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This exploratory study assesses the impact of variables associated with a financial portfolio model (marginal returns, growth, synergy, and uncertainty) and characteristics of the channel relationship (power, organizational climate, and communications) on the selling time allocated by 71 independent sales agencies to the principals they represent. The results indicate that the time allocated to principals is consistent with a normative microeconomic model; however, aspects of the channel relationship, particularly communications, participation, and feedback, also influence resource allocations.

Resource Allocation Behavior in Conventional Channels

Many channel management activities are directed toward influencing the resource allocation behavior of conventional channel members. For example, suppliers try to induce independent agents to spend more time selling their products, retailers to devote more shelf or floor space for displaying their products, and wholesalers to carry more of their products in inventory. Though influencing resource allocation behavior is an important channel management objective, little empirical research has examined the effects of channel management activities on these behaviors of conventional channel members.

Most of the empirical channel research focuses on factors affecting intrachannel processes such as the level of conflict in a channel (Etgar 1979; Lusch 1976a,b; Rosenberg and Stern 1971), the exercise of control by suppliers over channel member activities (Etgar 1976a, 1977), coordination of activities in the channel (Etgar 1976b), the amount and type of communication in the channel (Guiltinan, Rejab, and Rodgers 1980), goal compatibility of channel members (Eliashberg and Michie 1984),

and the satisfaction of channel members with channel relationships (Hunt and Nevin 1974). These process variables may affect the behavior of channel members, but their impact on resource allocation decisions has not been investigated directly.

We examine allocation behaviors in conventional channels. The channel members' decisions are made in the context of multiple suppliers competing for their resources. Much of the previous research examining actual behaviors of channel members (Brown and Day 1981; Frazier 1983; Guiltinan, Rejab, and Rodgers 1980; Hunt and Nevin 1974; Lusch 1976b) has centered on mutually exclusive relationships in which the supplier sells only to one channel member in a market and the channel member is restricted to selling only the products provided by one manufacturer. Such mutually exclusive relationships account for a small percentage of channel sales—about one-third of retail sales but almost no wholesale activity (Stern and El-Ansary 1982).

Our study objective is to describe the impact of financial incentives and aspects of the channel relationship on the allocation of resources by channel members across various suppliers. In normative microeconomic terms, channel members maximize short-term profit by allocating their resources so that the marginal contribution from each of their suppliers is equal to the channel members' marginal cost. Thus, the optimal level of resources that should be directed toward a supplier is a function of the response function describing the relationship between contribution generated from and resources expended for a supplier. We model the allocation decisions of 71 independent sales agents and investigate factors

that account for deviations between the actual resources allocated to their suppliers and the "optimal" allocation based on microeconomic principles derived from a decision calculus model parameterized by each of the agents.

In the next section, we review some variables that can affect resource allocation behavior. After describing the research setting, operationalization of variables, and data collection procedure, we report the results of the study. We conclude with managerial implications and some directions for future research.

FACTORS AFFECTING RESOURCE ALLOCATION DECISIONS

The variables we consider are derived from three sources: (1) financial portfolio theory, which provides a normative model for allocating resources across a set of investment opportunities, (2) the channels literature, which indicates variables affecting actual behavior in channels, and (3) managers involved in the study, who suggested what factors affected their decisions.

Financial Portfolio Theory

Microeconomic principles suggest that channel members should allocate resources on the basis of their perception of the response function relating contribution generated to resources expended. However, by simply focusing on marginal returns one does not consider the long-term implications of resource allocation decisions. One considers only the short-term returns, neglecting the entire stream of cash flows generated by an investment. In addition, this microeconomic principle is based on the assumption that the response function is known with certainty and the response functions for alternative investments are independent of each other.

Financial portfolio theory (Markowitz 1954) indicates that the optimal allocation of resources across a set of investment opportunities should be a function of both the short- and long-term returns from each opportunity, the uncertainty of these returns, and the covariances between the returns from investment alternatives. The financial portfolio model provides an appealing normative framework for examining the channel member's allocation decision, because the channel member's decision to invest resources, either inventory or time, in a set of suppliers is similar to the financial manager's decision to invest in a set of financial instruments.

Returns. We decompose the returns from investments made in a supplier into two components. One component is the short-term (2-year) returns derived from an "optimal" resource allocation based on the marginal returns associated with the response function facing the channel member. The other component is the long-term returns represented, from the channel member's perspective, as the anticipated growth in demand for each supplier's offerings.

Uncertainty. According to financial portfolio theory,

a firm should use a higher discount rate when evaluating risky investments. Thus, from a normative perspective, uncertainty or risk should reduce investments. If channel members are risk averse, the uncertainty of returns should be related negatively to the amount of resources allocated to a supplier.

Synergy. Covariances in the portfolio model are represented by synergistic effects arising from an interrelationship between the response functions for various suppliers. Complementary products result in positive synergy whereas substitute products result in negative synergy. In addition to demand synergies, there are cost synergies that enable channel members to exploit scale economies by offering the products of several suppliers to a customer. Because of the increased returns and/or lower costs arising from synergies, one would expect resources allocated to a supplier would be related directly to the degree of synergy between the supplier's products and other products offered by the channel member.

On the basis of the normative implications of the financial portfolio model,

H₁: The resources allocated to a supplier by a channel member should be related positively to (a) the "optimal" allocation based on perceived short-run marginal return, (b) the perceived growth rate of demand for the supplier's products, (c) the degree of certainty in future returns from the supplier's products, and (d) the degree of demand synergy between the supplier's products and products offered by other suppliers.

Biases in Resource Allocation Decisions

The resource allocation decision faced by the channel member is very complex. The channel member needs to assess accurately a response function, growth rate, uncertainty, and potential synergies for each product line sold and then combine this information to derive an optimal allocation of resources. Because of this complexity, managers may use some simplifying decision rules and models (Simon 1957) to make allocation decisions. Research indicates that there may be biases in both the assessments of response functions (Chakravarti, Mitchell, and Staelin 1981; Fudge and Lodish 1977) and the simplification rules used to integrate the information. Hence, deviations from "optimal" allocations may arise from limitations in human information processing.

