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Modelling the Impact of Sales Promotion on Chophouse Profits

Ndava Constantine Mupondo*, Evangelista Tasiiwa Nyakujipa

Statistics and Operations Research Department, National University of Science and Technology, Bulawayo, Zimbabwe

Email address: constantine.mupondo@nust.ac.zw (N C. Mupondo), evangelista.nyakujipa@nust.ac.zw (E. T. Nyakujipa)

*Corresponding author

ABSTRACT

Fast food establishments allocate funds towards sales promotion in order to enhance their daily revenue and overall profitability. Intense market competition compels stores to implement efficient promotional programs to generate earnings. Because of a limited understanding of its economic implications, operation managers must assess the profitability of the current use of sales promotion. This study examines the influence of promotion attributes on sales and revenues and constructs a conceptual model to evaluate the effect of sales promotions on emporium profitability. We utilised the Granger Causality Test, Impulse Response Function, and Pretest/Posttest Design Models to ascertain the causal connection between customer purchasing behaviour and sales promotion, as well as to assess the significance of sales at the Chophouse fast-food restaurant. We use the established framework model to evaluate the profitability of the current sales promotion strategy and identify the most profitable discount rate. The study's findings suggest that Chophouse's sales promotion techniques result in immediate advantages because there is no long-term relationship between sales promotion and consumer purchasing behaviour. Furthermore, a consistent rise in promotional expenditures is unlikely to exert a substantial influence on customer buying patterns and may even result in an ineffectual promotion, given that the findings indicate that sales promotion does not affect consumer purchasing behaviour.

Keywords: Sales Promotion, Consumer's Purchasing Behaviour, Cointegration, Pretest/Posttest Design, Granger Causality Test, Impulse Response function

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1. Introduction

Amidst a growing atmosphere of competition, eateries are actively seeking methods to entice fresh patrons and enhance spending among their current clientele. The fast food industry has experienced significant growth as a result of trade liberalisation in the early 1990s. This policy change enabled various individuals, particularly black entrepreneurs, to establish their own fast food establishments (Norberg & Deutsch, 2023). The industry's rapid expansion has resulted in fierce competition, emphasising the critical importance of creating value in these industries. One method by which businesses can attain their objectives and address competition is by utilising promotional tactics, such as advertising and sales promotions.

As stated in a study by Kimes and Beard (2013), promotion is a crucial aspect of restaurant revenue management, and it is important to assess the efficacy of promotional strategies.

Nevertheless, sales promotion carries a potential danger, specifically the possibility of cannibalisation, when the sales of certain products may decline due to the promotion of another product. Franchise restaurants do not always fully benefit from their obligatory contributions to national advertising initiatives. Restaurant advertising can incur significant expenses and may not always generate substantial results, especially for franchised establishments. This suggests that promotions can be advantageous for the majority of restaurants, but they come with associated expenses.

In order to mitigate losses, it is imperative to assess their magnitude both prior to and following the implementation of the promotion, enabling management to ascertain their efficacy. In order to anticipate and prevent management crises, it is imperative to establish a framework for quantifying the financial gains resulting from promotions. This analysis will enable managers to comprehend the impact of many elements on promotional profits and assess the profitability of their existing sales promotion techniques. Promotional profit models serve various purposes.

Fast food restaurants invest financial resources in sales marketing in order to augment their daily income and overall profitability. Fierce market rivalry necessitates that stores create effective promotional activities to produce profits. Operation managers are required to assess the profitability of the current sales promotion

strategies, as their understanding of the economic implications is limited. This study investigates the impact of promotion characteristics on sales and revenues. It also develops a conceptual model to assess how sales promotions affect the profitability of emporiums. We employed the Granger Causality Test, Impulse Response Function, and Pretest/Posttest Design Models to determine the causative relationship between consumer purchasing behaviour and sales promotion, as well as to evaluate the importance of sales at the Chophouse fast-food restaurant. We utilise the existing framework model to assess the profitability of the present sales promotion plan and determine the discount rate that yields the highest profitability. The study's findings indicate that Chophouse's sales promotion strategies yield quick benefits due to the absence of a long-term correlation between sales promotion and consumer purchasing behaviour. Moreover, a steady increase in promotional expenses is unlikely to have a significant impact on customer purchasing patterns and may even lead to an ineffective promotion, as the research suggests that sales promotion does not influence consumer buying behaviour.

1. Analyse the correlation between profits generated from sales promotions and several parameters like deal size, gross margins, sales reaction, cannibalisation, and the trade transaction.

2. Outline strategies for maximising promotional profits, analyse key elements that determine the best deal size, and demonstrate the relationship between the profit-maximising deal and the maximum profits based on these criteria.

1.2. Problem Statement

Organisations are relying more and more on promotional efforts that include different incentives. Often temporary, these incentives aim to motivate customers to make faster or larger purchases of specific items or services (Ivan and Stefan, 2023). Sales promotion is an incentive that persuades buyers to make an immediate purchase instead of delaying it (Kotler, 1999). Companies are aware that not all forms of sales promotion yield desired results, but they lack certainty on the most successful promotional instruments for their specific needs (Abiodun et al., 2021). Rising competition has enabled enterprises to distinguish their services and products primarily based on pricing rather than other distinguishing characteristics. In order to remain competitive, a company may find it necessary to develop its own sales campaign to offer consumers the opportunity to benefit from their services. Failure to do so could result in the company losing out to competitors who are offering discounted prices (Firdaus, Ikhsan, and Fernando, 2023).

In spite of persistent efforts made by businesses to carry out promotions, a significant number of organisations nevertheless experience unforeseen underperformance. Despite the dedicated efforts of organisational management to address this issue, there has been no notable improvement in organisational performance (Deus, 2023). Consequently, the researcher has undertaken an investigation to examine the impact of sales promotion on the organisational performance of Simbisa Brands (Musaibah et al., 2023). The source of this uncertainty remains unknown, as it's unclear if it stems from a lack of product samples, restricted access to retail locations, or a scarcity of coupons.

1.3. Objectives

This research has the following objectives:

1. Analyse the cause-and-effect connection between sales promotion and customer purchasing behaviour.
2. Monitor the effects of sales promotion on consumer buying patterns and the reciprocal relationship between consumer buying patterns and sales promotion.
3. Analyse the importance of sales promotion in relation to shop profitability and revenue.
4. Create a model to aid in the design and assessment of sales promotions.

2. Theoretical Framework

2.1. Introduction

Sales promotion is an action-focused marketing event whose goal is to have a direct impact on the behaviour of the firm's customers (Michaelsen & Collini, 2022). Sales promotion consists of a diverse collection of incentive tools, mostly short-term, designed to stimulate quicker and/or greater purchases of a particular product by consumers or the trade.

Sales promotion tools play an important role in motivating customers to buy any promoted product, which will definitely increase dealer and retailer profit and market share (Mohamed, 2016). This implies that various promotion tools, like price discounts, samples, and buy one, get one free, can positively influence consumers' behaviour. Promotional tools such as coupons, on the other hand, have no influence on consumer buying behaviour.

2.2. Sales Promotion

Sales promotion is the practice of offering direct inducements or rewards to the sales force, distributors, or consumers with the primary goal of creating an immediate sale. The location is Agra in the year 2017. Manufacturers and marketers devised the concept of sales promotion to address the issue of surplus inventory in their storage facilities. These marketing strategies aim to provide a temporary solution to excess inventory not required by customers or enterprises.

According to Locket (2018), the implementation of sales promotions in fast food establishments can lead to a rise in the number of customers and their frequency of visits. However, it does not guarantee substantial profits for the restaurants and may even result in a decline in sales of other items. Khan, Tanveer, & Zubair (2019) emphasised that buyers exhibit a favourable response to promoted products through sales promotion due to the fact that sales promotion stimulates their inclination to engage in acquiring the advertised product.

There are two primary categories of sales promotion: consumer-oriented promotion, also known as a pull strategy, and business-oriented promotion, often known as a push strategy. The ultimate consumer of a product or service is the intended target for consumer-focused sales marketing efforts. The primary objective of sales promotion is to encourage customers to try or repurchase a product, raise their consumption, enhance advertising, and carry out other marketing initiatives. Given the inherent characteristics of services and their inseparability, the end user must directly engage with the service provider in order to take advantage of the sales promotion.

Khan, Tanveer, and Zubair (2019) state that sales promotion objectives have a wide range of variations. Merchants may use consumer promotions to boost immediate sales or help develop long-term market dominance. The objectives of trade sales promotion include persuading merchants to stock new things and increase their inventory, encouraging them to promote the product through advertising, allocating more shelf space to it, and motivating them to make advance purchases. According to Khan, Tanveer, and Zubair (2019), the sales promotion for the sales force aims to achieve two objectives: first, to garner increased support from the sales force for existing or newly introduced items, and second, to encourage salespeople to register for new accounts. A comprehensive marketing communication strategy often includes sales promotions in addition to advertising and personal selling. Advertisers commonly promote consumer sales promotions to amplify the enthusiasm and effectiveness of their advertising. Trade and sales force promotions assist in facilitating the personal selling process.

