

Market Orientation Culture, Market Orientation Behavior and Their Impacts on Organizational Performance: The Moderating Role of Information Technology Competence

Cheng-Kiang Farn, Yi-Wen Fan, Chun-Der Chen
 Department of Information Management
 National Central University
 No. 300, Jhongda Rd., Jhongli City, Tao-Yuan County (32001)
 Taiwan, R.O.C.

Abstract: - It is widely believed that market orientation (MO) is a key strategic predictor for a firm's sustained competitive advantage and performance. While the pursuit of MO may well be laudable, few studies incorporate both MO culture and MO behavior simultaneously into their research. Furthermore, little attention has been given to the role of information technology competence (IT competence) in the relationship between MO behavior and business performance. Drawing from the "structure-conduct-performance" framework and the resource-based view, this study attempts to advance our understanding by investigating the "MO culture-MO behavior-performance" causal chain, and the moderating impact of IT competence on MO behavior-organizational performance relationship. Our research findings – based on a survey – show that both MO culture and MO behavior indeed positively influence organizational performance, and MO behavior mediates the MO culture-organizational performance relationship. Moreover, we also found a significant moderating effect of IT competence on the MO behavior-organizational performance relationship. Implications for practitioners and researchers and suggestions for future research are also addressed.

Key-Words: - Market orientation culture, market orientation behavior, organizational performance, information technology competence

1 Introduction

For nearly half a century, the concept of market orientation (hereafter MO) has received considerable attention from academicians and practitioners. It is widely believed that MO is a key strategic predictor for a firm's sustained competitive advantage and it leads to higher levels of organizational performance [11], [7]. In a general sense, MO pertains to an organizational culture (hereafter MO culture) and consists of three dimensions: customer orientation, competitor orientation, and interfunctional coordination [15]. Meanwhile, Kohli and Jaworski [12] offer a more process-driven model and characterize MO as specific marketing activities (hereafter MO behavior) related to the organization-wide generation and dissemination of market intelligence pertaining to current and future customer needs, and organization-wide responsiveness to it.

Despite the fact that both MO culture and MO behavior are considered to be essential for managerial competitiveness today, only few studies incorporate both cultural and behavioral perspectives into their research (e.g., [7], [13]). As Narver and Slater [15] stated, MO is the organizational culture

that most effectively creates the necessary behaviors for the creation of superior values for customers. Moreover, although a number of studies have empirically investigated the moderating effect of market-level and firm-specific factors on the relationship between MO and business performance (e.g., [10]), it is notable that little attention has been given to the moderating role of information technology competence (hereafter IT competence) on the MO behavior-business performance relationship.

As Dewett and Jones [5] argued, at an even higher conceptual level of analysis, IT serves as a moderator of the relationship between organizational characteristics and several organizational outcomes through its ability to generate information efficiencies and information synergies. Therefore, the purposes of this study are twofold. First, we incorporate MO culture and MO behavior simultaneously for investigating their effects in predicting organizational performance. More specifically, we also postulate the mediating effect of MO behavior on the relationship between MO culture and organizational performance. Second, we test whether IT competence as a moderator could affect the strength of the MO behavior-organizational

performance relationship. We develop a theoretical model in Figure 1 that based on Thorelli's [20] "structure-conduct-performance" framework by positioning MO culture as one of internal environmental factors, MO behavior as a firm's conduct, and organizational performance as a set of consequences of a firm's conduct. In addition, IT competence is modeled to have a moderated effect on the relationship between MO behavior and organizational performance based on the resource-based view (RBV) [14].

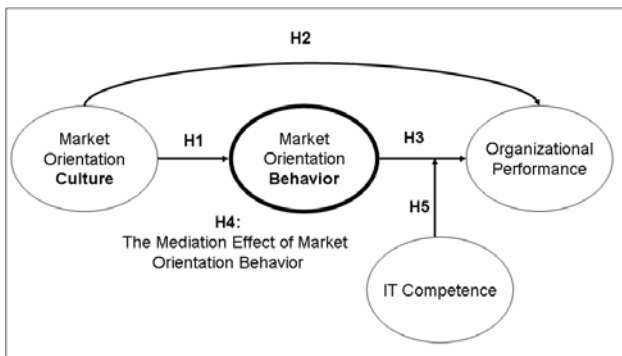


Figure 1. The Proposed Conceptual Model and Research Hypotheses

2 Theoretical Framework and Hypotheses

2.1 Two conceptualizations of market orientation

As markets become global and competition intensifies severely, firms increasingly face challenges and they must strive to respond continuously to opportunities and threats posed by an evolving environment. Under such situation, organizational culture served as a means and a structure of achieving competitive advantage and it has come to be viewed as an important internal environmental factor of a successful firm [20]. It is a complex system of norms, values and shared vision and it unifies organizational capabilities into a cohesive whole [4].

