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The Determinants of Firm's Competitiveness in the Textile and Apparel Industry in Tanzania

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Abstract
This study explores the determinants of firm's competitiveness in the Textile and Apparel Industry in Tanzania. Data were collected from 204 respondents through cross-section survey design and non-probability sampling method from three regions; namely, Dar es salaam, Mwanza and Arusha. The Maximum Likelihood technique was used to estimate the Structural Equation Modelling (SEM) in order to compute the fit indices of both measurement and structural models. In doing so, Factor Analysis was used in the preliminary step before estimating SEM in order to filter out key variables that need to be embedded in gauging competitiveness of the textiles and apparel industry. Thereafter, the principle component analysis (PCA) was used to extract the relevant constructs in the SEM. The estimated results show that value chain management, core competencies, competition, availability of alternative products and barriers to entry are statistically significant constructs in explaining the competitiveness of firms operating in the textile and apparel industry in Tanzania.
Keywords: Firms, Competitiveness, Textile and Apparel Industry, Maximum Likelihood, Structural Equation modeling, Factor Analysis, Tanzania

1.1 Introduction

The competitiveness of firms operating in the textile and apparel industry in Tanzania over the last three decades has not been impressive, largely attributed to the effects of trade liberalization coupled with the advent of globalization, ESRF, (1998), Wangwe *et al*, (2014). However, the existing literature shows that there are diverse and nuanced arguments on the effects of trade liberalization cum globalization on the performance of firms. On the one hand, it is argued that trade liberalization combined with globalization is a catalyst for improved performance of firms because it embraces technology upgrading, foster competition, and enhances best practices in management style. On the other hand, it is argued that the combined effects of trade liberalization and globalization on performance of firms hinge primarily on the underlying factors which bolster competitive advantages, Porter (1990).

In the recent past, a growing body of research on competitive of advantages surrounding firms has increasingly been a subject of rigorous empirical inquiry (Sultan, 2007, Anjana, 2008, Doud *et al*, 2011, Sabah *et al*, 2012, Solmaz, *et al*, 2014). But much of these studies have largely been carried in other countries and therefore relatively little is known about Tanzania's firms operating in the apparel and textile industry (Mboya and Kazungu, 2015). The paucity of research in this important strand of literature in Tanzania is particularly baffling given the fact that most of the firms in the apparel and textile industry have had to shut down over the past three decades due the effect of trade liberalization (ESRF, 1998) coupled with the effect of globalization that the country has witnessed so far.

Indeed, a recent report summarized in Investment Guide to the Textile and Garment Sub-sector (URT, 2014) show succinctly that despite comparative international advantages that Tanzania enjoys on important factor costs, such electricity and labour, the existing weaving sector under current operating conditions does not have a product cost structure which would allow existing producers to compete internationally. This situation arises from the myriad of factors, including but not limited to: power disruptions; age, speed and condition of existing machinery; quality of locally produced yarns, weaving efficiency; and the high cost of finance (URT, 2011).

It is worth underscoring a caveat before going further. That is, this study is not concerned with effects of trade liberalization cum globalization on the performance of firms. Rather, it seeks to explore the determinants of competitiveness of Textile and Apparel industry in Tanzania. The theoretical underpinning of this work stem from the fact that the firm should find the best combination of a *fit* that encompass activities that gear the firm to attain competitive advantage compared to rivals (Porter, 2007). Motivated by this conventional wisdom, this study seeks to examine whether the key determinants of industry structure using Porter Five Forces, value chain management and core competencies are statistically significant constructs in determining firm's competitive advantage; and more so, this study asks whether these constructs are interrelated in the Textile and Apparel industry in Tanzania.

This study contributes to the existing body of knowledge by exploiting data set from 204 apparel and textile firms in Tanzania. In doing so, the study uses Maximum Likelihood technique to estimate the Structural Equation Modelling (SEM) in order to compute the fit indices of both measurement and structural models of the firms working in the apparel and textile industry in Tanzania. Thereafter, Factor Analysis was used as a preliminary step before estimating SEM in order to filter out key variables that need to be considered in measuring competitiveness of the textiles and apparel industry. Subsequently, the principle component analysis (PCA) was then used to extract the relevant constructs to be embedded in the SEM. The estimated results reveal that value Chain management, core competencies, Competition, availability of alternative products and barriers to entry are statistically significant variables in explaining the competitive advantages of textile and apparel industry in Tanzania.

The remainder of this study is organized as follows. The next section reviews the literature on firm's competitiveness. Section 3 spells out the methodology. While section 4 deals with model estimation and interpretation of results, section 5 gives concluding remarks.

1.2 Literature Review

Porter (1980, 1990) defines competitiveness as the ability of a given firm to successfully compete in a given business environment. Porter's theoretical framework is frequently used as a benchmark to assess the underlying competitive advantages and environment surrounding the firm (Porter, 1990; Michael *et al* (2002); Porter (2006); Christopher and Ludwig, (2008); Orges and Omer (2008); Ogolla *et al*, (2009). In short, Porter's theoretical framework is divided into five forces, namely; threat of new entrants, bargaining power of suppliers, bargaining power of buyers, threat of substitute products or services, and rivalry among existing competitors.

The *threat to new entrants* generally include economies of scale, market growth, customer switching costs, diversity of rivals, product differentiation, capital investments and unequal access to distribution channels (Anthony *et al* 1999; Porter, 1990; Christopher and Ludwig, 2008). *The threat of substitute products* refers to the degree to which other products are identical in physical, structural and functional characteristics (Anthony *et al* 1999). The presence of the threat forces firms to offer superior qualities in order to avoid loss of market share and remain in business (Shanna *et al* 2005), restrict a firm's ability to raise prices and thus limit profitability (Christopher and Ludwig, 2008).

The *bargaining power of buyers* occurs when leverage is given to buyers who demand lower prices, higher qualities and services (Shanna *et al,* 2005, Porter, 1990; Enida and Vasilika, 2014); it also refers to the extent to which buyers are able to exert influence, and this affects the firms' profitability and general corporate well-being (Anthony *et al,* 1999). The bargaining power of suppliers is a mirror image of the bargaining power of buyers, and refers to the extent suppliers are able to exert influence and affect firm profitability and general wellbeing.

Broadly speaking, firms need to understand the underlying industry structure so that they are able to adopt relevant generic strategies in order to survive and remain competitive in the industry (Porter, 1980; Enida and Vasilika (2014). The generic strategies are: cost leadership, differentiation and focus. As far as costs reduction strategies are concerned, a firm is envisaged to manage the entire value chain in order to deliver the products (or services) at lower costs. The firm does this through adopting cost-reduction measures: efficient production, optimal scale utilization, improved services, efficient sales force, selective advertising, and so on (Porter, 1980).

Equally, firms need to adopt differentiation strategies through using innovative product features and standards that differentiate its products from rivals. Indeed, the firms need to embrace focus strategies to service a particular segment of the industry in an efficient means, Melih, (2012). The firms that are not able to implement one of these strategies are referred to as 'being struck in the middle", and have no chance to sustain profitability, Melih, (2012), Porter, (2006). The cost reduction and differentiation strategies are made possible through efficient management of firm's value chain, which are divided into two groups; primary and support activities. The primary activities are made up of inbound logistics, operations, outbound logistics, marketing and sales, and after sale services. The supporting activities are firm infrastructure, human resources management, technology development and procurement, Porter, (2008), Pinar and Trapp, (2008).

