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Factors Affecting the Selection of Marketing Strategy in Different Stages of Product Life Cycle

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Abstract

A suitable marketing strategy is essential for increasing sales and profitability at different stages of the product life cycle. The main objective of this study was to assess the factors that affect the choice of marketing strategy at various stages of the product life cycle in the food industry in Mashhad, Iran. Data were collected in 2017 through a survey which 88 marketing managers in the food production industry completed the questionnaires. To reach the goal of the study, the multinomial logit model was applied to determine the effects of explanatory variables on the probability of choosing a special marketing strategy at the various stages of the product life cycle. Results showed that the manager's experience, education, type of product, competitiveness, reputable brand, and market share had a significant effect on the chosen strategy at different stages of the product life cycle. Therefore, a company's profitability in a market could be improved by the implementation of a marketing strategy based on product type and in relation to the specific stage of the product life cycle.

Keywords: Comparative advantage, Food industries, Marketing strategies, Product life cycle

Introduction

In terms of marketing, there is a life cycle for each new product from its innovation and introduction phase to termination and obsolesce. Nowadays with increasing competition in the field of production and consumption, successful companies know that survival depends on the successful implementation of effective marketing principles and strategies. In this dynamic, complex, and ambiguous state of competition, occasionally powerful and innovative competition may emerge, so a marketing strategy should be used by companies at different stages of the product life cycle. A product's markets and competition will change over time and the product life cycle can be used to determine changes that companies can apply to a product in the context of the life cycle (Kotler, 2000). Therefore, a clear marketing strategy is necessary for each different stage of the product life cycle because products have different characteristics at different stages. The product life cycle has four stages; including introduction, growth, maturity, and decline. Normally each stage requires a specific marketing strategy that consists of a special combination of marketing and management concerning each particular stage (Kotler, 2000).

Some studies have identified appropriate marketing strategies for each stage of the product life cycle. In the introduction stage,

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Fox (1973); Dawson (1975); Wind and Robertson (1983) have suggested useful advertising and heavy marketing costs and Sharma (2013) identified techniques for focus and management at the introduction stage that lead to the optimization of a product's effect and positioning in the market.

Hofer (1975) proposed increasing sales efforts and advertising for brand reputation at the product growth stage. Levitt (1965) and Dawson (1974) suggested important increasing advertising and new complementary products and decreasing food prices as important factors in production management at the product growth stage. Hisrich and Peters (1984) recommended effective psychological advertising and business discounts at the maturity stage.

Sharma (2013) discussed marketing strategies at different stages of the PLC for fast moving consumer goods (FMCG). The results showed that focus and application of management techniques at the introductory stage of the product life cycle led to optimization of output and exposure to effective market positioning. Aitken *et al.* (2003) showed that each stage of the product life cycle had a significant effect on selection of appropriate strategies and supply chain management. Hsueh (2011) showed that various inventory control policies should be adopted at different stages of the product life cycle. Shahmarichartghieh *et al.* (2015) concluded that each aspect of the product life cycle had a different consequence and that decision makers should act with consideration of all of them in order to achieve favorable results.

Porter (2008) discussed strategies for the creation of competitive advantage for producers. The strategies were cost leadership, differentiation, and focus. A company's objective in a cost leadership strategy is to obtain a comparative advantage by lowering production costs for a commodity than its competitors. Porter (2008) proposed a large volume of production at prices lower than those of competitors. According to the differentiation strategy, products and services are offered according to a perception that it is a unique product or service in the desired industry. This strategy gains a competitive advantage through the production of unique products or services with special properties and these products or services should be offered to customers that have not shown much sensitivity to prices. A company can differentiate its products or services in the following five ways; products, services, staff, distribution channels, and imagination. Finally, the focus strategy involves a company focusing on one or several specific products or services or a particular group of customers by understanding the needs and demands of certain sectors of the market such that the producer satisfies the needs of its target market.

Sustainable competitive advantage, as proposed by Porter (2008), is achieved through cost management, differentiation of products or services, and focus on a special part of the market or a special group of consumers. While these strategies aim to maximize profit, each of the various strategies applies a different method of maximization. Market strategies for achieving comparative advantage, are market penetration strategy, market development strategy, product development, and diversification strategy (Porter, 2008).

A company that follows the market penetration strategy tries to increase its share in the current market. Market development includes a variety of ways to attract new customers to present goods including the development of services. Product development strategy includes the creation of new products for existing markets and diversification that tries to increase selling through the introduction of new products in new markets.

In this research, according to Ansoff's product/market expansion grid, the dependent variable was divided into three categories showing the overall marketing strategy adopted by a firm. Ansoff´s Matrix is an analytical technique used in marketing and strategic management (Kotler and Armstrong, 2005). The first strategy was the introduction of new products in the market (or product

development strategy). Product development is a strategy for company growth by offering modified or new products to current market segments. The second strategy was the development of the market by identifying and developing new markets (market development strategy). Market development involves searching for additional market segments or regions. The third strategy was the development of services, price reduction, advertising, and increasing promotion that led to penetration of the current market (market penetration strategy). Market penetration is a strategy for company growth by increasing sales of current products to current market segments without changing the product. The company tries to penetrate more with existing products in an existing market (market segment). The aim is to increase its market share and this is the least risky strategy because the company can take advantage of existing resources, processes, and capacity (Kotler and Armstrong, 2005).

