PROFIT AND ADVERTISING RELATIONSHIP BASED ON PRODUCT DIFFERENTIATION.

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Abstract: *This paper investigates the positive relationship between profit and advertising based on product differentiation on imperfect oligopoly market. Differentiated product under these markets put pressure on manufacturers to produce high quality products. Advertising helps them to take advantages of economies of scale, absolute cost advantage and capital requirement on new entrance. The study is using firms' data of certain specific manufacturers of heterogeneous products, through multiple regression, to prove that the positive relationship between profit rate and advertising is significant and still hold. By using the same data, the study could be able to relate the advantage of advertising for incumbent firms with barrier to entry for the new firms. In addition, the paper also highlights the view of ethical values of advertising based on Islamic perspective. The discussion focused on informative and educative advertising which is allowed in Islam and persuasive approach as well as manipulative advertising which is prohibited and immoral according to Islam.*

Keywords: Profit, Advertising, Product Differentiation, Informative & Educative (Halal), Persuasive and Manipulative (Haram).

I.   Introduction.

The main objective of product differentiation in market structure is to increase the profits by increasing the demand and decreasing the price elasticity of demand. Producers and sellers attempt to differentiate their products in many forms. Common forms of heterogeneous product include location, service, physical characteristics, and subjective image differences. Economist distinguish those products based on two broad categories: horizontal differentiation and vertical differentiation. Horizontal differentiation refers to different brand and different product characteristics but not on different overall quality. By comparison, vertical differentiation refers to differences in the actual quality of two different brands. The most controversial aspect of heterogeneous product is advertising aimed at creating subjective differences between products. Advertising targets to catch the consumer's attention by disclosing an informative massage and providing consumers with truthful information about price, location, service and quality of the product. Advertising can break old buying pattern and also can change the demand for certain product of the consumers as well as it can build a base of loyal customer to the product. Advertising in fact is one of the most significant instruments for the firms to control the new entrance into the

industry and thus they can earn a maximum profit as much as possible. Based on this main reason firms tend to increase the competitive advertising massages in mass media.

The objective of this paper is to investigate the positive relationship between profit and advertising is still hold although certain criteria have been imposed on it. The study also wants to examine whether differentiated product through advertising effects the barrier to entry or otherwise. In addition, the view of Islamic perspective concerning advertising based on ethical value is also highlighting in this paper. The paper has seven sections including this introduction. Section II, discusses the theoretical back ground and literature review. Model specification, data and methodology are briefly explained in section III. In section IV interprets and analyses the finding results. Section V additionally explained advertising based on Islamic perspectives. Recommendations and suggestions are given in section VI. Section VII is some concluding remarks.

II.   Theoretical Back Ground of Advertising and Product Differentiation and Literature Review.

Advertising and Product Differentiation.

There are four elements of market structure identified by Bain that act as barrier to entry. Barrier to entry are economic factors that may give firms an advantage over competition. The first one is economies of scale (EOS). EOS refers to the situation where the average cost in the long run for the incumbent firm falls as output increases ceteris paribus. It can produce at minimum efficient scale (MES) more than the new entrance firms.

The second element is absolute cost advantage. In the market it is assumed that the average cost (AC) is constant for both incumbent as well as new firm. The barrier to entry arises when incumbent firm has lower costs than the new firm, and the established firm set the price lower than the average cost of the new firm and higher than the average cost of its own firm. In this situation the rivalry can face with loss condition.

The third element is capital cost requirement. Fixed capital requirements were determined by estimating the value of a MES plant. The larger the MES, the larger the amount of financial capital required to enter at MES thus the higher the capital cost associated with entry. This would be the disadvantage for the rivalry to enter such market.

Final element is product differentiation (PD). According to Comanor and Wilson (1967) , PD through advertising affects barrier to entry via several ways:

1) The advertising for the new firm is to induce brand switching while for the incumbent firm is just only repeat buying.

