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Attributes Influence Customers towards Ice Cream Purchase with Brand Preference and Income Effect on Purchasing Ice Cream: An Empirical Study on Dhaka City

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Abstract

This paper identifies various attributes influencing consumers to purchase Icecream from a retail store. Our team has done this research during the year 2021. Notably, it confesses the behavioural patterns of consumers and perceptions regarding ice cream with the association between the income effect and purchase decisions. To conduct the research, we collected raw data from an online survey of 152 consumers of different ages. Participants from the separate age group provided their opinion in the pre-setted questionnaire. After gathering the raw data, we used three effective methods, Henry Garrett's ranking technique, Chi-Square Independence Test, and PCA, to rank the consumer-preferred ice cream flavour, income effect on purchasing ice cream and factors that attract consumers to buy ice cream. Raw data was gathered from the survey and coordinated with the Excel Programme. SPSS was used to implement Chi-Square and PCA tests, but Henry Garret's ranking was done on Excel Programme. This step-by-step analysis shows the consumer inside regarding existing brand preferences regarding ice cream in Bangladesh. Furthermore, this research depicts the scenario of the Dhaka city dwellers about their choosing factors for ice cream, favourite flavours and purchase power.

Index terms—

1 I. Introduction

Ice cream is a perishable, delicious, wholesome, nutritious frozen dairy food. Globally, the Ice cream market grew at the Compound Annual Growth Rate (CAGR) of around 6% during 2009-2016, which reached approximately 19.7 million metric tons in 2016 (Helmold & Terry, 2021; Munawar & Disman, 2023). European countries dominated the global ice cream market with more than 40% of the total volume in the same year. On the other hand, China and Brazil jointly became the reason for two-fifths of global ice cream sales (Brandenburg et al., 2019; Hamad & Omar, 2013; Sawant, 2014). Furthermore, the ice cream industry contributes 0.053 percent of the world's GDP. Ice cream is unquestionably one of Bangladesh's most renowned and favourite food products among children and adults (Islam & Liang, 2012; Shazzat Hossain et al., 2021). The ice cream sector of Bangladesh has been in place for decades. The ice cream industry of Bangladesh started to grow by establishing Igloo Ice Cream Unit by Abdul Monem Ltd in 1964 (Ramadani et al., 2022; Shazzat Hossain et al., 2022). Since then, the business scope in this field has been increasing. To gain and maximise the company's profit, several local giant companies have invested in ice cream production units (Martin, 2018).

As a result, Bangladesh has seven branded ice cream companies that mix with new wings of ice cream production of various companies along with previously established renowned brands (Puspitasari et al., 2020; Sawant, 2014).

According to Lanka Bangla Investment Guide 2018, this industry had a market of exactly 1200 cores BDT in 2018. Again, they reported that it would grow positively near about 15% in recent years (Wang et al., 2023). The study said that three companies hold a 79% share of the market volume. Igloo Ice Cream Ltd placed first with acquiring 38%, and Polar Ice Cream became second with 28% of the market share. Bellissimo and Za'n Zee

44 are the brands of The Kazi Food Industry and had a sales contribution jointly of 11% in 2018 (Kalogiannidis
45 et al., 2023). Other brands and nonbranded ice cream companies achieved a sharp 10% that year. Studies
46 on this industry depicted that it contributes 0.064% of the gross domestic product (GDP) (Bulc & Ojstr?ek,
47 2008;Shazzat Hossain et al., 2021).

48 The Ice Cream manufacturers have come a long way. This industry evolves with loads of ice cream makers
49 bringing creativity in quality, pricing, flavours, and packaging. Expanding market opportunities along with the
50 changing behavioural pattern of consumers regarding perishable products like ice cream is the essential purpose
51 of this study (Martin, 2018). The study revealed consumer preferences regarding the flavour of ice cream. As
52 consumers are the heart of any business, purchasing decisions based on income also carry significance. This
53 study has been done based on influencing factors directly connected with consumers' I perceptions of ice cream
54 (Barykin et al., 2022;Seuring & Müller, 2008). The preferable environment for customer ice cream consumption
55 was a partial analysis area in this paper. Nevertheless, the main issue to determine was the consumer behavioural
56 pattern for ice cream and the most renowned brand among the people of Dhaka city (Dian Nailiyah, 2013).

