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Determinants of a Competitive Strategy among Small and Medium Enterprises in Uganda

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Abstract

Employee related factors play a significant role in supporting business development and enabling firms to manage emerging risks and uncertainties. Despite this importance, relatively limited attention has been given to the role of employee-related factors in the formulation and implementation of such strategies. This study examined the relationship between corporate carbon-financing strategies and the competitiveness of small and medium-sized enterprises (SMEs) in Uganda, with particular emphasis on employee factors and management practices. The study employed multiple regression analysis to assess the factors associated with corporate carbon-financing strategies and SME competitiveness. The findings revealed a positive and statistically significant relationship between employee factors and corporate carbon-financing strategies (Pearson's $r = 0.602$, $p < 0.001$). This finding indicates that stronger employee-related capabilities are associated with greater capacity to develop innovative corporate strategies and identify emerging business opportunities. The multiple regression results further demonstrated that employee factors were statistically significant ($p < 0.005$) and constituted an important predictor of corporate carbon-financing strategies and SME competitiveness. The findings indicate the importance of strengthening employee knowledge, skills, creativity, and participation in strategic decision-making to enhance SME competitiveness and facilitate engagement in carbon-financing initiatives. Based on these findings, the study proposes the Employee-Factor Theory as a complementary perspective for understanding how employee capabilities can support competitive strategy and investment decision-making in SMEs.

Introduction

The private sector plays an important role in addressing climate change by investing in low-carbon technologies. (H. Zhang et al., 2023) shows that sustainable business practices and innovative financing mechanisms(Li et al., 2026). However, the capacity of private enterprises to contribute effectively to climate change mitigation is constrained by several factors, including limited awareness, weak governance structures, shortages of specialised personnel, and inadequate access to energy-efficient technologies. (Pessarrodona et al., 2024)and limited access to appropriate financial resources (Ahmed et al., 2026). These challenges are particularly significant for small and medium-sized enterprises (SMEs), which generally operate with limited financial, technological, and human resources. (Huang et al., 2017). In Uganda, concerns have also been raised about the effectiveness of existing new investment-support measures on green finance, especially in carbon, and their ability to attract and retain a greater share of investment projects. (Aneja et al., 2023). Strengthening the internal capabilities of enterprises is therefore essential to improving their capacity to respond to emerging opportunities associated with climate finance and sustainable development.(Du et al., 2025).

SMEs constitute more than 90% of Uganda's private sector and make substantial contributions to employment creation, providing goods and services, export earnings, and tax revenues, and are consequently important to the country's socio-economic development. (Lakuma et al., 2019). According to (Mugisha & Ijjo, 2022), indicate that despite their significance, SMEs in Uganda face considerable

challenges in sustaining their operations, with the country historically experiencing high rates of private business failure. Limited managerial capacity, inadequate access to finance and technology, weak organisational systems, and shortages of skilled personnel can constrain the ability of SMEs to develop innovative strategies and remain competitive. (Gamage et al., 2020). These challenges highlight the need to examine the internal organisational factors that influence strategic decision-making and business performance. (Njiru et al., 2023 and Alexander et al., 2018).

Among these internal factors, employees represent a critical but frequently underexamined source of organisational capability (Chirumalla et al., 2025). Employees possess knowledge, skills, experience, creativity, and problem-solving abilities that can influence how organisations identify opportunities, develop strategies, adopt new technologies, and respond to environmental and market changes. (Hajj et al., 2025). A company's ability to integrate employee capabilities into its strategic processes can therefore contribute to innovation and competitive advantage (Chirumalla et al., 2025). Rather than viewing competitiveness primarily through the lens of customer-oriented strategies, greater attention should be given to the people within the organisation who formulate, implement, and adapt those strategies. (Daymond et al., 2024). Employees can provide the knowledge and expertise required to translate organisational objectives into practical actions, particularly in emerging areas such as carbon financing and climate-smart business practices (Daymond et al., 2024).

In an emerging business environment, the relationship between organisational competencies and competitiveness is particularly relevant to carbon finance. Carbon financing provides opportunities for enterprises to mobilise resources for projects that reduce greenhouse-gas emissions while potentially generating additional economic and environmental benefits. (Bielenberg et al., 2016). However, accessing carbon markets requires technical knowledge, organisational capacity, strategic planning, and the ability to identify and develop viable low-carbon projects. SMEs with employees who possess relevant skills and who are encouraged to participate in strategic decision-making may be better positioned to identify such opportunities and integrate them into their business strategies. Consequently, employee capabilities can become an important organisational resource for developing innovative corporate strategies and improving competitiveness.

