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Managing Supply Chain Practices, Financial Performance, and Competitive Advantage to Enhance Retail Supply Chain Management in Sierra Leone: Case Study- Freetown

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Abstract

Even though the developing countries are facing financial and economic crisis today, the future poses yet still enormous challenges. Growing population, energy consumption, climate change, environmental pollution, deterioration of natural resources, globalization of production networks, multiple cases of violation of human rights in developing countries, and fierce competition in the business community, are just a few examples of the problems facing our societies today and putting at risk the prospects of development of potential future generations of which Sierra Leone is no exception. Supply chain management (SCM) has become a potentially significant way to enhancing competitive advantage and improving organizational performance since competition is no longer between organizations, but among supply chains. This paper conceptualizes and develops four resiliency practices, which involve (flexibility, redundancy, collaboration and agility), and tests the relationships between organizations' financial performance and competitive advantage in the retail supply chain management in Sierra Leone. The study used stratified random sampling to pick a sample size of 95 retailing outlets in the capital city of Sierra Leone - Freetown, which represent different retailing vendors. The respondents were mainly of managers of different retailing vendors. The relationships proposed in the conceptual framework were tested using correlation analysis. The results indicate that higher levels of resilience practices in retailing vendors can lead to enhanced competitive advantage and improved financial performance. In addition, competitive advantage has a direct positive impact on organizational performance.

Keywords

retailing, supply chain management (SCM), resiliency practices, organizational performance, and competitive advantage.

1.Introduction

In today's competitive business environment, the supply chain should efficiently and effectively integrate suppliers, manufacturers, warehouses, and stores so that merchandise is produced and distributed at the right quantities, to the right locations, and at the right time (Simatupang and Sridharan 2018). Supply chain disruptions can be very severe to robust retail supply chains. This complicates the working business environment and hence calls for resiliency practices like flexibility, collaboration, redundancy, and agility in global operations of retail supply chains. (Sheffi 2005) asserted that the growing complexity of managing global supply chains and meeting intensifying customer requirements has made organizations more aware of their operational and economic vulnerability to threats from the global environment. Supply chain resilience can help to reduce and overcome exposure to risks through developing

strategies that enable the supply chain to recover to its original functional state following a disruption (Carvalho, Azevedo, and Machado 2014). Therefore, retail supply chains can use supply chain resilience to prevent and overcome disruptions in case they occurs.

In today's inter-connected world, most organizations recognize the potential risk of experiencing a supply chain disruption. This can be caused by, for example, a workforce strike, extreme weather conditions or a truck breaking down (Xf Shao 2013). Such disruptions can be related to any unplanned and unanticipated event that impacts the normal flow of goods and services (Maslaric et al. 2013). The vulnerability of supply chains disruptions is evidenced by major events in the past. For example, the 2012 earthquake in Japan not only impacted the Japanese and Asian economies, but led to shortages in the automobile and technology industry supply chains in Europe (Xf Shao 2013). Recently, the outbreak of the COVID-19 has caused a huge impact on the global supply chains. Currently, the war between Russia and Ukraine is causing major disruption in the oil and gas supply chains. Once the supply chains are disrupted, retail supply chains are hugely impacted thereby affecting the financial performance and competitive advantage of the entire supply chains.

Sierra Leone like other developing countries, is a cash driven economy located in West Africa bordered by Guinea, Liberia and the Atlantic Ocean. Sierra Leone is a rapidly growing country with an estimated population of 7.72 million, up from 5.5 million in 2008. The country has a population density of 79 people per square kilometre (205/sq. mi), which ranks 114th in the world. The Western Area Urban District, which includes the capital and largest city Freetown, has a population density of 1,224 people per square kilometres. (Perspectives and Governance 2015). The country has limited manufacturing companies and wholesalers. Therefore a greater percentage of its daily economic activities is retailing. Because it is a country with a cash driven rather than a capital drive economy, it relies heavily on retail supply chain management for its revenue generation. Any disruption in the global supply chains will significantly affect the retail supply chain.

A number of researchers have focused on supply chain disruption management in different industries, such as retail industry (Oke & Gopalakrishnan 2009), toy industry (Johnson 2001), consumer electronics industry (Sodhi & Lee 2007) and aerospace supply chain (Sinha et al. 2004).While there have been a significant amount of research conducted in the area of supply chain disruption, relatively little reported about the impacts of supply chain characteristics on disruption mitigation capabilities. Craighead et al. (2007) employ a multiple-method, multiple-source empirical research design to present propositions that relate the severity of supply chain disruptions to supply chain design characteristics and supply chain mitigation capabilities. But they do not explore the relationships among supply chain resiliency practices, financial performance and competitive advantage for a robust retail supply chain management for economies that are cash driven.