The availability heuristic suggests that managers will place more emphasis on readily available, highly salient, vivid information than on less readily available information, even if the latter information is more useful in a normative sense (see Nisbett and Ross 1980, p. 121). According to the availability heuristic, resource allocation decisions may be biased by readily available information.

Because of their frequent customer interactions, customer acceptance of products, support provided by suppliers, and dollar sales volume should be highly salient

to channel members.[1] Commission rates and margins may not be readily available. Thus, information related to completing a sales transaction, such as the ease of selling, support provided by the supplier, and sales dollars may have a greater role in the allocation decision than information that is more relevant normatively but less accessible, such as marginal returns, commission rates, or margins. These factors should be incorporated into the sales response function; however, information processing research suggests that readily available information may bias allocation decisions. Thus,

> H_2: The resources allocated to a supplier by a channel member will be greater than the "optimal" allocation for the supplier's products when (a) the products are easy to sell, (b) the supplier provides support, and (c) the commission rate is lower.

H_{2c} is based on the assumption that the commission rate or margin for a product line is not as readily accessible as the sales volume. Thus channel members overemphasize sales dollars and underemphasize income generated by the product. Because income is sales times commission rate, overemphasizing sales causes commissions to be underemphasized, that is, there will be diminishing returns to increasing commission rates.

Features of the Channel Relationship

The channel literature suggests a wide variety of variables that can affect resource allocation behavior. Some factors that have received considerable attention are the perceived power relationship, interorganizational climate, and communications (Frazier 1984; Reve and Stern 1979; Stern and El-Ansary 1982).

Power (dependence). Empirical channel research has focused predominantly on the presence, uses, and consequences of power in channel relationships (Reve and Stern 1984). Power typically is defined in the channels context as a channel member's ability to influence the perceptions, behavior, and/or decision making of another channel member (El-Ansary and Stern 1972; Frazier 1983). Thus power is usually conceptualized as a *potential* for influence.

The amount of perceived power possessed by a channel member is a function of authority and dependence (Frazier 1984). Authority to specify how channel activities will be performed is granted to channel members through business agreements. These agreements give a channel member the right to demand that another channel member undertake an action. Typically, the authority basis of power arises in contractual channels, such as a franchise channel system. However, in traditional chan-

nels, the primary basis of power is dependence rather than authority.

Most channel research has examined power in terms of the interdependencies of firms that interact with each other (El-Ansary and Stern 1972; Frazier 1983). This focus on dependence is based on the work of Emerson (1962), who specified that (p. 31):

> The dependence of actor P upon actor O is (1) directly proportional to P's motivational investment in goals mediated by O and (2) inversely proportional to the availability of those goals to P outside the O-P relation.

A channel member could be expected to overallocate resources toward suppliers perceived as having power—suppliers on which the channel member is dependent. Hence, suppliers may strive to dominate the channel member's income and use the power associated with this dominant position to influence behavior. For example, National Semiconductor generates high sales for a few selected agents and "believes that the importance of its commissions to its agents gives the company the strong control needed to achieve its objectives" (Novick 1982, p. 96).

Interorganizational climate. Webster (1976) and Rosenbloom (1978) suggest that suppliers can motivate channel members effectively by developing a "partnership" arrangement in which the channel member feels there is a mutually supportive relationship. Reve and Stern (1984) refer to this aspect of an interorganizational relationship as the transaction climate. The climate of a channel relationship can be described by the following variables.

1. *Goal compatibility*—the degree to which the channel member perceives that it can achieve its individual goals by working together with the supplier (Eliashberg and Michie 1984; Schmidt and Kochan 1977).
2. *Mutual trust*—the degree to which the channel member perceives that its relationship with the supplier is based on mutual trust and thus is willing to accept short-term dislocation because it is confident that such dislocations will balance out in the long run (Ouchi 1980).

Trust is of particular importance in conventional channels, where termination is a credible threat. Channel members will be motivated to allocate resources to a supplier if they believe the future stream of returns produced by those resources is secure. If they perceive the relationship with the supplier as tenuous, channel members will discount heavily the future returns when making their resource allocation decisions.

Communications. The frequency and quality of information exchange may be a significant factor in determining the degree to which the parties understand each other's goals and coordinate their efforts to achieve those goals (Grabner and Rosenberg 1969; Guiltinan, Rejab, and Rodgers 1980). Two specific aspects of communications particularly relevant to achieving goal compatibility and mutual trust are feedback and mutual partici-

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[1]Information that is salient to one channel member may not be to another. For example, sales dollars are readily available, hence salient, to agents because the sales dollars are recorded for each transaction. Similarly, for distributors, sales dollars are more readily available than margins or inventory turns.

pation in goal setting. Through participation, channel members internalize goals for performance and thus are more strongly motivated to achieve those goals. Feedback, both positive and negative, provides information to the channel member about the supplier's perception of the channel member's performance. The channel member can use this information to adapt its behavior or attempt to alter the supplier's goals.

The channel literature suggests:

> H₃: The resources allocated to a supplier by a channel member will be greater than the "optimal" allocation when (a) the supplier is more powerful than the channel member, (b) there is a trust climate between the supplier and channel member, and (c) there is a high degree of communication between the supplier and channel member.

Managerial variables. Preliminary discussions with selected independent sales agents indicated that suppliers often attempt to influence allocation decisions by visiting the channel member frequently, attempting to interfere in the management of the channel member's activities, and providing negative feedback to motivate performance. Though these supplier activities can be related to the aspects of channel relationship discussed previously, we explicitly examined these specific managerial activities because of their prevalence in the channel examined in our study.

> H₄: The resources allocated to a supplier by a channel member are greater than the "optimal" allocation when suppliers (a) visit the channel member frequently, (b) interfere in channel member activities, and (c) provide negative feedback.

