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MULTIPLE KEY INFORMANTS' PERCEPTIONS OF BUSINESS ENVIRONMENTS

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MULTIPLE KEY INFORMANTS' PERCEPTIONS OF BUSINESS ENVIRONMENTS

Abstract

Multiple key informant reports from two mature industrial product companies are analyzed to investigate the construct validity of the measures. Two measures of a firm's business environment were obtained. The results indicate that social judgments about the environment are affected by the key informants' level in the organization. These judgments were significantly related to the performance.

Increased interest in the use of multiple-key-informant reports on organization and business environmental characteristics is emerging in the literature. Although marketing researchers have used key informants to study strategy and distribution channels, problems associated with the reliability and validity of the measurements obtained advises extreme caution in using single item measures and in key informant selection. To the extent that different informants use different information and social cues to form their judgments, there will be a low degree of correspondence between informants' reports and salient organizational criteria.

These problems have been highlighted in articles by John and Reve (1982) and Phillips (1981). Phillips sampled multiple informants in 506 wholesale-distribution companies to ascertain information on (1) characteristics on the firms' product portfolio and (2) its power relationship with its major suppliers and customers. He found that while the criteria for both discriminant and convergent validity could be met, there was considerable measurement error in the data. However, it was not possible to determine whether aspects of the key-informant process or inadequate measures or both were the causal antecedent of measurement error.

John and Reve (1982) analyzed data on two constructs measured by multi-item scales: structural dimensions of interorganizational relationships, and dimensions of dyadic sentiments. Using dyadic relationships in marketing channels between retailers and wholesalers, they found that informants could provide reliable and valid data on organizational structure characteristics, but not on sentiments. Perhaps some key informants might not be capable of making the complex social judgments researchers and managers pose to them. Agreement was high when both parties (retailers and wholesalers) were able to use concrete

observable data. Unfortunately, when the data focused on constructs and not concepts, little agreement was possible. A concept is an abstraction from observed events, the characteristics of which are either directly observable or easily measured (e.g., organizational structure). Some concepts, however, cannot be so easily related to the phenomena they are intended to represent (e.g., sentiments). They are inferences, at a higher level of abstraction from concrete events, and their meaning cannot easily be conveyed to the point of specific events. Such higher-level abstractions are sometimes identified as constructs, since they are constructed from concepts at a lower level of abstraction. The highly abstract nature of the sentiment construct could be a reason why little agreement was found. John and Reve conclude that both the nature of the construct and existing theoretical models must be studied. Unfortunately, the small number of multiple informants from the same organization did not allow the authors to adequately assess the influence of key informant selection on the extent of measurement error.

Several important and as yet unanswered issues are raised by these researchers. First, both Phillips and John and Reve have advocated the use of multiple item measures and multiple key informants from the same organization to determine whether error is introduced because of improper construct measurement, informant selection or both. The use of single item measures by Phillips prevented him from completely addressing this issue in his study. John and Reve, on the other hand, were unable to obtain a large enough sample of multiple informants in each organization to address the issue of informant selection. If the measures are found to be internally consistent, but key informant reports exhibit low agreement, then this would provide support for the view that aspects of the informant reporting process, not inadequate measures, are the causal antecedent to measurement error. However, if the internal consistency of measures

is found to be low, then this would support the view that inadequate measures were to blame for lack of agreement between informants.

Second, the construct validity of key informant responses has not been evaluated according to whether the measure relates to significant organizational criteria. Multiple measures may demonstrate convergent validity, but this does not prove construct validity. Nunnally (1978) and Campbell (1976) suggest that a final step in evaluating construct validity is to show that the measure behaves as expected in relation to another construct. If John and Reve, for example, had found that their measures of centralization of channel dyad decision making were positively related to channel efficiency as hypothesized by Stern and Reve (1980), then construct validity could have been assessed. The advantage of this analysis is that rather objective measures of channel efficiency could have been developed (e.g., sales per square foot, market share) and related to key informant data. If key informants with certain characteristics are found to provide responses consistently correlated with performance, then those people should be sampled in the future.

