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KNITTING BRANCH NETWORK EXPANSION VARIABLES TOWARDS AN OPTIMAL INTERPRETATIVE STRUCTURAL MODEL

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ABSTRACT

There is a growing interest in retail operations of supermarkets chains due to the dominant position supermarket retailers hold in the downstream supply chains. Current literature agrees that there are less works on his area. The present study is a flagship study investigating on branch network variables with a greater impact. Using a mixed research design (descriptive and exploratory) the study employs hotellings, retail location and queuing theory to establish the relationship between store layout and branch network expansion using a sample size of 300 respondents in supermarket retail operations. With a response rate of 61%, the findings reveal that store layout design is significantly related to branch network expansion and that supermarket retailers should ensure that their layout designs were in congruent to the total supply chain designs of the suppliers, distributors and warehouses. The study proposes that store layout design is a significantly variable to be used in developing an ISM model for branch network expansion.

Keywords: *Branch Network Expansion, Store Layout and Design, Interpretative Structural Model*

INTRODUCTION

Retail supply chain management is a contemporary and evolving field which is a culmination of two different areas of management, supply chain management and retailing. Even though there many refereed journals in the field of supply chain management and retailing, there are not many research papers in the area of retail supply chains especially supermarkets (Avirat, 2006). Due to the power that comes with the control over consumers, retailers are often dominant in a supply chain and this closeness gives retailers fast information to organize and inform the supply chains. They retail goods to customers and help in management of downstream relationships, enabling the supply chain to deliver value at less costs (Msimangira & Sitalakshmi, 2014).While providing this function they integrate customer demand and other channel member's supply into the supply chain as well as managing their own retail supply chains .Supermarkets just like other retail members are affected by a number of issues that virtually concern all retail and service organizations whose supply chains are reliant on branches. These include where best to site outlets; what size and formats to employ; what mix of products to incorporate; the area over which the outlets should be promoted and choice of the most efficient methods to solve customers' jams. These are generic problems, equally relevant to banks, grocery and superstores, and petrol stations. For banks, groceries and petrol stations, practical frameworks have been developed on branch network expansion modes (Sinha & Uniyal, 2007: Srivastava, 2008).

It is perhaps surprising that practical frameworks for helping retailers to plan their store own supply chains and networks expansion are all but absent from supermarket retail expansion

literature. This has given selected supermarket retailers an advantage to expand their branch network creating oligopolies whose competitive edges cannot be practically explained. Globally, selected Supermarkets sales are growing at a spectacular rate, far faster than those countries' rapid growth rates in gross domestic product (GDP) and entrepreneurial thought (Reilly, 2006). Using a sample of retailers, Dalwadi, Rathod and Patel (2010) studies in ahmadad, found out that it may take another one or two decades before supermarket diffusion was controlled strategically. The authors recommend that supply professionals should start validating retail network expansion variables and lay structures for practical frameworks in this area through generic models.

Supermarket retailing in Kenya

In Kenya retail chains supermarkets represents a third of the retail space and their annual growth is projected to increased at 18% yearly if it grows in tandem with self service demand (Reardon & Hopkins 2012). According to their study, the total sales by the top five leading supermarket chains amounted to $ 800 million in CY 2012 and are expected to keep increasing. These supermarkets include Nakumatt holdings, Tuskys, Naivas, Uchumi and Ukwala supermarket. Together they have a five ratio concentration of 75% and have continued to flourish the harsh retail environment amidst the problems facing their chains and expanded their branch networks successfully.

Statement of the Problem

The retail strategy index for the period 2009 – 2014 recognized branch network expansion as a valuable game plan that could be employed by major supply chain members at retail level. Highlighted in the index were location and branch numbers. The retail study cited the northward and southern branch network expansion of Sainsbury and Asda. The study identified successful supermarkets as those having more than five branches regionally. The Nakumatt retail strategic plans for the period 2010 – 2014, corroborates these studies by highlighting supermarket moves closer to the customer. With all this reports and strategies, supermarkets in Kenya still face branch network expansion challenges. Moreover, the network expansion reports for 2008/2009/2010/2011 and 2011/2012 describes theories explaining retail network expansion as descriptive to the extent that clear paths to branch network expansion cannot be extracted from branch expansion variables. Additionally, information about supermarkets expansion in East Africa has traditionally been limited. In Kenya, focused research on branch network expansion and modeling is inadequate thus allowing five sister supermarkets to expand their supply chains monopoly powers in the retail industry with market concentration of 75% yet they only constitute .005 % of total supermarkets.

Objectives of the study and hypothesis

The general objective of this study was to establish the reliability of store layout design as a variable affecting supermarket branch network expansion and validate it for ISM supermarket branch network modeling, in the Kenyan retail supply chains. Specifically, the objective of the study was to determine the influence of store layout design on supermarket branch network expansion in Kenya. The study was guided by the following hypothesis.

H_{01}: Store layout design does not influence supermarket branch network expansion.