In this paper, we investigate the relationships among supply chain resiliency practices, financial performance and competitive advantage to enhance a robust retail supply chain management in the capital city of Sierra Leone - Freetown. We intend to derive specific supply chain resiliency practices that either contribute to or conversely impact the retail supply chain management in Freetown in terms of financial performance and competitive advantage.
This research will propose a model in the form of hypothesis to illustrate the relationship between resilience factors specifically flexibility, redundancy, collaboration and agility to that of a retail's financial performance and competitive advantage to support a vigorous retail supply chain management in Freetown. The relationships proposed in the conceptual framework were tested using correlation analysis.

2.Literature Review

The word retail has its origin from a French word 'retailer' which means to 'break bulk' or 'to cut a piece off'(John 2011). This indeed is the task of the retailer. In simple definition, retail means to sell in small quantities directly to the ultimate consumer. (John 2011) described it as the final sales to mostly non-business customers or end-users often called consumers. According to (Rana, Osman, and Ab Halim 2014), retail supply chain encompasses many vendors that supply several types of products. These products are delivered to distribution centres. After that, products from these various vendors are aggregated with other products and shipment is made from distribution centres to retail outlets. A distinctive component of retail supply chains is that retailers have store outlets through which consumers purchase products.

Supply chain academics have put forward a classification for the identification of different product characteristics in the retail chain. This was believed to be necessary to allow easy grouping of these products based on their replenishment methods, forecast methods, planning systems, cycle times etc. Retail merchandises are therefore classified into two different categories depending on their sales history (Ayers & Odegaard 2008).

Staple products are products that are purchased on a daily basis. These include grocery products, basic clothing, fuel products etc. These set of items have predictable sales. Automated planning systems are used to manage stock replenishments for staple products. This is because these items have a reliable sales history, thus they are forecastable. Staple products can also be sub-categorized into two: Durable and perishable products. Durable staples can be held in excess inventory for the short term unlike perishable items. Product markdowns will to a large extent be avoided. Sales data are used to compute order points and order quantities based on past sales and forecasts. Supply chain design based on operational efficiency is mostly suited for functional product (Chiles, C.R. & Dau 2005).

Innovative products are more difficult to forecast. But they provide huge profit margins to manufacturers or distributors. They are also characterized with short sales period, which usually includes new product introduction, seasonal products etc. Innovative products require a flexible supply chain because they are difficult to forecast. They have a better profit margin and occupy higher mark-up percentages than staple products. More differentially, they have multiple retail paths to customers. Supply chain design based on operational responsiveness is mostly suited for innovative products.

Mensah et al (2015) stated that Supply chain risk can be conceptualized as an event that adversely affects supply chain operations and hence its desired performance measures, such as chain-wide service levels and responsiveness, as well as costs. There are a wide range of events that affects supply chain operations, from environmental, and intra-organizational to inter-organizational. Their impact is divided from short-term to long-term, as highlighted in various literature by practical examples. From the logistics point of view, supply chain member's interaction become very complex, especially in the context of growing uncertainty, where the main drivers of uncertainty are new business models that will apply in order to escalate both the logistics efficiency and competitiveness. Hence, as the main sources of risk in supply chain could be identified in both the relations between members in supply chain and its environment. Maslaric et al (2013), present that risks to supply chain range from short delays to catastrophic disasters and one of the key stages in proactively managing them is to visualize and understand these various types of risks.

While a variety of definitions of the term supply chain risk have been suggested, this research will use the definition first suggested by (Christopher and Peck 2004). They saw supply chain vulnerability as the exposure of the supply chain to the possibility and costs of disruptions. It therefore captures the risk exposure of the supply chain and is often conceptualized together with supply chain risks. For example (Ceryno et al. 1996) state that something that is "at risk, is vulnerable". By addressing the vulnerability of the supply chain, the supply chain risks are addressed(U. and S. 2011).

