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Evaluation of Consumers' Behaviour on Brand Loyalty and Switching of Competitive Soda Products

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ABSTRACT
This study examines the brand loyalty principle in three (3) bottling soda drinks on the basis of consumers' choice based on cost, product quality and availability determinant factors. The data collected from respondents through a questionnaire were analyzed on the basis of Chapman-Kolmogorov transition probability matrix for Markov processes for 1st ,2nd and 3rd steps.. The results revealed varying retention and switching patterns as both the upward and downward diagonals decreases as the step increases though Pepsi has the highest retention likelihood under cost and product quality determinant factors with a differential margin of about 14% to Coke while Limca takes the least. Pepsi maintains a margin of close to 30% ahead of Coke while Limca assumes the least under consumers' choice based on product quality. The retention is higher in Coke based on availability with a margin of approximately 8% to Pepsi which is 4% higher than Limca.It was also observed that probability of switching from Pepsi to coke is higher than switching to Limca at the various steps under all the choice determinants factors. The computation of the markets share for the brands based on the initial probabilities under choice determinants factors revealed Pepsi as the dominant brand under cost and product quality considerations while Coke dominates under availability factor while Limca constantly maintains the rare both in terms of the retention and switching as well as market shares.
Keywords: brand loyalty, retention, switching, transition probability matrix, choice determinant

I. INTRODUCTION

Brand loyalty and brand switching are two closely related concepts that have significant impacts on a company's profitability and growth. Singh (2021) opined that brand loyalty refers to a customer's commitment to repeatedly purchase a particular brand based on their perception of superior quality and service. On the contrary Liao, Li,, Wei and Tong (2021) perceived brand switching as the tendency of customers to stop buying from a company and choose another brand with relative similarity with respect to some product characteristics.

Brand loyalty is a powerful driver of revenue growth and profitability (Grandhi, Patwa&Saleem 2021; Lin & Bowman, 2022).Otto, Szymanski and Varadarajan (2020). asserted that the revenue of companies with high brand loyalty scores tends to grow in multiple folds which in turn earned shareholders reasonable returns within a reasonably business period. Substantial proportion of turnover in businesses is often due to continuous patronage of long term customers who serve as links for indirect advertisement of products to new customers (Cudby, 2020 ;López ,2021). On the other hand, brand switching can have a detrimental effect on a company's bottom line. Ghamry and Shamma, (2022) posited brand switching often come into market environment as a result of economic and product characteristics.Lopez,(2020) opined that customers switch brands for reasons such as the price-value gap, poor customer service, brand stagnation, or a desire to conquer all niches. Mehta & Pickens (2020) maintained that prevention of brand switching requires companies need to focus on providing a clear unique value proposition, investing in customer retention, offering personalized communications, building a winning customer support team, and addressing negative feedback. Vincent and Aurangabadkar (2022) highlighted that the dynamics and motivations behind brand switching is crucial for marketers to identify potential issues with customer loyalty promptly. Factors such as inadequate review on products, failure of post-purchase engagement, social media interactions, and a decline in sales promotion can be responsible for brand switching (Dobrokhotov,2023 ;Vatavwala, Kumar, Sharma, Billore, &Sadh, 2022).In

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summary, brand loyalty and brand switching are two sides of the same coin, with brand loyalty being the key to profitable growth and brand switching posing a significant threat to a company's success. Agha,Rashid, Rasheed, Khan and Khan(2021) opined that understanding the concept of brand loyalty and its implementation by business managers may guaranteeretention of customers by enjoying brand loyalty.

The focus of this study is to examine the pattern of brand loyalty and switching on the basis of the Markov transition probability matrix with reference to some factors capable of determining the loyalty and switching of consumers.The transition probability matrix (t.p.m) is a powerful tool for analyzing brand loyalty and switching behavior among consumers (Vijayaragunathan, & John, 2022). Meher,Afzal, Zakir, Bhuiyan and Kabir (2021) posited that the transition probability matrix is essential for understanding brand loyalty, as it captures fluctuations of consumer behaviour in a structured manner. The transition matrix quantifies the likelihood of customers transitioning from one brand to another over time, providing insights into consumer preferences and market dynamics(Cain,2022;Wei,Mu, Guo, Jiang,&Chen,2024). It is constructed based on the probabilities of consumers remaining loyal to their current brand or switching to a different one. The diagonal elements represent the probability of a consumer remaining with the same brand, while the off-diagonal elements indicate the probability of switching to other brands. The rest of this include material and methods in section 2.0, section 3.0 deals with results and discussions while section 4.0 and section 5.0 deal with conclusions and recommendation respectively.

II. MATERIAL AND METHOD

The data for the study was collected with the aid of a carefully structured questionnaire which focuses on some factors that could cause loyalty or switching in the choice of brands by consumers. The factors considered are cost, product quality and availability. A total of one hundred and fifty (150) questionnaires were administered on respondents while one hundred and thirty-seven questionnaires were duly filled and retrieved constituting 91.3 percent response rate. The probabilities of retaining and switching brand were computed based on responses obtained from respondents as shown in the questionnaire.

= where represents the number of customers that switch from brand i to brand j at time and represent the total number of customer who choose brand at (i.e row total).

t.p.m =

The diagonal elements in the transition probability matrix, that is, represent proportion of respondents who consistently retain same brand under possible factors which can be responsible for dynamics in choices.