On empirical front, there is a considerable interest among researchers in studying the determinants of firms' competitiveness. Sultan (2007) discusses how Small and Medium Sized Enterprises (SMEs) working in processing the natural stone sector in Jordan located in the factor-driven stage can move to the innovation-driven stage. The analysis of data shows that there are significant differences in all of the competitive factors confronting the SMEs working in the natural stone sector between Jordan, Turkey and Italy. The Kruskal-Wallis test showed that the individual relationship preferences are not the reasons for pushing the SMEs in Jordan to work individually or in partnership rather than in companies.

Anjana (2008) present the empirical findings on the relationship between Core Competence, Competitive advantage, and Competitiveness in India. The core competence has been measured on two

dimensions, i.e., competence at the level of people, and competence at the level of technology. For competitive advantage, differentiation, cost and time are considered as the surrogate measures. Competitiveness for corporate success is measured on the fronts of profitability and growth. The major findings reveal that 'competence at the level of technology' leads to the generation of sustainable competitive advantage and profitability, while as 'differentiation' and 'time' advantage helps in achieving corporate success in terms of growth.

Daoud *et al* (2011) examined the impact of core competencies on competitive advantages and success in Istanbul tourist companies and how to sustain the success of these companies. Data were collected from 150 successful tourist companies in Istanbul using a survey. Spearman correlation and multiple regressions were used to test the hypothesis. The empirical findings indicated that there is a significant relationship between core competencies, competitive advantages and company success. The core competence types with high impact were Strategic Focus and key staff skill, knowledge management systems, company facilities and infrastructure, dynamic capabilities and key work processes, and unique resources respectively.

Sabah, *et al* (2012) investigated the relationship between core competence, competitive advantage and organizational performance of Paint Industry in the United Arab Emirates. Core competence was measured through three dimensions: shared vision, cooperation and empowerment. Competitive advantage was also measured through flexibility and responsiveness. The survey was administered electronically to a total of 77 managers. The empirical findings indicated that, while core competence has a strong and positive impact on competitive advantage and organizational performance, competitive advantage has also significant impact on organizational performance. It was also found that flexibility has higher impact on organizational performance than responsiveness.

Solmaz *et al* (2014) used focus groups and survey data to explore determinants of competitiveness in the booming textile and apparel industry of Turkey. The explanatory factor analysis was used whereby 27 competitive items identified in this study were grouped into eight constructs. The empirical results revealed that the competitiveness of textile and apparel firm is heavily determined by product differentiation, efforts across foreign markets, and availability of government incentives. In contrast to existing studies, this study found little evidence that networking in different forms, such as close relationship to politicians and state employees, clustering, and participating in the industry associations, have a major impact on a firm competitiveness.

Although all these studies provide useful insights on competitive frameworks for firm performance, the major conclusion is that they are not comprehensive and fall short of linking the external and internal forces of firm performance, and thereby failing to provide corporate managers with a robust model of application. Our study helps to contribute on the erstwhile studies by examining the inter-linkages between the external and internal dimensions of competitiveness of the firms.

1.3 Methodology

1.3.1 The Model and Hypotheses.

The study uses structural equation modelling also referred to as covariance structure modelling method. The conceptual model[1] used in this study consists of the following constructs: Competitive Forces (CF), Core Competency (CCOM), and Enterprise value chain management (EM). This study tests five hypotheses that represent CF, one hypothesis that represents CCOM, one hypothesis that represents EM and one hypothesis that aims at finding out whether CF, CCOM and EM are structurally related. Consequently, the following null hypotheses are tested:

(a) Rivalry among competitors is not a statistically significant construct in determining the competitive advantage;
(b) Bargaining power of suppliers is not a statistically significant construct in determining the competitive advantage;
(c) Bargaining power of buyers is not a statistically significant construct in determining the competitive advantage
(d) Threat of new entrants is not a statistically significant construct in determining the competitive advantage;
(e) Alternative Products is not a statistically significant construct in determining competitive advantage.
(f) The core competency is not a statistically significant construct in determining the competitive advantage;
(g) Enterprise value chain management practices are not statistically significant in determining the competitive advantage; and
(h) Porter's Five Forces, Value management practices and Core Competency constructs are positively related.

[1] The conceptual model is presented in Appendix 2, and the results are presented in Appendix 3.

The last hypothesis aims at establishing linkages among all hypotheses: hypothesis (a)-(e) cover the constructs which represents Porter's Five Forces; hypothesis (f) is on Core Competency and (g) is about value chain management practices. Hypothesis (h) seeks to find out whether CF, CCOM and EM are structurally related.

1.3.2 Data Collection and Estimation Technique

The data were collected from 204 respondents working in the textiles and apparel firms in Dar es Salaam, Mwanza and Arusha regions. The cross-section survey design and non-probability sampling method were employed to collect data. The Maximum Likelihood estimation method is used to find out whether the parameters of the conceptual model that involves the CF, EM and CCOM; produces a population covariance matrix which is similar to the sample covariance matrix.

The estimation process is described as follows. Firstly, we assessed the reliability of the survey instrument in order to check whether the scale reflects the constructs it is intended to measure; and in this case, the crobach's alpha (α), a measure of scale reliability was used. Secondly, we proceeded with exploration of the key dimensions of competitiveness variables using Exploratory Factor Analysis (EFA) in order to discover the key factors that account for the largest variation in the data. The analysis of variance (ANOVA) was used as a complementary tool to test the explanatory power of the resulting variables from EFA. We then proceeded to the Structural Equation Modelling and Maximum Likelihood estimation function was used for this purpose to compute the fit indices of both measurement and structural models.[1]

It is worth mentioning that before estimating the SEM, it is imperative to assess whether the measurement model for each construct is identified. In doing so, we assessed the *order condition*; in which the number of free parameters to be estimated must be less than the number of distinct values in the sample-covariance matrix.[2] To meet the order condition, the number of free parameters to be estimated must be equal to or less than the distinct values in the matrix, S.

1.4 Data Analysis and Interpretation of the Results.

1.4.1 Descriptive statistics

The skewness and kurtosis presented in Table 1 confirm that the variables are normally distributed; the Skewness and Kurtosis of normally distributed variables should do not exceed the value of 2 and 7 respectively and this together shows that normality assumption is met (Nguyen, 2010; Mboya and Kazungu, 2015). Further, as observed in Table 1, there is marginal difference in mean and median indicating little or insignificant effect of extreme values. The standard deviation of all the variables suggests that there is a least spread around the mean.
The reliability analysis shows that, with an exception of bargaining power of suppliers, all constructs had excellent average internal consistency of 0.8 indicating that the constructs are the good measures of competitive advantage (Appendix 1). In addition, all variables that are used to measure had excellent internal consistency.

