

**The Role of Mediated Contingency Factors towards
the Successful Implementation of Activity-Based
Costing: Evidence from Tanzanian Service Sector**

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O papel dos Fatores de Contingência Mediados na Implementação Bem-sucedida do Custeio Baseado em Atividades

Resumo

Objetivo: O objetivo deste estudo foi avaliar o impacto mediador das preferências comportamentais sobre as contribuições dos fatores de contingência na implementação do ABC no setor de serviços da Tanzânia. **Método(s):** O estudo foi realizado nas cidades de Dar es Salaam, Arusha e Dodoma, onde os dados primários foram coletados de 107 empresas de serviços usando o desenho de pesquisa transversal. A análise dos dados foi feita usando mínimos quadrados parciais - modelagem de equações estruturais (PLS-SEM) com o apoio do software SmartPLS4 e do SPSS 28.0.1. **Resultados:** Os resultados mostram que, dos três elementos de preferências comportamentais, apenas a utilidade percebida e a facilidade de uso percebida mediaram positivamente as relações causais entre a competitividade, a cultura empresarial e a implementação do ABC. O impacto das crenças normativas não foi estatisticamente significativo. **Contribuições:** Os resultados sugerem que é importante que as empresas de serviços da Tanzânia deem mais ênfase ao treinamento regular dos funcionários da contabilidade, à familiarização com o ABC e às demonstrações de vantagens claras do sistema para aumentar a probabilidade de sua adoção.

Palavras-chave: Implementação do ABC. fatores de contingência. preferências comportamentais. setor de serviços da Tanzânia.

The Role of Mediated Contingency Factors towards the Successful Implementation of Activity-based Costing: Evidence from Tanzanian Service Sector

Abstract

Objective: The objective of this study was to assess the mediating impact of behavioral preferences on the contributions of contingency factors on ABC implementation in Tanzanian service sector. **Method(s):** The study was conducted in Dar es Salaam, Arusha and Dodoma cities, where the primary data were collected from 107 service companies using the cross-sectional survey design. Data analysis was done using partial least squares - structural equation modeling (PLS-SEM) with the support of the SmartPLS4 software and SPSS 28.0.1. **Results:** The results show that, of the three elements of behavioral preferences, only perceived usefulness and perceived ease of use positively mediated the causal relationships between the competitiveness, business culture and ABC implementation. The impact by normative beliefs was found not to be statistically significant. **Contributions:** The results suggest that it is important for service companies in Tanzania to put more emphasis on regular training of accounting employees, familiarization of ABC and demonstrations of clear advantages of the system to increase the likelihood of its adoption.

Keywords: ABC Implementation. Contingency Factors. Behavioral Preferences. Tanzanian Service Sector.

Introduction

In today's business environment of stiff competition, it has become indispensable for companies to adopt the proper costing system, which not only guarantees the accuracy of



assignment but also underpins the management's business decisions (Mahal & Hossain, 2015). The innovation of activity-based costing by Kaplan and Bruns in 1987 was particularly meant to serve this purpose by replacing the traditional costing which fell short of efficiency (Almeida & Cunha, 2017). However, its implementation faced a number of challenges including but not limited to lack of top management support, staff knowledge and the compatibility issue (Shihab & Prasad, 2017). Other factors that hampered a successful implementation of the system included the implementation costs and the complexity in translating system's features into the real world of practice (Durana, 2019).

