

THE IMPACTS OF TRIPLE-A SUPPLY CHAIN ON SUPPLY CHAIN PERFORMANCE IN ETHIOPIAN TEXTILE SHARE COMPANY

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Abstract

This study aimed to investigate the impacts of triple-A supply chain (SC) on SC performance in Bahir Dar & Kombolcha textile Share Company, Ethiopia. The study used survey questionnaires as a data collection instrument. Statistical package for social science to purify measurement items through exploratory factor analysis & Partial least square structural equation model used to test whether SC agility, SC adaptability and SC alignment have individual and/or joint effects on SC performance. The finding indicates that SC adaptability, SC alignment and SC agility have a positive and significant effect on SC performance. The result also indicates that the joint triple-A SC had the strongest impact on SC performance. This study focused on two Ethiopian textile share companies and it does not include other companies in the country. The study allow to understand the joint triple-A SC, SC agility, adaptability and SC alignment-SC performance relationships at a dimensional level and helps to develop a comprehensive research model.

Keywords: Agility • Adaptability • Alignment • Triple-A • SC performance • Partial Least Square Structural Equation Modeling

Introduction

Nowadays business are in a turbulent environment which has been faced a lot of complicated problems and challenges, among those are; shock and discontinuity, shut down due to disruption results from pandemic like COVID-19, rapid progress of information technology, and expectations of customers, globalization, unsettled and volatile market, constantly changing environments, short product life cycle and rapid introduction of new products, supply chain complexity results from numerous interaction and conflict of interest among supply chain partners, lack of trust, misalignment of incentives, fear of opportunism or of hold up and fear of being locked-in with a low quality supplier, inter-firm rivalry and managerial complexity, and other obstacle makes supply chain more challenging and may even leads to supply chain failure results poor of supply chain performance.

Sanchez & Perez argue that business in the 21st century have in a more turbulent market condition, increasingly subjected to unexpected shock and discontinuities. Furthermore, customers' expectation is challenging the 21st century businesses which require cheaper cost, improved quality service and enhanced satisfaction [1]. Fish claims that product life cycles are shrinking and product ranges are expanding to offer consumers more choice. Further, Ferguson,

Guide Jr., and Souza argue that as the new competitive environment changes to more global, technologically oriented and customer driven, product life cycles shrink and new products get introduced rapidly, as customers continually demand higher quality, faster response, and greater reliability of products and services to this, the new world market demands companies respond with innovative products and improved manufacturing processes.

In response to deal with this ever- changing phenomenon, Fawcett and Magnan and Teece examine that the competitive environment requires organizations to provide high quality products and services, deliver rapid service response, and develop dynamic capabilities that are congruent with the rapidly changing business environment. Lambert and Cooper (2000), Schneller and Smeltzer & White and Mohdzain reported that in today's hyper and intensely competitive global market, effective and integrated supply chain management (SCM) plays a critical role in improving organizational performance and competitive advantage.

In addition to the above, as a solution to the changing and ever increasing complexity of the today's business world, Hult and Ketchen suggest that there should be a strategic shift from the traditional supply chain to the strategic supply chain; this strategic supply chain is closely tied to the three main attributes of the supply chain which was introduced by Lee in 2004: agility, adaptability and

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alignment which provides the base for improving the whole supply chain performance. Eventually, this will help in enhancing the organizational performance [3]. Lee demonstrated that companies which are cost effective and efficient could not gain a sustainable competitive advantage than their rivals rather sustainable competitive could be achieved through supply chain that: react speedily to the sudden changes in demand and supply (agility), adapt over time as a market structure and strategies evolve (adaptability), and that align the interest of all firms (alignment).

Only a relative handful of previous studies have been specifically examined that whether SC agility has a positive and direct impact on supply chain performance. On the other hands, there are a number of studies shown that SC agility has positive and direct impact on other performance indicators such as: competitive business performance; operational and cost performance logistics performance etc., However, Yang and Um concludes that SC agility has not significant direct and positive effect on performance.

Empirical studies show that SC adaptability can result in significant cost savings and high customer demand fill rate [2]. Although Kabra and Ramesh conclude that SC adaptability is not positively related to performance. Schoenherr and Swink stressed that SC adaptability plays a core role in capturing the benefits of supplier technological intelligence for enhanced product innovation capability, new product launch success, and firm financial performance. Eckstein et al., conclude that SC adaptability has a positive effect on cost performance & on operational performance. Further Dubey & Gunasekaran suggested that SC adaptability is positively linked to humanitarian SC performance.