57 2 II. Methodology

58 In regard to performing the research analysis

59 The ice cream industry and consumer perceptions were the root point. Ultimately, various participant's
60 emotions about the attributes that influence customers towards icecream purchase with brand preference have
61 been considered. This research reveals the key attributes influencing the consumer of an ice cream buyer and
62 their income effect on having an ice cream.

63 3 a) Research Approach/way

64 The convenience sampling technique was adopted for this study, and the study is based on two types of data
65 sources. The entire research process was conducted based on primary data through a questionnaire comprising
66 152 consumers and secondary data. It is a quantitative study collecting data by interviewing the respondents,
67 who are consumers of ice cream in Dhaka, Bangladesh. The quantitative analysis represents a given reality
68 in data collection by taking interviews based on a questionnaire and acquiring respondents for an electronic
69 survey. There-fore, the study process had to be split into two parts: primary research and secondary research.
70 In this crosssectional survey research design, the nature of data is described by detailed explanations and mood
71 of analysis survey results.

72 4 b) Data Collection

73 The primary data is collected by an open-ended interview questionnaire and collecting respondent's responses
74 using an online research survey method with some descriptive questions. All the respondents belong to the capital
75 of Bangladesh, called Dhaka. Initially, the personal-contact approach was administered for the responses to the
76 survey questionnaire. The Google survey form has been used to collect the responses from the respondents. Ice
77 cream lovers were the respondents for the survey, and 152 respondents took part. Among all the respondents,
78 only 30 respondents were willing to provide an interview. Therefore, 120 respondents completed the survey form
79 digitally through email and social media. Three sections had developed to gather the responses accurately from
80 the interview throughout the questionnaire. Different sources were considered for collecting secondary data, such
81 as books, available literature, newspapers, magazines and websites.

82 5 c) Data Analysis and Representation

83 Data is processed carefully to make comparisons, statistical analysis, and interpretation. In this paper, the
84 techniques of data and information are presented in three different ways: textual, tabular, and graphical. Data
85 analysis has determined the relationships among the factors or variables.

86 6 Percentage Analysis:

87 This method has been used to depict the respondent's demographic information and various responses from the
88 respondents to some important factor-related questions. The survey participants have chosen their favourite
89 brand of the country, and this analysis method has been taken to declare the country's number one ice cream
90 brand.

91 7 Henry Garrett Ranking Technique: This technique

92 was used to evaluate the ranking of ice cream flavour. Respondents rank their favourite flavour from one to
93 eight in the survey form. The order of merit the respondents gave was transferred into a rank using the formula.
94 Garrett's ranking technique highlighted the favourite flavour the respondents love to take. For conducting the
95 method, respondents have been asked to provide the rank for all the given eight flavours. Then, the outcomes of
96 such ranking have been converted into score values with the help of the following formula.

97 $???????????????????? (%) = 100 (?? - 0)$. The percentage position has been estimated,
98 and then it is converted into scores with the assistance of Garret's Table . After that, for each flavour, we had

99 to calculate the mean score with the help of a percentage position-based ranking table (appendix) and frequency
100 table. The flavour with the highest mean value is considered the higher rank, and then other ranks are done by
101 the sequential order of the high mean value to the low mean value. Finally, a chi-square test on SPSS will give us
102 a p-value. The p-value will explain whether our test results are significant or not. We needed two pieces of data
103 to perform a chi-square test and acquire the p-value. Those are degrees of freedom, just the number of categories
104 minus 1 and the alpha level (?). The researcher usually selects the alpha level. We used the alpha level of 0.05
105 or 5% for this research.

106 **8 Principal Component Analysis: This research has**

107 used PCA to analyse the perception of consumers of Dhaka related to ice cream. The method is also widely known
108 as principal component analysis, principal value decomposition, singular value decomposition, singular system
109 analysis, singular spectrum analysis, bi-orthogonal decomposition, proper orthogonal decomposition, empirical
110 orthogonal functions, and Karhunen-Loeve decomposition. In this way, PCA is a handy tool for the research as
111 the respondents were more than 150, which is helpful for the large data set. PCA is performed in a sequence of
112 steps, with subjective decisions made at many steps. The amount of components extracted equals the number
113 of variables being analysed. We have considered four factors to figure out the variance of the components.

