An empirical investigation of the relationship between market orientation and MrkIS effectiveness in upscale hotels in Greece

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Keywords *marketing information systems effectiveness, market orientation, canonical correlation*

Abstract This study examines the nature of relationships between marketing information systems (MktIS) effectiveness and market orientation (MO) dimensions. The study utilises a canonical correlation approach in order to determine the relationship between the two constructs. The results indicate that MO and MrkIS effectiveness are related concepts. More interesting is the relationship of customer and competitor orientation, especially with the external dimensions of the MrkIS effectiveness. These are the first empirical data that demonstrate a strong relationship between the customer and competitor orientation dimensions of the MO concept with the marketing procedural improvement and the two external dimensions of MrkIS effectiveness, namely customer knowledge and market responsiveness. On the other hand, interfunctional coordination is more closely related to internal climate of company's MrkIS effectiveness. Based on the results, managerial implications are discussed. Limitations of the study as well as future research directions are also addressed.

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INTRODUCTION

The modern competitive environment is characterised by globalisation, numerous

homogeneous products and services, alternatives distribution channels and many communication technologies. In this competitive environment, managers try to find new sources to obtain a competitive advantage. In this direction, the utilisation of the marketing information systems (MrkIS) is essential for the company in order to compete and survive in such a competitive marketplace.^{1–4}

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Many researchers in the field of information technology and marketing have discussed the advantages of the adaptation and the use of IS in marketing.^{1–11} In addition, in the literature there are numerous studies focusing on the factors affecting MrkIS effectiveness.

Many researchers have stressed the role of market orientation (MO) as one of the most crucial factors affecting MrkIS effectiveness.^{2,4,12} Despite the fact that the relationship between MO and MrkIS effectiveness has been pointed out in the literature, there are still unresolved issues concerning the conceptualisation and the true nature of the relationship between the two constructs.^{2,12}

Hence, the purpose of this paper is to empirically examine the nature of the relationship between MO and the effectiveness of MrkIS. The structure of the paper is organised as follows: first, we review the relevant literature to define MrkIS effectiveness as well as the MO notion, in order to develop the research proposition of our study. Next, we present the methodology and the results of the empirical study providing implications for managers. Finally, the limitations of the study and the suggestions for future research are also addressed.

LITERATURE REVIEW

MrkIS effectiveness

The first definition of MrkIS, presented in 1967, determines these types of systems as a set of procedures and methods for analysing, planning and presenting information required in taking marketing-related decisions.¹³ In the following decades, researchers presented many MrkIS sub-systems such as marketing intelligence systems, marketing research systems, marketing decision support systems, marketing planning systems sales productivity and support systems and so on, in order to categorise these systems and investigate their usefulness in the specific marketing fields. The purpose of the earliest MrkIS was to gather, analyse, evaluate, organise and distribute timely, relevant and accurate information for marketing decision makers.¹⁴

Although the benefits of these kinds of systems have been mentioned by many researchers in the

literature, the examination of the notion of MrkIS effectiveness remains a major ‘unknown’ issue.

The concept of effectiveness could be defined as the power of capacity needed in order to deliver a required result.¹⁵ In other words, effectiveness includes the notion of success, as being effective indicates the completion of the outcomes that had been arranged.

The MrkIS effectiveness notion, as Gounaris *et al.*¹⁶ mentioned, is a complex construct, which comprises various facets,¹⁶ such as, among many others, efficiency, productivity, flexibility, control, internal communication and information management. In order to get a more integrated definition, we have to demarcate two major dimensions of the MrkIS effectiveness construct¹⁶: (a) the internal dimension (ie the improvement of the marketing operational procedures and the internal climate as defined by the relationships between the marketing department and its employees) and (b) the external dimension (ie the company’s responsiveness in terms of financial and nonfinancial performance).

