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Abstract

Research of uncertainty has traditionally focused on dimensions of the external environment as key sources of decision-making uncertainty. The research reported here seeks to supplement the traditional perspective by examining the roles of two important internal channel environment dimensions. Specifically, measures reflecting member performance and leader provision of information are included with measures of environmental capacity and dynamism to model decision-making uncertainty. Data were obtained from dealers in the franchised automobile industry, and results indicate that one of the internal environment constructs, dealer performance, is a consistently significant explainer of decision-making uncertainty. Environmental dynamism is also found to be positively related to uncertainty.

Introduction

Recent channels research of decision-making uncertainty has dealt with external environmental issues as the key sources of uncertainty. Among other characteristics of the environment, its capacity and dynamism have been positioned as salient variables to explain uncertainty (Achrol and Stern 1988). Capacity refers to the favorableness or munificence of the external environment, and dynamism is the extent of change or variability in marketing forces and the output environment (Achrol and Stern, 1988; Achrol, Reve, and Stern 1983; Dwyer and Welsh 1985; Dwyer and Oh 1987). Because of the central role of uncertainty in organizational and channel theory (Achrol, Reve, and Stern 1983; Duncan 1972; Pfeffer and Salancik 1978; Thompson 1967), and limited explanation of uncertainty by environmental characteristics such as capacity and dynamism (cf., Achrol and Stern 1988; Bourgeois 1985), additional attention to the topic is warranted. In particular, an evaluation of other types of explanatory variables offers a straight forward avenue to supplement existing research in the hopes of achieving better overall explanatory power.

Along with environmental capacity and dynamism, we propose and test two variables from the internal environment of channels. The channel member's performance and the channel leader's provision of information are examined as precursors of uncertainty formation. Better firm performance and availability of information regarding the external environment are expected to decrease perceived uncertainty. Further, the magnitude of effects of these variables is expected to be comparable to that of the external variables, environmental capacity and dynamism.

The authors examine both external and internal environmental effects on perceived uncertainty

of franchised dealers in the automobile industry. Dealer's perceived uncertainty is proposed as a function of perceived capacity and dynamism of the local output environment, as well as past dealership performance and uncertainty absorption by the manufacturer's provision of information to the dealer.

Background and Hypotheses

The interplay between external and internal channel environments is suggested by earlier research of channel control and by more recent theory and research of channels (Achrol, Reve, and Stern 1983; Dwyer and Oh 1987; Etgar 1977; Heide and John 1988; Klein, Frazier, and Roth 1990). The external environment has been conceptualized as a stock of resources and/or as a source of information, lending emphasis to problems of environmental uncertainty and dependence (Aldrich and Pfeffer 1976; Duncan 1972). In marketing channels, the external environment may threaten channel and member performance, create uncertainty and conflict, and lead to environmental or channel management attempts (Achrol, Reve, and Stern 1983; Dwyer and Oh 1987; Dwyer and Welsh 1985; Etgar 1977; Klein, Frazier, and Roth 1990).

Uncertainty reflects both information and resource perspectives of external environments and is defined as the perception of inadequate information to plan for and predict future environmental conditions (Pfeffer and Salancik 1978). Uncertainty may arise from changes in input, output, legal, technological, or other sectors of the environment (for a review see Aldrich 1979). Perceived complex, dynamic environments should logically correspond with high uncertainty, and simple, static environments should correspond with low uncertainty (Duncan 1972). However, only a weak link between the dimensions of external environments and uncertainty perceptions has been found (Bourgeois 1985).

This lack of strong correspondence may be attributed to individual differences in cognitive complexity, tolerance for ambiguity, experience, and decision discretion (Downey, Hellriegel, and Slocum 1975). One solution is to conceptualize the environment as an enacted phenomena (Weick 1969), since although actual environmental conditions will impact outcomes, it is the perception of the environment that likely influences decision making (Achrol and Stern 1988; Dwyer and Welsh 1985; Pfeffer and Salancik 1978). The present research examines the effects of perceived environmental capacity and dynamism on decision-making uncertainty.

A second explanation for uncertainty not corresponding strongly to environmental characteristics is its amelioration by individual firms in

their own responses to and interaction with the environment (Achrol, Reve, and Stern 1983; Bourgeois 1985; Downey, Hellriegel, and Slocum 1975). Individual firms may be relatively protected or effective in their own microenvironments. The present study examines this second explanation by specifically modeling uncertainty as a function of the performance of the dealer firm and the manufacturer's provision of environmental information to dealers.