114 Initially, the first counted component can be expected to account for an immense amount of the overall variance.
115 It is found that each succeeding component reasoned for progressively smaller amounts of variance. Although
116 a large integer of components may extract in this specific way, only the first few components will be potential
117 enough to be retained for interpretation. An eigenvalue represents the amount of variance that is accounted for
118 by a given component. It is shown that the Principal Component Analysis (PCA) reduces data dimensionality
119 by performing a covariance analysis between factors.

120 **9 d) Data Assortment and Inspect**

121 According to the survey report for this study, we have collected responses from 152 respondents from various age
122 groups with different educational qualifications. Most of the respondents were from the age group 20-30. It found
123 that 76% of participants belonged to the age group of 20-30. Similarly, the second-highest participants came
124 from the age group of 15-19, which counted exactly 15% of the total participants. People aged 31-45 showed less
125 interest, and only 5% took part in the survey. Undoubtedly, the lowest respondents counted from the age group
126 of 46-60. Only a person from that group paid attention to taking the interview face-to-face. The survey was
127 conducted only in Dhaka, Bangladesh. Dwellers of Dhaka showed a variety of preferences in terms of ice cream.

128 **10 e) Final Data Scraping and Analysis**

129 Final Data scraping and analysis were not easy for this specific research. As we have focused on 3 different
130 areas, 1. Attributes that influence consumers to purchase ice cream 2. Assuring that there has any income
131 effect on consumers for purchasing ice cream or not 3. Ranking the consumer-preferred flavour for ice cream and
132 ranking among the existing ice cream brands Data analysis is regulated through the consumers given information
133 regarding a set of questions and using a Likert scale to gather data from the survey participants. PCA has been
134 done to get the consumer's preferences on ice cream purchases, and KMO Bartlett's test was done for the data
135 accuracy of that factor analysis.

136 **11 f) Magnitude and Measurement**

137 For data collection, we tried to build a sample size of 152 ice cream consumers for respondents, and we took
138 their opinion based on the pre-settled questions on the questionnaire. On the contrary, we collected data on
139 which attributes attract them to purchase a specific ice cream. Eventually, the authors can collect Data and
140 information from respondents from different age groups of Dhaka Dwellers.

141 **12 g) Data Manipulation and Integration**

142 Data integration is crucial to getting accurate results from the gathered data. Based on the definition when
143 it is an element of quality research where the process observed various analyse with the same data points. It
144 controlled ideal and correct decisions with decreasing misleading data. This process can evaluate and recognise
145 data where the specific statistics come from respondents. That's why this combination is implemented for quality
146 results.

147 **13 III. Primary Analysis & Discussions a) Consumer's Source 148 of Information about Ice Cream**

149 In the survey form, we gave five different sources from which consumers can get news about ice cream-related
150 products. According to the survey findings, most respondents can learn about ice cream from social media like
151 Facebook, Instagram, TikTok etc. The provided news of friends can also transmit the influencing power of
152 consuming ice cream. 20% of respondents gather information about new ice cream products from their friends.

18 D) ASSOCIATION BETWEEN FAMILY MONTHLY INCOME AND FREQUENCY OF ICE CREAM PURCHASE BY THE CONSUMER

153 Television advertisements play a moderate contribution in spreading out information about ice cream. Only 16%
154 of survey takers believe they get news from TV ads about ice cream. Family members have little influence in
155 sharing knowledge about newly released ice cream brands. We observed that 11% of the respondents learned
156 about ice cream from their families. A few survey takers said they could get news while visiting trade fairs. Table
157 3 will clarify the viewpoint of the respondents, which are the sources of information about ice cream products.

158 14 Table 1: Source of Information about Icecream

159 This bar chart illustrates software users' priority level considering some attributes-however, the following bar
160 diagram was created with almost the same data and value.