The internal dimensions of MrkIS effectiveness refer to the utilisation of procedures and methods of MrkIS in order to improve the decision-making process,^{3,4,14,18–22} reporting,²³ planning/implementation^{3,8,14,18,21,24,25} and control of marketing actions.^{3,14} Another important aspect of the MrkIS internal dimensions relates to the human factor, and the management of the company’s internal relationships. By allowing more employees and departments to share and handle information, MrkIS offers unprecedented flexibility, communication and convenience. Employees can get reports out quicker, define executable actions, create measurable deliverables and clarify roles and responsibilities. Thus, IT-based MrkIS can help hotels to improve internal communication between colleagues in the marketing department and other functional units because communication becomes easier and faster.^{1,14}

As a result, MrkIS increases the amount of information that managers can access and handle. Consequently, provided the proper decision support and analysis tools are available, managers can improve their decisions.⁴ Thus, managers

improve their marketing planning activities, remove non-value-added activities and improve process flow and corporate efficiency. MrkIS also helps marketing managers to establish clear marketing goals with metrics and key deliverables (reports) to ensure that marketing employees can deliver any marketing project within the scope, schedule and resource targets. In this way, managers use a variety of MrkIS tools to understand the needs of the marketing employees while clarifying to the employees what is expected from them and their roles in the company's marketing strategy. Therefore, MrkIS applications lead the marketing team to identify specific concerns, determine which have the highest priority and create an action plan to resolve these concerns.

Concerning the external dimensions of MrkIS effectiveness, many researchers stress that through their MrkIS companies, they have the opportunity to improve customer knowledge,^{10,21,26} marketing programme efficiency^{27–30} and market responsiveness.^{3,31,32} In other words, MrkIS facilitates the identification of consumer needs, which, in turn, allows managers to develop more 'suitable' new products and in this way to build a more effective product-market strategy that includes an outline of any adjustments necessary to fulfill the needs of customers and meet market demands. Thus, the new product development and/or modification is reinforced and becomes more effective.^{18,26,33} In addition, by building up a strong body of customer knowledge, the company can build and manage customer relationships now and in the future, in terms of more satisfied and loyal customers.³⁴

Furthermore, the identification of customers' present and future needs could also increase the market share.¹⁸ The MrkIS benefits mentioned above contribute to the reduction of marketing costs, since the valuable information managers capture for their systems help them, for instance, to understand where they have cross-sale and up-sale opportunities, or to understand what type of customers are the most profitable. In addition, this kind of information helps the marketing managers to decide what to offer, when to offer it and for how much. Likewise, the profound analysis of

market trends and customers' media habits leads to more efficient targeting of the communication effort and strengthens the allocation of the communication budget. On top of this, direct marketing activities become more resourceful.³⁵ Such cost savings are connected to profitability increase.^{8,10}

Market orientation

MO became a 'hot' topic in marketing literature nearly a decade ago.^{36–41} The marketing literature reflects a variety of definitions of MO.^{36,38,42–44} One research stream stressed the cultural nature of the MO concept.^{38,43,45} They mentioned that MO is a system of corporate beliefs and values that enables the creation of superior customer value and shapes the company's internal environment and climate so that it can be responsive to market information.

On the other hand, the publication of two almost parallel studies, Narver and Slater's³⁶ and Kohli and Jaworski's,⁴² constituted the cornerstone of MO behavioural conceptualisation. According to Kohli and Jaworski,⁴² MO is an organisation-wide generation of market intelligence related to current and potential customer needs. In addition, MO is related to dissemination of intelligence across departments as well as the appropriate organisation responsiveness to impending market needs.

Narver and Slater,³⁶ who basically agree with Kohli and Jaworski,⁴² encourage three main aspects of MO: (a) customer orientation (ie understanding of the current and future customer's needs, preferences and special characteristics),⁴⁶ (b) competitor orientation (ie ability to understand the short-term strengths and weaknesses as well as long-term abilities and strategies of both current and future competitors)^{46–49} and (c) the coordination of the partial departments and functions of a company.

