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A dual-phase financial strategy for sustainable customer loyalty: Integrating fixed deposits and voucher systems in Sri Lankan supermarket retail

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Abstract: This study develops and evaluates an innovative dual-phase customer loyalty strategy for Sri Lankan supermarkets, integrating fixed deposit investments with voucher-based reward systems to enhance both customer engagement and sustainable business profitability during festive seasons. The research employs a mixed-methods approach, combining financial modelling using the EBITDA framework, customer surveys (n = 250) to analyse spending patterns, and a hypothetical case study with 1,000 participants to assess the strategy's viability during Christmas 2023. The dual-phase model generated projected returns of Rs. 19,135,035.44 from fixed deposits (a 6.3% gross profit margin) and a Rs. 1,113 markup profit per voucher participant, resulting in an overall EBITDA gross profit of Rs. 2,248,035.44 for 1,000 participants. The study contributes to retail management literature by proposing a novel integration of customer investment programs with loyalty systems, extending existing loyalty program theory to emerging market contexts and seasonal retail dynamics. The framework provides retail managers with a structured approach to capitalise on seasonal demand while building long-term customer relationships, particularly applicable to emerging markets where traditional loyalty programs may be insufficient.



Keywords: financial modelling, profit optimization, statistical analysis, inventory forecasting, investment return analysis, economic feasibility, financial sustainability

Sustainable Development Goals (SDGs): **SDG 8:** Decent Work and Economic Growth; **SDG 9:** Industry, Innovation, and Infrastructure; **SDG 12:** Responsible Consumption and Production

1. Introduction

The retail sector, especially the supermarket industry, globally is experiencing continuous evolution with increasing competition, technological advancements, and rapidly changing consumer preferences. Innovative strategies to balance staying competitive while ensuring profitability and fostering customer loyalty are being developed day by day. The rise of e-commerce, the digitalisation of business practices, and the implementation of omnichannel strategies have significantly altered retail operations. Such strategies emphasise the necessity for adaptability and focus on customer needs. Seasonal spending trends, especially during cultural festivities in different countries, add complexity to this by bringing the need to be relevant in the competition through strategic customisation. In Sri Lanka, Christmas is a significant time due to the aforementioned increased engagement and unique shopping behaviours among supermarkets. Many regions and countries still lack structured methodologies to effectively capitalise on these seasonal trends while maintaining long-term customer loyalty (Intel, 2022), although there is a window of opportunity for revenue growth nonetheless. This highlights the urgent need for innovative, data-driven strategies that integrate inventory management, pricing strategies, and customer satisfaction.

This research examines a novel financial model that addresses inefficiencies in Sri Lanka's seasonal retail supermarket market by integrating strategic retail management with a savings-oriented loyalty program. The study analyses how this model generates significant advantages for retailers and consumers by establishing a framework that can be adapted within Sri Lanka and across various regions and sectors, including banking and e-commerce. The model empowers supermarkets to capitalise on wholesale purchasing, maintain inventory consistency, and enhance cost-effectiveness during peak demand periods, such as Christmas. The results yield practical insights to boost customer retention, optimise profitability, and promote sustainable growth in seasonally fluctuating markets, backed by sophisticated retail analytics and strategic financial management, as suggested in the study.

This study introduces a two-phase strategic framework that integrates an innovative customer investment program with a value-enhancing return. Customers commit to a 12-month investment plan, resulting in a collective fund. This capital is undergoing two main phases. Firstly, it undergoes fixed-deposit investments to generate financial returns, bolstering the supermarket's capital. In the second phase, upon completion of the savings period, participants are rewarded with a gift voucher that exceeds their total contributions or a selection of Christmas essentials for the amount while also gaining another profit through a wholesale-to-retail markup. The effectiveness of this method can be increased through customer surveys that examine spending habits and preferences regarding financial assessments, utilising the EBITDA model to gauge profitability and cost efficiency, and JIT for inventory management. This framework overall enhances customer loyalty and positions the supermarket as a community-oriented, value-centric retailer.

2. Literature survey

This literature review examines several areas that share similarities with the proposed concept. Which are identifying best practices globally in customer savings and loyalty programs around the world. Also, this literature review explores

- Potential financial strategies - EBITDA
- Inventory management systems -Just-in-time
- Role of private label brands.

Examining such successful models from international markets provides insights into strategies that can be adapted to the Sri Lankan retail landscape.

2.1. Time frame and geographical focus

The literature review focuses on studies, reports, web resources, and articles published within the last two and half decades (2000–2025). This time frame ensures that the review is based on recent trends and innovations in a retail context. However, foundational theories and models, such as the JIT inventory management method and the EBITDA concept, are also included, even if they were developed before 2000, to provide a better understanding of their application in modern retail contexts.

