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STRATEGIC CONSISTENCY AND BUSINESS PERFORMANCE: THEORY AND ANALYSIS

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Abstract

The general concept of fit (consistency, contingency, coalignment, etc.) serves as an important theoretical perspective in strategic management research, but its use is limited by inadequate clarification of underlying theoretical and methodological issues. In this paper, we (a) develop a theoretical model of strategic consistency for a multi-business firm-- corresponding to three levels of strategy: functional, business, and corporate; (b) operationalize these levels within a hierarchical system of structural equation models; and (c) test the performance implications of consistency across these levels within a sample of business units drawn from the PIMS database. The results indicate that the performance impacts of strategic consistency at the functional level is superior than the treatment of individual policy decisions; the performance impacts of business consistency is superior than that at the functional level, and hypothesized differences in the pattern of consistency emerged for the corporate level operationalized in terms of the level of relatedness among the businesses (i.e., inter-business sharing). Implications for theory and future research are discussed.

Introduction

Consistency (alternatively termed as fit, coalignment, or congruence) has served as an important building block for theory development in organizational research (Fry and Smith, 1987; Galbraith, 1977; Schoonhoven, 1981; Thompson, 1967; Van de Ven and Drazin, 1985;) as well as strategic management research (Andrews, 1980; Snow and Miles, 1983; Venkatraman and Camillus, 1984; Venkatraman, 1989). It has been more useful for theory development than theory testing due to the lack of mechanisms and approaches to translate theoretical statements into methods and data. It is clear, furthermore that more appropriate analytical models are needed for bridging the theoretical and operational domain of the concept of consistency (Venkatraman, 1989).

This paper attempts to make a contribution to strategic management research by proposing a theoretical model of strategic consistency across three levels of strategy -- functional, business, and corporate -- and by developing a corresponding operational framework grounded in a hierarchical system of strategic equation models. Further, this framework is employed to test a series of hypotheses on the performance effects of strategic consistency (across the three levels) within a sample of business units operating in the components business from the PIMS database.

Theoretical Perspectives

Overview

Although the general concept of consistency has been used with widely differing meanings in a variety of contexts, its uses can be understood along two issues: (a) *primarily descriptive* or *normative*; and (b) *primarily conceptual* or *empirical*. For the first issue, the primarily descriptive use of this concept involves the specification of the *existence* of some theoretically-argued relationships among a set of concepts without any explicit link to performance. A case in point is Nightingale and Toulouse (1977) who developed a multi-level theory of organizations that "predicts congruence among five concepts: environment, values, structure, process, and reaction-adjustment" (p.266). In contrast, the primarily normative use (which subsumes the descriptive use) is exemplified in Etzioni's arguments that: congruent (organizational) types are more effective than incongruent types" (1961; p.14, emphasis added) and Thompson's proposition that "survival rests on the coalignment of technology and task environment with a viable domain and of organization design and structure appropriate to that domain" (1967; p.147). Simultaneously, while these theoretical statements reflect the importance of the concept of fit, the use of this concept in empirical settings involves translating such statements into appropriate analytical models that would either support or refute them and a growing body of empirical support can be seen for the structural contingency theory (see Drazin and Van de Ven, 1985; Schoonhoven, 1981) as well as for several strategic management relationships (see Venkatraman and Camillus, 1984; Ginsberg and Venkatraman, 1985). Our treatment of the concept of fit is primarily normative and empirical. Specifically, we develop and test a normative theory of strategic consistency that specifies its effect on performance.

Consistency as a Central Concept in Strategic Management Research

It is well known that strategy researchers invoke the general concept of consistency, contingency, congruence, coalignment, etc. in proposing and testing various theoretical relationships, but these invocations vary significantly in their theoretical elegance and precision . On the one hand, we see consistency used in general terms. For example, in the classical business policy paradigm, Andrews has stated: "the ability to identify four components -- (i) market opportunity; (ii) corporate competences and resources; (iii) personal values and aspirations; and (iv) acknowledged obligations to segments of society.. -- *is nothing compared to the art of reconciling their implications into a final choice of purpose*." (Andrews, 1971; p.38; emphasis added). In a similar vein, Peters and Waterman (1982) view organizations in terms of seven elements (strategy, structure, systems, style, staff, shared values, and skills), whose consistency has implications for organizational 'excellence.' Given the 'holistic' nature of consistency that underlies these propositions, it is not surprising that no systematic empirical tests of these models have been conducted.

When fewer concepts are involved, consistency is specified more precisely. A classic example is Chandler's (1962) proposition that strategic shifts in an organization from volume expansion to diversification without structural adjustment can only lead to economic inefficiency for the firm. This proposition has been subjected to a number of systematic tests (e.g., Rumelt, 1974).

Consistency has also been used in strategy research to define the concept of strategy itself. Mintzberg (1978) noted that a distinctive aspect of the concept of strategy lies in its underlying logic or consistency, namely: megastrategy. Similarly Grant and King (1982) define strategy as "a sequence of internally consistent and conditional resource allocation decisions that are designed to fulfill an organization's objectives." (p.4). These views require an operationalization of consistency which has not yet been accomplished.

Thus, we believe that a more systematic attention to the theory and statistical form of consistency is a key and current issue in strategy research. Our approach is to focus on consistency at three levels of a multi-business firm. We begin by conceptualizing consistency in terms of covariation among policy decisions at the functional level within a business unit, then specify business consistency as the covariation among the aggregates of functional policies in the business unit, and consistency at the corporate level as resource sharing by business units in the corporation potentially leading to business performance.

A Hierarchical Model of Strategic Consistency

Thus, this study treats the concept of strategic consistency or fit in terms of covarying (Venkatraman, 1989) and concurrent resource allocations or investments across the different levels in the firm. There is general agreement on the three-level classification of strategy (Hofer and Schendel, 1978; Hax and Majluf, 1984) in multi-business firms. Following this view, we first identify different investments (termed here as policy decisions) at the functional level in a business unit. For example, managers may commit differential levels of investments in sales, promotion, and advertising within the marketing function.Alternatively, they may invest in policies across functions to achieve a specific goal, e.g., low cost or high quality. While each policy decision may have its specific goals, the level of consistency among them is defined by the degree of their covariation.

Second, in the aggregate, policy investments are made in the functional domain within the context of a specific business strategy (Hax and Majluf, 1984). For instance, in Porter's two modal investment profiles -- characterized as strategies of product differentiation and cost leadership -- different patterns of covariation of investments in functional domains may be required. We define these patterns of covariations as consistencies at the business level. Third, businesses within a corporation may share assets (e.g., plant and equipment, research and development; marketing, etc.) based on their corporate logic, and may be mandated or voluntary. Rumelt (1974) and others have suggested that such sharing leads to higher corporate-level performance, by virtue of lower costs of achieving that particular business-level strategy. This view is consistent with Williamson's transaction cost model as elaborated by Teece (1981) that resource sharing *within* the firm entails lower coordination costs than resource sharing *between* firms. Thus, it is possible to view the resource allocation patterns within a multi-business firm in terms of three levels -- with each level reflecting two sets of considerations: those relevant to that particular level; and those reflecting the next higher level. Our purpose in this paper is to explicitly model these three levels of strategic consistency theoretically, methodologically, and empirically in their relationship to business-level performance.

Consistency at the functional level

The typical approach to modelling the relationship between a functional strategy and business performance is to include predictors representing one or more policy decisions from a specific function (e.g., marketing) or functional domain (e.g., quality) and hypothesize a direct relationship between performance and investment levels relative to competitors across all the activities within the function. Termed as 'main effects models,' the *interdependence*, if any, among the policy decisions, is assumed to have no effect on performance. In contrast, we assert that it is the covariation among the policy investments that reflects functional strategy, and that this covariation gives rise to superior performance. Hence, we decompose investments pertaining to each policy decision into a function-specific component and a component that is independent of other policy decisions in that function. For example, the marketing function can be represented in terms of three policy decisions: investments in advertising, promotion, and sales force. While each investment may have its specific goals, it is the pattern of covariation that reflects a consistent marketing strategy.