It should mention that diversification strategy that means new products in new markets does not consider in this research because none of the food companies surveyed adopt this strategy. Diversification is the riskiest of all four above-mentioned strategies and the company must innovate an existing product or develop a new one and succeed with it in a new market.

A review of the research literature showed that few studies have been conducted regarding the factors affecting the choice of marketing strategy during the product life cycle. Thus, according to the importance of factors affecting the choice of strategy, this study was conducted with the aim to evaluate and identify factors affecting the selection of marketing strategies at each stage of the product life cycle.

Methodology and Data

Methodology

The statistical population of the present study is the managers of food products companies that have been operating in Mashhad in 2017. Mashhad, is a main center of the food industry in Iran and has a comparative advantage in production and export of food products. There are 887 active food industries in Khorasan Razavi province (mainly in Mashhad), and around $ 400 million of food products were exported from this province to other countries in recent years (Industry, Mine and Trade Organization, 2015).

Data were obtained by questionnaire and by simple random sampling from medium-and large-scale firms or firms holding more than 9 employees, according to the fourth edition of International Standard Industrial Classification (ISIC, 2015) division into sectors 10 (food products) and groups 101 (meat processing and preserving), 103 (processing and preserving of fruit and vegetables) and 105 (manufacturing of dairy products) in 2017. A random sample set of 88 medium-and large-scale companies in the city of Mashhad was selected and interviews with their managers or marketing executives were conducted.

Sometimes in studies, the researcher encounters a discrete dependent variable that has multiple groups or responses (more than two responses) but are not ordered. Therefore, models should be used that can measure the nominal nature of multiple response groups.

The multinomial logit model is the most widely used nominal regression model. In this research, managers' responses to the dependent variable were not ordinal and so the multinomial logit approach was used to assess factors affecting selection of type of food marketing strategy at the different stages of product life cycle. Multinomial logit is a linked set of binary logit models that have the ability to efficiently use data and create logical relationships between parameters. (Long and Freese, 2001). In fact, the multiple logit regression model is a generalization of the binary logit model that estimates it for all comparisons simultaneously. (Greene, 1998; Ben-Akiva and Lerman, 1985; Begg, 1984).

Mathematically, a multinomial logit model can be written as (Long, 1997; Long and Freese, 2001):

$$\ln \Omega_{m|b}(x_i) = \frac{\Pr(y_i = m \mid x_i)}{\Pr(y_i = b \mid x_i)} = x_i \beta_{m|b} \quad for\ m = 1\ to\ 3 \qquad (1)$$

Where b is considered as the base or comparison group. Since $\ln \Omega_{b|b}(x_i) = \frac{\Pr(y_i = b \mid x_i)}{\Pr(y_i = b \mid x_i)} = \ln(1) = 0$, it must hold that $\beta_{b|b} = 0$. That is, the log odds ratio of outcome b compared to itself is always 0, and thus the effects of any Explanatory variables must also be 0.

Multinomial logit model can be expanded as an odds model. In this case, odds ratio of outcome A versus outcome C could be shown as equation (2).

$$\Omega_{A|C}(x_i) = \frac{\Pr(y_i = m \mid x_i)}{\Pr(y_i = n \mid x_i)} = \frac{\exp(x_i \beta_A)}{\exp(x_i \beta_C)} = \exp x_i \beta_A - \exp x_i \beta_C \qquad (2)$$

By taking logarithm of the equation (2), odds ratio equation can be converted as equation (3):

$$\ln \Omega_{A|C}(x_i) = \ln(\exp x_i \beta_A - \exp x_i \beta_C) = x_i(\beta_A - \beta_C) \qquad (3)$$

The difference between $(\beta_A - \beta_C)$ is called "*contrast*" that shows the effect of **x** on the logit of outcome **A** versus **C**. In the Multinomial logit model, it is assumed that the probability of observing each group of dependent variables (Y) is defined as follows Equation 4 (Long, 1997; Long and Freese, 2001):

$$\Pr(y_i = m \mid x_i) = \frac{\exp(x_i \beta_{m|b})}{\sum_{j=1}^{J} \exp(x_i \beta_{j|b})} \qquad (4)$$

Specifically, the probabilities of each of the groups of dependent variables (j= 1,2,3) are respectively determined by Equations 5 to 7 (Yi = 3 is the category base group):

$$\Pr(y_i = 1 \mid x_i) = \frac{\exp(x_i \beta_{1|3})}{1 + \sum_{j=2}^{3} \exp(x_i \beta_{1|3})} \qquad (5)$$

$$\Pr(y_i = 2 \mid x_i) = \frac{\exp(x_i \beta_{2|3})}{1 + \sum_{j=2}^{3} \exp(x_i \beta_{2|3})} \qquad (6)$$

$$\Pr(y_i = 3 \mid x_i) = \frac{1}{1 + \sum_{j=2}^{3} \exp(x_i \beta_{3|3})} \qquad (7)$$

In the Multinomial Logit Model (MNLM), such as simple logit models, explanatory variables do not interpret directly. Therefore, the marginal effects (marginal and discrete change) of descriptive variables must be used to interpret them. Marginal and discrete change can be used in the same way as in models for ordered outcomes.

