

CORVINUS UNIVERSITY OF BUDAPEST
DOCTORAL SCHOOL OF LANDSCAPE ARCHITECTURE AND
LANDSCAPE ECOLOGY



THESIS OF DOCTORAL (PhD) DISSERTATION
MEASURING MARKETING COMMUNICATION AND ITS
FINANCIAL EFFECTIVENESS AMONG HUNGARIAN
WINERIES

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1. INTRODUCTION AND RESEARCH OBJECTIVES

The main objective of my research is the effectiveness of marketing communication and the associated financial costs in the Hungarian wine sector.

The operators in the wine sector rationalize and choose a marketing communication channel correlates to their income and scale. There are many players in the domestic wine industry and small and medium-sized businesses dominate. During rationalization of expenditure small family farm businesses are trying to find the advertising opportunities which ensure the maximum efficiency in addition to the minimum expenditure for their business. If we do not take into consideration the opportunity cost, the cheapest means of communication are Internet marketing, event promotion, personal selling through the wine dinners and wine tasting and the local sales, collective marketing programs and newspaper advertisements. My topic was strengthened by the fact that the Hungarian wine industry is fragmented and wine businesses face many competitors. Due to the high degree of competition in the market none of the wineries increase marketing expenses significantly to impair the its effectiveness. The integration of marketing spending in prices is limited due to the competition in that market. External factors and market fragmentation directed the producers and traders in the Hungarian wine industry towards the low-cost but effective marketing communication, which further increased the relevance of the topic.

In my primary research using questionnaire survey I examined if the Hungarian wine sector operates a measuring system for the effectiveness of marketing communication and I was looking for a group of factors of marketing

communications tools. In my dissertation I wish to examine the impact of marketing communication expenditures on entrepreneurial profit. The sample of questionnaire survey contained 200 Hungarian wineries, the sampling was stratified sampling.

The compilation aspect of questionnaire was to assess the economic aspect of wineries operating in Hungary concerning the forms of business and terms of volume. My research goal was to gain information about the marketing communication tools of the Hungarian wineries, and how often these tools are applied to retain or to win customers. According to the main theme of my thesis the questionnaire analyzed what financial methods are used to examine the return on investment of marketing communications among the responding wineries. In addition to the investigation of corporate marketing structure I asked whether controlling system is used to track their income and expenses. I collected information collected to what extent the marketing communication is considered important in terms of business results by wineries surveyed.

Using the results of the questionnaire survey I analyzed the marketing activity and its effect on revenue of three Hungarian wineries taking into account the financial and accounting data. In the field of marketing communication I analyzed through at least five economic years how the revenue, the balance sheet and profit and loss statement changed. Concerning the marketing communication activities I analyzed the number of types of marketing communication tools and the related costs. Between the examined marketing expenditures and the profit, annual report of the company (balance sheet, income statement) regression and correlation analyzes were performed based on data from accounting statements made available to me by the wineries. Based

on the calculation formula of three different regression trend lines I intended to provide a common trend line that defines the approximate nature of the relationship between marketing communication and sales. Using the trend line the relationship between marketing communication expenditure and revenue can be expressed, and I intended to prove the existence of the optimum point assumed by Scolansky and Simberova at which a given marketing communication expenditure ensures the maximum revenue.

2. MATERIAL AND METHOD

2.1. The range of primary survey research

In my thesis I examined the financial effectiveness of marketing communication through quantitative research activity. The research methods and the statistical analysis have allowed to get new conclusions to examine the hypotheses. The dissertation is unique in that the wine industry is examined on the financial and marketing approach. In addition to data collection by questionnaire the research was carried out by examining marketing and financial data of three Hungarian wineries. The wineries requested anonymity, so I refer to them as "A" and "B" and "C" in my thesis.