Slater and Narver (1995), however, introduce the cultural dimension of MO. They argue that MO is a business culture in which all employees are committed to the continuous creation of greater value for customers.⁵⁰ According to their study, it is crucial for organisations to recognise MO as an original part of their culture.

The scales that Kohli and Jaworski⁴² and Narver and Slater³⁶ created have been tested, validated and improved as presented in the relevant literature.^{39,51,52} Nevertheless, the Kohli and Jaworski⁴² construct incorporates cultural factors^{38,53} and mainly focuses on marketing orientation instead on MO.⁵⁴ Thus, in the current study, the Narver and Slater³⁶ definition was preferred.

MO and MrkIS effectiveness

Based on the previous discussion of MO nature, it would be reasonable to conclude that all interpretations of MO have an operational focus in market information processing activities.⁵⁵ In any case, the acquisition, distribution, interpretation and storage of market information are considered weapons for a company to use in order to cope with uncertain and competitive environment.

In this way, companies can deal with a competitive environment by increasing their information processing capability enabled by MrkIS. In other words, the market-driven organisations know their markets so thoroughly that they are able to identify and utilise MrkIS applications in order to offer superior solutions to customers, find and retain employees, anticipate competitor's moves and gain revenue growth.¹² Through the automation of the collection, filing, processing and diffusion of consistently correct information, a company is able to make the right decisions and to intensify its efforts to be oriented towards the customer and the customer's special features, as well as towards the competitor and the competitor's strategic movement.

On these grounds, the major research hypothesis we investigate in this paper is as follows:

RH: MO dimensions (*customer orientation, competitor orientation and interfunctional coordination*) are related to MrkIS effectiveness dimensions.

METHODOLOGY

Sample and data collection

The data presented in this paper are part of a broader study, of luxury and 5-star hotels in

Greece. The current study focuses only on luxury and 5-star hotels. This decision is based on the results of earlier desk research. Many researchers indicated that relatively smaller hotels, if and when employing IT-based information systems, did so to a minimum and only at operational level (eg for accounting and billing purposes), while lacking any degree of integration of their information system.^{28,56–58}

In order to increase the content validity of the research instrument, 77 personal interviews were conducted with managers who agreed not only to fill in the questionnaire, but also to comment on the scales employed (pilot study).

Consecutively, in order to collect the data, the ICAP Directory,⁵⁹ which identified 780 hotels classed as luxury and 5 stars, was consulted, and self-filling questionnaires were addressed and mailed to hotel marketing managers. Given the relatively small research population, the authors decided to do a census rather than draw a sample. Hence, the research instrument was mailed to all 780 5-star hotels. Two mailing waves produced 254 usable questionnaires (response rate 35 per cent).

With regard to potential nonresponse bias, there are various ways to examine whether nonresponse represents a problem. Examining and comparing the study's response rates with those of an earlier study, comparing sample and frame estimates and comparing the findings of the study with those from external sources are some approaches that allow direct statistical control of the bias that nonresponse may have introduced in the findings.⁶⁰ These direct approaches are not, however, applicable in the case of this study because there is no precedent study or any external data that could serve as a comparison basis. Hence, to test the possible impact of nonresponse bias, the suggestions of Armstrong and Overton⁶¹ were followed and the authors divided all returned samples into two groups: early respondents who returned their survey before the follow-up call, and late respondents who returned their survey after the follow-up call. This type of extrapolation approach is the most widely adopted one in estimating possible nonresponse bias because late respondents resemble quite closely the profile of

nonrespondents. The authors compared the averages and standard deviations of relevant variables between these two groups to ascertain whether there were any significant differences. The results indicate that nonresponse does not influence the results of this study.

Variables measurements

The MrkIS effectiveness scale is specifically based on the work of Sääksjärvi and Talvinen¹⁴ and Gounaris *et al.*¹⁶ Respondents were asked to use a seven-point scale (anchored 1 = 'I strongly disagree' to 7 = 'I strongly agree') and to indicate their agreement with each item.