As Gainer and Padanyi [7] indicated, an organization with a MO culture will have employees who thus perform MO activities for understanding and satisfying clients and these behaviors will in turn lead to positive performance outcomes. Moreover, Narver and Slater [15] also treated that MO culture as an antecedent to MO behavior (as a firm's conduct) and organizational performance as a set of consequences of a firm's conduct, thereby consistent with the "structure-conduct-performance" framework [20]. In summary, MO behaviors and organizational performance do not manifest themselves in the organization if the culture lacks commitment to

superior value for customers [15]. Accordingly, we hypothesize that:

Hypothesis 1 (H1): *Market orientation culture has a positive effect on market orientation behavior.*

In addition, the literature on MO has provided sufficient evidence of the positive relationship between MO and a firm's performance (e.g., [10], [11]). Although some researchers have reported nonsignificant or negative effects for such association (e.g., [1]), in this sense, Slater and Narver [19, p.54] concluded that, given that in the long term all markets will have "low growth, high hostility and changes in consumer preferences", being market oriented will never be negative in spite of the negative moderating effect of certain variables acting in the short term. Thus, the above reasoning leads to our next hypotheses.

Hypothesis 2 (H2): *Market orientation culture has a positive effect on organizational performance.*

Hypothesis 3 (H3): *Market orientation behavior has a positive effect on organizational performance.*

2.2 The mediating role of market orientation behavior

Notwithstanding the developments surrounding MO culture, it also has been argued that, for a firm to maximize its capacity to learn about markets, it is only the start of creating a MO culture [19]. According to the RBV, organizations rich with various resources and unique capabilities may allow their decision makers to reshape the judgments or cognitions and respond better to environmental changes due to their greater capacity for innovative and imitative change. Likewise, MO behavior mediates the relationship between MO culture and organizational performance by ensuring that the organization is highly aware and responsive to customer needs and competitor's capabilities. Thus we propose the following hypothesis:

Hypothesis 4 (H4): *The relationship between market orientation culture and organizational performance is positively mediated by market orientation behavior.*

2.3 Information technology (IT) competence

IT competence refers to the extent to which a firm is knowledgeable about and effectively utilizes IT to manage information within the firm [21]. According to the RBV, IT alone may not generate a sustainable advantage because most forms of IT are readily available to all firms. IT-based advantages can only be achieved and protected through resource complementarity and cospecialization [18] by leveraging or exploiting firm-specific or intangible

resources such as organizational leadership, culture, and business processes because it is more difficult for competitors to replicate an entire system than individual IT components [14].

IT competence consists of three co-specialized resources: IT objects, IT knowledge, and IT operations [21]. IT objects refer to technical infrastructure such as computer-based hardware, software, and support personnel. They act as “enablers” and provide a foundation for information production and dissemination for the development and implementation of present and future business applications [14]. IT knowledge is conceptualized as the extent to which a firm possesses a body of technical expertise about objects such as computer-based systems [21]. Lastly, IT operations reflect the extent to which a firm utilizes IT to manage market and customer information. IT operations enable firms to manage the technical and market risks. They are tacit, causally ambiguous, and the result of socially complex processes, and they need to be developed over time through the accumulation of experience [21]. Consequently, IT operations are also believed to be a source of sustainable competitive advantage for firms.