Jüttner (2005) explained that supply chain disruptions stem from a broad range of risk sources and can emerge from within the supply chain or from external events. Sheffi (2005) in Zsidisin (2010) discussed that in recent years, supply chains have become extended and more complex, while this severity and frequency of supply chain disruptions seems to be increasing. According to the World Economic Forum report lunched in close cooperation with supply chain researchers, it indicates that significant supply chain disruptions reduce the share price of affected companies by as much as seven percent on average.

The origin of the term resilience comes from materials science. It has described the ability of a material to recover its initial state. In general terms, resiliency is surfaced as the ability to recover from, adjust easily to misfortune, or change. From an organizational perspective, resilience has been termed as a dynamic capacity of adaptability, which grows and develops over time (Maslaric et al. 2013). It reflects any organizations capacity to amend and maintain required functions under challenging situations. Thus, resiliency studies within an organization identifies both the ability to absorb shocks in the form of extreme events and an adaptive capability to adjust to new conditions. Gualandris (2015) identify organizations with better resilience practices are more likely to deal with everyday problems, as well as those coming from a crisis. Therefore, resilience is a source of competitive advantage to actualize a robust retail chain management.

3. Hypothesis Development

Competitive Advantage

$H_0$1: competitive advantage is positively associated with financial performance.
H_a1: competitive advantage is positively associated with financial performance.
Competitive advantage is the degree to which an organization is able to build a secured position over its rivals. Having a competitive advantage usually recommends that an organization can have one or more of the following capabilities when related to its competitors: lower prices, higher quality, higher dependability and shorter delivery time. These capabilities will improve the retail's general performance (Gualandris & Kalchschmidt 2015). Competitive advantage can lead to high levels of customer satisfaction and loyalty, and relationship effectiveness.

3.1 Redundancy

$H_0$3a: Redundancy is positively associated with financial performance.
H_a3a: Redundancy is not positively associated with financial performance.
$H_0$3b: Redundancy is positively associated with competitive advantage.
H_a3b: Redundancy is not positively associated with competitive advantage.
Redundancy includes the strategic and selective use of unused capacity and inventory that can be used during a catastrophe to cope with supply shortages or increase in demand (Purvis et al. 2016). Creating redundancy can be a costly means of building resilience. Extra capacity needed along the dangerous route to reduce potential vulnerability and build resilience.

3.2 Collaboration

H04a: Collaborative relationship is positively associated with financial performance.
Ha4a: Collaborative relationship is not positively associated with financial performance.
H04b: Collaborative relationship is positively associated with Competitive Advantage.
Ha4b: Collaborative relationship is not positively associated with Competitive Advantage
Waiganjo & Wambua (2016) define Supply chain collaboration as the capability to work effectively with other bodies for shared advantage, in areas such as forecasting, postponement and risk sharing. Collaboration could also involve information exchange, which can reduce uncertainty; increase transparency and its can enable the creation and sharing of knowledge, about supply chain risks and uncertainties. Collaboration also enable supply chain partners to share the costs of building security and resilience. Moreover, it influences the processes implemented by supply chain partners to ensure supply chain recovery (Cao and Zhang 2011).

3.3 Agility

$H_0$5a: Agility positively associated with financial performance.
H_a5a: Agility is not positively associated with financial performance.
$H_0$5b: Agility positively associated with competitive advantage.
H_a5b: Agility is not positively associated with competitive advantage
According to Vargas (2016), defined supply chain Agility as the ability to respond quickly to unbalanced changes in demand or supply; this could possibly be achieved through a swift change to business processes and systems. Many researchers suggested that supply chain agility is mainly composed of visibility and velocity. Supply chain visibility refers to the ability to see through the entire supply chain. It enables a clear view of the whole chain, which may help in discerning indications of potential disruptions.

3.4 Flexibility

$H_0$2a: flexibility is positively associated with financial performance.
H_a2b: flexibility is not positively associated with financial performance.
$H_0$2b: flexibility is positively associated with competitive advantage.
H_a2b: flexibility is not positively associated with competitive advantage.

Flexibility defined as the capacity of an enterprise to adapt to the changing requirements of its environment and stakeholders with least time and effort. Research has reveal several flexibility practices that can enhance Supply chain resilience, such as postponement, a flexible supply base, flexible transportation, flexible labour arrangements and order fulfilment flexibility (Pujawan 2004). However, it has been debated that flexibility through postponement

enhances resilience during a crisis by accepting demand to a future period. Thus, flexibility causes Supply chain resilience by improving rapid compliance in turbulence. It also supports a supply chain's quick response and recovery, and enabled by the availability of substitute choices such as redundancy, including alternative suppliers. Moreover, Flexibility also enables resources redeployed more easily, including transportation and labour resources, which will in turn boosts the retail's financial performance and competitive advantage.