Past studies have been found in the literature that analyses the relationship between SC alignment as a single scale and performance on different dimensions of its variable. Ye and Wang reported that SC information technology (IT) alignment along the SC has a positive effect on operational performance, market performance, but not on financial performance, and customer value creation. Dubey et al., conclude that SC alignment is a powerful determinant of logistics performance and human performance and that leadership has a partial mediating effect between SC alignment and human performance. However, Dubey and Gunasekaran do not confirm the SC alignment - SC performance relationship.

Studies on the combined effect of agility, adaptability, and alignment are scant apart from a few notable exceptions focuses on the impact of the combination of agility, adaptability, and alignment on supply chain performance and conclude that triple-A SC strategy positively impacts SC performance and that SC performance in turn positively affects organizational performance. Eckstein et al., investigate the impact of supply chain agility and adaptability on cost performance and operational performance under the moderating effects of product complexity. Moreover, Attia examines the effect of the triple-A SC and marketing strategy alignment on SC performance (flexibility performance; resource performance & output performance) and organizational performance (strategic performance & operational performance). Finally, Dwayne et al., have been found that analyze relationships between a triple-A SC multidimensional construct and performance measures, But neither of them analyses the effect of this individual variables on performance.

As motivational reason behind conducting this research can be the existing research gap in this area from novelty perspective, the first and the most uniqueness of the study lies in the fact that no study to date has been examined the impact of triple-A supply chain on supply chain performance in a unified context in Ethiopia in order to given insights for managers and further encourage supply chain firms to improvement such techniques of overcoming challenges and possibly improve both their own level of supply chain performance and organizational performance in the era of globalization, ever changing business environment, short product life cycle, unstable market and fierce competition. The study will seek to systematically fill this gap. Second the study might be seen as an answer for Whitten and Green recommend a call for future study to investigate the individual impact of agility, adaptability and alignment on supply chain performance so far to this suggestion this study will be an appropriate response. In addition to this, the study will be an answer to the call for future research studies in order to seek more investigation to improve agility, adaptability and alignment using other resource and capabilities rather than supply chain visibility since this study adapted resource based view and dynamic capability as a theoretical background. To fill the existing gaps, the main objectives of the study were:

- To examine the impacts of supply chain agility on supply chain performance in Bahir Dar and Kombolcha textile Share Company.
- To examine the impacts of supply chain adaptability on supply chain performance in Bahir Dar and Kombolcha textile Share Company.
- To assess the impacts of supply chain alignment on supply chain performance in Bahir Dar and Kombolcha textile Share Company.
- To investigate the impact of triple-A supply chain on supply chain performance in Bahir Dar and Kombolcha textile Share Company.

Conceptual Framework & Hypothesis Development

Supply Chain Agility & SC Performance

Supply chain agility is the ability of an organization to provide a strategic advantage by responding to uncertainty in the market and it enables firms too smoothly and cost efficiently handle supply chain disruption [4]. In supporting of this, Christopher suggested that supply chain agility helps a firm to better synchronize supply and demand which can reduce cost of inventory and transportation. Moreover, Gligor and Holcomb suggested that supply chain agility can also positively affect operational performance. Supply chain agility can be developed by acquiring capabilities that can make the supply chain act rapidly and diversely to environmental and competitive changes. Similarly found in his study that agile supply chain strategy is positively correlated with supply chain performance. Based on the above discussion, in this study the researcher expects an effect to the supply chain agility on the supply chain performance and claims that:

Supply chain agility has significance and positive effect on supply chain performance.

Supply Chain Adaptability & SC Performance

A few studies show that SC adaptability can result in significant cost savings and high customer demand fill rate. In supporting this,

Eckstein et al., conclude that SC adaptability has a positive effect on cost performance and on operational performance. Moreover, Dubey and Gunasekaran state that SC adaptability is positively linked to humanitarian SC performance. According to Baramichai et al. both a flexible and adaptable supply chain could lead to a better company performance compare with only a flexible supply chain. In relation to SC adaptability, Chanet al. concluded that the flexible and adaptable supply chain helps not only in improving the company performance but helps also in improving the supplier performance. Rameshwar et al., support the founding of Lee, 2004; Whitten et al., which states that supply chain adaptability can improve supply chain performance. Based on the above, in this study the researcher expects an effect to the supply chain adaptability on the supply chain performance and claims that:

Supply chain adaptability has significance and positive effect on supply chain performance.