As noted above, since the value and inimitability of a firm’s IT competence depends on the status of its three distinct but interdependent IT assets – IT objects, IT knowledge, and IT operations – therefore, if IT competence varies significantly in the degree to which competence is valued, then one would also expect that the relationship between MO behavior and organizational performance will vary as well. Therefore the following hypothesis is set forth:

Hypothesis 5 (H5): *The relationship between market orientation behavior and organizational performance is moderated by IT competence.*

3 Methodology and Research Design

3.1 Measurement development and sampling

The preliminary instrument was pilot tested and reviewed by faculty and doctoral students for clarity. All measurement items were five-point Likert-type scales and adapted from the literature wherever possible. In additions, the sampling frame used for this study was firms from “2004 Taiwan Top 1000 Listing” issued by Common Wealth Magazine, the leading magazine in Taiwan. A total of 150 questionnaires were sent out to appropriate informants who were initially contacted by phone and

motivated to complete the questionnaire. The identified key informants typically held the title of marketing, sales, or IT manager. A total of 130 completed questionnaires were returned. Nine questionnaires were invalid, and 121 responses were obtained and valid (80.67% response rate). We sampled a broad range of industries from this list, including IT related industry (28.10%), Manufacturing (40.50%), Banking / Financing (16.53%) and so on. Furthermore, the sample also generally reflects the distribution in Taiwan and hence we believe our data shows a certain degree of appropriate adequacy and representativeness for research purposes.

4 Data Analysis and Results

4.1 Convergent validity and discriminant validity

Data analysis took place in several phases, as described below. First, a convergent validity test was performed using an exploratory, principal components factor analysis (PCA) with SPSS 11.0 VARIMAX rotation. Second, internal consistency reliability analysis was examined using the Cronbach’s alpha and composite reliabilities, and they should be larger than 0.7 [16]. Third, it was further verified that the AVE (average variance extracted) of all constructs should exceed 0.50 [6]. A few items were dropped from the study due to their low factor loading or cross-loading, and we drop these items from further analysis. As summarized in Table 1, all of the Cronbach’s alpha and composite reliability values were above 0.7 except for MO2_B, which is considered good [16]. In addition, the AVEs of all dimensions are over 0.5. Thus, convergent validity is established. Meanwhile, discriminant validity is shown when the square root of each construct’s AVE is larger than its correlations with other constructs [3]. As illustrated in Table 1, the square root of the AVE is larger than all other cross-correlations, reinforcing the claim that the instrument demonstrates convergent and

Table 1. Reliability, Correlation Coefficients and AVE Results

Variable	Mean	S.D.	Cronbach's Alpha	Composite Reliability	AVE	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1. IT_A	16.11	3.35	0.89	0.85	0.59	0.77								
2. IT_B	17.21	4.42	0.89	0.88	0.61	0.47	0.78							
3. IT_C	21.28	3.97	0.87	0.86	0.55	0.54	0.39	0.74						
4. MO1_A	18.21	3.79	0.76	0.84	0.51	0.37	0.4	0.46	0.71					
5. MO1_B	14.67	3.43	0.78	0.81	0.52	0.4	0.43	0.38	0.62	0.71				
6. MO1_C	27.87	5.02	0.74	0.89	0.51	0.43	0.47	0.4	0.61	0.56	0.71			
7. MO2_A	23.88	4.67	0.91	0.86	0.51	0.48	0.4	0.45	0.6	0.66	0.62	0.71		
8. MO2_B	7.08	1.78	0.78	0.68	0.52	0.32	0.39	0.3	0.51	0.51	0.59	0.54	0.71	
9. MO2_C	14.26	3.22	0.87	0.81	0.52	0.45	0.47	0.32	0.49	0.6	0.65	0.61	0.58	0.71

Notes:

1. The main diagonal shows the square root of the AVE (Average Variance Extracted).

2. Significant at p < 0.01 level is shown in bold.

3. **IT_A** for IT Objects, **IT_B** for IT Knowledge, **IT_C** for IT operations, **MO1_A** for Market Intelligence Generation, **MO1_B** for Market Intelligence Dissemination, and **MO1_C** for Responsiveness, **MO2_A** for Customer Orientation, **MO2_B** for Competitor Orientation, and **MO2_C** for Interfunctional Orientation.

discriminant validity. Hence, discriminant validity is also established.