Store Layout Design

A store layout is the design in which a store's interior is set up (Gupta, 2008). The authors explore store layouts as well thought to provide the best movement, arrangement and easy movement. It is designed to create easy movement and arrangement of paths. According to Hino (2010) it describes the overall look and flow in a retail store, including the placement of fixtures and products within the store. Effective layouts are designed to expose customers to the most products possible given the amount of floor space available. A well-planned retail

store layout allows a retailer to maximize the sales for each square foot of the allocated selling space within the store.

Lu (2006) illustrate that store layouts generally show the size and location of each department, any permanent structures, fixture locations and customer traffic patterns. The author further shows that floor plan and store layout depends on the type of products sold, the retail location and how much the business can afford to put into the overall supply chain. Layout for retail stores depends on the retailer's understanding of the different upstream and downstream customers of the supply chain. Hang and Tan (2007) studies on stores perception illustrate that some areas of a retail store generate more sales per square foot and therefore are more valuable. The authors show that use of space is paramount since space needs effectively use, with all the scarce areas planned properly to break up the store into logical and functional areas in terms of appearance, walls, sections, and areas should be planned and positioned well.

According to Levy and Weitz (2007) study on floor layouts, the straight floor plan is an excellent store layout for most any type of retail store. It makes use of the walls and fixtures to create small spaces within the retail store. A well established stream of research rooted on store layout and design reveal that the straight floor plan is one of the most economical store designs (Baltas & Papastrathopoulou, 2005: Bank, Fidley & Sparks, 2008 & Dass, 2012). The diagonal floor plan is a good store layout for self-service types of retail stores. The authors advocate for the diagonal plan by claiming that it offers excellent visibility for cashiers and customers. The diagonal floor plan invites movement and traffic flow to the retail store while the angular floor plan is best used for high-end specialty stores (Nielson, 2008).

Parker and Lehmann (2011) explain that a retailer's optimal store layout is the result of balancing the interests of two different types of markets namely consumers and suppliers in a retail supply chain. Studies by Mishra (2007) on store layout found that a retailer's strategic manipulation of store layout is driven by the incentive to balance the shopping process of fitting uncertain consumers and the pricing behavior of upstream suppliers. In his research, the author argues the two different kinds of markets comprise of the consumers who buy goods, and the manufacturers that supply goods. The author found out that these are very important variables for local retailers and operations managers in increased competition, and it has important implications for supply chains and consumers. This is because the retailers virtually know nothing about the uniqueness of the product until they get into a store and handle the product. This argument is further corroborated by Singh et al, (2005) studies which found out that for many products, consumers typically remain uncertain about a product's fit until physically inspecting it. Supporting the same studies Spekman and Davis (2006) explain that retailers group all identical products together in the same location, thus forcing the manufacturers to compete on layout presented and how it is designed.

Studies by Goyal *et al.* (2009) found out that according to research, retailers want manufacturers to compete on location of products in the store, making it convenient for consumers. The supermarket and its processes, also influences store layouts of upstream manufacturers as not only do operations managers have to decide whether to locate their facilities together or separately, but must also balance that strategy with consumers' perception of the store (Hino, 2010) .According to Ghosh et al (2010) a store layout is the design in which a store's interior is set up, and well thought to provide the best exposure possible and is designed to create an attractive image for consumers and ease logistics while inside the store.

RESEARCH METHODOLOGY

This current study used a mixed research design (descriptive and exploratory) to describe practices of the five major supermarkets in Kenya and validate store layout with an aim of using the variable to formulating a working ISM model. The population for the study

comprised of employees of five major supermarkets (Nakumatt, Tuskys, Uchumi, Ukwala and Naivas) working in operations and key decision areas. The supermarkets are characterized by having more than five branches across the country and with an annual turnover of 0.5 billion (Euromonitor international, 2014).

Table 1: Distribution of operations and key area employees in the selected supermarket in Kenya

Supermarket	**Population**
Branch managers	82
Primary activity supervisors	382
Support activity supervisors	244
Floor supervisors	410
Central warehousing ,Procurement and stores in charge	82
Total	**1200**

Source: (Euro monitor international, 2014).

The sample selected for this study was selected using the slovin formulae as employed by Jankowicz (2011). Chuang (2005) and Bryman and Bell (2010) define a sample as a subject of a specific population. The process of sampling involves the selection of a group of individuals or elements from a target population. The group sample can then stand for the whole population (Anderson & Mittal 2010). The sample of the researcher should select depends on the requirements of the products, its objectives and funds available. The sample selected for this study was derived using the slovin formulae.

$$n = \frac{N}{1 + N(e)^2}$$

Where n = Sample Size
N = the total population
I = constant
E = limit of sampling error

Assuming a sampling error of 0.05, this can be computed as shown below:

$$n = \frac{1200}{1+1200\ (0.05)^2}$$

$$n = \frac{1200}{3}$$

$$= \frac{2400}{1+3}$$

$$= 300$$

Two conditions are required for sample size computation. The sample needs to be between 200-400 respondents (Thakkar et al 2005: Kline 2011 & Tamorski, 2014) and it should be approximately .0125 of the target population (Malone 2005: Kwok, 2012). The study employed a sample size of 300 respondents. Stratified sampling was used to allot the sample among the supermarkets. The allocation is based on the number of branches of the selected supermarkets.