2) Larger firm has the ability to spread the cost over more unit of output and spend less for per unit sold. Incumbent firm does not have to put more money on advertising as much as compared to rivalry in order to maintain its market share

3) In the situation that EOS exists either in the production or advertising, the need to acquire the fund for advertising will lead to the fact that the rise in capital requirement is over and above the need for physical plant and equipment. If they are failure, the investment in the market penetration by the rivalry will face a risky use of funds because it does not create tangible assets that can be resold. Thus, advertising creates barrier to entry to rivalry.

Therefore, this study will focus on the product differentiation and use the advertising as the measure to barrier to entry to the rivalry.

II.   Literature Reviews

The relationship between advertising and profit, there are many studies that have been conducted. The most of the findings proved that there is positive and statistically significant relationship between advertising and profit as expected by this study. According to Bothwell, Cooley and Hall (1984) , the results of study, by using single equation, have shown the positive correlation between advertising and profitability when advertising is regarded as focus variable. Gupta (1983), used both approaches; single and simultaneous equations. He found that the coefficient of advertising intensity to be positive and statistically significant in all OLS (ordinary least squares), 2SLS (two stage least squares) and 3SLS (three stage least squares) estimations. Moreover, his results supported the hypothesis barrier to entry. In addition to the above finding, Esposito and Esposito (1971) stated that the regression coefficient for the advertising/sales ratio is significant at 99 percent level.

Working paper conduct by Wang (1996) was on doupolistic model which involved only two markets but in the real world there are more than two markets. Therefore, he suggested that the study on oligopolistic market should be developed. Based on this suggestion, I started my model with five firms and competing brands and marginally differentiated products. It is an ideals ground for the use of advertising by each firm.

The effect of advertising on profit depends on the types of consumer or producer goods. Several Authors likes Gupta (1983) , Comanor and Wilson (1986), Vernon and Nourse (1973) and Esposito and Esposito (1971) concluded that advertising gave more effect on consumer goods than producer goods. There are many reasons explained this phenomenon are as follows:

Firstly, buyers of producer goods are likely to be relatively better informed about the availability of product for sale and hence they will require less prompting and reminding over the existence of products than consumers.

Secondly, buyer of producer goods spends more of their time and effort on purchasing decision, thus they must be less open to persuasion than consumers.

Thirdly, buyer of producer goods may be more amenable to direct selling methods than to advertising as such, then promotional efforts in such cases may not be attracted adequately in advertising data. Thus advertising-sales ratio was considered as a more appropriate measure for consumer goods than producer goods.

III. Model Specification, Data and Methodology.

This study mainly focuses on five manufacturers namely PROCTER AND GAMLE (PG), JOHNSON & JOHNSON (JJ), BRISTOL-MYERS (BM), and COLGATE-PALMOLIVE (CP) AND CLOROX (CX). The selection of these manufacturers based on several reasons.

First, they are among the hundred leading national advertisers in 1988 as reported in Advertising Age (1989) in which PG was placed at number two, JJ at number twenty, MB at number twenty-one, CP at number thirty-three and CX at number sixty-six.

Second, these manufacturers produced heterogeneous products in which the study is based on.

Third, these manufacturers are producing consumer goods rather than producer goods.

Fourth, they are the manufacturers of the product groups that have the highest advertising-sales ratio based on the reports of Census of Production in 1963.

Finally, they are competing with each other as being reported in Advertising Age on December 11, 2000, pp. 16.

Basic Model, the model consists of a multiple regression of two profit rate variables as independent variables. They are used to measure market performance, and that market performance can be measured through advertising sales ratio. The basic equations used in these models are described as follows:

Dependent Variables

ROE = Average rate of return on equity. (Net income divided by shareholders' equity, averaged over years).