161 15 b) Preferable Season and Place for Consuming Ice

162 Cream with the Purpose of Consumption All the seasons are preferable to consuming ice cream, according to
163 49% of the survey takers. At the same time, 45% of the participants think summer is the best season for enjoying
164 ice cream. People are unlikely to consume ice cream during cold weather like winter and the rainy season. From
165 Figure 1, the customer's seasonal priority of eating ice cream can be simplified. It has been reported from the
166 survey results that customers are unwilling to eat ice cream when it is winter season. Only 2% of people were
167 interested in having ice cream during the winter-similarly, less interest from the customers found for biting ice
168 cream when it is raining outside. It has been reported from the survey results that customers are unwilling to eat
169 ice cream when it is winter season. Only 2% of people wanted ice cream during the winter. Similarly, customers
170 have less interest in biting ice cream when it is raining outside.

171 The survey found that Home is the preferred place for people to consume ice cream. 50% of the participants
172 will likely enjoy ice cream at their Home. In this survey, around 40% of respondents consume ice cream for
173 enjoyment. Among other goals of having ice cream, it becomes first according to the high response. Some people
174 think that they eat ice cream for a sense of refreshment. Their amount is counted as nearly 39%. Only 16% of
175 respondents agreed that icecream consumption has no reason or is taken by them habitually. A few people take
176 ice cream during any celebration. We saw that 38 total respondents love ice cream to eat. They usually eat ice
177 cream frequently, more than thrice or above in a week. Consumers take those products that provide them with a
178 certain level of satisfaction that can depend on various types of things. Satisfaction of consumers can come from
179 the tastes of the product, after-sales service of the product, pricing of the products or any cash discount.

180 16 Frequency

181 We set a question in the questionnaire by asking about most favourite brands based on priority order. Respondents
182 could select three brands from given brands to respond to that question. We have investigated that a maximum
183 number of participants are willing to take ice cream from the Igloo Ice Cream Ltd brand as their priority choice.
184 Similarly, people preferred Polar Ice Cream, the sister concern company of Dhaka Ice Cream Ltd., as the second
185 priority of ice cream. Lovello ice cream brand of Toufiqa Food Ltd. has become the third priority of consumers
186 where the availability of the first two brands is low.

187 17 Figure 4: Consumer Priority Order of Ice Cream Brands of Bangladesh

188 One hundred fifty-two respondents responded individually to the priority-based question for the first, second, and
189 third priorities. We consider which brand gets the highest percentage as the priority of the vote for becoming
190 the number one brand by the consumer choice. Similarly, we will apply this logic for counting the second and
191 third most favourite brand by consumer choice and reasoning for the consumer choice of brands. We saw that
192 non-branded ice cream has no attraction among the customers. Among all the brands, three brands achieve a
193 high level of consumer satisfaction. Figure ?? depicts the consumer's three most preferable brands in Dhaka city.

194 The unavailability of a particular brand of ice cream forces the customers to alter the brand with the available
195 one. We have found that 59% of customers buy igloo ice cream from other options for this specific case. At the
196 same time, 42% of consumers love Polar ice cream, and 30% prefer to purchase Lovello ice cream. Interestingly,
197 the ice cream brands of Kazi Firms Ltd. make a place in the consumer list of choice. 24.3% of consumer selects Za
198 n Zee or Bellissimo ice cream as the second-third choice. Moven Pick ice cream is the only brand from abroad that
199 carries nearly 8% of consumer's initial priority. Local brands Bloop and Savoy have little consumer awareness
200 among the respondents.
201

202 18 d) Association between Family Monthly Income and Fre- 203 quency of Ice Cream Purchase by the Consumer

204 We have applied the Chi-Square test to investigate this association between family monthly income and ice cream
205 purchase frequency. ?? 0 : There has no significant association between the consumer's family monthly income
206 and the frequency of their purchase of ice cream. To determine whether the two variables, family monthly income
207 and frequency purchase of ice cream, are not dependent, compare the p-value to the exceptional level-usually, an

208 extraordinary level (marked as α or alpha) of 0.05 functions well. An incredible level of 0.05 represents a 5% risk
209 of winding up that an association between the variables exists when there is no actual association.