Previous approaches to corporate strategy have emphasised the importance of linking organisational competencies with customer interests and corporate social responsibility. According to Kopalle et al., (2020) the strategic approach proposed by O'Brien and J. Mack Robinson highlights the importance of integrating organisational competencies into broader corporate activities to respond proactively to customer expectations and create competitive advantage(R.Jung, 2019). While stakeholder relationships remain important, this perspective can be extended by placing greater emphasis on employees as the internal agents through whom organisational competencies are developed and implemented. Also, Employees influence the extent to which corporate values, sustainability objectives, and climate-related commitments are translated into operational practices as the new normal. Organisations that invest in employee knowledge, skills, participation, and innovation may therefore be better equipped to develop strategies that simultaneously support environmental sustainability and business competitiveness.

Similarly, employees' creativity, commitment, technical expertise, and ability to adapt to change can influence the implementation and success of corporate strategies. Employee factors may therefore represent an important mechanism through which SMEs transform available opportunities into sustainable competitive advantages.

Against this background, this study examines the extent to which employee factors influence SMEs' carbon financing strategies and competitiveness in Uganda. This study contributes to the body of knowledge by advancing the Employee-Factor Theory, which posits that employee-related factors are fundamental drivers of firms' competitive strategies and organisational competitiveness. The theory challenges the predominant emphasis on customer-related factors as the primary determinants of competitive advantage by demonstrating how employees' skills and creativity contribute to organisational competitiveness through effective decision-making and in response to prevailing organisational and environmental conditions. It specifically investigates how employee-related factors influence the development of innovative corporate strategies and SMEs' ability to respond to carbon-financing opportunities. By establishing the role of employees in strategic development and competitiveness, the study seeks to contribute to the literature on SME development, carbon finance, and climate-change mitigation in Uganda and the wider sub-Saharan African context.

This study is anchored primarily in the Resource-Based View (RBV) of the firm, complemented by Human Capital Theory. According to Zimuto & Zvarimwa (2022), the RBV, associated with Barney (1991), proposes that firms can achieve competitive advantage by developing and effectively utilising valuable, rare, imperfectly imitable, and non-substitutable resources. From this perspective, employees constitute an important organisational resource because their knowledge, skills, experience, creativity, and ability to learn can contribute to the development of distinctive organisational capabilities. The effective organisation and deployment of these capabilities can enable firms to formulate and implement strategies that competitors may find difficult to replicate.

Also, Aliu & Aigbavboa, (2019) Human Capital Theory provides further support for the focus on employees by explaining the contribution of employees' knowledge, skills, competencies, and experience to organisational productivity and performance (Becker, 1964). Investment in employee training and development can enhance the knowledge and capabilities required to identify opportunities, solve organisational problems, introduce innovations, and respond to changes in the business environment. For SMEs, where organisational resources are often limited, the capabilities of employees may be particularly important in determining how effectively available resources are converted into strategic outcomes.

The application of these theories to carbon financing suggests that employee capabilities can influence an SME's ability to recognise carbon-financing opportunities, understand emerging environmental requirements, develop innovative business responses, and implement sustainable technologies. Sherehiy et al., (2007) Employees with appropriate technical and strategic knowledge may enable firms

to move beyond simply responding to external pressures and instead proactively identify opportunities associated with climate finance and low-carbon development.

This study conceptualises employee factors as strategic internal resources that influence corporate strategy development and, ultimately, SME competitiveness. Corporate strategies are expected to provide a mechanism for translating employee capabilities into organisational outcomes. The framework therefore proposes that employee factors influence competitiveness both directly and indirectly through the development and implementation of innovative corporate strategies, including carbon-financing strategies.

Methods and materials

Research approach

The study adopted a mixed-methods approach, applying both quantitative and qualitative methods (Creswell, 2003). Data were collected and analysed to obtain numerical data to examine relationships, patterns, and measurable characteristics of the variables under investigation. The participants' opinions and perceptions regarding the variables under investigation were therefore transformed into measurable indicators, enabling the researcher to analyse and interpret the findings quantitatively. Lim, (2025) a quantitative approach was considered appropriate because it enabled the study to obtain standardised responses from the participants and to establish patterns and relationships among the variables of interest.

