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Market orientation and corporate performance in the health industry

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Abstract. *This study examines the market orientation and corporate performance of domestic enterprises in the health industry. The aim of the study is to explore the existence and the nature of the connection between market orientation adapted by SMEs in the domestic health industry and the subjective, perceived success, and competitiveness of these businesses. Market orientation was measured by the internationally standardised MKTOR scale. Corporate performance was tested by means of a scale based on subjective perception, during which the relative weight of particular performance categories for the enterprise was taken into consideration. With regard to corporate performance, two categories were examined: competitiveness and effectiveness. The basis for the primary research was provided by personal interviews, including 251 items, conducted with marketing specialists (for lack of them, general managers) of businesses in the health industry. Data collection was carried out in 2018 in collaboration with a market research company. The connection between market orientation and corporate performance was assessed using linear correlation and regression analysis. The results of our primary research revealed a positive, medium-strong relationship between market orientation and corporate performance. With a more detailed examination of the dimensions of market orientation, customer orientation, and competitor orientation were found to significantly explain competitiveness and effectiveness. It has been shown that with the increase in rival spirit, the market orientation of companies accounts for the dispersion of competitiveness to an increasingly lesser extent. This means that, for some businesses with good capacity to compete, the propensity to compete is obviously the result of market orientation. All the while, as regards the rest of those businesses, other factors may play an important role (such as social capital, production structure, and strategy). Their precise result is that these companies are not 'forced' in the market to adapt the market orientation. Since the increase in market orientation leads to better corporate performance, companies should lay more emphasis on the improvement of their market orientation, especially in the cases when other factors of competitive ability are not possible for the company to acquire or the costs are too high.*

Keywords: market orientation, MKTOR scale, corporate performance, health industry, SME.

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Introduction

Market orientation is a popular notion in economics, business administration, and management disciplines. It also appears in the fields of management, corporate theories, and marketing; however, it is primarily the latter field which deals with it extensively (Gyulavári et al., 2011). Its significance is reflected in the fact that in the 1980s the Marketing Science Institute placed a high priority on defining the notion, on exploring the fields it involves, and on developing a device with which to measure it (Desphandé and Farley, 2004).

The coordination mechanism generally prevailing in market economies is provided by the market; thus, it is crucial for it to be effectively linked to the company, the entity directly related to it (Berács, 2002). The question arises as to what directives should control company operations in a dynamically changing environment. In the early 1990s, Kohli and Jaworski (1990) expressed their views that theoretically founded guidelines can only be implemented to a limited extent. From among the answers to the dilemma which emerged, the authors stressed the implementation of the marketing concept and the strengthening of its practical aspects. In this sense, market orientation is the practical implementation of the marketing concept, and there is a consensus around this view among researchers in the field (Berács, 2002; Kohli and Jaworski, 1990; Narver and Slater, 1990). The two most common approaches to market orientation used today were established in the early 1990s, and both the market and changes in enterprise management have created the need to update these perspectives.

According to Kotler and Keller (2012), the majority of enterprises today increasingly operate in accordance with the holistic marketing concept, that is, in addition to making long-term profits, they also focus on meeting customer needs, supplementing all this with performance, internal, integrated, and relationship marketing. These companies rely on developing programmes, processes, and activities that pay attention to the significance of each task and to the interdependence of these tasks.

The present study examines the market orientation and corporate performance of domestic enterprises in the health industry. The objective of the study is to explore the existence and the nature of the relationship between the market orientation adapted by the enterprises and the subjective, perceived effectiveness, and competitiveness of the enterprises. The following hypotheses were established:

H1: In accordance with the original model, the dimensions of market orientation appear separately in Hungarian SMEs in the health industry.

Explanation: In the case of a latent variable model, it may be a problem that in empirical studies the measurement variables of the model (the scales) are not arranged in the presupposed structure (Bareith et al., 2013). In this regard, the hypothesis states that the measurement variables are arranged according to the latent variables, i.e., the exploratory factor analysis returns the previously assumed model structure.

H2: A positive relationship can be detected between the corporate performance dimensions examined and the factors of market orientation.

Explanation: A number of literature sources discuss the relationship between market orientation and corporate performance (Appendix 1). In this study, we seek to gain a deeper understanding of this by exploring which dimensions of market orientation contribute to improving the performance of a company. We examine the impact of each dimension of market orientation on corporate performance without assuming a multivariate causal relationship.

H3: Effectiveness and competitiveness can be explained by a linear model using the dimensions of market orientation.

Explanation: In the case of this hypothesis, we assume a causal relationship between the dimensions of market orientation and corporate performance categories, and we attempt to determine the nature of this relationship using a multivariate model.