4.2 Hypothesis testing

Although the MO culture and MO behavior constructs have been conceptualized into three distinct dimensions in the literature, the primary emphasis has been on the combined (versus individual) effects of the components in actual practices [8, p.33]. Therefore, we investigate the MO culture-MO behavior-performance relationship and the moderating effect of IT competence using the combined approach in this study. First, we predicted whether MO culture would be positively related to MO behavior (H1), and simple regression was used here. The result in Figure 2 shows that the coefficients for MO culture are significantly related to MO behavior (b=0.792, R square = 0.628, p=0.000). Therefore, this result provides support for the first hypothesis (H1) of this study.

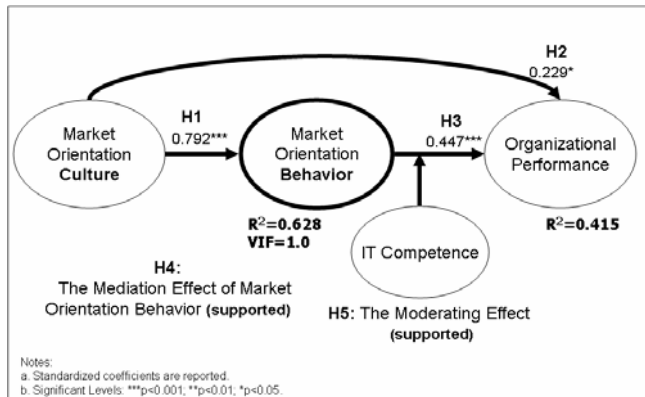


Figure 2. Data Analysis Results

Next, we predicted whether MO culture (H2) and MO behavior (H3) would be positively related to organizational performance. By conducting multiple regression analysis, results show that the coefficients for MO culture (H2) and MO behavior (H3) are all significantly related to organizational performance. Thus H2 and H3 were also supported.

Third, for examining the mediating influence of MO behavior, the regression procedure advocated by Baron and Kenny [2] was followed. As illustrated in Table 2, it is first required that the mediating variable (MO behavior) be related to the independent variable (MO culture) and the independent variable (MO culture) should also be related to the dependent variable (organizational performance).

These two requirements are satisfied as shown in Equation 1 and Equation 2 in Table 2. The final and most basic requirement specified by Baron and Kenny [2] is that a mediating variable should predict the dependent variable (organizational performance) even when the independent variable (MO culture) is

statistically controlled, while the effect of the independent variable on the dependent measure (organizational performance) should be substantially reduced when the mediating variable is statistically controlled (Equation 3 in Table 2). Results in Equation 3 show that the effect of MO culture on organizational performance was decreased when MO behavior was included, from 0.583 (Equation 2) to 0.229 (Equation 3). Thus, the mediation influence of MO behavior was granted and H4 was supported.

Table 2. Testing the Mediating Effect of MO Behavior

Regression Equation :	R ²	F-value	b ^a	t-value
Equation (1) Dependent Variable = MO behavior MO culture	0.628	200.611	0.792***	14.164
Equation (2) Dependent Variable = Organizational Performance MO culture	0.340	61.361	0.583***	7.833
Equation (3) Dependent Variable = Organizational Performance MO culture MO behavior	0.415	41.772	0.229* 0.447***	1.987 3.870

Notes:

a. Standardized coefficients are reported.

b. Significant Levels: ***p<0.001; **p<0.01; *p<0.05.

Finally, in order to test Hypothesis 5 (H5), we use the following procedure. We split the sample at the median value for the IT competence variable and estimated the regression model for each sub-group. The regression results in Table 3 show clear support for Hypothesis 5 regarding the moderating effect of IT competence.

Table 3. Results of Sub-Group Regressions: The Moderating Effect of IT Competence

Independent Variable \ Dependent Variable	Organizational Performance		
	Total Samples (N=121)	Low IT Competence (N=64)	High IT Competence (N=57)
MO behavior	0.628***	0.242*	0.635***
R-square	0.395***	0.058	0.403***
Adjusted R-Square	0.390***	0.041	0.394***
F-value	77.673	3.353	42.562
p-value	0.000	0.073	0.000

Notes:

a. Standardized coefficients are reported.

b. Significant Levels: ***p<0.001; **p<0.01; *p<0.05.

As shown in Table 3, the regression coefficient for MO behavior towards organizational performance is insignificant for the low IT competence subgroup. In contrast, the regression coefficient for MO behavior towards organizational performance is significant and positive for the high IT competence subgroup, and it is significantly greater than the one of the low IT competence subgroup. In summary, there is clear evidence that MO behavior is an important determinant of organizational performance and that relationship is moderated by IT competence in the expected direction.