2.2. Circumstances and method of the survey

The questionnaire data collection was in consideration of the 100 largest companies in Hungarian wine industry, in which 200 questionnaires were sent. Both on the questionnaire and the collection of detailed financial analysis that examined the wineries I tried to preserve representativeness. I received accounting data for the period between 2003 and 2011 for the winery "A". The winery operates as ltd. and it is a small-and medium-sized enterprise. The winery "A" formed in 1996 and does grape cultivation activities on nearly 60 hectares. The average number of employees was 42 people. The winery "B" supported me with costs related to marketing communication and types of marketing communication back to 2005. The company continues its economic activity in ltd. form. The winery "B" was founded in 2003 and carried out 40 hectares of grape cultivation activities. The average number of employees was

30 people. The winery "C" operates on 12 hectares and the average number of employees was 7 people.

2.3. Major topics covered by the survey

In case of these three wineries mentioned above I examine the net sales and expenses related to marketing communication. By stochastic analysis I wanted to prove the existence of optimum point in case of all three wineries that Scolansky Simberova assumed. In addition the study will examine the partial correlation coefficient, which measures what kind of correlation between marketing spending and each line of the report of wineries operating in ltd. form can be found. I wish to measure directly the impact on the financial result of marketing expenses at the "A", "B" and "C" wineries, including ROI assessment.

2.4. The methods of measurement

During the processing of questionnaires factor, correlation, and regression analysis were used. Before the factor analysis I examined the multicollinearity between the variables and I tested the existence of correlation by correlation matrix, before performing the research I calculated Kaiser-Meyer-Olkin index, Bartlett's test was performed by Anti-Image Matrix, which demonstrated that the factor analysis can be performed or not. Using the questions in the survey I do variance analysis (ANOVA) within which I checked the relationship between the standard deviation of tested samples. During the test I tried to find an answer to what trend-like connection exists between marketing communication and measurement of financial effectiveness of marketing communication, I examined the relationship with the help of correlation matrix.

2.5. The data collection and processing method

The detailed analysis was carried out with retrospective, cross-sectional research, while the questionnaire type of research was prospective and cross-sectional. The processing of questionnaires has occurred by using MS Excel and SPSS 16.0 software. In case of responses from the questionnaire after the decimal encoding I examined the occurrence and distribution of individual replies by absolute and relative frequency and statistical situation indicators (modus, median, standard deviation, quartiles).

2.6. The statistical methods used, justification of selecting the specific method

I organized a separate table for each marketing communication elements and the related marketing expenses related to measure their marketing activity.

In addition to the marketing communication sales and turnover data also were picked from the studied companies. By the quarterly data aggregation marketing communication frequency and intensity is comparable to the lines of balance sheet and income statement in financial report. By comparing the correlation between the frequency of marketing communication and the balance sheet I analyzed the effect on assets and liabilities. The studies were performed at the three wineries in parallel. With the help of regression functions for the three wineries a common trend line can be formed, which expresses how the frequency of marketing communication and marketing expenditure contributes to the financial success of the enterprise.

3. RESULTS

3.1. The statistical results of the questionnaire survey

Meanwhile the questionnaire collection 102 from the 200 questionnaires were evaluated. During the questionnaires transmission attention was paid to the fact that all wine regions would be reached.

In my dissertation with the help of quantitative questionnaire survey I examined what kind of marketing communication tools were used by the respondent wineries in their economic activity. It was assumed that the respondent wineries had limited used marketing communication tools as TV and radio, which was explained by the high investment needs. The assumption was proved because only 10.8% of businesses participating in the questionnaire survey used TV / radio advertising communication tools. Advertising in the form of flyers was more popular among Hungarian wine businesses which can be explained by low cost investment. 20.6% of wineries surveyed used printed advertising technique. 13.7% of the businesses surveyed used newspapers as a marketing communication tool. In Hungarian wine sector personal sales is outstanding, which is usually combined with wine tasting. 88.2% of the wineries surveyed used personal selling practices that provide opportunities to communicate and build up trust between the producer and the consumer. The questionnaire survey found that 39.2% of the surveyed wineries used sales promotion as marketing communication tool. The quantitative survey found that 87.3% of the respondents used internet in their marketing communication practice. 49% of the wineries surveyed supported a variety of programs, community events.

