An Investigation of the Role of Product, Place, Promotion and Price (4Ps) in Market Basket Analysis: A Case Study of Retail Shops in Gweru Zimbabwe

Musungwini, Samuel[1], Zhou, Tinashe Gwendolyn[2]

[1,] Midlands State University, Faculty of Science and Technology,
Department of Computer Science and Information Systems, Gweru Zimbabwe

[2]Midlands State University, Faculty of Science and Technology,
Department of Computer Science and Information Systems, Gweru Zimbabwe

Abstract: *Market basket analysis is a technique that discovers relationships between pairs of products purchased together. The technique can be used to uncover interesting cross-sells and related products. The purpose of this paper is to come up with a proposal on a research survey aimed at investigating the role of Product, Place, Promotion and Price (4Ps) in Market Basket Analysis (MBA) and establishing how the 4Ps can be applied as a tool for competitive advantage in the retail sector in Zimbabwe. To conduct this study the researchers propose to carry out observations, and examine transactions of customers for retail shops in Gweru. A survey questionnaire will also be used to elicit data. Finally the researchers will then evaluate the empirical data and compare it with literature evidence to reveal relationships. It is hoped that the results of the study will provide recommendations for the retail sector in Gweru about changes that need to be adopted in order to attract more traffic into their stores and increase the size and value of the basket purchases.*

Keywords: Market basket analysis, 4Ps, retail sector, Gweru

1. Introduction

Retailing is increasingly becoming a high performance sport, and like athletes, retailers are seeking a competitive edge through technology [1]. Market Basket Analysis (MBA) also known as affinity analysis, has emerged as the next step in the evolution of retail merchandising and promotion. It is a modeling technique based upon the theory that if you buy a certain group of items, you are more (or less) likely to buy another group of items. The technique also identifies associations between items or between categories of items that customers tend to purchase together (complements) or between items customers rarely purchase together (substitutes) [2]. The main goal of MBA is to identify relationship that is association rules between groups of products, items or categories [3]. For example, if you are in a Zimbabwean supermarket and you buy a packet of 2kg sugar and don't buy bread, you are more likely to buy flour at the same time than somebody who didn't buy sugar. The set of items a customer buys is referred to as an **item set**, and market basket analysis seeks to find relationships between purchases. Typically the relationship will be in the form of a rule:

IF {sugar, no bread} THEN {flour} [4] defines MBA as an algorithmic process that generates business rules and several metrics for each business rule such as support, confidence and lift that help researchers identify interesting patterns . The probability that a customer will buy sugar without a loaf of bread (that the antecedent is true) is referred to as the **support** for the rule. The conditional probability that a customer will purchase flour is referred to as the **confidence**. **Lift** being a third metric in the MBA approach is a measure of how much more likely the customer is to purchase item B now that he or she intends to purchase item A as compared to a customer not purchasing item A.

In retailing, most purchases are bought on impulse. MBA gives clues as to what a customer might have bought if the idea had occurred to them. The objective of this study will be to find out why customers buy particular products together and find whether the 4Ps influence the decisions they make on the retail outlets they choose to buy from.

2. Literature Review

2.1 Association rule mining

Association rule mining is a data mining technique used to find interesting associations or relationships between a large set of data items [5]. It identifies the association or relationship between a large set of data items and forms the base for MBA [6]. A typical application of association rule mining is market-basket analysis. In market-basket analysis, buying habits of customers are analyzed to find associations between the different items that customers place in their "shopping baskets". The discovery of such associations can help retailers develop marketing and placement strategies as well as plan on logistics for inventory management. Items that are frequently purchased together by customers can be identified. An attempt is made to associate a product "A" with another product "B" so as to infer "whenever A is bought, B is also bought", with high confidence (the number of times B occurs when A occurs).

2.2 Market Basket Analysis (MBA)

Market basket analysis is a technique that discovers relationships between pairs of products purchased together. The technique can be used to uncover interesting cross-sells and related products. The idea behind market basket analysis is simple. Simply examine your orders for products that have been purchased together. For example using market basket analysis you might uncover the fact that customers tend to buy hot dogs and buns together. Using this information you might organize the store so that hot dogs and buns are next to each other.