The research procedure used random and purposive sampling among Executives/Managers, customers, employees, and representatives from Banks, insurance, and Government who answered different sets of questions. The researcher took into account that these selected people were willing to share their knowledge on this specific topic. The questionnaire was pre-tested on a test group, and they provided valuable insights. Then the questions were amended, and the brief introduction was updated. This made the answers more focused, since cross-checks and confirmations were done using the information obtained.

This contributed to interviewing the specific target group selected. The administration of questionnaires and interviews to the selected participants was done in a mix of the local language (Luganda) and English. However, Participants were informed in writing that their responses would be kept confidential. The responses were then scored and analysed in consistency with the research objectives. The primary data for this research were collected from the selected customers and employees of companies and SMEs in Uganda.

The sample size included 100 respondents randomly selected. The sample was composed of employees of 30 companies and SMEs, including 70 selected customers of at least 3 manufacturing companies in Uganda. The common characteristic that made them the research population of choice is the fact that

they are all stakeholders in the market who could provide an opinion on the strategy and performance of any industry in Uganda.

The questions that were used in the research were both open-ended, giving the respondent the liberty to answer from a non-direct opinion, and closed-ended questions that needed either a yes or no answer. The major advantage of using an interview is the fact that a lot more data could be collected since the researcher deals directly with the respondent, although the downside to this is that the researcher could very easily influence the data being collected.

The questionnaire was developed using predominantly Likert-type rating scales, complemented by multiple-response and open-ended questions to capture both quantitative and qualitative aspects of the respondents' views and experiences.

Prior to the commencement of data collection, respondents were provided with a brief introduction to the study and an explanation of the key concepts of climate change mitigation and carbon financing. This introductory explanation was intended to establish a common understanding of the concepts under investigation and to enable respondents to provide informed and relevant responses.

The questionnaire was structured to cover a broad range of issues related to the study variables. Likert-scale items were employed to measure respondents' perceptions, attitudes, and levels of agreement with specific statements, while multiple-response questions were used to capture a range of possible responses. Open-ended questions were also incorporated to allow respondents to provide additional explanations, perspectives, and information that might not have been adequately captured through predetermined response categories.

The use of multiple question formats enhanced the comprehensiveness of the data collection process. In particular, the combination of Likert-scale, multiple-response, and open-ended questions facilitated the comparison and verification of responses across the different categories of respondents. It also provided a basis for identifying patterns and relationships within the data and for developing well-supported conclusions regarding climate change mitigation and carbon financing among the companies, their customers, and SMEs included in the study.

Target population and sampling procedure

The study targeted respondents from selected corporate organisations, including Coca-Cola, Nile Breweries, and the Saw Log Production Scheme (SPGs). In addition, the study considered respondents from other sectors, including commercial banks, small and medium-sized enterprises (SMEs), insurance companies, and government institutions. However, for the purpose of the customer survey, the study focused specifically on customers of the three selected corporate companies: Coca-Cola, Nile Breweries, and SPGs.

A total of 100 respondents were selected for the study, comprising 70 company customers and 30 company employees. The customers were selected using a random sampling technique to provide each

eligible customer with an opportunity to participate in the study. The employee respondents were selected purposively, with particular attention given to managers and employees occupying positions that were considered relevant to the study. This approach was adopted because such respondents were expected to possess appropriate knowledge and experience concerning the operations, environmental practices, and carbon financing activities of their respective organisations.

The combination of random and purposive sampling techniques was used to ensure that the study obtained information from both customers and knowledgeable employees. Random sampling was considered appropriate for selecting customers, while purposive sampling was used for employees whose managerial responsibilities or specific positions within the organisations provided them with relevant knowledge and experience required to address the objectives of the study.

The study was conducted in accordance with the ethical principles outlined in the Declaration of Helsinki, which prioritises the rights, dignity, safety, and well-being of research participants. Ethical approval was obtained from the Departmental Research Committee of Business Management before the commencement of data collection. Participation was voluntary, and informed consent was obtained from all participants before the interviews. Participants were adequately informed about the purpose and procedures of the study, their right to refuse participation or withdraw at any time without penalty, and the measures adopted to protect their privacy and confidentiality. Personal identifying information was excluded from the analytical dataset, and access to the research data was restricted to authorised members of the research team to ensure confidentiality and safeguard participants' identities

Data Analysis

The Statistical Package for the Social Sciences (SPSS), version 16.0, was used to analyse the data. Principal axis factor analysis was conducted to examine corporate carbon financing strategies and their relationship with SME competitiveness, with the aim of identifying the underlying factors influencing competitiveness. Factor analysis is based on the assumption that the variables under investigation are correlated to some extent and is therefore appropriate for identifying and grouping variables that share common characteristics.

