Institutional Isomorphism and Adoption of Activity-Based Costing in Tanzanian Manufacturing Sector

Godfrey Molela
https://orcid.org/0000-0002-4933-1527
The University of Dodoma
godfrey.molela@udom.ac.tz

Pendo Kasoga
https://orcid.org/0000-0001-6634-3020
The University of Dodoma
pendo.kasoga@udom.ac.tz

Ismail Juma Ismail
https://orcid.org/0000-0003-4649-2912
The University of Dodoma
ismail.ismail4@udom.ac.tz

Abstract

This study aimed to ascertain the correlation between the three forces of institutional isomorphism and the adoption of different levels of activity-based costing (ABC) by manufacturing companies in Tanzania. A cross-sectional survey design was executed to collect the primary data from the three research areas: Dar es Salaam, Arusha, and Dodoma regions. The study employed the multinomial logistic regression model (MLRM) to analyse the quantitative data from a sample of 188 manufacturing companies. The analytical results show that only normative pressures positively correlated with level 2 of ABC adoption, while mimetic and coercive pressures positively correlated with level 3. Level 4 of ABC adoption positively correlated with mimetic pressures, while level 5 was found to correlate with coercive pressures only positively.

Keywords: Institutional Isomorphism; Innovation Adoption; Activity-based Costing (ABC); Implementation Levels; Manufacturing Sector

General Background

ABC's role in the manufacturing sector's financial performance is paramount (Taherdoost and Brard, 2019). ABC is an innovation specifically conceived to replace traditional costing in assigning overhead costs and management decisions on operational costs (Gisario et al., 2019). Notwithstanding its importance, Tam and Tuan (2020) concluded that the adoption of ABC by manufacturing companies in developing countries was still very scant. The study referred to contingency factors as predictors of innovation adoption by specifically examining the impacts of organisational and cultural traits. Likewise, Askarany et al. (2012) examined the association between innovation attributes and ABC adoption. Based on the findings from those studies, it was evident that both contingency factors and innovation attributes showed diverse degrees of association with ABC adoption in the manufacturing sector. However, this list of factors was found not to be exhaustive in determining the predictors of ABC adoption (Amoako et al., 2021). Amoako et al. (2021) further suggested the importance of assessing the impact of institutional isomorphism in ascertaining the successful implementation of management accounting. Based on this discovery, this study contributed to the knowledge gap by assessing the correlation between the isomorphic pressures and ABC adoption in the Tanzanian context. It was not only about the study of the relationship between the variables that added new knowledge to the literature but also the assessment of the degree of associations between the mimetic, normative, coercive pressures and different levels of ABC implementation.

Literature Review

Theoretical Literature Review

This study was developed on the institutional isomorphism theory to explain the similarities among different organisations regarding either the structural dimension or operationalisation of their activities (DiMaggio and Powell, 1983). Three forces were identified to play roles in making the organisations similar in structure and operations, including the mimetic, normative and coercive pressures (Mustapha et al., 2017), which are briefly discussed below. Martínez-Ferrero and García-Sánchez (2016) asserted that mimetic pressure originates in organisations being forced to imitate or "mimic" the structure or operations of others with the prospect of gaining performance advantages accomplished by the latter. Normative isomorphism means organisations may become similar in structure and operationalisation based on professionalism requirements (Kezar and Bernstein-Sierra, 2019). Likewise, external pressures like customer demand, government policy, competition and the like could enhance the organisational similarities through the so-called coercive isomorphism (Anafinova, 2020). The postulates provided in the theory were based on explaining several cases regarding innovation adoption, as suggested by Xu et al. (2022).

Five levels of ABC adoption categorically reflect the five stages of ABC implementation in firms (Molela et al., 2023). The figure below summarises such levels adopted and modified by Hansen et al. (2022).