Every kind of organisation has the ability to utilise a wide range of sales marketing strategies. These methods encompass a variety of promotional strategies, such as premiums, sales contests and sweepstakes, coupons, free samples, on-pack immediate price reductions, money-off vouchers, money-off vouchers for future purchases, money-off vouchers for other products, computer-generated immediate price reductions, computer-generated vouchers for current and future purchases, trading allowances, and cooperative advertising (Publication 535, 2023).

2.3. The Impact of Sales Promotion on Customer's Purchasing Behaviour

McKinsey's 2020 study suggests that fast food restaurants can boost customer traffic and frequency by implementing sales promotion strategies. However, it is important to note that this may not necessarily result in significant profit gains for the restaurants. Additionally, the adoption of sales promotion tactics may have a negative impact on the sales of other products offered by the restaurants. These findings were the result of his investigation into the impact of sales promotion on post-promotion activity, namely customer loyalty and purchase behaviour in the fast food industry. He employed the multiple regression analysis method to analyse the data.

Hussin & Hasam (2021) emphasised that buyers respond favourably to products promoted through sales promotion, as it stimulates their inclination to contemplate purchasing the advertised product. Most clients are considered variety seekers because they consistently experiment with different products. Opting for brand switching yields more customer satisfaction compared to consistently purchasing the same product. Promotions enhance brand switching behaviour by increasing customers' responsiveness to them. (Ali, Muhammad, & Muhammad, 2020).

Topcuoglu (2020) asserts that sales promotion has a positive and long-lasting impact on sales. According to Vincent, Suryaputra, and Amelia (2023), buyers who express satisfaction with the advertised brand are more inclined to make repeat purchases. Nevertheless, it is possible that it will not influence the organisation's future procurement decisions.

2.4. Modeling the Impact of Sales Promotion

Avignon and Guigue introduced a methodology in 2022 to strategise retailers' profit margins that specifically addresses markups and markdowns. They designed their methodology to aid the shop in formulating a promotional strategy. They derived an

equation that shows the average fraction total markup as a weighted average of the fraction markup on products sold at regular and reduced prices. These authors proposed that the equation can be valuable for evaluating store tactics, such as high or low pricing, against everyday cheap prices.

A multi-store retailer used management judgment to parameterise and create a model that facilitates high-level annual planning and resource allocation.

The model is the focus of discussion. The model he used included predetermined values for the sales variables, as well as controllable and uncontrollable marketing variables. The model generates sales predictions based on the input provided by the managers. We applied cost relationships to the conditional sales predictions, resulting in the creation of projected profit and loss forecasts for marketing programs and scenarios.

The World Health Organisation (WHO, 2022) reported that the initial installation of the system included a sales and marketing database, initially relying on managerial discretion. Using the information, we improved our understanding of sales reactions to marketing factors and monitored the effectiveness of past decisions (WHO, 2022).

The Foundation for Distribution Research at the Economic Research Institute at the Stockholm School of Economics carried out a research project, prompting Dwivedi & Ismagilov (2020) to conduct a study. The paper was part of a larger study that investigated the potential use of supermarket scanner data for decision-making purposes. The study's objective was to improve understanding of the influence of sales promotion on retailer earnings. He created a structured approach for evaluating the influence of sales promotions on store revenues. He stressed the importance for retail managers to recognise the interconnectedness of various commodities in retail assortments. This highlights the need to establish and implement systems capable of gathering and analysing the necessary data. The findings highlighted the importance of store footfall in relation to sales and profits. Furthermore, it seemed advisable for retail managers to implement point-of-sale systems that have the capability to gather receipt data. He suggested that future research use the models he created to analyse the profitability of different product categories.

In 2023, the US Census Bureau conducted a study on store choice models and identified two similar methods for modeling customers' judgments regarding retail pleasure. One type of attraction is known as the spatial interaction paradigm. In this model, the number of customers visiting a store is directly proportional to the store's relative appeal compared to the overall attraction of all stores.

The multinomial logit model is the second class of model. This model predicts the likelihood of a consumer choosing a certain retailer based on its relative desirability compared to all other stores. Despite sharing mathematical similarities, these models are philosophically distinct. We use aggregate data on the number of shopping trips to calibrate the attraction-type models and individual decision data to calibrate the logit models.

In their study, Dey (2022) employed a linear model to examine the effects of double couponing and loss leader portfolios on retail establishments. The objective was to ascertain the impact of promotions on store sales, and the model was considered suitable for this investigation. They used the same model as shop sales to analyse store traffic and store profit, but with distinct model parameters. The researchers determined that sales promotion has no impact because the model parameters are statistically insignificant, which is a notable methodological concern.

The authors, Sinha and Verma (2022), proposed a structural model to examine the influence of sales promotions on store revenues. The approach offered a valuable foundation for assessing the profitability of retail promotions. This model elucidates the correlation between store profits, fluctuations in promotional activities, and seasonal patterns. Their conclusion was that it is more advantageous to directly simulate the impact of sales promotion on non-promoted sales rather than indirectly through promoted sales.

2.5. Research Design and Statistical Methods

A quasi-experimental design resembles an experimental design but does not have the crucial element of random assignment. Randomised experiments often surpass them in terms of internal validity. At its most basic level, it necessitates a preliminary assessment and subsequent evaluation for both the experimental and control groups. It is The analysis of the non-equivalent group design is similar to the analysis of the covariance design, with the exception that it does not include random group assignment. The random assignment process and the potential lack of equivalence across the groups complicate the statistical analysis of the non-equivalent group design (William, 2006).

A quasi-experiment, which is an empirical study, uses random assignment to evaluate the causal influence of an intervention on its target population. Quasi-

experimental research bears resemblances to traditional experimental design and randomised controlled trials. However, it notably lacks the component of random assignment to either the treatment or control groups. Quasi-experimental designs, on the other hand, usually enable the researcher to manipulate the assignment to the treatment condition based on specific criteria rather than random assignment.

Occasionally, the researcher may possess authority over the allocation of treatments. Quasi-experiments are vulnerable to internal validity issues due to the potential lack of comparability between the treatment and control groups at the start of the study. Random assignment guarantees an equal chance of assigning study participants to either the intervention group or the comparison group. Consequently, we would attribute any disparities between groups in terms of both observed and unobserved traits to random chance rather than a systematic feature associated with the treatment. Randomisation alone does not guarantee that groups will have the same characteristics at the start of a study. We can attribute any alteration in traits after the intervention to the intervention. Establishing a definitive cause-and-effect relationship between variables in quasi-experimental studies may prove challenging.

The study examined the treatment condition and the observed outcomes. This is particularly accurate in cases where there are unmanageable or unexplained confounding variables (White & Sabarwal, 2023).

Quasi-experiments are effective because they employ pre- and post-testing. This necessitates performing pre-data collection checks to identify possible confounding variables or participant biases. Following that, we proceed with the practical implementation of the experiment and document the post-test outcomes. Researchers have the option to compare this data as part of the study or integrate the pre-test data to elucidate the actual experimental outcomes. Quasi experiments involve pre-existing independent variables, such as age, gender, and eye colour. We can classify the variables as either continuous (like age) or categorical (like gender). In short, quasi-experiments evaluate factors that occur spontaneously (Miller, Smith, & Pugatch, 2019).

Quasi experiments involve the use of outcome measurements, treatments, and experimental units, but they do not employ random assignment. Individuals frequently prefer quasi-experiments over actual experiments. People often prefer quasi-experiments over genuine experiments due to their ease of conduct. Quasi-experiments are intriguing because they incorporate elements from both experimental and non-experimental designs. Researchers have the ability to include both measured and modified factors in their experiments. Experimenters often opt for quasi-experiments in order to optimise both internal and external validity (Miller, Smith, & Pugatch, 2019).

Tu, Fan, and Fan first introduced the Granger causality test as a statistical hypothesis test in 1969. The test seeks to ascertain the degree to which one-time series can predict another. Regressions generally indicate simple correlations, but Granger contended that economics might assess causation by quantifying the capacity to forecast future values of a time series using the preceding values of another time series. We establish causation between time series X and Y when we can show, typically through a series of T- and F-tests on the lagged values of X and Y, that the X values provide statistically significant information about the future values of Y. Granger further emphasised that certain studies using Granger causality tests in fields other than economics arrived at absurd conclusions.Time series research may encounter the challenge of validity testing, as noted by Baicker & Svoronos (2019). These studies involve the recurrent use of the same dependent measures, and there is a tendency for individuals to improve progressively over time. Despite measuring the dependent variable three or more times, time series designs require a single sample. We use the term "interrupted time series design" to describe a situation where a treatment intervention disrupts a continuous set of observations

3. Methodologies for Analysis

3.1 Data sources

Primary and secondary data sources were the focus of this investigation. The aim is to provide innovative viewpoints that could enhance current studies. In addition, we used secondary data to validate the efficient use of any pre-existing information that pertained to specific aims. We subtracted the costs incurred for sales promotion at the four Simbisa branches in Harare from 2020 to 2023 from the earnings generated during the corresponding period.

Direct personal experience is the source of primary data, while individuals or organisations other than the original source gather secondary data. Using primary data has the advantage of allowing the researcher to collect precise information that directly relates to the research objectives. Primary data is considered more

dependable than secondary data due to the researcher's capacity to assess and verify the accuracy and consistency of the gathered information. The study used primary data to analyse the non-monetary advantages of engaging in sales promotional activities, as well as the difficulties associated with Simbisa's sales promotion endeavours.