Market Basket Analysis (MBA) is also an exploratory technique which identifies the strength of association between pairs of products purchased from an individual retailer. Such analysis is usually applied to data on shopping behavior, such as that collected at the point of sale. If applied to grocery shopping for example, the results of a MBA could inform a supermarket's pricing strategy. If the supermarket knows that bread and fruit juice tend to be purchased together, it can avoid offering price discounts on both at the same time.

Almost all available literature have attempted to address the what, and how part of Market Basket Analysis. [3] researched on how MBA can be used in management research and concluded that the adoption of MBA can help bridge the much lamented micro-macro and science-practice divides. They also argued that the use of MBA can lead to insights in substantive management domains such as human resources, organizational behavior, entrepreneurship and strategic management.

[2]'s research was on how MBA can be used to estimate potential revenue increases for a small university bookstore and concluded that depending on the customers' price sensitivity and on the saturation level of the affinities uncovered revenue can increase by as much as $10 000 for the bookstore. Another research was done by [1] on how retailers are using MBA to win margin and market share. Results obtained reveal that retailers are using MBA to develop more profitable advertising and promotions target that can attract into the stores and increase the size and value of the basket of purchases among other things.

2.3 Marketing Mix: The 4Ps

Many authors argue that understanding the customer attitude toward 4Ps (product, price, place and promotion) marketing mix is important. The issue of customer mind-set toward 4Ps of business particularly in the retail industry is crucial. There is need to understand the customer attitude toward the 4Ps marketing mix. [7] stresses that the marketing mix is a framework of the dominant marketing management paradigm used to identify market development, environmental changes and trends. Several studies corroborate that the 4Ps are indeed the trusted abstract platform of practitioners dealing with operational marketing issues [8]. The ample recognition of the 4Ps among field marketers is the end result of their insightful disclosure to this notion, since identifying the 4Ps as the controllable parameters is likely to influence the consumer buying process and decisions [7], [9].

Marketing mix is not a systematic theory, but merely a conceptual framework that identifies the major decisions managers make in configuring their offerings to suit consumers' needs. The idea of the marketing mix is the same idea as when mixing a cake. A baker will alter the proportions of ingredients in a cake depending on the type of cake he or she wishes to bake. The proportions in the marketing mix can be altered in the same way and differ from product to product.

Consumers make many buying decisions every day. Most large companies research consumer buying decisions in great detail. They want to answer questions about what consumers buy, where they buy, how and how much they buy, when they buy, and why they buy. However learning about the whys of consumer buying behavior and the buying-decision process is not so easy as the answers are often locked deep with the consumer's head. The central question is: How do consumers respond to various marketing stimuli the company might use? The company that really understands how consumers will respond to different product features, price, and advertising appeals has a great advantage over its competitors. Therefore, companies and academics have heavily researched on the relationship between marketing stimuli and consumer response.

[10]'s survey was aimed at studying the issues of customer satisfaction with respect to the 4Ps for a brand in India and the results indicate that the 4Ps have significantly positive effects on overall customer satisfaction. [9]'s 2010 study was on why it is important to understand customer attitude towards the 4Ps marketing mix using a case study of the livestock input industry in Indonesia. The authors concluded that there is need to understand customer's needs, values and behavior associated with the product as this can help the marketers to develop segments around brand loyalty, price-sensitive and feature sensitive respondents. [11] came up with a proposal to conduct a survey which would look at the effects of the 4Ps marketing mix on sales performance of automotive fuels of selected service stations in Nakuru town. It is hoped that once the survey is completed the oil marketers' performance will be greatly influenced by the 4Ps.

2.3.1 Product
When considering product as a marketing element, issues such as brand, quality, design and packaging are very important [11]. If the brand is acceptable to the customer and of high quality, loyalty of the buyer is won through satisfaction. Research has shown that there exists a relationship between product quality and customer loyalty . It would be interesting to establish whether such a relationship exists for customers in Gweru and provide recommendations on how the retail stores can take advantage of brands to influence customer buying behaviors positively.

