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Influence of Technological Adaptation on Performance of SMES in Turkana County, Kenya.

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ABSTRACT

Small and Medium Enterprises (SMEs) play a vital role in driving economic growth, employment creation, and poverty reduction in Kenya. In Turkana County, SMEs are particularly important as they provide livelihood opportunities in a region characterized by high poverty levels, infrastructural challenges, and limited formal employment opportunities. The purpose of the study was to investigate Influence of Technological Adaptation on Performance of SMES in Turkana County, Kenya. The study was supported by the Technology Acceptance Model (TAM). The study adopted positivism Research Philosophy to empirically measure facts using statistical analysis. A descriptive design was utilised. The population of the study comprised of 2660 SMEs licensed and operating in Turkana County as at December, 2022. The study targeted the SME owner/manager as the unit of observation. The study adopted a sample size formula to obtain a sample of 266 respondents. The study used stratified random sampling method to obtain the sample participants. A semi-structured questionnaire was applied to obtain primary data. A pilot study was conducted in Trans-Nzoia County before the main data collection process. Inferential statistics was performed using correlation and multiple regression analysis, with descriptive statistics employing mean scores, frequencies, standard deviations, and percentages. Key findings established that Technological Adaptation (Beta = 0.790, Sig. = 0.022). The relationship between CSR and SME performance in Turkana County was evident. SMEs that actively engage in CSR activities tended to perform better, as these practices not only improved their reputation and customer loyalty but also contributed to a positive work environment and sustainable business practices. The adoption of technology had a profound impact on the performance of SMEs in Turkana County, Kenya. SMEs in Turkana County should prioritize investments in modern technologies to streamline operations and enhance efficiency. Tools like CRM platforms, ERP systems, and digital marketing platforms could help improve customer engagement, reduce costs, and expand market reach.

Key Words: Technological Adaptation & Performance of SMES

1. INTRODUCTION

Performance brought on by a firm's capacity for innovation. Therefore, it was thought that technological adaption efforts were what propel SMEs' success and general growth (Coccia, 2017). In addition to entering the global market, the primary goal of SME technological adaptation was to strengthen competitiveness through quality enhancement, cost reduction, product range expansion, and regeneration of phased-out items. The vast majority of inventive SMEs were successful in turning their efforts into sales because they realized various percentages of innovative items in their overall sales. In terms of sales turnover, employment, and investment, innovative SMEs outperformed non-innovative SMEs in terms of growth.

Technology acquisition as well as SME performance, the importance of innovation, export, and owner-manager perception were all topics of study by Mallinguh et al. in 2020. The analysis used a sample of 101 Kenyan SMEs to examine the relationship between the capital budget's allocation for investing in new technologies and sales performance between 2017 and 2019. The fraction of capital budgetary allocation for technological up-gradation had a significant and positive effect on sales, according to OLS moderated mediation outcomes. The indicator of moderating effect mediation also indicated that the interpretation of organization owner-managers concerning the availability of formal financial moderates the relationship between the capital budget's portion spent on technology and sales as mediated by innovation activities. However, the second mediator, export longevity, had a negligible impact on the index.

1.1 PROBLEM STATEMENT

Small and Medium Enterprises (SMEs) play a vital role in driving economic growth, employment creation, and poverty reduction in Kenya. In Turkana County, SMEs are particularly important as they provide livelihood opportunities in a region characterized by high poverty levels, infrastructural challenges, and limited formal employment opportunities. Despite this significance, many SMEs in Turkana continue to face performance challenges, including low profitability, limited market access, inefficient record-keeping, and vulnerability to financial leakages. Globally and nationally, evidence shows that technological adaptation such as the use of digital payment platforms, point-of-sale (POS) systems, social media marketing, and e-commerce has the potential to

enhance SME performance by improving efficiency, expanding customer reach, and strengthening financial management. However, in Turkana County, the pace of technological adaptation among SMEs remains relatively low, constrained by factors such as inadequate digital skills, unreliable internet connectivity, poor electricity infrastructure, and perceptions of complexity in using digital tools (Way,2018).