Hypotheses

Scarcity and instability of output resources, such as customer demand, may lead to uncertainty (Achrol, Reve, and Stern 1983). Further, changes in competitor strategies and customer preferences are likely to result in uncertainties in planning, inventory, and marketing decisions (Achrol and Stern 1988). Thus, decision-making uncertainty should be less when the output environment is perceived as favorable and should be greater under dynamic conditions of the environment:

- H1. The greater the environmental capacity, the less uncertainty; and
- H2. The greater the environmental dynamism, the more uncertainty.

However, the linkage between environmental characteristics and perceived uncertainty has not been consistently supported, possibly due to individual perceptual differences or coping abilities or as a result of uncertainty absorption (Bourgeois 1985; Downey, Hellriegel, and Slocum 1975). The dealer's ability to cope with the environment may be reflected in dealership performance, with better performance decreasing the level of perceived uncertainty (see Aldrich and Pfeffer 1976). The dealer's environmental coping ability and, thus, uncertainty, may also be affected by other channel members' absorption of environmental uncertainty (Achrol, Reve, and Stern 1983; Weick 1969). Decision-making uncertainty is proposed, not only as a function of the external environment, but also as a function of its absorption by dealership performance and by the manufacturer's provision of information regarding the environment:

- H3. The better the dealership performance, the less uncertainty; and
- H4. The more the manufacturer provides information to the dealer, the less uncertainty.

Methodology

The research is set within a single industry to control for concurrent variation in several sectors of the environment and to test specific relationships among the external and internal environments of channels (cf., Calder, Phillips, and Tybout 1981). The automobile dealership industry was chosen so that principal dyadic relationships between the dealer and manufacturer could be studied (Achrol, Reve, and Stern 1983). Variation in local retail environments are expected in output and competitive sectors, but

within the industry, little variation is expected in legal, social, or technological sectors.

Sample

The sample consisted of franchised automobile dealers in a Midwest state. Self-administered questionnaires were mailed to a random sample of 400 dealer-owned franchises. Surveys were addressed to the owner, but directed to the franchise manager, if owners were not directly involved with dealership management. Taken from a list of all franchised dealers in the state, the effective sample was reduced to 366 by dealerships no longer in business (1.0 percent), dealerships with only commercial truck franchises (4.0 percent), and dealers who owned more than one franchise (3.5 percent). Completed surveys were received from 125 dealerships for an effective response rate of 34.2 percent. Dealer perceptions were used to assess uncertainty and characteristics of the external environment, as well as dealership performance and the manufacturer's provision of information.

Perceptual Measures

Measures of dealer perceptions were developed from a literature review; subsequent interviews with dealers were used to clarify wording and modify the content of scales. A summary of the measures is provided in Table 1, and correlations are given in Table 2.

The first set of measures were designed to capture decision-making uncertainty regarding four types of decisions: levels of inventory, brands and models to carry, brands and models to promote, and advertising and promotion decisions. These were evaluated for three dimensions of uncertainty: predictability of consequences, information adequacy, and confidence in decisions made (Duncan, 1972; Achrol and Stern 1988). Each decision type was evaluated with six-point scales anchored from "can all the time" to "can never predict" consequences (prediction uncertainty), "no additional" to "a great deal more" information needed (information uncertainty), and "totally" to "not at all comfortable" with this decision (decision uncertainty). Exploratory factor analysis, using a scree-plot of eigenvalues, supports these three dimensions, which explain 71.3 percent of the variance in uncertainty. Three dependent variables were formed by averaging the responses to the four decision types for each dimension: (1) prediction uncertainty (UNCPRED); (2) information uncertainty (UNCINFO); and (3) decision uncertainty (UNCDEC). Each four-item measure displays adequate reliability ($\alpha = .80, .90$, and $.86$, respectively).

Although some studies have employed objective secondary data to assess the external environment of organizations (cf., Dess and Beard 1984; Keats and Hitt 1988), others have argued that the decision maker's interpretation of environmental conditions precipitates actions, as well as related cognitions and feelings (Pfeffer and Salancik 1978; Weick 1969). Following Achrol and Stern's (1988) operationalizations, we

TABLE 1
DESCRIPTION OF MEASURES

Construct	Dimensions ¹	Scale	Reliability ²
Decision-Making Uncertainty	1. Prediction Uncertainty (UNCPRED) 2. Information Uncertainty (UNCINFO) 3. Decision Uncertainty (UNCDEC)	Can predict consequences, 6-pt. ³ Information needed, 6-pt. Comfortable with decision, 6-pt.	.80, 4 items .90, 4 items .86, 4 items
Environmental Capacity	1. Capacity of Local Market (CAPAC)	Favorableness of conditions, 7-pt.	.78, 5 items
Environmental Dynamism	1. Competitive Dynamism (DYNCOMP) 2. Product Dynamism (DYNPROD) 3. Customer Demand Dynamism (DYNDDEM) 4. Market/Marketing Dynamism (DYNMKT)	Frequency of change in local market, 6-pt. scale used for all dimensions	.88, 5 items .72, 4 items .78, 4 items .77, 3 items
Dealer Performance	1. Goal Performance (DPERF)	Performance in prior year, relative to goals, 7-pt. scale	.80, 5 items
Information Provision	1. Manufacturer's Contribution to Available Information (MINFO)	Percent of available information provided by manufacturer to dealer	.74, 5 items