The interpretation of the health industry in this research was determined according to Szántó (2008). The health economy can be divided into two main parts, which are the following: the health industry and the health market. In addition, the health market includes the traditional health markets (hospitals, pharmacy, etc.) and those markets that have a positive impact on health (wellness, fitness, spa, etc.). The term 'health industry' is a collective term. Thus, the health industry is an economic sector that provides goods and services for treatment, prevention, and rehabilitation and for the improvement of the quality of life, as well as educational, research, and communication activities that promote the development and application of these products. According to the multilateral model of the health market, the health industry includes those enterprises whose main field of activity includes the following: traditional medicine, alternative medicine, pharmaceutical production, medical aid production, wellness, fitness, spas, food production, and herbarium and dietary supplement production (Szántó, 2008).

Literature review

Approaches to market orientation

In one of his articles in 1988, Shapiro approached market orientation from the perspective of the method and process of corporate decision-making, whereby information important for the organisation must go through all the functional areas in the course of decision-making, which improves the commitment to the decisions made. In this way, the information necessary for decision-making can become clearer and supplemented in the process (Shapiro, 1988).

According to research carried out by Desphandé, Farley, and Webster, market orientation is largely influenced by corporate culture, and is defined by them as a kind of customer orientation as opposed to a competitor orientation. This attitude represents the customer approach, emphasizing the need to bring the meeting of customer demands into the focus of the firm (Desphandé et al., 1993).

In addition to the customer approach, there also exists a so-called strategic approach, which is described by Ruekert as a way of putting information collected about customers into a strategic context. In his view, obtaining information is necessary in order to effectively allocate corporate objectives and resources in such a way that the information collected is directly influenced by the capacity of the organisation to access information (Ruekert, 1992).

Hunt and Morgan stress the three key factors of market orientation, which are the following: regular and deliberate collection of information about customers and competitors; collection and analysis of information carried out in order to acquire usable knowledge about the market, which may manifest itself as competitive advantage; incorporating knowledge gained in the process of strategy development (Hunt and Morgan, 1995).

Prior to the above articles, two studies had been published in 1990 (by two different pairs of authors), which in terms of their impact can be considered the greatest contributions to the beginnings of the conceptual basis for market orientation and to the development of a methodology that helps determine the degree to which market orientation has adapted

(Kontor, 2014a). The market information approach developed by Kohli and Jaworski is perhaps closer to the strategic approach, and its essence is that organisations collect and spread vital information to them so that each functional unit can effectively cooperate (Polereczki, 2011). They specified the following three key elements of market orientation:

1. The allocation of market information on an organisational level based on customer needs (intelligence generation).

2.The dissemination of information gained among institutional units (intelligence dissemination).

3. The sensitivity of the organisation to information (responsiveness) (Kohli and Jaworski, 1990).

The so-called culture-based approach can be attributed to the other pair of authors, Narver and Slater. They focused their research on sustainable competitive advantage and a strong corporate culture. According to their definition, market orientation is a corporate culture capable of inducing behaviour in a most effective and successful way which produces outstanding customer value thus contributing to higher business performance. Three behavioural variables were specified, the existence of which proved the market orientation. These are the following: consumer orientation, competitor orientation, and coordination among corporate units. The first two factors involve acquiring market information and bringing the customer and competition to the focal point of the organization, and also involve the circulation of the collected data to the different units of the organisation, while the third factor represents decisions based on the information gained and the coordination mechanism of the organisation. Furthermore, the authors laid down two conditions for attaining market orientation; the organisation must operate keeping its long-term goals in view and seeking to achieve long-term profitability (Narver and Slater, 1990).

Market orientation is defined by Bauer, Berács and Kenesei based on the approach of Narver and Slater as '… the establishment of customer and competitor intelligence on the corporate level, the diffusion of intelligence to the various parts of the institution and corporate receptivity to it' (Bauer et al., 2014:413).

Overall, there are several approaches to market orientation. In general, two perspectives can be identified, namely the cultural perspective, based on the approach of Kohli and Jaworski, and the behavioural one, founded by Narver and Slater. The behavioural perspective is more focused on action and activities that assist in finding out how an organisation acquires information and how it handles the information received. On the contrary, the cultural approach emphasizes the particular components of corporate culture, such as its standards, values, and attitudes (Becker and Homburg, 1999).

Another study identified five approaches, based on which research can be classified into at least one of the following aspects of market orientation: decision-making, strategic, market intelligence, culture-based behavioural, and consumer-oriented aspects (Lafferty and Hult, 2001). In our opinion, the consumer-oriented and market intelligence approaches are closer to the cultural perspective, while the strategic and decision-making approaches tend to represent behavioural perspectives to a much greater extent. The most important models presented above are shown in the table below:

Table 1. Models and areas explaining market orientation

Focusing on culture		**Focusing on a managerial approach**		
Desphande et al.	*Narver, Slater*	*Kohli, Jaworski*	*Shapiro*	*Ruekert*
Customer orientation	Customer orientation	Collection of information	Providing information for corporate functions	Collection of information about customers
	Competitor-orientation	Dissemination of information	Formulating strategy and tactics	Development of customer oriented strategy
	Cooperation among functions	Responsiveness	Decisions	Implementation of strategy

Source: Moll et al., 2007.