Supply chain Alignment & SC Performance

Rameshwar et al., states that supply chain alignment can have a direct impact on supply chain performance. Further, Tan et al. suggested two type of supply chain alignment: information alignment and relational alignment, they found a significant effect to the relational alignment on the firm performance. Mikalef et al., found that procurement alignment have a significant and positive impact on competitive performance and supply chain performance. Moreover, Ibrahim and Ogunyemi results support the effect of linkages and information sharing with the supplier as methods for achieving supply chain alignment of the company export performance. Based on the above discussion:

Supply chain alignment has significance and positive effect on supply chain performance.

Triple –A SC on SC Performance

Whitten et al., conclude that Triple-A SC strategy positively impacts SC performance and that SC performance in turn positively affects organizational performance. Attia examines the effect of Triple-A SC and marketing strategy alignment on SC performance (flexibility performance; resource performance; output performance) and organizational performance (strategic performance; operational performance), using data from 153 companies in the Egyptian textile industry and concludes that Triple-A SC-marketing strategy alignment directly affects SC performance, and that SC performance positively affects organizational performance. Based on the above discussion, in this research the researcher expects supply chain performance will have an effect and play a mediator role in between Triple-A supply chain and organizational performance and claims that:

Triple-A SC has a positive and significance impact on supply chain performance

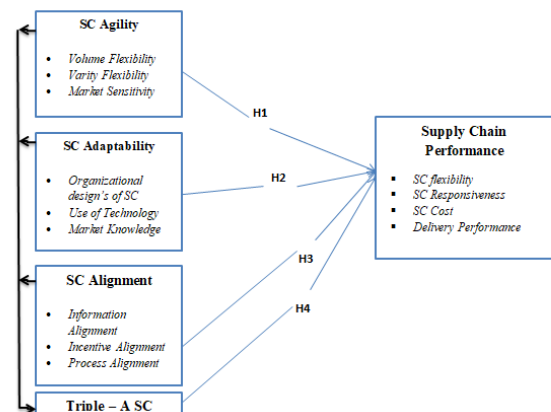


Figure1: Conceptual framework of the study (source: Author's)

Methodology

This study is an explanatory hypothesis testing research design that aimed to investigate the causal effects of triple-A SC on supply chain performance in two Ethiopian textile share company.

Target Population, Sampling Technique and Sample Size

Target Population

The target population for this study includes the two textile share companies in Amhara regional state, Ethiopia i.e. Bahir Dar textile Share Company (BDTSC) and Kombolcha textile Share Company (KTSC). The reason for choosing and targeted this company was based on the recommendation of Attia in his study of "the effect of triple-A supply chain on performance applied to the Egyptian textile industry" who recommend to repeat the study to get more responds from the textile industry in different countries. Another reason for selecting this company are since in this industries the environment they operate are highly characterized by intense competition, and short product life cycle, which is related to fashion product that needs an adaptable, agile and aligning of stockholders interest to be successful in the market. So from this point of view the study concentrated on these two companies in order to get more response and making generalizations through testing hypothesized relationship within the research variables [5].

Sample Technique

For the purposes of conducting this research study, stratified random sampling were selected because of two reasons. The first reason was, according to Sudman stratified sampling is intended to provide the smallest sampling error than the other. In supporting this Sekaran confirmed that stratified random sampling is the most efficient among all probability sampling. Secondly, the nature of this study was planned to obtain a response from two different (heterogeneous) companies which are located in different geographical area that are mandated to use stratified sampling in order to make generalization of the finding.

Therefore, this study had six targeted functional strata's in each company(table 1) which are purchasing, production management, quality assurance management, marketing and promotion, material management and general, vice manager & other supervisor with a total population of 320 permanent employees out of 2809 in both companies.

Sample Size

Because of the limited resources (regarding time and effort) of the researcher and to come up with an accurate and fair representation of the population characteristics, the researcher will tries to determine the sample size according to the Krejcie and Morgan (sample size determination table at 95% confidence level which is highly accepted by social science researchers since it takes into account the degree of required confidence and sample error. Based upon this, from the six functional stratum a total of 320 permanent employees in both textile share companies with a sample of 175 respondents were selected.