Table 2: Distribution of the selected supermarkets branches in Kenya and respondent distribution among them

Supermarket	**Number of branches**	**Respondents**
Nakumatt Holdings Ltd.	34	63
Tusker Mattresses Ltd. (Tuskys)	60	110
Uchumi Supermarkets	27	50
Ukwala Supermarket chains	11	20
Naivasha Self Service Stores Ltd	31	57

Total	**163**	**300**

Source: (Euromonitor international, 2014).

Secondary data was collected using journal, academic documents and expert opinion. Primary information was sought through a questionnaire-based.

RESULTS AND DISCUSSIONS

A total of 300 questionnaires were distributed to the target population. Out of the 300 distributed, a total of 183 questionnaires were returned. This represents a response rate of 61%. The response rate was satisfactory to draw conclusion from for the study and was deemed representative. Moses and Karlton (1971) as cited by Arshad and Hisam (2008) assert that a response rate above 30% is good and acceptable when the research uses survey questionnaires. According to Mugenda and Mugenda (2009) a response rate of above 50% is excellent. Other studies employing the interpretative structural modeling methodology and a response rate above 50% include studies by Thakkar *et al* (2006) and Sagheer *et al* (2009) with response rate of 52% and 67% respectively.

Table 3: Response Rate

Supermarket	Questionnaires distributed	Questionnaire completed	Response Rate
Nakumatt	63	50	79%
Tuskys	110	68	61%
Naivas	50	35	58%
Ukwala	20	12	60%
Uchumi	57	18	30%
Total	**300**	**183**	**61%**

All the supermarkets had a response rate of 30% and above hence the conclusions drawn from the current study are representative. Nakumatt supermarket had the highest response rate (79%) followed by Tuskys (61%), Ukwala (60%), Naivas, (58%) and Uchumi (30%). The researcher sought to get reliable information from the employees more conversant with supermarket operations and strategy as shown in table 4.

Table 4: Designation of Respondents

Job Designation	Number of respondents	% of total respondents
Team Leader/Branch Manager	36	19.8%
Floor Leaders	56	31%
Stores Supervisor	38	21%
Central Warehouse Supervisor	21	11.5%
Roving Sales supervisors	32	17.5%
Total	**183**	**100%**

Majority of the respondents were floor leaders whose total number was 56 (31%).This was closely followed by stores supervisors 38(21%) roving sales supervisors 32(17.5%) and Central Warehouse Supervisor 21(11. 5%).According to Bowman and Ambrosini (1997) as cited by Kovil (2008) data collected from one class of top managers may not give a clear picture about a firm's strategy. This clearly indicates that there was fair representation in the different levels of decision in supermarket operations. In terms of Duration of branch operation, sixty-seven point two percent (67.2%) of the respondents rated their branches to have operated for a period more than 5 years. Twenty-one point three (21.3%) percent between 2 to 5 years while 11.5% for less than 1 year. Sixty-seven point two percent (67.2%) of the respondents indicated to have been working in the supermarket for a period of above 5 years. Eighteen percent indicated to have worked for a period between 2 to 5 years while 14.8% indicated having worked in the supermarket for a period of less than a year. The length of service could be used to infer the experience and knowledge of the supermarket culture. The long period of work in supermarket respond rate indicates that the data received for this study is reliable.

The study also sought to establish the numbers of pathways employed by the supermarkets. This results are shown in table 5.

Table 5: The number of pathways in the supermarket branch

Number of pathways	Frequency	Percent
1-5	5	2.7
6-10	41	22.4
11-15	104	56.8
16 -20	26	14.2
21-25	7	3.8
Total	**183**	**100.0**

Fifty-six point eight percent (56.8%) indicated 11 to 15 pathways, 22.4% 6 to 10 pathways, 14.2%, 16-20 pathways, 3.8% 21 to 25 pathways and 2.7% for 1-5 pathways. Studies by Quinn and Stewart (2007) show that the numbers of pathways employed by supermarket branches varied from supermarket to supermarket. Although their study never provided a generic number, their longitudinal study on major UK supermarkets retailers using CCTV cameras found out that pathways between 11 and 20 were the most preferred for in store convenience and data extraction of consumer logistics behavior. Previous studies by Archna and Audhesh (2006) on space management through data tracking devices indicated that each supermarket store typically had a fixed number of square meters to use. According to the study if one segment was increased the space of another would reduce. Matopoulous et al (2007) contradicts the above findings by asserting that in a competitive retail environment, the number of pathways adopted depended on each retail gross return on footage (GMROF) guided by sales per square foot per day statistics. These findings are further affirming the help accorded by the pathways in helping the customers find the products first time on different trips. Citing Archna and Audhesh (2006) and Matopoulous et al (2007), Collins (2014) recommends that this depends on the permanent structure within which the supermarket was located, customer traffic and the types of products displayed.