210 19 Igloo

211 Therefore, we must consider the null and alternative hypotheses to decide on the Chi-Square test. We have
212 investigated that the computed value 0.746 is greater than the significance level. Then, we move to the null
213 hypothesis, which is accepted based on the respondent's given data for this particular test. In these results, the
214 Pearson Chi-square Statistic is 3.485 and the p-value = 0.746. The likelihood chi-square statistic is 3.483, and
215 the p-value = 0.746. Here, the P-value $> \alpha$, which can not conclude that the variables are associated. At a
216 significance level of 0.05, we can conclude that the association between the variables is not statistically significant.
217 Consumers are free from the income boundary to satisfy themselves by consuming ice cream. Finally, the income
218 of the consumers has no crucial impact on the purchase of ice cream.

219 20 e) Ranking the Flavours of Ice Creams

220 The Respondents were asked to rate their favourite flavours of ice cream from one to eight during the survey
221 session. We have provided eight different flavour names, which are available in the shops of Dhaka city. Then,
222 survey report data was used to analyse the flavours ranking by the Garret ranking analysis method. Table 4
223 illustrates how many respondents provide an individual rank for the particular flavour. This frequency table has
224 been established based on the variety of flavours in the questionnaire. The total amount of respondents for this
225 specific question was 152 same as the total number of respondents. With the frequency of flavours ranked by
226 the participants, we have to calculate the individual mean score for particular flavours for every rank from one
227 to eight. Then the sum of the mean score's percentage of individual flavours assists in figuring out the Garret
228 Score to rank the flavours. From the table below, one can easily get an idea of the people's taste in Dhaka city.
229 Ranking of Flavours by Garret Ranking Analysis makes sense that most consumers love to enjoy the taste of
230 chocolateflavoured ice cream. It placed first based on the analysis. The other eight flavours also being ranked in
231 the following Table ??.

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233 Volume XXIII Issue V Version I Year 2023 () B Table ??: Ranking the Varieties of Flavours of Ice Cream After
234 cross-matching both the Garret Score Table and the sum of the mean score from our calculation of individual
235 flavours, we have moved to build a position value table to rank the flavours. This position value table is attached
236 in the appendix. The results of the Garret ranking showed that Chocolate flavour is in the most vital position
237 to become a prioritised flavour by the consumers surrounding Dhaka. We were followed by four other ice cream
238 flavours; Vanilla, Butter Scotch, Mango and Strawberry. If we put a view on the ranking table, we can find that
239 Chocolate flavoured ice cream could achieve a mean score of 63.7; as Chocolate has acquired the highest Garret
240 Mean Score, it is placed first. In addition, vanilla has the second-highest achieved mean score, 55.9. We reported
241 a premium ice cream product based on consumer preference in the third position. With 48.1 mean scores, Butter
242 Scotch has become Dhaka's third favourite ice cream. Similarly, an average score was gained by Strawberry
243 flavoured ice cream and became secured fifth place with a mean score of 43.3.

244 Customers showed less affection for having three flavours, Blue Berry, Red Velvet, and Pistachios. According
245 to the analysis of flavour ranking, we found that Red Velvet ranked sixth with a mean score of 36.3, Blue Berry
246 ranked seven with a mean score of 35.1, and Pistachios became eighth with a mean score of 34.9.

