

Assessing consumer purchasing intent of MARDI's granola bar: An ethnic analysis

(Pertimbangan untuk membeli bar granola yang dibangunkan oleh MARDI:
Analisis kaum)

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Abstract

A study on consumer acceptance towards granola bar developed by MARDI involving 1,200 respondents was carried out in the Klang Valley between November and December 2012. One part of the study was about assessing consumer purchasing intent of the four different flavours of granola bars (roselle-almond, dates-almond, banana-almond and coconut-almond). This study found that between 20% and 30% of the Chinese consumers would not buy all four different flavours of granola bar, as compared to the Malay consumers who were treated as a reference group. This finding is a very useful input in formulating precise strategy for marketing the product.

Introduction

Consumers are more concerned about health benefits from their food intake. Nutritional values are emphasized besides taste and price in choosing what to buy. The market sector for food with functional benefits is growing, which currently is dominated mainly by functional drinks such as energy drinks, sport drinks, dairy-based drinks and to a lesser extent fruit juices, breakfast cereals and energy bars (Stanton et al. 2011). Energy bars comes in the form of snack bars. Snack bars consist of breakfast bars, energy and nutrition bars, fruit bars, granola bars and other snack bars.

According to Euromonitor (2013), among types of snack bars, granola bars have recorded the highest sales growth of 4% in terms of value in the domestic market last year (2012), while the overall market

size was estimated at RM8 million (*Table 1*). Major distribution channels were and still are super and hypermarkets. International brands such as Quaker and Nature Valley, are dominating the market. Consumers are often more confident regarding well-known outstanding international brands and less sensitive to pricing. Domestic manufacturers are unable to achieve a significant performance due to lack of innovation in product development compared to international producers who are specialized in these products thus leaving no room for domestic manufacturers to compete in this sector (Euromonitor 2013).

Problem statement

MARDI has developed a packaged technology for granola bars that is ready for commercialization. Most Malaysian

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Table 1. Sales of snack bars by category (RM '000)

	2011	2012	% current value growth
Breakfast bars	684.8	705.3	3.0
Energy and nutrition bars	358.7	363.8	1.4
Granola/muesli bars	6,675.9	6,943.0	4.0
Other snack bars	361.7	374.4	3.5
Snack bars	8,081.2	8,386.5	3.8

Source: Euromonitor (2013)

consumers are not familiar with granola bars and most of them are not aware of its potential health benefits (Euromonitor 2013). Some communication need to be disseminated in the form of promotions in order to increase awareness and induce consumption. Granola bar is a snack food made from rolled oats, nuts and honey. It is usually baked until crisp and then compacted into a bar of rectangular shape. Other ingredients such as puffed rice and dried fruits (such as raisins, dates, roselle and banana) are also added for product variety. This snack is also considered as a convenience food as it is light and easy to store, thus suitable for those on the move or anyone requiring for immediate energy, dietary fibre and reduced fat in a snack. Contiguous analysis on MARDI's granola bars showed that they are a "good source of dietary fibre" that is within 10 – 20% (Shamsiah and Norazizah 2006).

MARDI's granola bars are acceptable among panellists in MARDI but acceptance by consumers has yet to be determined. Therefore, this study was focused on determining the acceptance and purchasing intent of the granola bars developed by MARDI. The whole study consisted of three parts, consumers' acceptance based on products' attributes, a 'yes' or 'no' answer on whether they would buy the products if they were commercially available and consumers' willingness to buy at the designated price of RM2/bar which weighs 22 g. This report covers the second part, respondents' purchasing intent only. Therefore, the objective of this report was

to assess consumers purchasing intent in relation to their demographic profiles.

Data collection

Consumer survey was conducted between November and December 2012 in the Klang Valley. Klang Valley was chosen because it was presumed that the populace is familiar with the granola bars which can be found in abundance in super and hypermarkets. MARDI's granola bars are made of oats, roasted rice, candied roselle, roselle extracts and essences of dates, coconut extract, banana extract, almonds, honey and low fat milk. They do not contain gluten, preservatives or sugar and the fat content is very low. Four types of granola bars of different flavours, roselle-almond, dates-almond, coconut-almond and banana-almond, are the products considered in this study.