On the number of Display formats employed by supermarkets. Fifty-nine percent (59%) of the respondents indicated 11-15 formats. This was followed by 6-10 formats (19.1%), 16-20 formats (15, 8%), 21-25 formats (4.4%) and 1-5 formats (1.6%). The results are shown in table 6.

Table 6: Display formats

Display formats	Frequency	Percent
1-5	3	1.6
6-10	35	19.1
11-15	108	59.0
16 -20	29	15.8
21-25	8	4.4
Total	**183**	**100.0**

These findings collaborate with Varpou (2007) which indicated that the display formats in supermarkets are significantly related to the number of pathways on offer and provided that the most prevalent formats were 11-15. Hin et al (2008) game theoretical model assert that in order to benefit from display formats selected, supermarket retailers selected between display all (DA) or DO format (display only 1). Citing Varpou findings, Yin et al (2008) studies also support that display format strategically depended on extremes of display all (DA) and the (DO) format as illustrated by the Hin (2008) game theoretical model. Contrary, the authors further revealed that the best display formats were 6-20. On whether the population density relationship with floor space guided in establishment of new branches, sixty-seven point two percent (67.2%) of the respondents agreed that the population density in a store as a ratio of the floor space determined moves to establish new branches. Fourteen point two percent

(14.2%) of the respondents were indifferent, 10.4% strongly agreed, 4.9% disagreed and 3.3% strongly disagreed. Corroborating the findings, Ming-Ling *et al* (2011) study on supermarket and store characteristics in the UK supermarkets, identified population and its relationship to floor space to be a major determinant of supermarket expansion moves.

Moradi *et al* (2013) studies on population density reports that population density and floor space relationship could be factored on 10 minutes minimum customer waiting time. The study further found out that population density information was significantly related to queue lengths. The authors further report that queue lengths at the counters were inversely proportional to the square of the service speed irrespective of the floor space. However, Nag et al (2014) study on retail customer density cautions that population density should be measured in continuous flow and not associated with queue flow as this could be misleading.

The researchers further sought to establish if the store layout of a branch had similarities with the warehouse layout. Sixty-seven point eight percent (67.8%) of the respondents had the highest ranking in agreement. Fourteen point two percent (14.2%) were indifferent, 7.1% disagreed, 6.6% strongly agreed while 4.4% of the respondents strongly disagreed. The results show the significance of collaboration activities for the selected supermarkets. The current study corroborates results of Bobot (2011) on Winco Supermarket store layout. The study found out that Winco store layout highly resembled their distribution centre model providing large isles, giant shelves and bulk product display. Although Bobot (2011)'s survey failed to identify underlying reasons for all stores, he qualified that Winco's Stores were similar to its warehouse style of 85,000 to 90,000 square feet.

In later studies, Clement *et al* (2011) also support collaboration efforts of the warehouse and the store. In their exploratory study on Gree Supermarket and Z retail in china, the authors found out that Chinese manufacturer posed high powers over retailers and therefore retailer stores and warehouse were significantly aligned to the manufacturer's layout for strategic reasons of quick stock offloading and delivery. Other Corroborating studies are those of Nag *et al* (2014) that analyzed manufacturing industry data using design methods similar to Clement (2011). The study indicated that in the USA, structuring store layout with in-stores and manufacturing warehouse layout helped in-store logistics, predict the manufacturers supply chain strategy and provided reliability of response times. The results obtained by Sanchez *et al* (2015) would appear to refute the view that store layout will always be similar to the manufacturers store layout.

Carrying out a field experiment in Greece on horizontal logistics collaboration, Sanchez *et al* (2015) indicateS that at times the warehouse and distribution centres agility reduced retailer layout resemblance to the manufacturer's. The authors also found out those consignment sales awarded more powers to the retailers although these powers could not force the manufacturer to align his warehouse to particular retailer layout more so when serving many retailers. The study further sought to establish the significance of retail isle width on in-store retailing. Seventy-four point three (74.3%) percent indicated that retail isle width was very significant in retail network expansion. Nine point three percent (9.3%) were indifferent, 8.2% strongly agreed while 6% disagreed and 2.2% strongly disagreed. The mean rating was above 4 and the agreements were over 50%. Parracho et al (2009) studies indicate that space productivity is critical to successful retailing. Their studies maintain that supermarket retailers needed to benchmark minimum isle standards in the stores to ensure that check-out times and ease of shopping are not affected.

Corroborating Parracho *et al* (2009) and Nag *et al* (2014) provide a working rule of improving conveyance in the supermarket stores by providing that the best minimum isle width was that sufficient to allow two hand trolleys to pass one another plus some margin left for customer movement. While making general findings about space management, Katerina *et al* (2008) significantly, associates retail management and layout improvement to retail

store crowd density management. The authors indicate that retail isle numbers needed to be increased to multi levels from entrances towards check-out points.