Further, we argue that it is the function-specific component of the investment that contributes to performance as distinguished from that component of the investment which is independent of other policy decisions in the function. If this is true, we should find investments within a function strongly covarying to reflect the attempts of managers to create high function-specific components in individual policy decisions relative to their competitors. The implication for marketing strategy -- for example -- is that on average, it is not enough simply to invest in promotional activities to the exclusion of sales force and advertising. If a business manager has decided to use marketing as a critical means to performance, all of these marketing activities require investment relative to competitors; on the other hand, if marketing is not to be used, none should be invested as it is inefficient (or, inconsistent) to invest in some and not in others. It is important to recognize that the optimum pattern of function-specific investments may differ across functions, and it is the task of theory to specify the specific pattern of policies under different competitive situations.

Consistency at the business level

Consistency at the business level involves investing concurrently in those functions within the business unit that together support the achievement of the unit's goals. Our conceptualization of business consistency is a logical extension of functional-level consistency. We assert that the representation of business strategy as a linear vector of functional strategy fails to capture the pattern of internal consistency among the investments. Analogous to functional consistency, we decompose the collective investments in a given functional area into two components: a business-specific component that reflects the role of the function in the business strategy, and a function-specific component that is independent of other functional strategies. We argue that the business-specific components reflect business strategy as inter-functional consistency and give rise to business unit performance.

Consistency at the corporate level

Recognizing relatedness among businesses as a central construct at the corporate level, we view strategic consistency at this level as investments in functions that are shared across individual business units to achieve business unit goals (Porter, 1985; Chapter 10). The advantage which inter-business asset sharing provides an individual business may depend on a number of factors including a) the relative difficulty with which conflicts regarding cost allocations and quality control across businesses are resolved (Eccles and White, 1988), b) the ability of rival firms to replicate the advantage through similar or alternative means, and c) the compatibility of different business unit strategies within the corporation (e.g., product differentiation versus cost-leadership). In the present paper, we argue that business units that share assets with each other lose some of their control over functional activities related to these assets. Porter (1985; p.332) calls this effect of inter-unit sharing the *cost of compromise*. Because business unit consistency requires coordinated investments across functional activities, compromise may reduce consistency at the business level.If consistency among the activities shared across businesses leads to higher business performance, then compromise, by reducing consistency, will lower performance. On the other hand, consistency among shared activities may be less important for performance than the benefits of interbusiness sharing (e.g., reduced costs, access to distribution, specialized technology). The trade-off between optimizing business consistency through decentralized asset control and corporate consistency through corporate management of interbusiness sharing (Eccles, 1982 is thus a central corporate strategy dilemma. While we offer a particular conceptualization of strategic consistency at the corporate level in terms of inter-business sharing, we do not claim any general theory. We believe that the nature of the trade-off between these two levels is too complex to be captured by any single theory, and can only be elucidated by specific applications of theories regarding the determinants of business performance.

Operationalization of the Hierarchical Model of Consistency

The preceding three-level conceptualization is hardly useful unless accompanied by a corresponding operational scheme. For this purpose, we present a general framework in Figure 1.This framework has its roots in the philosophy of science perspective (e.g., Bagozzi, 1980; Hempel, 1951) that calls for fundamental distinctions in the levels of abstraction between the operational plane (i.e., specific policy decisions observed) and the various levels of the construct (i.e., strategy levels). At the operational plane are discrete functional activities in which managers invest resources; these activities are aggregated by function at the next level; functions are aggregated at the business level, and businesses are aggregated at the corporate level. The links among functions across businesses reflect the logic of asset (resource) sharing.

(Insert Figure 1 About Here)

In this schematic representation, Ys represent the activities at the functional level in which the investments are made; δs represent the non function-specific or unique components of these activities; λs indicate the function-specific component of the individual functional activities as determined by their covariation; ηs represent the aggregations of functional level activities that together compose business; ϕs represent the non business-specific component of the aggregate functional investments. γs indicate the business-specific components of aggregated investments due to their covariation; γ^* represents the effect of covariation among aggregated investments to business performance represented as π; ξs represent the business units as combinations of the aggregated investments; ψs represent the non-corporate component of combined business unit investments; κs represent corporate-specific components of business-unit investments, also defined as inter-business sharing, and τ represents the corporation as an amalgamation of business unit assets. In this model, we consider performance at only the level where the product--market competition occurs, namely at the business level.

Theory

As mentioned above, we have been unable to identify a systematic, general theory that specifies how functional strategies should covary for effective business strategy or the extent to which policy investment decisions should covary to achieve functional goals as outlined in Figure 1, although many highly suggestive ideas can be found (e.g., Hofer and Schendel, 1978; Miles and Snow, 1978; Porter, 1985). Conceptual arguments concerning consistency and its effect on performance throughout a multi-business firm have not been adequately linked to data and method. Therefore, we develop a provisional theory of consistency across these three levels by considering a small set of activities and their functional level aggregates. Specifically, we focus on two types of activities within business and use theory developed in marketing and industrial economics to derive hypotheses relating consistency constructs to business performance.

The types of activities that we examine concern the marketing function and the achievement of quality outcomes in the business. To the extent that the types of marketing expenditure -- sales force, advertising, and promotion -- are correlated, the business is defined as having achieved functional consistency in this function. However, since quality is an outcome, and not strictly a function, investments in quality encompass investments made in activities across the value chain (Porter, 1985; Ch.4) including service. Thus, to the extent that the measures of quality across the value chain are correlated, functional consistency is defined as having been achieved for these outcome-related activities.

The inter-relationship between marketing and quality has been hypothesized to lead to higher business unit performance for three reasons. First, Nelson (1974) proposed that marketing expenditures serve as signals of quality and thereby alert consumers to the valuable characteristics of the products. Second, in a similar vein, Porter (1985; Ch. 4) makes the distinction between signalling and use criteria as components of purchasing decisions from suppliers following a generic business strategy of product differentiation. Our model involves subsets of the two criteria that he mentions: marketing operations involve signalling; quality is related to use. Both are necessary, but neither alone is sufficient to achieve high performance (Porter, 1985; p.140). Last, Klein and Leffler (1981) have argued that the effect of marketing expenditures is not due to signalling, but to the demonstration of supplier commitment to the level of quality in the product; buyers should be more willing to purchase a product when they know that the supplier has sunk high irretrievable costs into selling it and thereby, implicitly ensures that the level of quality will be maintained in the long run.

Research Objectives and Questions

With the general representation of the three levels of consistency (Figure 1) and our choice of marketing and quality related policies as background, we propose to: (a) develop hypotheses regarding the effect of consistency on business performance across three levels of strategy; (b) operationalize them as a system of hierarchical models; and (c) test the hypotheses by comparing these models with data drawn from the PIMS database.It is necessary to note that our approach is different from the array of inductive approaches that have been adopted to specify and test consistency (e.g., Hambrick, 1983; 1984; Drazin and Van de Ven, 1985; Miller, 1981). Following Camerer (1985), we adopt a deductive approach to theory construction in strategy research. Specifically, we have three research questions:

Question One*: *Consistency at the functional level. At the functional level, we are interested in assessing both the existence of consistency and its performance effects. The *existence* of consistency at the functional level is indicated by two sets of test statistics: First, we expect high, positive, and significant λs that connect policies to the functional level aggregates. Second, following psychometric theory, treating the functional aggregates as a trait reflecting the covariation among the activities, a measure of trait validity is given by ρ_C (Bagozzi, 1981), which we expect to be above 0.5.