The first phase of the analysis utilised exploratory factor analysis (EFA), to derive a preliminary factorial structure of the measure,⁶² and four confirmatory factor analyses (CFAs) to assess the unidimensionality of the four partial constructs. The total sample was accordingly divided randomly in half; an EFA was run on the first data subset and CFAs on the second.

Table 1 summarises the result from EFA, which produced four factors: (a) the *marketing procedural improvements*, (b) the *marketing employees support*, (c) the adaptation and the knowledge of its market — *customer's knowledge* and (d) its goals and corporate objectives achievement — *market responsiveness*. In total, the four-factor solution explains 82.6 per cent of the total variance of the initial variables. The results of EFA provide us with the first evidence for the unidimensionality of the partial constructs, while indicators have higher factor loadings on their own constructs than on other constructs.

The next stage of analysis involved four CFAs to assess the unidimensionality of the four partial constructs. The results of the four CFAs provide evidence of the goodness-of-fit in all partial constructs. Before the overall construct of MrkIS effectiveness was accepted, however, the resulting set of items was tested for unidimensionality and convergent and discriminant validity using CFA. Fornell and Larcker⁶³ provide a procedure for assessing convergent and discriminant validity, which depends on the average variance extracted (AVE) for each of the core dimensions examined in the CFA.

The result of CFA, showing a very good fit with the data, concludes that the indicators adequately measure the intended constructs and provide further evidence for the unidimensionality of the overall MrkIS construct. The convergent and discriminant validity for the MrkIS construct, as can be seen from the results of Table A1, are at an acceptable level for Convergent (AVE > 0.50 in all occasions) and Discriminant (AVE is greater than or equal to unity in all occasions) validity.^{64,65} In the final stage of analysis, a three- and a two-factor model of MrkIS effectiveness were also tested. A chi-square test of both models with the four-factor model suggested the acceptance of the four-factor construct. Once unidimensionality was established, internal consistency was calculated using Cronbach's alpha.⁶⁶

Many MO scales have been tested and refined in the literature.^{36–39,42,64,67} For instance, Hooley *et al.*³⁷ saw MO as the implementation of the marketing concept, but limited their investigation to differences between companies with dominant marketing, sales or production orientations. Kohli and Jaworski⁴² considered MO in terms of market scanning, information sharing and response activities. Deshpande *et al.*³⁸ considered it to be a culture, but three competing scales were reduced down to a common customer orientation dimension.

Although Narver and Slater³⁶ conceptualised MO as a culture, they tended to measure its implementation, using both attitudinal and behavioural scales.⁶⁸ One of their major contributions was to broaden the original marketing concept to include customer needs and competitor actions as well as a strategic focus. In addition, Narver and Slater's scale is the most widely adopted, since it has tended to dominate MO studies in most countries. Thus, in order to measure MO, Narver and Slater's³⁶ scale was used. According to this instrument, MO comprises three basic elements: (1) *customer orientation*, (2) *competitor orientation* and (3) *interfunctional coordination*. Respondents were asked to use a seven-point scale (anchored 1 = 'I strongly disagree' to 7 = 'I strongly agree') and to indicate their agreement with each item. The reliability of

Table 1: Exploratory factor analysis of the hotels MrkIS effectiveness dimensions

Factors produced by the analysis	Items loading on each factor	Loadings	Cronbach's alpha
Factor 1: Marketing procedural improvement (explaining 27 per cent of total variance)	Improved marketing efforts control	0.89	0.835
	Improved marketing actions planning	0.68	
	Improved marketing reporting	0.89	
	Improved marketing decision making	0.68	
Factor 2: Marketing employees support (explaining 26 per cent of total variance)	Time saving, lower level of marketing routine work	0.74	0.831
	Improved sales work and customer service	0.98	
	Improved internal communication	0.66	
Factor 3: Hotel's customer knowledge (explaining 22 per cent of total variance)	Improved market sensitivity	0.65	0.925
	Improved customer satisfaction	0.59	
	Improved sales	0.59	
	Improved customer knowledge	0.82	
Factor 4: Market responsiveness (explaining 7 per cent of total variance)	Marketing programmes cost savings	0.71	0.937
	Quickest development of new services in the market	0.75	
	Improved sales promotion activities	0.79	
	Direct and more effective marketing research	0.86	

Kaiser–Meyer–Olkin measure of sampling adequacy: 0.896, Bartlett's test of sphericity: $\chi^2=4210.84$ significant 0.000.