A total of 1,200 respondents participated in the survey which was carried out based on a structured questionnaire. During the survey, respondents were asked to evaluate the four types of granola bars mentioned. Apart from product acceptance evaluation, respondents were also asked whether they would buy the product if they were commercially available. Their answers to this question, whether it was a 'yes' or 'no', became the dependent variable in assessing their purchasing intent in relation to their demographic profiles. Survey session was considered completed when all questions had been answered satisfactorily and the respondents were given a token of

appreciation. Data were analysed using SAS statistical packaged, version 9.1.

Model development

This study was aimed at determining whether the locally made granola bars were acceptable and whether consumers would purchase the product if it was commercially available. The authors were interested to find out the influence of the demographic factor(s) on purchasing intent of the consumers. In such a case, the dependent variable of the model is in a dichotomous form, i.e. taking a value of 1 if a consumer buys and 0 if they do not. The independent variables were in the form of categorical type for gender, ordinal for race or continuous for age, income and number of family members.

The Logit Model

$$\text{Log} [P/(1 - P)] = \beta_0 + \beta_1X_1 + \beta_2X_2 + \dots + \beta_nX_n + \epsilon$$

Where:

P = probability of the respondent purchasing the product

X = explanatory variable

B = coefficient of the explanatory variable

€ = error term

P/(1 - P) = the ratio of the probability of the respondent purchasing the product to the probability that he/she does not or the odds of the respondent

In this study the effect of demographic variables were explained in terms of marginal effect (ME) instead of odds. In

logit analysis, the marginal effect (ME) measures the effect on the conditional mean of y for a change in one of the independent variables. In linear model, marginal effects often provide a good approximation to the amount of change in Y that will be produced by a 1-unit change in the dependent variable. With binary dependent variables in logit regression, marginal effect offers some of the same advantages that the linear model does but it produces a single number that expresses the effect of an independent variable on P(Y=1).

Independent variable

The independent variables in this study were the demographic variables of the respondents. The following *Table 2* lists the demographic variables considered in this study.

The respondents

A total of 1,200 respondents took part in this study which was executed in the Klang Valley. The number of the respondents in this study have been structured by ethnic groups such that the three major ethnic groups were equally represented. The demographic data of the respondents is shown in *Table 3*.

In this study, 61% of the respondents were female and 39% were male. The majority (68.7%) were in the age group of between 21 and 40. The respondents' ethnic group distribution was almost equally represented. Majority (81%) of them were wage earners with a monthly income of

Table 2. Independent variables

Age	Age of respondent
Female	Female = 1, Male = 0
Chinese	Chinese = 1, Malay as reference
Indian	Indian and others = 1, Malay as reference
Tertiary education	University and college = 1, 0 otherwise
Wage earner	Wage earner = 1, 0 otherwise
Higher income	The cut-off point of income was RM4,000/month RM4,000 and above = 1, 0 otherwise
Married	Married = 1, 0 otherwise
Number of household	Actual number of household

Table 3. Demographic data of the respondents (%)

Gender	
Male	39
Female	61
Age	
Below 21	6.3
21 to 40	68.7
41 to 58	22.8
Above 58	2.2
Ethnic group	
Malay	36.5
Chinese	33.5
Indian and others	30.0
Income	
RM4,000/month and below	63
RM4,000/month and above	37
Occupation	
Wage earner	81
Others	19
Education	
Tertiary level	56
Others	44
Marital status	
Married	58
Others	42
Number of household	
1 – 5 persons	80.0
6 – 10 persons	19.5
11 persons and above	0.5

RM4,000 and below (63%). About 58% of them were married, 40% were single while only 2% were single parents. Majority (80%) were having family members between one and five persons. Apart from that, information on faith was also available in the structured questionnaire distributed during the survey. There was an intention to determine the correlation between faith or religion and purchasing intent but since faith or religion was closely related to the ethnic group, thus the study focused only on the ethnic groups. The following *Table 4* shows the distribution of the respondents faiths.

Results and discussion

The results of the logit analysis is presented in *Table 5* which shows that coefficients' estimates and their marginal effects on

Table 4. Frequency of respondents' faith

Faith	Frequency	%
Islam	438	36.5
Buddha	310	25.8
Hindu	292	24.3
Christian	143	11.9
Others	17	1.4
Total	1,200	100.0

consumers' purchasing intent for each type of granola bar considered in this study.