5 Discussions

5.1 The effect of MO culture on MO behavior

As expected, we found that MO culture has a significantly positive effect on MO behavior. Kohli and Jaworski [12] conceive a MO company to be one in which the three pillars of the marketing concept (customer focus, coordinated marketing and profitability) are manifest operationally. Thus, MO culture and MO behavior are highly correlated but distinct conceptually. They represent a different level of abstraction [13]. By taking a strategy formulation perspective, MO culture - with the underlying beliefs and values - has an important impact on business strategy, and the strategy determines structure and activities such as MO behavior. Hence, MO culture and MO behavior are critically interrelated. Again, these results are supported by the classic "structure-conduct-performance" paradigm proposed by Thorelli [20].

5.2 The effects of MO culture and MO behavior on organizational performance

MO culture and MO behavior are hypothesized to simultaneously have influences on determining the organizational performance. Our result reveals that both Narver and Slater's and Kohli and Jaworski's concepts are equally important antecedents in predicting organizational performance. Consistent with prior MO studies as described above, strong MO culture within a business leads to greater effort being exerted to offer superior value continuously to customers.

Meanwhile, development of a firm's specific and inimitable MO behavior also leads to internal quality improvement, enabling the customization of products and services and thereby meeting customer needs more accurately, ultimately achieving subsequent organizational performance. As a result, both MO culture and MO behavior simultaneously have great impact on organizational performance, as indicated in our research model.

5.3 The mediating influence of MO behavior between MO culture and organizational performance

MO behavior reflects a firm's orientation toward the promotion and support for the generation, dissemination, and responsiveness to market intelligence to serve customer needs [12]. As expected, MO behavior was shown to be a significant mediator and it intervenes between MO culture and organizational performance. Based on the RBV, MO behavior serves as an important conduct and a source of a firm's competitive advantage due to its value in numerous marketing-related resources and capabilities, the difficulty of accomplishing the

behavior, and the difficulty that competitors have imitating it. As such, MO culture cannot be pulled to directly increase performance and MO culture's performance effects were felt mostly through MO behavior and then to the organizational performance.

5.4 The moderating impact of IT competence on the relationship between MO behavior and organizational performance

Our study has shown that IT competence has a moderating influence on the MO behavior-organizational performance relationship. This finding lends support to the notion that the influence of MO behavior on organizational performance is varied and restricted to the extent of IT competence. It shows that firms with higher IT competence could positively amplify the MO behavior impact on organizational performance. However, due to lower IT objects, IT knowledge, and IT operations, firms with limited IT competence will constrain the influence of MO behavior on subsequent organizational performance. Hence the relationship between MO behavior and organizational performance is insignificant when IT competence is low, as shown in this study.

6 Implications and Conclusions

6.1 Limitations and Suggestions for Future Research

We acknowledge that a number of research limitations exist in our research which should be overcome in the future. First, this study relied mainly on the single key informant, which may cause a halo effect or common method variance. In order to test for common method variance, a Harman's one factor test was performed [17]. The basic assumption of Harman's test is if a single factor emerges from the factor analysis that explains a significant amount of the variance in the data there is strong evidence of common method bias. Although the Harman's one factor test indicated that common method variance was not a serious problem since a single factor did not emerge in our data, different sources of data (e.g., IT manager was asked for IT competence construct, and marketing manager was asked for the other constructs) should provide more robust evidence for MO study in the future. Second, our study adopts the combined approach as suggested by Han et al. [10] for investigating the relationship between market orientation, organizational performance, and IT competence. Even though we believe that the study has provided academic and managerial insights as a baseline, more in-depth and valuable insights might still be limited. Thus, the pursuit of both the combined as well as component-level approaches would be a fruitful direction for future research.

6.2 Implications and Conclusions

Viewed from the “structure-conduct-performance” paradigm and the resource-based perspective, this study contributes to the marketing and IT business value literatures by providing empirical support for the relationship between MO culture, MO behavior and organizational performance, and more specifically, the mediating effect of MO behavior on the relationship between MO culture and organizational performance and the moderating impact of IT competence on the relationship between MO behavior and organizational performance.