Measuring of market orientation

With the theoretical basis of market orientation having been thus defined, it became important to make it measurable. The three most widespread measurement methods, MARKOR, MKTOR and DFW, are introduced below. All three methods consist of so-called Likert scales. Depending on the theoretical basis, the authors determined the dimensions of the scales (such as competitor orientation, customer orientation, cooperation among functions); then variables were included in the dimensions, which represent activities that are possible to measure. These became the indicators of the measurement model, while the dimensions were the latent variables of the model. On this basis, market orientation is a latent variable that is determined by other latent variables (the dimensions). Therefore, models can be considered multi-level, hierarchical correlations: the measured variables or indicators determine the dimensions or latent variables for the existence of market orientation, thus creating market orientation together, which – based on this interrelationship – is also a latent variable. It is a typical feature of the models not to specify the level below which an organisation can or cannot be considered market-oriented. Rather, each scale can be perceived as starting at a '0' market orientation level and moving upward to the end-point of the scales.

For instance, if the level of market orientation were to be determined with summation in the case of the MARKOR scale, the starting point of the scale would be 32 (32*1), (if the respondent answered all the questions), and the end-point would be 160 (32*5), by using a five-point Likert scale.

The MARKOR scale is based on the behavioural approach of Kohli and Jaworski. The scale, originally comprising of 20 factors and later extended to 32 factors, defines market orientation along three dimensions: collection of information, dissemination of information, and responsiveness, which were discussed above in detail (Kohli et al., 1993).

The MKTOR scale is based on the cultural perspective developed by Narver and Slater. However, since cultural factors are difficult to measure objectively, the three dimensions of the scale (competitor orientation, customer orientation, and cooperation among functions) define the degree of market orientation, originally with 15, later extended to 17 behaviour-based variables/indicators (Narver and Slater, 1990; Brettel el al., 2007).

Desphandé, Farley and Webster (1993) developed a scale consisting of nine statements (DFW), which defines the degree of market orientation by measuring customer orientation, corporate culture, and organisational innovation. Later, Desphandé and Farley, having revised their previous results and synthesising the three scales, created a hybrid tool,

MORTN, which still primarily focused on customer orientation and was comprised of ten statements (Desphandé and Farley, 2004).

Endeavours to develop a market oriented mindset

In an empirical study, where all three scales (MARKOR, MKTOR, DFW) were used, Desphandé and Farley (1998) concluded that although the three scales differed considerably from one another in terms of their theoretical basis, they yielded approximately the same results. When they examined the relationship between the scales, the Pearson's correlation coefficients were around 0.6.

Gauzante (1999) examined the vocabulary richness and clarity of the MARKOR and MKTOR scales by semantic content analysis, although the scales he tested had not yet been updated (i.e., containing 20 and 14 elements). He found that both scales met the definition of market orientation created by their founders. Although the terminology of the MARKOR scale was more diversified, the usage of a variety of verb tenses still often made the statements ambiguous. He points out that semantic structures should also be taken into account when carrying out a statistical analysis, since an ambiguous definition could result in misleading findings.

According to the article by González-Benito and González-Benito (2005) about 40% of research in the field of market orientation applies the MARKOR and 35% the MKTOR scale, and only 5% considers both theories at the same time. They came to the conclusion that although the bases of the scales are different, they are not mutually exclusive in their abilities to measure the degree of market orientation, since the two scales measure the same phenomenon with adequate efficiency and similar results, even though they take different aspects into consideration.

Oczkowski and Farrell (1997) conducted reliability and validity studies on both the MARKOR and the MKTOR scales. Their results indicated that, based on the Cronbach alpha, the dimensions of both scales could be regarded as reliable. This, however, was not justified by the CFA analysis and it was found that there was a need to significantly adapt the scales. In their comparative study, MKTOR performed better, both in the case of the original and the adapted models.

The effects of market orientation on the company

The (positive) effect of market orientation on performance can be tested with several performance indicators. However, in the case of the cultural approach, it can be argued that a strong culture constitutes a cohesive force for the organisation and enables the implementation of objectives and activities in a more focused manner (Nagy, 2013); thus, it can definitely be viewed as a guideline or compass for corporate operations.

According to the research by Narver and Slater (1990), market orientation generates behaviour which, based on the experience acquired, will induce the company to react to market changes and to develop strategies and tactics. If done right, they can be a source of long-term competitive advantage when compared to companies with lower market orientation. Kontor (2014b) found positive, weak/moderate connections between market orientation and corporate performance, although the scales used in the research were not the standard, original market orientation ones.

Kohli and Jaworski concluded that market orientation improved the impact of the mission and vision of the company regarding company strategy by means of conferring

selective advantage to the employees and customers of the market-oriented company. Thus, the company acquires long-term competitive advantage as a result of the increase in customer value and employee commitment. The positive effects of market orientation were reflected in a number of performance measuring indicators, but significant connections were found in the following cases: ROI, profit, sales volume, market share, and increased revenue (Kohli and Jaworski, 1990).