We used a questionnaire as the principal instrument. We used questionnaires as a means of collecting data on sales promotion efforts. We distributed the surveys to selected customers, staff and management team members. The surveys primarily consisted of closed-ended questions, supplemented by a small number of open-ended questions. We distributed a total of 160 surveys. Employing a questionnaire not only streamlines quantitative analysis but also ensures a uniform set of questions for all respondents. Wide confidence intervals and substantial response rates distinguish questionnaires. This study focuses on examining Simbisa's sales promotion activities and their influence on performance.

3.2. Notations

n_i is the size of sample $_i$
x_i is the values in sample
n is the number of values in all samples $n_1 + n_2$+...
x_i is the sum of values in all samples
n is the overall sample size
e_t is the error term
Y_t is the observation at time t
y_{t-1}, y_{t-2}... are lagged values of Y
x_{t-1}, x_{t-2}... are lagged values of X
$O_n$is the observation at time n
X = intervention, that is sales promotion.

A linear stochastic process possesses a unit root if one of the roots of its characteristic equation is equal to one. Such a process is considered non-stationary, but it does not always exhibit a trend. If the absolute value of the other roots of the characteristic equation is less than one, then the process's first difference will exhibit stationarity. Otherwise, the process will require multiple differencing operations to achieve stationarity, enabling us to make future predictions (Smith, Miller, & Pugatch, 2020).

A time series can exhibit non-stationarity without possessing a unit root while still demonstrating trend-stationarity. Both unit root and trend-stationary systems can exhibit a changing mean over time, either increasing or decreasing. When a shock occurs, trend-stationary processes return to their mean value over time, indicating a temporary effect. On the other hand, unit-root processes have a lasting impact on the mean value, with no convergence over time. An explosive process is a situation in which the root of the process's characteristic equation is more than one. However, it's important to note that people often mistake these processes for unit root processes.

Consider a discrete time-stochastic process Y_t, t = 1, ..., α and suppose that it can be written as an autoregressive process of order p,

$$Y_{t=\ a1}Y_{t-1}+\ a_2Y_{t-2}+...\ +\ a_pY_{t-p}+\ e_t. \qquad (3.1)$$

Here [e_t, t = 0, ∞] is a serially uncorrelated, zero mean stochastic process with constant variance $\sigma^2$and for the covariance we need to assume $y_0$equal to zero. If m = 1 is a root of the characteristic equation which is given by;

$$m^p- m^{p-1}a_1- m^{p-2}a_2-... - a_p= 0, \qquad (3.2)$$

then the stochastic process has a unit root or, alternatively, is integrated of order one denoted by 1 (1). If m equal to one is a root of multiplicity r, then the stochastic process is integrated of order r.

3.3. The Augmented Dickey-Fuller (ADF) Test

Each time series undergoes a test to ascertain its integration order. We also use it to verify the stationary nature of the time series data for modeling. The test employs the augmented Dickey-Fuller (ADF) statistic, which yields a negative number. The more negative it is, the stronger the rejection of the hypothesis that there is a unit root at some level of confidence. We apply the ADF test testing procedure to the model.

$$\delta y_t= \alpha + \beta_t+ \gamma y_{t-1}+ r_1\delta y_{t-\ 1} +... + r_{p-1}\delta y_{t-p}+1 + \varepsilon_t, \qquad (3.3)$$

where α is a constant, the coefficient on a time trend and p the lag order of the autoregressive process. Imposing the constraints α = 0 and β = 0 corresponds to modeling a random walk and using the constraint β = 0 corresponds to modeling a random walk with a drift. By including lags of the order p the ADF formulation allows for higher-order autoregressive processes. This means that the lag length p has to be determined when applying the test.

The null hypothesis will be g equal to zero versus H_1: g<0. The test statistic is then computed which is given by;

$$DF_T = \frac{\hat{\gamma}}{SE(\hat{\gamma})} \qquad (3.4)$$

It can be compared to the relevant critical value for the Dickey-Fuller Test. If the test statistic is less (this test is non symmetrical so we do not consider an absolute value) than the (larger negative) critical value, then the null hypothesis is rejected and no unit root is present.

3.4. LM Test

We must perform the LM to verify that the errors in our time series data are unrelated. We must transform any

serially correlated data into uncorrelated error terms. The following outcomes are produced when a Granger causality test is applied to data that displays serial correlation with the error terms:

1. The supplied standard errors and t statistics were invalid.
2. Potentially biased coefficients.
3. Lagged dependent variables and
4. ordinary least squares (OLS) might introduce bias and inconsistency.

The LM Test is a statistical test of a simple null hypothesis that a parameter of interest θ is equal to some value θ_0. It is the most powerful test when the true value of θ is close to θ_0. The score statistic does not require an estimate of information under the alternative hypothesis.

Suppose that $\hat{\theta}_0$is the maximum likelihood estimate of θ under H_0, then; $U\ T\ (\hat{\theta}_0)\ I^{-1}\ (\hat{\theta}_0) \sim \chi^2 k$ asymptotically under H_0, k is the number of constraints imposed by the null hypothesis and;

$$U\left(\hat{\theta}_0\right) = \frac{\partial\left(\log \mathrm{L}\,\hat{\theta}_0|x\right)}{\partial\theta} \tag{3.5}$$

$$I\left(\hat{\theta}_0\right) = -E\,\frac{\partial\left(\log \mathrm{L}\,\hat{\theta}_0|x\right)}{\partial\theta\partial\theta'} \tag{3.6}$$

3.5. Johansen Cointegration Test

The Johansen tests are called the maximum eigenvalue test and the trace test. Let r be the rank of Π. The Johansen tests are likelihood-ratio tests and there are two tests which are the maximum eigenvalue test and the trace test. This test for integration is ideal where n is large, otherwise some other test can be used to test for integration. Here the Johansen test with trace is to be used. The initial Johansen test is a test of the null hypothesis of no cointegration against the alternative of cointegration.

The trace test, test whether the rank of the matrix Π is r_0. The null hypothesis is that rank (Π) = r_0. The alternative hypothesis is that r_0 <rank (Π) ≤ n, where n is the maximum number of possible cointegrating vectors. For the succeeding test if this null hypothesis is rejected, the next null hypothesis is that rank (Π) = $r_{0+1}$and the alternative hypothesis is that r_{0+1}<rank (Π) = n. Testing proceeds as for the maximum eigenvalue test. The likelihood ratio test statistic is given by;

$$LR(r_0 n) = -T\sum_{i=r_{0+1}}^{n} \ln(1-\lambda_i) \tag{3.7}$$

where LR (r_0, n) is the likelihood ratio statistic for testing whether rank (Π) = r versus the alternative hypothesis that rank (Π) = n. The first nonrejection region of the null hypothesis is taken as an estimate of r. EViews software is going to be of useful in the analysis of data.

3.6. Lag Order Selection

Choosing the appropriate lag order for VAR models i s a crucial initial stage in constructing models and c onducting impulse response research. In this study, we employ the Akaike Information Criterion (AIC) to determine the appropriate lag order. In order to esta blish the most suitable lag selection, it is important t o follow the golden rule, which states that a lower AI C value indicates a better model.

$$AIC = -2(LogLT) + \frac{2\mathrm{K}}{\mathrm{T}} \tag{3.8}$$

3.7. Granger Causality Test

(Granger, 1969), proposed a time-series data based approach to determine causality. In the Granger-sense X is a cause of Y if it is useful in forecasting Y_1. This means that X is able to increase the accuracy of the prediction of $Y$with respect to a forecast, considering only past values of Y. In this case the promotion (X) can have a positive effect on consumer behaviour (Y) and the relationship between cause and effect tends to be probabilistic in social sciences.

The following fundamentals are necessary but not sufficient in explaining the casual relationship because of its probabilistic nature;

1) Cause and effect varies together. If the cause changes, the effect must follow or at least the probability of the cause must increase.

2) Time order of causality means that the cause must occur before or simultaneously with the effect.

A time series X is said to be granger cause Y if it can be shown, usually through a series of t test and f test on lagged values of X and with lagged valued values of Y also included. As a result, X values will provide statistically significant information about future values of X. In this study Granger causality is limited to the investigation of pairs of time series and we need to investigate whether sales promotion precedes consumer purchasing behaviour or whether consumer purchasing behaviour precedes sales promotion or they are contemporaneous. In our model the lag variables of X and Y represent some months prior to the introduction of the promotion. Variables to be used will be the cost of the promotion per month and the number of customers who purchased an order per month. The assumptions of the Model are:

1. The cause takes place before its effect manifests.
2. A cause contains unique information about an effect that cannot be found elsewhere.
3. The direction of causality may depend critically on the number of lagged terms included.

3.9. Impulse Response Function (IRF)

A brief input signal known as an impulse stimulates a dynamic system, generating an impulse response function (IRF). In a broader context, an impulse response refers to the reaction of a dynamic system to an external stimulus. The impulse response function (IRF) quantifies the impact of a certain variable on other variables in the system. It is an essential instrument for doing empirical research on causal linkages and assessing the efficacy of interventions. It explains how one variable react to a shock in another variable *j* at time t over time one. In this case it will be explaining how consumer purchasing behaviour responds to a shock or impulse in sales promotion over time and vice versa.

