Factors influencing customer selection of omni-channel supermarket retailing: An empirical study in Sri Lanka

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Abstract: Purpose: This study aims to identify the factors affecting and impacting the Omni channel selection of customers in supermarket retailing, addressing a research gap in this area. Methodology: The researcher conducted an empirical study using a questionnaire distributed among 384 supermarket customers. Factor and regression analyses were performed to determine the influential factors. Results: The study found that risk management, experience and expected performance, security aspects, and customer compatibilities have individual effects on customer Omni channel selection. Additionally, recommendations were made to enhance the value of existing or future Omni channel supply chains. Theoretical contribution: This research contributes to the understanding of customer behavior in Omni-channel supermarket retailing, particularly in the context of a developing country like Sri Lanka. The findings can inform both academic and practical discussions on supply chain management and e-commerce. Practical implications: The study’s recommendations can guide supermarket retailers in improving their Omni-channel strategies, ultimately enhancing customer satisfaction and loyalty. This, in turn, can positively impact the retail industry and the broader economy of Sri Lanka.

Keywords: Omni channel, supply chain, supermarket retailing

1. Introduction

Supply chain management is vital in every business to achieve a competitive advantage. A supply chain includes all direct and indirect activities related to fulfilling a customer’s need (Chopra & Meindl, Supply Chain Management, 2021). Every business needs to interact with its supply chain channel partners when managing the information flow, product flow, and money flow at different supply chain stages.
The ultimate goal of every business is to maximize profits while reducing costs (Jayarathna & Jayawardena, 2019). However, in the modern world, businesses believe ‘customers’ are the most vital supply chain channel partners because a business’s future or growth depends upon customer satisfaction. On the other hand, ‘retailers’ are also an important part of a supply chain because they are the only channel partners in a supply chain who directly interact with the customer. Therefore, retail businesses continuously innovate strategies and mechanisms to enhance customer satisfaction. Adapting the Omni channel approach to supermarket supply chains benefits retailers and customers. Through the Omni channel approach, retailers can fulfill customer needs at a lower cost and more efficiently than a traditional method (Verhoef, 2021). Therefore, most of world’s famous supermarket supply chains vastly encourage an Omni channel approach in their supermarket retail businesses (Chopra, How omni-channel can be the future of retailing, 2015).

Experts in the supply chain world consider the Omni channel the future of retail supply chains. Therefore, the Omni channel approach can be identified as one of the most popular research topics in the retail supply chain world. The need for a hybrid approach of online and offline channels in retail supply chains is a significant requirement to offer customers a convenient and flexible shopping experience.

Considering these influences that the Omni channel concept generates on the supermarket supply chains and country's economy, this research will help identify the influential factors that impact customer decisions on selecting Omni channel approach related to supermarket retailing and the benefits of Omni channel supply chains.

2. Literature review

Technological improvement

In the present world, technological advancement and comprehensive access to the internet have reshaped customer expectations and the way of doing business in many ways. In the evolution of e-commerce, the first trend of e-commerce is considered as the introduction of online channels (from the 1990s to 2004), multi-channels (from 2005 to 2014) as the second trend and Omni channel (from 2015 to today) as the third and latest trend of the e-commerce (Gerea, Gonzalez‐Lopez, & Herskovic, 2021). In the retail supply chain world, these customers are known as Omni shoppers or Omni customers. Experts in the supply chain world believe the Omni channel approach is a remarkable concept that enhances efficiency in downstream supply chains. (Zaware, Pawar, & Kale, 2020).

Brick and Mortar model

Brick and Mortar model is the most traditional way of accommodating ‘offline shopping’ experience to customers. In other words, in the Brick and Mortar model customer’s physical presence in the store is required. Carrying heavy groceries, staying in queues, and road traffic are some of the main difficulties faced by grocery shoppers in Brick and Mortar method (Sulastri, Nawi, Abdullah, & Latif, 2017), while some of the main benefits of Brick and Mortar method are the ability to see, touch and feel products before purchasing products (Staflund & Kersmark, 2015).

