An Analysis of the MKTOR and MARKOR Measures of Market Orientation: An Australian Perspective

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This paper examines the two most important and significant measures of market orientation, MKTOR and MARKOR. Initially, literature which is critical of these existing measures is reviewed. The unidimensionality and within method convergent validity of these scales is then analysed through confirmatory factor analysis. Analysis is based on a sample of privately owned Australian companies, and validated on a sample of publicly listed companies. Both measures in their original form are found to be inadequate, with poor empirical fit, and refined scales based on fewer measurement items are proposed.

Keywords: MKTOR, MARKOR, marketing orientation

Introduction

The construct of market orientation is central to the discipline of marketing, indeed the marketing concept is a "cornerstone of the marketing discipline" (Kohli & Jaworski 1990, p1), "represents the foundation of high quality marketing practice" (Kohli, Jaworski & Kumar 1993), with the premise that market oriented organisations will, *ceteris paribus*, improve their market performance, (Narver & Slater 1990). Despite the significance of the construct of market orientation to the theory and practice of marketing strategy, there has been little critical inquiry into the multi-item scales of market orientation, MKTOR (Narver & Slater 1990) and MARKOR (Kohli, Jaworski, & Kumar 1993). These respective measures have been widely accepted by researchers, and an increasing body of literature focuses upon the antecedents and consequences of a market orientation.

Findings suggest that market orientation is positively related to profitability (Narver & Slater 1990; Ruekert 1992; Slater & Narver 1994), customer service and retention (Narver & Slater 1993), sales growth (Slater & Narver 1994; Greenley 1995a), new product success (Slater & Narver 1994), growth in sales revenue, employee satisfaction, commitment and trust (Ruekert 1992), overall business performance and employees' organisational commitment (Jaworski & Kohli 1993), and innovation-marketing fit, product advantage and interfunctional teamwork, project impact performance, and new product success (Atuahene-Gima 1995; 1996). Greenley (1995 a,b) examined various forms of market orientation, finding that the group with a comprehensive market orientation performed marginally better than other groups with respect to performance. Finally, research suggests that a market orientation-performance relationship is affected little by environmental moderators (Jaworski & Kohli 1993; Slater & Narver 1994).

Narver & Slater (1990), Kohli, Jaworski & Kumar (1993), and Slater & Narver (1994) suggest that the use of these measures to identify the degree of market orientation of the organisation is likely to be beneficial to practitioners. As Jaworski & Kohli (1993, p64) state, "managers should strive to improve the market orientation of their businesses in their efforts to attain higher business performance".

All this literature clearly suggests the need to thoroughly examine the alternative measures of market orientation. Oczkowski & Farrell (1996) have examined issues of criterion and construct validity of the MKTOR and MARKOR measures of market orientation. The purpose of this paper is to examine the unidimensionality for these scales, within the Australian business culture, using a confirmatory factor analysis (CFA) approach.

Market Orientation: Conceptual and Empirical Concerns

The dimensionality of MKTOR, the 21-item measure of market orientation developed by Narver & Slater (1990), was examined by Siguaw & Diamantopoulos (1994). Using confirmatory factor analysis they found that the overall fit for the model was not good. Noting that Narver & Slater did not include factor analysis in their scale development, Siguaw & Diamantopoulos explored the dimensionality of the original set of 21 items with exploratory factor analysis. This resulted in the extraction of five factors, the first accounting for more variance (30.8%) than the remaining factors together, and loading on variables reflecting customer orientation, and some items reflecting competitor orientation and interfunctional coordination. Two of the interfunctional coordination items reflecting competitor orientation and short term profit orientation, while Factor 5 loads on two items of the interfunctional coordination scale, one of which also loads similarly on two other factors. Siguaw & Diamantopoulos concluded that the "veracity of the scale becomes questionable" (pp. 150-151).

Kohli, Jaworski & Kumar (1993) criticise the MKTOR measure on the grounds that it:

- (1) adopts a focussed view of markets by emphasising customers and competition as compared with a view that focuses on these two stakeholders and additional factors that drive customer needs and expectation (eg., technology, regulation),
- (2) does not tap the speed with which market intelligence is generated and disseminated within an organisation, and
- (3) includes a number of items that do not tap specific *activities and behaviours that represent a market orientation* (*p.*467).