I studied how much money the surveyed wineries spend on marketing activities in a month on average. 74.5% of winemakers participated in survey, 76 wineries, said that they spend on marketing 0 – 50 000 HUF on average.

How much is spent on marketing activities on average a month?

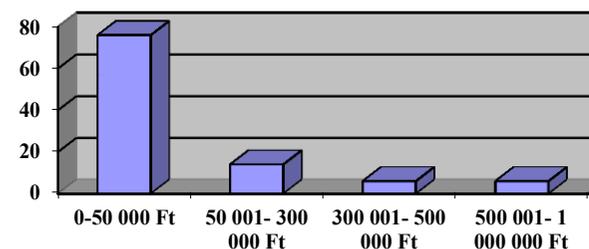


Figure 1. Marketing expenditures of the interviewed wineries in an average month

Source: Own construction based on data obtained from the questionnaire survey

The main topic of my thesis was to examine the financial return on marketing communication. I asked before the alternative response options in the questionnaire whether the companies measure or not the financial return on marketing investment.

Table 1. Distribution methods of marketing investment used by participants in the survey

Methods	Absolute frequency	Relative frequency
Sales	29	28 %
ROMI	0	0%
Total income	26	25%
Profit changes	9	9%
Change in stocks	8	8%
Operating profit	0	0%
Other	0	0%

Source: Own construction based on data obtained from the questionnaire survey

The survey reveals that 28% of the surveyed wineries used traffic tracking method. The second most popular testing method was revenue tracking, which represents the realized profit monitoring. In most cases I measured moderate stochastic relationship between sales and tracking of income as applied method, the partial correlation coefficient was 0.629.

In my dissertation I tried to find an answer to what extent the marketing communication can influence the degree of business efficiency according to the subjective judgment of the entrepreneur. On the basis of the data it is concluded that the wineries in the sample do not consider the marketing communication as the most important, but the majority acknowledges that the money spent on marketing communication affects the outcome of the business.

Rate on a six-point scale how marketing communication is able to influence the degree of business efficiency

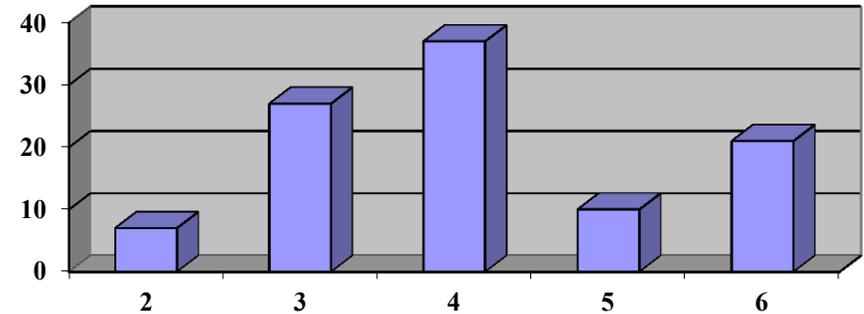


Figure 2. Impact of marketing communication on the profitability of the business

Source: Own construction based on data obtained from the questionnaire survey

3.2. Merging the marketing communication means with factor analysis

In the rest of my dissertation I examined data obtained from the questionnaire with factor and variance analysis in order to verify my hypotheses. With the help of the Anti-Image matrix and the Bartlett's test and KMO value and the correlation matrix I examined the applicability of factor analysis, which confirmed the validity of the application of the method.

The variance of the first factor (principal component) explains 24.135% of the total variance. If we add the explanatory variance values, we cover 60% of the

variance by using four factors. The variance method suggests the use of four factors in the factor analysis. In case of three factors this value is 55.985 that approximates the 60% rule.