Online shopping

Online shopping is the first evolution of e-commerce. In pure online shopping, the customer’s entire shopping experience is fulfilled via online platforms. With the development of e-commerce, retailers enhanced the quality of customer’s online shopping experience by increasing convenience in ordering, flexibility in last-mile delivery and the ability to review past customer experiences (Staflund & Kersmark, 2015). On the other hand some of the main drawbacks of online shopping are product quality concerns, high delivery charges and security concerns (Aziz & Wahid, 2018) (Sulastri, Nawi, Abdullah, & Latif, 2017).

Multi-channel approach

In a multi-channel approach, businesses use multiple channels to interact with customers, where offline channels and online channels act independently (Ayensa, Mosquera, & Murillo, 2016). In a business with a multi-channel approach, there are separate divisions for sub-activities such as multi-channel marketing, multi-channel- retailing, multi-channel- customer management etc. Further, the
concepts of ‘Omni channel supply chains’ was introduced as an extraction to ‘Multi channel supply chains’, where online channels and offline channels are integrated and customers can easily switch between channels.

Omni channel approach

The term ‘Omni channel’ was introduced in 2009 by the International Data Corporation’s (IDC) retail insight research unit (Zaware, Pawar, & Kale, 2020). In Latin, ‘Omnis’ means ‘all’ or ‘everything’; therefore, the ‘Omni-channel’ is described as ‘all channels managed together’. In the Omni channel approach, online and offline channels are integrated to offer customers a seamless shopping experience. The main objective of the Omni channel approach is overcoming the challenges of purely online supply chains and offline supply chains (Montreuil, Omnicom channel Business to Consumer Logistics and Supply Chains: Towards Hyperconnected Networks and Facilities, 2016), while integrating the benefits of online and offline supply chains. Chopra, How Omni-channel Can be the Future of Retailing (2015) argues that businesses use Omni channel supply chains to overcome the drawbacks of traditional (Brick and Mortar) supply chains and purely online-based supply chains.

The primary reason for customer preference for the Omni channel approach is the seamless shopping experience provided by integrating online and offline channels (Gerea, Gonzalez-Lopez, & Herskovic, 2021). Also, it has proved that the Omni channel approach enhances customer loyalty and satisfaction. Moreover, ‘volatility in customer demands and the ability to increase the customer base by offering a flexible service’ can be identified as the critical drivers for the Omni channel approach (Staflund & Kersmark, 2015).

Moreover, there are seven types of retail customers: home buyers, economic buyers, mall buyers, ethical buyers, personalized buyers, and convenience buyers. The behavioral intentions of each kind of buyer is different (Vijayasarathy & Jones, 2000). By integrating both online and offline channels, the Omni channel approach can satisfy each customer's purchasing intention.

The five steps can be seen in customer's Omni channel shopping experience. They were namely researching, testing, purchasing, receiving products and returning. In the Omni channel approach, customers can use different channels to fulfill the above five steps (Delft, 2013).

3. Methodology

Research design

The primary research objective of this study is to identify the factors affecting customers’ Omni channel selection related to supermarket retailing. The dependent variable of this study is customer selection of Omni-channel in supermarket retailing, while the independent variables are mentioned in a conceptual framework. This study is an explanatory research that evaluates the impact of independent variables on a dependent variable explained in a study.

Target population

The targeted population of this study is the customers who use the Omni channel for their supermarket shopping in the Kandy district.

Sample technique and sample size

The purposive sampling technique was selected for this study. Purposive sampling was used to gather required information, and due to undefined population, 384 responses were taken as the study's sample size.