They set out to develop a measure of market orientation, and assess its psychometric properties, based upon the conceptualisation and data gathered from their previous studies. They developed scale, MARKOR, (originally with 32 items, but reduced during development to 20) which is "moderately supportive of the validity of the market orientation construct" (p.473). However, although they argued that their conceptualisation of market orientation is an integrated view, with "an expanded focus on market rather than customer intelligence" (p.468), the 20-item scale includes only one item measuring market as opposed to customer intelligence. Moreover, the reduction of the scale items is derived from analysis of the single-informant sample, and subsequently applied to data from the multi-informant sample, resulting in a collapsing of the component factors of intelligence dissemination and responsiveness into a single factor. The theoretical justification for this is then supported by post-hoc rationalisation. This is surprising given that: (i) the initial conceptualisation of the market orientation construct "as composed of three sets of activities" (Jaworski & Kohli 1993 p.54); (ii) Jaworski & Kohli (1993 p.54) argue that "the responsiveness component is defined

as being composed of two sets of activities-response design and response implementation"; (iii) of the original 32 item scale, 14 items pertain to responsiveness, signifying its importance; (iv) in their regression analysis, responsiveness was treated as a dependent variable, and not collapsed with any of the other components of market orientation.

Pelham (1993) argues that Kohli & Jaworski may have presented a conceptualisation of market orientation which is too narrow, arguing that "understanding the customers' needs and responsiveness to those needs requires more than information analysis and decision making based on that information". Moreover, argues Pelham "even if this market information is adequately disseminated throughout the organisation it does not ensure firm-wide understanding of customers and firmwide orientation behaviours" (p.21). In short, Pelham argues (p.30) that a more appropriate operationalization of market orientation should include measures pertaining to customer understanding and how organisations provide total value to customers, as opposed to merely measuring information gathering and dissemination. Conversely, Pelham argues that Narver & Slater's MKTOR does capture the notion of providing value to customers, through measures such as customer satisfaction, after sales service, and top management interaction with customers.

Pelham (1993) conducted a pilot study of 51 presidents and sales managers, using both MKTOR and MARKOR. The findings indicated that Narver & Slater's MKTOR achieved greater reliability than Jaworski & Kohli's MARKOR. MKTOR achieved simple structure in factor analysis, while the dimensions of MARKOR did not achieve simple structure for the proposed four factors, or even for two factors. Indeed, only one of the MARKOR measures achieved an item correlation above 0.60 with a total Cronbach's alpha score (A) for their measure of market orientation of 0.71.

Using Churchill's (1979) paradigm for scale development, Gabel (1994) criticises the MARKOR scale on the following grounds: (i) the domain specification of market orientation is based on ambiguous and inconsistent past conceptualisation of both itself and the marketing concept; (ii) generation of scale items, data collection, measurement purification and data collection failed to include the perceptions of customers and channel partners; (iii) reliability is questionable in that MARKOR lacks both strong validity and intersubjective certification; (iv) discriminate and face validity are lacking. For example, Jaworski & Kohli (1993) provided no evidence of reliability and validity of the market orientation measure, other than reporting levels of Cronbach's alpha.

By contrast, Narver & Slater (1990) did provide some evidence of convergent, discriminant and concurrent validity for their MKTOR scale.

Deng & Dart (1994) developed a measure of market orientation based on the conceptual foundations of both Kohli & Jaworski (1990) & Narver & Slater (1990). Reliability of the scale was assessed by estimating Cronbach's alpha, while construct validity was assessed by simple correlation analyses. However, as has been pointed out by Steenkamp & van Trijp (1991 pp.283-284), assessing construct validity through techniques such as Cronbach's alpha and bivariate correlations is far less powerful than employing a confirmatory factor analysis approach.

Chee & Peng (1996) focussed on one particular dimension of market orientation, customer orientation. They developed a measure of 38 items designed to capture this construct.

However, it makes little sense, theoretically, to consider only customer orientation and ignore competitor orientation (see Porter 1980; Day & Wensley 1988; Aaker 1988).