Factors with eigenvalues of 1.0 or higher and a minimum correlation coefficient of 0.33 were retained for further analysis, as these factors were considered to account for a substantial proportion of the variation in the data (Gwali et al., 2011). To improve the clarity of the factor structure and minimise cross-loading among variables, variables with communalities of 0.60 or lower were excluded from the analysis. This procedure was intended to produce clearer and more meaningful factor groupings.

Correlation analysis was subsequently conducted to establish the nature and strength of the relationships between competitiveness and the identified company, employee, and customer factors. SME competitiveness was assessed in terms of market share, attitudes, and competence. Relationships that were statistically significant at the 95% confidence level ($p < 0.05$) were selected for further analysis using multiple regression. The regression analysis was used to determine the extent to which the

significant independent variables influenced SME competitiveness while accounting for the effects of other relevant factors.

Results

Table 1
Shows results of responses between employee factors and competitiveness of SMEs

Statements on Employee Factors	**Percentage Responses**						
	SA	**A**	**UD**	**D**	**SD**	**Mean**	**StD**
I am aware that the company's strategies facilitate carbon financing opportunities	6.7	40	23.3	6.7	23.3	**3.0**	**1.313**
Believe climate change is an issue among our customers	30	40	20	6.7	3.3	**3.87**	**1.042**
Awareness of short production life cycles is key to carbon emission reduction and saves company operational costs	13.3	43.3	13.3	3.3	26.7	**3.13**	**1.456**
I am planning a climate change-related activity or campaign in the next 4 months	6.7	33.3	33.3	3.3	23.3	**2.97**	**1.275**
Average **Mean**.**3.3**, Average **StD 1.272**							

Source: Field Data

SA= Strongly Agree **A=**Agree **UD =** Un decided **D=**Disagree **SD=**Strongly Disagree

Table 1 above indicates that employees demonstrated moderate awareness and engagement with climate change and carbon-emission-related issues within the company.

46.7% of respondents agreed or strongly agreed that they were aware of the company's strategies for facilitating carbon financing opportunities, while 30% disagreed or strongly disagreed. The mean score of 3.00 (SD = 1.313) suggests a moderate level of awareness.

Regarding customers' concerns about climate change, 70% of employees agreed or strongly agreed that climate change is an issue among the company's customers. This item recorded the highest mean score of 3.87 (SD = 1.042), indicating relatively strong employee recognition of climate change as a customer-related concern.

Considering that 56.6% of respondents agreed or strongly agreed that awareness of short production life cycles is important for reducing carbon emissions and lowering operational costs. The mean of 3.13 (SD = 1.456) reflects a moderate level of agreement, although the relatively higher standard deviation indicates some variation in employees' responses.

With respect to future climate-related initiatives, 40% of employees agreed or strongly agreed that they were planning a climate change-related activity or campaign within the next four months. However, 26.6% disagreed or strongly disagreed, while 33.3% remained undecided. The mean score of 2.97 (SD = 1.275) indicates a relatively low-to-moderate intention to undertake such activities.

Overall, the average mean of 3.30 and average standard deviation of 1.272 suggest that employees have a moderate level of awareness and engagement with climate change and carbon-related issues. These responses also show that employees recognise climate change as a concern among customers more strongly than they demonstrate awareness of carbon financing strategies or plans to implement climate-related activities.

Table 2
Showing Correlation results between employee factors and competitiveness

Correlation variables			
		Employee factors	Competitiveness
Employee factors	Pearson Correlation	1	.602**
	Sig. (2-tailed)		.000
	N	30	30
Competitiveness	Pearson Correlation	.602**	1
	Sig. (2-tailed)	.000	
	N	30	30
**. Correlation is significant at the 0.00 level			

In Table 2 above, the correlation analysis shows a positive and statistically significant relationship between employee factors and competitiveness. The Pearson correlation coefficient was r = 0.602**, with a significance level of p = 0.000**.