3.5 Conceptual Model and Framework

The figure below represents a framework developed to show the relationship between resilience factors and a retail's financial performance and competitive advantage in retail supply chain management. The framework proposes that the four resilience factors (Flexibility, Redundancy, Collaboration and Agility) have a positive impact on retail supply chain to achieve financial performance and gain competitive advantage.

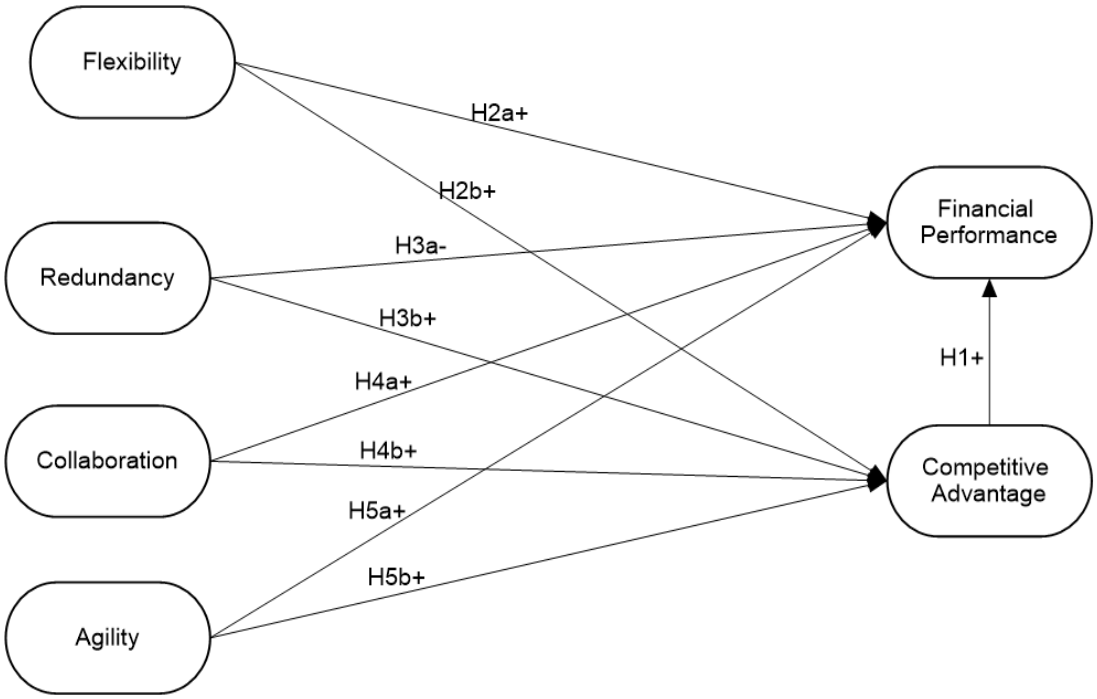

Figure 1. The Proposed Model

This study assumes a cross-sectional survey design using both quantitative and qualitative approaches. Qualitative approach was the main tool for screening of pre-existing theories (e.g. Literature review) to develop theory in the form of hypotheses, tested in an empirical setting to support previous theory. Quantitative research approach was involved in data collection, through administering questionnaire to various managers owning retailing shops and outlets in Freetown. In accordance from the point of view of the respondents in respect to the resilient factors used in the hypotheses and then a substantive conclusion built from the descriptive data, by identifying the main variables and relationships among them. Data analysis was done on the quantitative data received.

The goal of data analysis is to produce convincing conclusions and to eliminate alternative explanations (Miles and Huberman 1994). Data analysis in this research consists of running various statistical procedures and tests on the available data. It involves the conversion of meaningless information, into one that can be understood easily. The purpose of any research is not simply having data, but to deduce information from the data collected.Data analyses done in this research included data screening, normality test, and data reduction technique such as Exploratory Factory Analysis (EFA) and reliability test. In addition, correlation analysis was used to test the hypotheses. Statistical package for social sciences (SPSS) version 17 and statistical analysis system (SAS) studio were also used to compute the above measured analysis for the research.