METHOD

Research Design

To examine determinants of resource allocation behavior by channel members, we used the organization set (Evans 1969) rather than the channel dyad as the unit of analysis. The organization set approach captures the essence of a conventional channel in which channel members must choose between competing suppliers when allocating their scarce resources. For example, a grocery chain's shelf-space decisions in the ready to eat (RTE) cereal section are based on an evaluation of the *relative* merits of all RTE cereal company offerings. These decisions cannot be made effectively by examining each alternative individually. The entire set of offerings must be considered at one time as competing for a fixed, scarce resource.

The organization set we examined is composed of an independent manufacturers' agency or representative (the focal organization) and the principals represented by the agency. Principals not represented by the focal agency, other agencies in the territory, and customers called on by the focal agency represent the environment in which the organization set functions.

The agencies surveyed were members of the Elec-

tronic Representatives Association (ERA). Member firms primarily sell electronic components and materials to original equipment manufacturers and distributors. Typically, agencies in this industry represent between five and 20 manufacturers who produce compatible but not competing products. The agencies, which are given an exclusive territory, are paid a commission on sales generated and perform primarily selling functions. Commonly manufacturers have a mix of territories covered by direct salespeople and agencies and, in some cases, specific house accounts within an agency's territory that are called on by a company employee. Selling time is the scarce resource that the agencies must allocate across their principals' products (and across their customers).

The relationship between the manufacturers and agencies is defined legally by contract. The typical contract contains a minimum 30-day termination clause that can be exercised by either the manufacturer or the agency. Upon termination of the contract the manufacturer is required to pay full commission on all orders shipped during the termination period and partial commission on orders placed but not shipped prior to the end of the 30-day period.

Data Collection

Three hundred member firms attending the annual ERA convention in 1982 were asked to participate in the study. Ninety-five firms elected to participate for a 32% response rate. Within six months, each agency completed a questionnaire that had been sent by mail and returned it directly to the researchers. In exchange for their participation, each firm was given a summary of survey results and a personalized analysis of their time allocation pattern across principals in comparison with the "optimal" allocation. They also were provided with sales and profit implications of adding and deleting people from their salesforce. The questionnaire was completed by the person with the most knowledge of the firm's relationships with its principals—usually the owner or managing partner.

Because of a subtle ambiguity in the wording of some of the questions about sales response functions, some of the initial responses were logically inconsistent.[2] To correct for possible misunderstanding, the participating agencies were asked to answer a revised portion of the original questionnaire. Seventy-six agencies responded, 71 of which provided complete, usable responses. The 71 agencies supplying this revised information also provided information on their relationships with a total of 492 principals.

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[2]During the initial data collection, the response functions were assessed by asking the respondent to indicate the percentage of sales increase or decrease resulting from changes in time allocations. The time period was not clearly specified. Hence, the form of these questions resulted in confusion and logically inconsistent answers. In the secondary data collection (reducing the sample from 95 to 76) the questions were phrased in terms of sales forecasted in two years.

The average 1983 sales volume of the agencies sampled was $13.7 million, which generated $706,000 in commission. The agencies surveyed, on average, had 15 employees with seven outside salespeople. Because the participating agencies were larger, older, and more profitable than the typical ERA member, the resource allocation decisions made by the participating agencies are probably closer to normative prescriptions than the decisions made by typical agencies.

Questionnaire Design

The questionnaire, developed and pretested with the assistance of ERA, consisted of three parts: (1) descriptive information about the agency, (2) questions to parameterize the agency's perception of its sales response function for each of its eight largest principals, and (3) questions soliciting the agency's perception of its relationships with each of these principals.[3] Though the agencies often represented more than eight principals, the eight largest principals accounted for 90% of the average agency's selling time and 89% of its annual commission income.

Perceptual rather than objective measures were deemed most appropriate for the study because our objective was to model the resource allocation decision by agencies. Presumably the agencies' decisions are based on their perceptions, not on the objective realities of the situation. To minimize potential halo effects related to a principal, the third section of the questionnaire was organized so that the respondent evaluated each principal on a question rather than evaluating a principal on all questions. For example, the set of principals was evaluated in terms of relative power, then feedback, then participation, and so on.

MEASURES

Dependent Variables

Time allocation. Representative firms have a limited amount of time (in the short run) that their outside salespeople can devote to products from companies they represent. To assess how this scarce resource was allocated, the person completing the questionnaire was asked to indicate the percentage of total time spent by the outside salesforce on selling and nonselling activities for each of the firm's eight largest principals. The percentages were rescaled to sum to 100%.[4]

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[3]Some agencies either represented less than eight principals or did not provide information on eight principals. Data on 492 principal-agencies (6.9 principals per agent on average) were provided.

[4]By focusing on relationships with the eight largest principals and rescaling the total time spent to sum to 100%, we are only modeling the resource allocation behavior with respect to a subset of the agency's principals assuming there is no interaction between the decisions for the subset and decisions for the remaining principals. However, this subset typically accounts for almost all of the agency's economic activity and thus reflects the important tradeoffs made by the agency in allocating resources. In addition, the "optimal" allocation does not

In some cases, the responses to the time allocation question were based on data collected by the owner/manager from call reports. However, most of the respondents arrived at estimates of time allocation by informally polling their salespeople and/or observing operations. Though this informal method for assessing time allocation reduces the reliability of the measures, no obvious systematic biases were introduced.

Independent Variables

Optimal time allocation. The microeconomic model for determining the "optimal" allocation for the agency assumes that the agency wants to maximize commission income over the next two years. A response function relating sales anticipated as a function of salesforce time spent was derived by using subjective estimates for each of eight principals.

The following questions were asked to parameterize the sales response function for each principal.