Table 2. Rotated component matrix

	Components		
	1	2	3
6.1 Tv/ Radio ads	,715	,180	-,108
6.2 Flyers	,858	-,044	,127
6.3 Newspaper ads	,799	-,095	,063
6.4 Personal selling (wine tasting)	-,032	-,122	,670
6.5 Sales promotion	,099	,053	,695
6.6 Internet	-,042	,750	,297
6.7 Event support	,132	,626	-,245
6.8 Other	,044	-,654	,087

Source: Own construction based on data obtained from the questionnaire survey

The table shows that marketing communication tools used by wineries in the study can be divided into three groups of factors. In the first factor group TV / radio ads and flyers, as well as a combination of newspaper ads can be combined, as the main properties of those who prefer media. The second factor group prefers the Internet and event support in addition to other tools such as marketing communication tool (PR group communicates on the Internet). The third factor prefers personal sales (wine tasting) and sales promotion (tasting group).

3.3. Cluster analysis of marketing communication tools

I checked whether the surveyed wineries can be arranged to groups on the basis of factor analysis along the assumed properties.

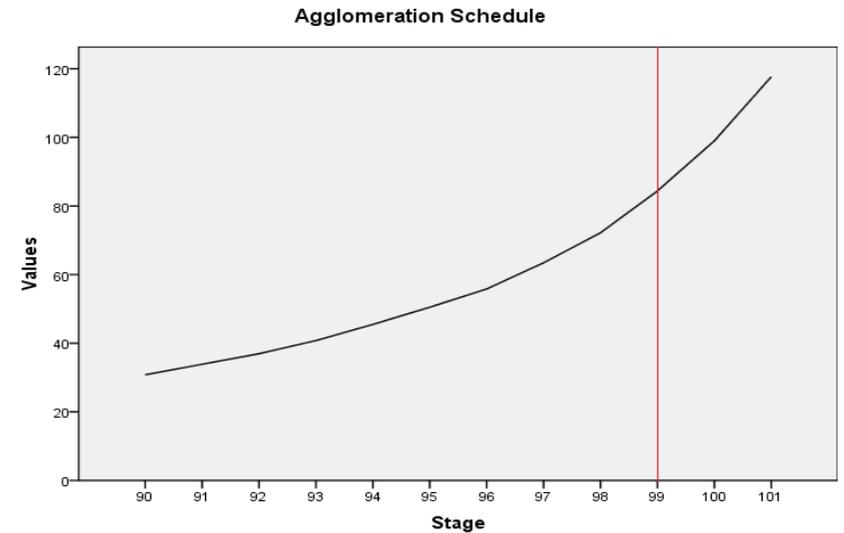


Figure 3. Representation of the coefficients depending on the merging steps

Source: Own construction based on data obtained from the questionnaire survey

In my dissertation I chose the hierarchical cluster analysis, in which I preferred the Ward method. A consolidated aggregate increase of cluster coefficients was graphically depicted.

In the figure, the horizontal axis indicates the sequence number of the merge steps. It can be observed that higher refractive is located which can be used as an elbow criterion. After 99. merging the cluster coefficient value rises sharply,

so the cluster analysis confirms the existence of allged three groups based on the factor analysis.

3.4. ANOVA analysis between marketing communication and the effectiveness of the company

In my dissertation I studied with analysis of variance (ANOVA) what extant marketing communication can influence the business efficiency according to the wineries interviewed by the survey.

In my dissertation it was a research question that those wineries participating in quastionnaire survey attach more importance to the impact of marketing communication on business results, probably examine the financial return on marketing investment to a greater extent. The two questions were compared by analysis of variance at 5% significance level. Analysis of variance as a hypothesis testing requires to know the specific problem and the null and alternative hypotheses.

H0 (null-hypotesis): those wineries participating in quastionnaire survey attach more importance to the impact of marketing communication on business results, probably examine the financial return on marketing investment not to a greater extent.