While the primary focus is on the Sri Lankan retail market, the review also expands to particularly similar global examples, such as those from the United Kingdom, where similar loyalty programs have been successfully implemented. This comparative analysis helps us to identify best practices that can be adapted to the Sri Lankan context.

2.2. Real world implications

A notable illustration of the suggesting model in this study is found in the United Kingdom, where prominent supermarket chains have introduced "Holiday Savings Clubs" or "Christmas Savings Clubs" in their supermarket chains. These models are designed to facilitate long-term savings for customers and allow them to redeem accumulated funds for grocery purchases or essential items bundles during Christmas. Instances of such programs are applied in leading retail chains in the UK, such as:

- Tesco
- Morrisons
- Sainsbury's
- Iceland
- Asda
- Co-op

The primary objective of these programs is to facilitate structured savings, thereby enhancing customers' financial preparedness for holiday-related expenditures. Several retailers further enhance consumer engagement by offering incentives, such as bonuses on these savings, which motivates participation and encourages increased holiday spending. The Tesco Clubcard scheme has established a solid customer base of 11.5 million since its introduction in 2002 (Hassan & Parvez, 2013).

2.2.1. Tesco Clubcard Christmas Savers

Tesco is a leading British multinational retailer that has established itself as one of the world's largest supermarket chains. Since it was founded in 1919 by Jack Cohen, it has expanded from a market stall to a retail behemoth with thousands of stores throughout the UK and beyond. (Plc, 2024) Tesco introduced the Clubcard in 1995 and revolutionised retail marketing by rewarding shoppers with points redeemable for vouchers (Yawson & Yamoah, 2022). The Clubcard Christmas Savers program was a seasonal extension of the initiative, implemented to help customers overcome holiday expenses through structured savings and bonuses. (Flanagan & Isgin, 2024)

In the Tesco program, a dual method strategy is offered to customers. Customers are given the chance to build their savings through a point-based system with the option to increase their savings via cash contributions. Participating customers can earn a bonus of up to 6% of their savings through the following criteria:

- A £1.50 bonus is awarded for savings between £25 and £49.50.
- A £3 bonus is granted for savings between £50 and £99.50.
- A £6 bonus is provided for savings between £100 and £199.50.
- A £12 bonus is available for savings ranging from £200 to £360.

2.2.2. The Morrisons Christmas savers program

Morrisons, a major UK supermarket chain, provides innovative savings initiatives to support customers during the holiday season. The Christmas Savings program enables customers to accumulate digital stamps through in-store purchases linked to their Morrisons More account, accessible via the app or website. Those stamps can be redeemed as vouchers for Christmas expenses, and The bonus structure is as follows

- £1 bonus for saving £49–£96
- £3 bonus for saving £97–£145
- £4 bonus for saving £146–£193
- £6 bonus for saving £194

This program is integrated with the Morrisons Reward System. Morrisons' reward system is a program where customers receive instant discounts on essential items. (Digital Christmas Saver FAQs, 2025) Moreover, a 5-week initiative enables eligible app users to earn a money-off voucher by shopping in 4 of the 5 weeks. Customers using physical loyalty cards can redeem weekly coupons instead (Morrisons, 2022). Morrisons aims to release the financial pressure on customers during the festive season by combining long-term savings with reward plans with these initiatives.

2.2.3. Sainsbury's Christmas Club Card

Sainsbury is well known for its extensive selection of quality products and customer-centric initiatives (thebigmarketing, 2024). Found in 1869 by John James Sainsbury with a shop in Drury Lane, London, Sainsbury's was the largest UK retailer of groceries for most of the 20th century (Sainsbury's, 2024). As a key player in the UK retail landscape, they launched their Christmas Clubcard (Sainsbury, 2022) as a strategic initiative designed to help consumers manage their finances effectively during the holiday season. (Hassan & Parvez, 2013) In this program, participants can save incrementally, with the accumulated funds explicitly earmarked for Christmas-related expenses. Moreover, Sainsbury's enhances the card's appeal by providing a 5% bonus on total savings. This attractive feature has significantly boosted the card's popularity among UK consumers over the years.

2.3. Theories and assumptions to enhance the feasibility

2.3.1. EBITDA

Earnings Before Interest, Taxes, Depreciation, and Amortisation a vital financial metrics for assessing corporate value, evaluating management performance, and determining solvency. (Bouwens, De Kok, & Verriest, 2019) This valuation method approach is crucial in money-centric industries where most assets experience rapid depreciation. EBITDA provides a clear view of operational efficiency and the ability to generate revenue by excluding non-cash expenses. This study focuses on EBITDA rather than net profit, as it better reflects the fluctuating financial circumstances typical of supermarkets, providing a more accurate assessment of earning potential within the proposed strategic framework.

