributes to increased financial depth (Grohmann et al. 2018). At the macroeconomic level, economies characterized by a large population with low financial literacy struggle to accumulate funds from savings, pension funds, and investment companies, hindering the execution of numerous potential infrastructural projects.

The detrimental consequences of low financial literacy highlight the critical importance of financial literacy for both individuals and the state. However, empirical evidence indicates that many individuals lack a basic understanding of financial literacy (Lusardi and Mitchell 2014). Financial literacy is recognized globally as a crucial lifelong skill for individuals and households to enhance their daily financial wellbeing. According to Klapper, Lusardi, and Van Oudheusden (2015) in the S&P Global Financial Literacy Survey, numerous developing economies have high rates of financial illiteracy among adults. Africa and South Asia, in particular, have a significant adult population with low levels of financial literacy compared with other continents. For instance, Yemen has a financial literacy rate of only 13 percent among its adults. Similarly, a survey found that 68 percent of adults in Ghana lacked financial literacy. The authors also note that, while national income, as measured by GDP per capita, has some influence on financial literacy levels, it can only be considered a partial explanation. The evidence reveals that even in affluent countries, there are instances of low financial literacy rates among adults. Moreover, in poorer countries, national income does not correlate with financial literacy.

Ghana's financial market encompasses four major industries: a deposit-taking industry regulated by the central bank, the Bank of Ghana; an active capital market overseen by the Securities and Exchange Commission, Ghana; a growing pension fund industry under the National Pension Regulatory Authority; and an insurance industry under the National Insurance Commission. However, the state of financial education in Ghana has been neglected and has lacked coordination. Notably, financial literacy is not a subject educational curricula.

To address this issue, the Ghanaian government initiated the Ghanaian Financial Literacy Week in 2008. Ghana was among the pioneering countries in Africa in developing and implementing a National Strategy for Financial Literacy and Consumer Protection in the Microfinance Sector in 2009. Furthermore, in 2015, the Ministry of Finance in Ghana launched a six-month nationwide campaign to raise awareness and promote

financial literacy, aligning with the comprehensive financial inclusion strategy of the Ghanaian government. Regrettably, these initiatives have gradually lost their momentum. Consequently, the current state of financial education in Ghana is sporadic and lacks coordination. While some financial institutions offer limited financial education as part of their service marketing, non-governmental organizations with an interest in financial education also provide targeted financial literacy initiatives that have very little, if any, impact.

This study is motivated by the presence of complex financial products and services offered by banks, capital markets, and the fund management industry, including mutual and pension funds. There is a pressing need for continuous financial education in all aspects of financial literacy among retail market participants. This is crucial for retail investors and financial product consumers. Lander (2018) emphasizes the significance of financial counselling, especially for low- and moderate-income households. Therefore, financial counseling providers and institutions must reassess their approaches and adopt modern strategies to better serve their consumers. The problem necessitating this study is that Ghana, a frontier market characterized by four major financial sector industries with a 68 percent of financially illiterate adult population, poses a potential challenge of underutilization of these industries by market participants. To address the issue of financial illiteracy, a key question arises: should financial education providers concentrate on basic financial literacy, or should they adopt a comprehensive approach that equips retail investors with essential knowledge to effectively engage in all four sectors of the financial market?

This study aimed to achieve three main objectives: first, to evaluate the level of financial literacy; second, to identify and discuss the areas of difficulty in basic and advanced financial literacy; and third, to examine the socioeconomic factors associated with basic financial literacy. By addressing these objectives, this study seeks to contribute to the empirical evidence of financial literacy challenges for financial service consumers and provide insights into potential solutions to the prevalent financial illiteracy challenge. The significance of this study lies in its provision of empirical evidence on challenging concepts in personal finance education, which can be valuable to financial institutions and regulators responsible for public education in financial markets. The findings of this study offer insights into the perspectives of the sampled individuals who represent potential clients. The findings of this study can guide institutions to effectively present personal finance terminology to facilitate transactions with clients.

The remainder of this paper is structured as follows: Section 2 provides a literature review, while Section 3 outlines the methodology employed in this study. Section 4 presents the results, and Section 5 contains the discussion and analysis of the findings.

Literature Review

Many definitions of financial literacy in the empirical literature have been questioned and classified as lacking well-defined standards (Gerrans and Heaney 2019). The authors identified two issues: first, the different measures of financial literacy and financial literacy and financial education interventions. The first focuses on different financial literacy assessment test items, while the second focuses on the

experimental and quasi-experimental methods used in financial literacy studies, leading to conflicting conclusions. Remund (2010) notes that many measurement approaches to financial literacy pose a significant challenge to researchers in this area of study. Not surprisingly, financial literacy, education, and knowledge are used interchangeably in extant literature. Financial literacy is the ability to make informed financial choices regarding saving, investing, borrowing, and other financial decisions (Klapper, Lusardi, & Van Oudheusden, 2015). According to the OECD (2018), financial literacy is a combination of the awareness, knowledge, skill, attitude, and behavior necessary to make sound financial decisions and ultimately achieve individual financial well-being. According to Remund (2010), there are five categories of financial literacy: (1) the individual's knowledge of financial concepts, (2) the individual's ability to communicate about financial concepts, (3) the individual's aptitude in managing personal finances, (4) the individual's skill in making appropriate financial decisions, and (5) the individual's confidence in planning effectively for future financial needs. On their part, Van Rooij, Lusardi and Alessie (2011) categorize financial literacy into basic and advanced levels. Basic financial literacy includes numeracy, inflation, compounding interests, money illusion, and diversification.

Advanced financial literacy includes the functions of the stock market, knowledge of mutual funds, interest rates and bond prices, stock and mutual fund funds, long-period returns, volatility of investment returns, and risk diversification. Financial education is defined by the OECD (2005) is "the process by which financial consumers/investors improve their understanding of financial products and

concepts and, through information, instruction and/or objective advice, develop the skills and confidence to become more aware of financial risks and opportunities, to make informed choices, to know where to go for help, and to take other effective actions to improve their financial well-being" (p. 26). Financial knowledge, on the other hand, is information that is learned, organized, represented, and stored in memory, and is expected to be used by individuals to make financial decisions (Alba & Hutchinson, 1987).

Although related, these definitions have some distinctions. Financial literacy covers five areas of personal financial management: awareness, knowledge, skills, attitudes, and behavior. Financial education discusses the process of acquiring personal finance concepts through formal educational or informal channels, whereas financial knowledge discusses what has been acquired in personal finance through a formal learning approach. Furthermore, financial literacy requires financial education, which provides financial knowledge, that is, the concepts and skills in personal finance for one to become financially literate. Hence, these three factors should have taken place to make an individual financially literate. The financially literate individual should be able to manage the daily personal financial decisions and those of the household. This results in improved financial or economic well-being for individuals or households. Bandura's (1997) self-efficacy theory aligns with the concept of financial literacy because it depends on an individual's ability to remain committed to a decision based on the skills and knowledge that individuals possess in a particular matter of interest.

The sampled empirical evidence on

financial literacy for the purpose of this study includes Korkmaz et al. (2021), who posit that in China, financial literacy has the chance to decrease the inconsistency between risk propensity and risk behavior, stating that financial literacy increases the inconsistency for risk-averse individuals and decreases the inconsistency for risk-seeking individuals by increasing risk-taking behavior. There is also evidence that financial literacy positively influences financial inclusion through savings accumulation for the future and the use of wealth-creation financial products (van Rooij, Maarten, Lusardi, & Alessie, 2012; Berry, Karlan, & Pradhan, 2018). According to Lusardi and Mitchell (2011a), age is positively associated with financial literacy, as sample data from the United States show that older individuals tend to have a lower level of financial knowledge than younger individuals. From sample data on Bosnia and Herzegovina, Halilovic et al., (2019) recommend that financial literacy should be introduced to individuals at a young age, as this would go a long way to influence positively savings, consumption, and retirement planning habits. According to Li, et al., (2023), spousal relationship influences financial literacy, using multilevel actor-partner interdependence regression models the author reveal that husbands' education was associated with wives' financial literacy, but wives' education was not associated with husbands' financial literacy. The authors recommend that a couple-based approach for providing financial literacy is not out of place.

In the research paper of Akoto et al., (2017), cocoa farmers in the Assin Foso and Twifo Praso Districts of the Central Region of Ghana have a lower level of financial literacy. The authors hold that the factors with a high chance of influencing financial literacy among these farmers are geographical location, age, and educational level. Similarly, Shimizutani and Yamada (2020) found that financial literacy is influenced by educational level, and that individuals with higher financial literacy are more likely to purchase financial investments. These observations were made using data from Japanese and Americans. Niu et al. (2020) used data from sampled Chinese and concluded that financial literacy has a positive and statistically significant impact on retirement planning. The nature of public pensions and their association with financial literacy provides another dimension of the effects of financial literacy. By contrast, Crossan et al. (2011) report that financial literacy does not influence retirement planning in New Zealand, plausibly because the generous nature of public pensions makes retirement planning unattractive.

Empirical literature on financial literacy in Ghana cuts across many domains; however, for the purpose of this study, only a few relevant studies are presented. Adam et al., (2018) provide evidence that male retirees in the Cape Coast metropolis of Ghana have higher financial literacy scores than female retirees. In their financial literacy assessment, male respondents scored seven out of ten questions correctly, while female respondents scored three out of ten questions correctly. According to the authors, the most challenging area of assessment for females was computational questions. According to Sarpong-Kumankoma et al. (2023), gender gaps exist in financial literacy scores, such that males scored higher than females in Ghana, which might be due to unobserved behavioral and psychological traits as well as cultural and social norms regarding

gender roles in financial decision-making. For stock market participation, Akpene Akakpo, et al., (2022) opine that financial literacy is positive and statistically significant determinant of financial inclusion. The authors further note that financially literate investors are less likely to participate in listed stocks in Ghana even in the presence of stock conversion opportunities. To answer the question of how financial literacy affects the performance of small-scale enterprises in Ghana, Tuffour et al., (2022) used a structural equation model to show that managers' financial literacy exerts a significant positive effect on both the financial and non-financial performance of small enterprises. The authors recommended capacity-building programs in financial literacy for managers and owners of small-scale enterprises. To strengthen the case of financial literacy training, Koomson et al. (2023) used treatment effect models to show that in Ghana, financial literacy training plays a significant role in the accumulation of both financial and productive durable assets. In this case, the effect of financial literacy was stronger for male and younger household heads. According to Karakara et al. (2022), financial literacy reduces the chances of individuals experiencing financial distress, as socioeconomic factors contribute to individual financial hardship in Ghana.

Hypothesis
From the literature review, the following hypothesis can be presented in relation to the difference between basic and advanced financial literacy, education, and the number of financial investments:

1. *Test Scores: There is a difference between the test scores for basic financial literacy and advanced financial literacy.*

2. *Gender: Being a male influence the level of basic financial literacy*
3. *Level of Education: The Level of education influences basic financial literacy.*
4. *Number of Financial Investments: Financial investments influence basic financial literacy.*

A better understanding of the relationship between these factors and financial literacy should help policymakers design effective interventions to enhance stakeholder financial literacy campaigns. The importance of financial literacy in literature has been well established. What is yet to be achieved is the financial literacy content and how education should be provided. As of now, a few studies such as (Van Rooij, Lusardi and Alessie, 2011; Remund, 2010; and the OECD 2018), have provided some knowledge set that should form the teaching contents and assessment of financial literacy levels. Evidence suggests that financial literacy levels are low across the world, especially in developing countries. This makes an interesting case for this study on whether to provide financial literacy; the contents should be in levels or unpacked in a single-course model and what socioeconomic factors contribute to financial literacy. This study examines whether financial literacy should be at a certain level using test scores from basic and advanced financial literacy as the basis. In addition, this study brings to the fore socioeconomic factors that determine basic financial literacy.

Method and Data
This study employed a cross-sectional research design and collected data from a cross-section of respondents in the Greater Accra Region of Ghana. The data collection tool was a questionnaire with

demographic and other questions that were relevant to the research objectives. six (6) questions on simple and compound interest rates, inflation, money illusion, and risk diversification are used to assess the basic level of financial literacy. In the case of the advanced level, eight (8) questions, which included the functions of the stock market, knowledge of mutual funds, relationship between interest rates and bond prices, company and stock fund, long period returns, highest fluctuations, and risk diversification. These questions on financial literacy were informed by the works of Van Rooij, Lusardi and Alessie (2011). Each correct answer was assigned a value of one (1) or zero (0) if otherwise. The questionnaire was piloted, after which corrections and clarifications were made. The sampling technique was A multi-stage random sampling technique was used in this study. Six hundred questionnaires were administered to the selected districts in the Greater Accra Region of Ghana. Furthermore, all respondents had to be proficient in English because we did not want enumerators to translate the questions to respondents. None of the respondents had participated in compulsions. The survey also gave the respondents the opportunity to withdraw their consent or skip a question during data collection. Ethically, the study requested information that bothers perception and does not present a threat to participants, anybody, or animals, whatsoever.

Estimation Technique

This study adopted a logit model because basic financial literacy was categorized into low or high levels according to the number of correct answers scored by respondents. The logit is an extension of the logit model, from Stock and Watson (2007), the

logit model is given as:

$$\Pr(Y = 1 | X1, X2, ... X_K) = F(\beta_0 + \beta_1 X_1 + \beta_2 X_2 + ... + \beta_K X_K)$$

(1)

The logit model as presented in equation (1) measures the probability of the regression's coefficient predicting the dependent variable, hence the model becomes:

$$\Pr(Y = 1 | X1, X2, ... X_K) = \frac{1}{1 + e^{-(\beta_0 + \beta_1 X_1 + \beta_2 X_2 + ... + \beta_K X_K)}}$$

(2)

From the above equations, Y is the outcome of interest and β is the unknown coefficient to be estimated.

Empirical Model

The empirical model for this study in a functional form is given in equation (3) which is:

$$FINLITlow \text{ or } high^* = X'\beta + \varepsilon,$$

(3)

Where, the dependent variable, $FINLITscore^*$ is unobserved. $\mathbf{X}$ is a vector of the explanatory variables while $\boldsymbol{\beta}$ is an unknown parameter to be estimated. The error term, ε is assumed to be multivariate normal with zero mean and a constant variance. The dependent variable in equation 3, $FINLITscore^* =$ is a binary variable view, respondents with score of less than 3 are have basic financial literacy, while those with 3 or more correct score have high basic financial literacy. To compare the basic financial literacy score with that of the advanced financial literacy test score, this study adapts with modification the financial literacy index following Douisa's (2020) approach. The financial literacy level was computed as:

$$Financial\ Literacy\ level =$$
$$\frac{Correct\ Answers}{Overall\ Maximum\ Score} \times 100$$
… (4)

The maximum score obtained from the basic financial literacy question was six (6). The sixth question is the contribution of this study to the existing question on assessing basic financial literacy. This question tests the correctness of the response in differentiating between savings and investments. Respondents with scores of up to one correct answer were classified under low financial literacy; 2, 3, 4, 5, and 6 correct answers were classified as fair, average, good, very good, and excellent basic financial literacy, respectively. This process was repeated to construct advanced financial literacy, which consisted of eight (8) questions.

Specifically, respondents with scores of up to one correct answer were classified as having low financial literacy, with two, three, four, five, and six or more correct answers classified as fair, average, good, very good, and excellent advanced financial literacy, respectively.

The independent variables are demographic and socioeconomic factors, including social security number, education, employment, personal retirement funds, and the total number of investments, which is the error term in the model. As our dependent variable, the basic financial literacy score, is binary, an ordered logistic regression model was used to estimate the coefficients. The detailed empirical logistic regression model is as follows:

$$Financial\ literacy =$$
$$\beta_0 + \beta_1(Sex) + \beta_2(Age) + \beta_3(Marital\ Status) + \beta_4(Education) +$$
$$\beta_5(Employment\ Status) + \beta_6(Social\ Security\ Number) +$$
$$\beta_7(Bank\ Personal\ Loan) + \beta_8(Bank\ Business\ Loan) +$$
$$\beta_9(Personal\ Retirement\ Fund) + \beta_{10}(Total\ Investments) + \varepsilon_i$$
………………..…(5

Where, β_0 is the constant term, B_i (where i= are 1, 2, 3, …, 10) are coefficients of the respective independent variables and ε_i is the error term.

Diagnostics Tests

When analyzing cross-sectional data, the two main identification challenges commonly associated with such data are multicollinearity and heteroscedasticity. We investigated the presence or absence of multicollinearity by using a pairwise correlation test. A mean VIF value of 1.40, as reported in Table 4 indicates low multicollinearity in the models. Because the F-statistics are highly statistically significant, there is evidence in this study that overall, the models have passed the fitness tests and will not produce spurious results.

Results and Discussion

Table 1A shows a fair representation of the male and female respondents. Females made up 44.36% of the sample, and males made up the remaining 55.64 percent. In terms of employment, over 78 percent of respondents are either employed or self-employed. The remaining 21.47 percent

were unemployed. The percentage of married respondents was 32.02%, whereas that of single respondents was 67.98 percent. Approximately 72.08 percent of the respondents were either bachelor's degree holders or postgraduate certificate holders. The remaining 27.91 percent had other educational certificates. From the survey, 58.03% of the respondents had social security numbers, which corroborates the 52.54 % %employed respondents. According to the data, 28.08 percent have secured personal loans from banks, while 71.92 percent have yet to secure such facilities. For business loans, 24.61 percent indicated that they had secured business loans compared to the remaining 75.39, who responded negatively. Regarding personal retirement funds, 42.86 percent contributed to a personal retirement fund, and the remaining 57.14 percent had yet to set up such funds.

Using Douisa's (2020) approach to categorize financial literacy levels, the test scores in Table 1A show that 16.54 percent of the respondents possess low financial literacy, and 22.56 percent, 28.2 percent, 22.56 percent, 7.41%, and 2.44 percent possess fair, average, good, very good, and excellent basic financial literacy, respectively. Evidence shows lower scores in the distribution when advanced financial literacy scores are considered. Furthermore, from the test scores, 21.99 percent, 37.78 percent, 17.29 percent, 12.59 percent, 9.21%, and 1.13 percent possessed low, fair, average, good, very good, and excellent advanced financial literacy, respectively.

In Table 1B, the ANOVA statistics reveal that the full model for basic financial literacy has 16 degrees of freedom, with an F-statistic value of 2.9, which is statistically significant at the 1% level. Furthermore,

there is evidence of a statistical difference in the basic financial literacy scores for employment, marital status, education, personal loans, and business loans. From the results presented in Table 1C, the ANOVA statistics for advanced financial literacy show that the full model has an F-statistics of 2.3 and is statistically significant at the 1 percent level. The independent variables that differ in advanced financial literacy levels are gender, education, and business loans.

Financial Literacy Test Score

The details in Table 2 are test scores from the survey. In Panel A, in basic financial literacy, 74.05 percent of the respondents correctly answered the question on diversification. The question on inflation was answered correctly by 44.68% of the participants, with 55.32 percent selecting the wrong choices. For the simple interest question, 54.96 percent correctly selected the correct answer, while 45.04 percent could not answer this question correctly. Regarding compound interest, 40 percent of the respondents selected the correct answer, whereas 60 percent answered this question incorrectly. For money illusion, the correct response rate was 44.55%, whereas 52.45 percent failed to answer this question. The question asking respondents to differentiate between savings and investment showed that only 29.28 percent could differentiate between savings and investment. The wrong answer accounts for 70.72%, as they view savings to be the same as an investment. Those with low basic financial literacy made up 67.29 percent, while those with high basic financial literacy scores made up 32.71 percent of our sample. The average correct and incorrect scores on the basic test were 48.28 and 51.58 percent, respectively.