Further research studies suggest that high market orientation allows for smoother decision-making processes, which derives from understanding customer needs and the objectives of the competitors, and is reflected in revenue growth (Pelham and Wilson, 1996).

There is a comprehensive overview of the effect of market orientation on performance in the table in *Appendix 1*. The table shows that the examinations either confirmed the 'beneficial' effect of market orientation, or found no significant connections.

The operation of small and medium-sized enterprises differs from that of big companies to some extent in regard to examination of market orientation. The attitudes of the managers of small and medium-sized enterprises have a great impact on the operation, intelligence, and corporate culture of the enterprise (Cagerra-Navaro and Rodrigo-Moya, 2007). These companies cannot perform quality information collection, since they generally do not have marketing professionals and they do not avail themselves of expert services. The dissemination of information – primarily in the case of small enterprises – is often of no significance at all, since the owner is also the decision-maker (Verhees and Muelenberg, 2004).

In a survey conducted among Spanish small and medium-sized enterprises, where 112 companies were analysed with the MARKOR scale, it was demonstrated that the increase in the degree of market orientation improved the performance of the company. They also concluded that the more efficient the marketing system of the company was, the more successful it was in international competition (Armario et al., 2008).

In 2009, a study examining a sample of 88 small American enterprises with the DFW scale proved the positive relationship between market orientation and corporate performance. In addition to the above connection, the research examined performance indicators applicable for measuring financial performance, and it also proved that, in the case of small enterprises, the concept of market orientation is supplemented with managerial commitment, as well as maximising consumer satisfaction (Baker and Sinkula, 2009).

Methodology

When compiling the questionnaire for our research, we used the market orientation scale based on the original Narver and Slater (1990) model, which had been applied and validated in Hungary several times (Polereczki, 2011; Kovács, Szakály and Polereczki, 2016; Kovács et al., 2017). Corporate performance was assessed using a subjective scale based on self-evaluation and perception involving 10 statements, which were drawn based on Govindarajan and Anthony (2013), Sajtos (2004), Brealey and Myers (2011). When measuring corporate performance, the weight of each aspect (statement) was also taken into account so as to see to what extent they were important to the managers of the company, thus eliminating the effect of different strategies.

Data collection was carried out by the Pécs-based Socio-Graph Market Research Ltd. in 2018, through personal interviews with the marketing manager or for lack of it the executive manager of the company in its head office/on the premises, conducted by pre-

trained interviewers. The sampling frame was the set of SMEs in the health industry enlisted in the Opten company database. Randomness during sampling was provided by means of a random number generator from the sampling frame. The representativeness of the sample cannot be ensured. If it were targeted by size category, approximately 99% of the sample would belong to the micro and small enterprise category. Therefore, in the case of 250 items, the medium-sized sector would hardly be represented, and this affects a significant portion of market orientation studies on SMEs (Zehir, Köhle and Yildiz, 2015; Idar, Yusuff and Mahmood, 2012). The descriptive statistical characteristics of the sample and data on enterprise demography are shown in *Table 2*.

Table 2. The composition of the sample based on enterprise demography

Demographics	**Number of items/ distribution**
Size category (based on staff headcount)	
micro	185 (73.7%)
small	46 (18.3%)
medium-sized	12 (4.8%)
did not respond	8 (3.2%)
Industry (by main activity)	
traditional medicine	33 (13.1%)
alternative medicine	52 (20.7%)
pharmaceuticals	2 (0.8%)
manufacturing medical aids	34 (13.5%)
sports provider	28 (11.2%)
wellness, fitness, spa	29 (11.6%)
food production	60 (5.2%)
herbarium, production of dietary supplements	13 (5.2%)
Type of market (by main activity)	
B2C	19 (7.6%)
B2B	201 (80.0%)
did not respond	31 (12.4%)

Source: Authors' own research.

To examine the objectives and the hypotheses of the research, univariate and multivariate analyses were performed. First, the reliability of the scales was tested by the Cronbach alpha indicator. Then, a factor analysis was carried out in the structural examination of market orientation. As regards the dimensions of market orientation, data reduction was performed by analysing three main components separately, while in testing corporate performance, the weighted mean was calculated. The relationship test was conducted by using Pearson's linear correlation analysis, while the exploration of the relationship between cause and effect was carried out by means of secondary research and a linear regression analysis performed in the primary database. In all these procedures, the limitations and conditions were taken into account, and the compliance with them will be shown in the 'Results' section.

The 3.5.0 version of R Statistics in Rstudio design was applied for the statistical analyses and the packages used for the examination were as follows: psych and rela, zoo, lmtest (R Core Team, 2018).