In relation to this, a researcher was considered data analysis techniques used within the study when determining the study sample size. Within this respect, the most demanding proposed data analysis technique for this study are Structural Equation Modeling (SEM) which is sensitive to sample size and less stable when estimated from small samples. Within this respect, Hair et al., suggests that a sample with a size of less than 100 is considered to be a small sample; a medium sample size is between 100 and 200, and a large sample size in more than 200. On the other hand, Garson suggests that a sample size has to be more than 100. Moreover, many researchers like Khong; Graham; Eid and Battor have used a sample size of around 100 to conduct research using structural equation modeling. Based on that, it is generally regarded that a sample size of 100 is the practical, acceptable size for using structural equation modeling. In line with this argument the researcher believes that a sample of 175 respondents was sufficient to conduct this study through (PLS-SEM) partial least structural equation model using SmartPLS 3.2.8 software. Then a sample was distributed proportionally (proportional allocation) to each stratum as per Pedhazur and Schmelkin's and Kyamanma formulas presented below and distributed on randomly for respondents.

$$r = \frac{c * s}{p}$$

Where r is respondent required from a stratum, c is stratum population (category), S is the desired size (175) and p is the total population (320)

Through the above formula, the sample size was allocated proportionally as below in (table 1).

Table1: Proportional allocation of Sample size.

Company	No.	Departmental level of strata's	Stratum population size (r = c*s/p)	Sample Size (r)
Bahir Textile	1	Purchasing	12	6
	2	Production management	94	51

	3	Quality assurance management	10	5
	4	Marketing & promotion	11	6
	5	Material management	10	5
	6	General, Vice manager & Other supervisor	12	7
	Subtotal		149	80
Kombolcha Textile SC.	1	Purchasing	15	8
	2	Production management	108	59
	3	Quality assurance management	11	6
	4	Marketing	13	7
	5	Material management	10	5
	6	General, Vice manager & other supervisor	14	8
	Subtotal		171	95
Total			320	175

Data Collection Instrument

This study adapted research questionnaires from Luque et al., to measure triple-A SC and its dimensions, from Qrunfleh & Tarafder, Wong et al., and Qi et al., to measure SC performance.

The survey questionnaire has two sections with a total of 49 questionnaires. To start, the first section is related to triple-A SC dimensions with a total of 27 items. All of these items were adapted from Luque et al., their respective validity and reliability were validated by a panel of experts in order to ensure content validity and a pilot test was conducted at several plants with pre-test that had been analyzed for reliability, validity and internal consistency. Each item in the study of Luque et al., was tailored to the expertise and validity, internal consistency and validity construct was presented good values in the scale that were finally used. The second section of the questionnaire focused on the dependent variable of SC performance, which had nine items adapted from Qrunfleh and Tarafder, Wong et al., and Qi et al. Questionnaires adapted from Qi et al., 2009 had a sufficient reliability with the alpha values larger than 0.60, with respect to convergent validity CFA was carried out and all of the factor loading in CFA model is greater than 0.5 and the t-values are significantly greater than 2.0. As a result, convergent validity is ensured and sufficient. Moreover, discriminant validity also support in which a significant difference of the χ^2 between constrained and unconstrained model indicated a significant difference. Items adopted from Qrunfleh and Tarafder had reliability with alpha value above 0.70, this was suggested as a good reliability. Related to discriminant validity the factor loading for each item was higher than its cross-loading, this indicates good discriminant validity. Finally, respondent

was requested to specify their level of agreement or disagreement on each item using five point Likert scale (1=strongly disagree, 2=disagree, 3= neutral, 4=agree, 5=strongly agree).

Discussion

Reliability and Validity of Measurement Model

To check whether or not the measures met the requirements of reliability Cronbach's alpha, composite reliability (CR), the average variance extracted (AVE) and Dijkstra-Henseler's rhoA were assessed. For this study Cronbach alpha was calculated to assess the internal consistency of researcher instrument which is achieved when its value is greater than or equal to 0.60 (Ahmad et al., 2016). Specifically to reduce the deficiencies of Cronbach's alpha, which had a poor estimation of internal consistency and in some cases over gross estimation CR were tested, which consider as more consistent in comparison to Cronbach alpha. Hence, for this study to measure the reliability and internal consistency of the measured variables represented by a latent construct CR and AVE was calculated with its recommended value of CR is greater than or equals to 0.70 and AVE value should not less than 0.50.