Table 1A: Frequency Distribution of Response

Variable	Respondents	Frequency	Percent
Gender			
	Female	236	44.36
	Male	296	55.64
	Total	**532**	**100**
Employment			
	Unemployed	114	21.47
	Employed	279	52.54
	Self-Employed	138	25.99
	Total	**531**	**100**
	Missing		1
Marital Status			
	Single	361	67.98
	Married	170	32.02
	Total	**531**	**100**
	Missing	1	
Education			
	Others	22	4.21
	Secondary	30	5.74
	Diploma	43	8.22
	HND	51	9.75
	Bachelors	251	47.99
	Postgraduates	126	24.09
	Total	**523**	**100**
	Missing	9	
Social Security Number			
	No	220	41.98
	Yes	304	58.02
	Total	**524**	**100**

Source: Author's estimates

Table 2A Continue: Frequency Distribution of Response

Variable	Respondents	Frequency	Percent
Personal Loan			
	No	379	71.92
	Yes	148	28.08
	Total	**527**	**100**
	Missing	5	
Business Loan			
	No	389	75.39
	Yes	127	24.61
	Total	**516**	**100**
	Missing	16	
Contribute to Personal Retirement Plan			
	No	300	57.14
	Yes	225	42.86
	Total	**525**	**100**
	Missing	7	
Basic Financial Literacy			
	Low	88	16.54
	Fair	120	22.56
	Average	150	28.2
	Good	120	22.56
	Very Good	41	7.71
	Excellent	13	2.44
	Total	**532**	**100**
Advance Financial Literacy			
	Low	117	21.99
	Fair	201	37.78
	Average	92	17.29
	Good	67	12.59
	Very Good	49	9.21
	Excellent	6	1.13
	Total	**532**	**100**

Source: Author's estimates

Table 1B: Basic Financial Literacy ANOVA Statistics of Variables

Variable	DF	F	Prob>F
Dependent Variable			
Basic Financial Literacy			
Model	16	2.9	0.001
Independent Variable			
Gender	1	1.3	0.252
Employment	2	3.5	0.033
Marital Status	4	2.1	0.082
Education	5	3.7	0.003
Social Security Number	1	0.6	0.424
Personal Loan	1	6.1	0.014
Business Loan	1	6.8	0.010
Contribute to Personal Retirement Plan	1	1	0.324

Source: Author's estimates

Table 1C: Advance Financial Literacy ANOVA Statistics of Variables

Advance Financial Literacy	DF	F	Prob>F
Model	16	2.3	0.003
Independent Variable			
Gender	1	4.4	0.036
Employment	2	1.7	0.176
Marital Status	4	0.3	0.891
Education	5	2	0.077
Social Security Number	1	2.2	0.135
Personal Loan	1	0.6	0.424
Business Loan	1	3.4	0.064
Contribute to Personal Retirement Plan	1	0.8	0.382

Source: Author's estimates

Table 2: Financial Literacy Test Score

Panel A: Basic Questions	Correct %	Wrong %	Total	Count	Missing
Diversification	74.05	25.95	100	524	8
Inflation	44.68	55.32	100	526	6
Simple Interest	54.96	45.04	100	524	8
Compound Interest	40	60	100	530	2
Money Illusion	47.55	52.45	100	530	2
Savings not same as Investment	29.28	70.72	100	526	6
Respondents with Low Basic Financial Literacy	67.29				
Respondents with High Basic Financial Literacy	32.71				
Average Score	*48.42*	*51.58*			
Panel B: Advance Questions	**Correct %**	**Wrong %**	**Total**	**Count**	**Missing**
Diversification	56.06	43.94	100	528	4
Function of the Stock Market	42.8	57.2	100	521	11
Riskiness of Shares	30.23	69.77	100	526	6
Mutual Funds	19.66	80.34	100	524	8
Interest rates and Bond Price	31.18	68.82	100	526	6
Shares versus Stock Mutual Funds	29.47	70.53	100	526	6
Shares return over Time	39.85	60.15	100	527	5
Shares Volatility	39.07	60.93	100	517	15
Average Score	*36.04*	*63.96*			

Source: Author's estimates

Panel B shows that the test scores for advanced financial literacy were low. Specifically, 56.06 percent of respondents answered correctly regarding diversification. However, 43.94 percent selected the incorrect answer. The function of the stock market question was answered correctly by 42.80 percent of the respondents, while 57.20 percent selected the wrong answer. The question on the riskiness of shares was correctly answered by 30.25% of respondents, with 69.77 percent selecting the wrong answer. The correct response for mutual funds was scored by 19.60 percent of the respondents, with 80.34 percent selecting the wrong choice. The percentage of respondents who correctly answered the question on interest rates and bond prices was 31.18 percent, whereas 68.82 percent chose the wrong answer. When comparing stocks to mutual funds, 29.47 percent scored correctly, while 70.53 percent failed to answer this question. 39.85% of respondents correctly answered the question on share returns over time, while 60.15 percent failed to answer this question. The question on share return

volatility was answered correctly by 39.07 percent, compared to 60.93 percent, which could not. The average correct and incorrect scores from the advanced 36.04 and 63.96%, respectively. From the test scores for both basic and advanced financial literacy, the financial literacy level of the sample respondents in this study was approximately average. This is not surprising and peculiar to Ghana, as the findings of Klapper, Lusardi, and Van Oudheusden (2015) in the S&P Global Financial Literacy Survey revealed that Africa and South Asia have adult populations with low financial literacy and that in Ghana, about 68 percent of adults are financially illiterate. Bansal and Kaur (2023) report low financial literacy levels in the Punjab region of India. The results in Table 3 are the categories of financial literacy and number of investments; the mean total investment is high for those who possess excellent basic financial literacy. This was followed by those with average and good basic financial literacy, with mean total investments of 0.9532 and 0.925, respectively. The highest variability in total investment is among those who possess average and good financial literacy, with standard deviations of 1.149 and 0.945, respectively. From the advanced financial literacy test, those with the highest mean investment of 1.667 have excellent financial literacy, with a volatility of 1.751. Those with very good advanced financial literacy had a mean total investment of 1.082, with variability of 0.812. Table 3 shows that financial literacy influences the number of investments made.

Differences in Financial Literacy

Table 3: Test Score Differences

Panel A: Financial Literacy and Number of Investments				
Financial Literacy	**Basic Level**		**Advance level**	
	Mean Total Investment	**SD Total Investment**	**Mean Total Investment**	**SD Total Investment**
Low	0.455	0.772	0.598	0.789
Fair	0.742	0.874	0.746	1.058
Average	0.953	1.149	0.913	0.980
Good	0.925	0.954	0.836	0.828
Very Good	0.659	0.693	1.082	0.812
Excellent	1.000	0.707	1.667	1.751
Panel B Test of Difference in the Levels of Financial Literacy				
Financial Literacy		**Rank Sum**	**Mean**	**Median**
Basic	532	331049.5	47.87	50
Advance	532	235530.5	34.77	33.33
Z		9.62		
Prob > z		0.000		
Total			41.32	44.44
Source: Author's estimates				

Panel B of Table 3 shows that the mean test score of 47.87 percent for basic financial literacy differs from the mean test score of 34.77 percent for the advanced financial literacy test. The median test scores for basic and advanced financial literacy differed by 50 percent and 33.33 percent, respectively. From the Mann-Whitney U test, Z with a value of 9.62, and probability > z value of 0.0000. With this test statistic, there is evidence of a statistically significant difference in the test scores of basic financial literacy compared to the advanced financial literacy test. Therefore, financial literacy should be high.

Panel A of Table 4 shows that the descriptive statistics have a mean age of 31.3 years with an age range of 18–73 years. The average total investment is 0.795, with a maximum of five financial investments. The average score on the basic financial literacy test was 2.897, compared to 2.840 on the advanced financial literacy test. The variability in the test scores was higher in the case of advanced financial literacy, with a value of 1.780, compared to the 1.278 standard deviation in the test scores of basic financial literacy. The scores ranged from 1 to 6 for basic financial literacy and 0 to 8 for the advanced financial literacy test.

Table 4: Descriptive Statistics and Spearman's Correlation

Panel A: Descriptive Statistics									
Variable	Observation	Mean	Std. Dev.	Min	Max				
Age	517	31.3	9.28	18	73				
Total Investment	532	0.795	0.961	0	5				
Basic Financial Literacy	532	2.897	1.278	1	6				
Advance Financial Literacy	532	2.84	1.78	0	8				
Panel B: Variables	-1	-2	-3	-4	-5	-6	-7	-8	-9	-10
(1) Gender	1									
(2) Age	0.016	1								
(3) Marital Status	-0.022	0.598	1							
(4) Education	0.032	0.066	0.069	1						
(5) Employment	0.054	0.283	0.182	-0.062	1					
(6) Social Security Number	0.011	0.4	0.369	0.09	0.106	1				
(7) Personal Bank Loan	-0.029	0.337	0.267	0.153	0.14	0.313	1			
(8) Business Bank Loan	0.088	0.208	0.19	0.077	0.255	0.175	0.501	1		
(9) Personal Retirement Fund	0.021	0.357	0.385	0.151	0.154	0.495	0.272	0.2	1	
(10) Total Investment	0.064	-0.102	-0.104	0.042	-0.152	-0.116	0.082	0.183	-0.04	1
Spearman rho = 0.309										

Source: Author's estimates

Table 5a: Logit Regression Results

	Odds Ratio	dy/dx	Odds Ratio	dy/dx
	Basic Financial Literacy	Basic Financial Literacy	Basic Financial Literacy	Basic Financial Literacy
Gender	1.480*	0.079*	1.497*	0.081*
	-0.308	-0.046	-0.314	-0.042
Age	0.981	-0.004	0.988	-0.0025
	-0.015	-0.003	-0.016	-0.003
Marital Status	1.403	0.0685	1.512	0.0833
	-0.399	-0.057	-0.435	-0.056
Education	1.496***	0.082***		
	-0.143	-0.018		
Employment Status	1.188	0.035	1.205	0.037
	-0.191	-0.032	-0.195	-0.032
Social Security Number	1.088	0.017	1.13	0.025
	-0.273	-0.051	-0.286	-0.051
Bank Personal Loan	1.486	0.08	1.508	0.083
	-0.411	-0.055	-0.416	-0.055
Bank Business Loan	0.554**	-0.119**	0.563**	-0.116**
	-0.161	-0.058	-0.163	-0.058

Source: Author's estimates

Table 5b: Logit Regression Results

	Odds Ratio	dy/dx	Odds Ratio	dy/dx
	Basic Financial Literacy	Basic Financial Literacy	Basic Financial Literacy	Basic Financial Literacy
Contribution to Personal Retirement Fund	1.06	0.012	1.13	0.024
	-0.26	-0.049	0.281	-0.05
Total Investment	0.712*	-0.069**	0.715*	-0.068**
	-0.124	-0.035	-0.124	-0.035
Other Education				
Secondary			3.443	0.085
			-4.169	-0.079
Diploma			6.0261	0.159**
			-6.696	-0.075
Higher National Diploma			8.671***	0.221***
			-9.462	-0.076
Bachelors			15.800***	0.346***
			-16.608	-0.053
Postgraduate			14.291**	0.324***
			-15.028	-0.062
Observations	482	482	482	482
Mean VIF	1.4	1.4	1.4	1.4
LR chi2(10)	38.43	38.43	42.61	42.61
Prob > chi2	0	0	0	0
Pseudo R^2	0.063	0.063	0.07	0.07

Source: Author's estimates

Discussion

The results generated for this study show that being male increases the probability of a high basic financial literacy score. This position on males is the same in Adam et al. (2018) and Sarpong-Kumankoma et al. (2023), who posit that males in Ghana have higher financial literacy scores than female retirees. How education associates with basic financial literacy in this study, is that higher academic education influences basic financial literacy, as a higher level of education is associated with greater odds of higher basic financial literacy; this finding avers that of Shimizutani and Yamada (2020) and Al-Tamimi (2009)'s evidence from the United Arab Emirates.

The results on bank business loans show that individuals with secured bank loans have lower odds of an increase in basic financial literacy levels. These individuals tend to use financial products, including loans from financial institutions, compared with those who are financially illiterate, which is supported by Lusardi and Tufano (2009). The inference from this result is that financial inclusion has the possibility of increasing the level of financial literacy, and this is not strange, as financial inclusion rests on the anchor of the usage of financial products and services. The results on the number of investments and financial literacy corroborate the finding that financially literate individuals are most likely to be financially included and purchase financial investments (van Rooij, et al., 2011a; van Rooij, Maarten, Lusardi, & Alessie, 2012; Berry, Karlan, & Pradhan, 2018). There is evidence from the logistic regression results that education matters in financial literacy. Compared with individuals with low basic financial literacy, those with a minimum bachelor's degree

have higher basic financial literacy. This is comparable to the findings of Klapper et al. (2015) on education and financial literacy from world survey results.

Conclusion

This study assessed the level of financial literacy of the sampled Ghanaians. Based on the basic financial literacy test scores, the respondents had average financial literacy. The advanced financial literacy test showed that respondents had advanced financial literacy. The challenging areas of the basic financial literacy test include inflation, compound interest, and money illusion. In the case of advanced financial literacy, difficult-to-understand concepts are a function of the stock market, riskiness of shares, mutual funds, interest rates and bond prices, share returns over time, and share return volatility. In this regard, providers of financial literacy, including financial institutions such as banks, pension funds, investment/mutual fund companies, and insurance companies, should dedicate appreciable financial and nonfinancial resources to provide financial literacy knowledge to the general population in Ghana. There is evidence that differences exist in the test scores of basic and advanced financial literacy tests. This indicates that financial literacy can be taught at basic and advanced levels. In addition, there is evidence to support our second hypothesis that education level influences financial literacy. The results from the logistic regression model prove that the number of financial investments influences financial literacy level. Furthermore, a targeted approach to financial literacy with content that meets the specific needs of targeted groups

would greatly improve financial literacy in Ghana and other countries with socio-demographic characteristics. This study recommends that a general content approach in financial literacy is best suited for students, whereas a targeted and content-specific approach is preferred for non-student groups. Moreover, the socioeconomic factors associated with basic financial literacy are gender, education, bank business loans, and the total number of investments. In addition, diplomas, higher national diplomas, bachelor's degrees, and postgraduate educational levels tended to be associated with higher basic financial literacy levels.

Providers of financial literacy, including personal financial advisors, should use public campaigns on radio, television, newspapers, social media, and other special-designed financial literacy training programs. This financial education can be conducted at least once a year by targeting the adult population of Ghana, with an extension of such campaigns to the tertiary levels of education and later to lower levels of education. The content of financial literacy educational material must be in levels such that easy financial concepts are

taught first, before advanced financial concepts. Public financial literacy campaigns should be conducted as part of the corporate social responsibility of these financial institutions, although we admit that financial service providers have conflicts of interest in such a pursuit in their call to action after such campaigns. Another strategy is to deploy financial literacy during these institutions' customer marketing campaigns.

The next recommendation is that financial market regulators, despite their regulatory mandate, should pool their resources together and lead the charge in providing financial literacy on the common and overlapping financial knowledge sets through collaborations with educational authorities using existing educational institutions and infrastructure. Further studies in the areas of household financial management and financial literacy can be conducted in the future.

Conflict of Interest
The authors declare that there are no conflicts of interest.

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Home Management of Febrile Convulsion among Ghanaian Parents with Children Under Five Years: An Exploratory Case Study

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Abstract
Febrile convulsion in children under five years is a common childhood problem, constitutes one of the causes of hospital admissions, and causes anxiety and fear among parents. Empirical information on the condition and how it is managed by parents in Ghana is scarce. This study was therefore, conducted to determine the 5-year (2018-2022) prevalence of the condition, knowledge, and home management of febrile convulsion among parents with children under five years, seeking healthcare for their children in the Holy Family Hospital, Berekum. A mixed method of data collection was used to collect data from 106 participants with interview questionnaires and focus group discussion (FGD) guide. Quantitative data were analyzed using SPSS (version 26) and descriptive statistics were used to interpret the findings. Qualitative data consisted of recorded responses from 2 FGDs, transcribed, and analyzed manually in tandem with the study objectives. The average prevalence of febrile convulsion on admission in the study facility was 2.8% for the 5-year period studied. 77.7% of the respondents had low knowledge on signs and symptoms of febrile convulsion. Causes of febrile convulsion according to participants ranged from elevated temperature (81.1%), inheritance (8.9%), evil spirit possession (6.7%) to no idea (3.3%). Home management of the condition included wiping affected child with water, application of herbal concoction, holding child's legs up with the head down among others. Facility and home management of febrile convulsion are critical to the survival of the affected child. Thus, misconceptions on the causes, signs and symptoms and proper home management and need for facility intervention should be tackled through mass education of parents. Hospital management should also collaborate with media houses to disseminate effective educational information on febrile convulsion and its management among the Ghanaian populace.

Key words: Febrile convulsion, Prevalence, Parental Knowledge, Home Management

Introduction

Febrile convulsion is one of the most common type of convulsions in children under five years and constitutes one of the causes of hospital admissions (Hakizimana et al., 2021). According to International League Against Epilepsy (ILAE), febrile convulsion is a seizure occurring in childhood between one month and five years of age with associated febrile illness excluding central nervous system infections, neonatal seizures, and acute symptomatic seizures. There are two types of febrile convulsion with 70% classified as simple and 30% as complex. The simple febrile convulsion involves tonic-clonic activity which is generalized and without the features of a focal seizure. Each convulsion lasts for less than ten minutes (Mewasingh, 2014). Whereas the complex febrile convulsion lasts for more than 10 minutes and may reoccur within 24 hours (Sadleir et al., 2007; Mewasingh, 2014).

Globally, seasonal, and diurnal variations in the occurrence of febrile seizures have been investigated. Population studies in Western Europe and the USA report an aggregate occurrence of 2–5%. The frequency elsewhere in the world varies between 5–10% (India), 8.8% (Japan), and 14% (Guam) (Waruiru & Appleton, 2004). In 2010, increased febrile convulsions (FC) occurred after administration of inactivated trivalent influenza vaccine (TIV) in Australia. Overall, FC is seen in about 5% of children - 460 out of 100,000 children under 4 years old (Khair & Elmagrabi, 2015). The prevalence of febrile convulsion among children in North America and Europe, is estimated as 3% to 5% respectively, and up to 14% in Asian children (RCN, 2013). The condition is more common in children from lower socioeconomic status, probably because of inadequate access to medical care (Sajadi &

Khosravi, 2017). The dearth of statistics on febrile convulsion in sub-Saharan Africa may be related to the difficulty in differentiating simple febrile seizures from acute symptomatic/infective seizures, especially if it is due to falciparum malaria infection (Waruiru & Appleton, 2004; Berg et al., 1997). In some cases, in Sub-Saharan Africa, the source of febrile convulsions in children under the age of 5 years could be malaria (Oke et al., 2021; Akpede, Sykes, & Abiodun, 1993), but most parents do not perceive the danger of convulsions when their children have malaria (Ramakrishna, Brieger, & Adeimiyi 1989), and when convulsions set in, the cause is mostly attributed to spiritual sources (Owusu, 2022). However, empirical research in the region has shown that about 25% to 35% of admissions in pediatric emergency wards are as a result of febrile convulsion and febrile-related conditions (Winkler et al., 2013; Nyaledzigbor et al., 2016).

In Ghana, febrile convulsions are the most common type of convulsions in children under five years (Jarret et al., 2012). The 2014 Annual Health Performance Reports from the Volta Region of Ghana indicated that febrile-related conditions accounted for 30% to 40% percent of admissions among children under five years in the region (GHS, 2013). Few studies on febrile convulsion have been conducted in the Volta and Northern regions of the country (Wuni et al., 2021; Konlan et al., 2019; Nyaledzigbor et al., 2016). Statistics in other parts of the country are scarce, and hence, makes this study very important and timely.

The impact of febrile convulsion on parents can be enormous. Parents are usually affected when their children are struck with febrile convulsion, thus, 95% of such parents have concerns about further

seizure attacks (Volta Regional Hospital, 2014), stemming from the emotional trauma and fear that entangle them with the first episode (Kayserili et al., 2008). Parents who witness a healthy child's first seizure retain an unforgettable memory of the event which significantly influences family life and may manifest in parental behaviour such as remaining awake at night or measuring their child's temperature frequently (GHS, 2013). Anxiety increases when febrile convulsion occurs for the first time when they do not know what to do and how the prognosis of the episode would be. Some studies in India and Nigeria have found out that mortality is the most feared among mothers whose children experience seizures (Anigilaje & Anigilaje, 2013; Parmar et al., 2001). More than 75% of respondents do not hold the opinion that their children will be alright during febrile convulsions, and the knowledge level of parents on febrile convulsion reflects the level of their anxiety (Syahida et al., 2016).