Table 1: Descriptive Analysis of the Variables

	Variables	Mean	Standard Deviation	Skewness	Std. Error	Kurtosis
A1	Capital requirements	1.671	0.806	2.111	0.201	6.592
A2	Access to distribution channels	2.164	0.724	0.954	0.201	1.887
A3	Access to raw materials	2.158	0.922	0.696	0.201	-0.211
A4	Access to specialized technologies	1.863	0.671	1.000	0.201	3.334
A5	Access to favourable locations	2.185	0.887	0.891	0.201	0.771
A6	Government regulation policy	2.151	0.957	0.939	0.201	0.431
A7	High operating costs	1.877	0.886	0.969	0.201	0.405
A8	High costs of establishing the business	1.904	0.746	0.764	0.201	0.815
A9	Price competition has been vigorous	1.932	0.907	1.317	0.201	2.023
A10	Rivals' efforts to improve quality	2.103	0.885	1.070	0.201	1.214
A11	Rivals' efforts to offer better custom service	2.207	0.904	0.720	0.201	0.647
A12	Lots of advertising/sales promotion	2.486	1.097	0.592	0.201	-0.322
A13	Active product innovation	2.322	1.043	0.835	0.201	0.033
A14	The rate of industry's growth	2.226	0.908	0.936	0.201	0.864
A15	High fixed and operating costs to set-up the industry	2.014	0.902	1.116	0.201	1.535
A16	There are few buyers	2.562	1.215	0.217	0.201	-1.387
A17	Buyers don't purchase in large volume	2.363	1.009	0.646	0.201	-0.284

[1] AMOSI-21 was used to estimate the Maximum Likelihood function.
[2] The sample-covariance matrix in this study is denoted *S* and is given by the following formula: DV = p (p+1)/2; where p is the number of variables in the sample-covariance matrix and DV is the distinct values in the sample covariance matrix, which need to be compared with the free parameters to be estimated

A18	One buyers' purchase volume represent significant sales revenue	2.514	0.963	0.313	0.201	-0.959
A19	Buyers face switching costs	2.459	0.911	0.512	0.201	-0.189
A21	Buyers have good information about the industry	2.185	0.822	1.078	0.201	1.583
A22	Textile and apparel products represent significant fraction of buyers costs	2.432	0.924	0.523	0.201	0.267
A23	Firms can buy the inputs whenever they want	2.455	0.882	0.569	0.201	-0.002
A24	The producers are many compared to the available customers	1.938	0.970	0.906	0.201	0.111
A25	There are few substitutes for production inputs	2.685	1.155	0.342	0.201	-1.100
A26	Firms make specific investments to support transactions with specific input suppliers	2.205	0.846	0.701	0.201	0.098
A27	There are costs of changing suppliers	2.267	0.773	0.952	0.201	1.615
A28	Availability of substitute products	2.178	0.945	1.328	0.201	2.095
A29	Low prices of second-hand clothes	1.555	0.925	2.170	0.201	4.999
A30	Lack of barriers	1.473	0.745	1.721	0.201	3.342
A31	Durability of imported clothes	1.623	0.789	1.464	0.201	2.613
A32	Buyers preferences to buy	1.760	0.865	1.199	0.201	1.314
A33	Purchasing power of buyers	2.007	0.898	1.144	0.201	1.637
A34	Ability to develop culture that attract key staff	2.062	1.005	1.239	0.201	1.273
A35	Ability to hire staff whose personality fits the company	1.678	0.742	1.112	0.201	1.378
A36	Ability to acquire key qualifications suitable for the work	1.822	0.811	0.967	0.201	0.763
A37	Ability to consider partner's skills in activities	1.836	0.788	0.901	0.201	0.753
A38	Ability to acquire new technologies	1.849	0.817	1.056	0.201	1.468
A39	Effective strategic leadership that is able to cope with the technological challenges	1.568	0.733	1.200	0.201	1.066
A40	Adequate strategies for capacity building (investment in human capital)	1.712	0.886	1.203	0.201	0.737
A41	Enhancing modern organizational culture	1.925	0.848	0.972	0.201	0.710
A42	Inbound logistics	1.801	0.711	1.126	0.201	3.004
A43	Ability to manage operations activities	2.582	1.106	0.300	0.201	-0.752
A44	Ability to manage outbound logistics	2.658	1.013	0.086	0.201	-0.739
A45	Ability to manage marketing and sales logistics	2.788	1.065	0.088	0.201	-0.676
A46	Ability to manage firm infrastructure	2.493	1.072	0.274	0.201	-0.580
A47	Ability to manage human resources	2.510	1.106	0.254	0.201	-0.758
A48	Ability to manage technology development	2.288	0.975	0.479	0.201	0.428
A49	Use of research and development	2.336	0.956	0.240	0.201	-0.644
A50	Ability to manage procurement process	2.144	0.954	0.480	0.201	-0.458

1.4.2 Results from Factor Analysis

The initial step in factor analysis entails conducting Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy in order to assess the adequacy of the sample. Table 2 shows that the KMO value is 0.813, suggesting that our sample is plausible enough to be used for factor analysis. Andy, (2005) asserts that the value of KMO above 0.5 is acceptable in performing factor analysis while the value below 0.5 is not acceptable.

The next step in the Factor Analysis involves an assessment of whether Factor Analysis can be employed to test the model. The null hypotheses in this case states that factor analysis cannot be used to analyze the competitiveness variables at 5 percent significance level. We can safely reject the null hypothesis if the p-value is less than the significance level, otherwise we cannot reject. Table 2 reveals that the p-value 0.00 is less than significance value 0.05; therefore, we confidently reject the null hypothesis and proceed with the Factor Analysis.

Table 2: Kaiser-Meyer-Olkin Measure (KMO) of Sampling Adequacy

KMO	Bartlett's Test of Sphericity		
	Approx. Chi-Square	Degree of Freedoms	Significance
0.813	6.037E3	1225	0.000

1.4.3 Factor Extraction and Rotation

The factor extraction was done taking into account the Eigen values of greater than 1 as a threshold; Eigen values greater than 1 are retained because they represent a substantial variation accounted for by the factor. In this study, the initial 50 variables shown in table 4 were grouped into 6 components which accounts for 53% of total variation as shown in Table 3**.** Interestingly, 6 out of 7 factors which were considered in our model, namely: enterprise value chain management practices, core competency, competition, alternative products, barriers to entry and bargaining power of buyers were accepted in Factor Analysis but the bargaining power of suppliers as an important variable was dropped. Then, we proceeded to rotate the component matrix by using Varimax with Kaiser Normalization in order to simplify interpretation with a view to achieving the desired pattern structure (Andy, 2005). The results from rotated matrix are presented in Table 4.

Table 3: Total Variance Explained

	Initial Eigenvalues			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	11.074	22.148	22.148	5.936	11.873	11.873
2	5.452	10.905	33.053	4.717	9.433	21.306
3	3.519	7.038	40.091	4.512	9.024	30.330
4	2.812	5.624	45.716	4.322	8.643	38.974
5	2.640	5.279	50.995	3.562	7.124	46.097
6	2.023	4.047	55.042	3.456	6.912	53.009

Extraction Method: Principal Component Analysis.