Let Y_t be a *k*-dimensional vector series generated by;

$$Y_t = A_1 Y_{t-1} + \ldots + A_m Y_{t-p} + U_t = \emptyset(B) U_t = \sum_{i=0}^{\emptyset} U_{t-1} \quad (3.12)$$

$$I = 1 - A_1 B - A_2 B - \cdots - A_p B^p \, \emptyset(B), \quad (3.13)$$

where cov (U_t) = *Σ*,∅is the M A coefficients measuring the impulse response. More specifically, *∅jk, i* represent the response of variable *j* to an unit impulse in variable k occurring in *i* th period ago.

IRF are used to evaluate the effectiveness of a policy change, say increasing discount rate. As *Σ* is usually non-diagonal, it is impossible to shock one variable with other variables fixed. Some kind of transformation is needed. Cholesky decomposition is the most popular one which we shall turn to now.

Let P be a lower triangular matrix such that *P= P¹*, then equation (3.12) can be rewritten as;

$$Y_t = \sum_{i=0}^{\theta} iW_{t-1}, \quad (3.14)$$

where *θi= ∅iP, Wt= P ⁻¹Ut,* and *E (Wt W′t)*. Let D be a diagonal matrix with same diagonals with P and *W = P D−1*, *Λ = DD*. After some manipulations, we obtain;

$$Y_t = B_0 Y_t + B_1 Y_{t-1} + \ldots + B_p Y_{t-p} + V_t, \quad (3.15)$$

where, *B_0= I_k− W ⁻¹, W = P D−1, B_i= W−1A_i*. Obviously, $B_0$is a lower triangular matrix with *0* diagonals. In other words, Cholesky decomposition imposes a recursive causal structure from the top variables to the bottom variables but not the other way around. For a K-dimensional stationary VAR (p) process, *∅jk, i = 0, j 6= k, i = 1, 2...*, which is equivalent to;

∅jk, for *i = 1...p (k − 1).*

In other words, if the first *pK–p* responses of variable *j* to an impulse in variable *k* is zero, then all the following responses are all zero. Variable k does not cause variable and only if*∅(jk, i) = 0, i = 1, 2....*

3.8. Pre-test/Post-test Design

Pre-test/post-test involves the manipulation that should change treatments to see if there were any changes. The shop's gross profits are to be tested prior to the introduction of the promotion and then after the promotion has been introduced to see what changes occurred. It has an observation before and after the intervention (*X)* (that is sales promotion) and variables to be used will be gross profit. In this case there are some observations before (denoted by O_1s) and after (O_2s) the introduction of the promotion which are depicted by the following table.

Table 1. *Pretest-Posttest Design.*

Pretest	Intervention	Posttest
O_1	X	O_2
O_1		O_2

3.10. Model Development

The goal of this section is to develop a model framework that quantifies the financial impact of sales promotions on profitability. Initially, we construct a comprehensive framework that analyses the revenue generated by the restaurant. Afterwards, we calculate and model the restaurant's promotional profit within this framework. Retailers can employ this approach to assess the efficacy of their sales and promotional endeavours. We have constructed a model that emulates Per-Goran's (1995) methodology for dissecting the influence of promotional sales into two components: the volume of purchases and the count of purchasers. In 1994, Per-Goran (1995) established the formalisation of that model. Per-Goran (1995) utilised the identical approach to accurately analyse and include his data in his research study.

3.10.1. Decomposition of Restaurant Sales

In order to construct a sales model for specific items, the following significant factors must be considered:

1. Typically, customers submit orders for products.
2. The average basket size contributes to the sales of all items in the store.
3. The flow of customers into the business is a catalyst for the sale of all products, even the main item.
4. Sales promotions have the potential to augment the average shopping basket's magnitude.
5. Sales promotions have the potential to boost the number of customers visiting a store, which in turn can lead to an increase in sales of other products.

This work aims to expand and modify the approach developed by Therneau, Crowson, & Atkinson (2023) in order to tackle the present challenge of modelling sales

for particular restaurants. Per-Goran (1995) suggests that buyers, at the most basic level, select between various package sizes, variety, or both when making decisions. At the subsequent stage, clients have the option to select between different brands. Customers might come across a situation where they have the opportunity to choose from various brand categories that exhibit similarities. At a more elevated level of hierarchy, the consumer selects from different product categories. In addition, the consumer may progress through one or more hierarchical levels of product category groups before reaching the shop choice level. The indirect approach, also known as the product model approach, depicts the ultimate dependent variable as the outcome of variables modeled as functions of the independent variables.

3.10.2. Selecting the Quantity Measure

This model employs the monetary market share metric, as it is essential to aggregate the sales quantities of the items in order to define market shares. According to Therneau, Crowson, & Atkinson (2023), market shares can be defined as either the portion of sales volume, measured in units or weight, or the portion of monetary sales, measured in dollars. Furthermore, monetary sales are of significant managerial importance. Nevertheless, we will revise the monetary market share metric in the model to incorporate price variations, thus reducing the drawback of monetary sales. Monetary sales suffer from their dependence on both the quantity of units sold and the price of those units. Interpreting monetary sales becomes more difficult when changes are present or absent. Additionally, the presence of pricing on both sides of the model equation makes it challenging to analyse sales-response models.

To determine the worth of unit sales volume at the usual price, we can use a fixed price that is applicable at a specific moment in time. We can interpret sales valued at the usual price as a Laspeyres quantity index, which uses the prices from the base period as weights. We will construct a model to examine the sales of individual items in restaurants, which will represent item sales as the outcome of four factors multiplied together. Basing with the above discussion, we define sales of item is in category j, period t as;

$$S_{ijt} = P_{ij}.Q_{ijt}, \tag{3.16}$$

where P_{ij} is base period's regular price of item *i* in category j and Q_{ijt} are unit sales of item *i* in category j, period t. Category sales of category j in period t will be the sum of the sales of all items belonging to that category, that is;

$$S_{jt} = \sum_{i=1}^{I_j} S_{ijt}, \tag{3.17}$$

where I_j is the number of items in category j.

The *J* categories can then be aggregated to yield store sales in period t as;

$$S_t = \sum_{j=1}^{j} S_{jt} \tag{3.18}$$

Assuming three hierarchical levels (store, category, and item), sales of an item (valued at regular price) can be expressed as the product of three factors given by;

$$S_{ijt} = S_t \left(\frac{S_{jt}}{S_t}\right)\left(\frac{S_{ijt}}{S_{jt}}\right). \tag{3.19}$$

The sales of item *i* in product category *j* in period *t* is the product of three factors which are total store sales valued at regular prices, product category *j's* share of store sales and item *i*'s share of category *j*'s sales. Store traffic is another important consideration because the model is not complete on important issues if store traffic is not included in the model. Using the hierarchical modeling approach, inclusion store traffic will extents the model to become;

$$S_{ijt} = B_t \left(\frac{S_t}{B_t}\right)\left(\frac{S_{jt}}{S_t}\right)\left(\frac{S_{ijt}}{S_{jt}}\right), \tag{3.20}$$

where B_t is the number of receipts produced in period t which measure number of customers who purchased an order in period *t*. The second factor is the average value of the shopping baskets (valued at regular prices). At each hierarchical level, the number of shopping baskets (orders) that contain an item, or at least one item from a group of items, can be counted. Sales of an item can then be written as;

$$S_{ijt} = B_t \left(\frac{B_{jt}}{B_t}\right)\left(\frac{B_{ijt}}{B_{jt}}\right)\left(\frac{S_{ijt}}{B_{ijt}}\right), \tag{3.21}$$

or

$$S_{ijt} = B_t \left(\frac{B_{jt}}{B_t}\right)\left(\frac{S_{jt}}{B_{jt}}\right)\left(\frac{S_{ijt}}{S_{jt}}\right) \tag{3.22}$$

where B_{ijt} is the number of orders that contain item *i* in category *j*, period *t*, B_{jt} is the number of orders that contain at least one item from category *j*, period *t*. The ratios between basket counts at different levels give percentages that can be interpreted as conditional probabilities, (that is the probability the category *j*'s item *i* is bought given that the category *j* is bought).

3.10.3. Model Constraints

$$B_t \leq \sum_j^J B_{jt}, \tag{3.23}$$

and

$$B_{jt} \leq \sum_j^J B_{jt}, \tag{3.24}$$

The above equations indicate that the sum can never be less than unity because empty shopping baskets are

not counted.

$$S_t \geq S_{jt} \geq S_{ijt} \geq 0 \quad (3.25)$$

The inequality indicates that a store's sales during a specific time period are consistently more than or eq ual to the sales of a category, which in turn are grea ter than or equal to the sales of an individual item. Furthermore, during that time period, an item's sales are always greater than or equal to zero.

$$B_t \geq B_{jt} \geq B_{ijt} \geq 0 \quad (3.26)$$

The rationale for the aforementioned constraint is to ensure that there will always be a minimum of zero orders that include items from a specific category within a given time frame. The quantity of orders including a specific item is either less than or equal to the quantity of orders that include at least one item from the same category during the same time frame. Furthermore, this quantity is also at most the number of receipts generated during that time period, which represents the number of customers who made a purchase.