2.3.2. Just-In-Time (JIT) inventory management model

The Just-In-Time (JIT) inventory management system aims to minimise waste and improve production efficiency. This system ensures that materials and products are available in the right quantities at the right locations precisely when needed. (Phogat, 2013). JIT management methodology was created in the 1970s by Taiichi Ohno at Toyota (Sugimori, Kusunoki, Cho, & Uchikawa, 1977). Today, it is used in many industries, including retail supermarkets.

The JIT system is a transformative approach to handling inventory and production by aligning resources with real-time demand. JIT reduces storage costs and minimises waste, making sure resources are used effectively and efficiently. This enhances production methods by streamlining processes and promoting teamwork across supply chains, enabling companies to respond more effectively to market changes. JIT helps businesses adapt to changing customer needs efficiently. However, for JIT to be effective, businesses need to predict customer demand accurately and have strong relationships with suppliers to minimise risks regarding the supply chain. JIT not only reduces costs but also enhances overall productivity and customer satisfaction when properly implemented.

2.4. Significance of implementing a customer loyalty program

Customer loyalty programs operate financially and psychologically to build long-term customer relationships (Hofman-Kohlmeyer, 2016). Financial incentives, such as discounts and reward points, are effective in attracting customers. However, long-term loyalty requires trust and positive emotional connections. Financial incentives alone are insufficient to sustain an ongoing brand commitment without these foundational elements. Loyalty programs that reward customer

behaviour without considering profitability run the risk of imminent failure. (Kumar & Shah, 2004) personalised interactions and data-driven marketing strategies create emotional bonds to the mix and improve retention rates. This encourages repeat purchases, thereby improving satisfaction, trust, and commitment to the brand. The strategic application of customer data to personalise marketing can enhance the effectiveness of such loyalty programs. However, it is crucial to protect customers' privacy and respect their choices. Neglecting these issues can erode trust and diminish the program's overall effectiveness.

2.5. The Role of Private Label Brands (PLBs) in Sri Lanka's supermarket industry

The supermarket industry in Sri Lanka operates within an oligopolistic market structure. Many supermarkets develop and promote their private label brands (PLBs) to stay competitive in this environment. These brands often offer at lower prices than well-known manufacturer brands. PLBs have proliferated over the past decade worldwide and are increasingly challenging manufacturer brands (Cuneo, Milberg, Benavente, & Palacios-Fenech, 2015). Scholars have identified several factors that influence the success of PLBs. Competition (Pauwels & Srinivasan, 2004), consumer behaviour (Baltas & Argouslidis, 2007), and retail strategies (Ailawadi & Harlam, 2004) are among them.

In Sri Lanka, supermarket chains such as Keells, Arpico, and Cargills have introduced private-label brands. Notable such programs include:

- Nexus by Keells Supermarkets
- MyChoice by Cargills Food City
- ARPICOFamily Brands by Arpico Supermarket

From an economic standpoint, PLBs can yield higher profit margins and create more substantial price differentials than manufacturer brands. However, only if retailers manage their cost structures (Ailawadi & Harlam, 2004). Studies have shown that several factors influence how customers choose PLBs. They are brand image, brand trust, brand awareness, brand loyalty, brand association and perceived quality (Aaker, 2009).

2.6. Research gap identified by the study

Despite the widespread use of consumer savings programs and customer loyalty strategies in Sri Lanka's retail sector, this study aims to address significant research gaps. Previous studies have mainly focused on the financial benefits for retailers and consumers. However, many important factors remain unexplored.

Most existing research is concentrated in developed regions, such as the UK, USA, and Europe, resulting in a significant lack of understanding of how savings and loyalty models perform in emerging markets like Sri Lanka. In Sri Lanka, consumer behaviour and market dynamics differ significantly. The current literature typically focuses on loyalty programs in a few supermarket chains, lacking comparative analysis across various retail formats, from supermarkets to smaller stores.

While earlier studies often emphasise short-term advantages such as immediate savings and heightened spending, there is a notable lack of research examining the long-term effects of these programs on consumer financial behaviors. For instance, budgeting practices and the development of financial literacy.

Research on private-label brands and loyalty programs within the Sri Lankan supermarket sector is limited. This study aims to fill this gap by examining how local supermarkets create and implement savings initiatives.

This study aims to provide detailed insights into the evolving landscape of consumer savings programs and loyalty strategies, particularly within the Sri Lankan retail environment, by addressing these research gaps.

3. Research methods

3.1. The financial strategy

In this study, the collected amount was strategically allocated in two segments to maximise the financial benefits of this 1-year business strategy.