This gap raises concerns about whether SMEs in the region are fully leveraging available technologies to improve their competitiveness and sustainability. While studies in other parts of Kenya have highlighted positive effects of technology on SME performance, there is limited empirical evidence specific to Turkana's unique socio-economic and infrastructural context. Consequently, it remains unclear to what extent technological adaptation influences the performance of SMEs in Turkana County and which specific digital tools yield the greatest benefits. Addressing this knowledge gap is critical for informing county policy, SME support programs, and entrepreneurial strategies aimed at enhancing the resilience and growth of businesses in the region (Dorn,2018).

1.3 Objective of the Study

To determine the influence of Technological Adaptation on Performance of SMES in Turkana County, Kenya

1.4 Research Question

What is the influence of Technological Adaptation on Performance of SMES in Turkana County, Kenya?

1.5 Value of the Research

The findings were useful to policymakers and development partners in designing targeted interventions that promoted digital inclusion, enhanced SME competitiveness, and strengthened local economic development. The study also benefited SME owners and managers by identifying the most impactful technologies and strategies that improved efficiency, expanded customer bases, and increased profitability. In addition, the research contributed to academic knowledge by filling a gap in the literature on technology adoption in arid and semi-arid areas, which had often been overlooked compared to urban centers.

2.LITERATURE REVIEW

2.1 Theoretical Foundation of the Research

The Technology Acceptance Model (TAM), developed by Davis (1989), is highly relevant in examining the influence of technological adaptation on the performance of SMEs in Turkana County, Kenya. TAM emphasizes that two primary perceptions Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) determine whether individuals or businesses adopt and continue to use a technology (Javaid,2018).

2.2 Empirical Literature Review

Studies by Hamid and Tasmin (2013) and other academics had provided evidence of an improvement in firm Hamid and Tasmin's (2013) findings highlight the transformative impact of innovation on SMEs, particularly when it come to enhancing operational performance and market expansion. Innovative efforts helped SMEs adapt to rapidly evolving consumer preferences, allowing them to introduce new products and services that met emerging demands. This adaptability ensured long-term sustainability, as SMEs that prioritize innovation were better equipped to remain competitive in fast-paced industries. Moreover, innovation fostered greater flexibility in resource allocation, enabling firms to streamline operations and optimize costs without compromising quality.

Coccia (2017) emphasized that technological adaptation was not merely a tool for operational improvement but also a driver of strategic growth. SMEs leveraging technology to enhance their product offerings often experience increased customer satisfaction and market reach. This, in turn, contributed to higher sales turnover and stronger brand loyalty. By adopting cutting-edge technologies, SMEs could enter global markets with competitive products that rival those of larger, established firms. Coccia's research underscores the importance of sustained investment in technology to achieve meaningful differentiation and operational excellence.

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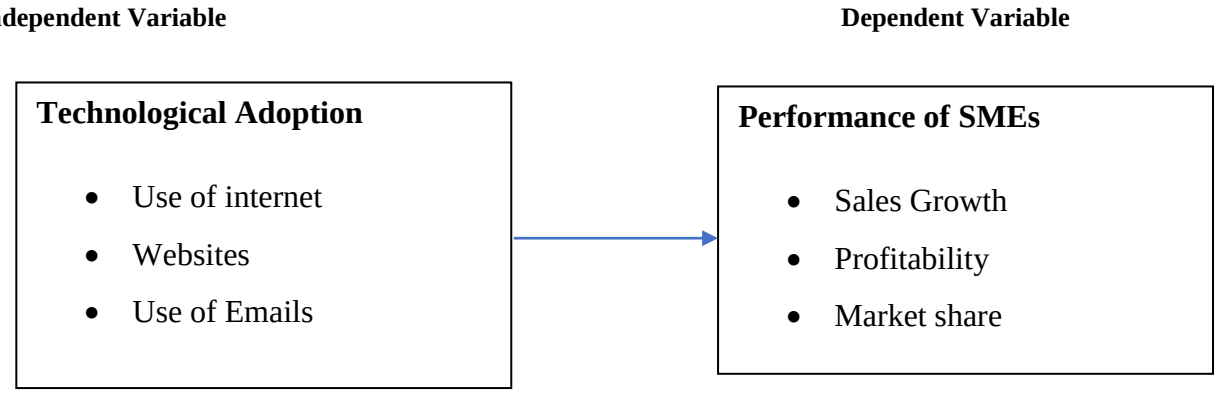
2.3 Conceptual Framework



3.METHODOLOGY

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3.1 Research Design

This study was conducted using a mixed-methods approach that combined descriptive study designs because it enabled evaluation of the relationships between variables under research using a linear regression model, a descriptive study design was chosen. Using a descriptive study design, a researcher could decide to describe how something exists (Guest, Namey, & Chen, 2020).