Despite the stream of research in the market orientation literature, it can be argued that the respective measures have been accepted in blind faith by the majority of researchers. For example, Siguaw, Brown & Widing (1994) do not examine the validity of the MKTOR scale, and simply state that "the properties of this scale have been reported only in the Narver & Slater study; however, analyses of reliability and validity were found to be satisfactory" (p.110). Similarly, Greenley (1995 a) does not examine validity issues regarding the MKTOR measure and states that this measure was adopted "because their instrument had been developed and refined, and had produced reliable results" (p.4). Other studies also accept the scales at face value, and perform few validity checks.

When rigorous validity checks are performed using confirmatory factor analysis, the results for both MKTOR and MARKOR are disappointing. Siguaw & Diamnatopolous (1994) found that the overall fit of the model is not good, while Kohli, Jaworski & Kumar (1993) undertook a CFA which produced an unacceptable fit for the model, $X^2 = 955$ (df = 659), goodness of fit index (GFI) 0.681, leading them to state only that "these findings are moderately supportive of the validity of the market orientation construct" (p.473).

This paper examines the MKTOR and MARKOR measures of market orientation using a confirmatory factor analysis (CFA) to determine unidimensionality and within-method convergent validity.

Method

Measures

Two measures of market orientation are examined. MKTOR (Narver & Slater 1990; Slater & Narver 1994) consists of three sub-constructs: customer orientation (6 items), competitor orientation (4 items), and interfunctional coordination (4 items). MARKOR (Jaworski & Kohli 1993) consists of three sub-constructs: intelligence generation (6 items), intelligence dissemination (5 items), and market responsiveness (9 items).

Sample and Unit of Analysis

The sample for this study is the Dun & Bradstreet list of the largest 1164 private companies in Australia, as defined by annual revenue. Large firms are chosen because they are more likely to have marketing departments, and systematic intelligence gathering. The unit of analysis is the corporation, with the CEO or General Manager as the key informants. Questionnaires were also sent to the top 861 public companies in Australia, as defined by annual revenue in order to cross validate the results.

A number of questionnaires were either returned to sender (19 publicly listed; 13 privately owned) or not completed due to company policy (31 publicly listed; 39 privately owned). In total, 262 public and 206 private companies responded, of which 237 (public) and 190 (private) were useable, resulting in an effective response rate of 29.2% (public) and 17.1% (private) respectively. Informants were told that the purpose of the survey was to investigate business practices in Australia. Two questionnaires were designed. One questionnaire contained the MKTOR scale, followed by the MARKOR scale. In the other questionnaire the

order was reversed. There were no statistically significant differences between respondents to the different questionnaires, or between late and early respondents. For further details, see Oczkowski & Farrell (1996 pp.21-25).

Results

To assess the measurement model we conducted a CFA, using EQS (Structural Equation Programme, Bentler 1989), to verify unidimensionality. Assuming multivariate normality for the variables, maximum likelihood estimation is performed on data from the covariance matrix. As part of the scale evaluation process we performed model specification searches in an attempt to improve upon the performance of the original scales. In the context of the measurement model, three approaches have been employed to improve upon the specification of the standard CFA model: 1) permit correlated measurement errors; 2) allow for cross loadings between factors; and 3) delete items from the scale. Changes in model specification are typically based on the examination of Lagrange Multiplier (LM) test statistics (EQS), modification indices (LISREL), and standardized residuals (correlation in EQS and normalized in LISREL); for a general discussion see Bollen (1989) and MacCallum (1995).

In respecifying the market orientation scales in order to improve the unidimensionality of the measures we chose only to delete existing items. There are strong theoretical arguments against model modification based on correlated measurement errors and cross factor loadings. The development of the MKTOR and MARKOR measures used traditional scale development techniques, in which correlated errors and cross loadings were ruled out by definition. Yet there is no theoretical logic to justify correlated measurement errors for these scales (Gerbing & Anderson 1984). Further, the defined sub-constructs have clear unique meanings with appropriately defined items; items were not defined to encourage the possibility of data inspired cross loadings. For example, in the case of MARKOR, Kohli, Jaworski & Kumar (1993, p.470) explicitly cite practical and managerial reasons as the motivation for having items uniquely loading on only one sub-construct.