This indicates that improvements in employee factors are associated with corresponding improvements in competitiveness. The coefficient of 0.602** represents a moderately strong positive relationship, suggesting that organisations with more favourable employee-related factors tend to report higher levels of competitiveness.

Since the significance value (p < 0.001**) is below the conventional 0.05 threshold, the relationship is statistically significant. Therefore, the results provide evidence of an association between employee factors and competitiveness among the respondents. However, the correlation does not by itself establish that employee factors cause changes in competitiveness.

Table 3
Presentation and Interpretation of Multiple Regression Results

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.350	.650		2.078	.048
	company factors	.179	.165	.192	1.086	.288
	Employee factors	.423	.146	.519	2.896	.008
	customer factors	− .049	.133	− .059	− .370	.715
2	(Constant)	3.264	1.131		2.886	.009
	company factors	.193	.134	.208	1.439	.164
	Employee factors	.369	.119	.453	3.091	.005
	customer factors	− .100	.112	− .119	− .896	.380
	company Data	− .780	.243	− .438	-3.210	.004
	Personal Background Information	− .087	.263	− .045	− .332	.743
	Policy Factors	.141	.120	.154	1.175	.253
a. Dependent Variable: Competitiveness						

Table 3 above presents the results of the multiple regression analysis examining the factors influencing the competitiveness of Small and Medium Enterprises (SMEs). The analysis was conducted using two models. Model 1 included company factors, employee factors, and customer factors, while Model 2 incorporated additional variables, namely company data, personal background information, and policy factors.

In Model 1, company factors had a positive but statistically insignificant effect on SME competitiveness (B = 0.179, β = 0.192, t = 1.086, p = 0.288). This indicates that, although company factors were positively associated with competitiveness, their effect was not statistically significant at the 5% level. Similarly, customer factors had a negative and statistically insignificant effect on competitiveness (B = − 0.049, β = −0.059, t = − 0.370, p = 0.715).

However, employee factors had a positive and statistically significant effect on SME competitiveness (B = 0.423, β = 0.519, t = 2.896, p = 0.008). This implies that, holding other factors constant, a one-unit increase in employee factors was associated with a 0.423-unit increase in SME competitiveness. The

standardised coefficient (β = 0.519) further indicates that employee factors had a relatively substantial contribution to competitiveness within Model 1.

In Model 2, after incorporating company data, personal background information, and policy factors, employee factors remained positive and statistically significant (B = 0.369, β = 0.453, t = 3.091, p = 0.005). Thus, even after controlling for the additional variables, employee-related factors continued to demonstrate a significant positive association with SME competitiveness. A one-unit increase in employee factors was associated with a 0.369-unit increase in competitiveness, holding the other variables constant.

Company factors in Model 2 remained positive but statistically insignificant (B = 0.193, β = 0.208, t = 1.439, p = 0.164), while customer factors remained negative and statistically insignificant (B = − 0.100, β = −0.119, t = − 0.896, p = 0.380). These findings suggest that neither company factors nor customer factors made a statistically significant independent contribution to competitiveness after controlling for the other variables.

Among the additional variables introduced in Model 2, company data had a negative and statistically significant effect on SME competitiveness (B = − 0.780, β = −0.438, t = − 3.210, p = 0.004). This indicates that company data was significantly associated with competitiveness, although the relationship was negative. In contrast, personal background information had a negative but statistically insignificant effect (B = − 0.087, β = −0.045, t = − 0.332, p = 0.743), while policy factors had a positive but statistically insignificant effect (B = 0.141, β = 0.154, t = 1.175, p = 0.253).

Figure 1 above illustrates the relationship between SME competitiveness and employee factors, while Fig. 2 above depicts the association between SME competitiveness and customer-related factors.

Overall, the regression results indicate that employee factors were the only variables that consistently showed a positive, statistically significant relationship with SME competitiveness across both models. In contrast, company data showed a statistically significant but negative association with competitiveness in Model 2.

Discussions

Quality characteristics in effective business support systems should be evaluated and are needed to enhance the competitiveness and productivity of SMEs. Development of an effective business support system is also a key condition for the success of both trade and investment capacity building (Gutterman, 2020). Companies that can convert their core competencies (Herrera, 2015) and integrate them throughout the organisation will achieve a competitive advantage by employing competencies to proactively address their stakeholder interests (Gakuru, Kristen Winters & Francois Stepman, 2009).