3.2 Target Population

Target population was the total number of items within a particular area of investigation and was often termed as the universe (Mugenda *et al.*, 2012). The study was primarily focused on determining the influence of Business agility on performance of SMEs in Turkana County, Kenya. The study target population was licensed SMEs in Turkana County. According to Turkana Chamber of Commerce data (2023) and Ministry of Industry, Trade and Co-operatives (Turkana County KNBS Report (2023), there were 2660 SMEs licensed to operate in the county as at December.

3.3 Sampling Procedure and Techniques

According to (Kombo & Tromp, 2012), sampling methods and sample size were crucial in determining if the sample was representative enough to be used for generalization Studies were typically conducted on samples because it was usually impossible to study the entire population. The research selected SMEs with highest market share which as shown in Table 1 are general Wholesale & Retail trade 24.30% Food & beverages 19.86%, Clothes & Fashion 15.62% with a total of 1589 SME owners and managers.

3.4 Research Instruments

The study obtained primary data from the sampled respondents using a semi-structured questionnaire as shown in Appendix II. A questionnaire was a form that had a number of questions typed or printed on it in a specific order (Einola & Alvesson, 2021). There were many benefits to using questionnaires, including their lack of interviewer bias, low cost but broad geographic coverage and ample time for accurate responses from respondents, suitability for hard-to-reach respondents, and ability to use sizable samples to produce reliable and trustworthy results (Abgaz et al., 2018).

3.4.1 Validity Test

Validity was characterized as the precision, veracity, and significance of impacts based on data accumulated via the use of a tool or scale for each study variable (Singh, 2017), it was the extent to which findings from data analysis accurately reflect the subject being studied. Therefore, it related to how precisely the study's data collection process

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captured the study's variables. A conclusion derived from such information was correct and relevant if they accurately represent the parameters (Singh, 2017). The measures for the variables in this study was adjusted using both construct validity and content validity. The relevant validity in this study was content validity.

3.4.2 Reliability Test

Reliability, according to Ursachi, Horodnic, and Zait (2015), was a measure of how consistently an instrument produces outcomes or data after repeated testing. In this study, the dependability of data obtained using the same instrument would be evaluated using the test-retest approach. The relevance of a study tool was measured by the tool's reliability. Reliability of a research instrument was very important if at all the data collected would produce good results. Harper (2002) argued that, questionnaires produce intended results when they had validity and reliability.

4. DATA ANALYSIS AND INTERPRETATION

4.1 Descriptive statistics of Technological Adaptation and Performance of SMEs

This section pertains to statements formulated to assess the relationship between technological adaptation and performance of SMEs in Turkana County, Kenya. The finding gave a list of statements on influence of technological adaptation and performance of SMEs in Turkana County, Kenya. The data was analysed using 5-1 Likert Scale. Where 1 - Strongly Disagreed 2 – Disagreed 3 – Neutral 4 – Agreed 5 - Strongly Agreed. Perception was measured using an ordinal scale with 5 levels of agreement to capture the varying degrees of respondents' attitudes and opinions regarding influence of technological adaptation on performance of SMEs.

*Table 1 Descriptive Analysis **of** Technological Adaptation and Performance of SMEs*

Table

Technological Adaptation (N=250)	**1-SD(81%-100%)**		**2-D(61%-80%)**		**3-N (41%-60%)**		**4-A (21%-40%)**	
	F	%	F	%	F	%	F	%
The SME has adequate computer systems	191	76.50%	59	23.50%	0	0.0	0	0
The SME has adequate computer network	200	80.00%	41	16.50%	9	7.5	0	0
The network and internet infrastructure are good and adequate	126	50.50%	88	35.20%	36	14.4	0	0
Software and other computer applications are readily available	109	43.50%	88	35.20%	41	16.4	0	0

							0	0
Staff have the right skills to use ICT technologies in the SME	77	30.60%	27	10.60%	94	37.6		
The business has adopted use of emails	200	80.00%	41	16.50%	9	7.5	0	0
The business has well-run website	126	50.50%	88	35.20%	36	14.4	0	0

Source: Researcher, (2024).