Figure 1: Levels of ABC Adoption

Stage 5: Cost Object Computation	**Level 5**
Stage 4: Cost Drivers Identification	**Level 4**
Stage 3: Cost Pools Creation	**Level 3**
Stage 2: Activities Identification and Resources Assignment to Activities	**Level 2**
Stage 1: Getting Acquainted with ABC System	**Level 1**

Activities

Source: Hansen et al. (2022).

Empirical Literature Review

One of the areas where studies were conducted to examine the effects of institutional isomorphism is management accounting, albeit with little attention to ABC adoption (Poll, 2022). The focus of the previous studies was on ascertaining the extent of impact which isomorphic pressures had on the financial performance of companies (Acquah et al., 2021). On the other hand, the empirical literature offered limited information on the contributions of isomorphic pressures to ABC adoption in the Tanzanian context and globally. According to Fito et al. (2018), mimetic pressures are external forces that drive companies to copy the business model or strategy of others. The researchers deduced evidence from previous studies that the forces played little role in influencing companies to adopt the ABC system. Based on institutional isomorphism theory and content analysis, Aillon et al. (2018) likewise supported the findings that mimetic pressures did not influence companies to adopt the ABC system. On the other hand, Alcouffe et al. (2019) reported different results about ABC adoption where the effect of mimetic pressures was found to be statistically significant in their case. This study, in particular, aimed at testing the alternative hypothesis below about mimetic pressures:

H1:   Mimetic Pressures positively correlated with ABC adoption in the manufacturing sector.

On the other hand, Poll (2022) drew a demarcation between the effect of mimetic pressures in developed and developing countries. The study attested that mimetic and normative pressures greatly impacted companies adopting ABC in developed countries, but the forces had little impact in developing countries. The weak institutions in developing countries could be why mimetic and normative pressures played little role in inducing accounting models among manufacturing companies. Generally speaking, mimetic and normative pressures played great roles in influencing manufacturing companies in developed countries to adopt management accounting practices (Hutaibat and Alhatabat, 2020). This study, in particular, aimed to test the alternative hypothesis below with regard to normative pressures:

H2:   Normative Pressures positively correlated with ABC adoption in the manufacturing sector.

While Nurdin et al. (2012) found only coercive pressure to have a significant impact on e-government adoption among the three forces of isomorphism, Mustapha et al. (2017) found all three isomorphic pressures had significant effects on Leon Six Sigma adoption, notwithstanding the disparities in disciplines. Anafinova (2020) came up with different findings in the study related to ranking in higher education, where only coercive and normative pressures were found to impact ranking. Other studies, including Sharma and Daniel (2016), reported a positive correlation between all three elements of isomorphism and enterprise resource planning adoption. Similar findings were reported by D'Andreamatteo et al. (2019) that all three elements of isomorphism impacted adopting lean thinking in healthcare. The question is, did the impacts of mimetic, normative and coercive pressures on innovation adoption differ in different fields? This study, in particular, aimed at testing the alternative hypothesis below with regard to coercive pressures:

H3:   Coercive pressures positively correlated with ABC adoption in the manufacturing sector.

Methodology

The study employed a cross-sectional survey design where primary data were collected using structured questionnaires from 188 manufacturing companies located in Dar es Salaam, Arusha and Dodoma regions in Tanzania. According to Tukamuhabwa et al. (2023), the cross-sectional survey design was recommended for data collection on studies exploring the effects of external forces on innovation applications. Maier et al. (2023) supported the idea by crediting the design of its usefulness in collecting large amounts of data from the widely dispersed population and in generalising the results.

Based on the research approach, which was quantitative, and the nature of the dependent variable, which was categorical with more than two options, the study used the multinomial logistic regression model (MLRM) in its data analysis. The prevalent condition that needs to be satisfied for interpreting the odds ratios in MLRM is the specification of reference category as a control group among different levels of outcome variables (Fagerland and Hosmer, 2017). The study expounded further on the three different models employed for reference category selection: (1) proportional odds, where the probabilities of equal or less value of levels are compared with such of higher value (2) adjacent-category model, where the probabilities of values of a certain level are compared with such of the next adjacent level and (3) constrained continuation model where the probabilities of values of a certain level are compared with values of all other levels with higher values. Considering the dominance of the "never adopted" level in frequency (90%) and the values of other levels in disposition, this study opted for the constrained continuation model. In this regard, the odds of treated levels 2, 3, 4 and 5 were assessed against the odds of controlled level 1 adoption.