1. If you maintain your present level of sales effort for the next two years, what would be your annual sales for the principal at the end of the two-year period? (all sales figures expressed in dollars)
2. If you increased the time allocated to the principal by 50% over the next two years, what would be your annual sales for the principal at the end of the two-year period?
3. If you spent all of your sales effort on the principal over the next two years, what would be your annual sales for the principal at the end of the two-year period?
4. If you reduced the time allocated to the principal by 20% over the next two years, what would be your annual sales for the principal at the end of the two-year period?
5. How much could you reduce the amount of time devoted to the principal without being terminated by the principal?
6. If you expended the level of effort indicated above (in #5) on the principal over the next two years, what would be the annual sales for the principal at the end of two years?

A two-year period was used for parameterizing the response function to allow for steady-state conditions to occur after a change in resource allocation patterns.

The respondents had little difficulty completing this portion of the questionnaire, in part because of their engineering backgrounds and their keen interest in this resource allocation question. Most of the responses were logically consistent. Inconsistencies were corrected through telephone contact.

The sales response function fit through the five points is the same as that in CALLPLAN (Lodish 1971) with one exception. In the independent agency context, there is a perceived threshold in terms of the minimum level of effort needed to keep the principal from terminating the relationship. This phenomenon makes the concept of a zero-effort sales level unrealistic. If the agency ex-

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consider adding salespeople. We are considering only the "optimal" allocation for the present resources.

Figure 1
OPTIMAL TIME ALLOCATION—RESPONSE CURVES
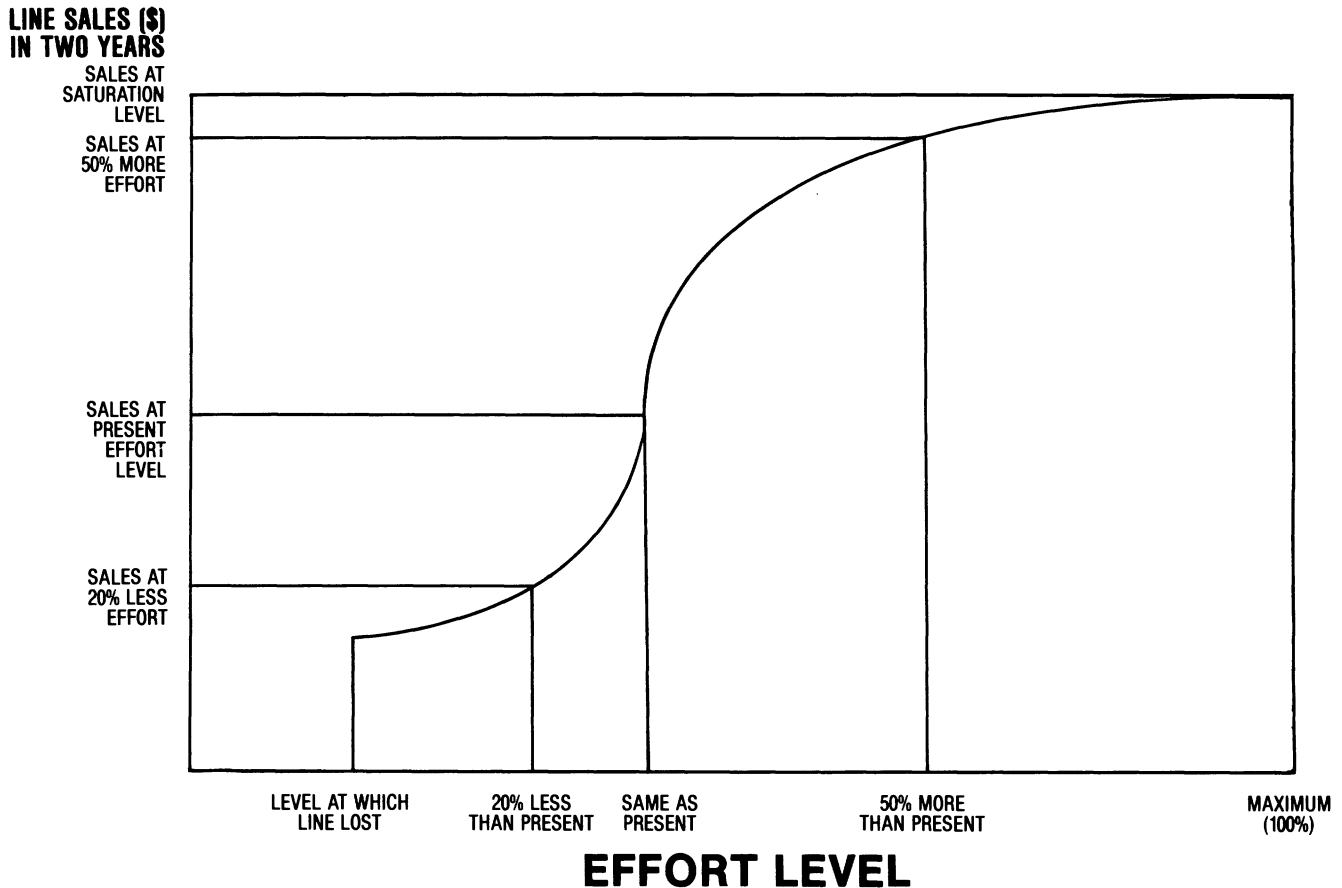
pends any less effort than the threshold, it will lose the representation of the principal regardless of the sales consequences. Thus the sales response function was truncated at the threshold level, as shown in Figure 1.

The "optimal" allocation was derived by using a "loose knapsack" algorithm (Lodish 1971) to maximize commission income subject to a time constraint.[5] The resulting "optimal" time allocations were scaled to sum to 100%.

Other aspects of the financial portfolio model. Synergy, risk or uncertainty, and anticipated sales growth associated with each principal's products were assessed by using a single item answered on a 7-point scale.

—*Synergy:* the degree of synergy a principal's product line has with the rest of the lines, assessed on a 7-point scale anchored by "not very synergistic"/"very synergistic."