Therefore, Cronbach alpha, composite reliability, the average variance extracted & rhoA were calculated for all research constructs. As shown in table 3 Cronbach's alpha values, CR & AVE values for each construct of the study exceeded the recommended value. Hence, this indicates the study constructs have sufficient reliability and the measurement model of this study satisfies all the requirement of reliability measurement.

Table 2: Reliability of Research Constructs

Constructs	α	CR	AVE	rhoA
Short Term Market Sensitivity	0.843	0.904	0.759	0.859
Volume Flexibility	0.826	0.895	0.739	0.84
Variety Flexibility	0.841	0.903	0.756	0.854
SC Organizational Design	0.863	0.91	0.771	1.001
Use of Technology	0.857	0.905	0.761	1.045
Medium- and Long Term Market knowledge	0.767	0.858	0.669	0.822
Incentive Alignment	0.78	0.871	0.692	0.788
Information Alignment	0.804	0.883	0.716	0.818
Process Alignment	0.777	0.871	0.694	0.792
SC Performance	0.907	0.928	0.683	0.907

Convergent validity: On the other hand, convergent validity is the extent to which a measure correlates positively with alternative measures of the same constructs (Hair et al., 2017). To evaluate convergent validity of reflective constructs, researchers consider the outer loading value and the average variance extracted.

To do this at a minimum the outer loading of all indicators should be statistically significant based on the common rule of thumb value greater than or equals to 0.708. This implies that an indicator's outer loading should be above 0.708 since that number squared $[(0.708)^2]$, Equals to 0.50, but in most instances 0.70 is considered close enough to 0.708 to be acceptable.

As table 5 below shown the loading values of most of the indicators were above threshold value 0.708. This implies that there is a higher level of indicator reliability of the study. With respect to convergent validity the AVE of all constructs is larger than the threshold value of 0.50. Therefore, convergent validity was confirmed.

Table3: Results of Indicators Reliability and Convergent validity for the outer model.

Constructs	Items	Loading (≥ 0.708)	AVE (≥ 0.5)
Short term market sensitivity	STMS1	0.869	0.759
	STMS2	0.887	
	STMS3	0.859	
Volume Flexibility	VOF1	0.847	0.739
	VOF2	0.882	
	VOF3	0.85	
Variety Flexibility	VAF1	0.866	0.756
	VAF2	0.861	
	VAF3	0.881	
SC Organizational Design	SCO1	0.908	0.786
	SCO2	0.85	
	SCO3	0.876	
Use of Technology	UT1	0.918	0.761
	UT2	0.836	
	UT3	0.862	
Medium & Long term market Knowledge	MLTK1	0.849	0.669
	MLTK2	0.78	
	MLTK3	0.822	
Incentive Alignment	INCA1	0.814	0.692
	INCA2	0.834	
	INCA3	0.847	
Information Alignment	INFA1	0.823	0.716
	INFA2	0.844	
	INFA3	0.87	

Process Alignment	PA1	0.849	0.694
	PA2	0.78	
	PA3	0.822	
SC Performance	SCP1	0.82	0.683
	SCP2	0.832	
	SCP3	0.851	
	SCP4	0.79	
	SCP5	0.821	
	SCP6	0.843	

In this study, the coefficient of determination or explanatory power (R^2) value was tested for the endogenous variable supply chain performance. As remarked by Hair et al., R^2 are the most commonly used measures to evaluate the structural model that measures the model's predictive power and calculated as the squared correlation between a specific endogenous construct's actual and predictive values. Hair et al. Also added the coefficient represents the exogenous latent variables' combined effects on the endogenous latent variables. Specifically, R^2 -values of 0.75, 0.50 or 0.25 for endogenous latent variables can as a rule of thumbs respectively describe as substantial, moderate or weak.