Given Y = response variable, x = explanatory variable, c = levels of response with category j i.e (j = 1, 2, 3, 4, 5 (c-1)) then;

$$\text{Logit } \Pi = \text{Log}\left\{\frac{\text{P }(Y \leq j + 1 \mid x)}{\text{P }(Y > j \mid x)}\right\}$$

$$= \alpha_j + \beta'_x$$

The relationship between $\Pi(x)$ – Logit of success and x is as formulated in the logistic function below:

$$\Pi(x) = \frac{\exp(\alpha + \beta_x)}{1 + \exp(\alpha + \beta_x)}$$

With α_j being a y-intercept and β a regression coefficient, the $\text{Exp}(\beta_x)$ denoted the odds ratio (OR) for one unit increase in x_i. The overall goodness of fit was tested using the Hosmer and Lemeshow test, where the calculated p-value was compared with the standard value of a 5% significance level.

Table 1: Hosmer and Lemeshow Test for MLRM Model Fit

Test	Benchmark	Decision on Model Fit
Goodness of Fit (p- value)	≥ 0.05	Significantly Fits

Source: Nattino et al. (2020)

Results and Discussion

The descriptive statistics, as summarised in Table 2 below, show the cases at each level of ABC adoption in all three research areas. Dar es Salaam had the largest total number of companies with ABC adoption at least at each level, while Dodoma had the lowest number of adopters.

Table 2: Cases at Each Level of ABC Adoption

Location		ABC Adoption					Total
		Level 1	Level 2	Level 3	Level 4	Level 5	
ARUSHA	Count	13	10	5	4	0	32
	Percentage (%)	40.6%	31.3%	15.6%	12.5%	0.0%	100.0%
DAR ES SALAAM	Count	63	35	25	7	2	132
	Percentage (%)	47.7%	26.5%	18.9%	5.3%	1.5%	100.0%
DODOMA	Count	14	7	3	0	0	24
	Percentage (%)	58.3%	29.2%	12.5%	0.0%	0.0%	100.0%
TOTAL	Count	90	52	33	11	2	188
	Percentage (%)	47.9%	27.7%	17.6%	5.9%	1.1%	100.0%

Source: Cross Tabulation Results

Moreover, table 3 summarises the results from analytical statistics, where the isomorphic pressures were found to have diverse significant contributions to all levels of ABC adoption by the manufacturing companies.

Table 3: Direct Effects of Isomorphic Pressures (n = 188)

ABC Adoption[a]	Coefficient (β)	df	P- value	Odds Ratio (OR)	95% CI for OR Lower, Upper Bound
Composite Effect					
Level 2	0.299	1	0.017	1.349	0.839, 2.170
Level 3	0.079	1	<0.001	1.082	0.587, 1.997
Level 4	-0.714	1	0.172	0.489	0.176, 1.365
Level 5	-2.183	1	0.455	0.113	0.000, 34.788
Mimetic Pressures Effect					
Level 2	-0.071	1	0.898	0.932	0.315, 2.754
Level 3	0.104	1	0.009	1.110	0.219, 5.617
Level 4	2.368	1	0.015	10.681	0.322, 354.223
Level 5	-3.148	1	1.000	0.043	0.000, .[b]
Normative Pressures Effect					
Level 2	0.420	1	0.020	1.522	0.710, 3.263
Level 3	-0.611	1	0.135	0.543	0.244, 1.208
Level 4	-0.718	1	0.335	0.488	0.113, 2.098
Level 5	-4.200	1	0.999	0.015	0.000, .[b]
Coercive Pressures Effect					
Level 2	-0.257	1	0.731	0.774	0.179, 3.336
Level 3	0.065	1	0.004	1.067	0.120, 9.518
Level 4	-0.808	1	0.624	0.446	0.018, 11.239
Level 5	21.675	1	0.007	2.590	0.000, .[b]