If these statistics support the existence of functional consistency, then we are interested its effect on business unit performance. Three sets of statistics underlie this test. First, we compare the degree to which a model that specifies aggregates (ηs) of activities (Ys) predicts performance to the explanatory power of a model without such an aggregation, namely (Ys only). If the aggregated model explains the relationship between activities and performance more efficiently, then the construct validity of the aggregates can not be rejected. Second, we examine the direction and significance of γ^*s that directly link the aggregates to performance. Third, we compare the contribution of the function-specific components of the activities to business performance to the contribution of the unique components.

Question Two: ***Consistency at the business level.*** Analogous to question one, we are interested in the assessment of the existence of consistency at the business level, and its effect on performance. To assess the existence of business level consistency, we compare the degree to which a model that specifies business-specific components of functional aggregates is superior in terms of parsimony (controlling for the goodness of fit to data) to a corresponding model that does not specify these components; We also assess whether the loadings on the second-order factors given by the γs that represent the business level components are positive and significant. The performance effects of business consistency are represented by the significance and direction of the relevant γ^*s.

Question Three: ***Consistency at the corporate level.*** Our approach to consistency at the corporate level focuses on the extent to which business level consistency is affected by the degree of inter-business sharing (i.e., relatedness) across businesses. For this purpose, we divide the sample into two groups -- 'high' and 'low' inter-business sharing of assets related to marketing and the achievement of quality. Because of the cost of compromise, we expect that businesses with high relatedness or sharing will be less able to achieve business consistency than businesses with low levels of relatedness. Thus, we would expect to see differences in the γs between the two groups. While the cost of compromise has significant implications for the occurrence of business consistency, we do not expect the performance effects of consistency to vary across levels of relatedness.

Methods

Data

We test our theory on a sample of businesses drawn from the SPI4 version of the PIMS database using the 1982-1985 period. Although the use of this database has generated some controversy, it has been consistently used by strategy researchers for over a decade (Ramanujam and Venkatraman, 1984). Assessments of measurement properties (e.g., Phillips and Buzzell, 1982; Phillips, Chang, and Buzzell, 1983) show acceptable reliability and validity of data. Some of the PIMS-based findings, furthermore, have recently been corroborated with non-PIMS data sources, such as the FTC Line of Business Program (see Anterasian and Phillips, 1988).

Within the PIMS database, we focus on components businesses as a type of business for two reasons: 1) it provides data most consistent with the theory in prior research (e.g., Phillips et.al., 1983; Hegarty, Carman, and Russell, 1988); and 2) it is highly appropriate for testing the hypotheses regarding consistency at the corporate level, given the high likelihood of inter-business sharing (Porter, 1985).

Variables. As mentioned before, the two specific domains of investments in functional activities considered here are: marketing and quality. Each is defined using three variables relative to competitors. Specifically, marketing is operationalized by the following variables: relative sales force; relative advertising; and relative promotion; and quality operationalized in terms of: relative product quality, relative service quality, and relative image for quality. We define inter-business sharing in terms of shared facilities and shared marketing programs and divided the sample along the median to delineate the low sharing and the high sharing groups. The total sample (n) is 386, with 210 in low sharing group (i.e., low shared facilities and marketing programs), and 176 in the high sharing group (high shared facilities and marketing programs). Further, to be consistent with prior models involving these variables, we include direct costs and relative market share as criterion variables in the system of equations[1]. The correlation matrices for the two subsamples are provided in Appendix I.

Model Specification: Definition, Notations, and Equations

Overview. We translate the general framework presented in Figure 1 into a specific framework that can be tested with data using the estimation procedures implemented in the LISREL VI program (Joreskog and Sorbom, 1984). The basic notations that we follow is as follows: the second-order factors will be represented by ξ, the first-order factors by η, and the observed

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[1] It is important to note that in all models tested the relationship among ROI, market share and direct costs follow the specifications found in Phillips et al,1983.

variables by [y]. The matrix Λ_y contains the loadings of the observed variables on the first order factors. The covariance matrix of the second-order factors will be represented by Φ, the vector of residual variables in the first-order factors will be represented by ζ, the unique variance of the observed variables by ε; the variance--covariance matrices of the residuals and of the uniqueness components will be represented by Ψ and Θ_ε respectively. The equation for the observed variables in terms of first-order factors is therefore:

$$y = \Lambda_y \eta + \varepsilon \qquad [1]$$

and the equation for the first–order factors in terms of the second–order factors is:

$$\eta = \Gamma\xi + \zeta \qquad [2]$$

The covariance matrix of the first–order factors is $\Gamma\Phi\Gamma' + \Psi$, and the observed variance—covariance matrix of y is:

$$\Sigma = \Lambda_y(\Gamma\Phi\Gamma' + \Psi)\Lambda_y' + \theta_e \qquad [3]$$

Assessment of Model Fit. A major area of controversy in the use of structural equation models is the assessment of model fit (Fornell, 1983) Well-known problems in using chi-square measures are sample size and distributional properties of the variables. Further, there exists a possibility that an alternate model may fit the data equally well (Bagozzi, 1980; Fornell, 1983; Joreskog & Sorbom, 1984). Thus, there are strong arguments infavor of testing competing models using formal test criteria. Hence, our approach to the assessment of model fit involves the comparison of a set of hierarchical models based on the two-step procedure discussed in Anderson and Gerbing (1988). Specifically, this involves the use of five nested[2] structural models as follows:

Model I -- The Saturated Model (M_S) is one in which all the relevant parameters relating the constructs to one another (i.e., unidirectional paths) are specified;

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[2] A model M_2 is said to be nested within another model M_1 when its set of freely estimated parameters is a subset of those estimated in M_1, and can be denoted as $M_2 < M_1$. That is, one or more parameters that are freely estimated in M_1 are freely contained in M_2.

Model II -- The Theoretical Model (M_t) is a model in which only the parameters guided by theory are specified;

Model III -- The Constrained Model (M_c) is the next most likely alternative constrained model from the theoretical perspective;

Model IV -- The Unconstrained Model (M_u) is the next most likely alternative unconstrained model in theory; and

Model V -- The Null Model (M_n). It is the model in which all parameters relating the constructs to one another are fixed at zero, implying no relationships (Bentler and Bonett, 1980).

Following Anderson and Gerbing (1988), these models can be nested into a sequence as follows:

$$M_s < M_c < M_t < M_u < M_n$$

The superiority of one model over another is given by the difference in χ^2 statistic (χ^2_d), which is asymptotically distributed as χ^2; these sequential chi-square difference tests are asymptotically independent (Joreskog and Sorbom, 1984; Steiger, Shapiro, and Browne, 1985). In this research, the model comparison follows the decision-framework provided in Anderson and Gerbing (1988). Our specific conceptualization of the five models are discussed below.

Specification of Five Models. The procedure adopted has the following logic for model comparison for the acceptance of the theoretical model. First, M_t is compared to M_s. If there is no significant difference in goodness of fit then M_t is preferable on the basis of parsimony. Second, M_t is compared to M_c. In this case, to be preferred over M_c, M_t should offer a significant increase in goodness of fit since Mc has more degrees of freedom and is therefore more parsimonious. If M_t is preferred over M_c, the relevant comparison is then with M_u. As with the M_s comparison, if M_t and M_u are not significantly different in terms of goodness of fit, M_t is preferred on the grounds of parsimony. We employ this logic to test the acceptability of three theoretical models, one for each level of consistency -- functional, business, and corporate.

Consistency at the functional level. The saturated model (M_s) for testing the first two theoretical models is presented in Figure 2, termed as Model I. It depicts the relationships among the functional activities as well as their impact on performance. Figure 3 is the schematic representation of consistency at the functional level. This model contains two first order factors, one each for marketing and quality related functional level consistency. All possible γ^*s are specified except for the relationship between marketing consistency and direct costs. This causal path was omitted because of prior research findings indicating the consistent lack of association between these variables (e.g., Buzzell and Gale, 1987). The theoretical model (M_t) is Model III, and the unconstrained model (M_u) is called Model II. In Figure 3, it is the representation with γ_{31} omitted.