The availability of companies with climate change and carbon trade practices in the private sector has the ability to contribute to combating climate change and increase awareness. Inefficient governance

structures, lack of specialised staff, and limited access to energy-efficient technology and finance have greatly slowed down the transition to climate change awareness among businesses. (Kouloukoui et al., 2025). Companies must develop strategies that respond to carbon financing strategies to target SMES.

The awareness level of company employees of opportunities that exist in the markets determines the extent to which such companies integrate company strategies. (Urbanski, 2021). A majority of global executives regard climate change as strategically important and consider it essential to product development, investment planning, and brand management. (Adewole, 2023). In addition, it's said that over 60% of global executives say that the effect on profits would be moderately to highly positive should their company successfully manage climate change issues. (Chen & Greene, 1998).

It's noticeable among companies and employees that climate change is an issue among company customers, and short production life cycles are key to carbon emission reduction, saving company operational costs, and meeting varying market demands. However, increasing scientific evidence, regulatory pressure, and growing societal unease about the potential impacts have already stimulated corporate concern over the risks imposed by climate change. As a consequence, climate change is rising on corporate boards' agendas. Many companies are coming up with proposals and strategies, including training on how to harness the carbon trade opportunities, but this needs to target SMES for their competitiveness.

Employees are always in contact with the customers, and they even evaluate customer needs and willingness to buy particular company products based on their desires. Therefore, employees get feedback about market needs and then plan and develop processing and marketing strategies that fit the market. The employees' potential and commitment to understanding carbon trade ensure corporate strategies work to ensure competitiveness and targeting of these customers. (A. Zhang et al., 2023).

Corporate companies considering carbon trade in their operations can turn climate change risks into opportunities, and this should be done through capacity building. Deutsche Bank introduced energy-saving mortgage loans to customers for the upgrading works of home energy conservation and renewable energy installations, and this can define competitiveness. (Henger & Voigtländer, 2013). The international community has established self-regulatory organisations that promote green finance and supervise financial institutions engaged in sustainable finance; their members include banks, insurance companies, securities firms, and other financial institutions worldwide.

Energy and its use have become a vital variable in production and are used by companies and SME operations in Africa. Therefore, for these company categories to remain competitive, they need to save on the amount of energy consumed by having short production cycles. However, large companies can invest in SMEs and employee competencies and attitudes to implement practices that save energy or encourage energy production, enabling SMEs to boost production and meet market demand (Maqsood et al., 2022). Boosting SMEs' efforts by companies to mitigate carbon effects can lead to increased business investments in water, energy, and natural resource management, hence impacting company

profit margins and economic and social indicators within the context of poverty eradication (Maman et al., 2024).

Given the fact that companies, SMEs, and employees are being impacted by climate change, employees are taking initiatives to mainstream climate change-related activities through corporate social responsibility.

But this approach can embrace carbon trading, such that they are able to benefit from climate change activities by considering the amount of carbon saved through tree planting activities among the communities. Indirect investment and financing under the “Equator Principles” have gradually become international industry standards and practice in project financing.(Maman et al., 2024). Foreign commercial banks actively participate in environmental financial innovation, carbon trading, and providing intermediary services for families and SMEs.

In conclusion, creating new synergies through Mergers and Acquisitions should be considered for capacity building for carbon trade Practitioners. However, Mergers and acquisitions are areas that may provide opportunities for companies and SMEs as an effective way for companies to cut costs and achieve synergy in financial and new concepts in the market, including gaining growth in the global market.

The presence of planning in analysed enterprises should form a sustainable strategy and become very useful irrespective of company and SME segment. Focusing on competitive carbon trade activities in Sub-Saharan Africa will be key to attracting investors for direct investment, which will be explained by the direct use of market initiatives answering the emerging concepts in the areas of energy, manufacturing, and agriculture projects.

An integrated approach to carbon trade could play a critical role in integrating carbon trading systems to take advantage of the unique environment in the market. This will close the existing carbon gap in trading systems, initiating the adaptation of innovative competitive strategies to market niches and segments in society and globally.

The study recommends that SMEs should strengthen employee capacity through continuous training and professional development in areas such as carbon finance, climate-smart business practices, energy efficiency, carbon accounting, environmental management, and sustainable technologies. The findings demonstrate a positive and statistically significant relationship between employee factors and competitiveness; therefore, developing employee knowledge, skills, creativity, and problem-solving capabilities should form an integral part of SME strategic planning.