Total variance explained: 83 per cent.

the measurement was reinvestigated using Cronbach's alpha. On all occasions, the calculated coefficient well exceeded the minimum acceptable level (minimum value of $\alpha=0,727$ and maximum value of $\alpha=0,823$) and thus, additive scales were developed.⁶⁶

DATA ANALYSIS

To investigate this research hypothesis, a multivariate analytic approach was adopted. More specifically, a canonical correlation analysis to identify potential relationships and existing variates between the two sets of variables was employed.^{69,70} Canonical correlation analysis examines the independent statistical relationships that exist between two variable sets by analysing the sets simultaneously and identifying and quantifying the elements of one variable set most highly related to the elements of the other variable set.^{70,71} The advantage that canonical correlation has over typical multiple regression is that it can take into account the complex nature of data: multiple regression is used for many-to-one relationships, canonical correlation is used for

many-to-many relationships. The MANOVA procedure in the Statistical Package for the Social Sciences (SPSS) was utilised to run the canonical analysis.⁷²

Canonical correlation begins with two sets of data: (a) MO: customer orientation, competitor orientation and interfunctional coordination (*as independent set*) and (b) MrkIS: marketing procedural improvements, marketing employees support, customer knowledge and market responsiveness (*as dependent set*).

Table 2 provides alternative tests of significance. The small p -values for these tests (<0.05) suggest rejecting the null hypothesis that all canonical correlations are zero.

The ratio of the eigenvalues, as shown in Table 3, is the ratio of the explanatory importance of the three canonical correlations (labelled 'roots') that are extracted for these data. As usual, the first canonical correlation is far more important than the others.

As shown in Table 3, the first canonical correlation the 'covariate' canonical variable explains about 35.5 per cent (0.596×0.596) of the

Table 2: Multivariate tests of significance and approximate *F*-tests

Test name	Value approx.	<i>F</i> hypothesis	d.f.	Error d.f.	Significance of <i>F</i>
Pillais	0.12992	2.81777	12	747.00	0.000
Hotellings	0.14016	2.86945	12	737.00	0.000
Wilks' lambda	0.87381	2.84499	12	653.79	0.000
Roy's	0.08747				

Table 3: Eigenvalues and canonical correlations

Root no.	Eigenvalue	Pct.	Cum. Pct.	Canon Cor.	Sq. Cor
1	0.364	88.387	88.387	0.596	0.355
2	0.134	11.469	99.856	0.366	0.133
3	0.000	0.144	100.000	0.014	0.000

Table 4: Dimension reduction analysis

Root no.	Wilks lambda	<i>F</i> hypothesis	d.f. error	d.f.	Significance of <i>F</i>
1	0.87381	2.84992	12	653.79	0.001
2	0.95756	1.81198	6	496.00	0.004
3	0.99980	0.02517	2	249.00	0.975

variance in the dependent canonical variable. Similarly, in the second canonical correlation, the 'covariate' canonical variable explains only about 13.3 per cent (0.366×0.366) of the variance in the dependent canonical variable. Furthermore, the significance of the *F*-test in Table 4 shows that the two canonical correlations are significant ($p < 0.05$) but the three are not. Thus, only the two canonical correlations are significant and only the two pairs of canonical variables need to be identified. In general, the researcher faces the choice of interpretation of the functions using canonical weights (standardised coefficients) and canonical structure loadings or canonical cross-loadings. Given a choice, it is felt that cross-loadings are superior to loadings, which are in turn superior to weights.⁷³

The canonical factor loading is the correlation of a canonical variable with the original variable in its set. In other words, the canonical factor loadings show how the original variables load on each of the canonical variables for the dependent set of variables in the two canonical correlations. Our largest loadings for the first correlation (Table 5) for MrkIS effectiveness are *customer knowledge* and *market responsiveness*, and for MO are *customer and competitor orientation*. The

dimension of *marketing procedural improvements* also has relatively large loading. Note that *marketing employees support* does not seem important in the relationship of these sets of variables.