Table 4: The Rotated Component Matrix

		Components					
	Variables	**1**	**2**	**3**	**4**	**5**	**6**
A1	Capital requirements						
A2	Access to distribution channels						
A3	Access to raw materials					0.521	
A4	Access to specialized technologies						
A5	Access to favourable locations						
A6	Government regulation policy					0.513	
A7	High operating costs					0.622	
A8	High costs of establishing the business					0.648	
A9	Price competition has been vigorous						
A10	Rivals' efforts to improve quality			0.555			
A11	Rivals' efforts to offer better custom service			0.763			
A12	Lots of advertising/sales promotion			0.748			
A13	Active product innovation			0.615			
A14	The rate of industry's growth			0.702			
A15	High fixed and operating costs to set-up the industry						
A16	There are few buyers						0.633
A17	Buyers don’t purchase in large volume						0.571
A18	One buyers’ purchase volume represent significant sales revenue						0.687
A19	Buyers face switching costs						0.507
A21	Buyers have good information about the industry						
A22	Textile and apparel products represent significant fraction of buyers costs						
A23	Firms can buy the inputs whenever they want						
A24	The producers are many compared to the available customers						0.509
A25	There are few substitutes for production inputs						
A26	Firms make specific investments to support transactions with specific input suppliers						
A27	There are costs of changing suppliers						

A28	Availability of substitute products				0.745		
A29	Low prices of second-hand clothes				0.753		
A30	Lack of barriers				0.722		
A31	Durability of imported clothes				0.782		
A32	Buyers preferences to buy						
A33	Purchasing power of buyers						
A34	Ability to develop culture that attract key staff		0.637				
A35	Ability to hire staff whose personality fits the company		0.745				
A36	Ability to acquire key qualifications suitable for the work		0.684				
A37	Abilty to consider partner's skills in activities		0.742				
A38	Ability to acquire new technologies		0.666				
A39	Effective strategic leadership that is able to cope with the technological challenges		0.761				
A40	Adequate strategies for capacity building (investment in human capital)		0.626				
A41	Enhancing modern organizational culture		0.62				
A42	Inbound logistics	0.759					
A43	Ability to manage operations activities	0.787					
A44	Ability to manage outbound logistics	0.731					
A45	Ability to manage marketing and sales logistics	0.783					
A46	Ability to manage firm infrastructure	0.72					
A47	Ability to manage human resources	0.765					
A48	Ability to manage technology development	0.785					
A49	Use of research and development	0.697					
A50	Ability to manage procurement process	0.733					

Note: (i) Extraction Method: Principal Component
(ii) Rotation Method: Varimax with Kaiser Normalization

1.4.4 Results from Factor Analysis

Based on Rotated Component Matrix shown in Table 4 above, factor equations were derived based on the loadings of the principal components. Consequently, the equation for factor one is summarized as follows:

$F_1 = 0.759A_{41} + 0.759A_{42} + 0.787A_{43} + 0.731A_{44} + 0.783A_{45} + 0.72A_{46} + 0.765\ A_{47} + 0.785\ A_{48} + 0.697\ A_{49} + 0.733\ A_{50}$ (1)

Factor One (i.e., equation 1) encompasses of modern organizational culture (A_{41}); ability to manage inbound logistics (A_{42}); ability to manage operations activities (A_{43}); ability to manage outbound logistics (A_{44}); ability to manage marketing and sales logistics (A_{45}); ability to manage firm infrastructure (A_{46}); ability to manage human resources (A_{47}); ability to manage technology development (A_{48}); use of research and development (A_{49}); and finally, ability to manage procurement process (A_{50}). This factor represents Value Chain Management.

The ANOVA statistics show that the percentage of variation in dependent variable explained by independent variables collectively accounts for 57 percent. The model fit results shows that F=28.84, DF=194, $p < 0.001$; indicating the significance level at 1 percent. Put it differently, the null hypothesis that the model has no explanatory power is rejected at 1 percent significance level. These results suggest that value chain management is an important construct towards enhancement of competitiveness of the firm.

Factor Two (see equation 2) comprises of ability to develop culture that attracts key staff (A_{34}); ability to hire staff whose personality fits the company (A_{35}); ability to acquire key qualifications suitable for the work (A_{36}); ability to consider partner's skills in activities (A_{37}); ability to acquire new technologies (A_{38}); effective strategic leadership that is able to cope with the technological challenges (A_{39}); adequate strategies for capacity building (A_{40}); and enhancing modern organizational culture (A_{41}). This Factor is named Core Competencies.

$F_2 = 0.637A_{34} + 0.745A_{35} + 0.684A_{36} + 0.742A_{37} + 0.666A_{38} + 0.761A_{39} + 0.626\ A_{40} + 0.62\ A_{41}$ (2)

Again, ANOVA Statistics of this construct shows that the percentage of variation in dependent variable as explained by independent variables collectively is 28 percent. The model fit results shows that F=11.257; Df=203, $p < 0.001$ and F-Change statistics are all significant. The null hypothesis that the model has no explanatory power is rejected at 1 percent significance level. Once again, these results suggest that Core Competencies is an important construct towards enhancement of competitiveness of the firm.

Factor Three (see equation 3) is made up of rivals' efforts to improve quality (A_{10}); rivals' efforts to offer better custom service (A_{11}); lots of advertising or sales promotion (A_{13}); active product innovation (A_{14});

and the rate of industry's growth (A_{15}); This factor represents *Competition.*

$F_3 = 0.555A_{10} + 0.763A_{11} + 0.748A_{12} + 0.615A_{13} + 0.702A_{14}$ (3)

The ANOVA Statistics show that the percentage variation in dependent variable explained by independent variables collectively is 28 percent. The model fit results shows that F=11.257, DF=203, $p < 0.001$ and F-Change statistics are significant. Again, the null hypothesis that the model has no explanatory power is rejected at 1 percent significance level. Again, these results suggest that Competition is an important construct towards enhancement of competitiveness of the firm.

Factor Four (see equation 4) is made up of availability of substitute products (A_{28}); low prices of second-hand clothes (A_{29}); lack of barriers (A_{30}), and durability of imported clothes (A_{31}). This factor represents *Alternative Products***.** The ANOVA Statistics shows that the percentage of variation in dependent variable explained by independent variables collectively is 33.5 percent. The model fit results shows that F=16.57, DF=197, $p < 0.001$ and F-Change statistics are significant. The null hypothesis that the model has no explanatory power is rejected at 1 percent significance level. Again, these results suggest that Alternative Products is an important construct towards enhancement of competitiveness of the firm.

$F_4 = 0.745A_{28} + 0.753A_{29} + 0.722A_{30} + 0.782A_{31}$ (4)

Factor five (see equation 5) is made up of access to raw materials (A_3); government regulation policy (A_6); high operating costs (A_7); and high cost of establishing business (A_8). This factor represents *Barriers to Entry*. As usual, the ANOVA Statistics shows that the percentage of variation in dependent variable explained by independent variables collectively is 41 percent.