Government should strengthen the institutional and regulatory environment for SME participation in carbon markets. Clear and accessible procedures for carbon-related investment, project registration, monitoring, reporting, verification, and access to finance could reduce uncertainty and transaction costs

for SMEs. Policy interventions should also consider the limited technical and financial capacity of smaller enterprises.

Finally, future research should examine the mechanisms through which employee capabilities translate into SME competitiveness and carbon-financing outcomes. Longitudinal and comparative studies could provide further evidence on whether improvements in employee training, participation, innovation, and technical expertise lead to changes in organisational performance over time. Future studies could also examine the mediating role of corporate strategy and the moderating effects of finance, technology, institutional support, and regulatory conditions.

Overall, the study recommends treating employee capabilities as a strategic organisational resource rather than merely an operational input. Strengthening employee knowledge, skills, creativity, participation, and adaptability, together with appropriate financial, technological, institutional, and policy support, can provide a stronger foundation for SME competitiveness and engagement in emerging carbon-financing opportunities.

Declarations

Ethical approval

"The Departmental Committee of Business Administration at Uganda Christian University approved the research in 2011 before the field data collection. " and also "The study was conducted in accordance with the ethical principles outlined in the Declaration of Helsinki, which prioritises the rights, dignity, safety, and well-being of research participants. Ethical approval was obtained from the Departmental Research Committee of Business Management before the commencement of data collection.

Consent to participate

Participation was voluntary, and informed consent was obtained from all participants before the interviews. Participants were adequately informed about the purpose and procedures of the study, their right to refuse participation or withdraw at any time without penalty, and the measures adopted to protect their privacy and confidentiality. Personal identifying information was excluded from the analytical dataset, and access to the research data was restricted to authorised members of the research team to ensure confidentiality and safeguard participants' identities.

Consent to publish

Not applicable

Author Contribution

Author1 Consent to participate in the authorship of the paper as a student Author2Consent to participate in the authorship of the paper as a supervisor Author 3Consent to participate in the authorship of the paper as Dean, Business School, at the time Author 4Consent to participate in authorship of the paper as a member of the supervising committee