For the second correlation, our largest loadings for MrkIS effectiveness are *marketing procedural improvements* and *marketing employees support* and for MO is *interfunctional coordination*. The other dimensions of MO (*customer and competitor orientation*) have very low loadings.

Table 5 also includes the cross-loadings for the two canonical functions. In studying the first canonical function, it can be seen that the independent variables *company's customer knowledge* (0.644) and *market responsiveness* (0.560) exhibit high correlations with the independent canonical variate. This reflects the high-shared variance between these two variables. By squaring these terms, it is found that the percentage of the variance for each of the variables is explained by canonical correlation 1. The results show that 41.4 per cent of the variance in *company's customer knowledge* and 31.3 per cent of the variance in *market responsiveness* is explained by the first canonical correlation. Looking at the independent variables' cross-loadings, demonstrates that the variables *customer orientation* (0.520) and *competitor*

Table 5: Canonical loadings and canonical cross-loadings

	Canonical loadings		Canonical cross-loadings	
	1	2	1	2
<i>MrkIS effectiveness</i>	<i>Set 1 (dependent variables)</i>			
Marketing procedural improvement	0.467	0.404	0.387	0.243
Marketing employees support	0.016	0.467	0.160	0.375
Hotel's customer knowledge	0.969	0.068	0.644	0.014
Market responsiveness	0.880	0.016	0.560	0.063
<i>Market orientation</i>	<i>Set 2 (independent variables)</i>			
Customer orientation	0.676	0.023	0.520	0.005
Competitor orientation	0.881	0.095	0.560	0.019
Interfunctional coordination	0.233	0.832	0.158	0.471

orientation (0.560) have high correlations with the dependent canonical variate. The correlation of *interfunctional coordination* (0.158) appears low, and after squaring this correlation, only the 2.4 per cent of the variation is included in the canonical variate. Thus, the first canonical variable seems to capture mainly *company's customer knowledge, market responsiveness* and *marketing procedural improvements* as explanatory variable, with *customer and competitor orientation*. This result of the first canonical correlation underlines the fact that customer and competitor orientation were significantly related to the external dimensions of MrkIS effectiveness and slightly with *marketing procedural improvements*. The correlation of *interfunctional coordination* (0.158) appears low, and after squaring this correlation, only the 2.4 per cent of the variation is included in the canonical variate. Similar statements could be made about the second canonical correlation. In studying the second canonical function, it can be seen that the independent variable *marketing employees support* (0.375) exhibits high correlation with the independent canonical variate. Looking at the independent variables' cross-loadings, show that the variable *interfunctional coordination* (0.471) has high correlation with the dependent canonical variate. This result of the second canonical correlation underlines the fact that *interfunctional coordination* was significantly related to the *marketing employees support*.

The final issue of interpretation is examining the signs of the cross-loadings. All independent and dependent variables have a positive

relationship. Similarly, for the second canonical correlation, all independent variables have a positive relationship.

The authors use canonical correlation coefficients to test for the existence of overall relationships between sets of variables; but for a measure of the magnitude of relationships, redundancy is more appropriate.⁷⁴ This index provides a summary measure of the ability of a set of independent variables to explain variation in the dependent variables. As such, the redundancy measure is perfectly analogous to multiple regression's R^2 statistic, and its value as an index is similar.⁷³

In other words, redundancy analysis is used to measure whether the dependent canonical variable predicts the values of the original independent variables, how well the independent canonical variable predicts the values of the original independent variables and how well the dependent canonical variable predicts the values of the original dependent variables.