Given the turbulence of many industries, understanding what facilitates the delivery of products and services to satisfy customers' needs offers scholars continuously and increasingly important challenges, as stated by Hult et al. [9]. Managers who work for a MO organization ultimately need to be effective not only in their marketing work, but more importantly they need to cultivate their IT competence in order to meet the needs of its customers more effectively than their competitors and expand the role that different departments can play toward this end.

References:

- [1] Agarwal, S., Krishna, M.E. and Chekitan, D.D., Market orientation and performance in service firms: role of innovation, *Journal of Service Marketing*; Vol.17, No.1, 2003, pp.68-82.
- [2] Baron, R.M. and Kenny, D.A., The moderator-mediator variable distinction in social psychological research: conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, Vol.51, 1986, pp. 1173-1182.
- [3] Chin, W.W., Issues and opinion on structural equation modeling, *MIS Quarterly*, Vol.22, No.1, 1998, pp. 7-16.
- [4] Day, G.S., The capabilities of market-driven organizations, *Journal of Marketing*, Vol.48, 1994, pp. 37-52.
- [5] Dewett, T. and Jones, G.R., The role of information technology in the organization: a review, model, and assessment, *Journal of Management*, Vol.27, 2001, pp. 313-346.
- [6] Fornell, C. and Larcker, D.F., Evaluating structural equation models with unobservable variables and measurement error, *Journal of Marketing Research*, Vol.18, 1981, pp. 39-50.
- [7] Gainer, B. and Padanyi, P., The relationship between market-oriented activities and market-oriented culture: implications for the development of market orientation in nonprofit service organizations, *Journal of Business Research*, Vol.58, 2005, pp. 854-862.
- [8] Han, J.K., Kim, N. and Srivastava, R.K., Market orientation and organizational performance: is innovation a missing link? *Journal of Marketing*, Vol.62, No.4, 1998, pp. 30-45.
- [9] Hult, G.T.M., Ketchen, D.J. and Slater, S.F., Market orientation and performance: an integration of disparate approaches, *Strategic Management Journal*, Vol.26, No.12, 2005, pp. 1173-1181.
- [10] Jaworski, B.J. and Kohli, A.K., Market orientation: antecedents and consequences, *Journal of Marketing*, Vol.57, 1993, pp. 53-70.
- [11] Kirca, A.H., Jayachandran, S. and Bearden, W.O., Market orientation: a meta-analytic review and assessment of its antecedents and impact on performance, *Journal of Marketing*, Vol.69, No.2, 2005, pp. 24-41.
- [12] Kohli, A.K. and Jaworski, B.J., Market orientation: the construct, research propositions, and managerial implications, *Journal of Marketing*, Vol.54, 1990, pp. 1-18.
- [13] Matsuno, K., Mentzer, J.T. and Rentz, J.O., A conceptual and empirical comparison of three market orientation scales, *Journal of Business Research*, Vol.58, 2005, pp. 1-8.
- [14] Melville, N., Kraemer, K. and Gurbaxani, V., Review: information technology and organizational performance: an integration model of IT business value, *MIS Quarterly*, Vol.28, No.2, 2004, pp. 283-322.
- [15] Narver, J.C. and Slater, S.F., The effect of a market orientation on business profitability, *Journal of Marketing*, Vol.54, 1990, pp. 20-35.
- [16] Nunnally, J., *Psychometric Theory*, New York: McGraw-Hill; 1978.
- [17] Podsakoff, M. and Organ, D., Self-reports in organizational research: problems and prospects, *Journal of Management*, Vol.12, No.4, 1986, pp. 531-544.
- [18] Powell, T.C. and Dent-Micallef, A., Information technology as competitive advantage: the role of human, business, and technology resources, *Strategic Management Journal*, Vol.18, No.5, 1997, pp. 375-405.
- [19] Slater, S.F. and Narver, J.C., Competitive strategy in the market-focused business, *Journal of Market Focused Management*, Vol.1, 1996, pp. 159-174.
- [20] Thorelli, H.B., *Strategy+Structure=Performance*, Bloomington (IN): Indiana University Press, 1977.
- [21] Tippins, M.J. and Sohi, R.S., IT competence and firm performance: is organizational learning a missing link? *Strategic Management Journal*, Vol.24, 2003, pp. 745-761.