Studies elsewhere have shown that more than half of the affected parents have high knowledge on the time-lapse and reoccurrence of febrile convulsion, for instance, a study in Britain indicated that 87 out of 89 parents with children having febrile convulsion lasted for 15 minutes, only two lasted for more than 15 minutes (Verity, 1998). Parents whose children have reoccurring seizures had a better experience in first aid practices (Volta Regional Hospital, 2014). More than 80% of these parents hold the opinion that seizures will reoccur (Syahida et al., 2016). A study conducted in Saudi Arabia found that housewives appear to have more knowledge on febrile convulsion than working mothers (Al-Thaqafy et al., 2022). The importance of parents' knowledge on febrile convulsion necessitated the study by

Toksoz et al (2023) to acquire a scale that measures caregivers and parents' knowledge on febrile convulsion.

The majority of parents (91%) in India do not carry out any intervention before getting the child with febrile convulsion to the hospital (Parmar et al., 2001). In Ghana, parents apply herbal preparations; onions, garlic, and other concoctions to the convulsive child (Wuni et al., 2021; Konlan et al., 2019). However, the realization that these interventions as a way of managing the condition do not work, leads to orthodox medical treatment intervention in a critical state of the child (GHS, 2013).

Abeysekara et al. (2017) reported that 54.6% of mothers in Siri Lanka Considered the family history of convulsion as a factor that increases the risk of FC. Respondents in this study showed that 70% of them believed that it would improve with age. However, Nyaledzigbor et al., 2016 reported that mothers in Ghana believe that FC can be prevented at home, 60% of them indicate that FC can be prevented by reducing fever in children by sponging, while 44% of them mentioned that giving paracetamol syrup to the child having fever can prevent FC.

Although febrile convulsion may not cause death, brain damage or learning disorders, it is quite frightening to observers and parents who witness an episode of febrile convulsion (Hakizimana et al., 2021). Parents also must understand the right time to take their children to the nearest health facility when febrile convulsion occurs. In consequence, parents' ignorance, and poor understanding about how to deal with seizures could lead to mismanagement of febrile convulsion. Hence, knowledge on febrile convulsion is important for parents, especially regarding febrile control, seizure

features and how to manage convulsion at home. Correct managerial skills among parents can prevent complications associated with febrile convulsion, such as head injury, mouth and teeth injury and neck suffocation. Even in the case of health practitioners, when the right protocols are overlooked, it can be dangerous to patients (Kopsidas et al., 2023). This study was therefore carried out to determine the 5-year prevalence rate, knowledge, and home management of febrile convulsion among parents with children under five years in a Ghanaian peri-urban hospital, to contribute to literature on the subject matter, to form the basis for developing educational messages to parents on the causes, signs and symptoms and home or first aid management of febrile convulsions to improve upon the interventions and outcome of febrile convulsions in the country.

Methods
Study Area, Sampling, and sample size

The study was conducted in Berekum, a town in the Bono Region of Ghana with a population of 129,628 people (Population and Housing Census, 2021), and projected to have a population of 132,869 in 2023 with an annual growth rate of 2.5%. Figure 1 shows the location of Berekum on the map of Ghana.

Figure 1: The location of Berekum on the map of Ghana.

The study population consisted of parents seeking healthcare for their children at the Holy Family Hospital, in Berekum. This hospital was selected purposefully for the study because it is the largest referral center in the municipality and access to eligible study participants was relatively easier.

Purposive sampling technique was used to select 106 parents with children admitted on the pediatric ward or attending child welfare clinic in the Holy Family Hospital. All the selected parents were adults aged 18 years and above, had children under 5 years of age, and were willing to participate fully in the study.

Data Collection Methods and Instrument

The sequential mixed method (Quantitative – Qualitative) approach to data collection was used. The quantitative study utilized interview questionnaires for data collection, and the qualitative study involved focus group discussion (FGD) with an FGD guide. The study instruments for data collection were pretested in another hospital in Berekum (Happy Hospital) and finalized for data collection. Ninety (90) and 16 eligible parents took part in the quantitative and qualitative studies, respectively. The questionnaires for the

quantitative study were made up of semi-structured questions that were divided into three sub-sections: socio-demographic background of respondents, knowledge on what febrile convulsion is, signs and symptoms, causes and management of febrile convulsion. Statistics on Febrile convulsion in the hospital were obtained from the Hospital's records department for 2018 to 2022 to determine the prevalence of febrile convulsion quantitatively in the study hospital. Data collection took place in the last quarter of 2022.

Two FGDs consisting of 8 participants each were conducted to elicit spontaneous responses on what febrile convulsion is, signs and symptoms and how it is managed among parents in the home, for the qualitative aspect of the study. Questionnaire interviews and FGDs were conducted in the English and in Akan languages in a convenient manner to generate the required data for the study.

Ethical Consideration
Approval to conduct the study was given by the Ethics Committee for Humanities (ECH), University of Ghana with the study protocol prior to the commencement of the study in 2022. Approval to conduct the study was sought from the Holy Family Hospital management to collect data in the hospital. Written consent was sought from individual participants before they were interviewed. Interviews were preceded by an explanation of the study purpose and its prospective contribution to the management of febrile convulsion. Participants were then informed about the voluntary nature of their participation and were thus assured of their rights to withdraw from the study any time they felt like doing so without any untoward consequences. Consent was also sought to audio-record the responses from the FGDs

and to publish findings of the study with anonymous quotes from them.

Data Analysis
Quantitative data were analyzed using the statistical package for social science research (SPSS version 26) and descriptive statistics were used to interpret the results. Knowledge of febrile convulsion was assessed based on the correct identification of 6 clinical signs of febrile convulsion - loss of consciousness, global or local twitching/jerking of arms and legs, difficulty breathing, foaming at the mouth, pallor or going blue, and eyes rolling back in the head. Respondents were scored as having high, moderate, or low knowledge based on the number of signs picked from the options provided in the questionnaire. Thus, selecting 5-6 signs was scored high, 3-4 signs was scored as moderate and 0-2 was scored as low knowledge on febrile convulsion.

Responses from the two FGDs were recorded with an electronic audio recorder, and notes were also taken during the FGDs. The recordings were transcribed verbatim and analyzed manually by groping them into themes with the objectives of the study as a guide. Quotes were then selected to instantiate the themes.

Results
Socio-demographic characteristics of quantitative respondents
As depicted in Table 1, about 92.2% (83/90) of participants were females and 7.8% (7/90) were males. The majority of them 65.6% (59/90) were between the ages of 30 and 40 years, about 16.7% (15/90) of the respondents were between 19 and 29 years and the remaining 17.7% (16/90) were 41 years old or above. Most of the respondents- 78.9% (71/90) were married,

16.7% (15/90) had never married before, 3.3% (3/90) were divorced and only of them was a widow. The majority of the respondents 67.7% (61/90) had secondary education (junior high or senior high), 15.6% (14/90) had tertiary education and the remaining 16.7% (15/90) had no formal education. The overwhelming majority-

93.3% (84/90) of the respondents were Christians, 5.6% (5/90) were Muslims and the remaining one was a traditionalist. Most of the respondents- 80% (72/90) were engaged in informal activities as their occupation with the remaining working in the formal sector- (20% (18/90).

Table 1: Socio-Demographic Characteristics of Respondents (n = 90)

|	Variable	Frequency	Percentage
Gender	Male	7	7.8
	Female	83	92.7
Age	19-29years	15	16.7
	30-40years	59	65.6
	41+years	16	17.7
Education	No formal education	15	16.7
	Primary/JHS/SHS	61	67.7
	Tertiary	14	15.6
Occupation	Informal	72	80
	Formal	18	20
Religion	Christian	84	93.3
	Muslim	5	5.6
	Traditionalist	1	1.1
Marital status	Married	71	78.9
	Never married	15	16.7
	Divorced	3	3.3
	Widow	1	1.1

Socio-Demographic Characteristics of Focus Group Discussion Participants

Participants for the FGDs were made up of 2 males (12.5%) and 14 females (87.5%), their ages ranged from 20 to 47 years old. Eleven (68.8%) were married and the remaining five (31.2%) were single or divorced. Nine (56.3%) had either undergone primary or secondary education, whilst 7 (43.7%) had no formal education.

Prevalence of febrile convulsion

The figure below shows the number of febrile convulsion cases presented in the

study facility (Holy Family Hospital) in the Berekum Municipality from 2015 to 2019. Information derived from the institutional records of the facility indicated that the highest number of cases of febrile convulsion were admitted in 2015, representing 4.5% (68/1,511) of total admissions as compared to 2.8% (55/1,964) in 2016, 2.4% (29/1,208) in 2017, 1.0% (16/1563) in 2018 and 3.4% (48/1410) in 2019 respectively. The average prevalence per year within the specified period was 2.8% (216/7656) (see Figure 2).

Figure 2: Prevalence of Febrile Convulsion
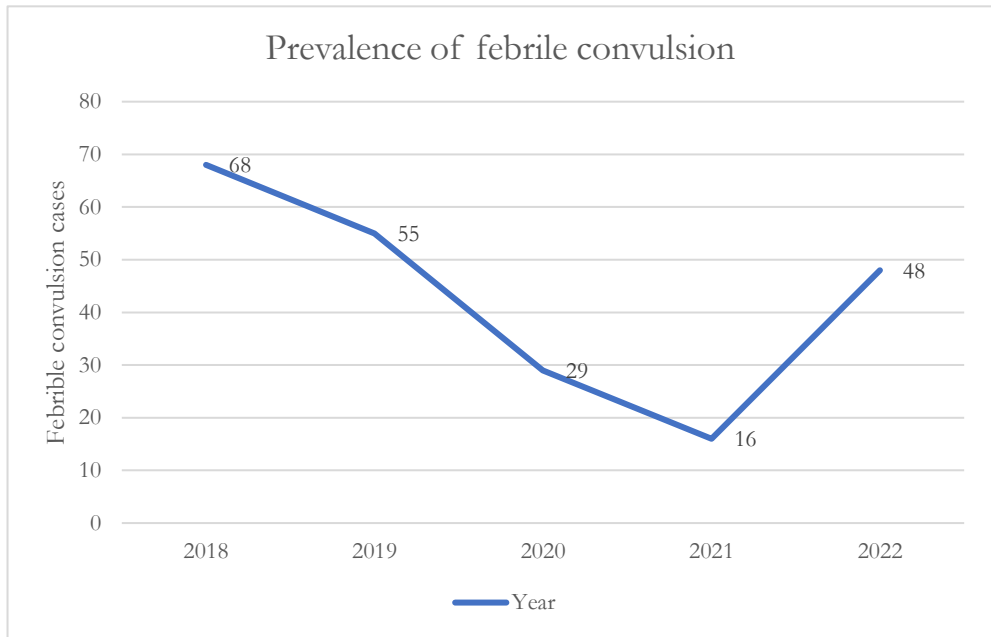
Perception of what febrile convulsion is among respondents

Participants' responses to what febrile convulsion is ranged from a child falling with elevated temperature 44.4% (40/90), severe shaking or tightening of the muscles 26.8% (24/90), child losing consciousness 17.7% (16/90), difficulty in breathing 8.9% (8/90), to no idea 2.2 % (2/90).

Respondents' knowledge on the six clinical signs and symptoms of febrile convulsion

The majority, 77.7% (70/90) of the respondents had low knowledge on signs

and symptoms (0-2 clinical signs correctly identified) associated with febrile convulsion, 15.6% (14/90) had moderate

knowledge (3-4 clinical signs correctly identified), with the remaining 6.7 % (6/90) having high knowledge on febrile convulsion (5-6 clinical signs correctly identified).

Perception of causes of febrile convulsion among respondents

The majority of respondents 81.1% (73/90) indicated elevated temperature as the cause of febrile convulsion, 8.9% (8/90) and 6.7% (6/90) indicated inheritance and evil

spirit possession respectively as the cause of febrile convulsion with the remaining 3.3% (3/90) indicating that they had no idea as to what causes febrile convulsion (see table 2).

Table 2: Perception of Causes of Febrile Convulsion among respondents, (n= 90)

Variable	Frequency	Percentage (%)
High temperature	73	81.1
Inheritance	8	8.9
Evil spirit	6	6.7
No idea	3	3.3

Home Management of Suspected Febrile Convulsion Among Respondents

About forty percent (37/90) of respondents indicated that it is a common practice among them to wash a convulsive child's face with water, 23.3% (21/90) apply local herbal preparation, 17.8% (16/90) revealed that holding a convulsing child's legs up with the head down will remedy the situation, 11.1% (10/90) call only men to hold the child or expose the child to smoke and the remaining 6..7% (6/90) indicated that they pray or send the child to a spiritualist (see table 3).

Table 3: Home management of Febrile Convulsion among Respondents (n= 90)

Variable	Frequency	Percent (%)
1. Wash the child's face with water	37	41.1
2. Application of herbal concoction (grinded onion, garlic and herbs) on the child's body	21	23.3
3. Hold the child's legs up with the head down	16	17.8
4. Only men are called to attend to the child	6	6.7
5. Expose the child to smoke	4	4.4
6. The child is sent to spiritualist/herbalist	4	4.4
7. Pray for the child	2	2.3

Findings from Focus Group Discussion

What is febrile convulsion?

FGD participants described febrile convulsion in relation to the signs and symptoms that the child exhibits when he/she is attacked by the condition to include twitching, mouth foaming, loss of consciousness, evil possession, difficulty in breathing and high temperature.

"Febrile convulsion is when a child becomes stiff and twitch with high temperature" (Participant FGD 1)
"Febrile convulsion is when a child losses consciousness and you see foam in his month" (Participant FGD 2)

"A child with febrile convulsion shakes severely and falls down, in some cases the child can't breathe well" (Participant FGD 2

Signs and symptoms of febrile convulsion FGD participants stated that high temperature, stiffness, eyes becoming white, and weakness are signs of febrile convulsion. Thus,
"From experience, the child starts off with high temperature, and the twitching follows with stiffness for some time" (Participant, FGD 2)
"A herbalist has informed me that anytime I see my child's eyes turning white with weakness and high temperature, I must know that my child is having febrile convulsion" (Participant, FGDs 1)

Causes of Febrile convulsion
FGDs participants mentioned several causes associated with febrile convulsion with a lot of misconceptions on the condition. These include curses from evil spirits, hereditary, improper transmission of blood in the body, and excessive intake of rice porridge as substitute for breast milk. Some participants also attributed the cause of febrile convulsion to elevated temperature resulting from malaria and fever associated with teething in children.
"My grandmother told me that witches and wizards in some families see children with brighter future and curse or bewitch them with difficulty in breathing and high temperature. Mostly the children shake especially when they are in a public place, thus, disgracing them" (Participant FGD 1)
"Me I believe it's high blood in the head! This can cause the child to lose consciousness and shake severely with febrile convulsion" (Participant FGD 1)

"I give my son rice porridge because I want to wean him from the breast, and anytime I give him rice porridge, he falls sick. He will have high temperature, vomit, and shake" (Participant FGD 2)

"I have observed that anytime my two-year old daughter's temperature rises, she twitches and falls down". (Participant FGD 1)

"Growing up, I know children fever results from teething and malaria. When the fever becomes severe, they black out or loss conscience" (Participant FGD 1)

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Home management of febrile convulsion

Some FGD participants opined that they first use water to wipe a child with febrile convulsion at home to manage the rise in temperature. Some also indicated holding the child upright with the head down for some time. Others said they grind onions, garlic and local herbs together and smear it on the child. at home to manage febrile convulsion. All these, according to participants are done to manage temperature and seizure before the child is taken to the hospital or a herbalist.

"I wipe the child with water several times to help bring down the temperature before I take the child to the hospital" (Participant FGD 1)

"I smear the child's body with a mixture of onion, garlic and herbs, I let the child inhale the scent, so as to stop the convulsion" (Participant FGD 2)

"I have some friends who manage their children's high temperature and stiffness with herbal medicine. They say it is very sharp! One touch, and the child gets well" (Participant FGD 2)

Discussion

Caregivers of sick children have natural preconceived notions and information about their child's illness, which is likely the case with seizures and febrile convulsion (Hakizimana et al., 2021). Approximately 1 in 20 children will have one before the age of 5 years and is mostly due to common illnesses such as ear infection, cough, colds, and viral infections (GSS, 2010).

The mean annual prevalence of febrile convulsion in the Holy Family hospital as found by the study was 2.8% for children on admission for the period between 2015 – 2019. This figure is quite substantial, and these children deserve to be treated with the best available care. This can only be achieved when parents who are primary caregivers of such children are knowledgeable on the condition and can apply knowledge -based home management techniques to sustain the child until orthodox healthcare facility intervention is sought.

Although the study by Wuni et al., 2021 indicated that 95% of the parents they studied in Northern Ghana had heard about febrile convulsion mostly from other family members, they did not assess their knowledge on the condition. Our study, however, assessed knowledge of the condition among study participants, and findings revealed that most parents had low knowledge on the causes, signs, and symptoms of febrile convulsion. This suggests that the parents' low knowledge of febrile convulsion affected the management of febrile convulsion at home.

This finding is consistent with how Ghanaian parents in the Volta region manage febrile convulsion at home, as they employ herbal preparations, onions, garlic, and concoctions to convulsive children as a way of managing this frightening condition (GHS, 2013; Nyaledzigbor et al., 2016). This indicates how widespread the use of local herbal preparation in the treatment of febrile convulsion in Ghana is, and this is at the detriment of poor and innocent children who have the right to healthy life, and evidence-based treatment of the condition for preservation of life.

When Ghanaian parents are educated on the causes and management of febrile convulsion among children, their fear, anxiety, and misconceptions on the condition will be allayed, consequently, proper home management of the condition may be observed (Oche & Onankpa, 2013) for improved management and outcomes of febrile convulsion among children in the country.

Our study is limited regarding generalization of findings to other parts of the country and elsewhere due to the case study design and the relatively small number of participants involved. However, in areas within Ghana and elsewhere, where similar contextual issues are observed, our findings may be applicable and useful for drawing up interventions aimed at improving prevention and home management of febrile convulsion.

Conclusion

This study has unveiled several misconceptions surrounding febrile convulsion among parents that potentially impact on the home management of febrile convulsion in Berekum, Ghana. These misconceptions about febrile convulsion and how the condition is managed at home can lead to increased morbidity or even avoidable death of affected children. Hence, meaningful, and effective interventions on febrile convulsion management at home are possible only when misunderstandings about the causes, signs, and symptoms of febrile convulsion are addressed through mass education of adults and parents. There should, therefore, be an urgent increased effort to institute effective interventional programmes to educate Ghanaian parents especially in the rural areas on febrile convulsion, what it is, signs and symptoms, first aid management and the urgent need to take an affected child to the hospital for appropriate intervention. These educational activities can be integrated into ante-natal and postnatal clinic activities, child welfare clinics and general out-patient department activities. At the community level, the hospital authorities should collaborate with the media houses (TV stations, radio stations and information centers), to plan and implement educational programmes on febrile convulsion consistently for sustained effect.

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Competence-Based Training and the Employability of Graduates in Tanzania

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Abstract

This paper explores competency-based training (CBT) on the employability of VET graduates in Morogoro Municipality. Precisely, this article explores the existing relationship between competence-based training framework and its implementation in Morogoro Municipality. To this end, the study used a mixed research approach with a case study design. The target population of this study was the vocational training students in Morogoro Municipality, graduates from vocational training and employers in Morogoro Municipality. A sample size of 115 respondents was selected by using non proportionate stratified simple random sampling from a population of 1388which constitutes students and graduates and a total of 25 employers of graduates from vocational training in Morogoro Municipality and staff were selected qualitatively. Furthermore, interviews and questionnaires instruments were used for data collection. The data was then analysed by using descriptive statistics for quantitative data and thematic analysis for qualitative data. The findings show that, vocational training graduates in Morogoro Municipality have inadequate competence required in the labour market due to insufficient training facilities to deliver CBT. Based on the findings, it is concluded that, the government must ensure conducive learning environment which is a precondition for competence-based training and graduates' employability in Morogoro Municipality.