$F_5 = 0.521A_3 + 0.513A_6 + 0.622A_7 + 0.648A_8$ (5)

The model fit results shows that F=34.95, DF=199, $p < 0.001$ and F-Change Statistics are significant. Therefore, the null hypothesis that the model has no explanatory power is rejected at 1 percent significance level. Again, these results suggests that Barriers to entry is an important construct towards enhancement of competitive advantages resulting from improved internal and external efficiency of the firm

Factor six (see equation 6) is made up few buyers (A_{16}); buyers don't purchase in large volume (A_{17}); one buyers' purchase volume represent significant sales revenue (A_{18}); buyers face switching costs (A_{19}) and buyers are many compared to the available customers (A_{24}). This factor represents *bargaining power of buyers.*

$F_6 = 0.633A_{16} + 0.571A_{17} + 0.687A_{18} + 0.507A_{19} + 0.509A_{24}$ (6)

The ANOVA Statistics shows the percentage of variation in dependent variable explained by independent variables collectively is 11 percent. The model fit results shows that F=4.995, Df=203, and $p < 0.001$. The F-Change Statistics are also significant. The null hypothesis that the model has no explanatory power is rejected at 1 percent significance level. Again, these results suggest that bargaining power of buyers is an important construct towards enhancement of competitiveness of the firm.

1.4.5 The Model Fit Indices

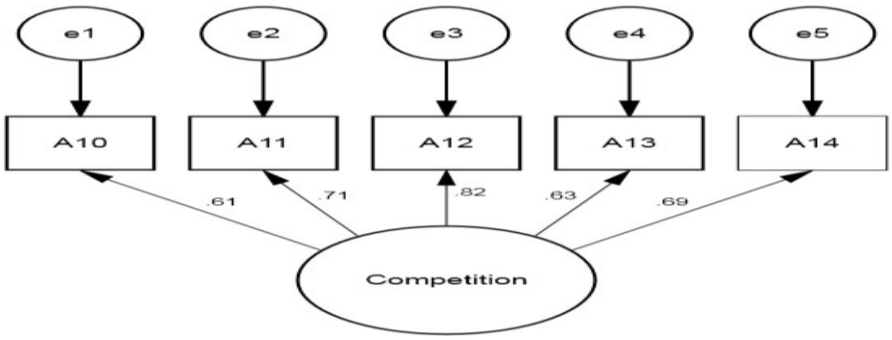
The exploratory factor results presented in the previous section were used to assess the extent to which the constructs reproduce the variance-covariance matrix among the indicator variables. Each construct was analyzed based on absolute fit indices and relative (incremental fit index). The Incremental Fit Indices are also known as comparative (Hooper, *et al* 2008; Miles and Shelvin, 2007) or relative fit indices (McDonald and Ho, 2002); and compares the fitness of the model under consideration to the baseline model (Edward and Joost, 2012). Examples of these are the Normed Fit Index (NFI) and Comparative Fit Index (CFI). On the other hand, Absolute Fit indices determine how well the model reasonably fits the sample data and determines which model has the superior fit (Hooper, *et al* 2008); and provides the overall assessment of how the proposed theory fits the data well. Examples are the Chi-Square Test and Root Mean Square Error of Approximation (RMSEA), Goodness of Fit Statistics (GFI).

A rule of thumb requires that the *p*-value should be greater than 0.05 for a good model fit. Indeed, the Root Mean Square Error of Approximation (RMSEA) Value must be close to 0 for a good fit. Throughout this study, the relationship between the latent constructs (i.e., independent variables) and indicators (A_1, A_2,…, A_n) denotes that the latent constructs drive the dependent variables, or put it differently, the constructs predicts the measured variables, Ullman, (2006). The numbers attached in each row are the correlation coefficients between the constructs and the indicators: the positive (or negative) signs indicate positive (negative) correlation between the latent constructs and the indicators, or among the error terms. The following sub-section present SEM results.

1.4.5.1 Rivalry (Competition)

The order condition showed that the number of free parameters to be estimated is 10; less than the number of distinct values (i.e., 15) in the matrix S. Since the degree of freedom is 5, this suggests that the measurement model has met the identification condition. The CFA results for competition presented in figure 1 show that the model fit indices has satisfied the fitness conditions. The CMIN/df=1.799, the p-value=0.90 is greater than 0.05 which satisfies the non-significance condition for a good fit. Also note that the CFI value is 0.982, the GFI value is 0.977; all of which provide an excellent model fit. The RMSEA value, the measure of badness of fit, is 0.077. The loadings of the items ranged from 0.61and 0.82 which provides satisfactory loadings. Therefore, the

construct validity has passed all tests, suggesting that the model is reliable.

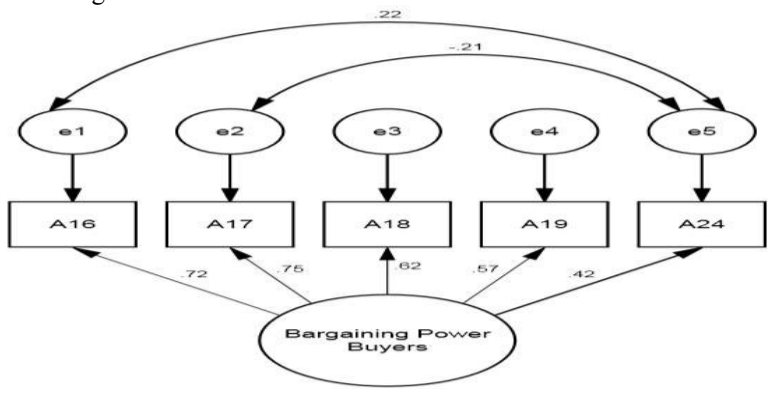


CMIN/df=1.799; p-Value=0.90; CFI=0.982; GFI=0.977; RMSEA=0.077

Figure 1: CFA Results for Competition

1.4.5.2 Bargaining Power of Buyers

The order condition shows that the number of free parameters to be estimated is 12; less than the number of distinct values (i.e., 15) in the matrix S. This implies that the degree of freedom is 3 and therefore the measurement model of this construct has met the identification condition. The initial results of CFA showed that the model fit indices could be improved by co-varying the residuals associated with items A16, A24, A17 and A24. Following this modification, the estimated results revealed the CMIN/df=0.948. Also, the p-value=0.416 passed the non-significance condition for a good model fit. The CFI and GFI values shown in figure 2 confirm that our model has produced an excellent fit. The loadings of the items ranged from 0.42 and 0.72 which, implying that our model is significant.

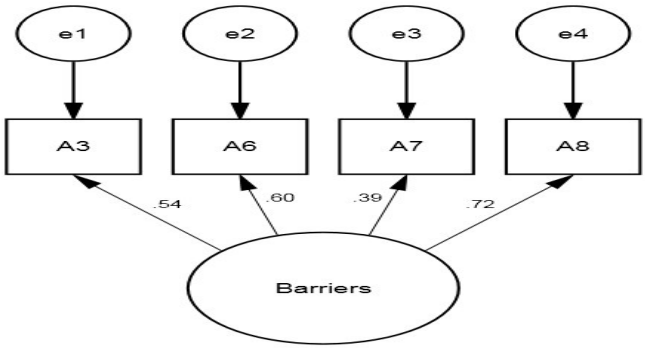


CMIN/df=0.948; p-Value=0.416; CFI=1.00; GFI=0.993; RMSEA=0.000

Figure 2: CFA Results for Bargaining Power of Buyers

1.4.5.3 Barriers to Entry

Barrier to entry was also identified: the order condition shows that the number of free parameters to be estimated is 8 which is less than the number of distinct values (i.e., 10) in the matrix S, implying that the degree of freedom is 2. The CFA results confirm that our construct has satisfied the fitness conditions. Indeed, our results showed a significance values: the CMIN/df=4.72 and the p-value=0.624 which satisfy the non-significance condition for a good fit. Moreover, the CFI value associated with this construct is 1.00, the GFI value is 0.997; all of which provide an excellent model fit. The RMSEA value which measures the badness of fit was found to be excellent at 0.00. The improved loadings of the items ranged from 0.39 and 0.72. The construct validity has passed all tests suggesting that the model is reliable.