The basic purpose of this article is to further investigate these important issues with respect to proper selection of key informants. Information from key informants from different organizational positions will be evaluated according to their ability to develop internally consistent judgments about their business environment and to relate these judgments to performance. In addition, the generalizability of the results is examined by replicating the study with two different samples.

Field sales managers and sales people were asked to report on certain aspects of the competitive and customer environment in the territory(s) for which they were responsible. These people were selected as key informants for several reasons. First, both sets of informants are required to make these assessments

within the contexts of their organizational positions. Sales managers, for example, should regularly take the competitive environment into consideration when evaluating each salesperson's performance (Brown, Jackson and Mowen, 1981). The extensive participation of sales people in quota setting and sales forecasting (Wotruba and Thurlow, 1976) requires them to regularly assess the business environment in their territories also. Therefore, low quality responses will not be due to the novelty of the task and job tenure is not likely to have a significant influence.

Second, this sample selection helps to alleviate problems associated with judgmentally assessing the similarity of informants' organizational position. Previous studies have found that organizational position influences the quality of informant responses (Phillips, 1981; Seidler, 1974). However, because the informants were from multiple companies, these researchers were required to a priori classify people into equivalent organizational positions while attempting to control for both inter-position and inter-organizational influences (e.g., strategy, market share, availability of information). These problems are substantially alleviated when informants are all from the same company.

Third, sales data provide an excellent opportunity to evaluate the construct validity of key informant judgments. Previously developed theoretical models and empirical research indicates that business environment should be related to territory sales volume. In one of the most widely accepted and complete models of the determinants of sales performance, the Churchill, Ford and Walker model (1981) states that a territory's business environment should have a direct influence on performance, as well as an indirect impact through the salesperson. A number of territory sales response studies (Beswick and Cravens, 1977; Bagozzi, 1976; Ryans and Weinberg, 1979) have found that sales volume is directly influenced by a number of territory characteristics (e.g.,

sales potential, geographic dispersion, concentration). These have been able to explain as much as 89 percent of the variation in sales in different territories. Therefore, a good means for evaluating the construct validity of key informant responses is to examine their relationship to territory sales volume.

METHOD

Sample Design

In this study, sales people and managers from two separate companies served as key informants. The responses from 286 sales people and 42 sales managers were obtained from one company, while 245 sales people and 36 sales managers responded from the second company. While these companies are classified into different S.I.C. codes, they are both fairly large industrial goods companies and compete in mature industrial product environments. According to Hambrick (1983), these industries might be classified as being roller-coaster commodities. Firms in these industries exhibit high instability in primary demand and low product dynamism.

Business Environment Instrument

There is considerable debate on how to measure the various aspects of a firm's business environment (e.g., Downey and Slocum, 1982). Most of the problems can be identified as either ill-defined theoretical rationale for choosing the concepts utilized or inadequate psychometric properties of the measurement instruments. According to Hambrick (1983), in mature industrial product environments, there are certain characteristics of the environment that are salient to those firms operating in them. Coalescing the research from the business policy and organization theory domains, he was able to develop profiles for eight industrial settings. Within each of their eight settings there were defining characteristics. Our setting was identified as "roller-coaster

commodities," whose defining characteristics were low product dynamism and high demand instability. Product dynamism refers to the opportunity for the firm to differentiate its product, whereas demand instability means that competition is keen because fixed costs must be covered during slow times and sales are crucial during good times. Our sample of a large agricultural fertilizer and a building material company clearly exemplify Hambrick's typology. Using these two characteristics, we modified the instrument developed by Khandwalla (1977) to measure these (see Appendix). In Khandwalla's study of 103 Canadian manufacturing firms, the scale reliabilities for competitive pressures was $\alpha = .56$ and dynamism was $\alpha = .76$. Therefore, we have limited our definition of the environment to two characteristics and used an instrument whose psychometric properties were established.