Key words: Competence-Based Training, Employability, Vocational Training, Competence-Based Framework, Tanzania, Competence Assessment

Introduction

Employability competencies are skills, knowledge and attitudes employers deem necessary for a newly appointed graduates in the work environment.

Employability competencies does not only lead to improved performance, it also enhances wealth creation, employment generation and industrialization in any nation (Geel, 2014; Ayonmike et al., 2013) and represent a tool to improve communication in education and the labour market (Garavan & Mcguire, 2001). For students to get employability skills they must attend a competence based training. By definition, competence-based training implies a learning model in which the required level of knowledge and skills on a task must be demonstrated before advancing to the next task (Kufaine & Chitera, 2013; Ondieki *et al.*, 2018).

Globally, this model has received great attention and has been practiced for more than 40 years in different countries. The United State of America (USA) was the first nation to adopt this model in the late 1960s. The aim was to address social and political pressure related with low student achievement, inadequate teaching and training, and the high costs of education (Kanyonga, Mtana & Wendt, 2019Rutayuga, 2014).The model was later adopted by countries like Australia, Germany, the Netherlands, and the United Kingdom (UK).One of the benefits of this model is its ability to advance science and technology by imparting students with skills that are demand driven and therefore produce graduates who are able to meet the demands of employers in the labour market (Rutayuga, 2012;Isaac &Okoye, 2015; Dadi, 2014). In Africa, CBET was adopted for the first time in South Africa in 1998, following the acute shortage of professionals including engineers, technicians and artisans with employable competencies to cope with challenging issues in the 21st century of knowledge based (Kanyonga *et al.,* 2019). While in Tanzania it was adopted in the early 2000s to generate competent

graduates equipped with appropriate sets of knowledge, skills and attitudes towards the realization of Tanzania Development Vision (TDV) _2025 of becoming middle income economy by 2025Apart from adoption of CBET in Tanzania, other efforts to impart employability competencies to learners were introduced including Technical and Vocational Education Development Program (TVETDP) (URT, 2019).

Despite the adoption and practices of this model, unemployability of graduates has remained to be a major problem. One of the factors attributing to lack of employability is the mismatch between the labour market requirement and the skills produced by universities and vocational institutions. Although many countries have good competence-based frameworks, their implementation has not yielded the expected results. The theoretical arguments is that learning environment and learners behaviour can be important variable but the systematic analysis of these factors and the way they influence competence based learning a country like Tanzania is missing. The key questions in this paper is that: *what goes wrong? Why does the implementation of competence-based training not yield the intended results in Morogoro Municipality? and; how can learners' behaviour and learning environment explain this shortfall?*

Literature Review
Competence-based training

Competence based training implies a learning model in which the required level of knowledge and skills on a task must be demonstrated before advancing to the next task (Kufaine & Chitera, 2013; Ondieki et al., 2018). Sumra and Katabaro (2016) identified the key skills which constitutes

competence-based training to include foundation skills, transferable skills, vocational and technical skills that ensure that the learners acquire the necessary skills. The classical theorists and empirical reviews on competence-based training have confirmed the positive relations between learning environment, behaviours of the learners and competence-based training which leads to employability of graduates (Kir et al., 2021. With regards to behavioural theory, this theory can be traced back to Watson (1962) and Skinner (1938) who emphasise on the changes of behaviour and its impact on learners. It is from this backdrop that the behaviourist insists on practical learning approach.

However, the theory is criticized by ignoring unobservable and immeasurable human behaviours which are also important for employability (Strauch, et al., 2014; Kaya & Canbal 2016). Therefore, to understand these behaviours, the learner's behaviour must be blended with the learning environment.

The learning environment is attributed with constructionism perspective by Piaget (1973) and Vygotsky (1978) which insist on effective learning environment. This in turn is expected to impacts on the ability of learners to acquire knowledge, skills, and competencies which are relevant to the community development. Various studies show the relationship between a competency-based learning environments and employability. Teaching and learning process must be related to the practical real world therefore the classroom should be designed and shaped in such a way that teacher and students can share their knowledge and experience actively, cognitive structure must always be altered and adapted according to demands of the environment, educating and teaching

should not focus on the educators but on the learners (Suhendi and Purwarno, 2018). The study by Thirunavukarasu et al. (2020) shows that, various degrees of expectation and experiences that predominated in the graduate course and were founded on the conceptual idea of graduate employability require major focus in the building of future curricula.

Selvaratnam et al. (2021) revealed that, the necessity for diverse learning environment enables collaborating, offering networking opportunities, and incorporates active learning strategies such as problem-based learning. Kenneth et al. (2021) noted the interactive and collaborative learning as the most important aspect of the online learning environment. Ertmer et al. (2019), found that, collaborative learning environment enables people to exchange information via technology immediately or later. Similarly, Bhina (2014) revealed a significant positive influence of the learning environment on graduates' competencies. Therefore, the establishment of an online learning environment ensures that participants have the opportunity to communicate with a variety of individuals, exchange knowledge and evaluate it. Therefore, to understand the factors which influence the employability of graduates, both the behaviour of learners and learning environment must be taken to account.

Competence based framework in Tanzania

Tanzania adopted CBET for transforming from knowledge-based education and training (KBET) to a CBET system to meet the objective of the Development Vision 2025, whose target is to become high level education nation at all levels (URT, 1991 in Tambwe, 2017). Education has been considered as a strategic agent for creating a well-educated society and adequately

equipped with the technical know-how (URT, 2019). By adopting CBET system, technical institutions are envisaged to produce competent personnel who can help the nation to achieve the desired vision and millennium goals (Kafyulilo *et al.,* 2012). This phase requires competent workers in areas like in welding, plumbing, installation, carpentry, masonry, teaching, and physics.

Apart from adopting CBET, the Tanzanian government took other strategies for enhancing graduate students, by ensuring that the graduates are imparted with skills. For example, VET introduced a program known as the Technical and Vocational Education Development Program (TVETDP) and additional contents in the curriculum such as communication skills in civil engineering, entrepreneurship skills and information communication technology (URT, 2013). Another initiative by the Tanzanian government was the Education Sector Development Plan (ESDP)-2016/17-2020/21.This aimed to establish a culture of human development via a commitment to hard work, professionalism, creativity, innovation, critical thinking, and problem-solving abilities (URT, 2018).

Although CBET was adopted in VET in the past 23 years, its impact on the graduate's employability is still questionable. That results in having graduates unacceptably less competent in workplace contrary to the expectations. Similarly, the government agencies, politicians and administrators are frequently accused of being incompetent and that graduates depend much more on public employment than self-employment. Further, such incompetence has been viewed to cause poor delivery of social services (Mulder, 2019).

With respect to Vocational Training and Education, the government in Tanzania adopted CBET in VET programs in the year 2000. The goal of these initiatives was to have graduates who are skilled, and knowledgeable in their areas of specialization. For example, the shift from Traditional approach to CBET aimed to produce graduates who meet the demands of the National Development Vision of 2025 by addressing the needs of the labour market as well as improving the delivery of social services (URT, 2018). In line with this move, certain programs were adopted, namely Education Sector Development Program (ESDP 2008-2017); the National Strategy for Growth and Reduction of Poverty for both Phases I and II (NSGRP/MKUKUTA, I & II) and Sustainable Development Goals. Moreover, Education Sector Development Plan (ESDP) 2016/17-2020/21 introduced fee-free education at the primary school level to promote acquisition of competencies for entering higher education (URT, 2018).

Despite the strategies adopted in Tanzania, the implementation of CBET has several challenges. Thus, the graduates entering the job market are still incompetent. Mulder (2019) reported a massively poor performance among medical doctors and police officers in delivering services. Furthermore, Munish (2017), observed that VET graduates lack communication and problem-solving skills. Also, Nkondola *et al.* (2019) revealed that, 42 percent of graduates lacks knowledge of using modern machines. Various studies (i.e., Nombo, 2018; Tambwe, 2017; Kabombwe & Mulenga, 2019; Tolliver et al., 2017; Makunja 2015) demonstrate a shortage of expert teachers and competent personnel to implement the CBET system in VET.

Methodology

The methodology of this study was set to answer the question: *why does the implementation of competence-based training does not yield the intended results in Morogoro Municipality? and; how can the learner's behaviour and learning environment explain this shortfall?* To answer this question, the study adopted concurrent mixed approach in which the quantitative approach with Likert scale was used for descriptive statistics and Pearson Chi-square test for categorical data analysis. Besides, the qualitative in-depth interviews were used to explore the state of employability of graduates.

To this end VETA in Morogoro Municipality was adopted as a case study design. The choice of VETA was based on the fact that, it is one of the education sectors in Tanzania which adopted the competence-based training. The CBT framework has been in place over a number of years, but the quality of graduates remains questionable in the labour market. The general public and the recent evaluation have proved a mismatch between the skills produced by VETA, the demanded skills in the labour market and the growing trend of unemployment.

Target population and sampling

The target population for this paper included graduates, students and employers of graduates from VET in Morogoro Municipality. The VET in Morogoro has about 1233 students who graduate annually; 120 VET staff working in the institutions and 100 students constituted the target population of this study.

The two sampling techniques were used to get the sample for this research namely; stratified sampling technique and purposive sampling techniques. To begin with, various steps were used to get stratified simple random sampling for survey. The actual process began with compiling the list of final-year college student, trainers, and employers in the labour market. The three categories of population formed the three subgroups with homogeneous characteristics to be included in the sampling frame. the population of sampling units were divided into sub-groups and a sample was selected separately per each stratum as indicated in the table below.

Table 1. Target population and sample size

Category	Target population	Sample Size
VETA students	1233	115
Graduates	100	40
Grand total	1353	155

With respect to purposive sampling, the researcher selected the key informants for the research. With respect to this article, the key questions which guided the interviews was the learning environment, leaners behaviour and the employability of graduates in Morogoro Municipality. Therefore, the key informants who were selected to provide this information includes three (3) heads of academic units, (2) admission officers and 20 employers for VETA graduates which includes: Five (5) employers from 21st-Century Textiles, Five (5) employers from Abood Soap Industry, Five (5) employers from Cable Television Network and Five (5) employers from Morogoro Tobacco. This leads to a total of 25 respondents.

Data Collection Methods

The actual research began with the Likert scale questionnaire administration for the VETA staff, students and the graduates. The questionnaire was designed in a five Likert scale as indicated in the table 2 below;

Table 2. Likert scale, attributes and the scales adopted

Variables	Attributes researched	Scale adopted	Type of scale	Measurement
Employability (dependent variable)	Employed Self-employed	*5=Strongly Disagree* *4= Disagree* *3= Neutral* *2=Agree* *1=Strongly Agree*	Ordinal	Likert scale
Learning Environment (independent variable)	Adequate Teaching facilities or equipment Quality of classrooms	*5=Strongly Disagree* *4= Disagree* *3= Neutral* *2=Agree* *1=Strongly Agree*	Ordinal	Likert scale
Behaviour of learners (independent variable)	Effective Teamwork Interaction	*5=Strongly Disagree* *4= Disagree* *3= Neutral* *2=Agree* *1=Strongly Agree*	Ordinal	Likert scale

The data from the questionnaire were analysed through descriptive statistics to measure the respondents' attitudes towards employability of graduates in Morogoro Municipality. The completion of the questionnaire was followed with the in-depth interviews on the employability of graduates and the way in relation to the learners' behaviour and the learning environment. The interview was recorded and transcribed based on the different themes of the interview guided.

Findings

Status of Employability of Graduates in Morogoro Municipality

These sections focused on the trend of employability of graduates from Vocational Education and Training in Morogoro Municipality. With respect to this, the interview with employers and VET staff began with the interrogation on skills demand in the labour market. The interview revealed that the skills demand

varies per discipline as evidenced by the interview quotation below;

"Yes, there are many graduates in the labour market with different skills but what I can say is that the skills which we demand more for now are electrical installation, Motor mechanic, Welder/blacksmith, Masonry/bricklaying and Carpentry. The graduates with these skills can also employ themselves"

The interview proceeded with probing on different sectors where these graduates are employed. With respect to this, the findings indicated that, majority of sampled graduates are employed on temporary basis and few on permanent basis. The interviewed employers also argued that, employers are not interested in the levels of qualifications, they are interested in the areas of specialization and the competence of graduates. For instance, one of the interviewees said:

"Yes, we receive many graduates who come with certificates but our interest is not academic qualifications but the competency. The graduates must have the required competence for them to be employed"

The findings from the Likert scale presented the relatively similar picture. For example, 20 respondents strongly agreed that the training they received was not useful at all; 70 respondents agreed that the training they received was not useful while 20 respondents agreed that the training, they received was somewhat useful, while 20 respondents disagreed that the training, they received was not useful and 15 respondents were neutral. The finding from the interviews were also consistent with the Likert scale findings as the employers who were interviewed argued that the student from VET graduate without CBT lacked the requisite knowledge and skill needed in the workplace as evidenced in the interview quotation below;

Student graduates under competence-based training are prepared more effectively for workplace challenges. This implies that, the acquisition of competences must take into consideration the requirements of organisations and industry.

In the same vein, the interview with employers and heads of academic units indicated that, the graduates with competence-based training are more likely to be employed as compared to those who study under traditional approaches. For instance, one of the respondents interviewed argued that; "The trend of employment of graduate under competency-based training is high because the leaner is prepared more effectively for real workplaces. The findings are consistent with the findings by REPOA (2021) and Chinyere, Chijioke and Benjamin (2014) who argued that CBET helps learners to become learner-focused, enabling them to gain the skills needed to do their jobs. Therefore, students with competence-based training from VET are more exposed and fit to employment opportunities.

Furthermore, the interview proceeded with the teaching techniques used by trainers and their impact on the competence acquired by learners. With regard to this, the interview with the instructors indicated that, the participatory methods of teaching are mostly used to ensure students become competent in specific technical skills. One of the interviewees responded that:

Participatory method of teaching is mostly used to make sure our students become competent in a specific technical skill. This is implemented by forming groups that work and learn together in both theory and practice. Mostly I give them a lot of practical activities with very strictly supervision. This helps them in becoming competent in conducting their field works"

Moreover, with respect to learners' interest and morale in training offered under CBT, the research shows that learners' curiosity

and motivation in the training provided are import variable. The results indicate that, forty-six 46 (63.3%) respondents agreed that, they participated fully in class. Forty respondents 40 (76.6%) agreed that assignments are submitted on time. Finally, the fifty-two respondents 52 (60%) agreed that student increased their ability to apply the learnt skills. This implies that, competence-based training and skills is associated with students' morale in their participation in class activities and submission of assignments on time.

The result on awareness of the training facilities by students shows that, 34 respondents (40.0%) agreed that, students were aware of the training facilities while 29 respondents (33.4per cent) strongly agreed that, accessibility of training facilities by students is moderate. The findings further show that, 40 respondents (46.6%) strongly disagreed that, students had the ability to research on their own while 35 respondents were neutral that, students were not able to study ahead of their trainers.

Learning environment and the employability of graduates

The purpose of the study was to determine whether the institutions had the necessary tools and resources to administer CBT technique in an effective and timely manner. The results based on trainers' interviews show that, neither the facilities nor the equipment are sufficient to permit effective and efficient use of the CBT method. The interview with the trainer revealed the lack of resources such as teaching aid, material, and books and low teacher-student ratio. For instance, one interviewee said;

The delivery of CBT approach requires a lot of things such as the adequate number of teachers; books; workshop equipment; books. In our institution, there is a limited number of teachers

which is incongruent with the number of students to supervise both theory and practical experiments. Further, workshop equipment is another challenge for effective delivery of CBT.

The results connect to Lukindo (2016), in that, the greatest obstacles to the adoption of CBE are large class sizes and a lack of time. Similarly, Bataineh and Tasnimi (2014) noted that, a competence-based approach is very costly and typically not practical because it takes a lot of time to teach just one part of the subject topic. This also is consistent with Hassan et al. (2018) who argued that, elements of interactive learning are significantly linked to students learning activities through the use of scientific tools machinery, ICT, solution-based learning procedures, and group work activities. This improves the flexibility and performance to produce graduates who are acceptable in content knowledge. It is therefore expected that there will be a positive association between interactive learning, which is evident in E-learning environments, and students' career development. Also, the creation of an E-learning environment ensures that participants have the opportunity to communicate with a diverse audience, and share and compare the information.

The findings from the questionnaire show that, twenty-one (50) respondents strongly agreed while twenty-five (65) agreed that, the availability of laboratories and workshops for the learning process is associated with employability. This supports the Chi-square test results that the availability of laboratories and workshops for the learning process has a Chi-square value of 11.768 with a p-value of 0.019 which is less than the rejection value of 0.05. This result implies that the availability of laboratory and workshop for the learning process has positive and statistically significant influence on

students' employability. Student's participation in CBT workshops would increase the probability of the students being employed. This is because, at these workshops, students are made abreast of what goes into the successful implementation of the methodology in the field or workplace. Also, the workshops bring to light the urgent need for students to acquire skills demanded in the labour market or the possibility of an individual gaining employment in the labour market.

Table 3: Laboratory and Workshop

		Laboratory and workshop					
		SA	A	N	D	SD	Total
Employability	No	8	4	3	9	11	35
	Yes	21	25	8	5	21	80
Total		29	29	11	14	32	115
Pearson Chi-Square value = 11.768; p_value = 0.019							
Likelihood Ratio value = 11.581, p_value = 0.021							
Linear-by-Linear Association value = 3.087; p_value=0.079							
Conclusion: Significant & Positive association							

With respect to the relationship between the availability of computer laboratories, e-learning and the employability of graduate, the finding from cross-tabulation shows that, all 50 respondents strongly agreed and 65 respondents agreed that the availability of computer laboratories and e-learning for the learning process is associated with the employability of graduates. This is supported by the results of the Chi-square test that, computer laboratory and e-learning for the learning process has a Chi-square value of 31.008 with a p-value of 0.000, which is less than the rejection value of 0.05. This result implies that, the availability of computer laboratories and e-learning for the learning process have a positive and statistically significant influence on the student's employability. This outcome offers helpful insight concerning the use of information communication technologies (ICTs) in teaching and learning vis-à-vis graduate skills development and employability in the labour market.

The results align with Kenneth et al. (2021), who revealed that, e-learning environments contribute significantly to the development of students' career skills. This result is important because it puts in the spotlight the participants' belief that instructional techniques that leverage technology provide a more personalized approach to learning. This is where students are given absolute control over the time, place, path and pace of their learning, developing the prospective workforce of any economy through the acquisition of requisite technical knowledge.

Table 4: Computer laboratory and e-learning

		A computer laboratory and e-learning					
		SA	A	N	D	SD	Total
Employability	No	3	5	4	10	13	35
	Yes	30	30	5	3	12	80
Total		33	35	9	13	25	115
Pearson Chi-Square value = 31.008; p_value = 0.000							
Likelihood Ratio value = 31.494, p_value = 0.000							
Linear-by-Linear Association value = 23.407; p_value=0.000							
Conclusion: Significant & Positive association							

With respect to library and classrooms, the paper sought to find out the relationship between the availability of libraries and classrooms for the learning process and the employability of graduate students. The finding from cross-tabulation shows that, nineteen (19) respondents strongly disagreed that the presence of a library and a classroom for the learning process is not associated with employability. This is supported by the Chi-square test results that the presence of library and classroom for the learning process has a Chi-square value of 2.988 with a p-value of 0. 560.This is greater than the rejection value of 0.05 as displayed in Table 5. This result implies that, the availability of library and classrooms for the learning process has a statistically insignificant influence on the student's employability in the labour market.