3.1.1. Stage 1: Fixed depositing with the monthly gain

Various banks in Sri Lanka provide a range of options for Fixed Deposits, banks such as Hatton National Bank (HNB), Bank of Ceylon (BOC), Cargills Bank, Commercial Bank, Sampath Bank, DFCC Bank, National Savings Bank (NSB), and Peoples Bank, all of which are distinguished by their competitive interest rates. For this research case study, Interest rates from the year 2023 of Hatton National Bank (HNB) are applied to calculate the gross gain from the fixed deposit strategic phase. The methodology underpinning this approach will be explained in the following section. The team applied this strategy considering the example use case for this research, based on details on the Christmas week of 2023 in Sri Lanka.

- Quarterly Breakdown: The year is divided into quarters, and the same process is followed for each separately.
- Monthly Deposits: Rs. 1,500,000.00 is deposited every month, and the previous month's accrued profits are reinvested to maximise returns.
- Initial Investment: Each quarter commences with the allocation of Rs. 1,500,000 into a 1-month fixed deposit, which earns the applicable 1-month fixed deposit interest rate for that month.
- Reinvestment: After each month, the cumulative amount, comprising principal and interest, is withdrawn and reinvested in the subsequent month's Rs. 1,500,000 deposits.
- Interest Rate Adjustments: In the second month of the quarter, the aggregated sum is reinvested in a 1-month FD at the relevant 1-month fixed deposit interest rate. In the third month, the total amount accrued is placed in a 3-month fixed deposit, benefiting from a higher interest rate.
- Compounding Profits: This methodology is reiterated each month, compounding the interest accrued and augmenting the initial amount for every month.

Therefore, based on certain assumptions, this study investigated to develop a formula to estimate the total gain achieved through the Fixed Deposit strategy. The formula is structured as follows.

Assumptions for the formula

- i. The fixed deposit rates remain the same throughout the 1-year term of the plan's application.
- ii. Although fixed deposit (FD) interest rates can vary among different financial institutions, it is presumed that the chosen bank provides a rate that aligns with the "average value" for such deposits.

Notation

Notations to the formula are as follows.

Decision Parameters

n = No. of customers

m = Payment by customer per month

i_1 = 1-month FD rate value

i_2 = 3-month FD rate value

$$x = \frac{i_1}{12 \times 100}$$

$$y = \frac{i_2 \times 3}{12 \times 100}$$

$$M = \text{Customers' total investment per month} = m \cdot n$$

$$\text{1st month gain after FD} = M(1 + x)$$

$$\text{2nd month gain} = M(1 + x) + M = M(2 + x)$$

$$\text{2nd month gain after FD} = M(2 + x)(1 + x)$$

Let us consider,

$$M(2 + x)(1 + x) = L$$

Through 4 Quarters of FD calculation,

The amount "L" from the 1-month FDs and the new month's gain from customers are added as the 1st quarter's investment amount.

$$\text{1st quarter investment amount} = L + M$$

$$Z_1 = \text{1st quarter gain after FD} = (L + M)(1 + y)$$

$$\text{2nd quarter investment amount} = Z_1 + L + M$$

$$\text{2nd quarter gain after FD} = (Z_1 + L + M)(1 + y) = Z_2$$

$$\text{3rd quarter investment amount} = Z_2 + L + M$$

$$\text{3rd quarter gain after FD} = (Z_2 + L + M)(1 + y) = Z_3$$

$$\text{Total gain} = Z_3 + L + M$$

from reverse substitution on Z_1, Z_2, Z_3 :

$$\text{Total gain} = \{(L + M)(1 + Y) + L + M\}(1 + Y) + L + M$$

Simplification:

$$\begin{aligned} \text{Total gain} &= (L + M)(1 + Y)[(1 + Y)(2 + Y) + 1] + (L + M) \\ &= (L + M)\{(1 + Y)^2(2 + Y) + (1 + Y) + 1\} \\ &= (L + M)(2 + Y)\{(1 + Y)^2 + 1\} \end{aligned}$$

From reverse substitution on L and M:

$$= [m \cdot n((2 + x)(1 + x) + m \cdot n)](2 + Y)\{(1 + Y)^2 + 1\}$$

Using this formula:

$$\text{Total gain} = (m \cdot n)(2 + Y)[(2 + x)(1 + x) + 1]\{(1 + Y)^2 + 1\}$$

The total gain of the strategic fixed deposit plan can be determined based on the assumptions made.

3.1.2. Stage 2: Allocation of voucher funds

The distribution of voucher funds is a very critical component of this strategy. Upon implementing the annual promotional plan, the supermarket will give customers a voucher worth more than they invested, which, in the case study of this research, is Rs. 20,000.00. This voucher is only valid for purchases made at the supermarket, promoting customer spending while ensuring and supporting the store's profitability. Several strategies have been proposed to optimise the benefits of this initiative.