Let θ_{ijt} be sales promotion whereby item *i* in category j in period t being promoted. The number of item baskets, number of category baskets, as well as the total number of orders would be expected to rise or remain constant as a result of the promotion that is;

$$\frac{\partial B_{ijt}}{\partial \theta_{ijt}} \geq 0; \frac{\partial B_{jt}}{\partial \theta_{ijt}} \geq 0; \frac{\partial B_t}{\partial \theta_{ijt}} \geq 0. \quad (3.27)$$

The effect on sales is positive at all levels of aggregation, meaning that the partial derivatives of sales with regard to the promotion are positive or zero given by;

$$\frac{\partial S_{ijt}}{\partial \theta_{ijt}} \geq 0; \frac{\partial S_{jt}}{\partial \theta_{ijt}} \geq 0; \frac{\partial S_t}{\partial \theta_{ijt}} \geq 0. \quad (3.28)$$

While Dwivedi and Ismagilov (2020) proposed a similar hierarchical model, the hierarchical structure in this model is different. Therneau, Crowson, and Atkinson (2023) also used this same model to model profits for retailers' shops.

3.11. Modeling Restaurant's Promotion Profits

To determine the promotional profits, the equations for the restaurant's shop profits (gross profit) with and without the promotion are required to be defined first. The restaurant's profit *(π)* in period *t* can be described by the following equation

$$\pi_t = \sum_{j=1}^{J} \sum_{i=1}^{I_j} \left[Q_{ijt} \left(P_{ijt} - C_{ijt} - d_{ijt} + \tau_{ijt} \right) - D_{ijt} + T_{ijt} \right] - F_t \quad (3.29)$$

where,

Q_{ijt}= unit sales of item *i*, category *j*, period *t*

P_{ijt}= regular price of item *i*, category *j*, period *t*

C_{ijt}= unit cost of item *i*, category *j*, period *t*

d_{ijt} = deal discount (in monetary units) for item *i*, category j, period t

τ_{ijt}= trade deal per unit of item *i*, category *j*, period *t*

D_{ijt}= lump sum deal cost for item *i*, category *j*, period *t*

T_{ijt}= lump sum trade deal for item *i*, category *j*, period *t*

F_t fixed costs in period *t*

J= number of product categories

I_j= number of items in category *j*.

The profit of a suggested promotion for an item in category *n* in period *t*is the difference in store profit with and without the promotion is given by;

$$\Delta\pi_t^{\theta} = \pi_t^{\theta} - \pi_t^{*}. \quad (3.30)$$

This implies that;

$$\Delta\pi_t^{\theta} = \left\{ \sum_{j=1}^{J} \sum_{i=1}^{I_j} \left[Q^{\theta}{}_{ijt} \left(P^{\theta}{}_{ijt} - C^{\theta}{}_{ijt} - d^{\theta}{}_{ijt} + \tau^{\theta}{}_{ijt} \right) - D^{\theta}{}_{ijt} + T^{\theta}{}_{ijt} \right] - T^{\theta}{}_{t} \right\} - \left\{ \sum_{j=1}^{J} \sum_{i=1}^{I_j} \left[Q^{*}{}_{ijt} \left(P^{*}{}_{ijt} - C^{*}{}_{ijt} - d^{*}{}_{ijt} + \tau^{*}{}_{ijt} \right) - D^{*}{}_{ijt} + T^{*}{}_{ijt} \right] - T^{*}{}_{t} \right\} \quad (3.31)$$

where;

π_t^{θ} is the profit in period *t* without the promotion on the focal item in period *t* and π_t^{*} is the profit in period t with the promotion in period *t*.

4. Results and Analysis

4.1. Introduction to the Chapter

We are using the models developed in this section to analyse data and achieve the stated objectives. We will use Eviews software to conduct a Granger Causality Test to ascertain the causal relationship between sales promotion and consumer purchasing behaviour. Eviews will track the impact of each variable on the other variables in the model. Additionally, SPSS is a valuable tool for conducting pre-test and post-test designs to investigate the impact of sales promotions on turnover and gross profit. Finally, Microsoft Excel will measure the profit impact of sales promotions using the framework model.

Table 2. *Unit Root Testing on Raw Data.*

Variable	p value	α value	Decision
Promotion Costs	0.14	0.05	Fail to reject H_0
No of customers	0.054	0.05	Fail to reject H_0

The ADF Test indicated that the data is non-stationary

and has a unit root, as the values (0.14) and (0.054) exceed the alpha threshold. As a result, our data's unpredictability poses challenges in accurately predicting and utilising it. The procedure involves executing the Augmented Dickey-Fuller (ADF) test on the data, followed by a single application of differencing to transform non-stationary data into stationary data. Once we convert the non-stationary data into stationary data, we obtain the following results:

Table 3. *Unit Root Testing After Transformation of Data.*

Variable	p value	α value	Decision
Promotion Costs	0.0066	0.05	Reject H_0
No of customers	0.0048	0.05	Reject H_0

Since the *p* value of the variables which are 0.0066 and 0.048 respectively are less than the alpha value (0.05), we can conclude that time series data are stationary.

4.2. LM Test

The model requires uncorrelated error terms and we will check for serial correlation.

Table 4. *LM Test for Serial Correlation on Error Terms.*

Lag	P value	α value	Decision
2	0.7185	0.05	Fail to reject H_0
4	0.6721	0.05	Fail to reject H_0
6	0.7836	0.05	Fail to reject H_0

The LM test for serial correlation was done on lags 2, 4and 6 and error terms are uncorrelated.

4.4. Cointegration

Table 5. *Johansen Test for Cointegration (Maximum eigen value).*

Hypothesised No of CEs	P value	α value	Decision
None	0.3952	0.0500	Fail to reject H_0
At most one	0.0513	0.0500	Fail to reject H_0

The Johansen test for cointegration suggests that there is no cointegration between sales promotion and customer purchasing behaviour. The variables do not exhibit a long-term linear connection, suggesting that promotion only yields short-term advantages. This ultimately results in a long-term increase in the market share of fast food establishments. This aligns with the findings of Kotle and Armstrong (2006), who observed that sales promotion aims exhibit significant diversity, and sellers may employ sales promotions to enhance immediate sales or to facilitate the development of long-term market dominance. This indicates that although sales promotion generates immediate advantages, it also encourages the establishment of long-term market share.

Ahmed's research validates the transient nature of the promotional trend at KFC Marble Arch. The Maslow (1943) hierarchy of needs concept can provide support for the reported results. We contend that the introduction of a sales offer will immediately increase demand because it will arouse clients' curiosity about buying orders at a discounted price. Once people acclimatise to the promotion, their enthusiasm for purchasing the identical orders as before will diminish. We can confidently assert from the preceding discourse that sales promotion primarily yields immediate advantages in the fast food sector.

Contrary to our findings, Phumchusri, Kosawanitchakarn, and Chawanapranee (2022) argue that sales promotion has a positive and long-term impact on sales, as indicated by their study.

4.4. Lag Selection Criteria

Table 6. *Akaike Information Criterion (AIC) for Optimal Lag Selection.*

Lag	Cost	Customers	Overall
1	18.9049	20.3114	38.7278
2	19.1911	20.3319	39.0057
3	18.7102	20.5420	38.8160
4	18.1247	19.7871	37.7863
5	18.2246	19.2089	37.3935

Based on the supplied data, the most suitable number of lags to choose for the VAR model in order to perform the impulse response function and Granger causality test is five. This is because it has the lowest overall AIC value (37.39353). Therefore, using five delays in our model will yield more accurate outcomes compared to any other amount of lag.

4.5. Granger Causality Test

In order to establish a causal relationship between sales promotions and customer purchasing behaviour, we present the following findings using various time lags: Sales promotions have no impact on the consumer base that chooses to make purchases at a fast-food establishment. Moreover, customer purchasing behaviour does not stimulate sales.

Table 7. *Granger Causality Test Results.*

Null Hypothesis	Lags	P values	Decision
Cu → Co	2	0.5413	Fail to reject H_0
Co → Cu	2	0.1438	Fail to reject H_0
Cu → Co	3	0.1647	Fail to reject H_0
Co → Cu	3	0.2273	Fail to reject H_0
Cu → Co	4	0.0606	Fail to reject H_0
Co → Cu	4	0.0753	Fail to reject H_0
Cu → Co	5	0.3784	Fail to reject H_0
Co → Cu	5	0.2097	Fail to reject H_0

Cu represents consumer purchasing behaviour.
Co represents sales promotion per month.
→ Means do not Granger cause.

We failed to reject the null hypothesis after conducting series of *F* tests because all the *p* values are greater than *α* value. The rejection of the null hypothesis (H0) at the 5% level of significance indicates the absence of a causal association between consumer purchasing behaviour and sales promotion. Put simply, consumer purchasing behaviour has no impact on sales promotion, and sales promotion has no impact on consumer purchasing behaviour. These findings suggest that increasing promotional expenses would not significantly influence customer purchase behaviour and may result in an ineffective offer.