H1 (alternative-hypotesis): those wineries participating in quastionnaire survey attach more importance to the impact of marketing communication on business results, probably examine the financial return on marketing investment to a greater extent.

Table 3. ANOVA analysis between the usefulness of marketing communication and the frequency of measuring methods

	Sum of Squares	df	MS	F.	Sig.
Between groups	4,909	4	1,227	1,080	,371
Within groups	110,268	97	1,137		
Total	115,176	101			

Source: Own construction based on data obtained from the questionnaire survey

The table shows (Sig. ($p > 0.05$)) that there is no significant difference between the group averages of dependent and independent variable group, so the hypothesis H0 will be accepted. The result can be explained by the fact that only 33% of the wineries surveyed measures the financial return on marketing communication.

H0 (null-hypotesis): those wineries participating in quastionnaire survey have more revenue, do not examine the financial return on marketing investment to a greater extent.

H1 (alternative-hypotesis): those wineries participating in quastionnaire survey have more revenue, examine the financial return on marketing investment to a greater extent.

After performing the ANOVA analysis it was revealed that the independent variable, the revenue did not have a significant effect on the number of method examining financial return on marketing communication ($p > 0.05$), so the hypothesis H0 was accepted.

Table 4. ANOVA analysis between the annual revenue and methods measuring the financial return of marketing communication

	Sum of Squares	df	MS	F.	Sig.
Between groups	5,886	5	1,177	1,028	,406
Within groups	108,788	95	1,145		
Total	114,673	100			

Source: Own construction based on data obtained from the questionnaire survey

To examine the reason I created a line chart which represents the relationship between sales and the average number of methods analyses the return on marketing communication investment. From the tendency of line the chart we can conclude on basis of the sample when the revenue increases, the number of these methods appears to increase, but the upward trend is broken between 30 and 70 million HUF turnover.

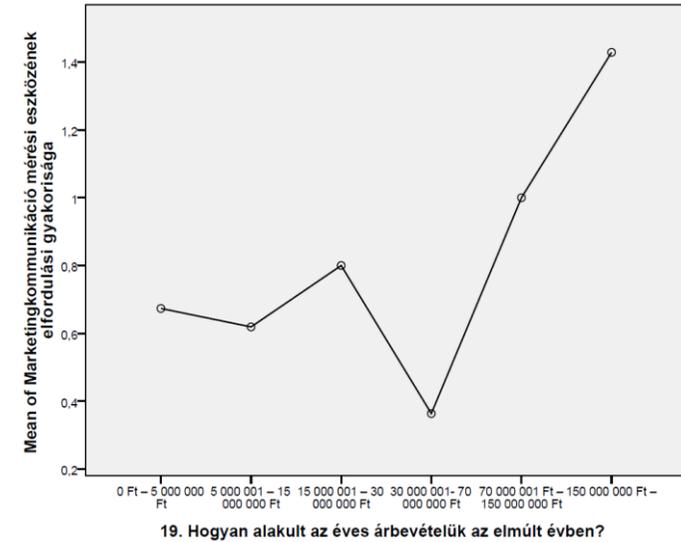


Figure 4. Examining the relationship between the annual revenue and the number of tools measuring the financial return on marketing communication

Source: Own construction based on data obtained from the questionnaire survey

H0 (null-hypotesis): those wineries participating in questionnaire survey attach more importance to the impact of marketing communication on business results, do not use more marketing communication tools to win and retain the customers. **H1 (alternative-hypotesis):** those wineries participating in questionnaire survey attach more importance to the impact of marketing communication on business results, use more marketing communication tools to win and retain the customers.