On whether the number of transactions per counter relationship with floor space guided in branch decisions, seventy point five percent (70.5%) of the respondents agreed, 14.2% strongly agreed, 9.3% were indifferent, 4.4% disagreed while 1.6% strongly disagreed that transactions per counter, and floor space relationship was significant in supermarkets retailing. Corroborating the current studies Yavuz and Akvali (2008) support the significance of the transactions per counter relationship with floor space as it helps retailers to keep track of the number of transactions carried out in relation to floor foot available. In their study on Walmart in the UK and Germany Pioch *et al* (2009) also indicated that the transactions per counter relationship to floor space was significant for retail activities since it assisted supermarkets in management of store checkout speeds.

On whether the relationship between the current and nominal floor space was vital in making branch network decisions, 66.1% respondents agreed that the amount of floor space in relationship to nominal ratio was significant, 17.5% were in strong agreement, 11.5% were indifferent, 3.8% disagreed while 1.1% strongly disagreed. It is well known from previous studies (Firey, 2008: Fernie 2008 & Fewcett et al 2008) that floor space insignificantly assisted on branch network strategy. Firey (2008) indicated that floor space could easily be manipulated by isle configuration and facility layout. Fawcett *et al*. (2008) corroborates that any additional space in a store could be used for other purposes such as loading zones or even stocking areas.

Fernie (2008) on a study on barriers of effective retail supply chain, found out that nominal floor space could be allowed to oscillate up or down by 10%. Faber *et al* (2013) study on Walmart revealed that despite the ambiguity that existed, there should be a discriminatory line drawn between the available and the opportune. Their study proposed that an area is beyond 120% of the nominal area added no but economically unused space.

The current study also sought to establish the significance of retail costs in relation to sales per square feet in branch network strategy. Results from the study reveal that 72.1% of the respondents rated this as significant in making branch network decision. Ten point four percent (10.4%) of the respondents disagreed while 17.5% were indifferent. Carrying out a survey on 125 representatives of large supermarkets chains in Brazil, Hugo et al (2009) corroborated these results by indicating that such a measure is very significant since it measures occupancy, cost per square foot, selling space given as a fraction of occupancy costs and selling space. The authors indicated that these relationships translate occupancy costs into dollar value per selling space. A similar study by Ming-Ling (2011) on Walmart and Carrefours' resolution of structural problems indicated that the relationship would be used to estimate the amounts of gross margin in dollars in each unit of space employed to cover occupancy costs. The authors further indicated that the measure was helpful in comparing performance of units for multiunit retailers in different locations which would be useful in store closure or retention decisions.

Correlation analysis of store layout and branch network expansion

Pearson correlation coefficient is a measure of linear association between two variables. According to Pallant (2005) values between 0.01 to 0.29 show small correlations, 0.03 to 0.49 medium while values between 0.50 to 1.0 show high correlation. The results are shown in table 7.

Table 7: Store layout design Pearson correlation computation

		Branch Network Expansion	**Store Layout**
Branch Network Expansion	Pearson Correlation	1	.505**

	Sig. (2-tailed)		.000
	N	183	183
Store Layout	Pearson Correlation	.505**	1
	Sig. (2-tailed)	.000	
	N	183	183

**. Correlation is significant at the 0.01 level (2-tailed).

The correlation coefficient between store layout and branch network expansion is 0.505 at p =0.000.This is highly significant linear correlation between the two variables since the relationship is close and above the recommended 30 % (Newman & Cullen , 2005).This supports the argument by Ugur *et al* (2010) which indicate that a well planned retail store layout allows retailers to maximize on allocated retail branches and help in network strategy .Experimenting with performance models in New Zealand the authors argue that the store layout strategy adopted by a particular retailer aligned their activities to the procurement and distribution approaches specific to their branch network strategy when opening and closing branches. Zijlstra and Mobach, (2011) on layout exploration of layout principles found out that good and similar retail layout designs assist in obtaining all branches of the retailers supply chain to the same degree of desirability. Although Notteboom and Rodriguez (2005) arguments do not elaborate on the strength of the relationship, employing the gross effect model the authors argue that there was a positive relationship between store layout and branch network expansion strategy. Their findings focused on retailers who applied the hub and spoke network model of branch expansion with head offices controlling all logistical activities of growing trade volumes. Agins *et al* (2006) indicate that the store layout and design of the flagship stores are operated with the intention of building or reinforcing the image of the retail supply chain brand for easy network expansion rather than operating to sell product at a profit. Mandal and Deshmukh, (2008) indicate that the store layout is best if it is optimizing to the retail chain space while expanding. Using the case of Patagonia inc. is a California-based retailer, the author illustrates that the allocation spacing error has a direct effect on the company's supply chain and branch network strategy and there will be no standard layouts to follow when updating or opening a new store.

Regression analysis on store layout and design

The model equation $y=b_ix_i+e$ explains 25.1% as measured by the goodness of fit as shown in table 8.