According to Pashkevich *et al.* (2023), the system's features are defined by its five main phases of implementation which include the activities identification, activities pooling, activity costs creation, cost drivers identification and cost object computation. Different translations and applications in the service sector, especially in the identification of cost drivers, would lead to different results as far as the allocation of indirect costs is concerned (Alsharari *et al.*, 2020). Steenbergen *et al.* (2022) reported further that the implementation of the system in other circumstances is limited by lack of relevance of the intended purpose of cost reduction. The study drew a case of the health sector in particular, where the efficiency of core business of operation is the most important thing, regardless of costs. Dropulic (2013) contended that competitiveness and business cultures are among the components of contingency factors which together with other items also play vital roles in successful implementation of innovation. Generally, the application of ABC grows in importance in line with the increased technological advancements which are meant to cut down the operational costs in service delivery (Pashkevich *et al.*, 2023). The implicit opinions by Molela *et al.* (2024a) and Pashkevich *et al.* (2023) required the study of the effects of confluence of factors from different dimensions in assessing the ABC implementation. With regards to this contention, it became interesting to contribute to the knowledge gap by including the mediators in the already established relationships by the previous studies. The empirical literature had limited information regarding the effects of behavioral preferences on the effectiveness and efficiency in implementing the ABC system in the service sector. Hence, this study contributed to the knowledge gap by excavating the mediating roles of perceived usefulness, perceived ease of use and normative beliefs on causal relationships between the contingency factors and ABC implementation.

Literature Review

Successful Implementation of Activity-based Costing

The implementation process consists of five main steps which are executed in disposition order starting with the identification of activities that consume resources (Shihab & Prasad, 2017). The second step of implementation is defined by the process of aggregating the more related activities to obtain groups of activities with similar features (Ayluctarhan, 2018). The groups of activities so formed are referred to in accounting terms as cost pools to which the resources are subsequently assigned to create activity costs (Suryanto *et al.*, 2020). The most important step in ABC implementation that makes it distinctive in cost management methods is the fourth step that involves the identification of accurate cost drivers (Wahid *et al.*, 2021). The means to assign the indirect costs that can hardly be associated with the specific cost object is specified at step four by identifying the appropriate cost drivers for this purpose (Anton, 2022). The very last step of ABC implementation culminates with the use of cost drivers to allocate indirect costs to the cost object (Mohammad & Salleh, 2022). The total indirect costs are summed up with the total direct costs to obtain the value of the cost object. The ABC system is said to be successfully implemented if the ultimate purpose of obtaining



the value of the cost object is achieved (Shanmugam, 2022). At this stage, the service company is regarded to have adopted the system by being able to determine the value of the service delivered to customers which is intangible in nature (Yuen *et al.*, 2020). According to the definition by Lu (2021), the terms adoption and successful implementation of ABC are used interchangeably in this document.

Contingency Factors

Competitiveness

In business perspective, competitiveness is defined as the company's responses to external environmental factors that trigger competition among the rivals (Fagerberg, 1996). A competitive company tends to adopt the technology earlier in order to outperform the rivals and keep on surviving (Falciola, Jansen & Rollo, 2021). This trait is indispensable especially in a situation where several companies deliver the similar services to the same limited customers (Rankin, 2020). In a competitive environment a company needs to distinguish itself by having an appropriate cost determinant system for better decision making (Alsayegh, 2020). Al-Saidi and Gowda (2015) had the binary logistic regression results with p - value of 0.670. Together with negative coefficient ($\beta = -0.086$), the study concluded that the odds of contribution by competitiveness to ABC implementation were not statistically significant. Based on the residual analysis model and contingency theory, (Aljabr, 2020) obtained the same results as those of Al-Saidi and Gowda (2015), in which the competitiveness was found to have no statistically significant effect on ABC implementation. However, the analytical results were different at the side of Hoang, Nguyen and Nguyen (2020), in which competitiveness was found to have a statistically significant effect on ABC implementation by service companies. The binary logistic regression model employed by the study produced the summary results for competitiveness with coefficient ($\beta = 1.081$), p - value ($p = 0.031$) and odds ratio ($\text{Exp}(\beta) = 2.948$). With the similar logit regression model, Tran and Tran (2022) observed the same analytical results that competitiveness played a significant role in influencing companies to implement the ABC system. The study noted that companies responded to competition by adopting ABC in order to gain competitive advantages in pricing and better decision making with regards to operational costs. The diversity in analytical findings from previous studies regarding the contribution of competitiveness suggested the existence of other factors that had impacts on the ABC implementation. This study assumed that the behavioral preferences mediated the causal relationship between the competitiveness and ABC implementation, hence hypothesized that:

H_1 : Behavioral preferences (a . Perceived usefulness, b . perceived ease of use, c . normative beliefs) positively mediated the relationship between the competitiveness and ABC implementation.