Table 5. ANOVA analysis between the effect of marketing communication on effectiveness and the number of marketing communication tools

	Sum of Squares	df	MS	F.	Sig.
Between groups	8,687	4	2,172	1,321	,268
Within groups	159,480	97	1,644		
Total	168,167	101			

Source: Own construction based on data obtained from the questionnaire survey

After the analysis of variance it was revealed that the independent variable, the impact of marketing communication on the effectiveness, has no significant effect on increase of the number of marketing communication tools of the wineries perspective. Because $p > 0.05$, the H_0 hypothesis was accepted.

H0 (null-hypotesis): those wineries participating in quastionnaire survey that have spent more on marketing activities, not have a higher frequency of marketing communication.

H1 (alternative-hypotesis): those wineries participating in quastionnaire survey that have spent more on marketing activities, have a higher frequency of marketing communication.

Table 6. ANOVA analysis between the monthly marketing expenses and the number of marketing communication tools

	Sum of Squares	df	MS	F.	Sig.
Between groups	24,237	3	8,079	5,501	,002
Within groups	143,929	98	1,469		
Total	168,167	101			

Source: Own construction based on data obtained from the questionnaire survey

The analysis of variance indicated the two most significant difference between the examined variable ($p \leq 0.05$), so we can conclude that the independent variable, the marketing expenditures affect the number of marketing communication tools used in the test sample. According to the data, H_1 hypothesis was accepted.

H0 (null-hypotesis): those wineries participating in quastionnaire survey attach more importance to the impact of marketing communication on business results, do not have higher marketing activity.

H1 (alternative-hypotesis): those wineries participating in quastionnaire survey attach more importance to the impact of marketing communication on business results, have higher marketing activity.

After performing the ANOVA ($p \leq 0.05$) it was found that there is significant difference between the mean of the examined variables, so the H_1 hypothesis is adopted against the H_0 hypothesis.

Table 7. ANOVA analysis between the effect of marketing communication on profit and the marketing activity

	Sum of Squares	df	MS	F.	Sig.
Between groups	496,170	4	124,043	2,417	,054
Within groups	4824,557	94	51,325		
Total	5320,727	98			

Source: Own construction based on data obtained from the questionnaire survey

3.5. Financial analysis of three Hungarian wineries

In addition to the questionnaire survey, I examined with financial analysis of three wineries the effect of the marketing communication on business profit or loss. The winery gave me sales, marketing communication and the related cost data with the accounting report.

In my thesis I wanted to examine the impact of the spending on marketing communication on the accounts of wineries. The rows of balance sheet and the profit and loss statement were compared to the values of marketing communication expenditures by partial correlations. With the statistical analysis I wanted to cast a light on those rows of the balance sheet and income statement on which the marketing expenditures have an impact. Examining the deficit and the assets there is a moderate stochastic relationship between the annual marketing expenditures. In case of the income statement the marketing expenditure had a stronger impact, which can be explained by the fact that in the

short term the income statement is more sensitive to the investments due to the cash outflow.

In case of the income statement the correlation coefficient was 0.6767 between the annual marketing expenditures and annual net sales for the "A" winery, which indicates a strong trend of a relationship.

3.6. Optimum point assumed by Scolansky and Simberova

In my dissertation I examined with polynomial trendline the optimum point between net sales and marketing expenditure assumed by Scolansky, Simberova at three wineries. At all three wineries I managed to find a concave equation with maximum point, which represented the maximum point that was alleged by Scolansky and Simberova.

The figure shows that the slope of the trend line reaches its maximum over 2,300,000 HUF marketing expenditure and the second-degree polynomial trend line does not show an increase in net sales revenue.