Results

Testing the reliability of the scales

The reliability of the scales used was tested using the Cronbach alpha indicator. The values of the Cronbach alpha reliability indicator were as follows: customer orientation: 0.91; competitor orientation: 0.91; cooperation among functions: 0.86; weights of corporate performance: 0.96; effectiveness: 0.95; competitiveness: 0.97. Based on the findings, it can be concluded that the scales in the questionnaire can be considered reliable (Gliem, 2003).

Exploratory factor analysis for the examination of the dimensions of market orientation

An Exploratory Factor Analysis (EFA) with the method of maximum likelihood (ML) was carried out in order to explore the structures the statements examining market orientation fall into. The results of EFA can be found in the table below, which clearly shows that the database perfectly reflects the dimensions of the original MKTOR model, unchanged. This means that hypothesis H1 is justified, i.e., in accordance with the original model, the dimensions of market orientation appear separately in Hungarian SMEs in the health industry. These results refute the conclusions of Bareith et al. (2013) that the one-dimensionality of latent variables is not fulfilled. At the same time, they confirm the validity of Narver and Slater's original model (Narver and Slater, 1990). Prior to the EFA test we had checked whether our data met the Kaiser-Meyer-Olkin (MSA mean 0.91) criterion and also whether the correlation of elements outside the main diagonal of the correlation matrix was not accidental (p value of the Bartlett probe <0.05). In the factor analysis, the three factors dictated explain 65% of the variance, while the characteristic root of the factors is greater than 1 in all cases.

Table 2. Dimensions of the MKTOR model, based on EFA

Statement	Customer orientation	Competitor orientation	Cooperation among functions
Setting our corporate objectives is motivated by efforts to achieve customer satisfaction.	0.75		
We monitor the commitment of the organisation to meeting customer needs.	0.83		
Our strategy in exploiting competitive advantages is based on understanding customer needs.	0.77		
Our business strategy is driven by belief in the way we can produce greater value for our customers.	0.63		
We regularly measure customer satisfaction.	0.56		
We pay a lot of attention to after-sales service.	0.66		
We attribute a great deal of importance to information about our customers within the company.	0.7		
We regularly collect information about our customers.	0.59		
The employees of our company share their information about competitor's strategy within the company.		0.79	
We properly respond to the competitors' moves that threaten us.		0.78	

Statement	Customer orientation	Competitor orientation	Cooperation among functions
We properly position ourselves to those consumers/consumer groups where we have or are able to develop a competitive advantage.		0.68	
We attribute a great deal of importance to information about the activities of our competitors within the company.		0.85	
We regularly collect information about our rivals.		0.78	
The top managers of the different functional units of the company call on present and potential future partners.			0.71
We adequately communicate the success and also the failure associated with our customers to the different functional units.			0.79
The operation of all our functional units (such as marketing, sales, R & D, accounting) is subject to meeting customer needs in the most effective manner.			0.66
All the managers of the company are aware of how, and to what extent, to contribute to creating the customer value of a product.			0.49

Source: Authors' own research.

Data reduction

Following EFA, the data reduction of market orientation was the next step to perform, by analysing three main components (by creating one main component per market orientation dimension), as this method yields dimensions of a clearer profile (e.g., in the customer orientation dimension/component the weight of statements in other dimensions/components is exactly zero).

During the examination of corporate performance, two categories were taken into consideration: effectiveness and competitiveness. In this case, data reduction was performed not by multivariate statistical analysis, since we had to bear in mind that the relative weight of each performance category for companies is varied (varied, for instance, because a company chooses a different strategy, has a different life-cycle, has different experiences, or is in a different size category). Therefore, the companies were asked to assess the relative significance (weight) of each performance criterion; to what extent did they meet the targets for the previous business year (effectiveness)? And also, how had they performed in the previous business year as compared to the most important competitor (competitiveness)? To define effectiveness and competitiveness, considering the weights, we carried out data reduction as follows:

$$Performance\ category = \frac{\sum_{i=1}^{n} w_i x_i}{n}, where$$

the performance category: effectiveness and competitiveness, w_i stands for the weight of the i-th item, x_i is the perceived performance of the i-th item, n is the number of items answered.

The measurement variables of the performance are as follows: achieved profit level; profit margin; return on capital; sales volume; market share; consumer satisfaction; consumer loyalty; employee satisfaction; return on investment; product quality; brand power; product development; innovation; expectations of short-term financial performance

from company owners; expectations of long-term financial performance from company owners.

The examination of corporate performance dimensions and the dimensions of market orientation

The existence of a relationship between corporate performance dimensions (competitiveness, effectiveness) and dimensions of market orientation (customer orientation, competitor orientation, cooperation among functions) was tested with Pearson's linear correlation coefficient. The results are shown in *Table 4*.