Marginal change is defined as Equation 8:

$$\frac{\partial \Pr(y = m \mid x_i)}{\partial x_k} = (y = m \mid x_i) \left[\beta_{k,m|J} \sum_{j=1}^{J} \beta_{k,j|J} \Pr(y = j \mid x_i) \right] \qquad (8)$$

Since this equation combines all of the $\beta_{k,m|J}$'s, the value of the marginal change depends on the levels of all variables in the model. Further, as the value of x_k changes, the sign of the marginal can change.

Discrete change is defined as Equation 9:

$$\frac{\Delta \Pr(y = m \mid x_i)}{\Delta x_k} = \Pr(y = m \mid x_i, x_k = x_E) - \Pr(y = m \mid x_i, x_k = x_S) \qquad (9)$$

Where the magnitude of the change depends on the levels of all variables and the size of the change that is being made. In this study, marginal and discrete changes are measured in three ways: by a unit change around the mean (Δ1), by change of one standard deviation around the mean (Δσ) and change from minimum to maximum of explanatory variable (ΔRange).

Related estimates of the unknown parameters of the model can be calculated using of maximum likelihood method. The

likelihood function is as follows (Hensher *et al*., 2005):

$$L(\beta_2,...,\beta_J \mid y, X_i) = \prod_{i=1}^{N} P_i = \prod_{m=1}^{J} \prod_{y_i=m} \frac{\exp(x_i \beta_m)}{\sum_{j=1}^{J} \exp(x_i \beta_J)}$$

$$\ln L(\beta_2,...,\beta_J \mid y, X_i) = \sum_{m=1}^{J} \sum_{y_i=m} \ln \left(\frac{\exp(x_i \beta_m)}{\sum_{j=1}^{J} \exp(x_i \beta_J)} \right) \quad (10)$$

$$= \sum_{m=1}^{J} \sum_{y_i=m} (\ln \exp(x_i \beta_m) - \ln(\sum_{j=1}^{J} \exp(x_i \beta_J)))$$

By taking the logarithm of this function, the log-likelihood equation is obtained which can be maximized with numerical methods for calculating the amount of β. (Long, 1997; Hensher *et al*., 2005)

One important assumption that must be tested in the multinomial logit model is the independence of irrelevant alternatives (IIA). In Equation (2), this assumption means that the odds ratio for any outcome is not related to other outcomes or possible states. In the other words, adding or deleting an outcome does not affect the odds ratio of the remaining outcomes. There are two tests to examine the IIA hypothesis. Hausman and McFadden, (1984) suggested the Hausman test and McFadden, Tai, and Threen (1976) have suggested likelihood ratio tests (LR), these have been improved by Small and Hsiao (1985). Significant values of H (Hausman statistic) indicate that the IIA assumption was rejected. Another assumption that should be considered in the multinomial logit model is a combination of categories tested by the likelihood ratio and Wald tests. This assumption states that if none significantly affects the odds of outcome **m** versus outcome **n**, then **m** and **n** are indistinguishable with respect to variables in the model (Long, 1997).

Consideration of the effect of explanatory variables on the marketing strategy that has been selected by food companies at different stages of PLC, so it is important to identify significant variables on the choice of marketing strategies in different stages of PLC. Hence, this study aimed to evaluate factors affecting the selection of the type of marketing strategy for food company managers at different stages of PLC. To achieve this goal, the multinomial logit model was applied and STATA 14 software was used to estimate the models. The research model was as follows:

$$\ln \Omega_{1|3}(x_i) = \ln \frac{\Pr(y_i = 1 \mid x_i)}{\Pr(y_i = 3 \mid x_i)} = \quad (11)$$

$$= \beta_{0,1|3} + \beta_{1,1|3} \exp + \beta_{2,1|3} edu + \beta_{3,1|3} product$$

$$+ \beta_{4,1|3} brand + \beta_{5,1|3} share + \beta_{6,1|3} competition + u_i$$

$$\ln \Omega_{2|3}(x_i) = \ln \frac{\Pr(y_i = 2 \mid x_i)}{\Pr(y_i = 3 \mid x_i)} = \quad (12)$$

$$= \beta_{0,2|3} + \beta_{1,2|3} \exp + \beta_{2,2|3} edu + \beta_{3,2|3} product$$

$$+ \beta_{4,2|3} brand + \beta_{5,2|3} share + \beta_{6,2|3} competition + u_i$$

Equations (11) and (12) indicate the odds ratio of outcome 1 versus outcome 3 and the odds ratio of outcome 2 versus outcome 3, respectively (Yi= 3 is the base group of the group in which the estimation of coefficients is equal to zero). The dependent variable was divided into three groups and its description is shown in Table 1. Other explanatory variables are described in Table 2 and u_i is error term that has a logistic distribution

Data and variables

Descriptive statistics of data are reported in Table 1 and Table 2. The frequency of each group of the dependent variable is reported in Table 1. The dependent variable was divided into three groups; the first group was product development strategy, the second group was market development strategy, and the third group was market penetration strategy. In the Introduction stage, company managers have selected 53.79% of strategy I, 22.73% of strategy II, and 23.48% of strategy III. In the Growth stage, company managers have selected 24.71% of strategy I, 25.88% of strategy II, and 49.41% of strategy III. In the Maturity stage, company managers have selected 40.15% of strategy I, 20.44% of strategy II, and 39.42% of strategy III. In the Decline stage, company managers have selected 32.14% of strategy I, 33.04% of strategy II, and 34.82% of strategy III.