The nth step t. p. m was obtained using the Chapman-Kolmogrow theorem for transition probability matrix.

Let be the transition probability matrix of a homogeneous Markov chain, then the n-step t.p.m is given as

= (1)

=

The stationary distribution of a Markov chain at state (i=1,2, 3, .. k) at any arbitrary step gives a row vector as in eqn (2)

(2)

Eqn (2) represents the market share for k- brands item which is the expected sales for each specific brand.

Where is the initial probability matrix (proportion based on present choice of brands by customers) and is the element in the column of the t.p.m at time . Let the initial probabilities of purchase for item under a category be

(3)

(4)

(5)

The specific market shares for the brands under each category are given in (3), (4) and (5).The initial transition probability matrix for Coke, Pepsi and Limca respectively. The corresponding market shares for the brands.

III. DISCUSSION OF RESULTS

The results in table I show the 1st, 2nd and 3rd steps transition probability matrices for the brands under the conditions of cost, product quality and availability of the products in the market at the point of demand by the consumers' considered for this study. At the first step under cost, Coke, Pepsi

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and Limca have retention probabilities of 39%,53% and 36% respectively .The switching rate from Coke to Pepsi and Limca are 37% and 39% respectively and the switching from Pepsi to Coke and Limca are 56% and 25% respectively while switching from Limca to Coke and Pepsi are 5% and 10% respectively. The pattern of retention and switching under product quality is similar to the situation under cost such that Coke, Pepsi and Limca have retention probabilities of approximately 36%, 66% and 41% respectively. The switching pattern from Coke to Pepsi and Limca is approximately 14% and 30% respectively and from Pepsi to Coke and Limca are 32% and 29% respectively while the switching from Limca to Coke and Pepsi are approximately 32% and 20% respectively. The upward diagonals decreases as the step increases indicating low tendencies of switching under the cost, product quality and availability factors and the downward diagonal also decreases as the step increases which indicate that the higher the step the lower the retention.

Table1: transition probabilities for the brands under the choice determinant factors

State	Cost			Product Quality			Availability		
	Brand			Brand			Brand		
	Coke	Pepsi	Limca	Coke	Pepsi	Limca	Coke	Pepsi	Limca
	0.3900	0.5600	0.0500	0.3577	0.3211	0.3212	0.5401	0.3796	0.0803
	0.3700	0.5300	0.1000	0.1386	0.6569	0.2045	0.3723	0.4598	0.1679
	0.3900	0.2500	0.3600	0.2992	0.2920	0.4088	0.3358	0.2409	0.4234
	0.1521	0.1369	0.1521	0.1279	0.0192	0.0895	0.2917	0.1386	0.1127
	0.3136	0.2804	0.0625	0.1031	0.4315	0.0853	0.1441	0.2115	0.0580
	0.0025	0.1000	0.1296	0.1032	0.0418	0.1671	0.0064	0.0281	0.1793
	0.0593	0.0507	0.0593	0.0458	0.0027	0.0267	0.1576	0.0516	0.0379
	0.1756	0.1489	0.0156	0.0331	0.2835	0.0249	0.0547	0.0973	0.0140
	0.0001	0.0010	0.0467	0.0331	0.0085	0.0683	0.0005	0.0047	0.0759

Table II: market share for the brand under the choice determinant factors

Brand	Choice determinant factor		
	Cost	Product Quality	Availability
Coke	0.3868	0.3174	0.4949
Pepsi	0.5273	0.3722	0.3799
Limca	0.0859	0.3104	0.1252

This implies instability in the retention and switching pattern across the brands under the choice determinant factors. However, the results in table II show the market share for the brands which clearly revealed that Pepsi dominates the market under cost with a margin of about 14% to Coke and 44% to Limca. For choice based on product quality Coke maintained close competition with Pepsi but behind with a margin slightly more than 5% while Limca is lower to Coke with a margin of 0.7%.Under choice based on availability Coke

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leads with a margins of approximately 12% and 37% for Pepsi and Limca respectively.

IV. CONCLUSIONS

This study revealed that switching exists among the brands though at varying probabilities from one item to the other depending on the choice determinant factor. The tendencies of retention which could suggest brand loyalty over time also exists in varying probabilities in relation to the choice determinant factors and step of the transition probability matrix. It was also established that both the upward and downward diagonals of the transition matrix decreases as the subsequent steps which suggest the possibility of decline in the retention over time. The computed market shares for the brands under cost and product choice determinant factors showed Pepsi as the dominant brand and Coke dominated on the basis of choice due to availability. Finally, it can be concluded that though the brands are competitive products but the switching and retention strengths differs with quantifiable margins.

V. RECOMMENDATION

The results of this study clearly showed switching and retention in closely related or competitive product is a common phenomenon which requires adequate attention of business managers, manufacturers and marketers in order to ensure proper placement for their brand in the market place. Retention and switching could be based on product inbuilt factors, market dynamics and marketing strategies. This study concentrated on cost, product quality and availability as determinant factors while there could be a host of other factors which can account for retention as well as switching. Further studies should be directed towards cases of hidden Markov chain transition probabilities as well as considerations of other possible choice determinant factors.

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