Table 8: Model summary for regression between store layout design and branch network expansion

R	R Square	Adjusted R Square	Std. Error of the Estimate
.505[a]	.255	.251	1.64237

a. Predictors: (Constant), Store Layout

Results indicate that store layout explained 25.1% of the variations in branch network expansion as shown by the adjusted r^2. This indicate that 25% of the corresponding change in branch network strategy can be explained by a unit change in store layout. This supports the argument by Cateora *et al* (2012), who indicate that store layout design is one of the more important determinants of store loyalty and branch supply chain strategy. The authors illustrate that store layout design help in allocation of space is important to how Patagonia stocking of goods and similar retail appearance particularly when employing the franchise approach. Another study of Simonson (2012) also mentions that store layout design can play a key role not only in satisfying buyer's requirements but also in influencing their wants and preferences in new locations. The ANOVA results indicate that the model of branch network expansion with store layout design at F=61.906, p>0.05 indicate that there is a highly significant relationship between store layout and branch network expansion. The results are presented in table 9.

Table 9: ANOVA results for store layout design and branch network expansion

	Sum of Squares	df	Mean Square	F	Sig.
Regression	166.985	1	166.985	61.906	.000[a]
Residual	488.227	181	2.697		
Total	**655.212**	**182**			

a. Predictors: (Constant), Store Layout

b. Dependent Variable: Branch Network Expansion

The results indicate that store layout is influential in predicting branch network expansion in supermarket retailing in Kenya and this supports Roslin and Rosnan (2012) who indicate that layout contributes to retailer's efficiency, increased productivity and higher sales when expanding into new locations. Rymarzak and Sieminska (2012) also indicate by concurring with the findings that the ideal layout dictates on the retailer's strategy for gaining expansion advantage.

Results of coefficients for regression between store layout design and branch network expansion show that store layout has a positive influence on employee performance. This is illustrated by the regression results at 5% level of significance with unstandardised beta coefficient of 0.234 and **t** value of 7.868 with a P value of 0. 000.This is shown in table 10.

Table 10: Coefficients for regression between store layout design and branch network expansion

	Unstandardized Coefficients		Standardized Coefficients		
	β	**Std. Error**	**Beta**	**t**	**Sig**
(Constant)	10.932	.714		15.307	.000
Store Layout	.234	.030	.505	7.868	.000

a. Dependent Variable: Branch Network Expansion

In supporting the results of the significance of store layout on branch network expansion previous studies conducted by Seyed (2005) indicate that in facilities design, retail layout has been determined to be one of the most important elements in the effectiveness of systematic branch operability and new branch acceptance in new markets. Citing Tompkins *et al*., (1996), Lala and Chakrabaty (2015) argue that effective facilities planning through good layout designs can reduce material handling cost by at least 10 to 30 percent and have a positive influence on branch network expansion since it reduces expansion costs. Using the coefficient of regression, the store layout hypothesis was testes as stated by Comparing the t calculated and t-critical.

Table 11: Hypothesis' testing for coefficients of regression between store layout design and branch network expansion

Model	β	t-cal	t-critical
constant	10.932	15.307	
Store layout design	0.234	7.868	1.96

Comparing the t calculated and t-critical $(_{183-1})$ $(_{0.05})$ the t-calculated is greater than the t-critical hence the study rejects the null hypothesis that there is no significant linear relationship between store layout design and branch network expansion. The study therefore accepted the alternative hypothesis that there is significant linear relationship between store layout design and branch network expansion. In support of this statement Madaan (2009) argues that the layout of the store is highly significant and influences both the customer experience and the speed of retail chain expansion in both new and established markets. This finding also supports the framing theory store division sales, share models and customer segmentation models. Employing the models, De-Giovanni,*et al* (2011) suggest that presenting the same layout and design in the same formats when expanding branches can provide brand loyalty to particular retail chain decision.

Recommendation and Managerial implications

The study recommends that supermarket retailers develop store layouts and designs similar to the stores, distribution centers as well as the suppliers. There is also need that store layout adopted be able to consider the expansion strategies of the head office and the other stakeholders. The supermarket chains need to treat store layout as a scarce resource and therefore adopt layout designs promoting efficient execution of in store logistics as well as allowing efficient delivery of merchandise. Within retailers employing consignment models, it is recommended that supplier retail chain layouts and designs should be crafted based on the retailer's. The study further recommends that store layout is highly significant and should be modeled alongside the other branch network expansion variables towards an optimal interpretative model for retail supply chains.

REFERENCES

Ahmad.Y.(2009) "Waiting for service at the checkout: Negative emotional responses, store image and overall satisfaction", *Journal of Service & operations Management*, *23 (2),*144 – 169.

Agin., M.T (2006). Relationship marketing: Understanding and implementing the Concepts. *Journal of Business Administration*, *30 (1/ 2)*61-78.

Anderson, G., & Mittal, L.S. (2010), "Retail relationships and store loyalty: a multi-level perspective", *International Journal of Research in supply chains, 3 (14)* 487-97.