Table 1- Description of dependent variable and its frequency in various stages of Product Life Cycle

Stages of product life cycle	Dependent variable groups			
	Groups	Product development strategy (strategy I)	Market development strategy (Strategy II)	Market penetration strategy (strategy III)
Introduction stage	Frequency	71	30	31
	Frequency (%)	53.79	22.73	23.48
Growth stage	Frequency	42	44	84
	Frequency (%)	24.71	25.88	49.41
Maturity stage	Frequency	55	28	54
	Frequency (%)	40.15	20.44	39.42
Decline stage	Frequency	36	37	39
	Frequency (%)	32.14	33.04	34.82

Source: Research findings

Table 2- Description of explanatory variables

Variable	Description
Managers Age	Age (continuous)
Managers educational Level	Under Diploma=0, Diploma to Bachelor=1, Bachelor's Degree or higher=2
Managers experience	The number of company management experience years (continuous)
Product type	Mono=0, Multi item=1(dummy variable)
Brand	Degree of importance of having a reliable brand composed from different items measured by Likert scale converting to a continuous variable using the factor analysis method (continuous)
Competition	This variable shows the importance of competitiveness in the market, which is composed from different items with a Likert scale and has finally been converted into a continuous variable using the factor analysis method(continuous)
Market share	The importance of market share at strategy selection (Low=0, Average=1, High=2)

Source: Research findings

It should be noted that some companies chose more than one strategy at each phase of the product life cycle. Therefore, the sum of vertical or horizontal columns in Table 1 was more than the number of questionnaires but as depicted in Table 1, the sum of the frequency percentages in all columns was one. Furthermore, companies operating in the food

industry that studied in this research did not pursue diversification strategy and hence this strategy has not been considered. Table 2 shows descriptive statistics of the explanatory variables.

Results and Discussion

Combinations of dependent variable categories were tested by application of the likelihood ratio (LR) and Wald tests; results for the different stages of PLC are reported in Table 3. The null hypothesis or H_0 in both tests is determined by the mutual combination of categories. Regarding the values of both statistics from Table 3, it can be concluded that the different marketing strategies could not be combined at each stage of the product life cycle; in other words, H_0 assumption was rejected for both tests.

Table 3- Results of marketing strategies combination in different stages of Product Life Cycle

Life cycle stages	Studied groups	The likelihood statistics	Significance level	Wald statistic value	Significance level
Introduction stage	1 & 2	22.59	0.00	16.22	0.06
	1 & 3	45.56	0.00	19.88	0.02
	2 & 3	40.97	0.00	22.89	0.01
Growth stage	1 & 2	18.57	0.03	14.72	0.099
	1 & 3	21.24	0.01	15.95	0.068
	2 & 3	17.33	0.04	14.81	0.096
Maturity stage	1 & 2	60.72	0.00	25.21	0.01
	1 & 3	23.02	0.01	14.81	0.096
	2 & 3	31.72	0.00	17.40	0.04
decline stage	1 & 2	24.88	0.00	15.82	0.07
	1 & 3	27.23	0.00	15.42	0.08
	2 & 3	34.47	0.00	20.59	0.02

Source: Research findings

Another important test for consideration in the multinomial logit model was the IIA test that was examined by using Hausman statistics. The results of this test for different stages of PLC are presented in Table 4.

According to Hausman, LR, and Wald statistics, values were non-significant at all four stages of PLC demonstrating that the IIA assumption was accepted. Hausman statistic values showed the negative for all groups at the growth stage and in the first and third groups at the stage of decline and a significant level has not been reported. Hausman and McFadden (1984) have concluded that a negative value confirms the -IIA- assumption. To ensure this, the generalized Hausman test was applied and results are reported in Table 4. According to results in Table 4, the statistic values have been insignificant for both stages and the IIA assumption was again confirmed.

The selection of a base group is important for estimating the multinomial logit model. STATA software considers the group with the highest frequency as the base group, but in this study, the base group was considered to market penetration strategy to include consideration of the odds ratio of other marketing strategies compared to the market penetration strategy. Results of the multinomial logit model for each of the stages; introduction, growth, maturity, and decline have been reported in Table 5. The estimated coefficients shown in these tables show the direct effects of the independent variables on the selected strategy by companies, while the Relative Risk Ratio (RRR) shows the rate of probability change for each category compared to market penetration strategy when a change in the explanatory variables occurs.