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Data Availability

Data can be accessed from the crossponding author

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Figures

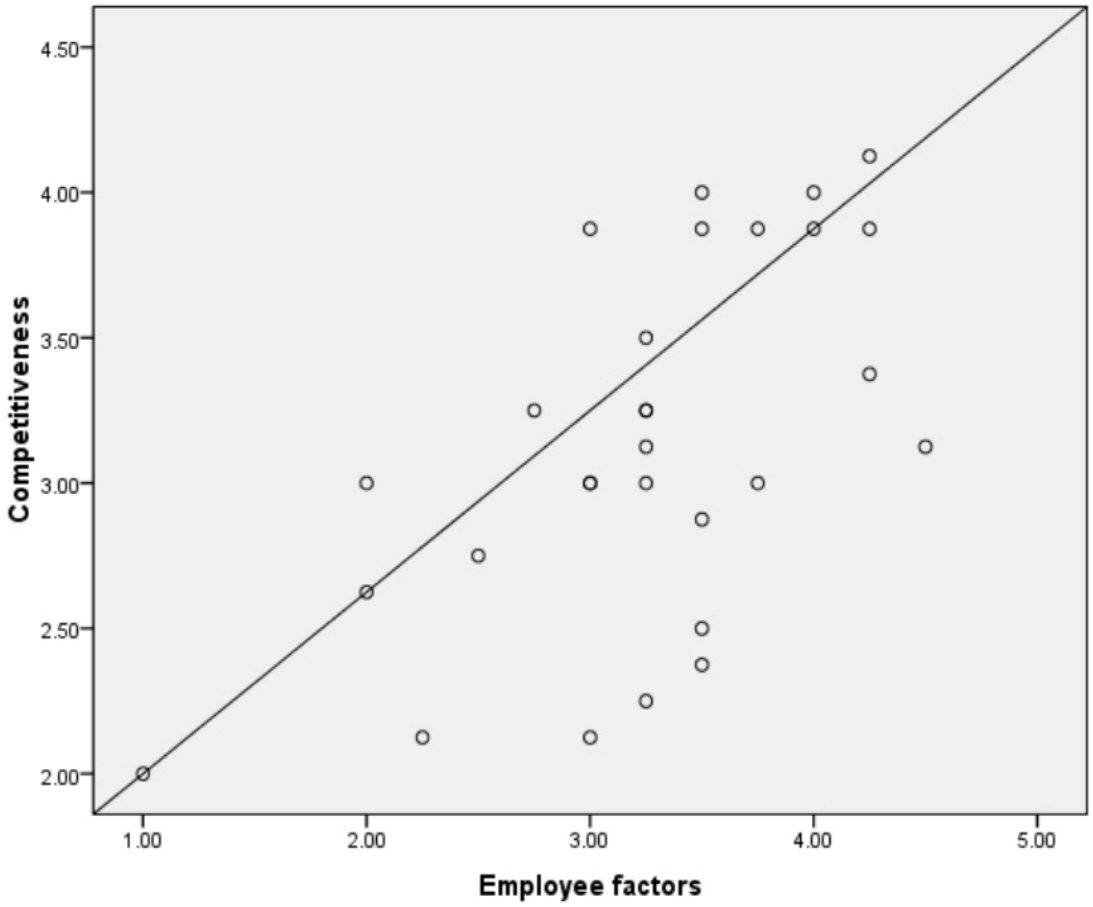

Figure 1

The graph of competitiveness vs. employee factors is illustrated in Figure 1.

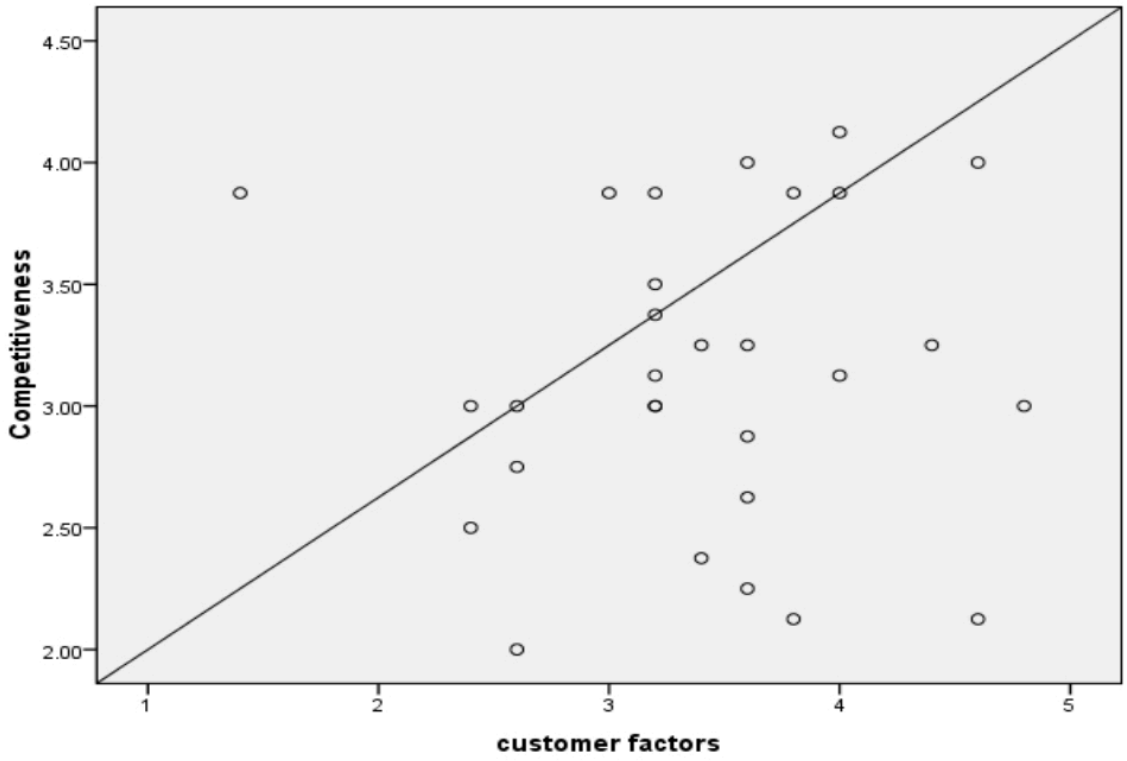

Figure 2

The graph of competitiveness vs customer-related factors is illustrated in Figure. 2