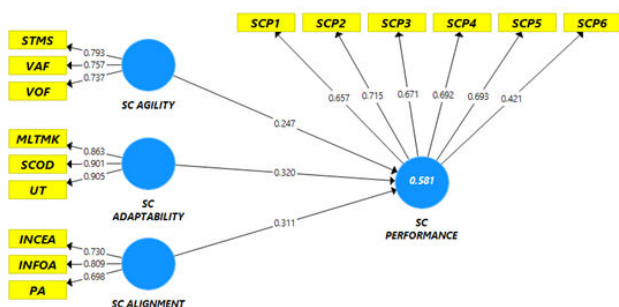


Figure 2: PLS-SEM coefficient of determination (R^2) - Output of SC Performance

Thus, the above second order structural model implies that the structural model of the endogenous variable (SC performance) has predictive accuracy at. Further, the model value of tell us a moderate combined effects SC agility, adaptability and SC alignment on SC performance. Moreover, the result of indicates that 58.1% of improvement are due results from the SC agility, SC adaptability and SC alignment. As the results are positive and significant the structural model can be regarded as strong and good quality (Ali & Park, 2016).

Furthermore, the predictive relevance (Q^2) was computed using techniques of blindfolding Smartpls-3.2.8. According to Hair et al. A measure of value is an indicator of the models out of sample predictive power or predictive relevance. In structural model, values larger than zero for a specific relevance endogenous latent variable indicate the path model's predictive relevance for a particular dependent variable [5]. In PLS-SEM, the method for calculating value technique omits every dth data point in the endogenous construct's indicator and estimates the parameters within the remaining data points cited in Hair et al. The values estimated by the blindfolding procedure represent a measure of how well the path model can

predict the originally observed values. Similar to the effect size approach for assessing values, the relative impact of predictive relevance can be compared by means of the measure to the effect size. For this study, after performing the blindfolding technique at omission distance case 7, the values were stable and different from zero, to this end the result were depicted in figure 3 as follows:

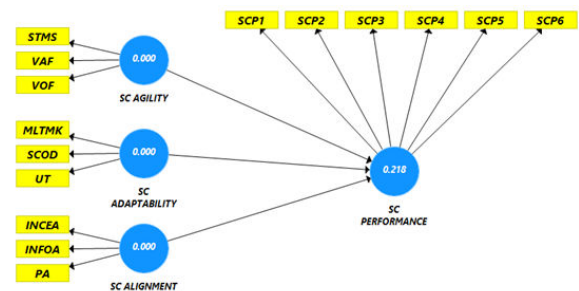


Figure 3: PLS-SEM results of predictive relevance -output for SC Performance.

For this study, the above second order structural model indicates that SC performance has a Q^2 -value of 0.218. This shows a medium predictive relevance (Q^2) -effect size. Therefore, as Q^2 results are positive and significant the structured model can be regarded as strong and good quality.

Assessment of the Structural Model

SC Agility, SC Adaptability and SC Alignment on SC performance (H1, H2&H3)

As H1 shows that SC agility has significant & positive effect on SC performance. The outcome fully supported the study's expectation of the significant and positive impacts of SC agility on supply chain performance in particular, the path coefficient depicted in figure 2 shows that β -value of 0.247 and the critical t-value of 2.216 and assure p-value (0.027) and the related lower bootstrap confidence interval (2.5%) and upper confidence interval (97.5%) was 0.051; 0.48 respectively which is comprised no absolute zero value [6]. This implies that an improvement in SC agility by one units will improved SC performance by 0.247 units. This result was consistent and demonstrated by previous study that the greatest extent of agility in its SC, the better the SC performs, agile supply chain requires a dynamic, context specific, and aggressively changing short term supply chain that allows the SC to interface with customers and quickly adapt to future changes. As a result, SC provides products at varying volumes and delivers to varying market demands. Meanwhile, the results of the study was consistent with the finding of Sufian mentioned as agile strategies are positively correlated with SC performance. Theoretically, it was also consistent with Brusset suggestion that to survive and prosper in an ever-changing business environment, firms need to enhance their SC agility by implementing the right approach when they configure the SC structure and establish relationships with their partners. The researcher was also supported that successful implementation of agility could enhance firms SC performance and helps them to stay competitive and gain market share than their competitors. Hence, H1 was supported.