Business Culture

Business culture encompasses organizational values, norms and beliefs as well as defines the specific ways and approaches of doing business (Williams, 2022). Other elements that define business culture include innovativeness, flexibility, staff development and customer care. Companies are willing to adopt the ABC system if they embrace the spirit of readiness to change, which is part and parcel of business culture (Madwe, Stainbank & Green, 2020). Similarly, Mohammed (2019) associated the way of doing business with the ABC adoption. He claimed that the focus on customers' satisfactions and the organizational desire of leading



the market contributes significantly to ABC implementation. Staff development as another component of business culture had a positive impact on successful implementation of the ABC system (Hamid, 2021). The contention raised was that most of the companies that were found to have not been implementing the system successfully did not have the culture of staff development. Ogungbade and Oyerogba (2020) however, asserted that companies with the element of stability culture found it hard to adopt ABC as they maintained the spirit of stability in what they already have. Generally, the implementation of ABC by service companies was consistent with the business culture and strategies (Oseifuah, 2014). The disagreement on the effect of business culture in previous studies was a clear message that there were other factors apart from business culture that contributed to ABC implementation. This study in particular hypothesized that:

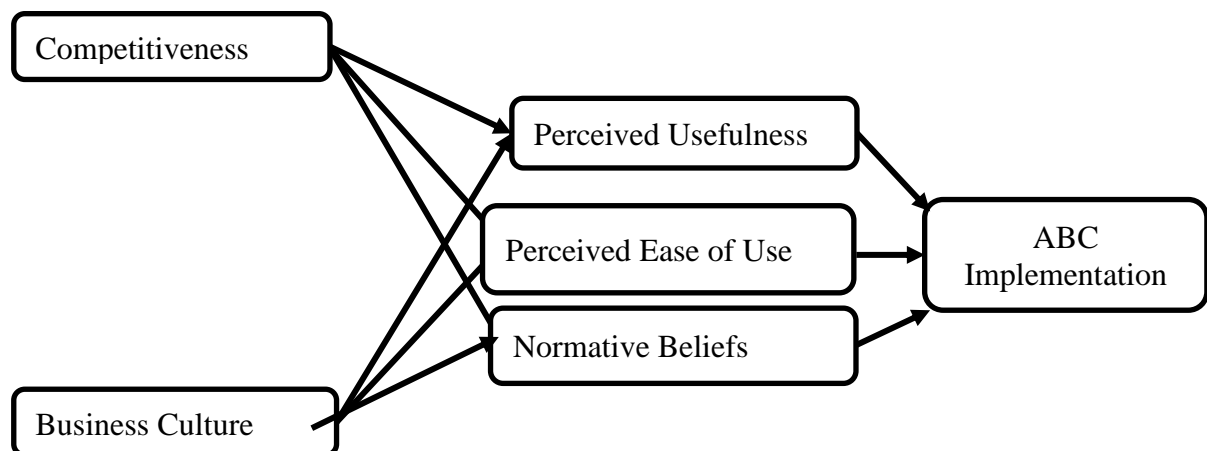
H₂: Behavioral preferences (a. Perceived usefulness, b. perceived ease of use, c. normative beliefs) positively mediated the relationship between the business culture and ABC implementation.