(Insert Figures 2 and 3 About Here)

Consistency at the business level. The theoretical model (M_t) for consistency at the business level is presented in Figure 4. Here, the intercorrelation of consistent marketing- and quality- related investments is aggregated into a business-level construct represented as a second-order factor of consistency at the business level. This is, in turn, posited to impact performance. However, since only quality consistency is hypothesized to affect direct costs (see Figure 3), a path, β_{35} is specified between quality and direct costs instead of a path between business level consistency and direct costs. This model is termed as Model IV. Within this hierarchical scheme, the unconstrained version (M_u) of the model is Model III.

(Insert Figure 4 About Here)

Consistency at the corporate level. This is modelled as a variation on Model IV. Since we expect business level consistency to be less for businesses that share marketing and quality related assets with other businesses in the corporation, we allow γ_{41} and γ_{51} in Model IV to be estimated separately in the high- and the low- sharing subsamples and test whether the estimates are significantly different. If so, we would expect lower γs in the high sharing subsample. We call the model with γ_{41} and γ_{51} freely estimated across subsamples, Model V, which is the theoretical model (M_t) at this level. The constrained model (M_c) is Model IV with γ_{41} and γ_{51} constrained to be equal across the subsamples, and the unconstrained model (M_u)is the theoretical model of functional consistency, Model III. However, since the saturated model, Model I, does not have parameters freed across subsamples , it is inappropriate to use it for comparison with Model V; therefore, we modify it. The saturated model (M_S) is called Model IA -- which is Model I with all ϕs and γs freed across subsamples.

The match of this construal of functional, business and corporate consistency to Anderson and Gerbing's method is shown in Figure 5. First, it is important to note that there is no constrained model, M_C, at either the functional or business levels. In these levels we specify no model with fewer parameters estimated than the theoretical models we test. The absence of these models is important since it indicates our commitment to specify only models that can be theoretically justified. Second, Figure 5 shows that theoretical models at lower levels are either constrained or unconstrained models for purposes of goodness-of-fit in comparison with higher level theoretical models. As we move from the functional to the business level, Model III, the functional level theoretical model, becomes the relevant unconstrained model for Model IV, the business level theoretical model. The logic here is that as one moves up the hierarchy, aggregation reduces the number of parameters specified, thereby increasing parsimony. If there is no difference in goodness of fit, the higher level theoretical model is preferred to the lower level theoretical model.

This pattern does not continue to the corporate level, however. This change in pattern is caused by the type of data used to test our theory. Because the respondents providing information for the PIMS data base are SBU managers, the data on functional level investments pertain straightforwardly to a single business unit and therefor can be aggregated to form a measure of business level consistency. However, the data base does not indicate whether a set of SBUs belong to the same corporation. Rather, it indicates only the extent to which each unit shares assets with other units within its corporation. Thus, we cannot aggregate SBUs by corporation as we aggregate functions by business unit.

Corporate level sharing is therefor a property of SBUs rather than the corporation, and we examine differences in business level consistency between SBU subsamples that have and do not have this property. If our data allowed us to specify sharing as an attribute of corporation, our theoretical model of corporate level consistency (M_t) would be a more (rather than less) constrained version of the theoretical model at the business level, thereby continuing the pattern set at the other levels.

(Insert Figure 5 About Here)

Results

Research Question One

We tested consistency at the functional level by: (a) examining the difference in fit to the data between Models I and III; (b) examining in Model III, the values of parameters linking the functional policy decisions to their respective functional-level constructs and of parameters linking the functional constructs to performance; and (c) estimating in Model IIb, the contribution to fit of the relationships between performance and the unique (non function-specific) components of marketing and quality had on performance. Collectively, these tests demonstrate the importance of the function-specific component of investments in marketing and quality.

First, following Anderson and Gerbing (1988), Model III is our theoretical model (M_t) at the functional level of analysis and Model I is our saturated model. There is no significant difference in model fit between Models I and III (χ^2 with df:20 = 26.68; p>.05), indicating that Model III is more parsimonious without any significant decrease in fit to the data. Although at this stage in the analysis, no model is constrained in relationship to Model III, Model II is less constrained (fewer degrees of freedom). Since the χ^2 difference between Models III and II is not significant (χ^2 (df:1) = 0.29; ns), we accept Model III as the best representation of the pattern of relationships among the variables.

Second, the values of the parameters (λs) linking the functional policy investment decisions to the underlying functions are all large and significant (see Figure 3). Further, when viewed as traits, the constructs have high psychometric reliability given by ρ_c (Bagozzi, 1981). For the marketing function, ρ_c is 0.856; and for the quality function, ρ_c is 0.859. Finally, we assess the concurrent contribution of the unique component of functional activities to ROI, market share and direct costs. This set of estimations indicates that with the parameters in Model III fixed at their estimated values, there is no significant decrease in the model fit: χ^2 (df:9) = 8..73, p>.05.

Furthermore, none of the relationships among the unique components and the three exogenous variables was significant (detailed results on request).

Research Question Two

The consistency between functions of investments in marketing and quality activities, relative to competitors, was examined by (a) comparing the goodness-of-fit of Model IV to Model I -- the saturated model; and Model III -- the candidate unconstrained model; (b) observing the significance of the parameters (γ) linking the marketing and quality constructs to the second-order construct representing the business as an aggregate of functions; and (c) the significance and the direction of the parameters (γ^*) relating the consistency construct to MS and ROI. These results indicate that, for this type of functionally-related investments, the business consistency model and its effect on performance is acceptable.

First, the fit of Model IV to the data is not significantly different from that of Model I -- χ^2 (df:22) = 32.78, p>.05), and is clearly more parsimonious. Further, there is no statistical difference between the fits to the data of Models III and IV, although Model IV estimates one less parameter by virtue of its representation of the second-order construct -- χ^2 (df:1) = 0.21, p>.05. Thus, among the three models, Model IV emulates the structure of the relationships among the data most efficiently.

Second, the parameter values (γ^*s) linking the functional consistency constructs of marketing and quality to the business -level consistency construct are strong, positive, and significant (γ_{41} = 0.245; t-value:5.768; and γ_{51} = 0.497; t-value: 7.523). In addition, the estimates of the parameters linking the business consistency construct to MS and ROI are positive, and significant (γ_{11} = 0.425; t-value: 5.791; and γ_{22} = 0.547; t-value: 7.361); the business consistency construct, furthermore, explains about 19% of the variance in market share.

Research Question Three

For testing the hypothesis that corporate-level consistency, represented by inter-business sharing of marketing and operational facilities, reduces the ability of a business unit to achieve consistency across its set of functional activities, we compared the business consistency model across two subsamples of businesses, differing in their level of inter-business sharing. This test is the third stage of our comparison of theoretical models using Anderson and Gerbing's approach. However, as discussed in the Methods section, since corporate level consistency constrains rather than facilitates business-level consistency, the business-level model serves as the constrained rather than the unconstrained alternative.

The results indicate that Model V is not significantly different from the saturated model (Model Ia) but is significantly different from Model IV -- χ^2 (df:1) = 3.97; p<.05, which is the constrained theoretical alternative. Furthermore, Model V is not significantly different from Model III -- the unconstrained theoretical alternative.This set of findings indicates that Model V is a more parsimonious but equally 'good' explanator, in terms of model fit, of the relationships among the variables in the data.

Model V includes a free parameter between the high and low sharing subsamples only for the relationship between marketing consistency and business consistency. The values of this parameter in the two subsamples were as expected. In the low subsample, γ_{41} was 0.299; t-value: 5.465; and in the high sharing subsample, γ_{41} was 0.165; t-value: 3.166, with the difference being significant. Indeed, as the parameter estimates indicate, this link was twice as large in the low sharing subsample as in the subsample that shared marketing and operational facilities extensively with other units of the corporation.