Table 4. Relationship test between corporate performance dimensions and the dimensions of market orientation with Pearson's correlation coefficient

	Customer orientation	**Competitor orientation**	**Cooperation among functions**	**Effectiveness**	**Competitive-ness**
Customer orientation	1.00	0.55*	0.67*	0.54*	0.52*
Competitor orientation	0.55*	1.00	0.68*	0.55*	0.63*
Cooperation among functions	0.67*	0.68*	1.00	0.54*	0.49*
Effectiveness	0.54*	0.55*	0.54*	1.00	0.86*
Competitiveness	0.52*	0.63*	0.49*	0.86*	1.00

Note: $p<0.05$.
Source: Authors' own research.

The results indicate that there is a positive, medium-strength linear relationship between corporate performance dimensions and the dimensions of market orientation; therefore, hypothesis H2 is confirmed. This result supports not only domestic research, but also many international results (Polereczki et al., 2012; Polereczki, Kövér, Bareith, and Szakály, 2013; Kovács, Szakály and Polereczki, 2016; Kis, Kovács and Szakály, 2020; Kontor 2014b; Armario et al., 2008).

Modelling effectiveness by linear regression with the dimensions of market orientation

The relationship between corporate performance and market orientation was examined by multivariate linear regression, and OLS prediction, where the dependent variable was the corporate performance category (effectiveness or competitiveness) and the independent variable was the dimensions of market orientation (customer orientation, competitor orientation, cooperation among functions).

In Model 1.1 cooperation among functions lacked significant explanatory power, and thus it was removed from the model. In Model 1.2 both explanatory variables had significant explanatory power; however, because of the medium-strength positive correlation between the explanatory variables (multicollinearity), the model was further divided, and we tested the relationship of effectiveness with customer orientation and competitor orientation separately. The results are summarised in the table below.

Table 5. The explanatory models of effectiveness

Model	Dependent variable	Independent variable	Weight	p-value	Corr. R^2	F-test
1.1. n=154	Effectiveness	Customer orientation	3.56	<0.001	0.36	$F(150)=29.7.$ $p<0.001$
		Competitor orientation	3.32	<0.001		
		Cooperation among functions	1.25	0.26		
		Constant	29.29	<0.001		
1.2. n=168	Effectiveness	Customer orientation	3.75	<0.001	0.295	$F(165)=35.9.$ $p<0.001$
		Competitor orientation	3.55	<0.001		
		Constant	29.83	<0.001		
1.3.1. n=179	Effectiveness	Customer orientation	5.16	<0.001	0.191	$F(147)=43.$ $p<0.001$
		Constant	29.703	<0.001		
1.3.2. n=193	Effectiveness	Competitor orientation	5.08	<0.001	0.25	$F(191)=64.2.$ $p<0.001$
		Constant	30.39	<0.001		

Source: Authors' own research.

Model 1.1 is not interpreted since the explanatory variable has no significant explanatory power. In Model 1.2 the weight of the explanatory variables clearly shows that customer orientation has a stronger link with effectiveness than competitor orientation (all other factors being equal, if customer orientation increases by 1 unit, the effectiveness of the company increases by 3.75 units). The adjusted R^2 of this model is 0.295, which means that the independent variables explain 29.5% of the variance in effectiveness (the omitted variable is the following: cooperation among functions). Based on the *F*-test, a link has been found between the dependent and the independent variables. According to the findings of the Breusch-Pagan hypothesis, testing heteroscedasticity can be dismissed ($BP(2)=7.3$; $p=0.026$).

In Models 1.3.1 and 1.3.2 the effect of solely one factor (customer orientation or competitor orientation) was examined. Comparing the explanatory power of the models, we can state that a better model can be set up with competitor orientation (1.3.2); however, with regard to the effect size of the variables, the explanatory power of customer orientation (5.16) still exceeds that of competitor orientation, though only slightly. More specifically, an increase in customer orientation (even if the model is less accurate) results in a larger increase in market orientation than in the case of growth in competitor orientation. The error terms show normal distribution in the case of all models (1.1, 1.2, 1.3.1, and 1.3.2).

Modelling competitiveness by linear regression with the dimensions of market orientation

As in the previous case, we attempted to explain competitiveness with the three dimensions of market orientation. In Model 2.1 the cooperation between functions had no significant explanatory power either; therefore, it was also removed from the model. In Model 2.2 both explanatory variables already had significant explanatory power; however, the model still could not be interpreted, because of the medium-strength positive correlation between the explanatory variables (multicollinearity) and the heteroscedasticity of the model (*Table 1*, $BP(2)=1.61$; $p=0.45$). During research, heteroscedasticity is most often considered a problem researchers strive to eliminate (by logarithmic transformation, by deflation, by substituting

OLS estimation with other procedures, such as the generalised least square method (GLS)), although heteroscedasticity is not always caused by data (Sajtos and Mitev, 2007; Koop, 2007). However, by using non-statistical correction, heteroscedasticity can be regarded as a result and can encourage researchers to draw conclusions which can be supported by tables created during regression analysis. The meaning of heteroscedasticity in this context is that when it comes to companies with higher competitiveness, the variance of residuals is greater. This would imply that in some high performance companies, it is market orientation that has a significant role in their competitiveness, while in the rest of high performance companies there are some other underlying factors resulting in competitiveness. It is also assumed that in the latter group, a higher level of market orientation did not develop specifically because companies, leaning on their current excellent competitive edge, did not adopt market orientation. This interpretation is based on the graph below:

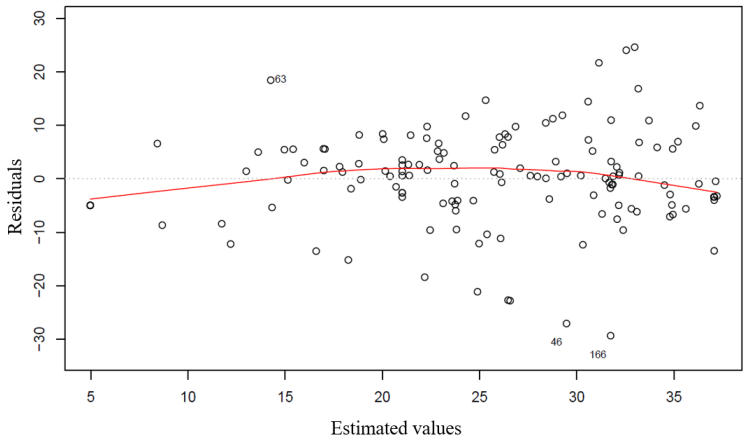

Figure 1. Distribution of errors terms

Source: Authors' own construction.

To get a clearer picture of the relationship between competitiveness, customer orientation, and competitor orientation, the model should also be narrowed down further to a univariate case. The comparison of the Models (2.3.1 and 2.3.2) shows that for this performance category, it is also the competitor orientation which helps to create a more appropriate model (R^2=0.363); its area of effect (7.11) is more significant than in the case of customer orientation (5.93). Both models 2.3.1 and 2.3.2 meet the requirements of homoscedasticity, and the error terms follow a normal distribution pattern (Hunyadi and Vita, 2006). The results of the examinations conducted to explore the relationship between competitiveness and the explanatory variables are shown in the table below:

Table 6. Explanatory models of competitiveness

Model	Dependent variable	Independent variable	Weight	p-value	Corr. R2	F-test
2.1. n=144	Competitiveness	Customer orientation	3.12	<0.001	0.426	$F(140)=36.4$, $p<0.001$
		Competitor orientation	3.56	<0.001		
		Cooperation among functions	-0.31	0.79		
		Constant	26.09	<0.001		

Model	Dependent variable	Independent variable	Weight	p-value	Corr. R2	F-test
2.2. n=153	Competitiveness	Customer orientation	3.15	<0.001	0.413	$F(150)=54.4$ $p<0.001$
		Competitor orientation	5.38	<0.001		
		Constant	26.16	<0.001		
2.3.1. n=160	Competitiveness	Customer orientation	5.93	<0.001	0.228	$F(158)=47.9$, $p<0.001$
		Constant	25.96	<0.001		
2.3.2. n=173	Competitiveness	Competitor orientation	7.11	<0.001	0.363	$F(171)=99$, $p<0.001$
		Constant	26.73	<0.001		

Source: Authors' own construction.

Based on the studies above, hypothesis H3 can be partially accepted. This means that a significant linear model with positive explanatory power could be established between the corporate performance categories (effectiveness and competitiveness) and the two dimensions of market orientation (customer orientation, competitor orientation).

Discussion

Most market orientation researchers in the healthcare industry use quantitative research. Some of these researchers include (Deng et al., 2018; Ahmad, Barnes and Chakrabarti, 2010; Bahadori et al., 2015; Hampton and Hampton 2004; Huang, Weng, Lai and Hu, 2012; Darby and Daniel 1999; Wood, Bhuian and Kiecker, 2000; Weng, Huang and Lin, 2013). Several other researchers used qualitative research and mixed methods. Qualitative research designs include ethnography (Dixon-woods, 2010), comparative studies (Borg and Ljungbo 2018), (Wrenn, 2002) and a qualitative multiple case study (Mosquera et al., 2014), while the mixed method is carried out by (Havens et al., 2010); (Atilla et al., 2015). The variety of the research methods used shows that market orientation research in the health industry can be pursued using all the research methods.

The researchers generally concluded that market orientation is correlated and influences the health care industry. Market orientation and hospital responsibilities can improve the long-term sustainability of hospitals (Hwang and Chung, 2017). Customer orientation has a positive influence on patient safety (Weng et al., 2014). Researchers have also proved that market orientation is influenced by environmental uncertainty aspects (Raju et al., 2000). Commitment to the management of quality service and nurse stress levels also affects customer orientation among nurses (Darby and Daniel, 1999). According to a research in Malaysia, competitor orientation does not significantly correlate directly with healthcare performance, because the innovation model of the industries does not imitate the competitor strategies (Subramaniam and Jabar, 2018). Research in Turkey has the conclusion that there is a strong connection between market orientation and new service development performance, but it does not correlate directly and significantly with finances (Lonial et al., 2008).