Table 5: Library and Classroom

		Library and classroom					
		SA	A	N	D	SD	Total
Employability	No	9	6	4	4	12	35
	Yes	20	25	7	9	19	80
Total		29	31	11	13	31	115
Pearson Chi-Square value = 2.988; p_value = 0.560							
Likelihood Ratio value = 3.100, p_value = 0.541							
Linear-by-Linear Association value = 1.132; p_value=0.287							
Conclusion: Insignificant association with employability							

With respect to the behaviour of the leaners, the study investigated the relationship between discovery learning and the employability of graduate students. The finding from cross-tabulation shows that, twenty-nine (29) and thirty-seven (37) respondents strongly disagreed and agreed respectively that, the discovery learning process is associated with employability. This aligns with the findings of the Pearson Chi-square test that, the discovery learning process has a Chi-square value of 12.947 with a p-value of 0.012, less than the rejection value of 0.05. This result implies that, the discovery learning process has a statistically significant influence on the student's employability. This implies that, students increase their learning by discovering new things in their cerebritis's associated with an increase possibility of an individual gaining employment in the labour market.

The findings are in line with Kenneth et al. (2021) that contextually, the application of discovery learning in higher education enhances student's competence in the usage of digital and electronic technology and helps to collaboratively present, design, facilitate and direct educational experience. Similarly, Lomicka (2020) and Atef & Medhat (2015) also suggested that, discovery learning provides innovative educational solutions that improve and develop students' confidence in social interaction either with their fellow students or lecturers as they prepare to enter the job market.

Table 6: Discovery Learning

		Discovery learning					
		SA	A	N	D	SD	Total
Employability	No	7	6	4	8	10	35
	Yes	29	37	13	12	24	80
Total		29	37	13	12	24	115
Pearson Chi-Square value = 12.947; p_value = 0.012							
Likelihood Ratio value = 12.556, p_value = 0.014							
Linear-by-Linear Association value = 6.507; p_value= 0.011							
Conclusion: Discovery learning is a significant and positive association with employability							

Cooperative and interactive Learning

In addition, the study examined the relationship between cooperative and interactive learning among the students with trainers and the employability of graduate students. The finding from cross-tabulation shows that, twenty-eight (28) respondents strongly disagreed and agreed that cooperative and interactive learning are associated with employability. This finding aligns with Pearson Chi-square test results that, cooperative and interactive learning has a Chi-square value of 15.910 with a p-value of 0.003, less than the rejection value of 0.05. The results imply that, cooperative and interactive learning have a statistically

significant influence on the students' employability. This implies that, as students increase their learning that makes them cooperate and interact with the trainer, the chance to discover and learn new things related to the demand of the current labour market is associated with an increase in the possibility of an individual gaining employment in the labour market. Cooperative and interactive learning facilitate the sustainable professionalization of teachers as well as the creation and adaptation of new teaching methods and curricula. Cooperative and interactive learning is necessary for accelerating the implementation and adjustment of large educational innovations that transcend individual courses and impact a curriculum in its entirety.

The results are consistent with Kenneth et al. (2021) suggestion that, interactive and collaborative learning is the most predictor of students' career development and employability. Similarly, Rohayati and Friatin (2020), proposed that, collaborative learning entails an instructional approach in which students work in groups toward a common academic goal and that collaborative learning is an instructional technique in which learners at various performance levels work together in small groups toward a common goal. Thus, their study concludes that, there is a positive relationship between students' collaborative learning and career development. Moreover, Hassan *et al.* (2018) found that, elements of interactive learning are significantly correlated with students learning activities through the application of scientific tools and machinery, application of ICT, solution-based learning procedures and group work activities. This has resulted in increased flexibility in the creation of high-performing graduates with adequate content knowledge and therefore a wide chance of competing in the labour market.

Conclusion

The overall conclusion is that competence-based training and learning has received prominence indifferent parts of the world first as a model of learning which can impart the required knowledge and skills for employability. In Tanzania like other countries across the globe, the competence-based training and learning was adopted as model of learning to replace the traditional approach of learning which failed to deliver to the required expectations. Since the adoption of this model in Tanzania at Vocational training and learning in the past twenty-three years, the model has not produced the required results. The implementation of this model has been problematic. The implementation of the model requires among other things; the proper learning environment and the change of the learner's behaviour. This research concludes that one of the impediments containing the success of the competence-based training and learning is the absence of the appropriate learning environment include, the class rooms, the library and tools for effective learning but the learner's behaviour which is conditional is yet to change effectively because of other factors including their learning environment. Therefore, for the government to effectively implement the CBET both the learning environment and leaners behaviour are important variables to consider but also availability of the learning facilities alone is not enough. The available facilities should be relevant to the learners needs. Therefore, the paper concludes that, competence training positively influences the employability of

graduates in Morogoro Municipality. Further, CBT programs significantly improves youths' employability compared to traditional training methods. This paper found that, graduates who received training using the conventional method are less competent in the delivery of job responsibilities and performance targets, compared to graduate counterparts who went through CBT programmes.

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Ghanaian Institutions and Supply Chain Management Practices: A Systematic Review of Evidence

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Abstract

This systematic review aims to enhance the current understanding of supply chain management (SCM) practices in Ghana by examining emerging trends in the literature. The analysis considered 43 peer-reviewed articles published in the last 20 years to identify the features, SCM components, research types, methodologies, and contributions to SCM theory. The results indicate that previous research on SCM practices in Ghana has mainly focused on particular attributes, such as supply chain (SC) risk planning and management, communication and information sharing, quality, strategic supplier partnership, inventory, and logistics management. However, benchmarking, customer relationship, and demand forecast, were list examined. Additionally, research on SCM practices has been concentrated in industries, such as manufacturing, banking and finance, agriculture value chain, health and allied areas, and retail and SMEs. The study also reveals that while quantitative research methods have gained increasing interest, qualitative research methods are still prevalent in the field. The results further highlighted a variety of SCM theories, namely resource-based view, transaction cost theory, agency, SC operations reference (SCOR), network theory, diffusion of innovation theory, contingency theory, and service demand logic, are focal areas of understanding SCM practices, performance, and their critical success factors in Ghanaian industries. This study provides practical insights for industry practitioners to better understand SCM deployment, design, and implementation steps, as well as suggestions for future research directions for SCM theory and practice in Ghana. These include exploring other areas and industries to gain a more comprehensive understanding of SCM practices in the country.

Key words: Supply Chain Management, Supply Chain Elements, Customer Relationship, Conceptual Review, Ghana

Introduction

In today's business environment, effective competition can be challenging for businesses and industries if their suppliers, customers, and other entities within their supply chain (SC) are not aligned with their operations (Hugos, 2018). Supply Chain Management (SCM) emerged from logistics, gaining importance in economics and business. Since the 1980s, collaboration along the value chain has been recognized as beneficial, as proposed by Porter's value chain (Núñez-Merino, Maqueira-Marín, Moyano-Fuentes & Castaño-Moraga, 2022). It emphasizes aligning internal processes with suppliers, distribution channels, and customers for efficiency and competitive edge.

Ghana, an emerging economy in sub-Saharan Africa, has shown slow but consistent and promising economic growth in recent years, despite the obstacles presented by the COVID-19 pandemic (Dickson & Yao, 2020; Aduhene & Osei-Assibey, 2021). Nevertheless, the rise of an increasingly sophisticated technological environment has led to heightened demands from customers, compelling businesses in Ghana to meet expectations by delivering high-quality products and services (Amankwah-Amoah, Osabutey & Egbetokun, 2018). As a result, businesses must focus on delivering products that meet customer needs while striving for optimal returns. This new dimension has prompted businesses to reevaluate their operations in order to achieve greater efficiencies and minimize costs.

Ghana presents a unique context for studying SCM practices. This is due to the limited research available in the field and the narrowed focus on specific sectors (Adomako, Frimpong, Danso, Amankwah-Amoah, Uddin & Kesse, 2020).

Additionally, there is the need for understanding the prevalent research channels, SCM practice elements, industry sectors, research focus, types, and methodologies employed in Ghanaian literature. Conducting a review of the body of knowledge on SCM using data from Ghana can provide valuable insights into the current state of SCM practices in Ghana, contribute to the existing literature on SCM, and potentially inform future research and practice in the Ghanaian context and beyond.

This study aims to fill gaps in SCM research in Ghana by examining research channels, SCM elements, industries covered, research focus, and methodologies used. It employs a systematic approach to categorize literature based on relevant scopes. The study includes sections on literature review, methodology, results, and discussions. It concludes by summarizing findings, offering recommendations, and emphasizing contributions to SCM knowledge in Ghana, along with implications for experts and scholars.

Literature Review
Concept of Supply Chain Management

The concept of SCM is widely recognized as an essential tool for businesses since the 1990s, as it brings numerous benefits to the various members of the SC in terms of timely production and cost-effective delivery of products or services (Salamai, 2022). SCM encompasses a sequence of interconnected activities carried out by different firms with the aim of meeting consumer needs. These activities include procurement, manufacturing, distribution, and waste disposal, along with associated transportation, storage, and information technology support, involving all members within the SC such as manufacturers,

suppliers, transporters, warehouses, retailers, and customers, as well as internal operations of individual businesses that contribute to fulfilling customer demands (Kazmi & Ahmed, 2021).

SCM involves a network of businesses adding value and ensuring timely delivery (Isho, 2022). It covers various functions, product life cycles, and aims for efficiency at minimal cost (Diaz et al., 2021). Core processes include planning, sourcing, production, inventory, and distribution (Kuupiel, Tlou, Bawontuo, Drain & Mashamba-Thompson, 2019) which emphases efficiency and customer focus.

The Supply Chain Management Process

Previous studies have generally referred to SCM as a process that involves planning and managing all activities related to obtaining materials, converting them into final products, and distributing them to the final consumer (Nguegan & Mafini, 2017; Fenton, 2019). However, other studies have focused on management processes. For instance, Dijikman et al. (2016) stated that management processes are a structured and measured set of actions intended to create specific outputs for a customer or market. Marker (2017) highlighted that SCM is the practice of managing relationships, information, and inputs flow across institutional borders to improve customer service and economic value through synchronized management of the flow of physical goods and associated information from sourcing to consumption. Li (2014) outlines SCM as the operational functions defining how a SC moves goods and services to the market. It involves a clear sequence of actions, identifying inputs and outputs (Halseth, 2018; A. Lemariska et al., 2015). Maddah and Roghanian (2021) emphasize that successful SCM requires businesses to break functional silos and

adopt a process-driven approach, organizing functions around meeting customer needs (Daniel, 2020; Li, 2014; Fish, 2011). Key processes include customer relationship management, customer service, demand, order fulfillment, manufacturing flow, procurement, and product development (Maddah and Roghanian, 2021).

Modern businesses leverage SCM practices to heighten agility and cost-effectiveness by collaborating with suppliers and integrating supply and demand effectively (Kersten, 2017). SCM aims to deliver superior customer value in speed, cost, quality, and flexibility. Various elements of SCM practices have been identified: Sánchez-Flores et al. (2020) highlight seven elements for sustainable SCM: common vision, information sharing, risk management, collaboration, process integration, sustainable relationships, and shared SC leadership. Gamini and Rajapaksa (2020) note supplier partnerships, outsourcing, cycle time, continuous flow, and information sharing as key for SC reliability. Pakurár et al. (2019) discuss the impact of purchasing, quality, and customer relations on SC integration's effect on financial performance. Rasib et al. (2021) connect six SCM elements such as SC integration, information sharing, customer service, geography, and JIT capability to SC innovation. Kumar et al. (2020) emphasize ICT, sourcing, supplier relationships, manufacturing, inventory, transportation, and customer relationships in impacting business performance through SCM.

This review thus suggests that the elements of SCM practices are multi-faceted with the common goal of ultimately improving business performance. While many models of SCM practice elements have been adduced in the literature, there appears to be no clear convergence on a single unifying construct to incorporate all facets

of SCM. However, some common set of SCM practice elements or constructs can be highlighted in this review; strategic supplier partnership, ICT and information sharing, customer relationship management, inventory and demand management and SCI.

Supply Chain Management Practices in Ghana

SCM is a complex responsibility that involves multiple customers and suppliers, creating challenges for businesses in all industries and countries, including Ghana (Nsiah Asare, 2016). Small businesses in particular face difficulties in implementing SCM practices due to competition with larger businesses that have more leverage and resources (Aduhene, D. T., & Osei-Assibey, E. (2021)). These challenges are prevalent among small businesses in Ghana, regardless of their industry, market, or geographical location (Tetteh, Kwarteng, Gyamera, Lamptey, Sunu & Muda, 2023). Constraints such as limited finances, infrastructure, and human capital are notable barriers for Ghanaian small businesses in adopting modern SCM practices into their strategic operations (Aggrey et al., 2021).

Large corporate businesses in Ghana have adopted centralized SCM practices due to high setup costs (Fuertes et al., 2020). However, they face challenges due to a scarcity of personnel with expertise in managing sophisticated SC strategies (Amoako, Huai Sheng, Dogbe & Pomegbe, 2022). Many prioritize hiring personnel with narrower skills in distribution channels rather than broader SCM expertise (Asante, Agyemang, Faibil & Osei-Asibey, 2022). Ghanaian businesses often focus solely on distribution channels as they expand, overlooking their entire SC (Ayam & Kusi, 2021)). In contrast, global conglomerates engage in diverse market services and source supplies from niche businesses, driving global SC growth (Donkor, Papadopoulos & Spiegler, 2021). This leaves Ghanaian businesses at a disadvantage in global competition.

Risk Associated with Supply Chain Management Practices

SCM has gained global popularity due to its significant impact on improving business performance. However, many businesses face various risks that hinder the effective operation of SCM. These risks, known as Supply Chain Risks (SCR), are associated with uncertainties and the subjective nature of intended outcomes (Baryannis, Validi, Dani & Antoniou, 2019). According to Gurtu and Johny (2021), SCR can be classified into different types based on the stages in the SC network, including external or environmental risks, internal or industry risks, and organizational risks. Additionally, SC process risks can be classified into external, internal, supply and demand side, and SC infrastructure risks (Benedito, Martínez-Costa & Rubio, 2020).

As highlighted by Shishodia, Sharma, Rajesh and Munim (2021), effective risk estimation is crucial for developing strategies to mitigate or manage SCR, which in turn improves SC resilience. Strategies such as prevention, rescheduling, conjecture, numerical and economic methods, vertical integration, risk-sharing, and technology and security can be employed to manage or control SCR (Gurtu & Johny, 2021).

Ghanaian businesses can enhance SC resilience by adopting contingency plans, monitoring failures through internal controls and audits, akin to practices seen in global companies like Toyota, mitigating product recalls (Qureshi, Sohu & Keerio, 2020). This necessitates streamlined SCM practices, proactive approaches, and flexible management behaviours.

Synthesis and Gaps in the Literature Review

SCM benefits businesses by ensuring timely production and cost-effective delivery (Katsaliaki, Galetsi & Kumar, 2021; Haddouch, Beidouri & El Oumami, 2019). It involves core processes like planning, sourcing, making, and delivering, covering various business functions (Marculetiu, Ataseven & Mackelprang, 2023; Mageto & Luke, 2020). SCM aims to optimize business returns by efficiently meeting customer needs (Wu, Yue, Jin & Yen, 2016). Past studies identify SCM elements but reveal gaps in Ghanaian literature: Few empirical studies on SCM implementation exist; focus is mainly on theory. Cultural and institutional factors impacting SCM adoption are overlooked. Understanding these factors, including trust affected by power distance, collectivism, and uncertainty avoidance, is crucial. Challenges in infrastructure and government policies hinder SCM. Future research should explore these factors to devise effective SCM strategies in Ghanaian businesses.

Methodology

The study adopts a systematic review approach to examine SCM practices in Ghana, following methodologies advocated by Tang and Qin (2018), Shishodia et al. (2021), Alexander (2020), Regmi and Jones (2020), Vieira et al. (2022), and Verma et al. (2021). Mendeley software is used for reference management due to its user-friendly interface and extensive features. The study method is structured into five steps: defining research questions, keyword classification, data selection and evaluation, data extraction, and analysis.

The Research Questions

Five study research questions as indicated below are formulated to achieve the objectives of the study;

RQ1: What is the common research channels used to publish SCM studies in Ghana?

RQ2: Which SCM practice elements are predominantly examined in the Ghanaian literature?

RQ3: Which industry sectors are mostly explored in the Ghanaian literature in relation to SCM?

RQ4: What is the prevalent research focus, types, and methodologies employed in the Ghanaian literature on SCM?

RQ5: What theoretical contributions have been made in the Ghanaian literature on SCM?

Classifying Keywords and Search Scheme

The research examined peer-reviewed journal publications on SCM practices published in Ghana over the last ten years, from 2010 to 2021. The study conducted a pilot search by using a simple string in all the potential electronic databases to identify relevant journals and conferences publishing research on SCM. These databases included Google Scholar, EmeraldInsight, Scopus, ScienceDirect, academia, SageJournals, scirp.org, onlinejournal.org.uk, AfroAsianArchive.com and EBSCO Host. The relevant articles were then selected using the study articles quality selection criteria manually screening for only articles published in a peer-reviewed journals and in English. See table 1 for the study articles search criteria.
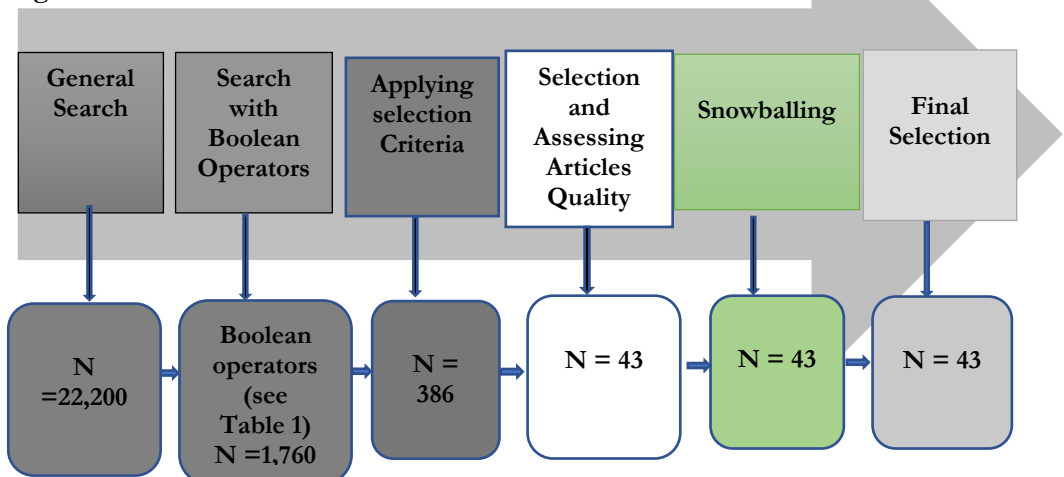
Table 1. Search Criteria

Concept	Keyword and String	Boolean Operator
Supply Chain	[Supply AND Chain] [practices OR mechanisms]	AND, OR, " Snowballing" and Limits Publication date, Language).
Supply Chain Management	[Supply AND Chain AND Management] [practices OR mechanisms]	AND, OR, " Snowballing" and Limits Publication date, Language).
Supply Chain Management Ghana	[Supply AND Chain AND Management] [practices OR mechanisms] AND Ghana]	AND, OR, " Snowballing" and Limits Publication date, Language).

Source: Author's own constructs

Articles Selection and Quality Evaluation

The study initial general search without limiting the publication period retrieved a total of 22,200 articles from all the electronic databases considered. The study further applied the article quality selection criteria which further excluded no peer-reviewed articles in general, prefaces, editorial notes, book reviews and interviews, conference papers. The article quality selection phase reduced the articles further to 1,760. The sampled reviewed articles were subsequently obtained from this result by further reading the titles of the displayed articles or abstracts where necessary which finally resulted the sampled selected articles of 43. See figure 1 for details

Figure 1. Article Selection Process

General Search	Search with Boolean Operators	Applying selection Criteria	Selection and Assessing Articles Quality	Snowballing	Final Selection
N =22,200	Boolean operators (see Table 1) N =1,760	N = 386	N = 43	N = 43	N = 43

Source: Author's own constructs

Data Classification and Model Framework

The study organized and grouped sampled articles into dimensions within a framework for holistic research analysis in SCM. It assessed literature trends, research focus on SCM attributes and industries, and research type/methodology's contribution to SCM knowledge. The approach used a wide range of dimensions for a comprehensive examination of SCM practices, ensuring reliability. Reviewers classified articles and reached consensus. Details are in Table 2.