To this end, Table 6 shows that, for the first canonical correlation, the independent canonical variable is able to predict 27.4 per cent of the variance in the individual original dependent variables. Also, the dependent canonical variable predicts 50.5 per cent of the variance in the individual original dependent variables. Similar statements could be made about the second canonical correlation.

Finally, for the first and second canonical correlations, the independent canonical variables are able to predict 45.4 per cent of the variance

Table 6: Canonical redundancy analysis

	Their own Canonical variables		The opposite Canonical variables	
	Proportion (%)	Cumulative proportion (%)	Proportion (%)	Cumulative proportion (%)
<i>Dependent variables</i>				
1	0.505	0.505	0.274	0.274
2	0.334	0.839	0.180	0.454
<i>Independent variables</i>				
1	0.792	0.792	0.189	0.189
2	0.158	0.950	0.122	0.311

in the individual original dependent variables. Also, the dependent canonical variable predicts 83.9 per cent of the variance in the individual original dependent variables.

To conclude, the canonical redundancy analysis provides evidence that the first and second canonical variables are relatively good overall predictors of the opposite set of variables, with cumulative proportions being 45.4 and 31.1 per cent.

For validation purposes, the authors ran a canonical correlation analysis on an analysis and hold-out sample. Canonical weights were compared across the two samples, thereby providing an indication of the stability of this measure for the combined sample. Those results lead to the acceptance of the research hypothesis.

Discussion and implications

The purpose of the study was to investigate the way in which the MrkIS effectiveness dimensions and MO dimensions are related, and the strengths and the nature of these relationships. Canonical correlation analysis gives us the opportunity to combine into a composite measure what otherwise might be an unmanageably large number of bivariate correlations between sets of variables. Results lead to the acceptance of the research hypothesis and demonstrate some interesting implications.

The research results indicate that MO and MrkIS effectiveness are related concepts. This is important because it demonstrates the necessity to consider the MO when determining either the antecedents or the consequences of MrkIS effectiveness within an integrated conceptual model.

Another interesting finding from this study is that not all dimensions of MO have an equally strong relationship with all dimensions of an MrkIS's effectiveness. In fact, these are the first empirical data that demonstrate a strong relationship between the customer and competitor orientation dimensions of the MO concept with the marketing procedural improvement and the two external dimensions of MrkIS effectiveness, namely customer knowledge and market responsiveness (first canonical function). This finding is important because it empirically justifies the need to tie together, at the strategic level, the decision to invest in developing an MrkIS with the decision to increase the company's market centrality. In other words, the findings from this study mark the path towards a virtuous cycle that helps companies to develop, sustain and increase their market focus by ensuring simultaneous development of the customer and competitor orientation with investment in MrkIS that have clearly defined objectives regarding the system's contribution in terms of corporate customer knowledge, market responsiveness and procedural improvements.

Also, without entirely resolving the issue, the findings from the first canonical function show that market centrality (*customer and competitor orientation*) relates to the company's internal environment (*marketing procedural improvements*). The need for aligning the company's internal environment with the marketing strategy's objectives has been raised before in the marketing literature⁷⁵ but the empirical research in this direction remains slim.⁷⁶ The relationship between

the contribution of the company's MrkIS in terms of marketing procedural improvements with customer and market orientation tallies with this view.

The significance of the company's internal environment with regard to the company's ability to become market-led is further demonstrated by the findings of the second canonical function. This study clearly demonstrates that the company's ability to coordinate the efforts of the various functions and align them with the needs of the company's customers (*interfunctional coordination*) relates to the ability of the company's MrkIS to provide the employees of the marketing function with the appropriate informational support. In fact, the second canonical function reveals the path to a second virtual cycle that is mainly internal in nature. This second leg of market centricity shows that companies investing to increase their market orientation, have to develop their abilities to coordinate the efforts of the different functions to meet the conditions of the market and the needs of the customers. To achieve this, it helps significantly to also invest in MrkIS that offer the employees of the marketing department all necessary information that will facilitate this task.