In contrast, no single item defined for a particular factor appear in the scale if empirical investigation suggests that it can be deleted without harming the scale's performance. Effectively, deleting items does not violate any of the underlying theoretical underpinnings of the scale's development; it simply suggests that a particular item is not particularly well defined for tapping that sub-construct. In developing both the MKTOR and MARKOR scales substantial item reduction occurred in arriving at the preferred measures.

MARKOR

In analysing this 20 item three construct model, correlation between the three latent subconstructs is permitted. The model was initially estimated for the sample of privately owned companies. All factor loadings, error variances and co-variances were estimated to be statistically significant at a 1% level of significance or better. This type of statistical significance was found for all the estimated models. However the model's overall fit was unacceptable: $X^2 = 386$ (df = 167, p < 0.001), goodness of fit index (GFI) = 0.810, adjusted goodness of fit index (AGFI) = 0.762, comparative fit index (CFI) = 0.809 (recommended by Bentler 1992), McDonald's (1989) index of non-centrality (MFI) = 0.562 (recommended by Gerbing & Anderson's (1993) review of Monte Carlo evidence), & Cronbach's alpha = 0.884. Standardized correlation (EQS) residuals were examined to help determine which items to delete to improve the model's performance. Forty residuals (19% of all residuals) had unacceptably high values (greater than 0.1 in absolute value). The measurement model was respecified by sequentially deleting items associated with the largest residuals until an acceptable model was identified, (this procedure was applied to all following models). The resulting 10 item model produced a good fit, $X^2 = 37.3$ (df = 32, p= 0.238), GFI = 0.962, AGFI = 0.935, CFI = 0.986, MFI = 0.986, A = 0.817, with only one (1.8%) large standardized residual. The remaining MARKOR items are listed in the appendix.

To cross validate the results we then tested the scale on a new data set, publicly listed companies, in accordance with the recommendations of Steenkamp & van Trijp (1991). The *a priori* hypothesis that the 10 items should be deleted was confirmed. The fit of the 20 item three construct model was unacceptable: $X^2 = 452$ (df = 167, p < 0.001), GFI = 0.821, AGFI = 0.775, CFI = 0.776, MFI = 0.548, A = 0.867, with 37 (17.6%) large standardized residuals. The reduced 10 item model produced a good fit, $X^2 = 46.3$ (df = 32, p = 0.049), GFI = 0.964, AGFI = 0.939, CFI = 0.970, MFI = 0.970, A = 0.807, with no large standardized residuals.

MKTOR

In this 14 item, three construct, model correlation between the three latent sub-constructs is again permitted The model was initially estimated for the sample of privately owned companies. The fit of the model was unacceptable: $X^2 = 184$ (df = 4, p < 0.001), GFI = 0.878, AGFI = 0.827, CFI = 0.913, MFI = 0.749, A = 0.905, with 17 (16.2%) large standardized residuals. Six offending items were deleted as outlined above. The resulting eight item model produced a good fit, $X^2 = 24.7$ (df =17, p = 0.101), GFI = 0.968, AGFI = 0.933, CFI = 0.990, MFI = 0.980, A = 0.884, with no large standardized residuals. The remaining MKTOR items are listed in the appendix.

When the 14 item MKTOR scale was administered to the sample of public companies. The a priori hypothesis that the 6 items should be deleted was confirmed. The fit of the 14 item model was unacceptable: $X^2 = 261$ (74 df, p < 0.001), GFI = 0.863, AGFI = 0.805, CFI = 0.896, MFI = 0.674, A = 0.921, with 12 (11.4%) large standardized residuals. The reduced 8 item model produced a good fit, $X^2 = 50.3$ (17 df, p < 0.001), GFI = 0.953, AGFI = 0.899, CFI = 0.963, MFI = 0.932, a = 0.890, with only one (2.8%) large standardized residual.

Finally, within method convergent validity was demonstrated with the following: the overall fit of the respecified models was good, all factor regression coefficients were highly significant (p < 0.001), the correlation of each item with the construct exceeded 0.50 (Hildebrandt 1987), and all reliabilities exceeded 0.80.