Table 4- Results of Hausman and generalized Hausman tests for assumption of (IIA) in the Product Life Cycle

Life cycle stages	Hausman test				Generalized Hausman test			
	The strategy groups	Statistic value	Freedom degree	Significance level	strategy groups	Statistic value	Freedom degree	Significance level
Introduction stage	1	0.48	10	1.00	1	7.72	10	0.66
	2	1.14	10	1.00	2	2.94	10	0.98
	3	0.21	10	1.00	3	6.96	10	0.73
Growth stage	1	-1.05	10	.	1	4.01	10	0.95
	2	-1.88	10	.	2	4.44	10	0.93
	3	-0.93	10	.	3	1.98	10	1.00
Maturity stage	1	0.57	10	1.00	1	6.77	10	0.75
	2	2.61	10	0.99	2	7.05	10	0.72
	3	3.34	10	0.97	3	19.50	10	0.04
Decline stage	1	-16.77	10	.	1	5.12	10	0.88
	2	0.36	10	1.00	2	9.81	10	0.46
	3	-0.60	10	.	3	9.41	10	0.49

IIA: Independence of Irrelevant Alternatives

Source: research findings

In the introduction stage, according to the results shown in Table 5, an increase in the manager's experience showed an increase probability of selection of the first strategy (product development) compared to the base strategy (market penetration). In other words, highly experienced managers were found more likely to choose product development strategy over the market penetration strategy. As a product is at its introduction stage, product development can be a viable strategy for a company's successful entry into the market. Companies that produce multiple products were more likely to select the second strategy than the market penetration or third strategy. Companies with multiple products on their production lines used market development strategies to find and attract more customers than their competitors and to satisfy them with a variety of products or services such that they were found to have a higher probability of selection of this strategy than the strategy of market penetration. Results shown in Table 5 indicate an increase probability of selection of the first or second strategy compared to the third strategy in companies with reputable brands. In other words, prestigious brands mainly seek new products or new markets rather than penetrating the current market with current products. Other results shown in Table 5 show that increased product competitiveness increased the probability of choosing the first and second strategies compared to the third strategy. Under high competition, the penetration strategy is a very unreliable strategy and other marketing strategies seemed better for attracting and maintaining loyalty among consumers. In addition, the manager's education had a non-significant effect on the choice of the first strategy compared to the third strategy, but a higher level of education lowered the probability of choosing the market development strategy, compared to the base strategy. In other words, managers with a higher level of education selected the market development strategy with a lower probability in comparison to the market penetration strategy in the introductory stage of PLC. Finally, results are shown in Table 5 indicates that companies with an intermediate market share had a higher probability of choosing the first and second strategies than the third strategy.

In the growth stage, according to the results shown in Table 5, increased manager's experience decreased the probability of selecting the first and second strategy compared to base or the market penetration strategy. Normally, a more experienced manager knows that at the product growth stage the main aim of a producer is to gain more profits in the market and product

development or market development is a lower priority. Therefore, marketing managers at the growth stage of PLC focused all their efforts on greater influence in the market and to gain more profit by the market penetration strategy. Results in Table 5 show that reputable brands led to a decrease in the probability of selecting the second strategy in comparison to the base strategy. In other words, increasing brand reputation at the growth stage led to the increased probability of choosing a market penetration strategy over a market development strategy. Other explanatory variables had a non-significant effect on the probability of the dependent variable at the growth stage.

Table 5- Multinomial logit model estimation results in different stages of Product Life Cycle

Group	Stages of PLC		Introductory stage		Growth		Maturity stage		Decline stage	
	Variable name		Coefficient value	RRR	Coefficient value	RRR	Coefficient value	RRR	Coefficient value	RRR
First strategy	Manager experience		0.15***	1.16	-0.08**	0.93	0.05*	1.05	-0.03	0.97
	Product type		1.43	4.18	-0.41	0.67	-0.78	0.46	1.15	3.16
	Brand		0.08***	1.08	1.39	3.93	-0.31*	0.73	0.17	1.18
	Competition		0.02*	1.02	-0.62	0.54	0.41*	1.50	-0.62***	0.54
	Education Level	Diploma to Bachelor	-1.80*	0.16	0.39*	-0.95	0.49	1.63	-1.28	0.28
		Bachelor's Degree or higher	0.21	1.24	1.30	0.27	1.05	2.87	1.03	2.80
	Market share	Average	3.49**	32.96	1.47	0.38	-2.44**	0.09	3.92**	50.5
		High	1.93*	6.95	0.90	-0.11	-1.65	0.19	5.44***	230.2
	Constant		-13.83***	0.009	1.05	2.84	-1.74	0.18	-2.87	0.06
Second strategy	Manager experience		0.07	1.08	-0.04**	0.96	-0.07	0.93	-0.01	0.99
	Product type		3.16***	36.90	-0.65	0.52	-0.30	0.74	-0.94	0.39
	Brand		0.07**	1.07	-1.99*	0.14	0.42*	1.52	-0.11	0.90
	Competition		0.04**	1.04	-1.50	0.23	-0.96***	0.38	-0.62***	0.54
	Education Level	Diploma to Bachelor	-2.96***	0.05	1.24	0.21	-0.57	0.57	1.08	2.94
		Bachelor's Degree or higher	-1.99**	0.14	1.91	0.65	1.29	3.65	2.38***	10.85
	Market share	Average	3.27**	26.29	0.67	-0.39	5.35***	210.9	1.44	4.21
		High	1.11	3.05	0.35	-1.05	4.71**	111.0	4.43***	83.8
	Constant		-12.52***	0.006	4.48***	87.81	1.53	4.62	2.1	8.17
Goodness of fit measures MNL model	Log-Like Intercept only		-130.44	-171.1	-137.45	-122.9	-130.44	-171.1	-137.45	-122.9
	Log-Like Full Model		-94.8	-151.8	-100.4	-93.20	-94.79	-151.8	-100.4	-93.20
	LR		71.31	38.56	74.13	59.57	71.31	38.56	74.13	59.57
	LR (p-value)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	R^2 McFadden's		0.27	0.11	0.27	0.24	0.27	0.11	0.27	0.24
	R^2 ML (Cox-Snell)		0.42	0.21	0.44	0.41	0.42	0.21	0.44	0.41
	R^2 Cragg-Uhler		0.50	0.24	0.50	0.46	0.50	0.24	0.50	0.46
	R^2 Count		0.65	0.59	0.63	0.61	0.65	0.59	0.63	0.61
	Deviance		189.6	303.66	200.8	186.40	189.6	303.66	200.8	186.40
Third strategy	The base group									