Source: MLRM Results

Where;

"*a*" stands for relative risk ratio

"*b*" stands for 95% CI for the relative risk ratio defined by "a"

"*df*" stands for the degree of freedom

Adoption of Level 1

Level 1 has been treated as the reference point to compare the odds of contributions in adopting the higher levels. Level 1 ABC was all about the "getting prepared' level, where companies had not yet started implementing any stage of the ABC system but rather were creating a conducive environment for adoption. At this level, companies used to find clues about the appropriate cost accounting system by learning their pros and cons. Acquaintance with the fundamentals of ABC was essential in determining the next move that the companies needed to take.

Adoption of Level 2

The analytical results suggest that only the normative pressures (p= 0.020, β= 0.420) positively correlated with level 2 of ABC implementation. The odds of the contribution of normative pressures to level 2 adoption were 52.2% higher than that of contribution to adopt level 1 while holding other levels (3,4,5) constant. This finding disagreed with the study by Poll (2022), which maintained that the effect of normative pressures applied only in developed countries. Considering the composite effect of all factors together, it was the effect of normative pressures that diluted the effects by mimetic pressures (*p*= 0.898, *β*= **-**0.071) and coercive pressures (*p*= 0.731, *β*= **-**0.257). In an actual sense, the cost accounting professionalism, advice from consultants and auditors, and adherence to accounting practices and experiences played great roles in explaining level 2 of ABC adoption. It was at level 2 that companies were considered to have started implementing the ABC system by undertaking the initial task of identifying the activities. Contrary to the traditional cost accounting system, which deals with allocating costs to departments, it is level 2 that made ABC differ from the traditional system by dealing with activities instead. The proper demarcation of activities at this level guarantees the reliable cost object at the end of the process since overlapping activities would make it difficult to apply the appropriate cost drivers at level 4.

Adoption of Level 3

From Table 3 above, the findings show that both mimetic pressures (p= 0.104, β= 0.009) and coercive pressures (p= 0.065, β= 0.004) positively correlated with level 3 of ABC adoption. The effect of normative pressures was statistically insignificant since its p-value of 0.135 was greater than 0.05, and its coefficient (*β*= -0.611) was negative. Nevertheless, the effect of normative pressures was diluted by the effects of mimetic and coercive pressures at the composite level (*p*< 0.001, *β*= 0.079). The odds of contributions by mimetic and coercive pressures to level 3 ABC adoption were greater by 11% and 6.7%, respectively than the odds of contributions to level 1 ABC adoption while holding other levels (2,4,5) constant. At this level, in particular, the findings were consistent with the report by Alcouffe et al. (2019) but disagreed with Aillon et al. (2018). In an actual sense, copying the accounting practices of competitors and employing the strategies to meet the customers' and suppliers' demands explained the companies' move to level 3 of ABC implementation. The major activity undertaken by companies at level 3 of ABC adoption was accumulating the related activity costs into cost pools. The activity is next to identifying separate activities, which was the prime onus by the companies at level 2 of adoption. It is important to have cost pools with closely related activities to simplify identifying the appropriate cost drivers for such pools.