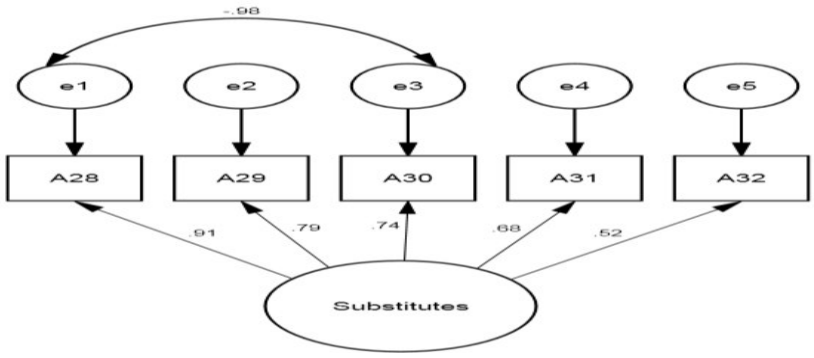


CMIN/df=4.72; p-Value=0.624; CFI=0.1.00; GFI=0.997; RMSEA=0.00

Figure 3: CFA Results for Barriers to Entry

1.4.5.4 Alternative Products

As usual, the order condition shows that the number of free parameters to be estimated is 11 while the number of distinct values in the matrix S, is 15. This implies that the degree of freedom is 4. Given this, it is clear that the measurement model of this construct has met the identification condition. The CFA was conducted to assess the measurement model validity of this construct, and the initial results showed that the model fit indices could not pass the fitness conditions. After testing several modifications, it became apparent that the fitness of the model could substantially be improved through co-varying errors terms: e_1 and e_3. Following this, the model results improved considerably. The CMIN/df=1.77 and the p-value=0.132; all of which satisfy the non-significance condition. The CFI associated with this value is 0.99, and the GFI value is 0.982; all of which provide an excellent model fit. The improved loadings of the items ranged from 0.52 and 0.91, suggesting that the model is significant.

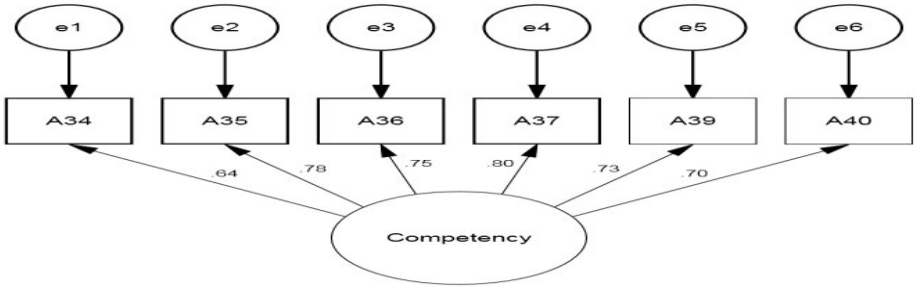


CMIN/df=1.77; p-Value=0.132; CFI=0.990; GFI=0.982; RMSEA=0.07

Figure 4: CFA Results for Alternative Products

1.4.5.5 Core Competency

The order condition shows that the number of free parameters to be estimated is 12; less than the number of distinct values (i.e., 22) in the matrix S. The degree of freedom is therefore 9, and the measurement model has met the identification condition. The initial results of CFA showed that the model fit indices satisfied the fitness conditions, given that the CMIN/df=1.799 and the p-value=0.15 which is non-significant; a condition which must be met for a good fit. The CFI value is 0.968 which provides an excellent model fit. The RMSEA which measures badness of fit, was=0.072. The model fit indices were improved by dropping two of the items with smallest loading; A37 and A41 with loadings of 0.52 and 0.53 respectively. Thereafter, the model was re-run and the output showed that all items had positive loading ranging from 0.64 to 0.80. Consequently, the modification indices improved considerably: the p-value=0.159. The CFI value is 0.99 which is an excellent model fit; the RMSEA, the measure of badness of fit also improved to 0.054.

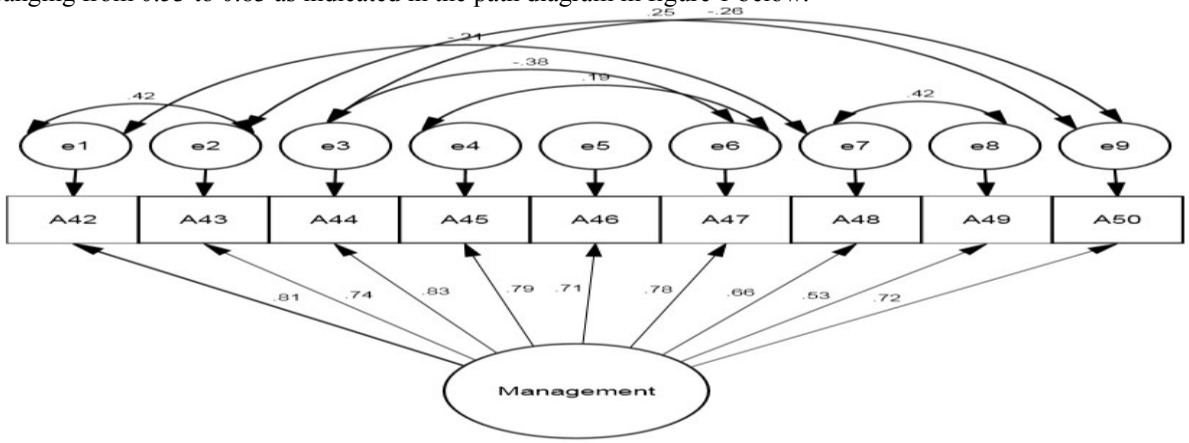


CMIN/df=1.799; p-Value=0.159; CFI=0.99; GFI=0.97; RMSEA=0.054

Figure 5: CFA Results for Core Competency

1.4.5.6 Enterprise Value Chain Management

The order condition shows that the number of free parameters to be estimated is 34. This number is less than the number of distinct values (i.e., 54) in the matrix S. This implies that the degree of freedom is 20; we are confident that the measurement model has met the identification condition. We next proceeded to undertake confirmatory factor analysis (CFA). The initial results (not reported here) showed that the model fit did not satisfy the fitness conditions. Consequently, the model fit was improved by using modification indices; a process that entails co-varying the residuals with high values. The following error covariances were modified: e_1 and e_2; e_1 and e_7; e_2 and e_9; e_3 and e_7; e_3 and e_9; e_4 and e_6; and e_7 and e_8. As a result of these modifications, the fit indices improved considerably: the CMIN/df=1.303, p-value=0.164, the CFI value is 0.993 and GFI value is 0.966. All these statistics indicate that our model has produced an excellent fit. Indeed, as a result of modification of error covariances, the RMSEA improved to 0.044. The revised CFA output showed that all items had positive loading ranging from 0.53 to 0.83 as indicated in the path diagram in figure 1 below.