Table 2. Data Classification Model Framework

Group		Dimension	Purpose
1	Characteristics of Selected Articles	Authors, Year of publications, Journal Name, Database, Citation	Analyses characteristics of the selected articles
2	Research Focus	SCM attributes Industry Sector	Classifies the selected articles contribution into SCM attributes covered and the industry sector
3	Research Type and Method	Research Type Research Method	Classifies the selected articles into the research type and method
4	Research Theory	Theoretical Contribution	Classifies the sampled articles into the various theoretical processes

Source: Authors' own constructs

Data Analysis and Discussions
Data Analysis
Articles Characteristics

This section addresses Research Question 1 by presenting the characteristics of the included studies. Analyzed articles' primary characteristics encompass author names, study titles, journals, publication years, rankings, databases, and citations (Table 3). The publications were fairly distributed across years, with the highest (8) in 2022 and the lowest in 2016 and 2017, each with one article. A considerable number of the articles (15) were sourced from lesser-known electronic databases, followed by 12 in Emerald, 7 in academia, 3 each in Taylor and Francis, and Elsevier, and 1 each in sagepub.com and core.ac.uk. A notable number of articles (15) originated from lesser-known electronic databases. The International Journal of Production Economics had the highest citations (190), followed by Management Decision (97), Benchmarking: An International Journal (84), Journal of Rural Studies (43), and Management Research Review (41), indicating their prominence in Ghanaian SCM (Table 3).

Table 3: Research Articles Characteristics

No.	Author(s)	Year	Title of Article	Journal	Journal Rankings (SJR)	Database	Citations
1	Abbey, W. M., Owusu-Bempah, G., & Owusu, I.	2013	Assessing the Relationship between Supply Chain Management and Organizational Performance in the Filtered Water Industry in Ghana	*International Journal of Business Management & Research (IJBMR)*	2.404	academia.edu	6
2	Afum, E., Issau, K., Agyabeng-Mensah, Y., Baah, C., Dacosta, E., Essandoh, E., & Agyenim Boateng, E.	2023	The missing links of sustainable supply chain management and green radical product innovation between sustainable entrepreneurship orientation and sustainability performance	*Journal of Engineering, Design and Technology*	0.371	EmeraldInsight	14

No.	Author(s)	Year	Title of Article	Journal	Journal Rankings (SJR)	Database	Citations
3	Aduku, J. M., & Ayertey, S. N.	2015	Supply Chain Management Integration and its Effects on Performance in the Hospitality Industry in Ghana	*Universal Journal of Industrial and Business Management*	0.200	academia.edu	3
4	Adu-Poku, S., Asamoah, D., & Abor, P. A.	2011	Users' perspective of medical logistics supply chain system in Ghana: The case of Adansi South District Health Directorate	*Journal of Medical Marketing*	0.500	sageJournals	11
5	Adusei, C., & Agambire, R.	2019	Qualitative insights into supply chain management of herbal medicine in Ghana	*Asian Journal of Advanced Research and Reports*	0.600	academia.edu	2
6	Amedofu, M., Asamoah, D., & Agyei-Owusu, B.	2019	Effect of supply chain management practices on customer development and start-up performance	*Benchmarking: An International Journal*	0.894	EmeraldInsight	25

No.	Author(s)	Year	Title of Article	Journal	Journal Rankings (SJR)	Database	Citations
7	Aggrey, G. A. B., Kusi, L. Y., Afum, E., Osei-Ahenkan, V. Y., Norman, C., Boateng, K. B., & Amponsah Owusu, J.	2022	Firm performance implications of supply chain integration, agility and innovation in agri-businesses: evidence from an emergent economy	Journal of Agribusiness in Developing and Emerging Economies	1.980	EmeraldInsight	8
8	Dadzie, K., Dadzie, C., Johnston, W. J., Winston, E., & Wang, H.	2023	The integration of logistics and marketing practice into baseline supply chain practices in the emerging markets	Journal of Business & Industrial Marketing	0.782	EmeraldInsight	2
9	Amankwah-Amoah, J., Debrah, Y. A., & Nuertey, D.	2018	Institutional legitimacy, cross-border trade and institutional voids: Insights from the cocoa industry in Ghana	Journal of Rural Studies	5.157	ScienceDirect	43

No.	Author(s)	Year	Title of Article	Journal	Journal Rankings (SJR)	Database	Citations
10	Amegashie-Viglo, S., & Nikoi, J. A. K.	2014	Supply chain management of the pharmaceutical industry for quality health care delivery: consumer perception of Ernest chemists limited as a pharmaceutical service provider in Ghana	Supply Chain Management	2.036	core.ac.uk	9
11	Damoah, I. S.	2022	Exploring critical success factors (CSFs) of humanitarian supply chain management (HSCM) in flood disaster management (FDM)	Journal of Humanitarian Logistics and Supply Chain Management	0.729	EmeraldInsight	12
12	Som, J. O., & Anyigba, H.	2022	Examining the effects of information systems usage and managerial commitment on supply chain performance: the mediating role of supply chain integration	SAGE Open	2.032	journals.sagepub.com	1

No.	Author(s)	Year	Title of Article	Journal	Journal Rankings (SJR)	Database	Citations
13	Antwi, M. O., & Lulin, Z.	2018	Enhancing Supply Chain Management in Healthcare Facilities in Ghana: An Overview	European Journal of Contemporary Research	-	onlinejournal.org.uk	0
14	Anyanful, T. K., & Nartey, E. D.	2015	Critical Success Factors in Supply Chain Management in the Banking Sector in Ghana	International Journal of Business Management	-	academia.edu	7
15	Asamoah, D., Nuertey, D., Agyei-Owusu, B., & Akyeh, J.	2021	The effect of supply chain responsiveness on customer development	The International Journal of Logistics Management	5.630	EmeraldInsight	20
16	Asamoah, D., Abor, P., & Opare, M.	2011	An examination of pharmaceutical supply chain for artemisinin-based combination therapies in Ghana	Management research review	0.671	EmeraldInsight	12

No.	Author(s)	Year	Title of Article	Journal	Journal Rankings (SJR)	Database	Citations
17	Sarpong, P. B., Jianguo, D., Musah, A. A. I., & Boamah, K. B.	2018	Evaluation of the Use of E-Procurement System on Procurement Practices and Performance of Public Hospitals in Ghana	British Journal of Interdisciplinary Research	-	onlinejournal.org.uk	1
18	Atanga, R. A.	2018	The Effect of Supply Chain Management Systems (SCMS) on Customer Satisfaction in the Hotel Industry in Ghana: The Case of Selected Hotels in the Sekondi-Takoradi Metropolis	RA Journal of Applied Research	-	-	0
19	Adegoke, I., Mingbao, C., Abredu, P., Ndafira, G. C., Amoateng, P. A., & Owusu-Gyan, L.	2021	The Impact of Sustainable Supply Chain Management Practices On Organizational Performance In Ghana	Management Science and Business Decisions	0.923	publish. thescienceinsight.com	4

No.	Author(s)	Year	Title of Article	Journal	Journal Rankings (SJR)	Database	Citations
20	Ayam, J. R. A., & Kusi, S.	2021	Supply chain management integration and value creation among Ghanaian 3-star hotels in the Bono Region	African Journal of Management Research	0.307	ajol.info	0
21	Owulaku, S. K., & Tetteh, A.	2022	The determinant of a five-stage downstream oil supply chain: An empirical study of Ghana	Journal of Transport and Supply Chain Management	1.060	jtscm.co.za	1
22	Dadzie, K. Q., Winston, E., & Hinson, R.	2015	Competing with Marketing Channels and Logistics in Africa's Booming Markets: An Investigation of Emerging Supply Chain Management Practices in Ghana	Journal of Marketing Channels	0.323	Taylor & Francis	21
23	Agyei, E. K., Sarpong, K. O., & Anin, E. K.	2013	The challenges of supply chain in the gold mining sector of Obuasi municipality of Ghana	International Journal of Business and Social Research	0.760	academia.edu	15

No.	Author(s)	Year	Title of Article	Journal	Journal Rankings (SJR)	Database	Citations
24	Famiyeh, S., Kwarteng, A., Asante-Darko, D., & Dadzie, S. A.	2018	Green supply chain management initiatives and operational competitive performance	Benchmarking: An International Journal	0.894	EmeraldInsight	84
25	Nyamah, E. Y., Jiang, Y., Feng, Y., & Enchill, E.	2017	Agri-food supply chain performance: an empirical impact of risk	Management Decision.	5.589	EmeraldInsight	97
26	Ganiyu, S. A., Yu, D., Xu, C., & Providence, A. M.	2020	The impact of supply chain risks and supply chain risk management strategies on enterprise performance in Ghana	Open Journal of Business and Management	0.300	scirp.org	11
27	Kafui, M. G., King, B. D., Linda, A., Esther, A., Ernest, O. N., & Kwarkoh, A. C.	2019	Assessing Supply Chain Vulnerabilities in Event Management in the Media Industry in Ghana-A Case of a Multimedia Station	International Journal of Management and Commerce Innovations	-	academia.edu	0

No.	Author(s)	Year	Title of Article	Journal	Journal Rankings (SJR)	Database	Citations
28	Kusi-Sarpong, S., Sarkis, J., & Wang, X.	2016	Assessing green supply chain practices in the Ghanaian mining industry: A framework and evaluation	International Journal of Production Economics	11.251	ScienceDirect	190
29	Kuupiel, D., Tlou, B., Bawontuo, V., Drain, P. K., & Mashamba-Thompson, T. P.	2019	Poor supply chain management and stock-outs of point-of-care diagnostic tests in Upper East Region's primary healthcare clinics, Ghana	PLoS One	3.752	journals.plos.org	28
30	Lawer, A. P., Amaning, F. O., Asare, C., & Acquah, I. S.	2014	The Effect of Supply Chain Management Practices on Performance of SMEs in Sekondi Takoradi Metropolis of Ghana	ADRRI Journal of Arts and Social Sciences	0.840	ojs.adrri.org	1
31	Mensah, C., Diyuoh, D., & Oppong, D.	2014	Assessment of supply chain management practices and its effects on the performance of kasapreko company limited in Ghana	European Journal of Logistics, Purchasing and Supply Chain Management	-	academia.edu	38

No.	Author(s)	Year	Title of Article	Journal	Journal Rankings (SJR)	Database	Citations
32	Dadzie, K. Q., Winston, E., & Hinson, R.	2015	Competing with Marketing Channels and Logistics in Africa's Booming Markets: An Investigation of Emerging Supply Chain Management Practices in Ghana	Journal of Marketing Channels	0.323	Taylor and Francis	21
33	Opoku, R. K., Fiati, H. M., Kaku, G., Ankomah, J., & Agyemang, F. O.	2020	Inventory management practices and operational performance of manufacturing firms in Ghana	Advances in Research	2.840	journal. pustakalibrary.com	16
34	Nartey, E., Aboagye-Otchere, F. K., & Yaw Simpson, S. N.	2020	The contingency effects of supply chain integration on management control system design and operational performance of hospitals in Ghana	Journal of Accounting in Emerging Economies	3.310	EmeraldInsight	16

No.	Author(s)	Year	Title of Article	Journal	Journal Rankings (SJR)	Database	Citations
35	Anin, E. K., Ofori, I., & Okyere, S.	2015	Factors affecting job satisfaction of employees in the construction supply chain in the Ashanti region of Ghana	European Journal of Business and Management	0.665	EBSCOhost	34
36	Appiah, K., Osei, C., Selassie, H., & Osabutey	2019	The role of government and the international competitiveness of SMEs: Evidence from Ghanaian non-traditional exports	Critical perspectives on international business	1.910	EmeraldInsight	25
37	Asante, R., Agyemang, M., Faibil, D., & Osei-Asibey, D.	2022	Roles and actions of managers in circular supply chain implementation: A resource orchestration perspective	Sustainable Production and Consumption	8.921	ScienceDirect	10
38	Nsowah, J., Agyenim-Boateng, G., & Anane, A.	2022	The Assessment of the Impact of Sustainable Supply Chain Management on the Performance of Manufacturing Firms in Ghana	Journal of Economics, Management and Trade	2.245	eparchives.uk	0

No.	Author(s)	Year	Title of Article	Journal	Journal Rankings (SJR)	Database	Citations
39	Kwamega, M., Li, D., & Abrokwah, E.	2018	Supply chain management practices and agribusiness firms' performance: Mediating role of supply chain integration	South African Journal of Business Management	0.836	journals.co.za	16
40	Amoako, T., Huai Sheng, Z., Dogbe, C. S. K., & Pomegbe, W. W. K.	2022	Effect of internal integration on SMEs' performance: the role of external integration and ICT	International Journal of Productivity and Performance Management	0.578	EmeraldInsight	21
41	Donkor, F., Papadopoulos, T., & Spiegler, V.	2021	The supply chain integration–Supply chain sustainability relationship in the UK and Ghana pharmaceutical industry: A stakeholder and contingency perspective	Transportation Research Part E: Logistics and Transportation Review	10.750	EBSCOhost	14

No.	Author(s)	Year	Title of Article	Journal	Journal Rankings (SJR)	Database	Citations
42	Asante Boakye, E., Zhao, H., Coffie, C. P. K., & Asare-Kyire, L.	2023	Seizing technological advancement; determinants of blockchain supply chain finance adoption in Ghanaian SMEs	Technology Analysis & Strategic Management	3.745	Taylor & Francis	0
43	Ofori, D., & Fuseini, O. I.	2020	Electronic government procurement adoption in Ghana: critical success factors	Advances in Research	2.840	afroasianarchive.com	8

Source: Authors' analysis with data from the sampled selected articles

Supply Chain Management Attributes

Table 4 findings address the second research question on SCM elements studied in Ghana. Out of 43 articles, SC risk planning (21 articles - 49%) was the most examined attribute. Communication, quality, strategic supplier partnership, and inventory management followed (18 articles - 42% each). ICT, SC integration (9 articles - 21%), demand forecast, and customer relationship (8 articles - 19%) were also studied. Benchmarking, customer relationship, and demand forecast received less attention (4 articles - 9% each). Ghanaian research has mainly focused on SC risk planning, with less exploration of benchmarking, customer relations, and demand forecasting.

Table 4. SCM Attribute

Category	Article S/N (Ref. Table 3)	No. of Articles	*Freq.*
Strategic Supplier Partnership	1,7,8,12,23,24,25,33,34,36,37	11	16
Level of Communication and Information Sharing and Quality	1,2,3,7,8,10,11,13,23,24,29,34	12	18
SC Risk Planning and Management	4,16,17,19,26,27,31,32,34,36,39,40,41,42	14	21
Inventory and Logistics Management	2,4,5,6,11,22,29,30,32,33,38	11	16
Demand Forecast	3,9,24,27,30	5	8
Benchmarking	2,3,28	3	4
ICT System and SC Integration	4,5,7,11,18,23,	6	9
Customer Relationship	3,9,20,25,35	5	8
Total		**67[a]**	**100**

Source: Authors' analysis with data from the sampled selected articles
[a]Note: Whereas 43 articles were reviewed; some articles discussed more than one SC element

Industry Sectors

Prior SCM studies in Ghana show concentration in specific industries. Table 5 analysis highlights: 13 articles (30%) on manufacturing, 8 (19%) on banking and finance, and 5 (each) on agriculture, health, retail, and SMEs. Three articles on tourism, two on media, and one each on water, mining, and natural resources. These findings sufficiently address the study's third research question.

Table 5. Industry Sectors

Category	Article S/N (Ref. Table 3)	No. of Articles	*Freq.*
Agriculture Value Chain	1,5,21,31,32,	5	12
Water & Natural Resources	23,	1	2
Banking and Finance	9,13,14,22,26,34,38,41	8	19
Tourism, Art & Culture	18,27,37	3	6
Health & Allied Areas	4,12,16,17,29	5	12
Manufacturing	2,3,6,7,8,11,24,33,36,39,40,42,43	13	30
Retail & SMEs	15,19,20,25,30	5	12
Mining	28	1	2
Media	10,35	2	5
Total		**43**	**100**

Source: Authors' analysis with data from the sampled selected article

Research Type and Method

Table 6 reveals increased interest in evaluation research and quantitative methods among Ghanaian SCM scholars. All 43 sampled articles were evaluative, with 20 (46.5%) using quantitative approaches, 17 (39.5%) employing qualitative methods, and 6 (14%) adopting a mixed approach. These findings address the final research question effectively.

Table 6. Research Focus

Research Method	Article S/N (Ref. Table 3)	No. of Articles	*Freq.*
Quantitative	1,3,7,8,12,14,15,16,17,18,19,20, 26,36,37,38,39,40,41	20	47
Qualitative	2,4,5,10,13,21,22,23,24,25,27,30,31,32,34,3 5,42	17	39
Mixed	6,9,11,28,29,33	6	14
Total		**43**	**100**

Source: Authors' analysis with data from the sampled selected articles

Theoretical Contributions

Table 7 presents the theoretical contributions in Ghanaian SCM studies, covering various theories: resource-based view, transaction cost, agency, SC operations reference (SCOR), network, diffusion of innovation, contingency, and service demand logic. The analysis reveals predominant focus on resource-based view (10 articles), service demand logic (9 articles), and transaction cost economics (6 articles). Additionally, contingency theory (5 articles), network theory (4), and fewer articles on agency theory, SCOR, and diffusion of innovation were observed (3 each). These studies enrich SCM theory, performance, and critical success factors in Ghanaian industries, contributing to the country's SCM field.