(Hany, 2013) contended that while the introduction of sales promotion in fast food places can increase the number of customers and visits, it does not inevitably lead to significant financial gains for the restaurants. Moreover, it has the detrimental consequence of diminishing sales of other products. He derived the aforementioned findings from his inquiry into the impact of sales promotion on customer behaviour, specifically loyalty and purchasing patterns, in the fast food industry in Egypt. This study utilised the multiple regression analysis approach. This implies that the fast food industry's overall profitability remains unaffected by sales promotion, but the promoted product decreases the sales of other items.

The research findings indicate that sales promotions have little impact on consumer purchasing behaviour. Multiple regression analysis revealed that Jordanian shareholder ceramic and glass manufacturing companies' promotional efforts have no statistically significant influence on consumer purchasing decisions. Therefore, we can deduce that the lack of effectiveness of sales promotions in influencing consumer buying behaviour also applies to the manufacturing of spectacles.

However, Wittmann, Uppal, & Sharma (2022) challenge the findings by arguing that sales promotion has emerged as a crucial marketing tool, experiencing a significant surge in relevance over time. They emphasised that the primary goal of a sales campaign is to directly impact the buying habits of the company's clients.

Verma and Sinha (2020) have presented findings that contradict our own. The investigation focused primarily on how consumers' perceptions of sales promotion and brand loyalty impact sales growth, firm profitability, and other important issues. We conducted a poll to understand customers' perspectives on sales marketing. During the sales promotion period, the financial analysis clearly demonstrated a significant surge in the company's sales. The consumer survey results indicated a robust and direct relationship between customers' perceptions of sales promotion and their loyalty towards the company.

4.5. Impulse Response Function

The VAR impulse response function analyses the system's dynamic effects when the model receives the impulse. Although the Granger causality test determined the relationship between consumer purchasing behaviour and sales promotion, it doesn't reveal how these variables react to each other or how long the reaction would last. So impulse responses would give us more details about time and the manner in which each variable will affect another. To enhance the visibility of the response function, we created the following chart:

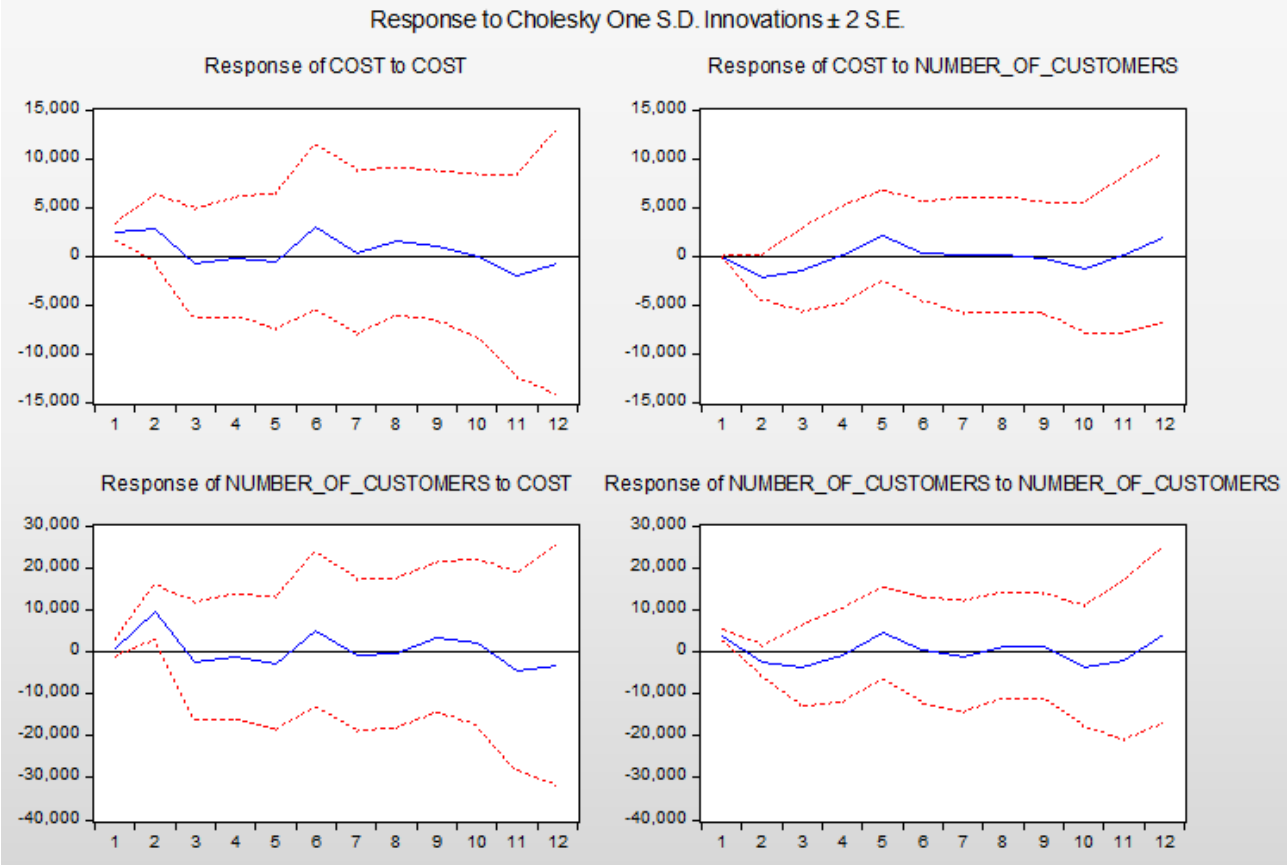

Figure 1. *The Impulse Response Function results.*

We can monitor the behaviour of variables in the model for the entire brand over a maximum duration of twelve months using the provided graphic. When there is a positive shock in the standard deviation, the cost-to-cost response initially shows a positive trend that continues for the following 3.5 months. The response exhibits a steady decline, transitions to a negative state, and then maintains stability for a duration of around three months. The cost-to-cost reaction demonstrates an initial positive trend for a duration of 4.5 months, followed by a subsequent increase while still maintaining a negative value. This indicates that the reaction to sales promotions can vary between favourable and unfavourable.

The cost exhibits an initial negative response to the number of consumers, but then, from the third month forward, it transitions to a positive response. Subsequently, it has remained consistently at a value of zero for almost three months. Ultimately, the cost reaches a negative number, and then, after a span of eleven months, it reverts back to a positive value. In essence, customers' reactions to sales promotions are typically negligible. Consumer purchasing behaviour initially exhibits a positive response to sales promotions, but after a period of three months, it becomes variable, alternating between positive and negative. Customers' responses to one another can vary between favourable and unfavourable.

In their publication (Fernando, Cludo, & Marcelo, 2015), they presented findings that contradicted our own results, suggesting that impulsivity and hedonic perception have favourable effects on acquiring discounted products. Their goal was to investigate the impact of discount sales promotions on purchase intention, while also considering the moderating effects of beauty in the connection between intention to acquire discounted goods, impulsiveness, and hedonic perception.

4.5. The Significance of Sales Promotion on Store Profits

Table 8. *Pretest/posttest Design.*

Pair	P value	α value	Decision
Pretest-Posttest	0.488	0.0500	Fail to reject H_0

We conducted an analysis to determine if there is a notable distinction between sales promotion and sales promotion, and found a probability value of 0.488, exceeding the alpha value of 0.05. Therefore, we may

deduce that there is no substantial disparity in gross profit prior to and following the implementation of sales promotion. Essentially, there were no alterations seen following the intervention, indicating that the promotion does not significantly contribute to the profitability of Chophouse restaurants.

The findings are consistent with the assertions made by Carlson, Ismagilova, and Dwivedi (2021), which indicate that some promotional activities lead to an increase in product trials and prompt customers to switch from buying alternative items. Customer switching inside the shop will have a negligible impact on gross profit, resulting in no noticeable variation in gross profit before and after the sales offer.

We present this graph to further corroborate the statistical findings obtained through a pre-test or post-test design.