2.3.2 Price
Price is an important factor that influences a customer's decision to repurchase, recommend and create loyalty to a given business [12]. It is unquestionably one of the most

important marketplace cues largely because the price cue is present in all purchase situations and at a minimum represents to all consumers the amount of economic outlay that must be sacrificed in order to engage in a given purchase transaction [13]. Less frequent changes of prices causes customers to perceive a company as focused and this assists in planning hence positively enhancing a company perception in the market [11]. Based on customer perceptions concerning the prices charged for the different products found in the retail stores, the study seeks to determine the appropriate pricing strategies that the retail stores may use to their advantage in order to influence the buying behaviors of the customers.

2.3.3 Place

Businesses need to decide on the place of purchase or where and how to distribute the product to the customer [11]. Consumers are satisfied if products are made available at the right time, in the right place and in the right quantity [14]. Businesses should be strategically located so that they are easily accessed. [15] supports this notion by saying that organizations need to ensure accessibility of their products and services by establishing their stores at places that ensure convenience and ease. The study seeks to provide recommendations on what the retail stores should do to improve the layout and presentation of their stores and ensure that the products are distributed and delivered to the customers effectively and efficiently.

2.3.4 Promotion

Promotion involves a variety of activities undertaken by a firm to communicate the merits of its products in a bid to persuade target consumers to purchase it. It includes activities like advertising, sales promotion, personal selling and publicity [11]. Advertising has a positive and enduring effect on base sales [16] therefore each seller must tailor product promotion to suit the product and the market segment [11]. This study seeks to establish the promotional activities the retail stores are engaged in and provide recommendations on strategies the retail stores can use to boost demand for their products in order to succeed in the market place.

3. Methodology

Gweru CBD has six major retail shops and all these shops will be considered for the study. The observation method will be used to identify and categorise the product relationships and customer profiles in order to further develop the questionnaires required for the survey phase. Questionnaires will be distributed to customers who will be actively buying from the supermarkets at the date and time that the survey will be conducted. Observations will also be carried out to establish the general buying behavior of customers in the retail shops to be studied as well as the general composition and size of the market basket and the products to consider in the research.

4. Expected Outcome

The purpose of this study will be to investigate the role of the 4Ps in MBA and establish how the concept can be applied as a tool for competitive advantage in the retail sector in Zimbabwe. Results of the study will provide recommendations for the retail sector in Gweru about changes that need to be adopted in order to attract more traffic into their stores and increase the size and value of the basket purchases. By using the marketplace as a laboratory, retail planners and merchants may be empowered to make smarter decisions and match inventory to needs by customizing layouts, assortments and pricing to the local demographics.

5. Implications of the Study

For retailers to introduce products and services that create value in the mind of customers they need information. The strength of this research lies on its specific focus on the connection between the 4Ps and MBA. The study seeks to provide the retailers with guidance on how they can take advantage of the 4Ps to influence the buying decisions of their customers (both existing and potential) in order to improve their profit margins. Specifically recommendations will be made on how the retailers can produce superior products, charge competitive prices, position themselves appropriately and widely promote their products and services in order to attract customers to their businesses and influence customer loyalty.

This study is targeted at one town that is Gweru which might not be representative of the state of retail stores in Zimbabwe. Other researchers might extend this research to other geographical areas to ascertain whether the findings are consistent and what can be done to make them more generalizable.

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Author Profile

Samuel Musungwini holds a Post Graduate Diploma in Tertiary education from Midlands State University, a Bachelor of Science Honours in Information Systems from Midlands State University, Master Science degree in Information Systems Management from Midlands State University and is currently a Doctoral Student at University of South Africa (UNISA). He is a lecturer at the Midlands State University, in the Department of Computer Science and Information Systems.

Tinashe Gwendolyn Zhou holds a Post Graduate Diploma in Tertiary education from Midlands State University, a Bachelor of Business Administration in Computer and Management Information Systems from Solusi University and a Master of Science degree in Information Systems Management from Midlands State University and is currently a Doctoral Student at University of South Africa (UNISA). She is a lecturer at the Midlands State University, in the Department of Computer Science and Information Systems.