Contingency Theory

The contingency theory, which was put forward by Fred Fiedler in 1964, supports the fact that there is no universal cost accounting system which is applicable in all organizations to yield the same results (Aldukhil, 2012). According to Mahmood and Ibrahim (2018), the successful implementation of the ABC system has strong links with the contingency factors, which differ from one organization to another and from time to time. There are internal and external contingency factors that affect the successful implementation of ABC by service companies (Shahzadi *et al.*, 2018; Aldukhil, 2012). The internal factors whose impacts on ABC adoption were assessed in this study include the company's competitiveness and business culture. The contingency theory postulates the direct relationship between competitiveness, business culture and innovation adoption (Korzhova & Bezrukova, 2023; Salensky, 2022). This study adopted the modified contingency theory by introducing the behavioral preferences as the mediators of the relationships between the competitiveness, business culture and ABC implementation as suggested by Molela *et al.* (2024b).

Figure 1

Conceptual Framework



Source: Author's Summary of Hypotheses



The conceptual framework of the study, as shown in figure 1 above, consists of three sections comprising the independent variables, mediating variables and dependent variables. The section of independent variables comprises the items of contingency factors including the company's competitiveness and business culture. Meanwhile, the section of mediating variables comprises the elements of behavioral preferences including the perceived usefulness, perceived ease of use and normative beliefs. The third section of the dependent variable consists of ABC implementation.

Methodology

The study adopted the cross-sectional survey design to collect data from a sample of 188 service companies from the three research areas in Tanzania, including Dar es Salaam, Arusha and Dodoma. The units of analysis were the private service companies with headquarters in the three identified research areas where the units of inquiry were the heads of accounting and finance departments or their representatives.

Based on the nature of data which were quantitative, the study employed the data collection technique of using the structured questionnaires which were administered to 162 companies. 107 companies duly filled in the questionnaires, hence making the response rate 66%, which is acceptance as in accordance to Sataloff and Vontela (2021). The data obtained from 188 companies were analyzed using the Partial Least Squares - Structural Equation Modeling (PLS-SEM) with the help of SmartPLS 4 software. Both measurement and structural models were run in testing the assumptions and hypotheses. Apart from being the advanced model in measuring the impacts of mediating variables, PLS-SEM was a better option than Covariance Based SEM because the data analyzed were not normally distributed.

Study Findings

Test of Assumptions

Factor Analysis

Factor analysis was performed by running the principal component analysis (PCA) model, whose results of factor loadings greater than 0.7 confirmed the strong associations of all the items that formed the variables.

Test for Normality

The data did not follow the normal probability distribution pattern as revealed by both the Kolmogorov-Smirnov and Shapiro-Wilk tests, which produced the results for indicators with p values less than 0.001. Likewise, the excess kurtosis and skewness produced similar results, which showed that data did not follow normal probability distribution as most of the indicators had values ranging outside -1 and +1.

Measurement Model Assessment

Measurement model, which is the first component of PLS-SEM, was analyzed in which both reflective and formative constructs were assessed to confirm to what extent the indicators represented the constructs and vice versa.

Reflective Model Assessment



Reflective model was analyzed by referring to the outer loadings in assessing the magnitude of causation of constructs to their respective indicators. The model was analyzed by assessing the indicators' reliability that was measured against the minimal loadings of 0.708. The internal consistency reliability was assessed if they fell in between the cronbach's alpha range of 0.70 and 0.95. The convergent validity and discriminant validity were both assessed against the minimal average variance extract (AVE) of 0.5. The analytical results confirmed that all the tests satisfied the standard values as given in this section.

Formative Model Assessment

Formative model was analyzed by assessing the outer weights of indicators and the collinearity among such indicators to confirm the extent of indicators' representations to constructs. The individual contributions of indicators to their respective constructs were assessed by comparing the calculated outer weights with the standard weight. The contribution of the indicator to the variable was deemed significant if its outer weight exceeded 0.5. Formative model assessment shows that all the indicators under study contributed significantly to their respective constructs, since they each had outer weight values greater than 0.5 standard. Multicollinearity test was performed to assess if there were linear correlations either among the indicators themselves or among the constructs themselves.