Discussion

This study has examined the measures of market orientation, MKTOR and MARKOR. The measures were tested in the Australian business culture, and on two separate populations, private and public companies. Findings suggest that both measures were problematic, with an acceptable fit obtained only when several items were deleted.

The original MARKOR measure was a 32 item scale, of which ten items captured market intelligence generation, eight items captured intelligence dissemination, and fourteen items captured responsiveness, (Jaworski & Kohli 1993 p.59). Of the original scale, only one item was dropped from the intelligence dissemination dimension. The subsequent 20 item MARKOR scale (Kohli, Jaworski & Kumar, 1993), was poor by conventional standards in

that the model produced the following results; $X^2 = 955$ (659 df), goodness of fit index (GFI) 0.681. Our preferred MARKOR measure of 10 items maintains a reasonable balance between the various sub-constructs, with 5 items (intelligence generation), 2 items (intelligence dissemination) and 3 items (market responsiveness). Moreover, it is more practical to administer a shorter scale.

Similarly, our findings regarding the MKTOR scale suggest that a shortened 8-item version of the scale produces a better fit of the model, and is easier to administer, than that with 20 items. With regard to both MARKOR and MKTOR, we agree with Kohli, Jaworski & Kumar (1993), that future assessments of the scales should also include both customers, suppliers and other key players within the organisation's environment.

We encourage researchers to repeat this study in a variety of different cultural and business environments. Further research should examine all dimensions of market orientation, rigorously and systematically. Such studies would add to our knowledge regarding these important measures, and would benefit both researcher and practitioner alike.

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Appendix

MKTOR

- 1 * Our business objectives are driven by customer satisfaction.
- 2. We monitor our level of commitment and orientation to serving customers' needs.
- 3. Our strategy for competitive advantage is based on our understanding of customer needs.
- 4. Our business strategies are driven by our beliefs about how we can create greater value for customers.
- 5. * We measure customer satisfaction systematically and frequently.
- 6. * We give close attention to after-sales service.
- 7.* Our salespeople share information within our business concerning competitors' strategies.
- 8. * We respond to competitive actions that threaten us.
- 9. We target customers and customer groups where we have, or can develop, a competitive advantage.
- 10. The top management team regularly discusses competitors' strengths and strategies.
- 11. * Our top managers from every function visit our current and prospective customers.
- 12. We communicate information about our successful and unsuccessful customer experiences across all business functions.
- 13. All of our business functions (eg. marketing/sales, manufacturing, R&D, inance/accounting, etc.) are integrated in serving the needs of our target markets.
- 14. All of our managers understand how everyone in our company can contribute to creating customer value.

* Denotes deleted item

MARKOR

- 1. In this organisation, we meet with customers at least once a year to find out what products or services they will need in the future.
- 2. In this organisation, we do a lot of in-house market research.
- 3. We are slow to detect changes in our customers' product references.
- 4. We survey end users at least once a year to assess the quality of our products and services.
- 5. * We are slow to detect fundamental shifts in our industry (eg. competition, technology, regulation).
- 6. We periodically review the likely effect of changes in our business environment (eg. regulation) on customers.
- 7. We have interdepartmental meetings at least once a quarter to discuss market trends and developments.
- 8. Marketing personnel in our organisation spend time discussing customers' future needs with other functional departments.
- 9. * When something important happens to a major customer of market, the whole department or organisation knows about it within a short period.
- 10. * Data on customer satisfaction are disseminated at all levels in this organisation on a regular basis.
- 11. * When one department finds out something important about competitors, it is slow to alert other departments.
- 12. * It takes us forever to decide how to respond to our competitor's price changes.

- 13. * For one reason or another we tend to ignore changes in our customer's product or service needs.
- 14. * We periodically review our product development efforts to ensure that they are in line with what customers want.
- 15. Several departments get together periodically to plan a response to changes taking place in our business environment.
- 16. If a major competitor were to launch an intensive campaign targeted at our customers, we would implement a response immediately.
- 17. The activities of the different departments in this business are well coordinated.
- 18. * Customer complaints fall on deaf ears in this organisation.
- 19. * Even if we came up with a great marketing plan, we probably would not be able to implement it in a timely fashion.
- 20. * When we find that customers would like us to modify a product or service, the departments involved make concerted efforts to do so.

* Denotes deleted item.