- 1. Dimensions revealed in exploratory factor analysis
2. Coefficient alpha
3. 6-point scale used

measured dealer perceptions of capacity and dynamism as two aspects of the external environment. Capacity was measured as the perception of the favorableness or unfavorableness of economic growth, automobile demand, general consumer demand, competition, and demand for the dealer's products. A seven-point scale was used, ranging from very unfavorable to very favorable conditions in the local market. The five items appear to be unidimensional, as evidenced by exploratory factor analysis, and reliable ($\alpha = .78$). An index of capacity was created by averaging the item responses (CAPAC).

Environmental dynamism, the frequency of change or dynamism in marketing forces in the output environment (Achrol and Stern 1988), was measured using a 15-item scale to capture perceptions of the frequency of change in the output market, competitor's strategies, marketing strategies, and customer preferences. The six-point scale used was anchored from "no" to "very frequent" change in the local market. Exploratory factor analysis reveals four dimensions of dynamism: (1) competitive (DYNCOMP); (2) product (DYNPROD); (3) customer demand (DYNDDEM); and (4) market/marketing (DYNMKT). The four factors account for 68.4 percent of the variance in dynamism. Indices were created by averaging the items for each dimension, and, as seen in Table 2, the measures are positively correlated. Reliability is indicated as follows: (1) DYNCOMP, 5 items, $\alpha = .88$; (2) DYNPROD, 3 items, $\alpha = .72$; (3) DYNDDEM, 4 items, $\alpha = .78$; and (4) DYNMKT, 3 items, $\alpha = .77$.

Rather than using an objective measure of performance, we considered dealership performance as an enacted phenomenon and used perceptual measures. Dealers were asked to rate their performance in the past year relative to goals for five areas: net sales, profit, market

share, financial position, and business expansion. A seven-point scale was used for each performance area, ranging from: (1) "very much below goals"; to (4) "exactly met goals"; to (7) "very much above goals." Unidimensionality was indicated by a one-factor solution in exploratory factor analysis, and the five items display adequate reliability ($\alpha = .80$). An index of performance (DPERF) was formed by averaging the five items.

The manufacturer's provision of information was assessed by a five-item scale for information regarding the industry, competition, consumers,

TABLE 2
CORRELATIONS AMONG MEASURES*

	1	2	3	4	5
1 UNCPRED	1.00				
2 UNCINFO	.14	1.00			
3 UNCDEC	.42*	.21*	1.00		
4 CAPAC	-.22*	.04	-.11	1.00	
5 DYNCOMP	.00	.15	.12	-.03	1.00
6 DYNPROD	-.04	.06	.09	.14	.53*
7 DYNDDEM	-.08	.22*	.05	-.01	.40*
8 DYNMKT	-.19*	-.02	.01	.23*	.39*
9 DPERF	-.42*	-.21*	-.18	.28*	.01
10 MINFO	-.07	-.05	.05	.03	.01

TABLE 2 (CONT.)

	6	7	8	9	10
6 DYNPROD	1.00				
7 DYNDDEM	.44*	1.00			
8 DYNMKT	.48*	.38*	1.00		
9 DPERF	.13	-.19*	.10	1.00	
10 MINFO	-.05	.10	.00	-.02	1.00

* Correlations significant at the $p < .05$ level

technology, and legal issues. The measure asked the percent of all the dealer's available information which is provided by their principal manufacturer (that is, franchiser). One factor and adequate reliability ($\alpha = .74$) were indicated, and an index (MINFO) was formed by averaging the five items.

Results

The hypotheses were tested through a series of regression analyses. Three models were estimated, using the three uncertainty constructs as dependent variables. In each case, the analysis began with all independent variables in the equation; sequential elimination was used until all remaining variables were statistically significant ($p < .10$). At each iteration, the variable with the lowest nonsignificant t -value was removed and the model reestimated with the remaining variables. Results are presented in Table 3. Multicollinearity was examined through condition indices for all regression models (Belsley, Kuh, and Welsch 1980), using the COLLIN procedure in SPSS 4.1. All condition indices were below the $CI < 30$ limit suggested by Belsley, Kuh, and Welsch (1980), thus multicollinearity does not appear to pose a threat to stability and interpretation.