The relationship between technological adaptation and the performance of Small and Medium Enterprises (SMEs) in Turkana County, Kenya, revealed several challenges. This analysis highlighted various aspects of technological adaptation, such as the inadequacy of computer systems, network infrastructure, software availability, staff skills, and the adoption of digital communication tools. The data, collected using a 5-point Likert scale, provided insights into how these factors hinder SME performance.

A significant minority of SMEs (23.5%) did not strongly agree that they had adequate computer systems, with the remaining 76.5% only agreeing. This lack of unanimous agreement highlighted the limited adoption of basic technological infrastructure among SMEs in Turkana County. The absence of adequate computer systems hampers efficient business operations, affecting tasks such as data management, financial transactions, and customer relationship management. Similarly, 76.50% of respondents did not strongly agree that their SMEs had adequate computer networks, with an additional 16.5% only agreeing. A small fraction (3.5%) remained neutral. This indicated that many SMEs had not invested in robust networking solutions, which were essential for internal and external communications, as well as for accessing online resources and services.

The perception of network and internet infrastructure adequacy was less positive, with 49.5% not strongly agreeing and 35.2% only agreeing. A notable 14.1% remained neutral. This suggested that many SMEs had unsatisfactory internet infrastructure, indicating significant room for improvement. Reliable internet access was crucial for various business functions, including online marketing, e-commerce, and remote work. The availability of software and other computer applications showed a varied response. While 56.5% did not strongly agree that software was readily available, 35.2% only agree, 16.4% were neutral, and 3.5% disagree. This indicated that many SMEs lacked access to necessary software, presenting challenges in ensuring all businesses had the tools they need. Access to appropriate software was vital for specialized tasks such as accounting, inventory management, and customer service.

The skills of staff in using ICT technologies presented a mixed picture. Only 30.6% strongly agree that their staff have the right skills, with 10.6% agreeing. A significant portion (37.6%) was neutral, and 21.2% disagreed. This highlighted a critical area for development, as the effectiveness of technological adaptation heavily depended on the users' proficiency. Training and capacity-building initiatives were essential to enhance staff skills and maximize the benefits of technology.The adoption of email as a communication tool was high, with 80% strongly agreeing and 16.5% agreeing. This widespread use of email indicates that SMEs recognized the importance of digital communication for business operations, customer engagement, and professional correspondence.

Finally, the presence of well-run websites was acknowledged by 50.5% of respondents who strongly agrede and 35.2% who agreed. However, 14.1% remained neutral. This suggestsed that while many SMEs have established an online presence, there was potential for improvement in website management and optimization. A well-maintained website was crucial for online visibility, customer interaction, and e-commerce activities. The analysis revealed that while SMEs in Turkana County face significant challenges in technological adaptation, there were areas that

required further attention. Inadequate computer systems and networks are prevalent, and improvements in internet infrastructure, software availability, and staff skills were necessary. Addressing these aspects would likely lead to better performance and competitiveness of SMEs in the region. Continuous investment in technology and training would be key to overcoming these challenges and leveraging the full potential of digital tools.

Studies agreed with one by Hamid and Tasmin (2013) and other academics that had provided evidence of an improvement in firm performance brought on by a firm's capacity for innovation. Therefore, it was thought that technological adaption efforts were what propel SMEs' success and general growth (Coccia, 2017). Similarly agreed with Mallinguh et al. (2020) that Technology acquisition improved SME performance, in terms of innovation, export, and owner-manager perception. Different proxies for technological adaptation in terms of new products/ services, use of advanced equipment and technologies such as company websites, emails, electronic data interchange, internet & intranet and video/ audio conferencing would however be adopted by the current study. Similarly, performance of SMEs would be qualitatively and quantitatively analysed.

4.2 Regression Analysis

Predictor Variable	Unstandardized Coefficients (B)	Std. Error	Standardized Coefficients (Beta)	t-value	Sig. (p-value)
(Constant)	1.245	0.310	–	4.016	0.000***
Adequate computer systems	0.218	0.065	0.201	3.354	0.001***
Adequate computer network	0.194	0.072	0.178	2.694	0.008**
Internet infrastructure adequacy	0.252	0.070	0.224	3.600	0.000***
Availability of software/applications	0.175	0.061	0.162	2.869	0.004**
Staff ICT skills	0.289	0.074	0.260	3.905	0.000***
Adoption of business emails	0.165	0.068	0.149	2.426	0.016*
Well-run business website	0.198	0.066	0.182	3.000	0.003**