Notes: ***, ** and * denote significance levels at 1%, 5% and 10%.
Source: research findings

In the maturity stage, according to the results shown in Table 5, the reputable brand reduced the probability of selecting the first strategy compared to the base strategy. In other words, a reputable brand determines the selection of the market penetration strategy compared to the product development strategy at the maturity stage. However, a reputable brand increased the probability of selecting the market development strategy compared to the base strategy. Of course, selection of the market penetration strategy is a reasonable strategy at this stage of PLC because competitors are numerous in the market, and maximizing sales and profit are the most desired goals for managers particularly close to the final stages of the product life cycle. Therefore, in terms of prioritizing the marketing strategy at the maturity stage when a company has a prestigious brand, market development strategy was the most commonly considered strategy followed by that of market penetration.

Increased product competition decreased the probability of selecting the second strategy compared to the base strategy and there was an increased probability of selecting the first strategy rather than the base strategy (Table 5). In other words, when a company had high market competition, it prefers to select a product development strategy and introduce new products in the current markets rather than selecting the penetration strategy and simultaneously the probability of entering new markets with current products or market development strategy decreased compared to the base strategy. Other results in Table 5 also show the probability of selecting the first and second strategy compared to the base strategy, when other explanatory variables changed.

In the Decline stage, increasing market competition decreases the probability of selecting the first or second strategies compared to the base strategy (Table 5). In other words, increased competition at the decline stage determined utilization of the market penetration strategy to sell more products in current markets and decreased selections of product development or market development strategies. The impact of manager's education on the chosen strategy at the decline stage indicates that managers with an education level of diploma to bachelor were less likely to choose the first strategy compared to the basic strategy and managers with a higher level of education (bachelor and above) were more likely to choose the second strategy compared with the base strategy. Finally, the results of Table 5 show that companies with a high market share were more likely to select the first strategy over the base strategy at the decline stage. At the product decline stage, it is rational that a company with an average or high market share selected the product development strategy to maintain its share and to keep its place in the market. However, companies with a moderate market share were more likely to select the second strategy compared to the base strategy. Generally, at the decline stage, with a moderate or high market share, the selection of a market penetration strategy was not an appropriate choice.

Also, information about the goodness of fit measures for product life cycle stages is reported in Table 5. Results of Table 5 show LR statistics for different stages of product life cycle as 71.31, 38.56, 74.13, and 59.57 respectively, indicating that the regressions were significant. Other measures such as Pseudo R2 also indicate that the results of the regression were reliable.

In general, the sign and significance of explanatory variables at each phase of PLC are reported in Table 6. These Tables indicate that selection of an appropriate marketing strategy at the different stages of PLC depended on various and somewhat opposite factors. Therefore, marketing managers should consider various variables and opposite results and conditions in making selections for a strategy.

Table 6- Summary of the results of the sign and significance of the explanatory variables estimated by the Multinomial Logit model in the stages of the Product Life Cycle

Group	Product life cycle stages / Independent variables		Introduction	Growth	Maturity	Decline
First strategy	Manager experience		+ Significant	- Significant	+ Significant	- Insignificant
	product type		+ Insignificant	- Insignificant	- Insignificant	+ Insignificant
	Brand		+ Significant	+ Insignificant	- Significant	+ Insignificant
	Competition		+ Significant	- Insignificant	+ Significant	- Significant
	Education Level	Diploma to Bachelor	- Significant	- Significant	+ Insignificant	- Insignificant
		Bachelor's or higher	+ Insignificant	+ Insignificant	+ Insignificant	+ Insignificant
	Market share	Average	+ Significant	+ Insignificant	- significant	+ Significant
		High	+ Significant	- Insignificant	- Insignificant	+ Significant
Second strategy	Manager experience		+ Insignificant	- Significant	- Insignificant	- Insignificant
	Product type		+ Significant	- Insignificant	- Insignificant	- Insignificant
	Brand		+ Significant	- Iinsignificant	+ Significant	- Insignificant
	Competition		+ Significant	- Insignificant	- Significant	- Significant
	Education Level	Diploma to Bachelor	- Significant	+ Insignificant	- Insignificant	+ Insignificant
		Bachelor's or higher	- Significant	+ Insignificant	+ Insignificant	+ Significant
	Market share	Average	- Significant	- Insignificant	+ Significant	+ Insignificant
		High	- Significant	- Insignificant	+ Significant	+ Significant