Outer VIF for each indicator was assessed against the standard value of 3.3 in a course of confirming the indicators were independent against one another. VIF for all the indicators was less than 3.3 signifying that there was no linear correlation among such indicators. The constructs formed by these indicators as well as the path analysis results were not affected by the correlation among the indicators. On the other hand, inner VIF for constructs was analyzed to assess that the path analysis results were not affected by the correlation among the constructs. Cross tabulation confirmed that the constructs were independent against one another, since all the calculated VIF were less than 3.3. Both outer VIF and inner VIF confirmed that there was no multicollinearity problem for all the indicators and constructs which would distort the final analytical results.

Table 1

Inner Variance Inflation Factor (VIF <3.3)

Construct	Normative Beliefs	Perceived Ease of Use	Perceived Usefulness
Competitiveness	1.619	1.619	1.619
Business Culture	1.790	1.790	1.790

Source: *Multicollinearity Test Results*

Structural Model Assessment

PLS-SEM Model Fitness Test

SRMR and NFI tests were conducted to vindicate the appropriateness of the PLS-SEM model in analyzing data for ABC adoption. Rule of thumb was to have the value of SRMR not exceeding 0.080 and that of NFI exceeding 0.900 which were the standard values.

**Table 2***PLS-SEM Model Fitness Test Results Across Adoption Levels*

Measure	Calculated Value	Standard Value	Results
SRMR	0.020	< 0.080	Fitted the data
NFI	0.993	> 0.900	Fitted the data

Source: *Model Fitness Results***Path Analysis**

The assessment of the structural model involved the process of path analysis, which was intrinsic in testing the hypotheses of the study. If 1, 2, PU, PE and NB stand for competitiveness, business culture, perceived usefulness, perceived ease of use and normative beliefs respectively, then the synopsis of the path analytical results are as given in the table below.

Table 3*Path Analytical Results*

Independent Variable	Individual Effect			Total Effect						Direct Effect
	PU	PE	NB	PU		PE		NB		
				<i>P</i> β	<i>R</i> ²	<i>P</i> β	<i>R</i> ²	<i>P</i> β	<i>R</i> ²	
<i>p</i>	0.032	0.041	0.361							
1 β	0.123	0.336	-0.418	0.018		0.005		0.073		42.2%
<i>R</i> ²	51.1%	43.7%	31.8%		63.2%		53.1%		22.4%	
<i>p</i>	<0.001	<0.001	0.086							
2 β	0.812	0.457	0.411	0.734		0.615		-0.881		39.9%
<i>R</i> ²	53.8%	70.1%	20.1%							

Source: *Path Analytical Results***Test Results for Hypothesis One**

Hypothesis One was designed to predict the mediation effects of perceived usefulness, perceived ease of use and normative beliefs on the causal relationships between competitiveness and ABC implementation. From the table 3 above, the structural model assessment shows that the mediation effect by perceived usefulness on the causal relationship between competitiveness and ABC implementation was statistically significant with *p*-value (*p*= 0.032) and positive coefficient of β = 0.123. With this regard, the successful implementation of ABC in the Tanzanian service sector was explained by 51.1% of the influence of perceived usefulness on companies' competitiveness. Similarly, the model assessment substantiated the statistical significance (*p*= 0.041, β = 0.336) of the mediation effect of perceived ease of use on the causal relationship between competitiveness and ABC implementation. It is deduced from this finding that the successful implementation of ABC in the Tanzanian service sector was explained by 43.7% of the influence of perceived ease of use on companies' competitiveness. The case was different on the influence of normative beliefs, which was revealed to be statistically insignificant as the *p*-value (*p*= 0.361) was greater than 0.05.