3.2. Formulating a suggested shopping cart for Rs. 20,000

A key recommended strategy involves developing a suggested shopping cart for customers, featuring a thoughtfully crafted selection of products that can be purchased with the Rs. 20,000 vouchers. This assortment should include essential items commonly sought after during peak shopping seasons, especially during festive periods such as Avurudu (Sri Lankan New Year) and Christmas. One practical approach for selecting items could be introducing a voting system during the program's registration phase. This enables customers to indicate their preferences for particular products, which was also our suggestion. This method encourages customer involvement in the selection process, ensuring that the offerings align with consumer preferences. This increases the likelihood of purchases and customer involvement in the promotional program.

This approach is applied in the use-case scenario, as discussed earlier in this work, using the questionnaire. The gathered insights will be further analysed to refine the recommended product selection list for the shopping cart and enhance the overall effectiveness of the proposed strategy.

3.3. Strategies to enhance profitability and maximise advantages

To improve supermarket operations, three key strategies were proposed. Which are establishing a customer loyalty card program, implementing JIT inventory management, and launching a private label product line. The supermarket can initiate a loyalty card system integrated with a voucher distribution strategy. This program will track customer contributions and allocations via linked accounts. Targeted campaigns promoting loyalty card sign-ups will expand this program's reach while maintaining customer loyalty. JIT inventory practices will be applied to ensure efficient stock management during voucher redemption periods. Real-time demand will guide product replenishment, thereby minimising surplus inventory and related expenses while still maintaining sufficient stock to meet customer needs.

A private-label product line will be developed to address quality and pricing issues. This includes examining the market to identify goods that people demand, evaluating production costs, creating customer profiles and their preferences, analysing competitors, and collaborating with suppliers to secure the best prices and quality.

4. Research results

4.1. Stage 1 results

The execution of this strategy spans four quarters. Monthly deposits are systematically made on the 10th day of each month to give customers time to make the monthly investment (from the 1st to the 10th of each month). Refer to Table 1 for the applied fixed deposit rates on a monthly basis and Table 2 for the demonstration.

Table 1: Fixed deposit rates of the year 2022/2023 of HNB relevant to the case study

2022/2023	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
1M	14%	14%		14%	14%		12%	10%		9%	9%	
3M			16%			15%			12%			

Table 2: Step-by-step demonstration of the fixed deposit strategy

Month	Amount forwarded	Forwarded + month investment	FD period	Expected FD outdated	Expected FD outcome
December		1,500,000.00	1 month	10-Jan	1,517,500.00
January	1,517,500.00	3,017,500.00	1 month	10-Feb	3,052,704.17
February	3,052,704.17	4,552,704.17	3 months	10-May	4,734,812.33
March		1,500,000.00	1 month	10-Apr	1,517,500.00
April	1,517,500.00	3,017,500.00	1 month	10-May	3,052,704.17
May	7,787,516.50	9,287,516.50	3 months	10-Aug	9,635,798.37
June		1,500,000.00	1 month	10-Jul	1,515,000.00
July	1,515,000.00	3,015,000.00	1 month	10-Aug	3,040,125.00
August	12,675,923.37	14,175,923.37	3 months	10-Nov	14,601,201.07
September		1,500,000.00	1 month	10-Oct	1,511,250.00
October	1,511,250.00	3,011,250.00	1 month	10-Nov	3,033,834.38
November	17,635,035.44	19,135,035.44			

At the culmination of the first stage of the example use case, the projected total revenue reaches Rs. 19,135,035.44, resulting in a gross profit margin P_{FD} of:

$$P_{FD} = \text{Total Money Gained} - \text{Invested Amount}$$

$$P_{FD} = 19,135,035.44 - 18,000,000 = 1,135,035.44$$

4.2. Stage 2 results

In the use case, the team conducted a sample analysis. The purpose of this is to identify what items the customers most preferred to see in the Rs.20,000 shopping carts. Based on market research and customer voting results, the suggested assortment of essential products for the voucher includes rice, flour, sugar, eggs, dairy products, meat, and cleaning supplies, as determined by customer votes. The total retail value of this selection is Rs. 20,001, which is nearly equivalent to the Rs. 20,000 voucher limit. The wholesale cost of these products in the supermarket is Rs. 16,887. This slight markup presents an opportunity to enhance profit margins. Preparing and stocking these items at least one month in advance is advisable to effectively address price fluctuations and ensure product availability during peak demand periods.