247 22 f) Factor Analysis to Determine the Consumer Perceptions

248 From frequency analysis, we can interpret that consumers primarily eat Chocolate flavoured ice cream, which
249 has huge demand. In contrast, customers rated Vanilla flavoured ice cream just after the Chocolate flavoured
250 ice cream. Sig. 0 KMO measure of sampling adequacy was found to be 0.866, and Bartlett's test represented a
251 significance of 0.000. It showed that the above parameters are highly significant. Due to having perfect results
252 from the statistical calculation, sampling adequacy should be more than 0.5 to perform factor analysis. The above
253 table shows a sampling adequacy of 0.866, which means factor analysis can be achieved. Hence, factor analysis
254 had applied to 15 variables measuring the perception of consumers regarding ice cream. It has been found that 15
255 variables have been reduced into four predominant factors. These four factors are quality of ingredients, quantity,
256 appearance, price, and taste. Individually the factors have a variance; respectively, quality of ingredients was
257 observed at 20.037%, quantity has 19.114% of the variance, appearance noted 14.303% of the variance, and price
258 and taste, counted 7.315% of the variance. The total variance was explained as 60.768%. The first factor is
259 "Quality of Ingredients used in ice cream", and it includes four sub-variables, Toppings of ice cream are lucrative,
260 I prefer to buy ice cream if there is a combo offer, Ingredients level of quality uses in ice cream is satisfactory, I
261 like ice cream for the freshness and coldness. The quality of ingredients used in Ice cream is satisfactory. I like
262 ice creams due to the freshness and coldness, which explains 20.037% of the variances. "Quality of Ice cream"
263 comes next to the previous factor. It has been comprised of 4 variables: I am pleased with the weight of ice cream
264 with its price, I buy ice cream for its extraordinary packaging, I feel the price charged is authentic, Ice creams
265 are available in a wide variety, and it reports 19.114% of the variance. The next factor is "Appearance", which

266 comprises two different variables respectively; I buy ice cream due to the influence of catchy advertisements. The
267 visual image of ice cream convinces me to purchase it, showing 14.3030% of the variance. "Price and Taste" is
268 the last factor of this factor analysis part. Based on five separate variables, the related question was there for
269 the consumers. Those are the price of ice creams that do not match their given quality I will purchase ice cream
270 no matter that how much the price of it I will buy ice cream no matter how much the price is; I love to consume
271 ice cream throughout the first week of the month, and I'm not too fond of the perishability of ice cream, and I
272 think the ice cream is yummy. The last factor explains 7.315% of the variance.

273 **23 Component**

274 **24 IV. Significant Findings of the Study**

275 **25 ?**

276 There is no association between the family's monthly income and ice cream purchase frequency. ? Chocolate-
277 flavoured ice cream becomes the first in position according to the consumer's purchasing frequency and rank.

278 **26 ?**

279 The majority (40%) of the respondents eat ice cream for enjoyment. ? Maximum (49%) of the consumer learn
280 about ice cream from social media. ? Igloo ice cream became the number one brand according to consumer
281 preferences. ? A large number of respondents (72 participants) consumed ice cream only once a week. ? 50% of
282 the customers prefer ice cream in their home environment.

283 **27 ?**

284 Factor Analysis revealed four factors: quality of Ingredients used in ice cream, the quantity of ice cream,
285 appearance, and price & taste.

286 **28 V. Conclusion**

287 This study aimed to assess the consumer behavior of city people regarding ice cream. Luckily, the paper found
288 the attributes that influenced the city dwellers of Bangladesh to buy ice cream and checked the income effect on
289 purchasing power for ice cream.

290 **29 Despite having various limitations, this research**

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293 **31 B**

294 provides valuable information about consumer behavioural patterns. As the consumer is the heart of any business,
295 the consumer's choice of flavour for ice cream consumption is significant. Usually, a consumer gets a wide variety
296 of options. Consumer choice for a particular commodity on a specific flavour is mainly built on the fair value
297 the customer gains after paying for the product. The research has demonstrated which flavours carry consumer
298 preference to consume.

299 Again, this industry is growing up rapidly due to the changing tastes of consumers. After the liberation war
300 of the independents of Bangladesh, there was only one ice cream company except for traditional handmade ice
301 creams. In 2021, we are aware of more than seven branded ice creams. The conventional form of eating ice
302 cream is also changing. For this purpose, a few foreign brands have introduced their ice cream parlour in the
303 town. Competition is enhancing without any doubts. We have seen that only three locally branded ice creams
304 dominate the market, besides having many competitors.

305 Similarly, consumers also prefer to get new tastes around the year. Most of the consumers get refreshments
306 while they are eating ice cream. It can be their mental satisfaction regarding ice cream products. Three specific
307 flavours are the most renowned among the customers. People love to enjoy a variety of flavours during their
308 celebrations at the house. We collected a satisfactory amount of data throughout the study's survey. The
309 information from the survey simplifies the analysis regarding the purchasing factors. We have defined only four
310 factors contributing to an individual rate of variance when consumers purchase ice creams. Overall, this study
311 creates new grounds for further research in the area of the ice cream industry of Bangladesh. Other studies can
312 be done to develop the marketing concept of ice cream and develop a new product based on a large scale of
313 consumer opinion.