The path analysis figure 4 also depicts a strong positive association between SC adaptability and SC performance. As can be observed, the value of path coefficients (β) =0.320 with (t) value of 4.867 at $p=0.000$ which is $p<0.001$. Meanwhile, just like other hypothesis, the bootstrapping technique shows the non-inclusion of zero within the lower and upper confidence interval (0.184; 0.438) respectively. The finding of the current study was consistent with a number of previous empirical studies including Rameshwar et al. Which were stated as SC adaptability can improve SC performance. Eckstein also added SC adaptability has a positive effect on SC performance in terms of cost saving, customer demand fill rate, adjust any kinds of structural forms of organization within the changing environment. Additionally, it was exactly consistent with the theoretical viewpoints of Lee mentioned as firms can foster adaptability to improve SC performance by using intermediaries to develop fresh suppliers and logistics infrastructure, evaluating the need of customers creating a flexible product design. Furthermore, this study was also added that companies will benefit themselves and improve SC performance through successfully implementing those adaptability strategies to adapt the ever-changing environment. Therefore, the study's result strongly supported H2.

In terms of the impacts of SC alignment on SC performance, the results strongly demonstrate a positive impact on SC performance. In particular, at ($\beta=0.311$) the path coefficient that connects SC alignment and SC performance, statistics(t) =2.757, $p=0.006$ and the lower & upper percentile confidence interval (0.09; 0.538) in which the bootstrapping technique incorporates non-zero value. This result of the study also consistent with the result of priori studies more importantly the result indicates the benefit of aligning and coordinating the interest of all firms using information, process and incentive alignment, particularly to share information and knowledge, establishing partner's role, task and responsibilities and to share risks, cost as well as a reward. Further, the studies result demonstrates that the collective benefits of information, process and incentive have a substantial positive impact for firm's successful improvements of SC. It was also consistent with the theoretical viewpoint of Tang & Tomlin Lalonde and Pohlen indicates that firms benefit themselves using SC alignment by clearly exchange information, clearly lay out roles and responsibilities, looking holistic view and sharing risk, cost and rewards equally. Once again, this study argues that firms coordinating the interest of all channel members through sharing relevant information and rewards equally to the whole members of the supply chain can foster SC performance. Hence, H3 was supported.

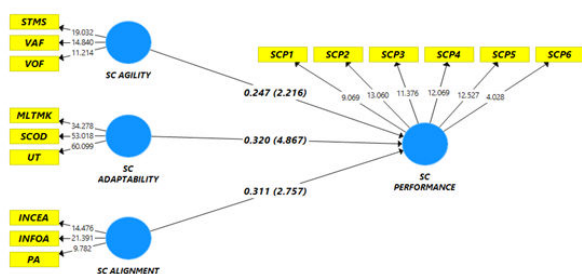


Figure 4: PLS-SEM Outputs for the effects of SC-Ag, SC -Ad & SC-AI on SCP.

Triple-A Supply Chain and Supply Chain Performance (H4)

Finally, the positive and significant effects of cumulative or joint triple-A SC on SC performance were affirmed. As a result, the path from triple-A SC to SC performance was the strongest positive and significant with the standardized coefficient value at ($\beta=0.760$), (t) =21.702 and significant at the ($p=0.000$). This result were consistent with the previous studies Dwayne et al Attia & Luque et al. In which the cumulative impacts of triple-A SC has a tremendous effect on the performance of supply chain to which the extent of supply chain partners working together to rapidly in reacting to change in customer demand, cope with the working environmental dynamics associated with the supply chain by maintaining adaptability and aligning the interest of all firms which are working on their own supply chain through freely exchanging information with supplier & customer; clearly layout roles and responsibilities, equitable sharing of risks , costs and gain of improvement. The researcher supported the combined impacts of triple-A SC on SC performance in terms of that an enhanced SC operation using agility, adaptability and alignment strategies will help to improved SC performance. Thus, H4 was fully supported.

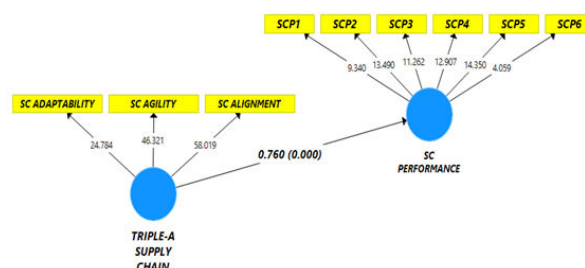


Figure 5: PLS-SEM Outputs for the combined effects of triple-A SC on SCP

Conclusion

Based on PLS-SEM bootstrapping hypothesis testing technique result the following conclusions of this study were outlined as follows:

The main objectives of this study were to examine the effects of SC agility, SC adaptability and SC alignment on firms SC performance. As a result all the three independent constructs has a major impact on SC performance in the case companies. Additionally, the study confirmed the combined effects of triple-A SC on SC performance. To conclude that, responding successfully to one-time variation in the SC environment would not be sufficient for the success of firms, because such a responding capability cannot always be effective in the constantly changing business environment. So their SC should be able to adapt itself to the structural change and trends in the business environment and evolve accordingly. Further, they should work on win-win situation to align the interest of all channel members.