CMIN/df=1.303; p-Value=0.164; CFI=0.993; GFI=0.966; RMSEA=0.044

Figure 6: CFA Results for Firm's Value Chain Management

1.4.6 The Structural Model

In the previous sections, we have presented results of the measurement model on each construct and its associated variables. According to Edward and Joost (2012), the structural model in a SEM context is the full model, specifying both the constructs with their indicators, and the causal relationships between the constructs. Having this in mind, we developed and tested the last hypothesis which state that: Porter's Five Forces, Enterprise Value management practices and Core Competency constructs are positively related. The estimated results of structural models presented in Appendix 3 show clearly that we cannot reject our hypothesis.

We then went on to examine the interrelationship among the variables and the following results emerged out clearly. Firstly, it was established that the industry structure bears a positive relationship with barriers to entry, with a standardized path coefficient of 0.74; indicating that the more favorable the industry structure, the more intense barriers to entry are. Secondly, the industry structure has a strong positive relationship with competition, with a standardized path coefficient of 0.68; again, the more favorable the industry structure, the more intense the rivalry. Thirdly, the industry structure has a strong positive relationship with bargaining power of buyers, with a standardized path coefficient of 0.5; suggesting that the more favorable the industry structure, the more leverage the buyers have to bargain. The industry structure has a strong positive relationship with substitutes, with a standardized path coefficient of 0.73: the more favorable is the industry structure, the greater are availability of substitutes. Fourthly, competitive advantage as an exogenous latent variable has a positive relationship with Strategy, with a path coefficient of 0.58. In turn, Strategy, as a latent exogenous

variable and mediating variable, has positive relationship with enterprise management with a path coefficient of 0.74.

1.5 Summary of hypotheses Results

Based on the empirical findings presented above, we provide hereunder the CFA and ANOVA statistics to show whether our hypotheses are supported or rejected:

Table 5: CFA and ANOVA Statistics

Hypothesis	Results	Conclusion
Rivalry among competitors is not a statistically significant construct in determining the competitive advantage;	CMIN/df=1.905; p-value=0.09 (which satisfies the non-significance condition which must be met for a good fit as it is above 0.05); CFI value= 0.982; GFI value=0.977; RMSEA=0.077; and the loadings of the items ranged from 0.61and 0.82. ANOVA statistics: F=11.257; Df=203, $p < 0.001$ and F-Change statistics are all significant	The CFI indices and ANOVA statistics strongly support the hypothesis
Bargaining power of buyers is not a statistically significant construct in determining the competitive advantage	The CMIN/df=0.948; the p-value=0.416; the GFI value=1.00; GFI value=0.993; RMSEA=0.00; the item loadings ranged from 0.42 and 0.72. ANOVA Statistics: Df=203, $p < 0.001$ and DW Statistic is 1.657 which is close to 2 as required. The F-Change Statistics are also significant	The CFI indices and ANOVA statistics strongly support the hypothesis.
Threat of new entrants is not a statistically significant construct in determining the competitive advantage	CMIN/df=4.72; p-value=0.624; The CFI value= 1.00; the GFI value=0.997; RMSEA value= 0.00. ANOVA statistics: F=34.95, DF=199, $p < 0.001$ and F-Change Statistics are significant.	The CFI indices and ANOVA statistics strongly support the hypothesis.
Alternative Products is not a statistically significant construct in determining competitive advantage	CMIN/df=1.77; p-value=0.132; the CFI value= 0.99, the GFI value=0.982; the RMSEA value= 0.071. ANOVA Statistics: F=16.57, DF=197, $p < 0.001$; F-Change statistics are significant and DW=1.682	The CFI indices and ANOVA statistics strongly support the hypothesis.
The core competency is not a statistically significant construct in determining the competitive advantage	CMIN/df=1.799; p-Value=0.159; CFI=0.99; GFI=0.97; RMSEA=0.054. ANOVA Statistics: F=28.84, DF=194, $p < 0.001$.	The CFI indices and ANOVA statistics strongly support the hypothesis.
Enterprise value chain management practices are not statistically significant in determining the competitive advantage	CMIN/df=1.303; p-Value=0.164; CFI=0.993; GFI=0.966; RMSEA=0.044. ANOVA Statistics: F=28.84, DF=194, $p < 0.001$.	The CFI indices and ANOVA statistics strongly support the hypothesis.
Porter's Five Forces, value management practices and core competency constructs are positively related.	The findings on the structural model reveals there exists relationships among the constructs as follows: CA has a positive relationship with CCOM with a path coefficient of 0.61; CA vs. STR (0.58); CA vs. CF (0.88); STR vs. EM (0.74); CF vs. BPB (0.5); CF vs. CCOM (0.68); CF vs. BET (0.74) and CF vs. SBS (0.73). See Appendix 3.	The path coefficients shows existence of relationship among the constructs, hence hypothesis supported.

1.6 Concluding Remarks

This study has examined the determinants of firms' competitiveness in the Textile and Apparel Industry in Tanzania using cross-section survey design and non-probability sampling method. Based on the variables filtered during factor analysis, the maximum likelihood estimation technique was used to compute the fit indices of both measurement and structural models. The ANOVA results confirmed that all independent variables have a significant impact in explaining variation in the dependent variables. All null hypotheses, with an exception of (bargaining power of suppliers which is not a statistically significant variable in determining the competitive advantage), are strongly rejected. The key recommendation emerging from this study is that the firms in the textile and apparel industry should study the underlying industry structure, and use it as an input to develop

competitive strategies that should focus on enhancing core competencies and value chain management practices when designing competitive strategies.

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Appendix 1: Reliability Analysis

Latent Construct	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	Number of Items
Entry Barriers	0.79	0.79	9
Competition	0.84	0.84	8
Bargaining power of buyers	0.76	0.76	8
Bargaining power of supplies	0.67	0.69	6
Substitute products	0.79	0.80	7
Core Competency	0.86	0.86	9
Value Chain Management	0.91	0.91	10