Adoption of Level 4

The companies that adopted level 4 of ABC were found to have been driven by mimetic pressures (*p*= 0.015, *β*= 2.368) only. Even though the contribution by mimetic pressures was statistically significant, its odds were less by 6.8% than the odds of

contribution to level 1 of ABC adoption while holding other levels (2,3,5) constant. On the other hand, the effects of normative pressures (p= 0.335, $\boldsymbol{\beta}$= -0.718) and coercive pressures (p= 0.624, $\boldsymbol{\beta}$= -0.808) were found to be statistically insignificant. In aggregate, the effect of mimetic pressures was diluted by the effects of normative and coercive pressures to cause the composite effect (p= 0.172, $\boldsymbol{\beta}$= -0.714) to be statistically insignificant. Companies were considered to be at level 4 of ABC adoption only when they undertook the activity of cost driver identification on top of the activities encompassed in levels 1, 2 and 3. The main difference between the traditional and ABC systems when referring to level 4 was the number of cost drivers to be applied to cost pools. ABC tends to have more cost drivers than the traditional cost accounting system.

Adoption of Level 5

At this level, the costs of manufactured products are determined for business decisions by the management. The inferential statistics confirmed the effect of coercive pressures (p= 0.007, $\boldsymbol{\beta}$= 21.675) only as the driver to adopt the highest level of ABC implementation. The odds of contribution by coercive pressures were greater by 159% than the odds of contribution to level 1 of ABC adoption while holding other levels (2,3,4) constant. In an actual sense, the responses to regulatory authorities, customers, suppliers and competitors played great roles in explaining the companies' reach to level 5 of ABC adoption, which is the highest of all. The results are consistent with the findings by D'Andreamatteo et al. (2019) and Anafinova (2020) that coercive pressures played a significant role in innovation adoption in general. On the other hand, the effects of mimetic pressures (p= 1.000, β= -3.148) and normative pressures (p= 0.999, β= -4.200) were statistically insignificant as their *p-values* were greater than 0.05. The cumulative effects of both mimetic and normative pressures diluted the effect of coercive pressures to have the composite effect (p= 0.455, β= -2.183) by all three forces insignificant.

Conclusion and Recommendations

It is evident from the findings that adhering to the management accounting profession contributed to level 2 ABC adoption, where 27.7% of manufacturing companies in Tanzania initiated a move to start implementing the system. At this stage, companies identify the activities and subsequently create the activity costs. 17.6% of the companies that progressed to level 3 of ABC adoption were explained by mimicking their rivals' cost structures and operations. In addition to activities performed at levels 1 and 2, companies at level 3 tend to identify and accumulate similar activity costs to create cost pools. The same forces identified at level 3 were also found to apply at level 4, where 5.9% of companies identified the cost drivers. Moreover, pressures from customers, suppliers, competitors, government boards, auditors and consultants contributed not only to the companies' adoption of level 3 but also played a sole role in explaining the companies' move to the highest fifth level of the ABC system. It is at level 5, where only 1.1% of manufacturing companies in Tanzania were found to implement the ABC system in its entirety.

Following the importance of ABC in improving financial performance, ensuring accurate allocation of overheads, and appropriate price setting compared to traditional costing systems, we recommend that manufacturing companies in Tanzania adopt the system. Several ways through which the companies could switch from the traditional to the ABC system have been suggested in the study's findings. Companies ' management should invest in knowledge, among other factors, that act as the driving force to adopt the ABC system in Tanzania. Through this study, it became apparent that knowledge alone did not have a significant statistical correlation with the system adoption but rather a combination of factors. Knowledge could be acquired through seminars, training and exchange visits involving the adopters. We also recommend that the management have the entrepreneurial mindset of mimicking good practices from their competitors. However, mimetic pressures should be mixed with other related pressures to have a stronger correlation with the system adoption. Such other pressures include normative and coercive pressures that compose the isomorphic pressures. Management should also learn the reactions of customers and suppliers to the prices of the products.

Future studies should explore more the relationships and influences of isomorphic pressures while considering the mediating effects of the innovation implementation factors. Previous studies mentioned such implementation factors as technical, environmental and behavioural preferences. Considering the contributions of small and medium enterprises (SMEs) and the agricultural sector to developing economies, it is recommended that future studies explore ways to encourage SMEs and agribusinesses to adopt the ABC system.

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