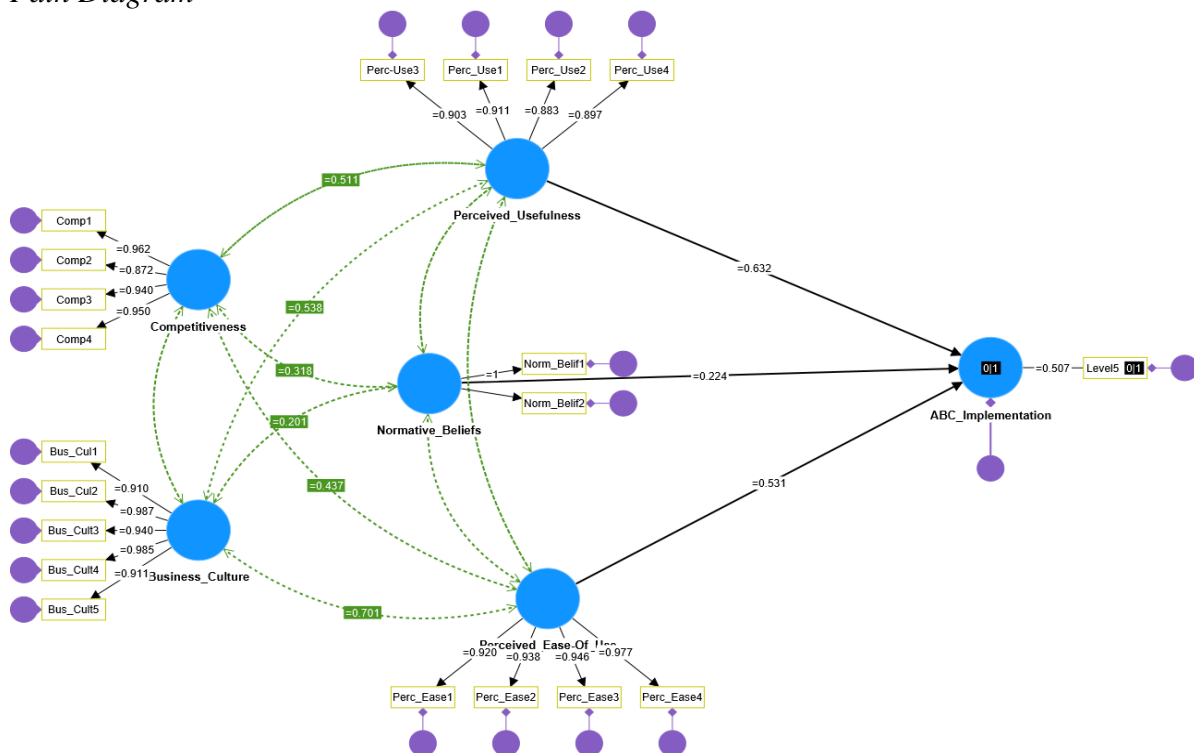
The mediation effects of the perceived usefulness and perceived ease of use exerted more influences on the ABC implementation. From the analytical statistics, the results in table 3 show that the perceived usefulness as the mediator contributed to ABC implementation by 8.9% more than the direct effect by the competitiveness. Likewise, the mediation effect by perceived ease of use imposed more impact on ABC implementation by 1.5% than the direct effect by competitiveness.

Test Results for Hypothesis Two

Hypothesis Two predicted the mediating effect of perceived usefulness, perceived ease of use and normative beliefs on the causal relationship between business culture and ABC implementation. Path analytical results revealed that the mediation effect by perceived usefulness on the causal relationship between competitiveness and ABC implementation was statistically significant ($p= 0.032$, $\beta= 0.123$). Hence, the successful implementation of ABC in the Tanzanian service sector was explained by 53.8% of the mediating effect of perceived usefulness on companies' competitiveness. The same applied to mediation effect by perceived ease of use which explained 70.1% of the success in implementing ABC in the Tanzanian service sector. The model failed to hold for normative beliefs where the p - value of 0.086 led to the failure to reject the null hypothesis which assumed no statistical significance of the mediation effect by normative beliefs.

The direct effect by business culture was 39.9% while the mediation effect by perceived usefulness was 53.8%, implying that there was an increase in impact by 13.9% imposed by the perceived usefulness on ABC implementation. The same applied to perceived ease of use, where the analytical results suggest that the mediation effect imposed more impact on ABC implementation by 30.2% than the direct effect by business culture.