These findings are also interesting for practitioners. The major practical contribution from the study is that the effort to become more market focused goes hand in hand with an investment to appropriate MrkIS. This study shows that missing the right informational foundation is a strong deterrent in the company's effort to become more competitive in responding to customers' needs. Hence, companies seeking to increase their MO have to invest in developing the necessary MrkIS. Nevertheless, top management should not ignore the reverse reading of this study. Investing in strong, powerful and, possibly, more expensive MrkIS makes little sense unless the company's service strategy is oriented towards excellence in meeting and satisfying customers' needs. In other words, the findings from this study show managers the need to keep their MrkIS in balance with their corporate strategy and to invest accordingly.

Furthermore, managers have to understand that MO gives to the company the 'way of thinking' and thus, the way to apply effectively all of these MrkIS tools with the potential to add real value to the relationship with the customer. On the other hand, the marketing information provided by MrkIS through the firm's forms leads executives to gain customer knowledge and to increase internal communication and market responsiveness, which, consequently, result in developing and implementing effective market-oriented efforts and marketing strategies in general.

LIMITATIONS

As with many studies, there are some limitations inherent with this study. The first limitation pertains to the sample of the study. The research involved luxury and 5-star hotels in Greece. Thus, the findings could not be generalised to other countries or other types of hotels. Future research should be undertaken in order to investigate the relationship between the two constructs in other countries and among different types of hotels. In addition, this study is confined to the hotel industry only. Thus, future research is certainly required before the relationships this study reveals can be applied to other industries.

Furthermore, this study looked at the MrkIS effectiveness of a hotel at one moment in time. Any MrkIS develops over time, both as a result of experience and because of the fast development of MrkIS technology. Future research may explore the necessary conditions under which MrkIS effectiveness and MO relationships could prevail over time.⁷⁷

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Appendix

See Table A1.

Table A1: MrkIS effectiveness instrument: confirmatory

Goodness-of-fit measures: GFI=0.913, AGFI=0.901, CFI=0.971, RMSEA=0.076	Standardised regression weights	AVE	Convergent validity	(Corr) ²	Discriminant validity
<i>Marketing procedural improvements</i>					
Improved marketing efforts control	0.887*	0.644	Yes	0.467	Yes
Improved marketing actions planning	0.957*				
Improved marketing reporting	0.546*				
Improved marketing decision making	0.614*				
<i>Employees support</i>					
Time saving, lower level of marketing routine work	0.797*	0.658	Yes	0.646	Yes
Improved sales work and customer service	0.915*				
Improved internal communication	0.807*				
<i>Customer knowledge</i>					
Improved market sensitivity	0.898*	0.727	Yes	0.547	Yes
Improved customer satisfaction	0.799*				
Improved sales	0.910*				
Improved customer knowledge	0.867*				
<i>Market responsiveness</i>					
Marketing programmes cost savings	0.807*	0.734	Yes	0.614	Yes
Quickest development of new services in the market	0.958*				
Improved sales promotion activities	0.939*				
Direct and more effective marketing research	0.879*				
Marketing procedural improvements employee support	0.624*				
Marketing procedural improvements customer knowledge	0.684*				
Marketing procedural improvements market responsiveness	0.639*				
Employee support customer knowledge	0.804*				
Employee support market responsiveness	0.740*				
Customer knowledge market responsiveness	0.784*				

AVE=average variance extracted = $\Sigma(\text{standard loadings})^2 / \Sigma(\text{standard loadings})^2 + \Sigma e_{ij}$, Conv=convergent validity (AVE > 0.50), discriminant validity = AVE / (Corr)² > 1, (Corr)² = highest correlation between the examined factor and the rests of factors.

*significant $p=0.000$.