However, the market orientation research in the food industry in Hungary has concluded that there is a moderately strong positive connection between the adapted level of market orientation and corporate performance. (Polereczki et al., 2012; Polereczki, Kövér,

Bareith, and Szakály, 2013; Kovács, Szakály and Polereczki, 2016; Kis, Kovács and Szakály, 2020). *Appendix 1* contains more research examining the connection between market orientation and corporate performance.

Conclusion

The first result of our research is that it has been confirmed that the dimensions of market orientation tend to emerge separately also among SMEs in the Hungarian health industry, according to the original model (Narver and Slater, 1990) (H1). This means that in the corporate culture of SMEs in the health industry, customer orientation, competitor orientation, and cooperation among functions can clearly be considered determining factors; however, it has also been established that these factors have been adapted by companies with significant variance, i.e., there are considerable differences as regards market orientation among companies in this sector as well.

The second result of our research is that a significant medium-strength positive relationship has been detected between market orientation and corporate performance dimensions (H2). Therefore, it can be argued that companies that have adapted to a higher level of market orientation have improved competitiveness and effectiveness.

The third result of our research is that we have modelled the examined corporate performance categories with the help of the dimensions of market orientation. Based on these primary results and the literature, we have identified the following explanatory cause-effect relationship: the increase in the degree of customer orientation and competitor orientation adapted by companies, meaning the improvement in the market orientation of the company, has a definite positive effect on company performance (competitiveness and effectiveness). It has also been found during the research that in some cases better competitiveness cannot be associated with a high level of market orientation. When at a lower level of competitiveness, the two dimensions of market orientation (customer orientation and competitor orientation) explain the ability to compete much better, while at a higher level of capacity to compete, the estimation is less accurate. In our view, this is due to the fact that some companies with greater ability to compete have not adopted market orientation, because some other factors such as social capital, production structure and the strategy of the company contribute to their already existing competitive spirit.

Based on our research and findings, further studies on market orientation in the health industry are recommended, since a better understanding of market orientation, even if not in every case, can improve company performance, potentially leading to the improvement of the industry and Hungary.

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Appendix

Appendix 1. A review of research examining the relationship between market orientation and performance

Author	Industry	Market orientation scale applied	Other (moderating) effects	Performance index	Effect of market orientation on performance
Narver and Slater (1990)	MixedC	MKTOR	Type of company	Profit	Direct, positive
Jaworski and Kohli (1993)	MixedC	a variety of MARKOR	-	Profit	Not significant
Slater and Narver (1994)	MC	MKTOR	Environment	Profit	Direct, positive
Pelham and Wilson (1996)	MixedC	MKTOR, MARKOR	-	Profit	Direct, positive
Selnes, Jaworski and Kohli (1996)	MC	MARKOR	-	Profit	Direct, positive
Pelham (1997)	MC	MKTOR	Resource use	Profit and non- profit	Not significant
Bhuian (1998)	MC	MKTOR	Competition intensity	Profit	Not significant
Desphandé and Farley (1998)	MixedC	MKTOR, MARKOR	-	Profit	Direct, positive
Gray et al. (1998)	MixedC	Mixed	-	Profit	Direct, positive
Han, Kim, Srivastava (1998)	SC	MKTOR	Innovation	Profit	Direct, positive
Oczkowski and Farrel (1998)	MC	MARKOR and MKTOR	-	Profit	Direct, positive
Baker and Sinkula (1999)	MixedC	MARKOR	Product development	Profit and non profit	Not significant
Caruana, Pitt and Berthon (1999)	SC	MARKOR	-	Profit	Not significant
Dawes (2000)	MixedC	MARKOR	Competition orientation	Profit	Direct, positive
Gray, Matear and Matheson (2000)	SC	MARKOR	-	Profit	Direct, positive
Hooley et al. (2000)	MixedC	MKTOR	-	Profit and non-profit	Direct, positive

Author	Industry	Market orientation scale applied	Other (moderating) effects	Performance index	Effect of market orientation on performance
Matsuno and Mentzer (2000)	MC	MARKOR	Strategy types	Profit	Not significant
Slater and Narver (2000)	MixedC	MKTOR	-	Profit	Direct, positive
Harris and Ogbonna (2001)	MixedC	MKTOR	-	Profit	Direct, positive
Langerak (2001)	MC	MARKOR	-	Profit	Direct, positive
Subramanian and Gopalakrishna (2001)	MixedC	MKTOR	Competition intensity	Profit and non-profit	Direct, positive
Matear et al. (2002)	MixedC	modified MKTOR	Innovation	Profit	Direct, positive

Symbols: MC = manufacturing company; SC = service company; MixedC = mixed company.
Source: Authors' own construction based on Desphande and Farley (2004).