Figure 2
Path Diagram



Source: SmartPLS Path Analytical Results



More importantly, the inferential statistics support that the mediation effect by the perceived usefulness on total causal effects by both competitiveness and business culture on ABC implementation was statistically significant. The synopsis of results that appear in the path diagram above indicates that the successful implementation of ABC was explained by 63.2% by the influences of perceived usefulness on both competitiveness and business culture. On the other hand, it is deduced from the inferential statistics with p -value of 0.005 and $\beta = 0.615$ that the mediation effect by perceived ease of use on total effect by both competitiveness and business culture was statistically significant. The path diagram below shows that the successful implementation of ABC was explained by 53.1% by the mediation effect of perceived ease of use on the total causal effect by both competitiveness and business culture.

By considering the total mediation effects by all the elements of behavioral preferences, it is evident from the path diagram below that the successful implementation of ABC was explained by 8.5% and 16.8% more than the direct effects by the competitiveness and business culture. While the total mediation effects by behavioral preferences were 50.7%, the direct effects by competitiveness and business culture were 42.2% and 33.9% respectively.

Discussion of the Findings

The findings above suggest that it was only the perceived usefulness and perceived ease of use that influenced the mediation effects on causal relationship between competitiveness, business culture and ABC implementation. This gives an impression that the management of companies that successfully implemented the ABC system in Tanzania had positive perceptions on businesses' prospects on profitability, setting of competitive prices, control of operational costs and enhanced effectiveness in managerial accounting. It was discovered that successful implementation needed the management to envision ABC as the useful tool for sound decision making. Furthermore, management's networks and work collaborations played a significant role in exposing them to situations where they learnt the benefits of ABC in business operations. Likewise, the perception that it was easy to operate ABC by copying the strategies from competitors contributed to the adoption of the system by service companies. The companies were also encouraged by the notion that ABC is more flexible to interact with. The idea that it was easy to get acquainted with ABC technicalities through learning drove them to adopt the system where they mastered the implementation skills through prolonged usage.

Furthermore, the companies had an understanding that it was fundamental to have experienced staff in management accounting as the prerequisite for successful implementation of the ABC system. The impact of staff experience and knowledge was achieved through staff development which is part and parcel of business culture. Innovativeness is another trait that the adopters perceived as an important driver towards successful implementation of ABC. It is evident from the findings that those companies with negative perceptions on the importance of innovativeness in business performance either did not adopt the system at all or failed to implement it successfully. Innovativeness is another component of business culture which was found to be one of the core values of companies that adopted the ABC system. The perceptions of focus on customers' satisfactions also played a great role in driving companies to successfully implement the ABC system. The focus on customers' satisfactions was measured in this study on service prices, quality service and customer care.

On the other, the findings failed to suggest that normative beliefs mediated the causal relationships between the competitiveness, business culture and ABC implementation. This means that the compliance on international standards and regulations for management



accounting had nothing to do with companies' competitiveness and core values. As a result, companies' competitive spirit, staff development and innovativeness were not influenced by the fact that they had to comply with the management accounting standards as far as ABC implementation is concerned.

Conclusion and Recommendations

Conclusion

From the findings, it is concluded that the perceptions on the usefulness of ABC system in business operations and the easiness to interact with contributed more to its successful implementation than just a mere possession of competitiveness trait. Likewise, the business culture alone of staff development, innovativeness and customer focus was not enough in enabling the service companies in Tanzania to successfully implement the ABC system but rather with the intervention of a positive mindset of management on system's usefulness and ease of use. The belief that the adherence to international standards on management accounting did not contribute to the influences of competitiveness traits and business culture on successful implementation of ABC by Tanzanian service companies.

Recommendations

Given the importance of ABC in cost management, profitability analysis and business decision making, it is recommended that the service companies should invest more in building the positive mindset of management on system usefulness. Cost benefit analysis suggests that ABC is the better costing system than the traditional costing in terms of accuracy in computing the cost object hence provided it is efficiently implemented (Shanmugam, 2022).

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