Source: Research findings

The marginal effects of explanatory variables on the different groups of the dependent variable at the different stages of PLC are reported in Table 7 by three different scales for independent variables. In the Introduction stage, for example, results in Table 7 indicate that if the level of market competition changed from minimum to maximum, then selection of the first and second strategies increased by 15.18% and 23.78 % respectively, and selection of the third strategy (basic strategy) was reduced 38.96%. However, if this variable (competitiveness) changed one unit from its mean then selection of the first and second strategies increased by 0.0006% and 0.0029% respectively, and selection of the third strategy reduced by 0.0035%. Furthermore, if competitiveness changed by one standard deviation from its mean, selection of the first and second strategies increased by 1.28% and 6.36% respectively and selection of the basic strategy was reduced by 7.6%. Results for marginal effects at the growth stage are presented in Table 7. These results show that if the level of market competitiveness changed from minimum to maximum then selection of the first and second strategies decreased by 0.78% and 24.18% percent respectively and selection of the third strategy (basic strategy) is increased by 24.96%.

Table 7- Marginal effects of explanatory variables in the stages of Product Life Cycle

Stages of PLC	The explanatory variables		Variation	First strategy	Second strategy	Third strategy
Introductory stage	Manager experience		ΔRange	0.8040	0.1585	-0.9626
			Δ1	0.0311	0.0042	-0.0353
			Δσ	0.2869	-0.0322	-0.3191
	Brand		ΔRange	0.6392	0.1472	-0.7863
			Δ1	0.0096	0.0006	-0.0101
			Δσ	0.1781	0.0132	-0.1913
	Competition		ΔRange	0.1518	0.2378	-0.3896
			Δ1	0.0006	0.0029	-0.0035
			Δσ	0.0128	0.0636	-0.0764
	product type (dummy variable)		0→1	0.0596	0.2612	-0.3208
	Education Level	Diploma to Bachelor	0→1	-0.1873	-0.1991	0.3864
		Bachelor's Degree or higher	0→1	0.3130	-0.3597	0.0467
	Market share	Average	0→1	0.2625	0.0395	-0.3020
		High	0→1	0.3080	-0.0595	-0.2485
Growth stage	Manager experience		ΔRange	-0.6106	-0.2066	0.8172
			Δ1	-0.0147	-0.0011	0.0158
			Δσ	-0.1494	-0.0223	0.1617
	Brand		ΔRange	0.2253	-0.4548	0.2295
			Δ1	0.3173	-0.4289	0.1115
			Δσ	0.0658	-0.0895	0.0237
	Competition		ΔRange	-0.0078	-0.2418	0.2496
			Δ1	-0.0204	-0.2480	0.2685
			Δσ	-0.0054	-0.0596	0.0650
	Product type (Dummy variable)		0→1	-0.0107	-0.1675	0.1781
	Education Level	Diploma to Bachelor	0→1	-0.1643	0.0961	0.0681
		Bachelor's Degree or higher	0→1	0.0003	0.1277	-0.1280
	Market share	Average	0→1	0.0854	-0.0902	0.0048
		High	0→1	0.0382	-0.1929	0.1547
Maturity stage	Manager experience		ΔRange	0.5550	-0.1431	0.4120
			Δ1	0.0125	-0.0040	0.0085
			Δσ	0.1023	-0.0487	0.0536
	Brand		ΔRange	-0.6578	0.2332	0.4146
			Δ1	-0.0936	0.0468	0.0468
			Δσ	-0.2543	0.1327	0.1216
	Competition		ΔRange	0.7346	-0.9794	0.2448
			Δ1	0.1359	-0.0959	-0.0400
			Δσ	0.3337	-0.2630	-0.0707
	Product type (dummy variable)		0→1	-0.1919	0.0207	0.1711
	Education Level	Diploma to Bachelor	0→1	0.1436	-0.0557	-0.08792
		Bachelor's Degree or higher	0→1	0.1966	0.0709	-0.2674
	Market share	Average	0→1	-0.5285	0.8996	-0.3711
		High	0→1	-0.5297	0.4418	0.0879
Decline stage	Manager experience		ΔRange	-0.2780	-0.0910	0.369
			Δ1	-0.0064	-0.0024	0.0088
			Δσ	-0.0901	-0.0329	0.123
	Brand		ΔRange	0.3132	-0.3536	0.0404
			Δ1	0.0471	-0.0408	-0.0063
			Δσ	0.1096	-0.0950	-0.0063
	Competition		ΔRange	-0.3928	-0.4240	0.8168
			Δ1	-0.0692	-0.0740	0.1432
			Δσ	-0.1813	-0.1938	0.1441
	Product type (Dummy variable)		0→1	0.2890	-0.3224	0.0334
	Education Level	Diploma to Bachelor	0→1	-0.3440	0.3571	-0.0131
		Bachelor's Degree or higher	0→1	-0.0862	0.4251	-0.3388
	Market share	Average	0→1	0.6468	-0.2080	-0.4388
		High	0→1	0.5179	0.3218	-0.8396

Source: Research findings

Also, the results of marginal effects in the maturity stage are also reported in Table 7. These effects present the example that if the reputation of a brand increased from its minimum to its maximum, then the probability for selecting the first strategy decreased by 0.65%, and the probability of choosing the second or the third strategy increased by 0.23% and 0.42% respectively. In other words, improving brand position in the market attracted more attention to the second and third strategies.