Appendix 2: The Structural Model

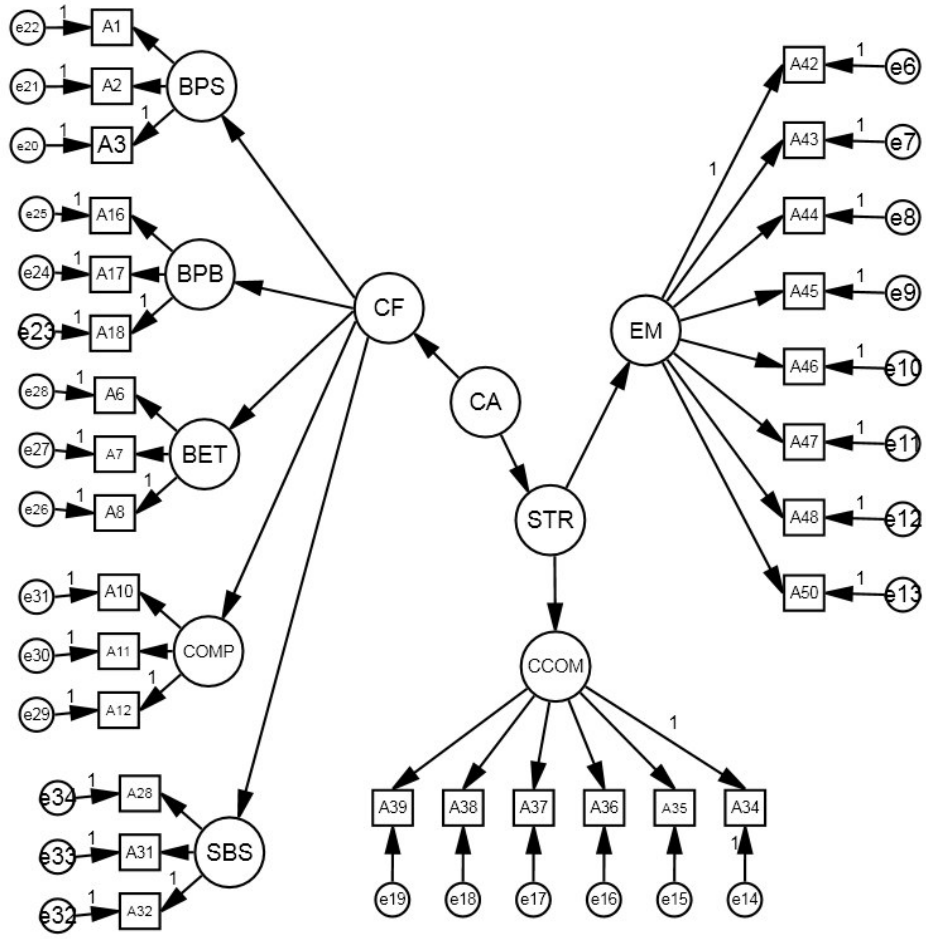

Figure 7: The Structural Model

Appendix 3: The Results of the Structural Model

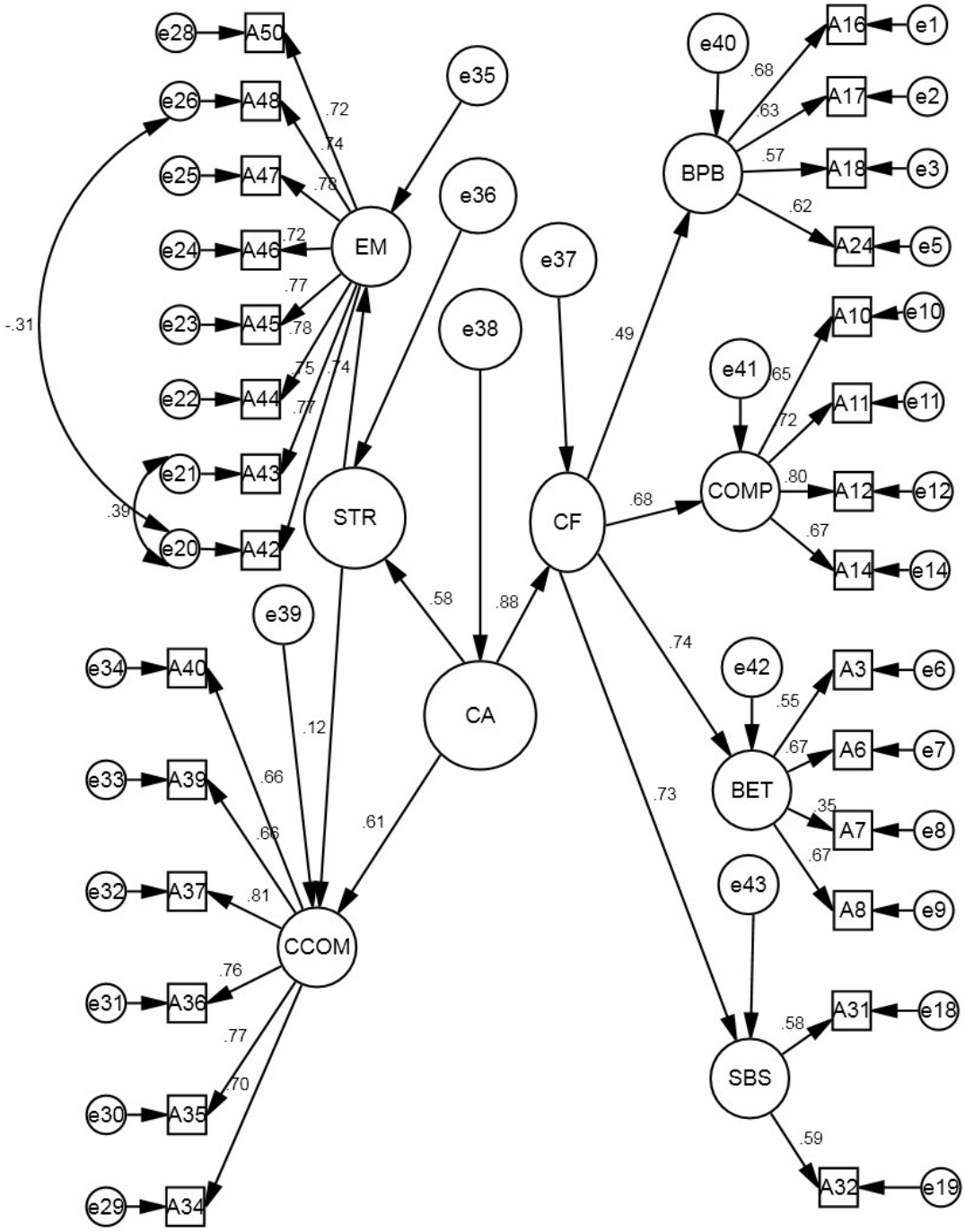

Figure 8: The Structural Model Linking Internal and External Competitiveness Variables

Appendix 4: List of Abbreviations and Acronyms

- ANOVA Analysis of Variance
- BET Barriers to Entry
- BPB Bargaining Power of Buyers
- BPS Bargaining Power of Suppliers
- CA Competitive Advantage
- CCOM Core Competency
- CF Competitive Forces
- CFA Confirmatory Factor Analysis
- CFI Comparative Fit Index.
- CMIN/df Chi-square divided by the df
- DW Durbin Watson Statistic
- EFA Exploratory Factor Analysis
- EM Enterprise Value Chain Management
- ESRF Economic and Social Research Foundation
- GFI Goodness of Fit Statistics
- COMP Competition
- EM Value Chain Management Practices
- ICT Communications Technology
- KMO Kaiser-Meyer-Olkin
- ML Maximum Likelihood
- PCA Principle component analysis
- RMSEA Root Mean Square Error of Approximation
- SBS Substitutes
- SEM Structural Equation Modeling
- SMEs Small and Medium Sized Enterprises
- STR Strategy
- URT United Republic of Tanzania
- $e_{1,...,}e_{50}$ Error term for the first observed variable, up to 50th Observed variable.
- $A_{1....50}$ First observed variable up to 50^{th}, as shown in Table 3.