No free parameter was specified for the parallel relationship between quality and business consistency, and in fact the values of this parameter across the two subsamples were virtually identical. Furthermore, the results of freeing the parameters linking business-level consistency with ROI and MS also show no significant difference in the two subsamples, and no significant difference was found between the l parameters relating the functional policies (e.g., marketing: sales force, advertising, and promotion) to the underlying functional consistency.

Table 1 summarizes the results for the set of tests carried out here using Figure 5 as the basis.

(Insert Table 1 About Here)

Discussion

As we theorized, it is the function-specific component of investments in functional activities and the business-specific component of functional aggregates that give rise to business performance. This set of results provides strong support for the general model of consistency adopted here and signals the limitations of 'main effects' models. Furthermore, because interbusiness sharing had a significant (and negative) influence on business level consistency, researchers of functional-level investments and of investments aggregated by business should be alerted to possible omitted corporate level variables that affect the covariation of these investments as they are related to business performance. The results indicate strong support for the superiority of Model V specifying differential patterns of business consistency across businesses differing in the level of corporate constraint (i.e., inter-business sharing), Model V.

Furthermore, the slow erosion of the influence of direct costs on market share and ROI and of the covariation of market share and ROI as higher levels of consistency were tested and accepted indicates that large components of these estimates were related to the consistency constructs. These results should further caution researchers interested in predicting business level performance with variables that reflect investments in functional level assets and policies.

We have argued that the contribution of each level of consistency to business unit performance should be determined by the business unit strategy in relation to the requirements of the markets in which it competes. At one extreme, business units pursue the same strategy in comparable markets and utilize each other's resources with low cost of compromise to achieve higher levels of performance than competitors. In such a case, inter-business sharing of resources makes a strong contribution to business unit success. At the other extreme, to which the present paper is closer, business units pursue strategies in non-comparable or highly segmented markets and coordinate the sharing of resources poorly, thereby reducing the contribution of inter-business sharing to their performance.

Our results were clearly not uniform for the effect of interbusiness resource sharing on the relationship of quality and of marketing consistency to the business level consistency construct. The relationship between the quality aggregate and business level consistency may have been the same across both subsamples due to the way we measured interbusiness sharing. In contrast to the marketing activities we measure, our operationalization of quality consistency involved imputed investments in quality enhancing policies among several activities. However, our measure of resource sharing involved only the sharing of manufacturing facilities and might have indicated quality outcomes related only to manufacturing. Consequently, we may not have captured all the compromise costs of the relevant interbusiness transactions that would lead to lower quality in high sharing business across the range of quality variables measured.

In addition, we have based our models on an economic arguments for the effect of covariation between marketing investments and investments in quality on business performance. To test our general assertions regarding consistency and performance as represented in Figure 1 and discussed in the Methods Section, other theories relating types of business level consistency and performance should be examined. For example, rather than investigating quality outcomes, we could have specified cost; in turn, we might have measured functional policies that support a cost focus. Further, in this study, we hypothesize a positive relationship between each type of consistency at the functional level and business level consistency and follow this rationale for our hypotheses regarding the relationship between business and corporate level consistency. In contrast, hypotheses based on other theories might specify negative relationships between these levels and business performance.

There are two types of implications of the results for manager. First, depending on the economic logic relating business level consistency and performance, investments in functional policies should be coordinated to achieve higher correlations among them, since it is the function-specific component of the investment that leads to performance. In turn, aggregate investments in functional policies within the business should be coordinated to achieve higher business consistency, thereby leading to higher performance. Second, however, as manager increase the correlation between investments in policies in different functional domains in order to increase consistency, the importance of aggregates of policies (e.g. marketing, quality related investments) as explanators of the patten of investment should decrease. In effect, the correlations among the policies between the aggregates may approach the correlations among the policies within functions. As this occurs, components representing new aggregates of policies are likely to emerge; these new aggregates will be composed of policies that are highly correlated but from different functional domains. Thus as the pattern of covariation among policies loses its heterogeneity based on the high discriminability of investments in a functional domain, the number of components required to explain the pattern increases. Correspondingly, however, the achievement of business level consistency is facilitated.

Finally, it is important to recognize that our results are limited to businesses producing components for assembly in manufacturing firms. Other types of businesses may show dissimilar results because of differences in the effect of marketing and quality variables on market share and performance (Phillips et.al., 1983; Prescott, Kohli, and Venkatraman, 1986) as well as in the distribution of intercorporate sharing of marketing and production facilities across businesses due to the general adoption of generic facilities or the demands of functional specialization.

Conclusions

The general concept of consistency has been employed to develop powerful theoretical arguments in strategic management, but few such arguments have been systematically tested due to lack of appropriate operationalization scheme. Based on a three-level conceptualization of strategic consistency that corresponds to the organizational hierarchy, we developed a theoretical model of consistency. This model was operationalized within a system of structural equation models and tested with a sample of data on businesses from the PIMS database. The results support our theory of consistency and its performance effects, and caution against the use of a set of functional policies as appropriate predictors of business performance. This is because, as we have shown, the performance effects are more due to covariation at the functional and business levels than due to main effects. In addition, beyond the specific context of this study, we believe that we have been able to offer a generalized framework to model consistency in terms of covariation among the relevant components. This framework appears to have not only intuitive appeal, but can be used to subject a rich set of questions to systematic examination.

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Table 1: Three Levels of Strategic Consistency and Performance Implications: Model Comparisons and Results

A. Functional Consistency

$M_t - M_s$	χ^2 (df:66)=84.43 - χ^2 (df:45) = 57.46
(Models III-I)	χ^2 (df:21) = 26.97; p>.05
ns	
$M_c - M_t$	Not Applicable Since No Theoretically Constrained Model Exists
$M_t - M_u$	χ^2 (df:66)=84.43 - χ^2 (df:65)=84.14
(Models III-II)	χ^2 (df:1)=0.29; p>.05
ns	
ACCEPT M_t (Model III)	