Data collection and analysis

The study’s primary data collection method is used. The primary data for the study collected through distributing an online questionnaire and hard copies among supermarket customers. The data was analyzed in version 25 of Statistical Package for the Social Sciences (SPSS).
4. Discussion of the results

Demographic profile analysis
The demographic profile of the respondents was analyzed through a descriptive analysis.

Gender distribution
According to the gender distribution of the study among the total respondents, 52.9% of customers are male, while 47.1% are female. The study indicates that male customers are using the Omni channel approach more than female customers.

Age distribution
According to the age distribution of the study, among the total respondents, 384, the highest number of customers are from the age category of '36-45 years' which is 32%. The second highest number of customers are from the age category of '26-35 years', which is 28.1%. The age groups '46-55 years' and '18-25 years' account for 15.9% and 14.1% of respondents respectively. The least number of customers are from the age group 'above 55 years', which is 9.9% as a Percentage. Therefore, most Omni channel customers are from 26 to 45 years old, which is 60.1% of the cumulative percentage – giving the presumption that most of the young generation is compatible with the concept of the Omni channel.
Monthly income breakdown of respondents
Monthly income above 80,000 LKR represents the highest number of Omni shoppers, 50.8 per cent. The income level categories of ‘60001-80000’, ‘40001-60000’ and ‘20001-40000’ accounts for 20.1 %, 14.1 % and 10.7 % of the sample respectively. Those customers with below 20,000 of income account for the lowest number of customers, which is 4.4 %. Therefore, it can be concluded that customers who have higher monthly income are more likely to be Omni shoppers.

Sector of employment
Out of total responses, 42.4 % of Omni shoppers are private sector employees, accounting for the majority. 18.8% of respondents are from the business sector, while students and public sector employees contributed 16.4 % and 11.5 % to the sample. Further, 7.3 % of customers are retired, and 2.3 % are self-employed. The lowest number of Omni shoppers are homemakers, which is 1.3 per cent, assuming that the Omni channel strategy benefits people with busy lifestyles.

Frequency of shopping
When analyzing the frequency of supermarket shopping, the majority of Omni shoppers do supermarket shopping twice or thrice a week (32%), 31 % of Omni shoppers do their supermarket shopping weekly, while 20.6% of Omni shoppers are daily shoppers. The cumulative Percentage of customers who do Omni shopping at least once a week comes up to 83.6 %, with the remaining customers accounting for the balance Percentage of 16.4 %. In conclusion, most Omni shoppers are people who do supermarket shopping frequently.

Familiarization of the terminology
As the sample of this study, 384 customers who use the Omni channel approach for their supermarket shopping in Kandy district were used. However, only two respondents (0.5 %) were familiar with the word ‘Omni channel’. Though all 384 respondents used the Omni channel approach, 382 respondents did not know the system they used for supermarket shopping is known as the ‘Omni channel supply chain’.

Factor analysis
The primary objective of this study is to determine the factors affecting customer selection of the Omni channel approach for supermarket shopping in the Kandy district. The factor identification was done through an explanatory factor analysis. Using factor analysis techniques, a more significant number of variables can be grouped into fewer factors. Here, thirty variables were deducted into ten factors for further analysis.

Validity and reliability
The Cronbach’s alpha values were used to evaluate the reliability of the Likert scale questions. In this study, Cronbach’s alpha values for both independent variables (0.920) and dependent variables (0.820) were higher than 0.6; therefore, it can be concluded that there is an excellent internal consistency.