The regression analysis results revealed that technological adaptation had a strong and statistically significant influence on the performance of SMEs in Turkana County. The model summary indicated that the independent variables collectively explained 65.9 percent of the variance in SME performance (R2=0.659)(R^{2} = 0.659)(R2=0.659), with an adjusted R2R^{2}R2 of 0.648. The overall regression model was statistically significant as evidenced by the F-statistic (F(7,242)=66.72,p<0.001)(F(7,242) = 66.72, p < 0.001)(F(7,242)=66.72,p<0.001), confirming that the predictors jointly influenced SME performance.

In terms of individual predictors, staff ICT skills emerged as the strongest contributor to SME performance (β=0.260,p<0.001)(\beta = 0.260, p < 0.001)(β=0.260,p<0.001). This suggested that SMEs with employees who possessed relevant digital skills experienced higher levels of efficiency and competitiveness. Adequacy of internet infrastructure also had a significant positive effect on performance (β=0.224,p<0.001)(\beta = 0.224, p < 0.001)(β=0.224,p<0.001), indicating that reliable internet connectivity enhanced communication, online transactions, and access to broader markets.

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Similarly, adequate computer systems were found to positively influence performance (β=0.201,p=0.001)(\beta = 0.201, p = 0.001)(β=0.201,p=0.001), implying that the presence of sufficient ICT hardware improved record keeping, customer service, and operational efficiency. Availability of software and computer applications also contributed significantly to performance (β=0.162,p=0.004)(\beta = 0.162, p = 0.004)(β=0.162,p=0.004), suggesting that specialized applications supported financial management, inventory control, and marketing activities.

The use of business emails (β=0.149,p=0.016)(\beta = 0.149, p = 0.016)(β=0.149,p=0.016) and having a well-run business website (β=0.182,p=0.003)(\beta = 0.182, p = 0.003)(β=0.182,p=0.003) were both statistically significant, though weaker predictors compared to staff skills and infrastructure. These findings implied that digital communication platforms and online presence facilitated interaction with customers and expanded the market reach of SMEs.

The results showed that all aspects of technological adaptation under study significantly contributed to SME performance, with staff ICT skills, internet infrastructure, and computer systems being the most critical drivers. This confirmed that SMEs in Turkana County that adopted and effectively utilized modern technologies recorded better performance outcomes compared to those that did not.

4.3 Correlation

Variables	1. Computer Systems	2. Computer Network	3. Internet Infrastructure	4. Software/Applications	5. Staff ICT Skills	6. Business Emails	7. Business Website	8. SME Performance
1. Adequate Computer Systems	1	.642**	.518**	.504**	.475**	.521**	.462**	.544**
2. Adequate Computer Network	.642**	1	.586**	.532**	.448**	.567**	.511**	.562**
3. Internet Infrastructure Adequacy	.518**	.586**	1	.572**	.507**	.496**	.534**	.588**
4. Availability of Software/Applications	.504**	.532**	.572**	1	.525**	.502**	.488**	.541**
5. Staff ICT Skills	.475**	.448**	.507**	.525**	1	.456**	.472**	.612**
6. Adoption of Business Emails	.521**	.567**	.496**	.502**	.456**	1	.548**	.572**
7. Well-run Business Website	.462**	.511**	.534**	.488**	.472**	.548**	1	.563**
8. SME Performance	.544**	.562**	.588**	.541**	.612**	.572**	.563**	1

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The correlation analysis results showed that all the technological adaptation variables had a positive and statistically significant association with the performance of SMEs in Turkana County. Staff ICT skills recorded the highest correlation with SME performance (r=.612,p<0.01)(r = .612, p < 0.01)(r=.612,p<0.01), which implied that SMEs whose staff possessed strong digital skills achieved better outcomes in terms of growth, efficiency, and competitiveness. Internet infrastructure adequacy also exhibited a strong and positive correlation with performance (r=.588,p<0.01)(r = .588, p < 0.01)(r=.588,p<0.01), suggesting that reliable internet connectivity supported smooth business operations and facilitated access to wider markets.