Performance Measure

Although salespeople in these companies are asked to perform a number of tasks, both companies' management indicated that sales volume was the most important criteria for evaluating performance. The construct validity of the key informant responses was evaluated according to their relationship to actual sales volume in each territory. Sales volume in each territory was adjusted for differences in sales potential by regressing sales potential on sales volume. The residuals of this regression analysis served as the measure of performance.

RESULTS

Dimensions of Business Environment

To develop unidimensional measures of each territory's business environment, the business environment questionnaire was factor analyzed. The Scree Test (Cattell, 1966) was used to determine that two factors should be extracted for both sales managers and sales people. The resulting varimax rotated factor

loadings are presented in Table 1. The data in Table 1 indicate that each of the

 Insert Table 1 about here

variables loaded most heavily on similar factors for sales managers and sales people in both companies. Only the factor loading for Company A's sales people diverge from the pattern of the other three sets of key informants, with variables 3 and 4 loading on the opposite factors.

A more complete psychometric analysis of the association between different factor analysis results would be to compare the magnitude of factor loadings between factors with like variables (Harman, 1979) across companies. Table 2 presents the coefficient of congruencies for factor loadings between key informants in similar organizational positions between the two companies. The congru-

 Insert Table 2 about here

ency between factor loadings for sales managers (.940 and .919) are within the acceptable range established by Tucker (1951) and are higher than those for sales people (.889 and .721).

Further analysis of the congruency coefficients for key informants at different organizational levels within and between companies are shown in Table 3. There is generally higher agreement between the different key infor-

 Insert Table 3 about here

mants in Company B, than in Company A (.844 and .824 compared to .611 and .671). It is also interesting to note that there is greater congruency between key informants at the same organizational level than between key informants within the same company but at different organizational levels. To assess whether sales

managers' job tenure affected these data, a nested design was used. The data indicated that job tenure did not affect perceptions of the business environment in Company A ($F = .2148, p < .81$) or Company B ($F = .723, p < .52$).

Internal Consistency

The internal consistency of each scale is provided by coefficient alpha. The mean, standard deviation and coefficient alpha for each scale and set of key informants are shown in Table 4. For early stages of basic research, Nunnally (1978) suggests that reliabilities of .50 to .60 suffice. Both Company A

- - - - -
 Insert Table 4 about here
 - - - - -

and B sales managers' responses exceed these levels of acceptability. However, only Company A's sales peoples' responses on competitive aggressiveness exceed the minimum acceptable level (.536). Other combinations of items were investigated in an effort to increase the coefficient alphas for sales people, but none produced an acceptable alpha level.

Performance

The construct validity of the two business environment scales was evaluated according to the association between key informants' perceptions and territory sales volume when controlling for sales potential differences. Ryans and Weinberg (1979) found that competition had a significant negative influence on territory sales response for two of the three companies they investigated. Therefore, sales potential differences had to be minimized because territories differed in the amount of competition. The national sales managers from the two firms felt that intensive competitive aggressiveness would have a negative influence on sales potential penetration. Therefore, competitive aggressiveness was expected to have a negative association with territory sales volume performance in both companies. Customer loyalty, on the other hand, was hypo-

thesized to have a positive association on sales performance. Loyalty is built on customer satisfaction with the service of the sales person and his company. Therefore, loyalty should be positively related to sales.

Correlations between territory environment perceptions and sales volume are presented in Tables 5 and 6 for Companies A and B. The correlations between

 Insert Tables 5 and 6 about here

sales managers' perceptions of competitive aggressiveness and sales are significant ($r = 0.239$, $p < .01$, and $-.289$, $p < .01$ for managers in Company A and B, respectively. This supports the findings by Ryans and Weinberg (1979) and our hypothesis. Sales people's perceptions of competitive aggressiveness were not significantly related to sales for either company.