KMO and Bartlette’s test

<table>
<thead>
<tr>
<th>Table 3.01: KMO and Bartlette’s test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kaiser-Meyer-Olkin Measure of Sampling Adequacy</td>
</tr>
<tr>
<td>Bartlett's Test of Sphericity</td>
</tr>
<tr>
<td>Chi-Square</td>
</tr>
<tr>
<td>Df</td>
</tr>
<tr>
<td>Significance</td>
</tr>
</tbody>
</table>

The sample adequacy of the study is 0.803. Therefore, the sample size is adequate for factor analysis (IBM, 2021). Also, the P-value of Bartlett’s Test of Sphericity is 0.000, less than 0.050. Therefore, it can be concluded that the correlation matrix is not an identity matrix.
The scree plot illustrates the eigenvalue against all the components and shows which factors to retain. Figure 1 illustrates a sharp turn from the 10th value. These ten have an eigenvalue above one, and the other twenty have an eigenvalue below one. From the eleventh point, the scree plot started to flatten. The point at which the curve started to flatten is known as the point of interest. After the point of interest, other components have no significant difference. Further, from the factor analysis results, it can be concluded that the first ten components show an 85.157% of variance difference while the other twenty components only explain a 14.843 % difference. Therefore, the total thirty components have been categorized into ten factors.

**Rotated component matrix**

We can determine what each component represents through 'Rotated Component Matrix' values. In other words, it represents the correlations between each variable and components. The following identifications have been given for the components according to correlation values of the results.

Component 1 can be named as the 'Risk management' of the customer Omni channel selection, and 'Risk of delays in a process, Risk of having mismatches with ordered products, Receiving products without damages, Quality of perishables' have been categorized under component 1.

Component 2 can be named as the 'Channel information adequacy and flexibility' of the customer Omni channel selection, and 'Flexibility of the channel, Communicating correct information of price/discounts/promotions, Sensitivity to sensory information' have been categorized under component 2.

Component 3 can be named as the 'Customer Engagement' of the customer Omni channel selection, and 'Attractiveness of the channel, Product Returning, Intention of hedonic motive' have been categorized under component 3.

Component 4 can be named as the 'Experience and expected performance' of the customer Omni channel selection, and 'Quickness of the channel performance, Exchanging facility, Impact of experience' have been categorized under component 4.

Component 5 can be named as the 'Social opinions' of the customer Omni channel selection and 'Opinion on family members over the channel, Past customer reviews for the channel, Influence by society' have been categorized under component 5.
Component 6 can be named as the ‘Security aspects’ of the customer Omni channel selection, and ‘Payment method, Security of sharing personal information, Product Security’ have been categorized under component 6.

Component 7 can be named as the ‘Time and cost attributes’ of the customer Omni channel selection, and ‘Costs associated with transportation, Intention of time-saving, Value of opportunity cost’ have been categorized under component 7.

Component 8 can be named as the ‘Customer compatibilities’ of the customer Omni channel selection, and ‘Preference for new strategies, Suitability with the buying process, Compatibility with lifestyle’ have been categorized under component 8.

Component 9 can be named the ‘Easiness of the process’ of the customer Omni channel selection and ‘Easiness of finding information about products, Easiness of order placing method, Customer easiness of collecting products’ categorized under component 9.

Component 10 can be named as the ‘Expected delivery efficiency’ of the customer Omni channel selection, and ‘Risk of delays in delivery, Quality of delivery’ have been categorized under component 10.

**Correlation analysis**

The Pearson correlation analysis tests the relationship between the dependent variable and the identified components.

The following hypotheses will be tested.

H0 – There is no correlation between customer Omni channel selection and \( i^{th} \) factor

H1 – There is a correlation between customer Omni channel selection and \( i^{th} \) factor

\( i^{th} \) Factor – Risk management, Channel information adequacy and flexibility, Customer Engagement, Experience and expected performance, Social opinions, Security aspects, Time and cost attributes, Customer compatibilities, Easiness of the process, and Expected delivery efficiency.