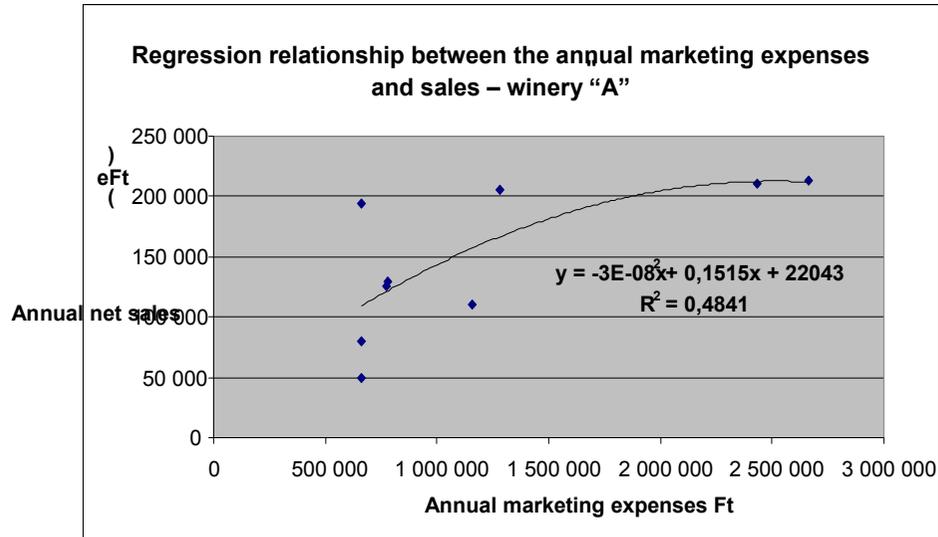


Figure 5. Optimum point between net sales and marketing expenses supposed by Scolansky and Simberova

Source: Based on data from the report of the winery

In respect of the winery "B" I made a regression analysis between marketing expenditure and annual net income with the second-degree polynomial function, and as in case of winery "A" the measurement resulted in a concave shape of the mathematical function.

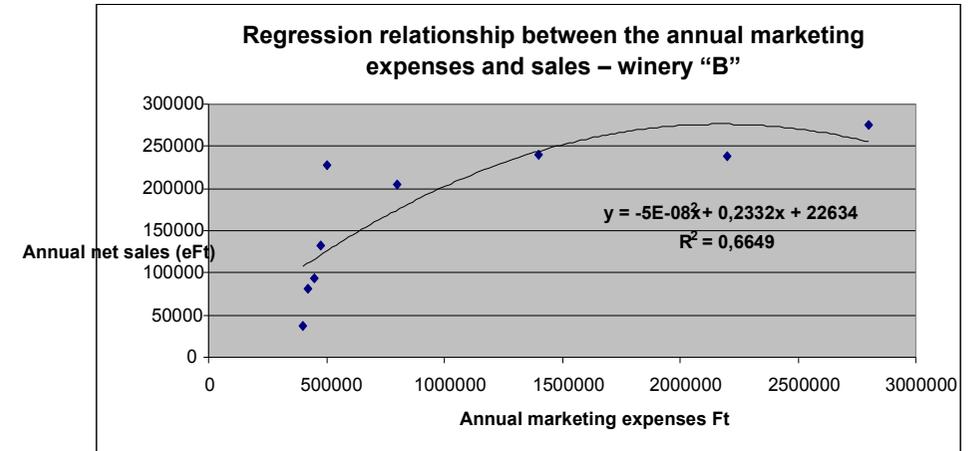


Figure 6. Optimum point between net sales and marketing expenses supposed by Scolansky and Simberova

Source: Based on data from the report of the winery

4. NEW SCIENTIFIC RESULTS, CONCLUSIONS

In my research I was wondering with what kind of methods and how the Hungarian wine sector measured the financial return on marketing communication. Those Hungarian wineries which filled the questionnaire were from 22 wine regions, thus ensuring that the surveyed wineries authentically represent the Hungarian market. In the questionnaire survey I took care beside the stratified sampling that there should be at least 50% of the corporations in the test sample. The questionnaire survey found that the majority of the wineries in the sample were founded after the change of economic and political system. The average number of employees was 10.18 and an average of 10 types of wines were produced by the wineries in the test sample. The interviewed wineries farmed on an average of 19 hectares and marketing expenses accounted for 2.44% of total expenditures. 49% of the surveyed firms operate as private enterprise. 51% of the sample are joint venture. In case of the interviewed sample the supreme leader has over the marketing expenses and the marketing strategy of the firm. 95.1% of the examined wineries do not use controlling method to follow up the costs and revenues. The impact of marketing communication on profit is important for 69.6% of the surveyed enterprises, but the majority of the surveyed wineries do not examine the return on investment of marketing communication. 3.2 out of 10 examined the return on investment of marketing communication, and among the methods used monitoring traffic and revenues were the most popular methods of analysis.