Perceptions of customer loyalty by sales managers in Company B were significantly related to sales ($r = .239$, $p < .01$). While the responses by sales managers in Company A were positively related to sales, the correlation was not significant. Once again, sales peoples' perceptions were not significantly correlated with sales.

The relatively stronger competitive position of Company A in its market may explain the lack of a significant relationship between customer loyalty and sales performance. Company A has historically held a dominant U.S. market share (e.g., 30 to 40 percent) in a fairly concentrated roller-coaster commodity business environment. Company B, on the other hand, has not had a very dominant national presence. The industry is highly fragmented with many strong local competitors. As a result, customer loyalty is more dependent on the quality of local sales representation for Company B than for Company A, which has been able to build up company loyalty over an extended period of time. As a result, most of Company A's customers may have reached a level of supplier confidence that renders the differences between territories moot and exerts no real influence

on sales volume. The means and standard deviations reported in Table 4 for customer loyalty lend some support to this line of reasoning. The mean responses for both sales managers and salespeople ($\bar{X} = 12.1$ and 11.4) are higher in Company A than those for Company B. At the same time, the standard deviations for Company A are smaller.

Discussion and Conclusions

The purpose of our study was to assess the information of multiple-key informants and its relationship to performance. Two firms in mature industrial-products environments were selected. Both sales persons and their immediate superiors were questioned. The findings support both Phillips and John and Reve that multiple-key-informants within a firm should be used. Phillips' conjecture that investigators might wish to gather data from different multiple informants for each construct under study received support. In our study, the construct was abstract and required high forms of social judgment. The informants who provided the most valid information were the sales managers, and not the sales persons. Position in the organizational hierarchy was the most salient variable relating key informant data and performance. If we attempt to ask participants to process more complex information than they can, measurement error reduces the reliability and validity of their judgments. Therefore, while the procedure advocated by Phillips (1981) may be time consuming and expensive, our results support his position.

Second, respondents should be asked to respond to multiple survey items designed to measure the same concept. While this was done by John and Reve, the internal consistency reliability of Phillips' data could not be checked because of the use of single item measures. Our data clearly indicate that because internal consistency reliabilities could not be adequately established

at the sales person level, alternative methods attempting to measure the same construct might be used.

Third, in mature industrial-product business environments, sales managers' perceptions of competition was negative related to the performance of their sales persons. Because both of these companies were particularly subject to swings in economic conditions and other demand factors, competition was keen among those firms in the industry. This competition may create resource tensions between territories in periods of low sales as sales people vie for business to cover their fixed costs.

APPENDIX

I. BUSINESS ENVIRONMENT

How would you characterize the business environment of your territory?
 Below are listed a series of possible statements describing the business environment within your territory. Please indicate the degree of your agreement or disagreement with each statement as it reflects your perceptions of the business environment in this territory. Please use the following scale:

SA = Strongly Agree
 MA = Moderately Agree
 NAD = Neither Agree nor Disagree
 MD = Moderately Disagree
 SD = Strongly Disagree

- | | | | | | |
|--|----|----|-----|----|----|
| 1. My customers' businesses are very similar | SA | MA | NAD | MD | SD |
| 2. Annual demand forecasts for this territory are always very accurate . . . | SA | MA | NAD | MD | SD |
| 3. Customers in my territory always require detailed product specifications. | SA | MA | NAD | MD | SD |
| 4. Competitors aggressively discount prices | SA | MA | NAD | MD | SD |
| 5. Competitors are spending a lot of money on advertising and promotion in this territory. | SA | MA | NAD | MD | SD |
| 6. Competitors are aggressively trying to increase their market share in my territory. | SA | MA | NAD | MD | SD |
| 7. Customers in this territory are very loyal to their present supplier(s) . . | SA | MA | NAD | MD | SD |