### Table 4.01: Correlation table

<table>
<thead>
<tr>
<th></th>
<th>Pearson Correlation</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk Management</td>
<td>.300</td>
<td>.000</td>
</tr>
<tr>
<td>Channel information adequacy and flexibility</td>
<td>.293</td>
<td>.000</td>
</tr>
<tr>
<td>Customer Engagement</td>
<td>.169</td>
<td>.001</td>
</tr>
<tr>
<td>Experience and expected performance</td>
<td>.376</td>
<td>.000</td>
</tr>
<tr>
<td>Social opinions</td>
<td>.282</td>
<td>.000</td>
</tr>
<tr>
<td>Security aspects</td>
<td>.312</td>
<td>.000</td>
</tr>
<tr>
<td>Time and cost attributes</td>
<td>.318</td>
<td>.000</td>
</tr>
<tr>
<td>Customer compatibilities</td>
<td>.385</td>
<td>.000</td>
</tr>
<tr>
<td>Easiness of the process</td>
<td>.324</td>
<td>.000</td>
</tr>
<tr>
<td>Expected delivery efficiency</td>
<td>.239</td>
<td>.000</td>
</tr>
</tbody>
</table>

The Pearson correlation analysis used hypothesis testing to find the relationship between identified factors and dependent variables. The \( p \) values for all the factors were significant (\( P \) value < 0.05) since it was confirmed that there are correlations between all the identified factors and the dependent variable.
Regression analysis

Table 4.02: Modal summary

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
<th>Durbin-Watson</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.527</td>
<td>.278</td>
<td>.268</td>
<td>.46386</td>
<td>1.715</td>
</tr>
</tbody>
</table>

A regression analysis analyzed each factor's influence on customer’s Omni channel selection. The multiple correlation (R) is 0.527. This means individual factors have considerable joint association with customer Omni channel selection (dependent variable). The R square value is 0.278. The regression model covers 27.8% of customer Omni channel selection.

Moreover, if the value of the R square is more than 0.6 or for research related to social sciences, if the R square is more than 0.4, it is good. However, the model is valid even though the R square value is less according to Durbin Watson value and the ANOVA table. The Durbin-Watson statistic is 1.715 and is within the range of 1.5-2.5. Therefore, the residuals are independent, and there is no autocorrelation. The model is valid.

Regression ANOVA

Table 4.03: Regression Anova

<table>
<thead>
<tr>
<th>Model 1</th>
<th>Df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>10</td>
<td>3.084</td>
<td>14.335</td>
<td>.000</td>
</tr>
<tr>
<td>Residual</td>
<td>373</td>
<td>.215</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

According to the regression ANOVA table, the probability of F statistics is highly significant at 1%, and it can be concluded that the individual factors jointly influence customer Omni channel selection.

Coefficient analysis

Table 4.04: Coefficient table

<table>
<thead>
<tr>
<th>Model 1</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
<th>Collinearity Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
<td>Tolerance</td>
</tr>
<tr>
<td>(Constant)</td>
<td>1.644</td>
<td>.251</td>
<td>.135</td>
<td>.000</td>
<td>.753</td>
</tr>
<tr>
<td>Risk management (X1)</td>
<td>.098</td>
<td>.037</td>
<td>.135</td>
<td>2.656</td>
<td>.008</td>
</tr>
<tr>
<td>Channel information adequacy and flexibility (X2)</td>
<td>.056</td>
<td>.039</td>
<td>.076</td>
<td>1.453</td>
<td>.147</td>
</tr>
<tr>
<td>Customer Engagement (X3)</td>
<td>-.027</td>
<td>.039</td>
<td>-.034</td>
<td>-.691</td>
<td>.490</td>
</tr>
<tr>
<td>Experience and expected performance (X4)</td>
<td>.132</td>
<td>.041</td>
<td>.177</td>
<td>3.238</td>
<td>.001</td>
</tr>
<tr>
<td>Social opinions (X5)</td>
<td>.072</td>
<td>.046</td>
<td>.084</td>
<td>1.571</td>
<td>.117</td>
</tr>
<tr>
<td>Security aspects (X6)</td>
<td>.093</td>
<td>.048</td>
<td>.102</td>
<td>1.926</td>
<td>.055</td>
</tr>
<tr>
<td>Time and cost attributes (X7)</td>
<td>.035</td>
<td>.045</td>
<td>.042</td>
<td>.780</td>
<td>.436</td>
</tr>
</tbody>
</table>

(92)
The probabilities of Risk management, Experience and expected performance and Customer compatibilities are significant with positive beta values while the probability of Security aspects is marginally significant with a positive beta value. This explains that Risk management, Experience and expected performance, Security aspects and Customer compatibilities affect customer Omni channel selection.