Roselle-almond granola bar

Results indicated that for all flavours of the granola bars, the only significant independent variable influencing purchasing intent was the Chinese ethnic. As for roselle-almond granola bar, the marginal effect for Chinese ethnic was 0.251 with a negative sign. This indicated that about 25% of Chinese consumers will not buy the products compared to Malay consumers, which was treated as a reference, *ceterus peribus*. Other independent variables were not significant.

Dates-almond granola bar

The logit regression results for dates-almond granola bar concurred with roselle-almond granola bar. The independent variable, Chinese ethnic was also significant ($p < 0.001$), with a marginal effect of -0.30 . This indicated that 30% of the Chinese consumers were not likely to purchase the product as compared to the Malay consumer *ceterus peribus* ($p < 0.0001$).

Banana-almond granola bar

For dates-almond granola bars, the Chinese ethnic showed significant results with negative sign. This indicated that about 30% of the Chinese consumers were not likely to purchase the products compared to the Malay consumers. Other variables were not significant, *ceterus peribus*.

Coconut-almond granola bar

All independent variables except for Chinese ethnic were not significant in determining

Table 5. Result of logistic regression; marginal effect (ME), coefficient and standard error

Independent variable	Roselle-almond granola bar		Dates-almond granola bar		Banana-almond granola bar		Coconut-almond granola bar	
	Coefficient	ME	Coefficient	ME	Coefficient	ME	Coefficient	ME
Intercept	0.0360 (0.2270)	0.2933411	0.4290 (0.2289)	0.3453178	0.2408 (0.2258)	0.27434	0.2743 (0.2246)	0.22268
Age	0.00611 (0.00424)	0.0022324	0.00336 (0.00426)	0.0011904	-0.0024 (0.0042)	-0.00088	0.00207 (0.00419)	0.00078
Female	0.0561 (0.0771)	0.0204733	-0.0364 (0.0779)	-0.0129072	0.0109 (0.0768)	0.004047	-0.0562 (0.0763)	-0.02125
Chinese	-0.6893 (0.0917)	-0.251778***	-0.8415 (0.0936)	-0.2982917***	-0.5749 (0.0909)	-0.212612***	-0.5189 (0.0902)	-0.19616***
Indian	-0.1634 (0.0940)	-0.0596947	-0.3666 (0.0953)	-0.1299487	-0.0666 (0.0933)	-0.0246339	-0.0516 (0.0923)	-0.01949
Tertiary education	0.1402 (0.0810)	0.0511993	0.0697 (0.0821)	0.0247182	0.1580 (0.0807)	0.0584374	0.0471 (0.0802)	0.01781
Wage earner	0.0584 (0.0987)	0.0213434	0.1309 (0.0998)	0.0463934	0.1592 (0.0982)	0.0588705	0.0541 (0.0981)	0.02043
Higher income	0.0925 (0.0843)	0.0337885	0.1839 (0.0855)	0.0651754	0.0286 (0.0835)	0.0105849	0.0577 (0.0831)	0.02182
Married	-0.0120 (0.0905)	-0.0043735	-0.0781 (0.0917)	-0.0276913	0.0399 (0.0903)	0.0147608	0.0561 (0.0896)	0.02120
Number of household	0.0227 (0.0194)	0.0082978	0.0222 (0.0197)	0.0078836	0.0145 (0.0194)	0.0053063	0.0084 (0.0192)	0.00318

(cont.)

Table 5. (cont.)

Independent variable	Roselle-almond granola bar		Dates-almond granola bar		Banana-almond granola bar		Coconut-almond granola bar	
	Coefficient	ME	Coefficient	ME	Coefficient	ME	Coefficient	ME
Model Fit Statistics:								
$\beta = 0$	$X^2 = (p < 0.0001)$		$X^2 = (p < 0.0001)$		$X^2 = (p < 0.0001)$		$X^2 = (p < 0.0001)$	
-2LL ratio	1597.37		1577.9		1603.5		1619.5	
Association of predictive and observed responses:								
% Concordant rate	64.3		66.3					
Somer's D	0.291		0.331		62.0		59.4	
Gamma	0.293		0.332		0.248		0.198	
Tau-a	0.139		0.155		0.250		0.200	
c	0.646		0.665		0.119		0.096	
					0.624		0.599	

purchase intent for banana-almond granola bars. The sign was also negative which indicated that about 19.6% of the Chinese ethnic group would not buy the product as opposed to the Malay consumers, *ceterus peribus*.