4. Results and Discussions

The methods used to analyze the data of this study follow the structure of data analysis steps generally recommended in textbooks on research methods. Preliminary univariate statistics such as univariate Summary Statistics for continuous variables was conducted followed by test of univariate normality for continuous variables. In addition, data reduction techniques such as Exploratory Factor Analysis (EFA) and correlation analysis used to check the relationship between the variables were also conducted. Two statistical packages used for data analysis in this research were SPSS version 17.0 and SAS studio student version.

A summary of the simple statistics continuous variables in shown in Table1 below with the following interpretation: flexibility, redundancy, collaboration, agility, financial performance and competitive advantage are labelled as Flex, Redu, Colla, Agil, Finper and ComAd respectively. Table 1 also clearly shows the sample size, sample mean, sample standard deviation, minimum and maximum range of each variable.

Table 1. Simple Statistics

Simple Statistics							
Variable	**N**	**Mean**	**Std Dev**	**Sum**	**Minimum**	**Maximum**	**Label**
Flex1	95	3.24211	1.36612	308.00000	1.00000	5.00000	Flex1
FLex2	95	3.58947	1.18945	341.00000	1.00000	5.00000	FLex2
Flex3	95	3.63158	1.14903	345.00000	1.00000	5.00000	Flex3
Flex4	95	3.43158	1.04833	326.00000	1.00000	5.00000	Flex4
Flex5	95	3.51579	1.05046	334.00000	1.00000	5.00000	Flex5
Redu1	95	3.37895	1.45995	321.00000	1.00000	5.00000	Redu1
Redu2	95	3.62105	0.85277	344.00000	1.00000	5.00000	Redu2
Redu3	95	3.47368	0.92071	330.00000	2.00000	5.00000	Redu3
Redu4	95	3.47368	0.76967	330.00000	1.00000	5.00000	Redu4
Redu5	95	3.52632	0.96582	335.00000	1.00000	5.00000	Redu5
Colla1	95	3.26316	1.25656	310.00000	1.00000	5.00000	Colla1
Colla2	95	3.54737	1.16481	337.00000	1.00000	5.00000	Colla2
Colla3	95	3.34737	1.11821	318.00000	1.00000	5.00000	Colla3
Colla4	95	3.46316	0.98726	329.00000	1.00000	5.00000	Colla4
Colla5	95	3.38947	0.98169	322.00000	2.00000	5.00000	Colla5
Agil1	95	2.88421	1.31168	274.00000	1.00000	5.00000	Agil1
Agil2	95	3.81053	1.03446	362.00000	1.00000	5.00000	Agil2
Agil3	95	3.81053	1.09442	362.00000	1.00000	5.00000	Agil3
Agil4	95	3.56842	1.07834	339.00000	1.00000	5.00000	Agil4
Agil5	95	3.71579	1.03824	353.00000	1.00000	5.00000	Agil5
FInper1	95	3.55789	1.15515	338.00000	1.00000	5.00000	FInper1
Finper2	95	3.60000	0.99360	342.00000	1.00000	5.00000	Finper2

Simple Statistics							
Variable	**N**	**Mean**	**Std Dev**	**Sum**	**Minimum**	**Maximum**	**Label**
Finper3	95	3.54737	0.93135	337.00000	1.00000	5.00000	Finper3
Finper4	95	3.56842	0.84618	339.00000	1.00000	5.00000	Finper4
Finper5	95	3.36842	0.88789	320.00000	1.00000	5.00000	Finper5
ComAd1	95	3.52632	1.29518	335.00000	1.00000	5.00000	ComAd1
ComAd2	95	3.96842	0.99416	377.00000	1.00000	5.00000	ComAd2
ComAd3	95	3.70526	1.09032	352.00000	1.00000	5.00000	ComAd3
ComAd4	95	3.82105	0.93375	363.00000	1.00000	5.00000	ComAd4
ComAd5	95	3.57895	1.05769	340.00000	1.00000	5.00000	ComAd5

By performing exploratory factor analysis (EFA), the number of constructs and the underlying factor structure are identified. Principal component analysis used for extraction in this research was based on eigenvalue greater than one (Samuels 2016). Table 2 below shows the total explained variance of the model. The table also includes the eigenvalues of each factor. The eigenvalue is the sum of the squared factor loadings for each factor. SAS studio extracts all factors that have an eigenvalue greater than 0.1. In this research, the analysis extracted six factors based on the number of factors. In addition, the table also shows the total variance explained before and after rotation. The rule of thumb is that the model should explain more than 50% of the variance; while in this study, the model explained **77.24%,** which is above the acceptable standard (Samuels 2016).