Figure 1: Votes received, as percentages for the ideal grocery list

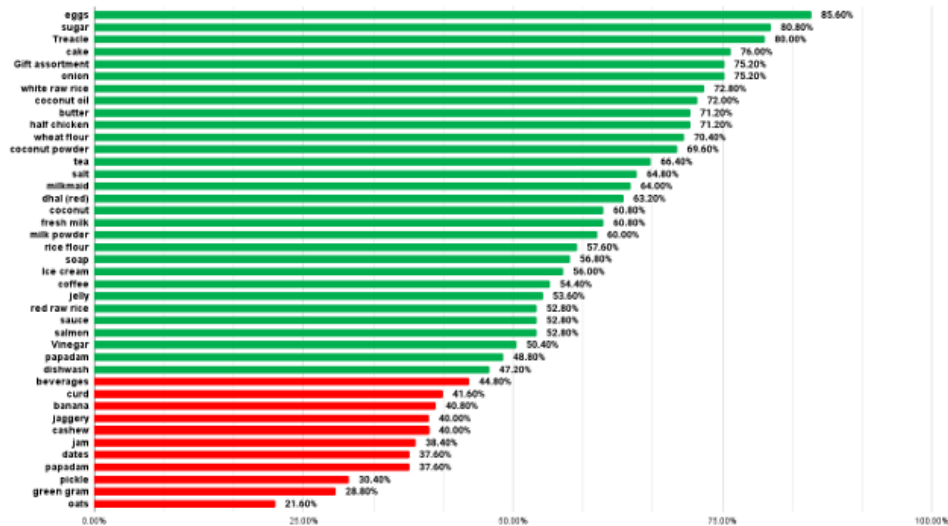


Table 3: Customised grocery list of the case study

Item	Unit	No. of Units	Wholesale Total	Retail Total
white raw rice	1kg	5	900	1050
red raw rice	1kg	0	0	0
wheat flour	1kg	2	390	494
sugar	1kg	3	885	1035
coconut	1	2	196	220
coconut powder	1kg	1	730	850
Gift assortment	1	2	1280	1400
milkmaid	510g	1	840	860
butter	125g	2	960	1050
dhal (red)	1kg	1	300	360
Ice cream	1L	2	970	1040
Treacle	340ml	2	890	1100
vinegar	340ml	1	165	190
coconut oil	1kg	2	1200	2100
salt	400g	1	75	102
eggs	1	10	480	530
milk powder	1	1	1040	1080
tea	100g	2	370	480
dishwash	500ml	1	410	450
soap	1	1	135	150
salmon	425g	1	390	545
papadam	70g	1	86	120
coffee	100g	1	370	400
rice flour	400g	2	260	300
cake	1	1	315	350
onion	1kg	1	450	580
sauce	375g	1	435	490
jelly	1	2	430	460
fresh milk	1L	1	405	490
half chicken	1kg	1.5	1530	1725
TOTAL			16,887	20,001

The supermarket can earn a gross profit by applying this shopping cart promotion strategy.

$$\begin{aligned}
 \text{Profit per customer} &= \text{Collected amount customer} - \text{Cost of Goods} = \\
 &= 18000.00 - 16887.00 = \\
 &= \text{Rs. 1113.00}
 \end{aligned}$$

5. Advanced analysis

5.1. Customer spending patterns

The survey mentioned above reveals the spending patterns and behaviours of 250 supermarket customers. This survey helps identify customers' shopping habits during the Christmas season. These results help researchers understand what customers like to buy during specific seasons.

- Shopping Frequency: Female respondents exhibited higher shopping frequency, with 48% visiting supermarkets daily or multiple times per week, compared to 39% of male respondents (Fig. 2, Fig. 3, Fig. 4).