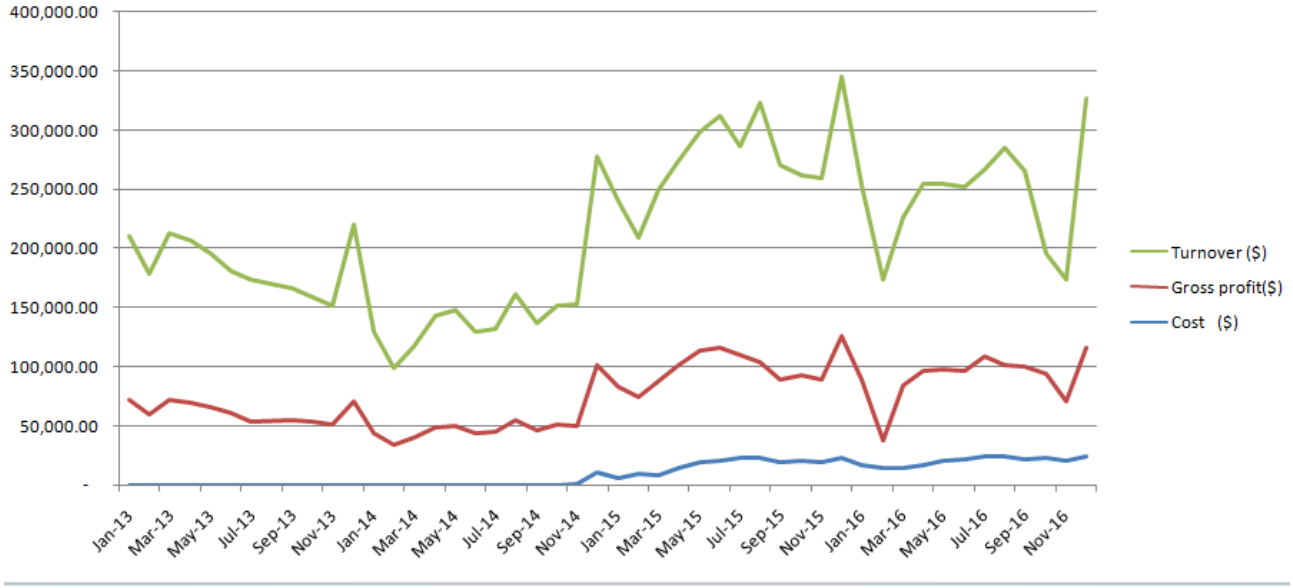

Figure 2. *Relationship between turnover and gross profit before and after sales promotion.*

The graph shows that the promotion was implemented, resulting in a rise in gross profit from $50,000.00 to $100,000.00 and an increase in turnover from $150,000.00 to $270,000.00. However, due to a consistent increase in the promotion's cost, both turnover and gross profit started to decline. This exemplifies the principle of diminishing returns, where a small rise in one element that contributes to profits leads to a decrease in the additional output of profits, while the levels of all other profit variables remain constant. Consequently, the introduction of seasonal elements does not have a substantial impact on the overall gross profit and turnover per month. As a result of these factors, turnover and gross profit often reach their highest levels in December and August. Conversely, February and November exhibit the lowest levels of gross profit and turnover. For example, the presence of designated public holidays can cause customers to exceed their typical spending habits.

Hany (2013) concurs that the impact of sales on profit can be negligible. While sales promotions in fast food establishments may boost customer numbers and frequency of visits, they may not yield substantial profits for the restaurants. Furthermore, these promotions may lead to a decrease in sales of other products. The 2020 paper by Rajput and Gahfoor supports the notion that promotion only redistributes brand shares without generating any significant boost in overall demand.

The citation "(Mathe-Soulek, Krawczyk, & Harrington, 2016)" refers to a 2016 publication by Mathe-Soulek, Krawczyk, and Harrington. The findings indicate that introducing new product promotions can have a substantial and favourable impact on sales inside existing stores. Promotions based on pricing, on the other hand, tend to result in smaller changes in sales within the same stores, as well as affecting the stock price. Therefore, we can conclude that the impact of a sales promotion on gross profit varies based on the specific type of promotion, specifically in our case, a pricing-focused promotion. Therefore, we can infer that price-based promotions have a negligible effect on gross profit in the fast food sector.

The analysis by Phumchusri, Kosawanitchakarn, and Chawanapranee (2022) on the factors associated with the overall effect in a pharmacy environment is consistent with the results. Regression analysis revealed contrasting relationships with net unit and net profit impact for numerous promotion and brand attributes.

Kim (2019) employed a linear model to investigate the impact of double couponing and loss leader portfolios on retail sales. Their findings are consistent with ours, since they conclude that sales promotions have no effect on gross profit because the model parameters deviate insignificantly from zero. The researchers aimed to assess the influence of promotions on store sales and concluded that the model was suitable for this objective.

Ripple effects may influence the acquired results, indicating potential methods to boost earnings before their indirect impact on monthly gross profits and turnover rates occurs. Employees' work duties have a significant impact on an organisation's profitability, directly and indirectly affecting the business's success. For example, if a cashier's oversight of her responsibilities goes undetected, it has the potential to cause problems for the entire department. If the error is not reported, it will have an indirect effect on other departments, ultimately affecting the client. At this juncture, you have exerted an indirect influence on a consumer, an individual with whom you may never have direct interaction. If the consumer obtains a product that fails to meet their expectations, their likelihood of returning to the company for further services may diminish, ultimately impacting the company's longevity and success. Consequently, the organisation will see reduced employee attrition and financial gains.

The facts suggest that the campaign is providing discounts to customers who would have otherwise paid the full amount, leading to a decline in sales and profit. Customers who would have visited anyway make a purchase using a promotional offer at a reduced price, and the offer does not affect their total expenditure. This suggests that the promotion approach is not effective, as a successful promotional strategy should decrease the probability of an existing client replacing a fully paid experience with a discounted one. Furthermore, if a client who made an advertised purchase visited the store without the promotion but ended up spending more money due to the offer, this could potentially indicate that the promotion is not highly significant.

4.5. Development of a Model that will assist in Planning and Evaluating Sales Promotions

The five categories include beverages, appetisers, deep-fried chicken, roasted chicken, and hamburgers. Our attention will be directed towards the two-piecer lunch, which is a specific item within the fried chicken category, as this is the origin of the campaign. The financial effect on profitability

We employ sales response models to assess the profit implications of sales promotion and ascertain the most advantageous discount for the deals. We employ sales response models to assess the profit impact of sales promotions and select the most advantageous discount offers.

Store traffic, average basket value, category-to-store sales, and item-to-category sales are essential variables for describing the sales of any item in a store. In order to determine the credibility of the framework model, it is necessary to do correlation tests on the variables included in the model. This will allow us to utilise the decomposition method to elucidate the relationship between fluctuations in shop traffic and changes in item sales. While a strong correlation between the variables could suggest a causal relationship (as suggested by the causality test), it is also possible that there is a common underlying factor. For instance, if the sales within a specific category are relatively low in comparison to the overall sales of the shop, it indicates a strong association, which would enhance the credibility of the model.

Simultaneously, strong correlations do not definitively establish the correctness of the model; conversely, weak correlations do not disprove the model. This is because while store sales may have a causal effect on category sales, other factors that influence category sales can weaken the association between store sales and category sales. Considering these limitations, we will now analyse the correlations between the variables shown in the accompanying figure.

Table 9. *Pearson correlations between store traffic (Bt), store sales (St), number of orders with the promoted item (Bjt), and promoted item category sales (Sjt).*

Correlation between	Correlation t-statistic probability	Strength of correlation
B_{jt} and B_{jt}	1.0000	Very strong
B_t and B_{jt}	1.0000	Very strong
B_t and B_t	1.0000	Very strong
S_{jt} and B_{jt}	0.7494	Strong
S_{jt} and B_t	0.7494	Strong
S_{jt} and S_{jt}	1.0000	Very strong
S_t and B_{jt}	0.7494	Strong
S_t and B_t	0.7494	Strong
S_t and S_{jt}	1.0000	Very strong
S_t and S_t	1.0000	Very strong

All of the associations exhibited statistically significant deviations from zero. This suggests that the model has the potential to effectively explain fluctuations in sales. As stated in reference [8], we describe the magnitude of the correlation between variables as previously mentioned.

The test does not provide definitive evidence for or against the model, but the observed correlations improve its reliability.

4.9. Profit of a Promoted Item

To determine the promotion profits, the equations for the restaurant's shop profits (gross profit) with and

without the promotion are required to be defined first. The restaurant's gross profit (π) over eighteen months is obtained through substitution of variables in the following model which was developed in chapter three.

$$\pi_t = \sum_{j=1}^{J}\sum_{i=1}^{I_j}\left[Q_{ijt}\left(P_{ijt} - C_{ijt} - d_{ijt} + \tau_{ijt}\right) - D_{ijt} + T_{ijt}\right] - F_t$$

where,

Q_{ijt}= unit sales of item *i*, category *j*, period *t*

P_{ijt}= regular price of item *i,* category *j*, period *t*

C_{ijt}= unit cost of item *i*, category *j*, period *t*

d_{ijt} = deal discount (in monetary units) for item *i*, category *j,* period t

τ_{ijt}= trade deal per unit of item *i*, category *j*, period *t*

D_{ijt}= lump sum deal cost for item *i*, category *j*, period *t*

T_{ijt}= lump sum trade deal for item *i*, category *j*, period *t*

F_t fixed costs in period *t*

J= number of product categories

I_j= number of items in category *j*.

t = 1 which is the period without sales promotion practice and

2- Period with sales promotion practice.

4.10. Explanations of Variables to be used in the Model

1. Item *i* is the promoted product which is 2 piecer meals.
2. Category *j* is the fried chicken department/category.
3. Period *t*, in this case we are using a period of a year before and after sales promotion to predict profit produced over a year.
4. Deal discount of a promoted product is 25% which is $1.
5. Trade deal discount is zero since the company is not concerned much about it because most of their products are produced within the company.
6. There is no any fixed cost allocated directly to the promoted item.