Implication and Contributions to practice & theory

In terms of implications for managerial practice, this study helps to advance the understanding of SC managers by giving insights on how their firms SC performance could be improved particularly using triple-A SC strategies as a turning point.

The finding of this study also provides implications and contributions to SCM theories. The first implications are concerned with the conceptualization of multidimensional constructs, this study demonstrates the benefits of conceptualizing triple-A SC and SC performance as a multidimensional construct by conceptualizing the effects of joint triple-A SC's as consisting of three dimensions such as SC agility, SC adaptability and SC alignment on SC performance in a combined manner. Likewise, SC agility, adaptability and alignment each were conceptualized from nine construct dimensions in a weighted manner. Therefore, this study allows to comprehensively understanding the joint triple-A SC, SC agility, adaptability and SC alignment-SC performance relationships at a dimensional level. More importantly, from this study the use of multidimensional triple-A SC, SC Ag, SC Ad, SC Al and SCP allow to develop a comprehensive research conceptual model.

Recommendation

Based on the major finding and comprehensive reviews of literatures, case studies, journals and articles which have been generally accepted by a number of scholars, the following recommendations are given by the researcher that may potentially help to improve their intended SC performance from three comprehensive viewpoints as follows:

Recommendation to improve SC performance through SC agility

It is advisable that they have respond rapidly to the short term changes in demand and supply, uncertainty and unpredictable business environment through promoting synchronous flows of real time information among their own SC partners. Particularly this helps them in improving responsiveness to the changing, unexpected and volatile customer demand. It is imperative that companies should have to working on agility to be effective, quick and flexible in ever-changing environment.

Recommendation to improve SC performance through SC adaptability

In order to cope and consistent with the dynamic environment BDTSC &KTSC should adjust SC design to meet the structural shifting in the market and modify networks, strategies, technologies, products and making changes in the market positions and upgrading skill of the company's employees. Furthermore, they should go hand in hand with the situation through determining where a product stands in terms of technology and product life cycles. To this end, to overcome the problem associated with shortening product and technological cycles, it is crucial they must have a dynamic instead of static supply chain.

Recommendation to improve SC performance through SC alignment

In order to reduce problems such as an inability or unwillingness to share information, lack of trust among SC members and unwillingness to share risks, cost, reward and incentive those companies should imperatively create close relationship that cultivate trust among partners, creating synergy in collaboration and ensures

operational efficiency, thereby they can improve the whole supply chain.

Lastly, in order to survive the SC complexity & dynamisms of the current business environment the researcher recommend both firms to establish and basing on triple-A SC that helps to improve SC. Undoubtedly an improved SC performance will leads to improved organizational performance. Therefore, companies should have to go for the indisputable triple-A supply chain and its dimensions.

Limitation and Suggestion for Further Research Directions

Following the recommendation of Magutu et al., (2016), Dubey et al. this study was coming to end and investigate the joint effects of triple-A SC on SC performance. In spite of the study's contribution, some limitations have been found regarding this study. To start, the first limitation of this study was considering triple-A SC as an antecedent of SC performance and this study couldn't include all dimensions of triple-A SC and only focused on some unidimensional constructs. Thus, there is a need to suggest further studies exclusively to focus on those other factors that contributes to foster supply chain agility, adaptability and SC alignment. To illustrate a few with respect to SC alignment: relational alignment, organizational alignment, internal and external alignment to reach a more generalized and acceptable conclusion. To add on SC agility the researcher once again suggests for looking at customer sensitivity, virtual and process integration and network based. Secondly, this study focused on two textile share companies in Ethiopia and it does not include other companies in the country. Hence, there is a need to examine this issue by even repeating this study on the textile industry level in Ethiopia to reach a more generalized conclusion.

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