ROA = Average rate of return on assets. (Net income plus interest rates expense, divided by total assets, averaged over years)

Independent Variables

ADV   = Advertising-sales ratio (advertising expenses are divided by total sales revenue)

GR   = Growth of the firm (this year's sales minus last year's sales over last year's sales)

SALE = Firm's total sales

D2   = 1,   if JJ

      = 0,   if otherwise

D3   = 1,   if BM

      = 0,   if otherwise

D4   = 1,   if CP

= 0,   if otherwise

D5   = 1,   if CX

        = 0,   if otherwise

Data and Methodology

There are five selected manufacturers involved in this study as mentioned in the model. Data collections for this study are twelve years, starting from 1988 and 1999. Data on profit, net income, stockholders' equity, total assets and interest rate expense are quoted in million USD. While total sales are quoted in billion USD. The data for advertising are taken from two sources i.e., from Advertising Age (1988 – 1993) and from the web site of Advertising Age (1994 – 1999) based on million USD. This study used the pooled data of sixty observations overall (12 years for 5 firms). The firms are arranged according to their ranking in Advertising Age for the year 1988. First ranking is PG, second is JJ, third is BM, forth is CP and last is CX. Finally, the data can be consistent with the theory mentioned above.

By using the multiple regression analysis, test and solve, if there is any, the problem of econometric heteroscedasticity, autocorrelation and multicollinearity to achieve the reliable results.

IV.   Results and Its Interpretations

Table I. Linear Results of Multiple Regression Equations Explaining the Profit Rates.

Variables   ROA   ROE   ROA1

Intercept   -0.00423

(-0.879)   -0.01043

(-0.8432)   -0.00448

(-0.9433)

ADV   0.07792*

(1.985)0.12238

(1.214)0.07782*

(1.997)

GR   -0.00002

(-0.4782)   -0.00004

(1.214)-----------

SALE 0.00023**

(2.580) 0.00063***

(2.743) 0.00024***

(2.669)

D2   0.00849***

(3.882) 0.01577***

(2.805) 0.0085***

(3.909)

D3   0.0136***

(4.938) 0.02673***

(3.777) 0.0136***

(4.971)

D4   0.00789***

(2.577) 0.02145***

(2.792) 0.00803***

(2.659)

D5   0.00389

(1.471) 0.01098

(1.612) 0.00396

(1.505)

0.5524 0.3951 0.4996

Notes: The number in the parentheses are t-values

Single Star (*) indicates that the coefficient is significant at 0.10 level using two tail tests.

Double Star (**) indicates that the coefficient is significant at 0.05 level using two tail tests.

Triple Star (***) indicates that the coefficient is significant at 0.01 level using two tail tests.

The simple correlation coefficients between the two profit rate measures (ROE and ROA) and the independent variables are shown in the first and second column of Table I.

The primary concern of this study is to analyze the relationship between profit rate and advertising. The results of regression of ROE in the second column of table I reveals that advertising coefficient is not significant and thus unreliable. For this reason, the results in this paper will be reported for the regression of ROA1 only. From a purely statistical viewpoint, the estimated regression lines fit the data quite well. First, the variation in the ROA1 is explained by independent variables. Second, signs of the coefficients are as expected. Third, the study found that statistically positive significance at 0.10 level of significant for the ADV coefficient and 0.05 level of significant for SALE, D2, D3, and D4 coefficients. Therefore, average rate of return on asset (ROA1) is characterized by increasing profit due to increasing advertising and total sales. It is supported the hypothesis. The significant and positive coefficient between profit rate and advertising has been interpreted as barrier to entry by Vernon and Norse (1973) . In these results are still faced with the problem of heteroscedasticity. The problem could be solved by transforming the data and change the equations to logarithm form (LSALE). The new results can be seen in table II.

Table II – Logarithmic Multiple Regression Equations Explaining Profit Rates: Uncorrected and Corrected equations for Heteroscedasticity.