Conclusion

The ME for all the four products concurred with each other. The Chinese consumers were not likely to purchase the product compared to the Malay consumers, *ceterus peribus*. In support of this finding, chi squared analysis was carried out on respondents' purchasing intent by ethnic groups. Results showed that there were significant differences ($p < 0.0001$) in purchasing intent by ethnic groups. Findings of the study is useful in formulating specific marketing strategies of the specific products, i.e. roselle-almond, dates-almond, coconut-almond and banana-almond granola bars.

Granola bar is relatively new in the domestic snack bar market but recorded the highest growth in its sector last year (2012). The market was saturated with imported brand names. With the rising awareness among the new generation and busy businessmen regarding health and healthy snacks, local granola bars should make its way into the market. It was reported that domestic unawareness regarding the benefits of granola bars was due to the lack of promotion by manufacturers and marketers (Euromonitor 2013). This study indicated that the predictor variable, Chinese as an ethnic group, is a critical factor to be specially considered in marketing granola bars. Further investigations regarding the Chinese preferences of the products has been suggested. Findings from this study can be utilized to formulate appropriate marketing and promotional strategies.

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Abstrak

Kajian penerimaan pengguna terhadap bar granola yang telah dibangunkan oleh MARDI melibatkan 1,200 responden telah dijalankan di Lembah Klang pada November dan Disember 2012. Salah satu bahagian dalam kajian ini adalah untuk menilai kehendak pengguna untuk membeli empat perasa bar granola yang berlainan (rosel-badam, kurma-badam, pisang-badam dan kelapa-badam). Kajian ini mendapati 20% hingga 30% pengguna Cina tidak akan membeli produk tersebut berbanding dengan pengguna Melayu. Hasil kajian ini merupakan input berguna untuk membangunkan strategi pemasaran yang tepat dalam memasarkan bar granola ini.

Appendix 1. Roselle-almond granola bar (Product A)

Frequency Table of Purchasing Intent vs Ethnic Group

Ethnic	Will not purchase	Will purchase	Total	%
Malay	125	313	438	36.50
Chines	216	186	402	33.50
Indian	125	235	360	30.0
Total	466	734	1,200	100

Result of chi squared analysis of purchasing intent vs ethnic group

Statistics	DF	Value	Probability
Chi-squared	2	59.6667	<.0001***
Likelihood ratio chi-squared	2	59.4093	<.0001***
Mantel-Haenszel chi-squared	1	4.8672	0.0274

Appendix 2. Dates-almond granola bar (Product B)

Frequency table for purchasing intent vs ethnic group (Product B)

Ethnic	Not buy	Buy	Total	%
Malay	101	337	438	36.50
Chines	214	188	402	33.50
Indian	130	230	360	30.0
Total	445	755	1,200	100

Result of data for chi squared analysis; purchasing intent vs ethnic group

Statistics	DF	Value	Probability
Chi-squared	2	82.0088	< .0001***
Likelihood ratio chi-squared	2	82.9939	< .0001***
Mantel-Haenszel chi-squared	1	18.1214	< .0001***

Appendix 3. Banana-almond granola bar (Product C)

Frequency table for purchasing intent vs ethnic group (Product C)

Ethnic	Not buy	Buy	Total	%
Malay	136	302	438	36.50
Chines	214	188	402	33.50
Indian	123	237	360	30.0
Total	473	727	1,200	100

Result of data for chi-squared analysis; purchasing intent vs ethnic group (Product C)

Statistics	DF	Value	Probability
Chi-squared	2	49.1328	< .0001***
Likelihood Ratio chi-squared	2	48.7527	< .0001***
Mantel-Haenszel chi-squared	1	1.6616	0.1974

Appendix 4. Coconut-Almond Granola Bar (Product D)

Frequency table for purchasing intent vs ethnic group (Product D)

Ethnic	Not buy	Buy	Total	%
Malay	149	289	438	36.50
Chines	217	185	402	33.50
Indian	129	230	360	30.0
Total	495	704	1,200	100

Result of data for chi-squared analysis; purchasing intent vs ethnic group (Product D)

Statistics	DF	Value	Probability
Chi-squared	2	40.5109	< .0001***
Likelihood Ratio chi-squared	2	40.2781	< .0001***
Mantel-Haenszel chi-squared	1	0.8284	0.3627