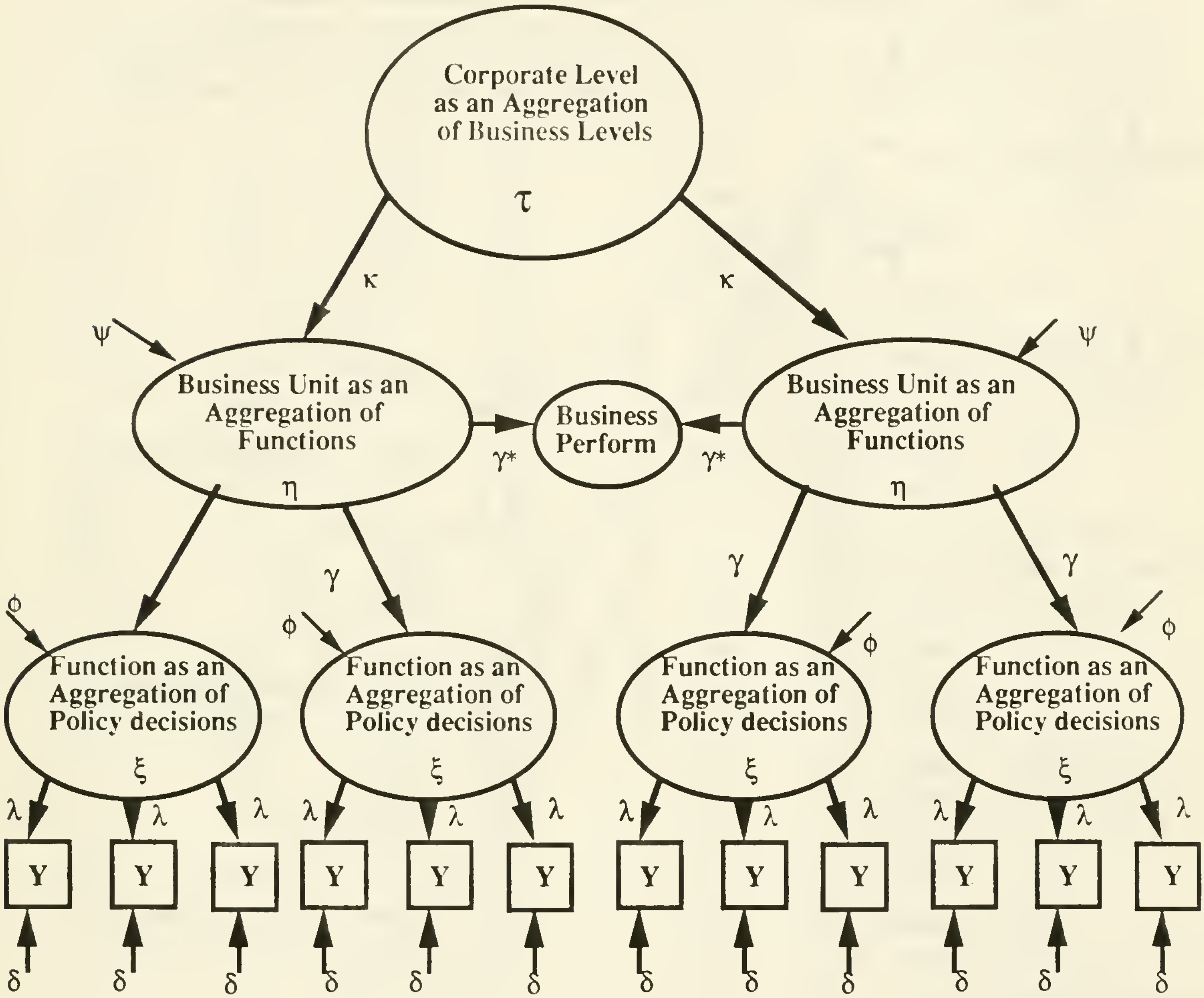
B. Business Consistency

$M_t - M_s$	χ^2 (df:67)=84.64 - χ^2 (df:45) = 57.46
(Models IV-I)	χ^2 (df:22) = 27.18; p>.05
ns	
$M_c - M_t$	Not Applicable Since No Theoretically Constrained Model Exists
$M_t - M_u$	χ^2 (df:67)=84.64 - χ^2 (df:66)=84.43
(Models III-II)	χ^2 (df:1)=0.19; p>.05
ns	
ACCEPT M_t (Model IV)	

C. Corporate Consistency

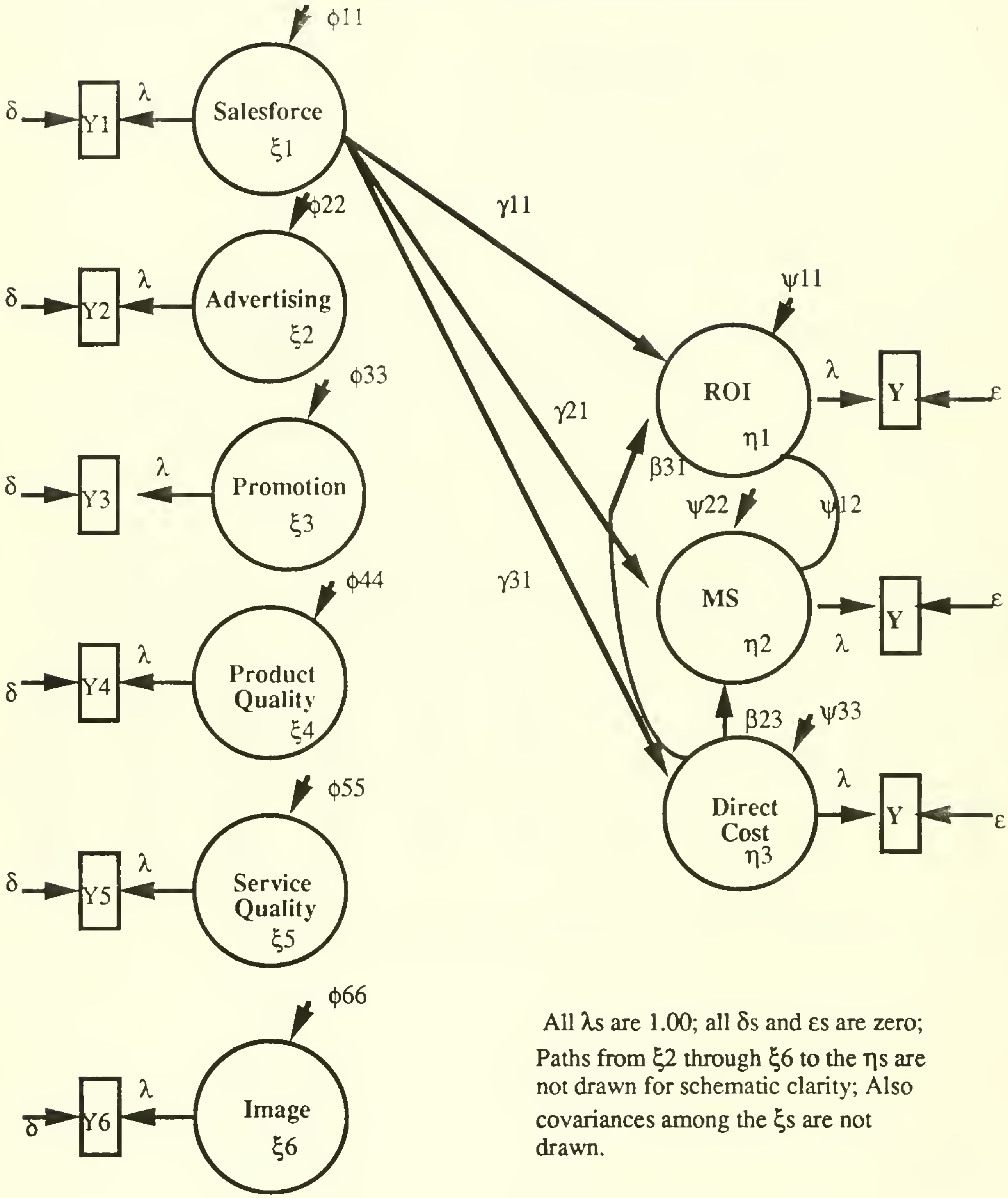
$M_t - M_s$	χ^2 (df:66)=80.67 - χ^2 (df:12) = 13.97
(Models V-Ia)	χ^2 (df:54) = 66.70; p>.05
ns	
$M_c - M_t$	χ^2 (df:67)=84.64 - χ^2 (df:66) = 80.67
(Models IV-V)	χ^2 (df:1) = 3.97; p<.05
Sig	
$M_t - M_u$	χ^2 (df:66)=80.67 - χ^2 (df:66)=84.43
(Models V-III)	ns
ns	
ACCEPT M_t (Model V)	

Hierarchical Model of Strategic Consistency



The observational indicators for business performance are not shown for schematic clarity