Figure 1: Customers' supermarket shopping regularity on a month

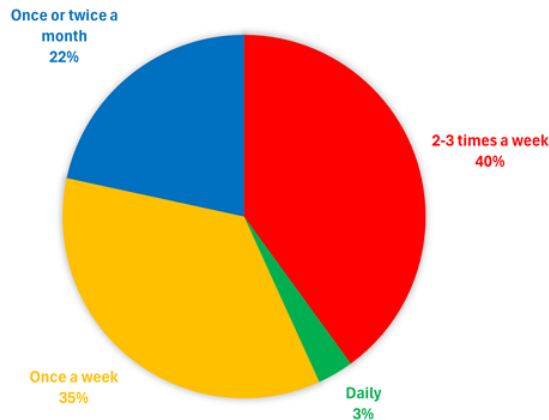


Figure 2: Customers' supermarket shopping regularity on a month – female

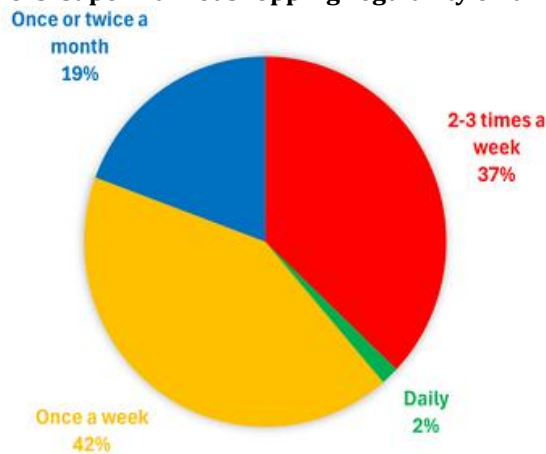
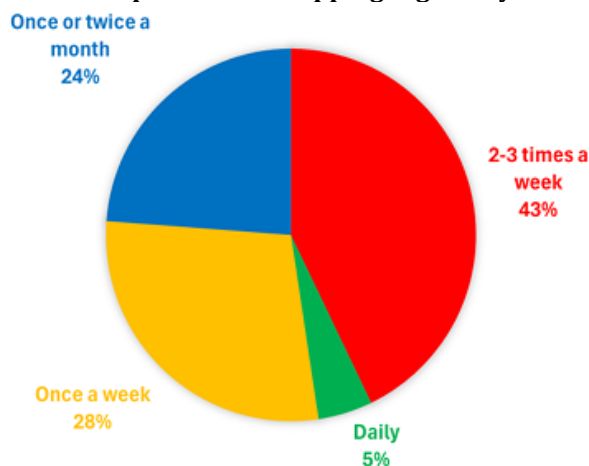


Figure 3 : Customers' supermarket shopping regularity on a month - male



- Average Additional Spending during Christmas Month: According to the survey data, the average spending per customer during the Christmas season varies, with notable variation

as some respondents' spending exceeds Rs. 25,000. The supermarket's Rs. 20,000 voucher aligns with this spending trend, enhancing the value of the loyalty program and bringing increased sales volumes during peak shopping periods.

Table 4: Average additional Spending of customers during Christmas - statistics

Ranges (Rs.)	No. of People (f(i))	Mid Value (m(i))	f(i) × m(i)
0 - 10,000	39	5,000	195,000
10,000 - 15,000	68	12,500	850,000
15,000 - 20,000	34	17,500	595,000
20,000 - 25,000	49	22,500	1,102,500
Over 25,000	60	32,500	1,950,000

$$\text{Total number of people} = \sum_i f(i) = 250$$

$$\sum_i f(i) \times m(i) = 4,692,500.00$$

To calculate the average spending of a customer in a certain month,

$$\frac{\sum_{i=1}^{250} f_i m_i}{\sum_{i=1}^{250} f_i} = \frac{4,692,500.00}{250} = 18,770.00$$

This analysis supports establishing Rs. 20,000 as the ultimate voucher redemption value in accordance with the investment strategy. Customers are expected to contribute Rs. 18,000 over 12 months, with monthly instalments of Rs. 1,500. Moreover, it is gaining an additional Rs. 2,000 in value, as indicated by the research team's scenario analysis. Implementing this approach, supermarkets can utilise surveys or evaluate their historical data to identify the most effective giveaway amount. This enables them to design the monthly investment advantageously, enhancing customer engagement and optimising the impact of the loyalty program.

5.2. Profitability from the voucher system

We assume that each of the 1,000 customers benefits from the customised shopping cart by the conclusion of the use case. Based on this assumption, we can project an overall EBITDA gross profit derived from the entire strategy. This also includes the profit from fixed deposits.

With a markup profit of Rs.1,113.00 per participant, the projected EBITDA gross profit for 1,000 participants would be:

$$\begin{aligned} \text{Profit Gained from shopping carts retail markup} &= P_{SC} \\ P_{SC} &= \text{Profit per participant} \times \text{Number of Participants} \\ P_{SC} &= 1,113 \times 1,000 = 1,113,000 \end{aligned}$$

The overall EBITDA gross profit

T_P : Total Profit

P_{FD} : Profit from Fixed Deposits

P_{SC} : Profit from Voucher System

$$\begin{aligned} T_P &= P_{FD} + P_{SC} \\ T_P &= 1,135,035.44 + 1,113,000.00 = \text{Rs. } 2,248,035.44 \end{aligned}$$

Considering the use case of this strategy for Christmas of 2023, this value highlights a substantial total gain, emphasising the strategy's success.

5.3. Benefits of using the proposed additional theories and assumptions

The application of these strategies offers significant advantages for supermarkets. A customer loyalty card program improves the customer experience by offering rewards and benefits. The initial costs of launching a loyalty program may be high, but the long-term benefits, including increased loyalty and brand equity, far surpass the investment.