Table 2. Total variance Explained

Eigenvalues of the Correlation Matrix: Total = 20 Average = 1				
	Eigenvalue	**Difference**	**Proportion**	**Cumulative**
1	5.59423701	3.08002783	0.2797	0.2797
2	2.51420918	0.12586233	0.1257	0.4054
3	2.38834685	0.28565778	0.1194	0.5248
4	2.10268907	0.26573083	0.1051	0.6300
5	1.83695824	0.82522149	0.0918	0.7218
6	**1.01173675**	**0.27932450**	**0.0506**	**0.7724**
7	0.73241225	0.06844116	0.0366	0.8090
8	0.66397109	0.15444834	0.0332	0.8422
9	0.50952275	0.07902899	0.0255	0.8677
10	0.43049376	0.06291430	0.0215	0.8892
11	0.36757946	0.04855765	0.0184	0.9076
12	0.31902181	0.04383897	0.0160	0.9236

Eigenvalues of the Correlation Matrix: Total = 20 Average = 1				
	Eigenvalue	**Difference**	**Proportion**	**Cumulative**
13	0.27518284	0.01703377	0.0138	0.9373
14	0.25814907	0.01677123	0.0129	0.9502
15	0.24137783	0.02214252	0.0121	0.9623
16	0.21923531	0.04753796	0.0110	0.9733
17	0.17169735	0.02378742	0.0086	0.9818
18	0.14790993	0.02012338	0.0074	0.9892
19	0.12778655	0.04030365	0.0064	0.9956
20	0.08748290	0.04246760	0.0044	1.0000

The elements of the Factor Pattern reflect the unique variance each factor contributes to the variance of an observed variable. The reason factor analysis is not stopped after this initial rotation is that factors are not easily interpretable, as they currently exist. In an ideal solution, the variables should "load" highly (have a high value that approaches 1) on just one factor each. The results of the rotated factor matrix for Resiliency practices, financial performance and Competitive advantage are summarized in Table 3 below. From the table we can conclude that factor 1 is competitive advantage, factor 2 is collaboration, factor 3 is Agility, factor 4 is financial performance, factor 5 is Redundancy and factor 6 is flexibility because they load perfectly to each of these factors respectively.

Table 3. Factor Loadings after Rotation

Rotated Factor Pattern							
		Factor1	Factor2	Factor3	Factor4	Factor5	Factor6
FLex2	FLex2	0.12786	0.25913	-0.13467	0.01246	0.15392	**0.81691**
Flex3	Flex3	0.19509	0.08455	-0.09321	0.03300	0.14858	**0.76481**
Flex5	Flex5	-0.01410	0.11443	0.14666	0.07082	0.25446	**0.82247**
Redu3	Redu3	0.00027	0.17595	0.18760	0.04458	**0.85071**	0.20265
Redu4	Redu4	0.03967	0.00138	0.05250	-0.00630	**0.85636**	0.16999
Redu5	Redu5	0.10820	-0.03996	0.07602	0.22782	**0.80562**	0.15651
Colla2	Colla2	0.11601	**0.87960**	0.04491	-0.05136	0.11350	0.02626
Colla3	Colla3	0.11384	**0.84095**	0.13773	0.17896	-0.07494	0.09660
Colla4	Colla4	-0.06990	**0.63382**	0.25428	0.33973	0.02069	0.27789
Colla5	Colla5	0.14001	**0.62346**	0.17199	0.14906	0.08567	0.24424
Agil4	Agil4	0.12023	0.29522	**0.85033**	0.08083	-0.04246	-0.04901
Agil3	Agil3	0.06252	0.04941	**0.91572**	0.02645	0.13819	0.00608
Agil5	Agil5	0.11082	0.13466	**0.87442**	0.06811	0.21398	-0.03259
Finper2	Finper2	0.06132	0.09536	0.05420	**0.89835**	0.10623	-0.01512
Finper4	Finper4	0.00589	0.04992	0.07853	**0.88287**	0.06779	0.13771
Finper5	Finper5	0.24646	0.26050	0.01879	**0.75220**	0.07197	-0.01398
ComAd2	ComAd2	**0.84844**	0.07490	0.19848	0.16028	0.02248	0.23943
ComAd3	ComAd3	**0.79093**	0.07271	0.09683	0.10663	0.15909	0.23800
ComAd4	ComAd4	**0.90507**	0.01199	-0.00464	-0.15963	0.04672	-0.04320
ComAd5	ComAd5	**0.79165**	0.22020	0.05805	0.28078	-0.05596	-0.03512

The Pearson product moment correlation coefficient is used to determine the relationship between the resiliency practices, financial performance and competitive advantage for a robust retail supply chain management. The correlation analysis technique in (SAS) studio was used in this research to test the relationship between resilient factors

and the retail performance. The results from the evaluation of the correlation analysis are reported in the correlation matrix in Table 4 and Figure 2 below.