TABLE 1

VARIMAX ROTATED FACTOR LOADINGS

Variables	Company A				Company B			
	Salespeople		Managers		Salespeople		Manager	
	Factor 1	Factor 2	Factor 1	Factor 2	Factor 1	Factor 2	Factor 1	Factor 2
1	.108	.699	-.075	.786	.216	.608	.002	.766
2	-.265	.749	-.071	.645	-.027	.744	.019	.796
3	.348	.616	.681	.016	.436	.121	.635	-.047
4	.583	.029	.802	-.037	.360	-.529	.754	-.050
5	.726	.003	.474	-.156	.655	.007	.686	.247
6	.632	.309	.851	-.001	.688	-.065	.771	-.162
7	.376	-.017	.001	.691	.248	.281	.375	.497
Eigenvalue	1.873	1.756	2.063	1.462	2.631	1.087	2.395	1.359
Percent of Explained Variance	26.8	25.1	29.5	20.9	37.6	15.5	34.2	19.4

TABLE 2

Stability of Factor Loadings for
Salespeople and Sales Managers

		Company B			
		Salespeople		Sales Managers	
		Factor 1	Factor 2	Factor 1	Factor 2
Company A	Salespeople: Factor 1	.889 ^a	.211		
	Factor 2	.503	.721		
	Sales Managers: Factor 1			.940	.108
	Factor 2			.208	.919

$$^a \text{Coefficient of Congruency} = \left(\sum_{j=1}^n 1^{a_{jp}} \cdot 2^{a_{jq}} \right) / \left(\sum_{j=1}^n 1^{a_{jp}^2} \right) \left(\sum_{j=1}^n 2^{a_{jq}^2} \right)$$

TABLE 3

Comparison of Factor Loadings for
Salespeople versus Sales Managers

			<u>Company A</u>		<u>Company B</u>	
			<u>Sales Managers</u>		<u>Sales Managers</u>	
			<u>Factor 1</u>	<u>Factor 2</u>	<u>Factor 1</u>	<u>Factor 2</u>
Company A	Salespeople:	Factor 1	.611	.075		
		Factor 2	.339	.671		
Company B	Salespeople:	Factor 1			.844	.194
		Factor 2			.405	.824

TABLE 4

Reliability Coefficients (Coefficient Alpha) for
Business Environment Scales

	Number of Items	Mean (Standard Deviation) Company A	Mean (Standard Deviation) Company B	Coefficient Company A	Alpha Company B
Competitive Agressiveness:					
Sales Managers (CM)	4	13.8 (2.65)	13.7 (2.62)	.705	.649
Salespeople (CP)	4	14.9 (2.53)	14.9 (2.67)	.536	.285
Customer Loyalty:					
Sales Managers	3	12.1 (1.88)	10.0 (2.19)	.716	.625
Salespeople	3	11.4 (1.95)	8.6 (3.10)	.213	.242

TABLE 5

COMPANY A

Pearson Product Moment Correlations

	<u>CM</u>	<u>CP</u>	<u>LM</u>	<u>LP</u>
Competition - Sales Managers (CM) ^a	1.000			
Competition - Salespeople (CP)	.221 ^b	1.000		
Customer Loyalty - Sales Managers (LM)	-.263 ^b	.081	1.000	
Customer Loyalty - Salespeople (LP)	.076	-.185 ^b	-.099	1.000
Residual Sales (S)	-.239 ^b	-.025	.123 ^c	.045

^a_n = 286

^b_p < .01

^c < .05

TABLE 6

COMPANY B

Pearson Product Moment Correlations

	<u>CM</u>	<u>CS</u>	<u>LM</u>	<u>LP</u>
Competition - Sales Managers (CM) ^a	1.000			
Competition - Salesperson (CS)	.236 ^b	1.000		
Customer Loyalty - Sales Managers (LM)	-.362 ^b	.098	1.000	
Customer Loyalty - Salespeople (LP)	.089	-.199 ^b	.076	1.000
Residual Sales (S)	-.289 ^b	-.056	.239 ^b	.066

^a_n = 245

^b_p < .01

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