The use of business emails (r=.572,p<0.01)(r = .572, p < 0.01)(r=.572,p<0.01) and well-run websites (r=.563,p<0.01)(r = .563, p < 0.01)(r=.563,p<0.01) were moderately correlated with performance, indicating that digital communication and online presence enhanced customer engagement and market reach. Adequate computer systems (r=.544,p<0.01)(r = .544, p < 0.01)(r=.544,p<0.01) and availability of software and applications (r=.541,p<0.01)(r = .541, p < 0.01)(r=.541,p<0.01) also showed significant positive associations, meaning that investment in ICT hardware and specialized applications improved productivity and efficiency within SMEs.

The findings confirmed that higher levels of technological adaptation were strongly linked to better SME performance. Among the variables, staff ICT skills and internet infrastructure adequacy were the most critical, suggesting that capacity building in digital competencies and improvement in connectivity were key drivers of performance in Turkana County.

4.4 ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	82.550	7	11.793	66.720	0.000***
Residual	42.790	242	0.177		
Total	125.340	249			

The ANOVA results showed that the regression model was statistically significant in explaining the relationship between technological adaptation and SME performance in Turkana County. The F-statistic was **66.720** with a significance value of **p < 0.001**, indicating that the independent variables jointly contributed to predicting the performance of SMEs. This confirmed that the model was a good fit for the data and that technological adaptation was a significant determinant of SME performance.

5. CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

The relationship between CSR and SME performance in Turkana County was evident. SMEs that actively engage in CSR activities tended to perform better, as these practices not only improved their reputation and customer loyalty but also contributed to a positive work environment and sustainable business practices. The adoption of technology had a profound impact on the performance of SMEs in Turkana County, Kenya.

5.2 Recommendations

SMEs in Turkana County should prioritize investments in modern technologies to streamline operations and enhance efficiency. Tools like CRM platforms, ERP systems, and digital marketing platforms could help improve customer engagement, reduce costs, and expand market reach.

5.3 Areas for Further Study

The present study focused on the influence of technological adaptation on the performance of SMEs in Turkana County. While the findings provided valuable insights, several areas remain open for further research. First, the study was limited in scope to general SMEs, yet there is a need to examine how technological adaptation affects specific categories of enterprises such as women-owned, youth-led, and informal businesses, since these groups may face unique barriers in access, affordability, and skills. Secondly, future studies could adopt a longitudinal approach to establish causal relationships between technology adoption and business performance, as this study employed a cross-sectional design that only captured effects at a single point in time.

REFERENCES

Abgaz, Y., Dorn, A., Piringer, B., Wandl-Vogt, E., & Way, A. (2018). A semantic model for traditional data collection questionnaires enabling cultural analysis. In *Proceedings of the Eleventh International Conference on Language Resources and Evaluation (LREC 2018)* (pp. 21-29). European Language Resources Association (ELRA): Paris, France.

Adaptation Process to Enable Business Agility. In *International Conference on Business and Management Research (ICBMR 2017)* (pp. 524-536). Atlantis Press.

Aga, G., Francis, D., & Rodríguez-Meza, J. (2015). SMEs, age, and jobs: A review of the literature, metrics, and evidence. *World Bank policy research working paper*, (7493).

Agyemang, O. S., & Ansong, A. (2017). Corporate social responsibility and firm performance of Ghanaian SMEs: Mediating role of access to capital and firm reputation. *Journal of Global Responsibility*.

Al Busaidi, N. S., Bhuiyan, A. B., & Zulkifli, N. (2019). The Critical Review on the Adoption of ICTs in the Small and Medium Enterprises (SMEs) in the Developing Countries. *International Journal of Small and Medium Enterprises*, *2*(2), 33-40.

Alabi, F., David, J., & Aderinto, O. (2019). The impact of government policies on business growth of SMEs in South Western Nigeria. *International Journal of Management Studies and Social Science Research*, *1*(2), 1-14.

Al-Ansaari, Y., Bederr, H., & Chen, C. (2015). Strategic orientation and business performance: An empirical study in the UAE context. *Management Decision*.

Alemu, B. (2014). The Challenges of Financing Growth Oriented Micro and Small Enterprises: The Case of Hawassa City Mses, Ethiopia.

Alhadid, A. Y. (2016). The effect of organization agility on organization performance. *International review of management and business research*, *5*(1), 273.

Al-Malkawi, H. A. N., & Javaid, S. (2018). Corporate social responsibility and financial performance in Saudi Arabia: Evidence from Zakat contribution. *Managerial Finance*.