Figure 2: Saturated Model Without Measurements: Model I

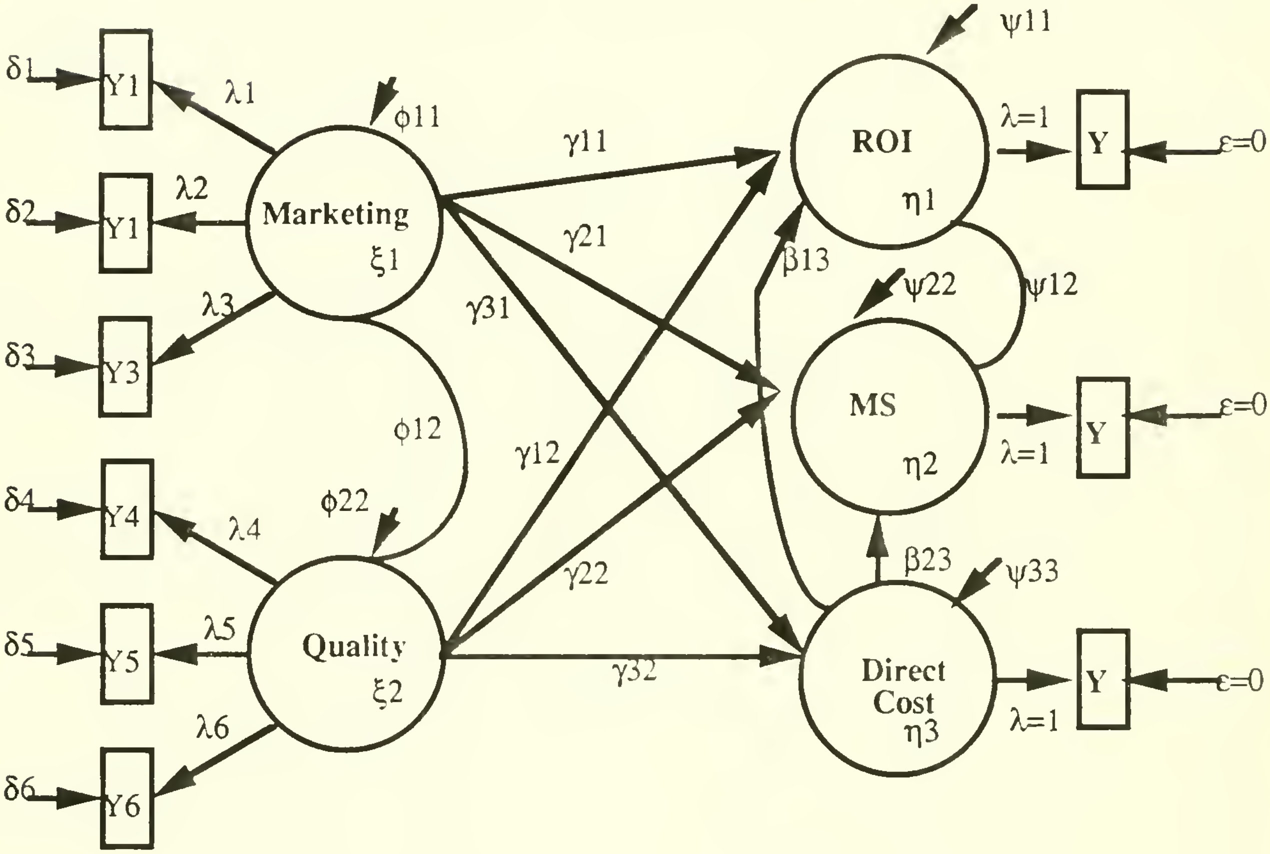


All λs are 1.00; all δs and εs are zero; Paths from ξ2 through ξ6 to the ηs are not drawn for schematic clarity; Also covariances among the ξs are not drawn.

Figure 2 (Continued): Parameter Estimates for Model I

Parameter Values	MLE	SE	T-Values	Parameter	MLE	SE	T-
β_{13}	−.072	.049	−1.47	ϕ_{33}	1.0	0.72	13.856
β_{23}	−.054	.047	−1.47	ϕ_{44}	1.0	.072	13.856
γ_{11}	.033	.054	.048	ϕ_{55}	1.0	.072	13.856
γ_{12}	.091	.066	1.368	ϕ_{66}	1.0	.072	13.856
γ_{13}	.017	.067	.252	ϕ_{21}	.396	.055	7.223
γ_{14}	.203	.058	3.521	ϕ_{31}	.437	.056	7.841
γ_{15}	−.013	.060	−.213	ϕ_{41}	.096	.051	1.867
γ_{16}	.127	.063	2.011	ϕ_{51}	.085	.051	1.653
γ_{21}	−.042	.052	−.806	ϕ_{61}	.134	.051	2.609
γ_{22}	.211	.064	3.301	ϕ_{32}	.672	.061	10.929
γ_{23}	−.006	.065	−.096	ϕ_{42}	.187	.052	3.598
γ_{24}	.179	.056	3.220	ϕ_{52}	.235	.052	4.488
γ_{25}	.066	.057	1.153	ϕ_{62}	.242	.053	4.614
γ_{26}	.136	.061	2.234	ϕ_{43}	.202	.052	3.876
γ_{31}	.103	.056	1.834	ϕ_{53}	.197	.052	3.784
γ_{32}	−.061	.069	−.890	ϕ_{63}	.246	.053	4.684
γ_{33}	−.048	.070	−.681	ϕ_{54}	.420	055	7.582
γ_{34}	.024	.060	.402	ϕ_{64}	.528	.058	9.148
γ_{35}	−.158	.061	−2.564	ϕ_{65}	.555	.058	9.507
γ_{36}	−.024	.066	−.364	ψ_{11}	.884	.064	13.856
ϕ_{11}	1.0	.072	13.856	ψ_{22}	.822	.059	13.856
ϕ_{22}	1.0	.072	13.856	ψ_{33}	.957	.069	13.856
				ψ_{12}	.097	.044	2.226

Figure 3: A Schematic of the Relationship Between Functional Consistency and Performance: Models II and III



Model II: Statistics: $\chi 2$ (df:65)= 84.14; $p<.05$.

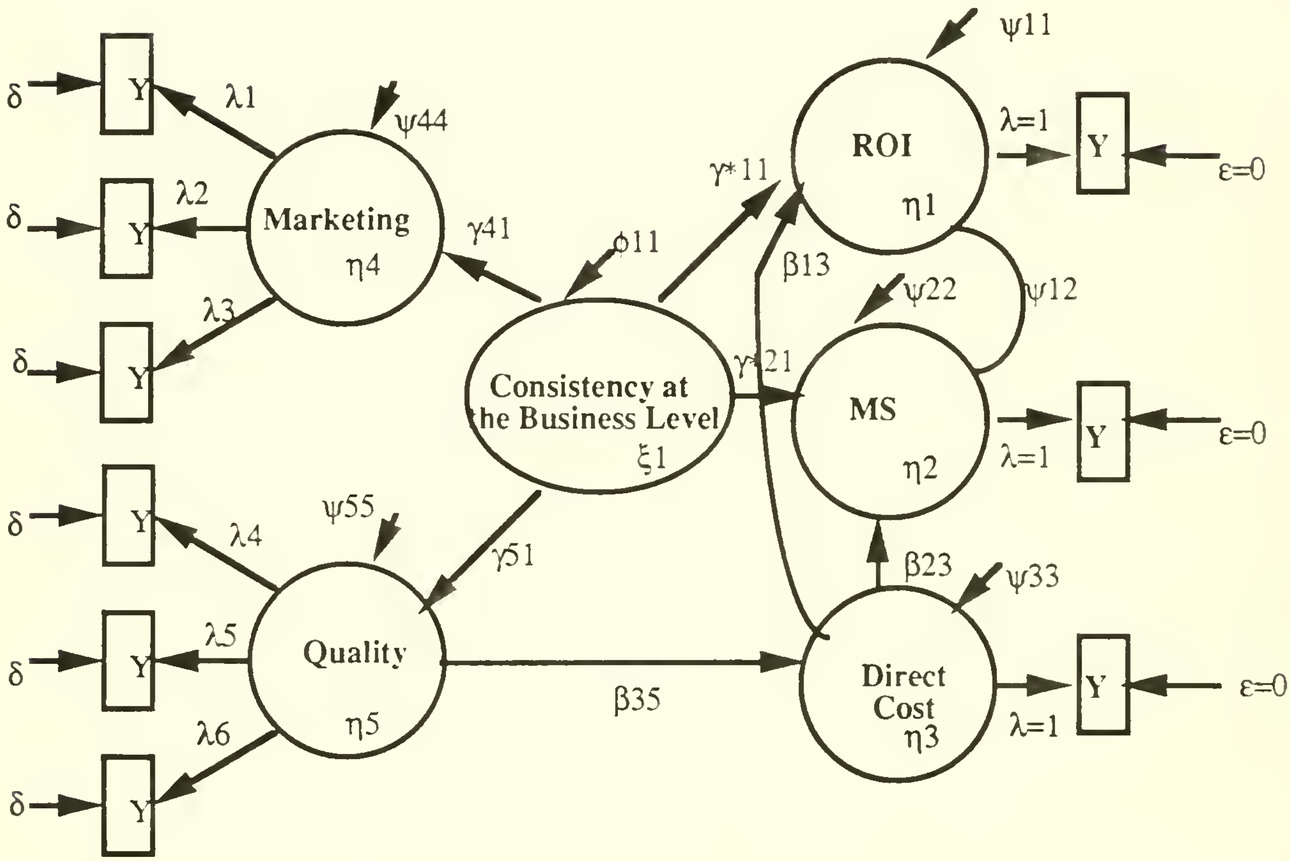
Model III: Statistics: $\chi 2$ (df:66)= 84.43; $p<.05$.