Archna V., & Audhesh P, (2006) "Private label brand image: its relationship with store image and national brand*", International Journal of Retail & Distribution Management*, 34 (1) 67 – 84.

Arshad., S.A. & Hisam, M.W. (2008) *Issues in Retailing, Research in Management and Technology,* Ed. by Aneet and Ramanjeet Singh, Deep and Deep Publications Pvt. Ltd., 109-118

Avirat., S (2006), "A Valuable System – Different aspects of managing the supply chain in retail", *Retail Biz, 12(2)*37-38.

Baltas, A.D. & Argouslidis, B.P. (2005), "Relationship marketing and retailing: comfortable bedfellows?" *International Journal of Customer Relationship Management*, 1*(1)* 39-53.

Bank, J., Findlay, A & Sparks, L. (2008), *the Retailing Reader,* Routledge, London.

Bobot.,AM (2011) "Managing in-store logistics: a fresh perspective on retail service", *Journal of operations Management*, 24 (2),112 – 129.

Bowman,G., & Ambrosini.F (1997) retail format choice in the making. J*ournal of Commerce and Management*, 25(4),406 – 409.

Bryman LS & Bell., D (2010), *The Good Research Guide For Small Scale Social Research Projects*,McGraw-Hill, New York, NY.

Cateora.S.,Cao, L. & Dupuis, M. (2009), "Core competences, strategy and performance: the case of international retailers in China", *The International Review of Retail, Distribution & Consumer Research,* 19 (4) 349-69.

Chuang,M (2005), *Business Research Methods,* McGraw-Hill

Collins. W.P (2014), "Investments in consumer relationships:a cross country and cross industry exploration", *Journal of logistics management,* 5 (4),33-50.

Dalwadi, R., Rathod H.S. & Patel, A. (2010) "Key Retail Store Attributes Determining Consumers' Retail Stores Located in Ahmadabad (Gujarat)", *SIES Journal of Management*, 7, (1) 20-34.

Dass, C. (2012). *The Inspired Retail Space.* Gloucester, MA: Rockport Publishers.

Euromonitor International. (2014). Retail report –Kenya Retrieved from GMID: Global Market Information Database

Fawcett, S, E. Magnan, G., Matthew .,& McCarter, W. (2008) "Benefits, barriers, and

bridges to effective supply chain management", *Supply Chain Management: An International Journal,* 13 (1),35 – 48.
Faber.,M.B.M & Dekoster .,A.S (2013) Organization Warehouse management, *international journal of operations and amp: production management* .33 (9)1230-1256.
Fernie, J & Grant, D. B. (2008) "On shelf availability: the case of a UK grocery retailer", *The International Journal of Logistics Management*, 19 (3),293 – 308.
Firey, S. (2007), "Loyalty-based segmentation and the customer development process", *European Management Journal,* 16 (6) 729-37.
Ghosh, P., Tripathi, V. & Kumar, A. (2010) Customer expectations of store attributes: A study of organized retail outlets in India", *Journal of Retail & Leisure Property, 9(1)*75–87
Goyal, B. & Aggarwal, M. (2009) "Organized retailing in India- An empirical study of appropriate formats and expected trends*", Global journal of Business Research, 3(2)*77-83.
Hino.H (2010) "Antecedents of supermarket formats` Adoption and usage: A study in context of non-western customers", *Journal of Retailing and Consumer Services,* 17(1)61-72.
Hin, S. J., Kim, B., Montogomery, A. L., & Rossi, P. E. (2005). Deter-minants of store-level price elasticity.*Journal of operations Research,* 32(2)17–29.
Jankowtz .A (2005) "A customized measure of service quality in the UAE", Managing Service Quality: *An International Journal*, 15 (4),374 – 388.
Hugo.,J V., & Ho, L (2009) "Collaboration intensity in the Brazilian supermarket retail chain", *Supply Chain Management: An International Journal,* 14 (1)11 – 21.
Kovil.V.N.M (2008) Strategy formulation and i9mplementation in manufacturing organizations: the impact on performance. *International journal of retail and distribution management 28(4*)25-32.
Kumar .S. V (2014) "Outshopping in rural periodic markets: a retailing opportunity*",* *International Journal of Retail & Distribution Management*, 42 (2),151 – 167.
Kwok, H. L (2012). Distribution network rationalisation through benchmarking with DEA. *Benchmarking: An International Journal* **19**(6) 668-689.
Lala.,V & Chakrabaty., G (2015) impact of consumer efforts investment on buying decisions.*journal of consumer marketing & operations .32(3*)61-70.
Levy, J. & Weitz, R. (2007), "Competitive advantage through anticipation, innovation and relationships", *Management Decision,* 37 (1) 51-6.
Lu, V. (2006), "A dynamic process model of service quality: from expectations to behavioural intentions", *Journal of operations Research*, 30.7-27.
Malone, D.W. (2005), "An introduction to the application of interpretive structural modeling", *International Review of Retail, Distribution.* 3 (3)17-40.
Mandal, A. & Deshmukh, S.G. (2008), "Vendor selection using interpretive structural modeling(ISM)", *International Journal of Operations & Production Management*, 14 (6) 52-9.
Matopoulos, A., Vlachopoulou, M. . Manthou, V .& Manos, B (2007) "A conceptual framework for supply chain collaboration: empirical evidence from the agri-food industry", *Supply Chain Management: An International Journal*, 12 (3).177 – 186.
Mishra, S. (2008) "New Retail Models in India: Strategic Perspective Analysis", *Journal of distribution & Communication,* 4(2)39-47.
Mittal, A.& Mittal, R. (2008) "Store Choice in the Emerging Indian Apparel Retail Market: An Empirical Analysis", *IBSU Scientific Journal,* 2(2)21-46
Moradi, Hadi & Zandieh, M. (2013) *"An imperialist competitive algorithm for a mixed model assembly line sequencing problem", Journal of Manufacturing Systems, 32, 46-54.*