Table 7. Theoretical Contribution

Theoretical Model	Theoretical Contribution	Article S/N (Ref. Table 3)	No. of Articles	Freq.
Resource-Based View	The studies assessed the relationship between SCM and organizational performance in Ghana, focusing on industries such as filtered water, cocoa, oil and gas, and beverages, including specific companies like Kasapreko Company Limited and Coca Cola Bottling Company Ghana Limited. They also examined the impact of SCI, customer integration, and sustainable SCM practices on performance in the food processing, pharmaceutical, and agribusiness industries in Ghana.	1, 9,12,21,31, 32,33,41,4 2,43	10	23

Table 7 continued				
Theoretical Model	**Theoretical Contribution**	**Article S/N (Ref. Table 3)**	**No. of Articles**	**Freq.**
Transaction Cost Economics	This research studies SCM practices among small and medium-sized enterprises in Ghana, with a focus on the pharmaceutical supply chain, consumer perceptions of Ernest Chemists Limited, emerging practices in Ghana's markets, contingency effects of supply chain integration on hospitals, and factors influencing supply chain management in Ghanaian construction firms.	2,10,16,22,34,35	6	14
Agency Theory	These studies investigate the impact of SCMI on performance in Ghana's hospitality industry, identify critical success factors in the banking sector, and explore SCM practices in the mining industry in Ghana.	3,14,23	3	7
Supply Chain Operations Reference (SCOR) Model	These articles examine the users' perspective of the medical logistics supply chain system in Ghana's Adansi South District Health Directorate, explore supply chain management practices in the Ghanaian construction industry, and investigate green supply chain management practices in the Ghanaian manufacturing sector.	4,11,24	3	7
Network Theory	The articles offer qualitative insights into the SCM of herbal medicine in Ghana, examine the effect of SCM systems on customer satisfaction in the hotel industry, explore SC sustainability practices in Ghana's agri-food sector, and provide an understanding of SCM practices in Ghana's cocoa industry as a case study of developing economies.	5,18,25,36	4	9

Table 7 continued				
Theoretical Model	**Theoretical Contribution**	**Article S/N (Ref. Table 3)**	**No. of Articles**	**Freq.**
Diffusion of Innovation Theory	Exploring supply chain management practices of the construction industry in Ghana. Investigates supply chain management integration and value creation among Ghanaian 3-star hotels in the Bono Region.	6,20,26	3	7
Contingency Theory	These articles examined SCI's impact on manufacturing firm performance in Ghana, examined SC practices in public hospitals, explored the relationship between SCR, risk management strategies, and enterprise performance, assessed supply chain vulnerabilities in media event management, reviewed critical success factors for public-private partnership (PPP) projects, and evaluated PPP project success factors in Ghana from stakeholders' perspectives.	7,17,27,37,38	5	12
Service-Dominant Logic	These studies cover a wide range of topics in Ghana's SCM, including improving SC performance in emerging markets, enhancing healthcare facilities' SCM, investigating SMEs' SC practices in Kumasi Metropolis, examining the impact of SCM on pharmaceutical firm performance, assessing green SC practices in mining, identifying issues of poor SCM in healthcare clinics, studying the effect of supply chain management on SMEs' performance in Sekondi-Takoradi Metropolis, and exploring SCM practices in manufacturing and agribusiness sectors in Ghana.	8,13,15,19,28,29,30,39,40	9	21
Total			**43**	**100**

Discussions

The result of the review addresses the study objectives, covering characteristics of articles, SCM elements, industries, research types, and theoretical contributions in Ghana (Table 2). Few peer-reviewed articles on SCM practices exist post-2011, signifying limited recent research. However, various journals publish on Ghanaian SCM, indicating broad interest (Table 2). Academic studies often focus on specific SCM attributes like strategic partnerships, communication, and quality, inventory, and customer relations (Table 4). Elements such as risk planning demand forecasting, benchmarking, ICT, and SC integration have received minimal attention. The industry sectors primarily explored in Ghanaian SCM studies are health, tourism, culture, and SMEs (Table 6). Research methods tend toward evaluative and quantitative approaches, while experimental designs are infrequent (Wang, Fan & Wang, 2016). Lack of mixed-method approaches may hinder SCM research development (Opoku, Fiati, Kaku, Ankomah & Agyemang, 2020)). Articles contribute insights into SCM in various industries, including medical logistics, cocoa, mining, agri-food, and pharmaceuticals. They explore IT, sustainability, risk management, and success factors in SCM, illuminating Ghana's SCM challenges and opportunities. Theoretical contributions encompass diverse theories such as resource-based view, transaction cost, agency, SCOR, network, diffusion of innovation, contingency, and service demand logic (Table 7). Resource-based view theory dominates, followed by service demand logic and transaction cost economics. These contributions enhance understanding of SCM in Ghana's industries, supporting sustainable growth (Anin, Boso & Asamoah, 2021; Osei-Kyei & Chan, 2015). Further research is crucial for Ghana's SCM development.

Conclusion

This study reviewed research on SCM practices in Ghana from 2010 to May 2021, exploring publishing channels, article prominence, research types, SCM elements, industry sectors, and theoretical contributions. Certain SCM attributes like risk planning, communication, quality, and inventory management have received attention, while others such as benchmarking and demand forecast need further exploration. Previous research mainly focuses on the manufacturing sector, warranting exploration in other industries for a comprehensive understanding. SCM researchers in Ghana employ diverse theoretical frameworks, enhancing understanding of SCM practices. These contributions add value to Ghana's SCM field, requiring further research for sustainable industry growth and development.

Recommendations

The study suggests recommendations for advancing SCM in Ghana: Scholars should deepen consumer SCM understanding; embrace disruptive technologies like IoT, big data, blockchain, and AI; focus on tailored solutions for Ghanaian businesses. SCM should integrate with operations, logistics, and purchasing management. Research agencies should prioritize underexplored SCM elements, encourage diverse sector-focused SCM studies, and invest in infrastructure for SCM knowledge advancement. Ghanaian businesses should design customer-driven SCM strategies aligning with their operations. Assessing ICT utilization in SCM and fostering information sharing partnerships with suppliers can strengthen SCM resilience for Ghanaian businesses.

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Do macroeconomic variables really matter in explaining stock market returns in Tanzanian Stock Exchange Market?

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Abstract

The behaviour of stock markets is characterized by volatility of macroeconomic fundamentals which cause stock prices to move upwards and downwards within a short period of time. Therefore, the current paper examines the effect of macroeconomic variables on stock market returns of firms listed at Dar es Salaam Stock Exchange market. This study used time series data of macroeconomic variables collected from Central Bank of Tanzania and National Bureau of Statistics from 2011 to 2021.The error correction model was used to check the strength of the relationship between the selected macroeconomic variables and stock market returns. The results show that the selected variables have significant effect on the stock market returns. Inflation, Broad Money Supply and Interest rate appear to have positive impact on stock market returns. However, exchange rate reports negative impact on the stock market returns. The findings of the study provide policy insights about the drivers of the stock market returns volatility to enable policy makers to design the effective macroeconomic policies that will help with predicting the pathways to economic growth.

Key words: Macroeconomic Variables, Error Correction Model, Dar es Salaam Stock Exchange Market, Stock Market Returns, Capital Markets.

Introduction

What triggers the changes of stock market returns has drawn much attention among academics, practitioners and scholars. Most researchers relate aggregate stock market returns volatility to macroeconomic variables (Fang et al, 2020, Olayode et al., 2021). Besides, macroeconomic indicators, financial market variables including past volatility are also considered in predicting stock market returns (Ghysels et al., 2006; Christiansen et al., 2012).

The study of macroeconomic variables and their effect on stock market returns has been a fascinating domain among academics, investors and stock market regulators since the 1970s (Mazuruse, 2014). The relationship which exists between macroeconomic variables and stock market returns affects the valuation of securities and risk management, thus any movement in stock prices directly affects the real economy because of the strong inter-dependence of the stock market and the real economy (Mazuruse, 2014). Moreover economic theory considers stock prices to be a key measure of changes in economic activities, this has led to several studies on how macroeconomic variables and stock market returns relate and extent of the relationship (Sigh et al, 2011; Kalam, 2020)

Stock market acts as a crucial tool to indicate performance and serve as a barometer of the country financial competitiveness, while providing guidelines for implementation of monetary policy (Talla, 2013). In addition, investor's investment decision on company viability in long term will depend with share prices of the company (Golam et al, 2017). The theoretical underpinnings of the connection between the stock market returns and the macroeconomic risk factors are based on the Efficient Market Hypothesis (EMH) and Arbitrage Pricing Theory (APT). The Efficient Market Hypothesis stipulates that stock market price usually incorporate the most relevant and current information; thus, past information is less predictive in the future stock prices and hence stock market returns. Based on that only relevant and new information is used to explain the volatility of the stock market returns (Fama, 1965). On the other hand, the Arbitrage Pricing theory stipulates that if the market

is efficient, then any change in the macroeconomic fundamentals will influence stock market returns, the expected cash flows of the firms, and their financing and investment decisions (Semmler, 2011; Chinzara, 2011; Fama and French, 2015)

Despite the fact that current and relevant information is quickly absorbed in the stock price as stipulated by EMH, companies listed at Dar es Salaam stock exchange are characterized with very low stock price volatility and hence insignificant stock market returns regardless on number of factors influencing stock market returns. The frequently change of macroeconomic variables with low reflection on listed firms' shares price bring controversial of whether the prevailing share price reflect the real value of the firm and its financial viability. In addition, the presence of frequent changes in macroeconomic variables has not been clearly reflected in the stock market returns since stock price exhibits low fluctuation and sometimes non which provide the controversial on the effect of macroeconomic variables on the stock market returns. Based on this controversy, thus, the current study explores whether the macroeconomic variables namely interest rates, exchange rates, inflation rate, and broad money supply can explain the stock market return of the firms listed at Dar es Salaam Stock Exchange Market.

The rest of the paper is organized as follows. Section 2 provides the literature review; section 3 provides the data and methodology. Section 4 provides results of the study and section 5 draws the conclusion and policy implications

Literature Review

Theoretical Review

The Efficient Market Hypothesis (EMH) proposed by Fama (1970) and Arbitrage Pricing Theory (APT), developed by Ross (1984) are foundational theories in financial research, providing frameworks for understanding market efficiency and asset returns.

The Efficient Market Hypothesis (EMH) holds that asset prices accurately reflect all available information (Fama, 1970). According to Efficient Market Hypothesis (EMH), financial markets process and reflect pertinent information in asset prices in three forms: weak, semi-strong, and strong efficiency. These kinds of efficiency make distinct assumptions about the state of the market and how it affects investors (Fama, 1970).

On the other hand, to forecast asset returns, APT offers a complex model that takes into account a number of macroeconomic variables. APT acknowledges the intricate relationship between macroeconomic variables and stock market returns, departing from the Capital Asset Pricing Model's (CAPM) simplistic approach. The dynamic relationship between economic conditions and stock market behavior is highlighted by Alam, (2020), who also emphasizes the importance of macroeconomic variables in determining asset return risks. APT covers the complex dynamics that drive stock returns by factoring variables like the rate of inflation, industrial production, GDP, currency rate, lending rate and broad money supply. However, one drawback of APT is its incapacity to pinpoint exactly the macroeconomic factors that have the biggest impact on stock market returns. This work seeks to address this gap by identifying the major indicators which are broad money supply, inflation rate, lending rate, and currency rate as suggested by Kalam et al. (2020)

Empirical Literature Review

There has been a wide heterogeneous discussion of the influence of macroeconomic variables on the stock market around the globe, however there is a scant of literatures that have considered a set of macroeconomic factors to analyse the feedback reaction of stock market particularly in the developing economies.

Money supply and stock market returns.

The early works revealed that money supply and inflation are negatively related with the stock market return (Fama, 1981; Geske and Roll, 1983; Pearce and Roley, 1983)

Aremo (2020) used autoregressive distributed lag (ARDL) to examine how certain macroeconomic factors affected Nigeria's stock market performance. The study found that broad money had a large positive impact over time on Nigeria's stock market results. Furthermore, Lee et al. (2017) found that there was a positive short-term correlation between broad money supply and Thailand's stock market returns. These studies show the diverse effects of several variables on stock market dynamics and throw insight on the intricate relationship between macroeconomic factors and stock market returns. Therefore, the study makes the following hypothesis based on the literature review mentioned above.

H_1 Money supply has a significant positive effect on stock market returns in Tanzania

Inflation rate and stock market returns.

The results of the researches conducted by Lee et al. (2017), Ahmad (2017), and Al-Abdallah (2017) suggest that the relationship between macroeconomic

variables and stock market returns vary depending on the context. According to Al-Abdallah (2017), inflation has a greater impact on stock market returns in Jordan than foreign exchange rates do. Laichena and Tabitha (2015) found a positive significant relationship between inflation and stock market returns. On the other hand, Ahmad (2017), found a negative association between inflation and stock market returns, indicating that there is a distinct dynamic between these variables. As a result, these studies show how intricate the relationship is between macroeconomic variables and stock market returns and how the influence varies based on the particular economic environment. To resolve these differences and offer a more cohesive view of the dynamics affecting stock market review, more research is required. Therefore, the study makes the following hypothesis based on the literature review mentioned above.

H_2 Inflation rate has a significant impact on stock market returns in Tanzania

Exchange rate and stock market returns.

Exchange of foreign currencies is a major factor in determining economic activity within a nation. It has a significant and beneficial impact on investors' investment frameworks (Kalam, 2020).

Josiah (2019) investigated the relationship between macroeconomic variables and stock index returns in Nigeria using the Johansen multivariate co-integration test. The findings revealed a strong positive

relationship between foreign exchange rates and stock index returns. On the other hand, there was a marginally negative correlation between stock index returns and inflation. John (2019) conducted a

parallel analysis to examine the relationship between macroeconomic factors and the performance of Nigeria's stock index. The research revealed a positive but statistically insignificant correlation between the Nigerian All-Share Index and currency exchange rates. Therefore, the study makes the following hypothesis based on the literature review mentioned above.

H_3 Exchange rate has a significant impact on stock market returns in Tanzania

Interest rate and stock market returns

Macroeconomic variables such as interest rate has impact on the stock market returns. One of the early works on the literatures between the macroeconomic fundamentals and stock market returns is the work of Schwert (1989) who examined the relationship between multiple macroeconomic factors and the stock market. This study used monthly data from 1857 to 1987 in the US to examine the relation of stock market volatility with the volatility of real and nominal macroeconomics, real economic activity, financial leverage and trading volume. The study revealed that the interest rate and corporate bond return volatilities are correlated with the volatility of stock market returns. Gnahe (2021) found that regulators should keep interest rate relatively low to encourage economic business, improve external financing through rule-based exchange rate policy.

Otieno (2017) used the Autoregressive

Fractionally Integrated Moving Average (ARFIMA) to investigate the stochastic properties of stock market returns, macroeconomic factors, and their cointegrating residuals. The findings showed a significant cointegration between

interest rates and stock market returns. Similar studies were done by Afful (2017), Okechukwu et al. (2019) and Iqmal *et al*, (2020). Both studies discovered a substantial relationship between interest rates and stock market returns, indicating that fluctuations in interest rates may have an impact on stock market returns. All of these results highlight how crucial it is to take interest rates into account when analyzing the factors that affect stock market returns. Therefore, the study makes the following hypothesis based on the literature review mentioned above.

H_4 Interest rates have a significant impact on stock market returns in Tanzania.

Despite the fact that such contradictions on the nexus between the stock market and macroeconomic variables have been addressed up to a large extent in previous literatures, much of the empirical work in literatures has focused on the developed economies (i.e. Kang, 2017; Camilleri et al., 2019; Wang et al., 2017; Guo et al., 2018; Abbas et al., 2018; Abbas et al., 2019, Kalam, 2020). The results in these studies provide inconsistent results, which motivates us to revisit this relationship between stock market and macroeconomic variables.

In addition, the previous studies such as Aremo (2020), Lee et al (2017) ,Talla (2013) and Aful (2017) did not include all macroeconomic variables used in this study. Therefore, using historical data and statistical techniques, the purpose of the study is to investigate the specific relationship between the selected macroeconomic variables namely money supply, interest rate, exchange rate, inflation, and stock market returns. This study aims to provide a deep knowledge of how macroeconomic factors influence stock market returns by connecting theoretical ideas from APT and EMH with real-world applications.

Data and Methodology

Data

This study used secondary data where quarterly time series data were collected from 1st Jan 2011 to 1st Jan 2021. DSE All Share Index was used to measure the dependent variable of stock market returns. This measure was used as statistical concept to predict the returns of DSE. The independent variables used are, money supply, interest rate, exchange rate and inflation rate as shown in Table 1. These variables were selected based on the fact that they are among of the important determinants of the stock market performance (Kalam, 2020)

Inflation data were collected from National Bureau of Statistics of Tanzania (NBS), broad money supply, exchange rate and interest rate data from Bank of Tanzania (BOT) whereas stock market returns were computed and collected from Dar es Salaam Stock Exchange Market**.**

Model Specification

The empirical linear model guided from the literatures to understand the relationship between the stock market returns and its determinants is given as follows

$$Ret_t = \beta_0 + \beta_1 MS_t + \beta_2 INF_t + \beta_3 ER_t + \beta_4 INT_t + \mu_t$$
(1)

In the above equation Ret represents stock market returns, MS represents broad money supply, INF represents inflation rate, ER represents exchange rate, INT represents interest rate, βs represents the parameters to be estimated, in the model, μ_t represents the error term.

The stock markets returns are computed by using share market index. The formula used in this case is shown below.

$$Ret_1 = \frac{(P_t - P_{t-1})}{(P_{t-1})} * 100$$
(2)

To ensure that the analysis is realistic and robust, it is necessary to acknowledge the possible flaws in Equation (1). Since real-world data frequently has limits, the formula shown below takes this into account and addresses any inconsistencies that can happen during the analysis process (Hair et al, 2019).

$$\Delta Ret_t = \beta_0 + \beta_1(\Delta MS_{t-i}) + \beta_2(\Delta INF_{t-i}) + \beta_3(\Delta ER_{t-i}) + \beta_4(\Delta INT_{t-i}) + \mu_t \qquad (3)$$

where: Δ represents difference operator, β_i represents parameters that need to be estimated, $t - i$ represents unknown lags. The lag order, or the interval of time between the observation of independent variables and their possible influence on stock market returns, is indicated by the subscript i in Equation (3), since it enables us to take into consideration the dynamic interaction between variables over various time periods (Box et al, 2015). Including the lag order is essential in describing the temporal dynamics of our data with accuracy. This claim aids in laying the groundwork for a careful analysis of the dependability and validity of our model. The equation above may take into account the order of differencing as presented below.

$$\Delta^{K_0} Ret_t = \beta_0 + \beta_1(\Delta^{K_1} MS_{t-i}) + \beta_2(\Delta^{K_2} INF_{t-i}) + \beta_3(\Delta^{K_3} ER_{t-i}) + \beta_4(\Delta^{K_4} INT_{t-i}) + \mu_t \quad (4)$$

In this case: K characterizes the order of differencing, where as K_0 is not equal

to K_1, K_2, K_3, and K_4. if K_0 appear to be equal to any of K_1, K_2, K_3, and K_4, the study will examine the occurrence of co-integration among the variables. If the residuals are stationary and a long run relationship is established, the parameters will be appropriately estimated by an error correction method (ECM). The ECM examines how equilibrium behavior drives short run dynamics. As a result, the rate of adjustment can be calculated. It should be noted that the presence of co-integration among variables leads to the convergence of equation above to the Error Correction Model (ECM), as shown below:

$$\Delta^{D_0} Ret_1 = \beta_0 + \beta_1(\Delta^{K_1} MS_{t-i}) + \beta_2(\Delta^{K_2} INF_{t-i}) + \beta_3(\Delta^{K_3} ER_{t-i}) + \beta_4(\Delta^{K_4} INT_{t-i}) + \beta_5(\Delta^{K_5} ECM_{t-i}) + \mu_t$$
(5)

Estimation Techniques

Co-integration and Error-Correction Modeling approaches were employed in this study. For this case, three steps were considered which are testing for order of integration, Co-integration test, and error correction estimation.

Unit root testing

The unit root test involves testing the order of integration of the series under consideration. Unit root tests were performed to examine whether time series variables are stationary or non-stationary.

The stochastic process is said to have no unit root if mean, covariance, and variance are not affected by fluctuation of time. The Augmented Dickey-Fuller (ADF) test and Phillips-Person (PP) test were used to test the order of integration. Augmented Dickey-Fuller (ADF relies on rejecting the

null hypothesis of unit root (variables are non-stationary) in favor the alternative hypothesis of stationarity. The test procedure for Augmented Dickey-Fuller (ADF) test is estimated as follows:

$$\Delta Y_t = \alpha_0 + \alpha_1 y_{yt-1} + \sum_{i=1}^{n} \alpha_i \Delta y_i + \mu_t$$
(6)

$$\Delta Y_t = \alpha_0 + \alpha_i y_{yt-1} + \sum_{i=1}^{n} \alpha_i \Delta y_i + \delta_i + \mu_t$$
(7)

In the above equations, Y_t is time series, t is a linear time trend, Δ represents the first difference operator, α_0 is a constant, n is the optimum number of lags in the stock market returns (dependent variable) and μ_t is error term.

Co-integration

The existence or absence of co-integration between series of the same order of integration is tested by constructing a co-integration equation. The underlying notion behind co-integration is that if two or more series move closely together in the long run, even if the series themselves are trended, the difference between them remains constant. Johnsen Co-integration test was used to show long term relationship between the variables. Johansen's approach considers its starting

point in the vector autoregressive (VAR) of order P given as

$$Y_t = \mu + \Delta_1 y_{t-1} + .. + \Delta p y_{t-p} + \varepsilon_t$$
(8)

In this case Y_t represents vector of variables that are assumed to be integrated of order(I). Thus

$$\Delta y_t = \mu + \vartheta_{yt-1} + \sum_{i=1}^{p-1} \varphi_i \Delta y_{t-1} + \varepsilon_t$$
(9)

where,

$$\vartheta = \sum_{i=1}^{p} A_{i-1} \quad \text{and} \quad \varphi_i = -\sum_{j=i+1}^{p} A_j$$
(10)

Cointegration vectors were determined using two test statistics namely trace test and maximum eigenvalue test.