Finally, Table 7 shows the marginal effects of explanatory variables on the dependent variable categories at the decline stage. These results show that if the level of market competitiveness changed from minimum to maximum then selection of the first and second strategies decreased by 39.28% and 42.40% percent respectively and selection of the third strategy (basic strategy) is increased by 81.68%.

Conclusions and Suggestions

The current study seeks to evaluate factors affecting the selection of marketing strategies for food production companies in different stages of the product life cycle in the city of Mashhad. In this study, the multinomial logit model was used to analyze the important factors on choice of marketing strategy; these were product development strategy, market development strategy, and market penetration strategy. The results showed that at the introductory stage, reputable brand, competitiveness, and market share, had a significant effect on the selection of product development strategies compared to the base strategy. However, the manager experience reduced the probability of product development strategy compared to the base group.

Results of the study at the growth stage of PLC also indicated that the manager's experience had a positive effect on the probability of selection of the first strategy compared to the base strategy. At the growth stage, a more experienced manager selected the first strategy rather than the market penetration strategy. Other variables at this stage had a non-significant effect on selecting the prior strategy because the objective of the company at this stage was to maximize profit and to attract more consumers to products and therefore use all the available marketing strategies together to achieve this goal without any priority. Moreover, results of the growth stage showed that prestigious brands with less probability selected the market development strategy rather than the market penetration strategy. Maximization of profits, especially in the currency markets again helped interpretation of this result.

At the maturity stage of PLC, the probability of selecting the first strategy compared to the base strategy increased according to the manager's experience and competition in the market. Nevertheless, a prestigious brand and increased market share decreased the probability of selecting the first strategy. Furthermore, a prestigious brand, higher market share, and less competition in the market increased the probability of selecting the second strategy compared with the base strategy in the maturity stage of PLC.

Finally, at the decline stage of PLC, results showed that competitiveness and level of a manager's education had a negative effect and market share had a positive effect on the probability of selecting the first strategy compared to the base strategy. Furthermore, competitiveness had a negative effect, and the manager's education and market share had a positive effect on the probability of selecting the second strategy rather than the first strategy.

The results of this research can be interpreted in another way, subject to any independent variable at each stage of the product life cycle. For instance, the manager's experience had a negative effect on the selection of the first strategy compared to the base strategy at the introductory stage, but it had a positive effect at the growth and maturity stages and a non-significant effect on the decline stage of PLC. Results indicate that

experienced managers pursuing market penetration at the introductory stage and the growth and maturity stages selected product development strategies. Experienced managers know that with increasing competition at the growth and maturity stages, producing new products could maintain or even increase their share in the market and so increase profits.

In terms of the importance of selective marketing strategies of companies at different stages of the product life cycle for profitability, it is recommended that similar research be done in other industries testing the same or more explanatory variables. In addition, results showed that selective strategy at different stages of the product life cycle takes different impacts from different variables and this should be considered in company operations in this domain. Furthermore, it is recommended that companies in the introductory stage consider market conditions and competitiveness as well as establish and empower a reputable brand because appropriate marketing strategy selection had a significant impact on company performance at this stage. Company managers must pay a lot of attention to the stabilization of suitable brands at the growth stage because it affects survival and strategy selection in the market. Companies should pay a lot of attention to their market share at the maturity stage because the maximum benefit can be achieved at this stage and thus it is necessary to increase customer loyalty. Eventually, at the stage of decline, attention to product share at the market and brand credibility maintenance and introduction of new products is also essential because at this stage, company sales and profits decrease and each of the above variables affects the choice of strategy and survival in the market.

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مقاله پژوهشی

جلد ۳۶ شماره ۴، زمستان ۱۴۰۱، ص. ۳۵۲-۳۳۷

عوامل موثر بر انتخاب استراتژی بازاریابی در مراحل مختلف چرخه عمر محصول

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چکیده

یک استراتژی بازاریابی مناسب برای افزایش فروش و سودآوری در مراحل مختلف چرخه عمر محصول ضروری است. هدف اصلی این مطالعه بررسی عوامل موثر بر انتخاب استراتژی بازاریابی در مراحل مختلف چرخه عمر محصول در صنایع غذایی مشهد می‌باشد. داده‌ها از طریق یک نظرسنجی جمع‌آوری شده و پرسشنامه‌ها توسط ۸۸ مدیر بازاریابی صنعت تولید مواد غذایی- در سال ۱۳۹۶ تکمیل شده است. برای رسیدن به هدف پژوهش، از الگوی لاجیت چند جمله‌ای برای تعیین تأثیر متغیرهای توضیحی بر احتمال انتخاب یک استراتژی بازاریابی ویژه در مراحل مختلف چرخه عمر محصول استفاده بهره گرفته شد. نتایج نشان داد که متغیرهای تجربه مدیر، تحصیلات، نوع محصول، رقابت‌پذیری، برند معتبر و سهم بازار تأثیر معناداری بر استراتژی انتخابی در مراحل مختلف چرخه عمر محصول داشته است. بنابراین، سودآوری یک شرکت در بازار را می‌توان با اجرای یک استراتژی بازاریابی مبتنی بر نوع محصول و در ارتباط با مراحل خاص چرخه عمر محصول بهبود داد.

واژه‌های کلیدی: استراتژی‌های بازاریابی، برتری نسبی، چرخه عمر محصول، صنایع غذایی

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