Table 4. Correlation Matrix

Pearson Correlation Coefficients, N = 95 Prob > |r| under H0: Rho=0						
	Flexibility	**Redundancy**	**Collaboration**	**Agility**	**Finper**	**Compadv**
Flexibility Flexibility	1.00000	0.41204 <.0001	0.35813 0.0004	0.02179 0.8340	0.14955 0.1480	0.25718 0.0119
Redundancy Redundancy	0.41204 <.0001	1.00000	0.17984 0.0812	0.24205 0.0181	0.21793 0.0339	0.16202 0.1167
Collaboration Collaboration	0.35813 0.0004	0.17984 0.0812	1.00000	0.35284 0.0005	0.34319 0.0007	0.27020 0.0081
Agility Agility	0.02179 0.8340	0.24205 0.0181	0.35284 0.0005	1.00000	0.17440 0.0910	0.22520 0.0282
Finper Finper	0.14955 0.1480	0.21793 0.0339	0.34319 0.0007	0.17440 0.0910	1.00000	0.25645 0.0121
Compadv Compadv	0.25718 0.0119	0.16202 0.1167	0.27020 0.0081	0.22520 0.0282	0.25645 0.0121	1.00000

Figure 2 below shows the estimated model for the various relationships between resiliency practices, financial performance and competitive advantage derived from the correlation matrix in Table 4 above.

Figure 2. Estimated Model

As shown in figure 2 above competitive advantage has a significantly positive correlation on a retail's financial performance (0.01211; p< 0.05). Thus, H1 supported. The correlation coefficient between flexibility and financial performance is not statistically significant (0.1480; p> 0.05) thus, the null hypothesis H2a rejected. However, the correlation coefficient from flexibility to competitive advantage is significant, in this case the null hypothesis is accepted (0.0119 p<0.05). Thus, supply chains with high level of flexibility exhibit a lower level of financial performance and a higher level of competitive advantage. Likewise, H3a the correlation coefficient from redundancy to a company financial performance is significant thus, the null hypothesis is accepted (0.0339; p <0.05) .However, H3b the correlation coefficient from redundancy to competitive advantage is not significant, thus the null hypothesis is rejected (0.1167; p> 0.05).

Conclusion

Supply chain collaboration has significantly positive correlation to both financial performance (0.0007; p<0.05) and competitive advantage (0.0081; p<0.05) of a retail supply chain. Thus, supply chains with high collaboration exhibit high level of financial performance and competitive advantage. Hence, both H4a and H4b supported. Finally, the correlation between supply chain agility to that of financial performance H5a is not significant (0.0910; p >0.05), and the correlation coefficient from supply chain agility to competitive advantage is found to be significant H5b (0.0282; p<0.05). Thus, supply chains with high level of agility found to exhibit a low level of financial performance and high level of competitive advantage. Hence, H5a rejected and H5b supported. The summary of the hypotheses is shown in Table 5 below.

Table 5. Summary of Hypotheses

Hypotheses	Hypothesised Relationship	Correlation	Significance P –value<0.05	Test
H1	Competitive advantage to Financial performance	0. 2 5 6 4 5	0.01211	supported
H2a	Flexibility to Financial Performance	0.14955	0.1480	rejected
H2b	Flexibility to Competitive advantage	0.25718	0.0119	supported
H3a	Redundancy to Financial performance	0.217930	0.0339	supported
H3b	Redundancy to competitive advantage	0. 1 6 2 0 2	0.1167	rejected
H4a	Collaboration to Financial performance	0. 3 4 3 1 9	0.0007	supported
H4b	Collaboration to Competitive advantage	0 .2 7 0 2 0	0.0081	supported
H5a	Agility to Financial performance	0.17440	0.0910	rejected
H5b	Agility to competitive advantage	0. 2 2 5 2 0	0.0282	supported

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