Hypothesis 1 - 4 propose that perceived uncertainty is a function of environmental capacity and dynamism, dealership performance, and manufacturer provision of information. The first equation of Table 1 shows results of regression analysis dealing with prediction uncertainty. The model accounts for 14 percent of the variance in prediction uncertainty, and dealership performance (DPERF) is the only significant variable remaining in the model. The analysis supports H3 that prediction uncertainty is a negative function of the dealership's past performance. On the other hand, environmental capacity and dynamism and information provision by the manufacturer are not found as explanators of prediction uncertainty, failing to support H1, H2, and H4.

Regarding information uncertainty, three variables are significant: dealer performance, capacity, and customer demand dynamism. The model accounts for 15 percent of the variation in information uncertainty. All indices of collinearity are well under the critical value. The analysis supports H2 and H3: information uncertainty is shown as a positive function of demand dynamism and a negative function of dealership performance. However, no other dynamism variables were significant, and manufacturer information provision was not shown as a significant predictor of information uncertainty. With regard to environmental capacity, H1 predicts a negative relationship, but a positive relationship was indicated for the capacity variable ($p = .07$), failing to support H1.

The final analysis concerns decision uncertainty; two independent variables are significant: dealership performance and competitive dynamism. Collinearity indices are well within acceptable ranges, and the model accounts for 8 percent of

TABLE 3
REGRESSION RESULTS*

1. Dependent Variable: Prediction Uncertainty

$$\text{UNCPRED} = -.373 \text{ DPERF} \\ (p=.001)$$

$$[R^2 = .139; F = 16.34; p = .0001]$$

2. Dependent Variable: Information Uncertainty

$$\text{UNCINFO} = -.256 \text{ DPERF} + .178 \text{ CAPAC} + .223 \text{ DYNDEM} \\ (p=.01) \quad (p=.07) \quad (p=.02)$$

$$[R^2 = .151; F = 5.75; p = .001]$$

3. Dependent Variable: Decision Uncertainty

$$\text{UNCDEC} = -.205 \text{ DPERF} + .199 \text{ DYNCOMP} \\ (p=.04) \quad (p=.04)$$

$$[R^2 = .076; F = 4.08; p = .020]$$

* Standardized regression coefficients given

the variation in decision uncertainty. This analysis also provides support for both H2 and H3: decision uncertainty is shown as a positive function of competitive dynamism and a negative function of dealership performance. Hypotheses H1 and H4, regarding capacity and information provision, are not supported by the results with respect to decision uncertainty.

The dimensions of uncertainty provide three separate tests of the four hypotheses, and the results are fairly consistent. Performance of the dealership is statistically significant and in the predicted direction in all three models. Dynamism measures are also significant and in the predicted direction in two of the three models. Thus, H2 and H3 were supported by the data. Variables representing environmental capacity and manufacturer provision of information to the dealer were not significant and, in one instance, not in the predicted direction. Neither H1 or H4 were supported in the analysis.

Conclusions

A key contribution of the study is its focus on both the internal and external environments of channels as related to decision-making uncertainty. Prior research has suggested the role of external environment characteristics on uncertainty and on channel conflict and control, but little research has examined channel members' actions to absorb uncertainty. The current research is limited to only two of several environmental characteristics, but supports previous findings and extends the explanation of decision-making uncertainty by inclusion of the performance of dealers.

A central finding of the study is that environmental dynamism appears as a significant explan-

ator of automobile dealer uncertainty, but environmental capacity does not appear to be directly negatively related to decision-making uncertainty. These results are fairly consistent with Achrol and Stern's (1988) findings. Of particular interest is the finding that past dealership performance is closely linked to perceived uncertainty. Actions of dealers appear to ameliorate uncertainty. This effect was the most consistent among the four proposed determinants examined, yielding significant results when modeled with prediction, information, and decision uncertainty.

Uncertainty absorption by the manufacturer's provision of information about the environment was not indicated, however. This result may be attributed to the particular measures used or to the relatively greater importance of alternative sources of information used by dealers (such as trade associations). Manufacturer actions may exercise a less direct effect on dealer uncertainty, however. For example, manufacturer action which impedes or enhances dealer performance would have the effect of increasing or decreasing perceived uncertainty.

It should be noted that the amount of variance explained by the analysis here is modest. Several areas for future research appear promising. First, additional research of performance effects on uncertainty is needed. Second, the role of information provision should be examined through the use of more comprehensive measures of the types, amounts, sources, and quality of information provided to channel members. Third, other characteristics of external and internal environments of channels should be included in future studies of uncertainty, and, more generally, in studies of channel relationships. In particular, effects of manufacturer actions on dealer performance, and indirect effects on uncertainty could be included. Finally, research on the outcomes of decision-making uncertainty on the channel relationship and the subsequent performance of members is suggested.

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