Variables	ROA	ROA1
Intercept	-0.00199	
(-0.4328)	-0.00199	
(-0.6601)		
ADV	0.0892**	
(2.280)	0.0892***	
(3.563)		
LSALE	-0.000000004	
(-0.289)	-0.000000004	
(-0.4205)		
D2	0.000132***	
(2.266)	0.000132	
(2.898)		
D3	0.00714***	
(3.515)	0.000132***	
(2.898)		
D4	0.012***	

(4.632)0.012***

(5.747)

D5   0.0574**

(2.8800)   0.00574***

(3.210)

 0.5320   0.5320

Adjusted

0.4790 0.4790

Notes: The numbers in the parentheses are t- values

Single star (*) indicates that the coefficient is significant at 0.10 level using two tail tests

Double star (**) indicates that the coefficient is significant at 0.05 level using two-tail test

Triple star (***) indicates that the coefficient is significant at 0.01 level using two-tail test.

The table II shows that ADV coefficient (for ROA1) is statistically significant at 0.01 level but the coefficient of LSALE has become insignificant. The dummy variables still maintain their significant level with the improvement of D5 whereby its coefficient is also significant at 0.01 level. T-ratio for ROA1 are also increased compared to ROA.

Based on dummy variables are all significant, this is proved that the value of profit rates for each firm are different.

The strong positive relationship between advertising and total sales ratio, shown in table I, has been interpreted as barrier to entry. Thus, the results supported the hypothesis of this study that differentiated product via advertising creates barrier to entry.

V.   Advertising and Islamic Perspectives

In Islam, all human activities should be geared to the achievement of AL-FALAH because the main objective of all action in Islam is to seek the pleasure of Allah Almighty. In this connection, economic activities must be morally directed to achieve Al-falah. The productions, consumptions, trades and commerce in Islam are linked up with moral and ethical values of life. According to al-hadith quoted by al-Ghazali, "Take to trade and commerce, because nine-tenth of the source of earnings is in trade and commerce " . The main reason of encouraging trade and commerce is due to these activities are the most rewarding and satisfying.

In daily life of economic activities in a modern world today, producers involved with advertising, propaganda and campaign of their products in order to inform, educate, persuade and manipulate people to buy their goods and services. In advertising is normally not only involved with information and education of their products but some time engage in evil deeds such as exploiting ambiguity, concealing fault of information, exaggerating and other unethical behaviors.

Note that Islam does not allow the room for justification of any cover up promotional behavior. Islam teaches its followers to be sincere and reveal all fault in the goods sold and it is an obligation for them to disclose all available information. Nowadays, the concept of promotion and attracting business through advertising has gone too far, sometime beyond the limitation of syariah injunctions. Therefore, the syariah experts have constructed guidelines in advertising as follows:

1) Muslim advertisers must have good intention such as to disclose to customers of their products and services or to give information about the things that people might need to know before making decision to buy and people can appreciate after doing a purchasing.

2) Muslim advertisers must always be honest in advertising in order to avoid over-praise or exaggerating a product or service on consumer part. In this connection, the Prophet Mohammad (PBUH) said, "Try not to praise product to one another" (Al – Tirmidzi, no 1268). In other words, sellers or advertisers must reveal the reality of their products or services.

3) Muslim advertisers must not cheat or deceive in advertising – such as to conceal its fault, praise terms and features that the real subject matters do not possess. In this connection, Prophet Mohammad (PBUH) once passed by a heap of corn and when he pushed his hand into it, he felt some moisture. Then he asked the grain dealer that "Oh! Grain dealer! What is this?" The dealer said, Oh Messenger of Allah! This grain has been drenched with rain." The Prophet said, "Why it was not exposed on top so that people might see it? One who cheats (ghassh) is not one of us.

4) Muslim Sellers, through advertising, should not condemn or belittle other's products or services in which can cause harm to others. Islam wants to avoid harm and preserve the full justice and complete security of individual and social interest. In this respect, Allah Al-mighty had said in Al-Quraan "And do not eat up your property among yourself for vanities.

5) Advertising should not go against the Shariah principles. It should not contain unlawful manner or prohibited things.