—*Risk or uncertainty:* the ability to forecast a principal's sales, anchored by "can forecast accurately"/"cannot forecast accurately."

—*Growth prospects:* expected growth of product category for this principal's offering, anchored by "low sales growth"/"high sales growth."

Sources of bias. Factors related to potential biases in the resource allocation decision—the *ease of selling* each principal's products and the *quality of backup support*—were assessed by using single-item 7-point scales anchored by "difficult to sell"/"easy to sell" and "poor backup"/"excellent backup," respectively. Commission rate for each principal was assessed in the first part of the questionnaire.

Aspects of the channel relationship. A series of semantic differential scales was generated to measure the hypothesized constructs—relative power, interorganizational climate, and communications—describing the

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[5]The forecasted sales were converted into commissions by simply multiplying the sales forecasts by the commission rate the representative currently realized from each principal. We assumed that the commission rate was not a function of sales volume and that the agency did not anticipate a change in commission rate over the next two years. Informal discussions with representatives indicated that these assumptions were valid in the vast majority of agency-principal relationships.

agency's relationship with each of its principals.[6] In general, the responses to these questions were not skewed and the standard deviations of the responses were similar across questions (see Table 1).

Measures of these constructs were pooled across agencies and factor analyzed using principal factors with iteratively estimated communalities.[7] On the basis of a "breaks in eigenvalues" criterion, three factors were extracted and subjected to a varimax rotation. These factors account for 39.7% of the variance in the measures. The results of this analysis of items describing the principal-agency relationships are reported in Table 1.

The first factor (items 13 through 44) represents the agency's perception of the interorganizational climate of its relationship with a principal. Items loading on this factor describe the level of agreement on goals and expectations, mutual trust, the stability of the relationship, and the mutual respect and liking of the parties. The second factor (items 1 through 24) is related to items indicating the agency's perception of the amount of communications, feedback, and participation.

Finally, the third factor (items 36 through 40) measures the agency's perception of its relative power in the relationship. The two items loading on this factor are the perception of overall relative power (item 37) and the principal source of power—dependence (item 36). The components of dependence based on Emerson's (1962) work are the importance to principals and agents of each other's goals (items 31 and 35) and the degree to which alternative organizations, including employee (direct)

salespeople, are available to satisfy those goals (items 33, 34, 38 to 40). Though the subjective measures of overall power and dependence have high loadings on this third factor, the more objective measures of the components of power (dependence) have low loadings. However, the items with these low loadings are related more closely to the power factor than the other factors and the signs of the loadings are appropriate. The low loadings may be due to the difficulty in estimating the results of infrequent events such as the loss in sales if the relationship were terminated.

As anticipated, the items describing aspects of the channel relationship resulted in three factors—interorganizational climate, communication, and the agency's power. Factor scores were used as independent variables in subsequent analysis to represent these constructs.

Managerial inputs. The three variables affecting resource allocation that arose from our discussions with principals and agents in the industry were measured on single-item scales.

—The degree to which the manufacturer interferes in the management of the rep agency ("great deal of interference"/"little interference"). To clarify interpretation, the scale was reversed for later analysis.
—The frequency with which the manufacturer gives the agency negative feedback ("very infrequently"/"very frequently").
—How often the manufacturer visits the rep, operationalized as how many days per year the manufacturer spends in the field with the rep.

Summary. The means, standard deviations, and correlation matrix for the independent and dependent variables are reported in Table 2. The correlations between the independent variables are low, suggesting that multicollinearity may not be a major problem in interpreting the results in the next section. Note that the agencies perceive the relationships described in this study as very congenial. They are characterized by a high level of perceived trust by representatives (mean of 5.4 on a 7-point scale) and principals (5.7), by low likelihood of termination by representatives (2.0) and principals (2.4), and by about equal levels of power (3.6 where 4 is labeled "equal") and dependence (4.7). These responses are compatible with the 9-year average length of relationship reported by our sample, which suggests the measures have face validity.

RESULTS

Model Specification and Estimation

A multinomial logit model is used to characterize the impact of normative factors, features of the relationship, and managerial inputs on the time agents devote to each of their eight largest principals. The actual time allocated to each principal is modeled as a function of the predictor variables, including the "optimal" time that should be allocated to the principal. Thus, the estimated coefficients for the predictor variables (other than "optimal"

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[6]An alternative approach for operationalizing these constructs would be to develop multiple-item measures using a procedure suggested by Churchill (1979). Though this procedure is clearly appropriate for theory development and hypothesis testing, our objective is simply to describe the allocation behavior of the agents in our study. By developing constructs based on a factor analysis of agent responses, we are building on the phenomenology of the agents rather than the theoretical constructs proposed by the researchers. For example, goal compatibility and trust frequently are treated as separate constructs in the channels literature; however, the factor analysis suggests that these concepts are strongly interrelated from the perspective of the agents. Similarly, frequency of communications, feedback, and participation in planning are ecologically interrelated, though they often are treated as separate constructs in channels research. The use of factor analysis to develop measures provides some descriptive insights about how agents perceive their relationships with suppliers, but may sacrifice some theoretical clarity in terms of defining constructs.

[7]Pooling responses across agencies violates the assumption of independent observations for respondents who have idiosyncratic response biases. This potential problem can be corrected by transforming the data—standardizing the responses for a respondent across all items and principals and/or across principals for each item. However, such transformations also can alter the information contained in the actual responses. For example, an agent may actually feel that its feedback from all its principals is good, with some principals slightly better than others. If these data were transformed, the agency's responses would be interpreted as indicating that the feedback, in general, was average, with some principals very good and some very poor. We elected to not transform the data, thus preserving the actual response meaning and assuming that any response bias would have a negligible effect on the factor structure uncovered.