314 **32 VI. Suggestion for Future Work**

315 This research has unbarred an enormous scope for future studies. The potential scopes are discussed below:

316 1. It is a way forward for the existing companies to do nationwide surveys and apply provided methods to
317 get consumer insights. Popular brands will reduce their possibility of destruction as they are already mature.
318 2. Upcoming brands can also be benefited by getting their consumer preference in different areas like pricing of ice
319 creams and preferred sizes, discovering new SKUs and taking the opportunity of economies of scale. 3. This
320 research will help determine the less popular flavours with only a 1-5% contribution to a company's total sales.
321 Thus, companies can stop making those flavours and reduce their cost of production.
322 Nevertheless, this research can also be implemented in other FMCG sectors like beverage, bakery products,
323 and chain restaurants like pizza hut, Mac Donald etc.

324 **33 Global Journal of Management and Business Research**

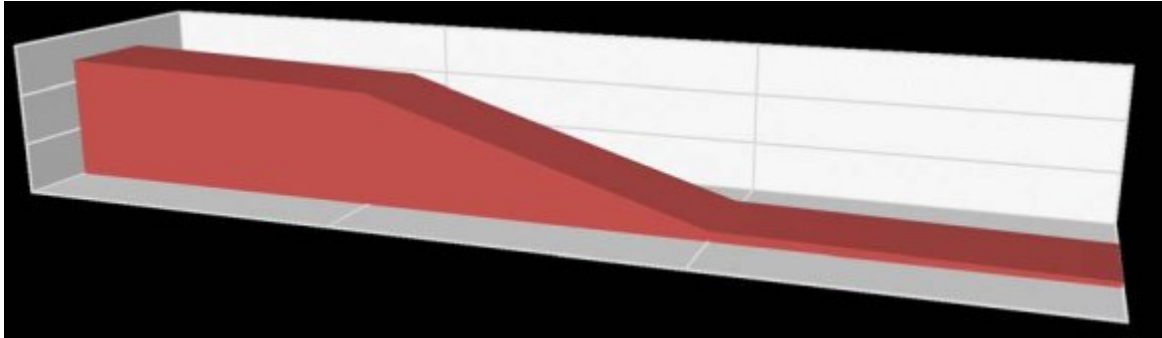


Figure 1: Global

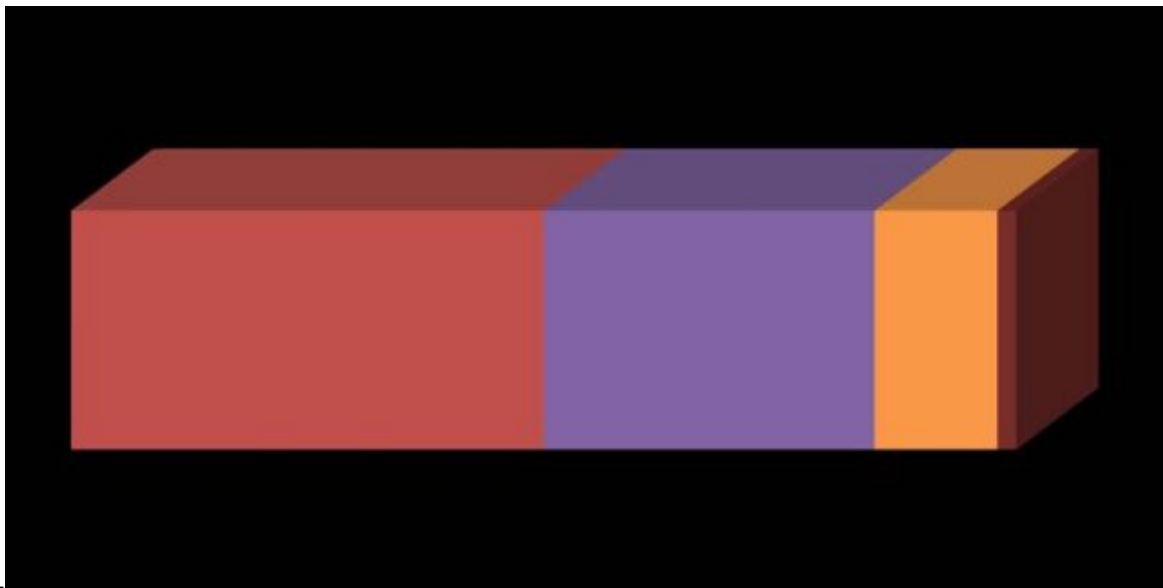


Figure 2: Figure 1 :