Implementing the JIT inventory management further optimises supermarket operations by reducing storage costs and minimising waste, as discussed in the study. This system keeps stock

levels aligned with real-time demand. It also helps the supermarkets avoid overstocking or shortages during critical periods.

Private-label brands enable supermarkets to differentiate themselves in a competitive market by offering affordable and high-quality alternatives to major brands. These brands fill market gaps and match customer preferences, boosting profitability and fostering loyalty through their unique offerings.

5.4. Comparison with existing literature

These findings align with the strategies employed by loyalty programs in many countries to enhance customer retention and profitability. Sainsbury's Christmas Club Card and Tesco's Clubcard Christmas Savers program are some examples of those programs. However, this study introduces a two-phase strategy that combines fixed deposits with a voucher system. This strategy can be mentioned as a unique approach to profit maximisation in the Sri Lankan retail context.

6. Conclusion and further recommendations

This study examined ways to enhance loyalty systems as mechanisms for profit growth in supermarket ecosystems. By analysing supermarket operations both locally and globally, we have established a two-stage framework that combines financial investment strategies with customer-centric approaches to enhance profitability and sustainability. This research demonstrates that a well-structured loyalty system can enhance supermarket profits by prioritising both financial growth and customer satisfaction. Fixed deposits as a primary revenue source ensure reliable financial returns from customer investments, while a thoughtfully implemented shopping cart or a similar reward system can resonate with cultural shopping behaviours. This primarily affects during the Christmas season when consumer spending tends to rise.

A key element of the success of our proposed model is the utilisation of data-driven decision-making. Insights gathered from surveys conducted by Google Forms have clarified customer preferences, monthly spending habits and product demand. Adopting operational strategies, such as Just-In-Time inventory management, creating private-label brands, and forming partnerships with direct distributors, has further improved operational efficiency and lowered costs. The evaluation of financial performance through the EBITDA framework validated the proposed loyalty program's practical viability and profitability. Additionally, including meticulously crafted terms and conditions enhances the program's robustness in the face of fluctuating economic circumstances.

6.1. Limitations and future research directions

Economic factors, such as changes in interest rates, tax policies, and variations in product pricing, may influence the effectiveness of the proposed strategies. The program's scalability can be improved by analysing larger datasets, allowing for more detailed and tailored customisation. Future investigations should explore the long-term effects of loyalty programs under varying economic conditions. Long-term studies would provide significant insights into the sustainability of these programs. Furthermore, a comparative analysis of similar programs implemented in different cultural contexts could deepen the understanding of how cultural factors influence loyalty initiatives.

6.2. Additional future recommendations

Policymakers also play an important role in facilitating innovation and sustainability within the retail sector by developing frameworks that support profit-enhancing strategies for supermarkets. Initiatives such as tax benefits or lower compliance barriers for loyalty-focused fixed deposit plans should be prioritised. This encourages companies to support the expansion of their customers' investments. Collaborating with financial institutions to create investment options that complement retail operations could increase economic resilience. Ensuring economic stability by controlling inflation and maintaining stable interest and tax rates is equally essential, as it reduces financial uncertainties and enhances profit forecasting capabilities.

Targeted incentives, such as tax benefits, can promote private label brands and local sourcing, thereby reducing operational costs while supporting local producers and fostering community-level economic sustainability. Policymakers should also facilitate technology adoption by offering financial and technical support for advanced systems, such as Just-In-Time (JIT) inventory management, which minimises waste and improves efficiency (van Donselaar, van Woensel, Broekmeulen, & Fransoo, 2006). Ultimately, clear regulations governing loyalty programs are crucial to ensuring

fairness and consistency for both consumers and businesses, thereby fostering a stronger retail ecosystem.

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Conflicts of interest

The authors declare no conflict of interest.

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A.K.G.N. Deshapriya – Structuring of the research article, market prices research, research team lead

W.M.A. Weerakoon – Strategizing of the entire plan and necessary aspects for optimization, research team co- lead

H.Y.M.T.P. Wickramasinghe – Research methodology -Formula creation (formulation)/ Final profit calculation and finalizations

T.M.C.E.K. Tennakoon – Supermarket groceries' wholesale/retail prices research

B.N. Jayasinghe – Literature review – JIT, EBITDA, loyalty programs and PLBs

S.A.N. Hirunika – Literature review – JIT, EBITDA, loyalty programs and PLBs

H.P.G.T. Dulshan – Research methodology - Strategizing the FD plan

M.I.V. Perera – Advanced analysis – Questionnaire related reviews and stats calculations, FD rates research

M.D.H.S. Maddage – Advanced analysis – Creating the ideal sample shopping cart with the obtained details and review

D.D. Munasinghe – Literature review – research on Current similar real-world plans implied

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