Table 1
FACTOR ANALYSIS OF QUESTIONS ASSESSING ASPECTS OF REPRESENTATIVE/PRINCIPAL RELATIONSHIP

Questions with anchor points (7-point scale)	Mean	S.D.	Interorganizational climate	Communication/ participation/ feedback	Agent's power
13 You personally like people you deal with (do not like/like a lot)	5.24	1.45	.79	.27	.03
14 Salespeople like people they deal with (do not like/like a lot)	4.88	1.50	.72	.28	-.07
17 Competency of people you deal with (not very/very competent)	5.15	1.35	.64	.20	-.13
18 Competency of people salespeople deal with (not very/very competent)	5.06	1.40	.64	.17	-.15
25 You trust principal to be fair (very little/great deal of trust)	5.42	1.53	.77	.20	.14
26 Principal trusts you to be fair (very little/great deal of trust)	5.68	1.32	.75	.25	.03
27 Agreement on expectations (agree very little/agree a great deal)	5:08	1.31	.71	.26	-.04
29 Agreement on growth objectives (little/much agreement)	4.84	1.30	.60	.35	.01
41 Likelihood principal will take house accounts in next two years (not very likely/very likely)	1.95	.144	-.43	.14	-.35
42 How frequently principal replaces reps (never/very often)	2.87	1.17	-.45	.15	-.17
43 Likelihood of being terminated (not very/very likely)	2.44	1.38	-.63	.01	-.29
44 Likelihood of you severing the relationship (not very/very likely)	1.99	1.44	-.54	-.21	.10
1 Kept informed of new developments (not well/very well informed)	4.70	1.47	.38	.58	-.15
3 Advice and counsel on marketing sought (seeks little/seeks a lot of advice)	3.97	1.63	.32	.67	.12
4 Participate in goal setting and forecasting (little/great deal of participation)	4.50	1.75	.15	.68	-.05
5 Involvement in principal's planning (little/great deal of involvement)	3.38	1.63	.26	.63	.17
7 Frequency of positive feedback (very infrequently/very frequently)	4.18	1.74	.38	.54	.12
11 Quality of principal's recognition programs (very poor/very good)	4.48	1.85	.16	.65	.11
12 Special incentives offered to salespeople or firm (not at all/extensive use of special incentives)	2.55	1.81	-.04	.59	-.03
22 Evaluation of training programs offered by principal (not very useful/very useful)	4.12	1.71	.16	.66	-.05
23 Expectations communicated formally vs. informally (mostly communicates informally/mostly formally)	4.03	1.78	.11	.52	-.28
24 Detail in which expectations communicated (principal's expectations are outlined in little detail/in great detail)	3.64	1.82	.01	.68	-.25
36 Dependence of rep—principal more dependent on our firm (1), equally dependent on each other (4), our firm is more dependent on principal (7)	4.67	1.38	.08	-.01	-.68
37 Power of rep—this principal is more powerful (1), equal (4), our firm more powerful than this principal (7)	3.64	1.53	-.06	-.07	.70
31 Of principal's U.S. dollar sales of products rep sells, the percentage generated by this rep agency	9.23	10.90	.07	.04	.13
33 If relationship ends, estimated principal's sales over next two years in this territory as % of sales had relationship continued	77.94	21.20	.02	-.09	-.18
34 If relationship ends and rep selects best alternative, % of lost sales recouped over two years	72.14	30.29	-.18	-.06	.42
35 % of agency's commission income generated by this principal	11.48	10.81	.23	.30	-.23

Table 1
FACTOR ANALYSIS OF QUESTIONS ASSESSING ASPECTS OF REPRESENTATIVE/PRINCIPAL RELATIONSHIP
(continued)

	Mean	S.D.	Interorganizational climate	Communication/ participation/ feedback	Agent's power
38 Of products rep sells, % of principal's U.S. dollar sales of these products made by the principal's direct salesforce (0% means principal has no direct salesforce)	12.00	24.03	-.09	.02	-.22
39 Does principal have house accounts in rep's territory? (0 = no, 1 = yes)	.11	.32	-.10	.04	-.25
40 Level of sales principal would need to replace rep with a direct salesforce (present sales could support direct salesforce/much greater sales needed to support direct salesforce)	4.93	2.02	-.07	-.19	.31
Eigenvalue			7.81	2.76	1.74

allocation) indicate the degree to which these variables account for difference between the actual time allocation and the "optimal" allocation based on equating short-term, marginal returns subject to a total time constraint. The logit model is estimated by the procedure recently developed by Nakanishi and Cooper (1982) and Louviere and Woodworth (1983).[8]

The multinomial logit model is particularly appropriate in this application because it is logically consistent and thus constrains the dependent variable, percentage of time allocated to a principal, to be between 0% and 100%. In addition, our focus on the organization set imposes an unusual form of the well-known sum constraint. Logically consistent models also constrain the estimates to sum to no more than 100% for all entities in the data set (Naert and Bultez 1973).

Finally, the logit model is appropriate on theoretical grounds because it embodies the true competitive nature of the agency's resource allocation decision. From the agency's perspective, the resource allocation decision in the short term involves a choice between allocating more

[8]The 492 channel relationships examined are not independent observations. Clearly, time allocated to one principal affects the amount of time available for allocation to other principals. However, the estimation procedure used provides unbiased estimates even though the observations for each agent are intercorrelated because of the constraint on time.