Error Correction Model

This can be done once co-integration has been proven to exist; it involves the development of an error correction technique to describe the dynamic relationship. The error correction model's objective is to indicate the rate of adjustment from the short-run equilibrium to the long-run equilibrium state. The bigger the parameter co-efficient, the faster the model may be adjusted from the short-run to the long-run. The error correction model can be stated as shown in equation 5

Table 1. Description of the variables

Variables	Description
Stock Market return	The growth rate of annual average stock market index
Interest rate	The rate paid by commercial or similar banks for demand, time or saving deposits
Inflation	The annual percentage change in the cost to the average consumer of acquiring a basket of goods and services that may be fixed or charged at specified intervals as measured by consumer price index
Exchange rate	The value of one country's currency expressed in another country's currency and is determined by national authorities or the rate determined in the legally sanctioned exchange market
Broad Money Supply	The entire aggregate of money circulated in the economy including the narrow money, M2 =M1+saving deposit

Source: The World Bank Data, (2020) & Kalam, (2020)

Table 2: Descriptive statistics of the variables.

Variables	Obs	Mean	Std Dev	Min	Max	Skew	Kurt
Money supply	40	1.37E+07	4170000	6840000	2.06E+07	-0.018	1.751
Exchange rate	40	1888.599	358.023	1326.623	2463.844	0.112	1.402
Interest rate	40	7.581	1.003	5.463	9.923	0.046	2.55
Inflation rate	40	7.707	4.607	3.033	19.367	1.219	3.355
Stock market return	40	2254.847	341.98	1511.386	2746.667	-0.701	2.671
Ln(Money supply)	40	16.383	0.327	15.738	16.843	-0.385	1.934
Ln(exchange rate)	40	7.526	0.191	7.19	7.809	-0.006	1.444
Ln(interest rate)	40	2.017	0.134	1.698	2.295	-0.258	2.604
Ln(Inflation rate)	40	1.894	0.532	1.11	2.964	0.541	2.242
Ln(Stock market return)	40	7.708	0.164	7.321	7.918	-0.98	3.095

Table 2 shows the summarized descriptive statistics on the series of money supply, exchange rate, interest rate, inflation rate and stock market return. It should be noted that mean values are positive in each case implying that the variables show an increasing tendency throughout the period under study. Thus, there is statistical evidence that money supply, exchange rate, interest rate, inflation rate and stock market return have been increasing during the period. Natural logarithm of Money supply has a minimum value of 15.738 and a maximum value of 16.843 with a standard deviation of 0.327. This implies that money supply is one of the most volatile variables together with inflation. As a consequence of the results of both non-transformed and transformed data, it was determined that there is little variance in the values of Natural logarithm of Stock market returns, Natural logarithm of Money supply, Natural Logarithm of Inflation rate, Natural Logarithm of Exchange rate, and Natural Logarithm of Interest rate over time. The scale of skewness with respect to Natural Logarithm of Money supply, Natural Logarithm of exchange rate,

Natural Logarithm of interest rate, and Natural Logarithm of Stock market return are -0.385, -0.006, -0.258 and -0.98 respectively, showing that the variables are negatively skewed which implies that they exhibit large values over the period, whereas Natural Logarithm of Inflation rate is positive of 0.541, suggesting that the right tails are excessive and have large values over a shorter period..

Pre-estimation Test

In analyzing the underlying properties of data collected on the selected variables, there are mixed outcomes in terms of the skewness and kurtosis features of the variables. However, in order to confirm the potential of fitting the data into an error correction model for estimating purposes, the unit root test was carried out using Augmented Dickey-Fuller (ADF) test and Philip-Peron (PP) technique for stationarity and correlation analysis for perfect collinearity. Table 3 summarizes the stationarity test results, whereas table 4 shows the correlation matrix for the multi-collinearity test.

Table 3: Unit Root Test

ADF Test

Variable	Level		First difference		order of integration
	Test statistics	**Critical value**	**Test statistics**	**Critical value**	
Ln(Money supply)	-2.951	-3.682	-4.863**	-3.668	I(1)
Ln(Exchange rate)	-0.365	-3.668	-4.419**	-3.682	I(1)
Ln(Interest rate)	-1.856	-3.662	-5.364 **	-3.668	I(1)
Ln(Inflation rate)	-1.675	-3.662	-4.029**	-3.668	I(1)
Ln(Stock market return)	-2.731	-3.668	-3.317**	-2.969	I(1)

Table 3 Continued

The PP Test

Variable	Level		First difference		order of integration
	Test statistics	**Critical value**	**Test statistics**	**Critical value**	
Ln(Money supply)	-3.345	-3.655	-5.881**	-3.662	I(1)
Ln(Exchange rate)	-0.967	-3.655	-7.060 **	-3.668	I(1)
Ln(Interest rate)	-2.200	-3.655	-6.915**	-3.662	I(1)
Ln(Inflation rate)	-1.704	-3.655	-5.121**	-3.662	I(1)
Ln(Stock market return)	-2.480	-3.655	-4.190**	-3.662	I(1)

The results of the ADF and PP tests in Table 3 show that all variables were not stationary at their levels, as evidenced by their test statistics being greater than their respective critical values at 1% levels of significance. Nonetheless, after acquiring their first differences, all variables became stationary, as demonstrated by test statistics that were less than their respective critical values at 1% significance levels. As a result, the null hypothesis of non-constant variance and mean across time (i.e. unit root or non-stationary) was rejected at 0.01 levels of significance, suggesting that all variables are integrated of order one 1(1). Based on this fact, the appropriate estimation methodology is the Johansen co-integration method, which is used in the estimation section.

Table 4: Correlation Test

Variables	(1)	(2)	(3)	(4)	(5)
(1) Ln(Stock market returns)	1.000				
(2) Ln(Exchange rate)	0.914	1.000			
	(0.000)				
(3) Ln(Interest rate)	-0.499	-0.402	1.000		
	(0.001)	(0.010)			
(4) Ln(Inflation rate)	-0.830	-0.776	0.425	1.000	
	(0.000)	(0.000)	(0.006)		
(5) Ln(Money supply)	0.546	0.368	-0.607	-0.307	1.000
	(0.000)	(0.020)	(0.000)	(0.054)	

The first column of table 4 shows the correlation coefficients in-between each pair of the variables-Stock market returns, exchange rate, interest rate, inflation rate and money supply. The first pair has the correlation coefficient of 0.914, the second has -0.499, the third has -0.830 and the fourth has 0.546. This means stock market returns, exchange rate and money supply move on the same direction, while stock market returns move on opposite directions with interest rate and inflation rate. The second column shows the correlation between exchange rate and interest rate, and between exchange rate and inflation rate, and between exchange rate and money supply. The first pair has the correlation coefficient of -0.402, the second has -0.776 and the third pair has 0.368. In the first pair and second pair, the exchange rate moves in the opposite direction with interest rate and inflation rate but it moves in same direction with money supply. In the third column, the correlation between interest rate and inflation rate and between interest rate and money supply where by, at the first pair indicates 0.425 and second pair shows -0.607. This implies that interest rate moves on the same direction with inflation rate

while opposite direction with money supply. The fourth column shows correlation between inflation rate and money supply in which -0.307 implies that inflation rate and money supply moves in opposite direction. As a result, there is evidence of weak correlation coefficients, implying that each peer variable is not perfectly associated, and thus the concept of multi-collinearity or perfect collinearity is contradicted, moreover, all of the correlation coefficients between macroeconomic variables were less than 0.95. This means that there is no multicollinearity issue for the model that includes all macroeconomic variables as independent variables that affect stock market return. Since the study demonstrated that all of the variables are I (1) and that there is no multi-collinearity, then the estimation tests can be conducted.

Estimation test

The research investigated on the effect of macroeconomic variables on stock market returns. Long run co-integration analysis using the Johansen method, and error correction model are used to investigate the relationship between macroeconomic variables and stock market returns.

Table 5: Johnsen Co-integration results

Null Hypotheses	Trace Statistics	Critical Value	Max-Eigen Statistics	Critical Value
$r = 0$	97.0819	68.52	34.8645	33.46
$r \leq 1$	62.2174	47.21	27.3704	27.07
$r \leq 2$	34.847	29.68	17.2572	20.97
$r \leq 3$	17.5898	15.41	15.0976	14.07
$r \leq 4$	2.4923	3.76	2.4923	3.76

Table 5 shows that the trace and max tests rejected the null hypothesis of no co-integration ($r = 0$) in favor of the alternative, showing a long run relationship, as indicated by test statistics greater than

critical values at 5% significance levels. Furthermore, the Johansen test shows that each model has many co-integrating vectors (relationships). While trace statistics indicate that there are at most four $r \leq 4$

and three r ≤ 3 vectors in 3(a) and 3(b), respectively. The max statistics in 3(a) and 3(b) imply that there are at most three r ≤ 3 vectors and at most two r ≤ 2 vectors. Because trace is stronger than max, there are only four and three co-integrating vectors in models 3(a) and 3(b), respectively. Thus, there is evidence of co-integration and a long-term association between macroeconomic variables and stock market returns in Tanzania based on the trace and Eigen test. The next critical question is, what is the nature of this long-term and short-term relationship? The answer to this question is illustrated in table 6.

						Number of obs =37	
						R-squared = 0.2841	
						Adj R-squared= 0.1687	
Log likelihood = 60.51628						Root MSE=0.0515	
	D. Ln (Stock market return)	**Coef.**	**Std. Err.**	**t**	**P>t**	**[95% Conf.**	**Interval]**
ADJ							
	Ln(Stock market return)						
	L1.	-0.13428	0.019015	-7.06	0.000	-0.377013	0.1084509
LR							
	Ln(Money supply)	0.253209	0.007946	31.9	0.000	-1.986067	2.492486
	Ln(Exchange rate)	-0.34592	0.116968	-2.96	0.014	-3.23585	2.544002
	Ln(Interest rate)	0.282443	0.049654	5.69	0.004	-1.450439	2.015324
	Ln(Inflation rate)	0.261094	0.040756	6.41	0.002	-0.2299317	0.7521196
SR							
	_cons	0.69808	0.050194	13.9	0.000	-1.443805	2.839965

The long run coefficient with respect to money supply is 0.253209 and the associated p-value 0.000. This means in the long run money supply will increase significantly with increase in stock market returns. Furthermore, there is statistically significant association between money supply and stock market returns in the short run. The results are supported by the Efficient Market Hypothesis, which suggests that in an efficient market, all relevant information is quickly incorporated into prices (Fama, 1970). In this situation, an increase in the money supply as a result of an expansionary monetary policy may portend future economic growth and enhancement of stock market returns (Ndlovu, 2018).

Moreover, the long run coefficient of inflation rate is 0.261094 with associated p-statistic value of 0.002. This implies that in the long run the inflation rate has a positive and significant impact on the stock market returns. Because it has a positive coefficient, the inflation rate has a considerable positive link with stock market returns in the short run. APT theory states that changes in the risk premiums that investors seek have an impact on asset values due to a variety of macroeconomic circumstances, including inflation (Ross, 1976). Therefore, increased economic activity and growth prospects may be indicated by rising inflation rates, which could increase stock market returns. The current conclusions are empirically supported by the study of Kalam (2020), which showed a positive relationship between inflation and stock market returns.

However, the coefficient of exchange rate is -0.34692 with an associated p-value of 0.014 and this reveals that exchange rate has negative and significant impact on stock market returns in the long run. In short run relationship there is significant positive relationship between exchange rate and stock market returns. This implies that the increase in currency value will probably decline the stock market returns of the Tanzanian Stock Market.

In addition, the coefficient of interest rate is 0.282443 and the associated p-statistic value is 0.004 and this implies that interest rate is positive and significant impact on stock market returns in Tanzania. But also, there is statistically significance between interest rate and stock market returns in short run relationship. Interest rate fluctuations are a reflection of shifts in the risk that investors are willing to pay, and this has an impact on stock prices and stock returns (Linck, 2016).

On the other hand, the error correction model coefficient of -0.13428 suggests that any disequilibrium can be corrected at a rate of 13.428 percent, this is an indication that there is a long run dynamic influence running from macroeconomic variables to stock market returns in Tanzania

Conclusion

Macroeconomic variables have various effects in the stock market. This paper examined the effects of macroeconomic variables on stock market returns of the firms listed at Dar es Salaam Stock Exchange from 2011-2021. The pre estimation test was conducted using Augmented Dickey-Fuller (ADF) test and Philip-Peron (PP) technique for stationarity and correlation analysis for perfect collinearity. The results indicate that all the variables are stationary at first difference. In addition, there is evidence of cointegration and long run relationship between macroeconomic variables and stock market returns in Tanzania

The results show a significant relationships between macroeconomic factors and stock market returns. A long-term increase in the money supply and inflation rate is linked to higher returns on the stock market, putting an emphasis on the role that monetary policy plays in determining market performance. Exchange rate fluctuations, however, show a negative relationship with stock returns, indicating the importance of external economic variables in influencing the stock market dynamics.

The impact of interest rate fluctuations on asset price is further demonstrated by the relationship between higher interest rates and higher stock market returns. This implies that an increase in Tanzania's government Treasury (T)-Bill rates led to the rise of aggregate stock values.

These results offer policymakers useful information by indicating that exchange rate management and monetary policy choices may have a big impact on the performance of the stock market. A favorable investment atmosphere and sustained stock market growth in Tanzania may be fostered by implementing policy measures targeted at controlling inflation, containing exchange rate volatility, and guaranteeing a favorable interest rate environment.

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Editorial Policy and Information for Authors

Focus of the Journal

African Journal of Management Research seeks to publish works that test, advance and develop models, frameworks and concepts in the broad areas of management, organisation, finance, public sector management, marketing and decision systems. The Journal is international and multidisciplinary, which means that topics and themes appropriate for African Journal of Management Research will come from and cut across organisational/institutional sectors (public, private, non-for-profit) and address matters of theory, research and practice from a variety of management and organizational disciplines (finance, operations, human resource, organisational behaviour, marketing, services). The Journal's multidisciplinary character means it seeks to promote the interplay and nexus between organisational functionality, management practice and economic / national development. The Journal's aim is to facilitate greater understanding of organisational processes, managerial processes and functions and critical firm level challenges facing developing and emerging areas.

Papers will have strong theoretical foundations, solid and defensible methodological frameworks with clear empirical stance. In this regard, *African Journal of Management Research* is mainly empiricist. Our definition of 'empiricist' in this context is not to exclude the phenomenological. Rather those papers will have sound quantitative and/or qualitative data, rigorous design and demonstration of exploring and advancing knowledge of the world 'as-is'. The Journal will periodically accept prescriptive, theoretical and conceptual papers (the world-as-should-be) which in its view present sufficiently ground-breaking discourse of theory, models and methodological paradigms, reviews of the literature or practice which lead to new understandings.

Structure of the Journal

The Journal is published in a 2-part Volume each year: January and June. It has the following typical structure:

- Topical Editorial: Written by the Editorial Board, the Editor or his nominee
- Articles/Invited papers
- Solicited and unsolicited papers that have come through the review process
- Practitioners' view point: Written by a practitioner or an academic, but with a clear practice slant
- Peer reviewed teaching case,
- Book Review

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Submission Guidelines

The Journal's circulation is worldwide. It pursues a policy of double-blind peer-review. Papers are likely to vary in length from 5000-7500 words. Papers outside this range may only be considered under special circumstances.

Papers are invited from the general academic, research and practitioner community in Africa and around the world; the journal will occasionally issue calls for papers along particular thematic lines or request peer commentaries on topical issues.

Notes to Contributors

Authors are to note that should the Editor deem it necessary, the Journal may call for data file/analyses and/or research instruments for separate or simultaneous review. It is a condition of acceptance for review, that the paper is not under consideration elsewhere and that the data are not being repeated from a previous work (except that clear and demonstrable alternate issues, concepts or extensions are being developed, in which case due reference and notification must be made to said previous work). The Journal has an internet Editor. The following are the key submission requirements:

- There must be an **Abstract** of up to **250 words**. Manuscripts must be prepared with MS Word and in **Times New Roman font size 12**. 1 inch margins must be maintained all round, fully justified and in double line spacing. The Abstract and References must be in single line spacing and font **size 10**.
- Title Page (title, author's name/s, institutional affiliation, full contact details - phone, fax, email and post) must be prepared separate from the body of the paper. Titles must be as concise as possible and not more than 15 words. Authors must avoid any reference to themselves no matter how tangential in the body of the text.
- Avoid the use of foot or end notes.
- Tables, Figures and Diagrams must be camera ready and sharp, set within the text; numbered, titled at the bottom without spacing from table, figure or diagram, all in font size 10. Voluminous descriptive data tables are not encouraged, except that they have direct bearing on the discourse and need to be referred to. Parsimony in use of tables and figures is preferred.
- All articles should include in the

methodology, clear statement of where and when data were collected. The use of student populations, where the matter at hand does not relate to student issues is not encouraged.
- Formulae must be presented using appropriate font and symbols, and set to centre, font size 10.
- It is the responsibility of authors to secure the necessary copyright permissions if reproducing illustrations and diagrams or using extensive ditto quotes reaching to 100 words or more at any one quote.
- *African Journal of Management Research* is an Open Access journal.
- It is generally preferred that authors should ensure they articulate the nature of their paper's contribution to theory, method, policy or practice.

Manuscripts must be prepared according to the following format:
- Title of the paper should be in **Title Case, Bold and centred**
- No paragraph numbering,
- Follow APA referencing style in the body of the text and in the reference listing.
- Examples of referencing in body of text:
  - In sentence: Aryeetey (2001),
  - End sentence: (Hinson, Domfeh and Ayee, 1999),
  - If a work has more than 2 authors, cite all in the first instance and use 'et al' subsequently,

Reference list should use the following style:
- Journal articles: Puplampu, B. (2004). Meaning of Work, **Journal of Behaviour**, 2, 3, 111-120.
- Books: Puplampu, B. (2004). **Meaning of Work**. Publisher, Place of Publication

Headings must follow the house style:

FIRST HEADING (Bold, UPPER CASE, 1 space from text, font size 12, centred); **Secondary Heading** (Bold, Title Case, notpaced from text, font size 12, left justified); **Tertiary Heading** (Italicised, Title Case, not spaced from text, font size 12, left justified)

Submissions
Papers should be submitted by email and online in accordance with the 'Notes to Contributors'.
Email:
aaboagye@ug.edu.gh; ajmr@ug.edu.gh
Online:
https://journals.ug.edu.gh/index.php/ajmr

Review Process
We detail below, the typical process for all papers received.
Upon receipt of any manuscript, the Editor will make an initial determination as to compliance with editorial policy and submission requirements. Papers found to be compliant will receive an entry number and the Editor will then write to the corresponding author acknowledging receipt and quoting an entry number. The Editorial Board will then send the paper to at least 2 reviewers. Authors whose papers are not found to be initially compliant may be asked to resubmit a revised version or informed of an outright rejection by email

such papers will not receive an entry number.

African Journal of Management Research maintains a 2–3-month turnaround time from submission to decision. The secretariat will keep authors informed by email, of the progress of their paper/s.

Reviewers are expected to apply the strictest codes of scientific professionalism to the process and are to turn papers round within 8-10 weeks and are not expected to use or quote from any manuscripts they review.

Authors will receive a notification of the Editor's decision with any necessary comments from reviewers. Where the manuscript is accepted subject to amendments suggested by reviewers, authors are to turn such revisions around within reasonable time of not more than 2 months. Authors are to pay particular attention to typographical errors, print errors, grammatical aberrations, completeness of references, etc. as such lapses tend to delay the review process.

Accepted papers will be published in order of receipt of final versions. **Final versions must be submitted in both MS Word and PDF format.** Authors whose papers are accepted will receive 1 complimentary copy of the journal issue in which their paper appears.