Based on the questionnaires we can say that in respect of the marketing communication tools the use of less expensive methods of marketing communication is more common in the test sample (wine tastings, Internet,

promotion events). I examined within the framework of factor analysis based on the sample what type of marketing communication tools combined are used among the Hungarian wineries. I wanted to determine the type of tools used in marketing communications as factor groups. After the factor rotation (Varimax method) three factors were found in the test sample. Wineries in the first factor-group use the combination of TV / radio ads and flyers, newspaper ads (media preferring group). The second factor group prefers the Internet and event promotion, as a marketing communication tools (PR group communicates on Internet). The third factor group prefers personal sales team (wine tasting) and sales promotion (tasting group).

In addition to a comprehensive analysis of the Hungarian wine industry I examined the impact of marketing communication expenditures on the income, the lines of the balance sheet and income statement with detailed financial and marketing analysis of three wineries ("A", "B" winery "C"). I was able to compare the lines of report to the marketing communication expenditures in case of winery „A” and „B”. In both case I measured a moderate correlation between marketing communication expenditure and the value of assets and deficit in the balance sheet.

The analysis of the three wineries allowed me to compare the costs of marketing communication to the revenue with the help of scatter plot and regression function. I could conclude for all three wineries that stochastic positive correlation exists between marketing expenditures and revenue growth because of the positive slope of linear regression line. In their research Scolansky and Simberova assumed an optimal point between marketing spending and revenues, which can be described by a mathematical function. During my

research a second-degree polynomial regression function was used between the marketing communication expenditures and revenues. The second-degree polynomial function resulted in a concave shaped curve for each of the three which had maximum point.

It can be concluded from the measurement data that an overall function for over all Hungarian wineries cannot be done, because the regression relationship is based on historical data and experience. In case of the three different wineries the relationship between marketing communication spending and the revenue was different. The correlation determined only the strength of the relationship with similar results in all three wineries. The rate of change resulted in different parameters for the two variables of the test wineries, so a universal function for the sector cannot be formed, but the method is suited that every winery determines the optimum size of the marketing expenditures based on past sales and marketing communication data. The regression function, as I mentioned, based on correlation of past data, so finding the optimum point can be projected to a given time, which in my opinion should be determined each year in order to increase the financial efficiency of marketing communication.

In my thesis the results of the hypotheses tested were as follows:

H1: those wineries participating in questionnaire survey attach more importance to the impact of marketing communication on business results, probably examine the financial return on marketing investment to a greater extent. The hypothesis was rejected.

H2: those wineries participating in questionnaire survey have more revenue, examine the financial return on marketing investment to a greater extent. The hypothesis was rejected.

H3: those wineries participating in questionnaire survey attach more importance to the impact of marketing communication on business results, use more marketing communication tools to win and retain the customers. The hypothesis was rejected.

H4: the marketing communication tools, as features, can be divided into groups of factors. The hypothesis was accepted.

H5: those surveyed wineries that have been spent more on marketing activities, used more marketing communication tools to win and retain the customers. The hypothesis was accepted.

H6: those wineries participating in questionnaire survey have attached more importance to the impact of marketing communication on business results, had higher marketing activity. The hypothesis was accepted.

H7: in case of wineries analyzed with financial and accounting data, including sales and marketing communication, an optimal point can be found, which ensures the highest possible revenue for the business. The hypothesis was accepted.

5. RELATED PUBLICATIONS

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