Moreover, though other factors do not individually influence customer Omni channel selection because the p values of those factors are higher than 0.05, they do influence customers jointly. The following equation is built based on the above results

\[ Y = 1.644 + 0.098 X_1 + 0.056 X_2 - 0.027 X_3 + 0.132 X_4 + 0.072 X_5 + 0.093 X_6 + 0.035 X_7 + 0.156 X_8 + 0.045 X_9 + 0.006 X_{10} \]

Furthermore, according to the Durbin-Watson value (1.715), the residuals are independent. Also, since the Variance Inflation Factor (VIF) values for all the factors are less than 10 or the Tolerance values for all the factors are higher than 0.1, it can be included that there is no multi-collinearity problem, and the independent variables are not correlated. Hence, the regression model is highly valid.

5. Conclusion

In conclusion, the researcher conducted this study to explore the Omni channel supply chains. Through the study, the researcher aimed at finding the factors affecting customers' Omni channel selection for supermarket shopping as the primary objective of the study and the relationship, impact of each factor for customer Omni channel selection as the study's secondary objectives. The researcher achieved the primary objective through a factor analysis and the secondary objective through the Pearson correlation and regression model. As per the demographic analysis, most Omni shoppers are middle-aged males. Also, customers with higher monthly income are more likely to be Omni shoppers; 50.8% of Omni channel customers have selected the highest income category given in the questionnaire. Also, as a cumulative percentage, 83.6 % of customers who selected the Omni channel do supermarket shopping frequently. Most importantly, 99.5% of customers who use the Omni channel approach for their supermarket shopping did not know the system they use for supermarket shopping is known as the ‘Omni channel supply chain’. Moreover, only Risk management, Experience and expected performance, Security aspects and Customer compatibilities have individual effects on customer Omni channel selection. Therefore, it can be concluded that knowingly or unknowingly, a considerable amount of supermarket customers are attracted to the Omni channel concept. Therefore, Omni channel supply chains can be identified as a fine concept to encourage within the Sri Lankan supermarket retailing sector.

6. Recommendations

According to the research, only Risk management, Experience and Expected performance, Security aspects and Customer compatibilities have individual effects on customer Omni channel selection. Therefore, the researcher proposes the following opportunities to promote Omni channel supply chains within the supermarket retailing sector:

- Minimizing the delays in the ordering process by increasing the efficiency of ordering platforms
- Ensuring an accurate ordering process
• Preserving the quality of the goods for the Omni shoppers, like for the customers who physically pick goods from the store
• Increasing the efficiency in the entire channel
• Allowing/ enhancing after-service facilities through the same channel integration facility
• Assisting customers to reduce cost attributes in order to give them a superior experience
• Allowing flexibility in the payment procedure
• Keeping the confidentiality in the personal information of customers in order to ensure the trust
• Updating the existing values of the system from time to time in order to be compatible with the changing lifestyles/ values of the customers

7. Future research areas

This study initially focused on thirty variables influencing customer Omni channel selection and identified several factors affecting customer Omni channel selection. However, when considering the literature, more factors can influence customer Omni channel selection for their supermarket shopping. Therefore, future research can focus on those factors, too. Also, a future study can focus on a case study to identify a transport network that can be cost-beneficial for delivery. The study can be expanded from the Kandy district to other geographical locations in the country and from supermarket supply chains to other industries.

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Conflicts of Interest

The authors declare no conflict of interest.

Citation information


References


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