Msimangira,K. A., & Sitalakshmi, V (2014) Supply chain management integration: acritical problem and solution. *Operations and Supply chain management* 7 (1) 23-31.

Mugenda, A.G. (2009) *Social science research*. Nairobi: Acts Press.

Nielson, V. (2008), "On the profitability of long-life customers in a Non-contractual setting: an empirical investigation and implications for marketing",*Journal of logistics , 64*, 17-35.

Newman, D., & Cullen, B. (2005), *Doing Research in Business and Management*, Sage, London.

Notteboom , K.E & Rodriques ,S.E. (2009), "Customer benefits and company consequences of customer-salesperson relationships in retailing", *Journal of Retailing*, 75 (1), 11-32.

Pallant, A. (2005), "A critical incident approach to the examination of customer relationship management in a retail chain: an exploratory study*", Qualitative Market Research: An International Journal,* 6 (4) 248-62.

Parracho.D (2009) Decision Support Systems, *International Journal* .13 (1) 49-61.

Parker, J &. Lehmann. D. R (2011). "When Shelf-Based Scarcity Impact Consumer Preferences," *Journal of Retailing*, 87 (2), 142–55.

Pioch, E., Gerhard, U., Fernie, J., & Arnold, S. J. (2009) "Consumer acceptance and market success: Wal-Mart in the UK and Germany", *International Journal of Retail & Distribution Management,* 37 (3),205 – 225.

Quinn. P.L & Stewart. L.K (2007) "An exploratory study of outsourcing 3PL services: An Australian perspective", *Benchmarking: An International Journal,* 18 (3)342 – 358.

Reardon, T.& Hopkins, R. (2012), "The supermarket revolution in developing countries: policies to address emerging tensions among supermarkets suppliers and traditional retailers", *The European Journal of Development Research*, 18 (4) 522-45.

Reilly, F.F. (2006), *The Loyalty Effect: The Hidden Force Behind Growth, Profits and Lasting Value,* Harvard Business School Press, Boston, MA.

Roslin, T & Rosnani.M.T. (2012), "Decomposing the value of department store shopping into utilitarian, hedonic and social dimensions", *International Journal of Retail & Distribution Management,* 34 (1)6-24.

Sagheer, S.,Yadav, S. & Deshmukh, S.G. (2009) "An application of interpretative structural modeling of the compliance to food standards", *International Journal of Productivity and Performance Management,* 58 (2),136 – 159.

Sanchez,V.,Irina H., & Mason, R (2015) "Horizontal logistics collaboration for enhanced supply chain performance: an international retail perspective", *Supply Chain Management. International Journal.* 20 (6), 631 – 647.

Singh, M.D., Shankar, R., Narain, R., & Agarwal, A. (2005), "An interpretive structural modelingof knowledge management in engineering industries", *Journal of Advances in Management Research,* 2(1)7-39.

Spekman, R.E. & Davis, E.W. (2006), "Risky business: expanding the discussion on risk and the extended enterprise", *International Journal of Physical Distribution & Logistics Management,* 34 (5)414-33.

Srivastava, R.K., Shervani, T.A. & Fahey, L. (2009), "Marketing business processes and shareholder value: an organizationally embedded view of marketing activities and the discipline of marketing", *Journal of operations,* 63 (2) 168-79.

Tamorski.,H (2014) Modeling the barriers of supply chain collaboration .*Journal of Modelling in Management* .5 (2) 176-193.

Thakkar, J., Deshmukh, S.G., Gupta, A.D. & Shankar, R. (2005), "Selection of third-party-logistics (3PL): a hybrid approach using interpretive structural modeling(ISM) and analytic network process (ANP)",*Supply Chain*: *An International Journal*, 6 (1)32-46.

Ugur, J. (2010). *Retail Desire: Design, Display and Visual Merchandising*. East Sussex, UK:Sheridan House

Yavuz, M.& AKçali, E(2007) *"*Productionsmoothing in just-in-time manufacturingsystems: a review of the models and solutionapproaches*", International Journal of production*, 45(16),3579-3597.