6) The advertising itself must not lead to extravagant. Spendthrift and wasteful is forbidden in Islam as it is an act of evil (syaitan).

7) In addition, Shariah experts suggest that the cost of advertising should not be too high in order to avoid the burden of bearing cost by the final consumers. This is an act of Zulm. It is unlawful manner as Allah said in Al-Quran (28: 37) "The wrong does will not prosper". Thus, advertising should concisely and clearly describe the product without going beyond the limit which will cause the price to rise.

In this study, I concentrated on informative and persuasive advertising. The former refers to objective fact as well as subjective impression – information that is supplied to consumer with the real characteristics of the goods, quality and price of the product or the location and services of the dealer. Informative advertising is good and favorable in Islam because it is helped to disseminate true information to consumer and easy for them to make proper selection, at the same time it encourages producer to maintain the quality standard since advertising can project image of branded goods. Whereas the persuasive advertising refers to the manner that seller gives the information or supplies the goods to the consumers with self-serving claims about the products it is very difficult verify. The negative effect of this advertising is that it could change the consumption trend in which consumer can make unfavorable comparison and thus buy the goods which is less than utility maximization. It, moreover, can lead to market imperfection since it increases the barrier to entry. This type of advertising, based on Islam, could categorize as false advertising.

False advertising, based on Islamic principle, is strictly prohibited because it distorts the natural choice of the consumers and leads them to buy the goods that they do not need in which can cause wasteful and extravagance and encourages spendthrift manner. In this connection, Al-mighty Allah explicitly said in Al-quran, "…but squander not (your wealth) in the manner of a spendthrift. Verily spendthrifts are brothers of the evil ones. (Quran 17:26-27).

The second cause of prohibition is that false advertising leads to market imperfection and thus creates barrier to entry, concentration of economic power, abuses and distortion of resources and substantially lessen a workable degree of competition in the economy. This is synchronized with section I and II of the Sherman Antitrust Act passed in 1890 of Antitrust Law of United States.

In Islam, the entire spirits of economic enterprise consist of a sincere devotion to the two values of justice and benevolence. The essence of entrepreneurial behavior in Islamic society lies in aiming at satisfactory profit, social service and cooperative attitude. Satisfactory profit lies between upper and lower limit set by the Islamic spirit, which satisfies the entrepreneur sense of goodness as well as his urge to earn money, maintain and develop his enterprise.

Based on the above explanations, we can understand that in Islam persuasive advertising is prohibited since it involves the unethical aspects and thus Islam only allows informative and educative advertising.

VI.   Recommendations and Suggestions

Several important issues need to be discussed for future research from this study. Firstly, more variable should be included in the equation in order to obtain higher value of. Secondly, there are many other variables that explain profit rates e.g., market concentration, absolute cost and capital advantage and economy of scale

Thirdly, Talser (1964) suggested that advertising outlays per potential customer is a better measure of advertising intensity as compared to advertising outlays per dollar of sales. There are stages for the product that is advertised. A newly released product needs heavy advertising because

customers are uninformed, after the product is stable and advertising is repeated just to remind the old customers and inform new customers. When a product reaches a steady stage, its advertising sales ratio declines.

Finally, Bolch (1974) argued that one must be very careful in interpreting the results of regression of the profit rates because advertising intensity is a proxy for errors in measuring profit rates from the advertising expenditure and not a proxy for the degree of product differentiation.

VII.   Conclusion.

The result of this study is favorably obtained through the multiple regression in which led to major findings. The findings shown that the profit rate is positively related to the advertising to sale ratio, as expected. Every variable results are statistically significant because the study is based on the firm's data rather than industry's data. The finding results are strongly supported the hypothesis namely product differentiation through advertising gives advantage to the incumbent firm and disadvantage to the new entrance. In other word, the expectation in this study that advertising acts as barrier to entry for the incumbent firm is hold. However, this study also provided the proper guidelines based on Islamic perspective for the advertiser to follow in order to maintain the health of social welfare in every industrial economic activity.

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