Figure 3 (Continued): Parameter Estimates for Model II

Param	MLE	SE	t-values	SS	Param	MLE	SE	t-Values	SS
$\lambda x1$	1.0	–	–	502	$\beta 13$	−.052	.049	−1.056	−.052
$\lambda x2$	1.618	.181	8.940	.812	$\beta 23$	−.044	.048	−.923	−.044
$\lambda x3$	1.653	.186	8.892	.830	$\gamma 11$	.878	.065	13.432	.878
$\lambda x4$	1.0	–	–	.657	$\psi 22$	.807	.061	13.169	.807
$\lambda x5$	1.02	.100	10.247	.671	$\psi 33$	.974	.071	13.764	.974
$\lambda x6$	1.228	.048	10.787	.807	$\psi 12$	.083	.045	1.829	.083
$\lambda y1$	1.0	–	–	1.0	$\phi 11$	.252	.053	4.779	1.0
$\lambda y2$	1.0	–	–	1.0	$\phi 22$	.432	.068	6.363	1.0
$\lambda y3$	1.0	–	–	1.0	$\phi 12$	.121	.026	4.65	.367
$\delta 1$	.748	.058	12.821	.748	γ_{11}	.165	.120	1.377	.083
$\delta 2$	.340	.055	6.162	.340	γ_{21}	.291	.098	2.465	.146
$\delta 3$	.311	.056	5.526	.311	γ_{31}	−066	.124	−.534	−033
$\delta 4$	.568	.053	10.803	.568	$\gamma 12$	.454	.098	4.608	.298
$\delta 5$	.550	.052	10.545	.550	$\gamma 22$	.539	.097	5.534	.355
$\delta 6$	.348	.052	6.655	.348	$\gamma 32$	−.224	.098	−2.287	−.147

Model III: Key Parameters and Statistics χ^2 (df:66) = 84.43; p>.05.with γ_{31} fixed at zero.

Figure 4: A Schematic of the Relationship Between Business Consistency and Performance: Models IV and V



Model IV: Statistics: $\chi 2$ (df:67)= 84.64; p<.072.

Figure 4 (Continued):
Parameter Estimates for Model IV

Param	MLE	SE	t-values	SS	Param	MLE	SE	t-Values	SS
λx1	1.00	–	–	.503	γ41	.245	.042	5.768	.486
λx2	1.611	.180	8.960	.811	γ51	.497	.066	7.523	.756
λx3	1.652	.180	8.903	.832	β13	−.052	.049	−1.064	−.052
λx4	1.0	–	–	.657	β23	−.043	.048	−1.064	−.052
λx5	1.022	1.00	8.903	.671	β35	−.247	.089	−2.786	−.162
λx6	1.228	.114	10.788	.807	ψ11	.811	.075	10.871	.811
δ1	.747	.058	12.814	.747	ψ22	.693	.080	8.688	.693
δ2	.343	.055	6.214	.343	ψ33	.974	.071	13.752	.974
δ3	.309	.056	5.477	.309	ψ44	.193	.042	4.576	.763
δ4	.568	.053	10.814	.568	ψ55	.185	.056	3.274	.428
δ5	.549	.052	10.534	.549	ψ12	−.005	.059	–	−.005
δ6	.349	.052	6.690	.349	φ11	1.0	–	–	1.0
γ11	.425	.073	5.791	.425					
γ21	.547	.074	7.361	.547					

Model V: Key Parameters and Statistics: χ^2 (df:66) = 80.67; p>.106.

γ_{31} in the low subsample: MLE: 0.299 (t-value:5.465) and Standardized estimate of 0.592.

γ_{31} in the high subsample: MLE: 0.165 (t-value: 3.166) and Standardized estimate of 0.326.
Detailed parameter estimates for this model are available on request

Figure 5: Testing the Models of Consistency at the Three Hierarchical Levels Using Anderson and Gerbing's Framework

Level of Consistency	Type of Models			
	Saturated	Constrained	Theoretical	Unconstrained
Functional	Model I	Not Applicable	Model III	Model II
Business	Model I	Not Applicable	Model IV	Model III
Corporate	Model Ia	Model IV	Model V	Model III

APPENDIX I: Descriptive Statistics and Zero-Order Correlations

Sample: High-Sharing Businesses (n = 176)

No.	Variable	Mean	Sd	Correlations 1	2	3	4	5	6	7	8	9
1	ROI	21.89	21.99	1.00								
2	MS	70.30	79.33	0.2476	1.00							
3	Rel. Direct Cost	101.80	7.54	-0.1118	-0.0742	1.00						
4	Rel. Sales Force	2.88	1.00	0.1585	0.1073	0.0449	1.00					
5	Rel. Advtg.	2.58	1.05	0.1929	0.3092	0.0267	0.3898	1.00				
6	Rel. Promotion	2.72	0.97	0.2201	0.2905	0.0056	0.4871	0.7094	1.00			
7	Rel. Product Quality	28.64	26.98	0.3496	0.2868	0.0130	0.2615	0.2324	0.2823	1.00		
8	Serv. Quality	3.61	0.84	0.2596	0.2355	-0.1848	0.1570	0.2940	0.2905	0.4259	1.00	
9	Rel. Image	3.70	0.87	0.3347	0.3153	-0.1387	0.1953	0.3286	0.3058	0.5111	0.5290	1

Sample: Low-Sharing Businesses (n = 210)

No.	Variable	Mean	Sd	1	2	3	4	5	6	7	8	9
1	ROI	25.14	24.36	1.00								
2	MS	67.17	74.65	0.2211	1.00							
3	Rel. Direct Cost	101.7	6.79	-0.1009	-0.1600	1.00						
4	Rel. Sales Force	2.98	0.94	-0.0175	0.0420	0.0420	1.00					
5	Rel. Advtg.	2.52	1.03	0.1547	0.2391	-0.2316	0.4045	1.00				
6	Rel. Promotion	2.67	0.95	0.0758	0.1000	-0.1602	0.3763	0.6271	1.00			
7	Rel. Product Quality	26.24	27.66	0.2188	0.3515	-0.1237	-0.1023	0.1323	0.1056	1.00		
8	Serv. Quality	3.67	0.86	0.0862	0.3140	-0.1652	-0.0017	0.1652	0.0849	0.5856	1.00	
9	Rel. Image	3.68	0.85	0.1746	0.3200	-0.0789	0.0615	0.1392	0.1749	-0.0978	-0.1305	1