Table 2
VARIABLE MEANS, STANDARD DEVIATIONS, AND CORRELATIONS

	Mean	S.D.	V1	V2	V3	V4	V5	V6	V7	V8	V9	V10	V11	V12	V13
Actual time allocated (V1)	.14	.11	1.00												
"Optimal" allocation (V2)	.14	.13	.86*	1.00											
Growth (product class) (V3)	4.74	1.47	.33*	.35*	1.00										
Synergy with portfolio (V4)	4.72	1.72	.40*	.38*	.45*	1.00									
Forecast accuracy (V5)	5.05	1.25	.23*	.22*	.15*	.26*	1.00								
Commission rate (V6)	6.20	2.59	-.09*	-.02	.10*	-.05	-.02	1.00							
Ease of selling (V7)	3.73	1.37	.23*	.23*	.16*	.19*	.24*	.04	1.00						
Quality of support (V8)	4.67	1.54	.14*	.17*	.13*	.13*	.41*	.07	.23*	1.00					
Interorganizational climate (V9)	-.02	.96	.19*	.22*	.16*	.15*	.49*	-.02	.25*	.55*	1.00				
Communications (V10)	-.01	.96	.38*	.37*	.41*	.40*	.37*	.00	.19*	.39*	.08	1.00			
Agent's power (V11)	.04	.86	-.32*	-.32*	-.17*	-.15*	.04	.05	-.08	-.04	-.01	-.08	1.00		
Interference (V12)	5.58	1.54	.20*	-.14*	.07	.13*	-.03	.14*	-.01	-.13*	-.34*	.23*	.18*	1.00	
Negative feedback (V13)	3.06	1.62	.10*	.05	.15*	.13*	-.03	.03	-.16*	-.08	-.33*	.23*	-.19*	.45*	1.00
Number of visits per year (V14)	2.38	3.12	.46*	.44*	.29*	.27*	.13*	-.10*	.10*	.11	.06	.29*	-.20	.16*	.18*

$^ap < .05.$

time to one principal and less time to another. Thus, principals are competing against each other to get more than their "fair share" of time ("share of mind").

Factors Affecting Time Allocation

Table 3 lists the standardized estimates of the coefficients in the logit model of time allocation. The set of independent variables explains 76% of the variance in the estimation model.[9] The model is significant at the .01 level, $F_{(84,408)} = 186.2$.

Financial portfolio considerations. The variables suggested in H_1 have a significant impact on the agency time allocation. The strong relationship between the actual and the "optimal" time allocation (.426, $p < .01$) indicates that agencies do a good job of balancing the returns and costs to maximize their profitability. In addition, more time is allocated to principals with offerings in growth product categories (.064, $p < .10$), whose lines are synergistic with other lines in the agent's portfolio (.164, $p < .01$), and whose sales are more predictable (less uncertain) (.067, $p < .10$).

Table 3
FACTORS AFFECTING PERCENTAGE OF AGENCY TIME SPENT PER PRINCIPAL

Dependent variable	Standardized coefficients actual time allocation
Financial portfolio model	
"Optimal" allocation	.426[a]
Growth (product class)	.064[c]
Synergy with portfolio	.164[a]
Forecast accuracy	.067[c]
Allocation biases	
Commission rate	−.161[a]
Ease of selling	.026
Quality of support	−.064[c]
Aspects of the relationship	
Interorganizational climate	.078[c]
Communication/participation/feedback	.217[a]
Agent's power (dependence of principal)	−.064[c]
Managerial variables	
Interference in agency management	.164[a]
Negative feedback	.080[b]
Number of visits per year	.081[b]
R^2 .76	
F 186,2[a]	
d.f. (84,408)	
N 492	

[a]$p < .01$.
[b]$p < .05$.
[c]$p < .10$.

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[9]The R^2 is determined by correlating the actual percentage of time allocated with the predicted percentage of time allocated derived from the multinomial logit model with the estimated parameters. Though 71 dummy variables were used to estimate the logit model parameters, these dummy variables serve as constraints in the estimation and do not influence the fit of the model.

Potential biases. Of the three factors outlined in H_2 that potentially bias the allocation decision, only commission rate and principal support are significant. This finding suggests that agencies do not fully adjust their time allocation in response to the commission rate. The negative sign (−.161, $p < .01$) indicates that higher commission rates have diminishing returns in terms of motivating agents to devote more time to a principal. The same diminishing returns effect occurs for the quality of backup support given by this principal (−.064, $p < .10$). However, agents apparently fully incorporate the effects of the ease of selling a principal's line (.026, ns) into their perception of the response function.

Channel relationship. In terms of features of the channel relationship (H_3), perceptions of interorganizational climate (.078, $p < .10$) and communication/participation/feedback (.217, $p < .01$) are related significantly to time allocation. Agencies appear to spend more time than economically "optimal" (in the short run) on principals with whom they have a trusting relationship and good communications.

The most unexpected finding is that the perception of the principal's power (i.e., the agency's dependence) has a limited (−.064, $p < .10$) effect on the agent's time allocation. (Because the factor is scaled to represent agents' power, the sign of the coefficient indicates that agencies allocate more time to powerful principals.) Agents do not seem to be affected greatly by their dependence on a principal.

Managerial variables. The use of authority in terms of interference in agency operations (.164, $p < .01$) and provision of negative feedback (.080, $p < .05$) also increases a principal's time allocation. Finally, personal contacts in the form of visits by the principal have a significant positive effect on time allocation (.081, $p < .05$).

DISCUSSION

Factors Motivating Resource Allocation Behavior of Independent Agents

Financial portfolio variables. The results indicate that resource allocation decisions made by agents are influenced strongly by short-term marginal returns reflected in the "optimal" allocation. Agencies appear to allocate their scarcest resource, selling time, in a manner consistent with normative economic principles related to profit maximization.[10]

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[10]There is a striking similarity between our findings and the results of an experiment conducted by Fudge and Lodish (1977). Using a matched-pairs design, Fudge and Lodish found that airline sales agents using CALLPLAN performed, on average, 8.1% better than their counterparts. The modified CALLPLAN (Lodish 1971) used in our study suggested that a reallocation of time across the eight principals according to the agencies' response functions would generate commission increases of about the same magnitude. The average increase would be 8%, and 90% of agencies would realize commission in-

Suppliers have a variety of methods for altering the slope of the response function facing the channel member. For example, the incremental contribution can be increased by increasing margins or commission rate. Promotions directed toward end users, sales training, and the price/performance ratio of products offered may make the products easier to sell and thus reduce incremental costs. If we assume that costs are similar for various management activities, our results suggest emphasis should be placed on making the product line easier to sell because agents fully adjust to this factor. Providing more backup and increasing the commission rate both show diminishing returns in terms of their effect on resource allocation, indicating their effectiveness may diminish as levels of commission or support increase.