325 1

$$\chi^2 = \sum \frac{(O - E)^2}{E}$$

Where,

C=Degrees of freedom

O=Observed value (s)

E=Expected value(s)

The Chi-square test of association evaluated relationships between categorical variables between the monthly income of respondents and the purchase frequency of ice cream. The Chi-square test has two types of statistical hypotheses. Those are provided below. a. Null Hypothesis:

3. Chi-Square Independence Test: Chi-square test of independence determined whether there is a significant relationship between categorical

variables of the respondent's monthly income and the ice cream purchase frequency. The Chi-Square independence test is also known as the chi-square test of association. The theoretical formula of the chi-square test is given below.

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b. Alternative Hypothesis: If there are relationships between the selected categorical variables for this research. Learning about the value of one variable will assist us in predicting the value of another variable.

Figure 3:

2

Rarely	Once	72
Occasionally	Twice	42
Frequently	Thrice or above	38

Figure 4: Table 2 :

3

Percentage of Respondent Preferred	Total respondents = 152						
	0.00%	10.00%	20.00%	Polar	Lovello	Bloop	Bellissimo Zan Zee or
30.00%	40.00%	50.00%					
60.00%	70.00%						
1st priority			58.60%	19.10%	3.90%	1.10%	8.60%
2nd priority			23.70%	42.10%	7.90%	3.30%	12.50%
3rd priority			10.50%	15.10%	28.90%	6.60%	24.30%

Figure 5: Table 3 :

4

Rank	Vanilla	Chocolate	Mango	Strawberry	Blue Berry	Red Velvet	Pistachios	Butter	Scotch	
1	35	71			5	7	2	2	6	24
2	34	39			21	14	9	9	10	16
3	22	12			42	19	8	20	8	21
4	15	9			23	46	13	14	10	22
5	27	7			20	14	23	13	19	29
6	10	4			15	14	39	22	30	18
7	3	5			15	15	27	47	37	3
8	6	5			11	23	31	25	32	19

Figure 6: Table 4 :

6

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.866
Approx. ChiSquare		812.544
Bartlett's Test of Sphericity	Df	105

Figure 7: Table 6 :

7

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums	
	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %	Total	%
1	5.544	36.958	36.958	5.544	36.958	36.958	3.006	2
2	1.388	9.25	46.208	1.388	9.25	46.208	2.867	1
3	1.168	7.789	53.997	1.168	7.789	53.997	2.145	1
4	1.016	6.771	60.768	1.016	6.771	60.768	1.097	7

Extraction Method: Principal Component Analysis

Figure 8: Table 7 :

8

Rotated Component Matrix		Defined Name
Variables	1	Component of the
	2 3	Factor
Toppings of ice cream are lucrative	0.625	Quality of
I prefer to buy ice cream if there is a combo offer	0.693	Ingredients
Ingredients level of quality used in ice cream is satisfactory I love	0.743	used
ice cream for the freshness and coldness	0.709	in ice cream
I am pleased with the weight of the ice cream with its price	0.726	
I buy ice cream for its extraordinary packaging	0.370	Quantity of Ice cream
I feel the price charged is authentic	0.829	
Ice creams are available in a wide variety	0.642	
I buy ice cream due to the influence of catchy advertisements The	0.727	Appearance
visual image of ice cream convince me to purchase it	0.418	
The price of ice creams does not match with its given quality	0.294	
I will buy ice cream no matter that how much the price of it	0.232	
I love to consume ice cream throughout the first week of the	0.251	Price & Taste
month		
I'm not too fond of the perishability of ice cream	0.841	
I think the ice cream is yummy	0.110	

Figure 9: Table 8 :

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