We categorise the costs of a marketed item into two groups: take-away and eating. The expenditures are contingent on the timeframe, i.e., whether they occur prior to or subsequent to the implementation of sales promotion strategies. The cost of advertising a product prior to promoting sales for dining and takeout is $1.20 and $1.33, respectively. Conversely, after implementing sales promotions for dining and takeaway, the price of a promoted item is $1.58 and $1.71, respectively. Additionally, both the takeaway and dining portions contribute to unit sales, with a uniform selling price of $3.00. Therefore, it is advisable to integrate two equations into the model to accurately represent the costs and revenues associated with a marketed product, considering its segmentation into two separate segments. The equations are as stated below: All of the relationships exhibited a statistically significant deviation from zero. This suggests that the model has the potential to be valuable in elucidating the fluctuations in sales. As stated in reference [8], we describe the degree of correlation between variables in the following manner:

The test lacks the ability to definitively confirm or refute the model; nevertheless, the observed correlations enhance the reliability of the model.Q_{ijt}= DQ_{ijt}+ TQ_{ijt}, and C_{ijt}= DC_{ijt}+ $TC_{ijt,}$

where *D*= Dinning and *T*= Take away. For example, Q_{ijt} represents dinning unit sales of the promoted item *i*, category *j*, period *t*.

This implies that, profit of a promoted item in category *j* in period *t* is the difference in store profit with and without the promotion is given by;

$$\Delta\pi_t^{\theta} = \pi_t^{\theta} - \pi_t^{*}.$$

this is equal to;

$$\Delta\pi_t^{\theta} = \left\{\sum_{j=1}^{J}\sum_{i=1}^{I_j}\left[{Q^{\theta}}_{ijt}\left({P^{\theta}}_{ijt} - {C^{\theta}}_{ijt} - {d^{\theta}}_{ijt} + {\tau^{\theta}}_{ijt}\right) - {D^{\theta}}_{ijt} + {T^{\theta}}_{ijt}\right] - {T^{\theta}}_{t}\right\} - \left\{\sum_{j=1}^{J}\sum_{i=1}^{I_j}\left[{Q^{*}}_{ijt}\left({P^{*}}_{ijt} - {C^{*}}_{ijt} - {d^{*}}_{ijt} + {\tau^{*}}_{ijt}\right) - {D^{*}}_{ijt} + {T^{*}}_{ijt}\right] - {T^{*}}_{t}\right\}$$

where;

π_t^{θ} is the profit in period t without the promotion on the focal item in period t and π_t^{*} is the profit in period t with the promotion in period *t*.

Table 10. *Profit of a promoted item in dollars.*

Month	$\pi^{*}{}_t$($)	$\pi^{\theta}{}_t$($)	$\delta\pi^{\theta}{}_t$ ($)
January	9,882.91	15,357.03	5,474.12
February	9,016.46	8,061.46	(955.00)
March	9,866.93	12,885.02	3,018.09
April	10,360.28	12,574.54	2,214.26
May	10,463.88	13,059.98	2,596.10

Month	π^*_t($)	π^θ_t($)	$\delta\pi^\theta_t$ ($)
June	9,940.69	17,845.91	7,905.22
July	7,846.25	19,835.97	11,989.72
August	10,345.47	20,464.43	10,118.96
September	9,857.16	16,616.29	6,759.13
November	10,381.95	16,921.82	6,539.87
December	15,768.93	20,274.98	4,506.05
Total	122,978.76	192,498.15	69,519.39

The table above shows the profit a promoted item generates, calculated using the previously built model in Microsoft Excel.

The figure demonstrates that, before the introduction of sales promotion strategies, the month of December yielded significant earnings amounting to $15,768, contributing to a total annual profit of $122,978.76. In August, both products reach their highest point, resulting in a total annual profit of $192,498.15 for the course of the sales promotion. In summary, the profit increase for a promoted item at Chophouse Shop amounts to about $69,519.39 over a period of twelve months.

July and August were the most lucrative months, suggesting that these are the months in which the company can generate the highest level of profit. Currently, it is advantageous for a company to extend their business hours and promote in-person dining rather than takeout, as takeout tends to be more expensive. The results show a positive increase in profit for the advertised product, aligning with the principle of demand. According to this law, a decrease in the price of a product will result in an increase in the required amount, assuming all other conditions remain the same.

4.11. Profit of a Promoted Item Using Several Discount Rates

We also developed a model to simulate the profit of a promoted item over a year at various discount rates, as illustrated in the following table.***Table 11.*** *Profit of a Promoted Item using Several Discount Rates.*

Month	24%	25%(current)	26%	26.5%
January	9,573.80	5,474.12	1,374.44	(675.40)
February	1,236.36	(955.00)	(3,146.36)	(4,242.04)
March	6,479.05	3,018.09	(442.87)	(2,173.35)
April	5,610.98	2,214.26	(1,182.46)	(2,880.82)
May	6,160.66	2,596.10	(968.46)	(2,750.74)
June	12,814.10	7,905.22	2,996.34	541.90
July	17,446.04	11,989.72	6,533.40	3,805.24
August	15,738.32	10,118.96	4,499.60	1,689.92
Septemb er	11,310.73	6,759.13	2,207.53	(68.27)
Novembe r	11,185.15	6,539.87	1,894.59	(428.05)
Decembe r	10,079.89	4,506.05	(1,067.79)	(3,854.71)
Total	122,057.07	69,519.39	16,981.71	(9,287.13)

The model showed that implementing discounts of 24%, 25%, and 26% resulted in significant earnings during the months of July and August. The annual profit change amounts to $122,057.07, $69,519.39, $519.39, and $16,981.71, respectively. Conversely, implementing a discount of 26.5% yields the highest profit in July, and subsequently in October, resulting in a total profit increase of $9,287.13. Typically, the months of August and July experience the greatest fluctuation in profit for a two-piece garment, whilst February results in the lowest profit. A smaller discount results in greater profitability, whereas a larger discount results in increased losses.

Leung (2015) states that management has the ability to provide a discount of 26%. Upon selecting the most advantageous discount, the author hypothesised that the effectiveness of a sales promotion hinges on its capacity to advantageously impact both clients and the organisation. In essence, discounts below 26% will mostly favour the firm rather than the clients, whereas discounts beyond 26% will solely benefit the customers. Consequently, the optimal course of action for the company is to decrease the cost of a two-piece dinner to $2.60 specifically in Harare (Unicef, 2024). Thus, it is vital to accurately choose the optimal discount by initially comprehending the company's client demographic. Customers may perceive a decrease in product quality if the company provides substantial discounts. Conversely, insufficient discounts may not successfully entice a significant number of clients.

5. Summary, Conclusions and Recommendations

The study's goal is to investigate the impact of sales promotion and develop a framework model to evaluate its influence on Chophouse store profits. By juxtaposing the hypotheses presented in the conceptual framework with the empirical facts, we have successfully addressed the study inquiries. We specifically tailored the conclusions and recommendations to align with the study's objectives.

The absence of cointegration between sales promotion and consumer purchasing behaviour implies that sales promotion tactics yield only short-term advantages, according to the study's findings. Furthermore, a consistent rise in promotional

expenditures is unlikely to exert a substantial influence on customer buying behaviour and may potentially result in ineffective promotion, as the findings indicate that sales promotion does not affect consumer purchasing behaviour. Similarly, the Granger causality test indicates that sales promotion does not influence customer purchasing behaviour. This is due to the observation that sales promotion typically yields immediate benefits in the fast food industry.

Sales promotion has a tendency to decrease sales of other products, according to Abdelhamied (2013).

According to the study, the principle of diminishing returns states that a consistent increase in promotional expenditure would result in a decline in both revenue and gross profit. Thus, it can be inferred that there is no substantial disparity in the gross profit prior to and during the implementation of sales promotion, suggesting that no noteworthy alterations took place after the intervention. This implies that the promotion is insignificant in relation to the restaurant's profitability.

The study demonstrates that the majority of consumers exhibit greater purchasing behaviour for the advertised product throughout the promotional period. The marketed item's profit significantly increased to $89,773.95 over a year, compared to the same item without promotion. The study suggests that the marketed item has the highest potential for significant profit growth in the months of July and August, particularly with the current promotion. Now is the opportune moment to incentivise additional customers to purchase the advertised products for eating purposes, with the goal of minimising packing expenses. The findings indicate that the greater the number of units sold during the promotional period, the greater the potential for profit growth.

The profit modelling analysis recommends that management adopt a 26% discount for the marketed item. This discount is the only one that can confirm the effectiveness of the promotional campaign, as it is advantageous for both the company and the customers (Leung, 2015). A reduction of 26% leads to a significant minimum increase in the firm's profit of $14912.75. Ultimately, pushing a product usually yields substantial earnings throughout the months of July and August.

In order to minimise packing expenses, it is necessary to convince clients to choose dining meals, particularly during periods when the company can generate significant profit margins compared to take-away options. We suggest that fast food establishments engage in co-promotional endeavours with partner companies. These activities can take on different forms but generally involve formal collaboration between two or more organisations to achieve promotional objectives and avoid cannibalisation (Cambron, 2012). This study has developed a model that requires adjustments to aid in the planning, assessment, and allocation of funds for sales promotions.

According to this study, the possible areas for further research in sales promotion are as follows: This study initially focused on four Chophouse fast food businesses in Harare, and it is not suitable to draw broad generalisations that could apply to other regions of the country. Therefore, future investigations should focus on the remaining areas of Zimbabwe. Furthermore, it is important to undertake an extensive analysis to simulate the influence of sales promotion on store earnings in additional provinces. Given the outcomes, it is imperative to carry out additional studies to examine the extent of cannibalisation among different categories and items.

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