The other variables derived from the financial portfolio model—growth (long-term returns), synergy (covariances in return), and forecast accuracy (uncertainty)—have a significant but weaker impact on resource allocation behavior. Of these factors, synergy has the strongest impact. Principals may be able to gain time by using agents with synergistic product portfolios, because incompatible lines appear to receive less time.

Features of the channel relationship. Channel members seem to respond not only to normative financial variables, but also to the interorganizational climate characterized by goal congruity and mutual trust and by good communications. Thus, principals may be able to increase the level of resources directed toward their products by developing a trusting relationship with their agents and by improving communication through recognition programs, product training, and consultation with the agents, as well as by informing the agents of plans, explicitly detailing objectives, and providing positive feedback.

Relative power (relative dependence on the principal) has a minor impact on resource allocation decisions. This finding may be due to the measurement of the power construct and/or the type of relationship examined. Power is a complex construct and difficult to measure. Proven, Beyer, and Kruytbosch (1980) suggest that power can be conceptualized as either potential power or enacted power and assessed by subjective or objective measures. We focus primarily on subjective measures of potential dependence. Though this approach seems to be appropriate for examining factors affecting resource allocation decisions by an agent, an alternative approach may have demonstrated a more substantial impact of power on time allocation.

An alternative explanation for the limited impact of relative power may be the type of relationship studied. Emerson (1962), Benson (1975), and Cook (1977) sug-

gest that stable interpersonal and interorganizational relationships are characterized by equality of power or dependence between the parties. If there are inequalities in dependencies, the parties attempt to reduce these inequalities by reducing the importance of the relationship (motivational goal) and/or seeking alternative sources for satisfying their needs. The channel relationships we examine are predominantly long-term, stable relationships with little threat of termination. In addition, the typical relationship is characterized by equal power and dependence. Perhaps in this type of relationship power is no longer a motivating factor. The channel members have found methods over time for neutralizing potential power imbalances. Power may be a significant factor only in newly formed or highly volatile channel relationships.

Managerial variables. Direct involvement by a principal in the activities of the agency also may be a positive motivating force in terms of resource allocation. Principals that have a hands-off approach to their agencies lose time. Active involvement means communicating with their agencies, visiting them in the field, giving negative (as well as positive) feedback, and even interfering in the management of the agency. It is interesting that both positive (communication, visits) and negative (interference, feedback) involvement results in greater resource allocation.

Limitations of the Study

Measurement. Because of the exploratory nature of our study, we elected to assess agent perceptions of numerous variables for as many as eight relationships, rather than collecting multiple measures for a few constructs pertaining to one relationship. Thus, a number of variables in this study are measured with a single item. Though the reliability of these single-item measures is unknown, the results provide some evidence for the nomological validity of the measures.

Common method variance. As both the dependent and independent variables were provided by the same person, significant relationships may be due to common method variance. This potential threat to validity is particularly important in evaluating the strong relationship between actual and "optimal" time allocation. Perhaps the respondents answered the questions used to parameterize the response function in a manner that justified their present time allocation pattern. However, the motivation of respondents and the complexity of the questions argues against this explanation.

The respondents' primary motivation was to gain information from the analysis to use in improving the operation of their agencies. It is unlikely that they would sacrifice the value of the feedback just to convince some academics that they were allocating their time optimally. Second, the relationship between the 48 questions used to parameterize the eight response functions and the optimal allocation is not apparent. People unfamiliar with judgmentally parameterized response functions and this type of decision calculus model are not likely to generate

creases of less than 14%. Thus, independent agencies do a good job of allocating their resources in comparison with normative economic models, in spite of the cognitive and informational limitations that make optimal resource allocations difficult to ascertain.

a set of responses that would produce a specific allocation pattern, making the best possible tradeoffs among eight principals over a two-year time horizon.

Key informant bias. Because resource allocation decisions involve several people within an agency, using a single respondent as a key informant may bias the results. Seidler (1974) and Phillips (1981) have suggested the following approaches for minimizing key informant bias: (1) ask specific, simple, direct questions (in the language of the respondents) of individuals knowledgeable about the issues and (2) use multiple informants and model sources of bias. In our study, the second approach was not feasible because typically only one individual in the agency had knowledge of the agency's relationships with all of its principals. Thus, we used the first approach. Campbell (1955) demonstrated that key informants do provide highly accurate information when the first approach is implemented properly.

Generalizing to other channel relationships. We examined a set of long-term, stable relationships within a traditional channel structure. Though this structure is the most common type of channel relationship, it has not received much research attention. The nature of the channel relationship may account for some of the findings, such as the limited impact of power. Thus the findings may not be generalizable to the more commonly studied contractual channel.

DIRECTIONS FOR FUTURE RESEARCH

Modeling the Portfolio Decision of Channel Members

Our results are descriptive. A model is used to determine the "optimal" allocation decision. Though this model has been used in other product line decision contexts (Lodish 1980), it does not explicitly incorporate anticipated growth, synergy, and risk—three factors that affect the allocation decision in our study. Research needs to be done on developing a normative resource allocation model that incorporates these factors, in addition to a measure of agency risk aversion.

Allocation Decision Biases

The decreasing returns from raising commissions and improving the support offered may be due to agencies focusing on relatively available information, such as sales volume, rather than less readily available but more normatively relevant information, such as commission income. Additional research is needed applying approaches from cognitive psychology to uncover and understand managerial biases in resource allocation.

Power as a Motivating Force

Power has been a significant factor in describing channel relations in many studies. Additional research needs to be directed toward studying the importance of power in long relationships and in conventional rather than contractual channels. However, our findings suggest that achieving control through the use of power may be less effective than offering financial incentives, maintaining communications, and developing relationships.

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