Considering the IS-Business Relationship: A Measurement Approach

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Abstract

To better understand the relationships between IS organizations and their associated client business (line) organizations, we build and test a theoretical model of the management of these relationships. This model originates in the political economy framework of organizational analysis, and couples two streams of theories: transaction cost analysis and resource dependency analysis. Additionally, elements of social contract theory are used to emphasize the long-term, relational aspect of the IS-line relationship. From these frameworks, two dimensions of the IS-business relationship are proposed: Sustainability and Influence. These constructs are conceptualized separately for each participant, emphasizing the disparate perspectives held by IS and the line. The model is validated with a field study of 121 IS-line relationships, in which the reliability and validity of the model is established in a confirmatory factor analytic approach.

1. Introduction

These are turbulent times in the world of organizations. Rapid technology change and shifting patterns of domestic and international competition have put an intense strain on firms' ability to keep pace. In response to these pressures, the modern organization is undergoing significant transformation. There is an increasing consensus in the academic and professional press about the emergence of innovative organizational forms and practices [5,9]. These organizational innovations are characterized by increased process interdependencies, more communication-intensive structures, and the blurring of traditional organizational boundaries – and they require designs that encourage close collaboration among business units [27].

Similar organizational design concerns have been specifically recognized for the IS function [29,6]. For example, many companies use cross-functional teams and liaison roles to coordinate not only across IS units and their business clients [33], but also across multiple systems development units in a federal form of IS governance – in which IT infrastructure responsibilities are centralized to address enterprise-level concerns for connectivity and scale economy, but development responsibilities are decentralized to business units to respond to unit-level concerns for control of some IS resources [34]. However, there is little empirical research on which to base managerial guidelines for the IS-business relationship [5]. The goal of this research is to develop a better understanding of the relationships between IS and their associated business (line) organizations by building and testing a theoretical model of the management of these relationships. This management model is developed with two major objectives. First, it should provide a theoretical basis for building effective IS-line relationships. Second, it should improve our understanding of the nature of the relationship between IS and line/business organizations, providing new insights into its successful management.

IS and business organizations have typically operated in separate worlds, with different languages and only a hazy understanding of each other [19,20]. The relationship between IS and various line organizations has tended to be murky at best and hostile at worst [33]. As the responsibilities for IS activities have expanded past the boundaries of the traditional IS organization, management has faced the important challenge of developing, managing, and coordinating cooperative relationships between IS and line organizations [11,23]. What should be the nature of these IS-line relationships?

2. A framework for understanding

The issue of how the responsibilities for delivering information services should be distributed throughout an organization is a key one for today's managers. The basic goal is to determine an appropriate arrangement for the deployment of computing resources in
organizations, given user and business needs and the desire to control costs and usage. There has been much advice and speculation on how to approach this issue. King [21] surveys the "centralization versus decentralization" IS literature and proposes two fundamental perspectives for the debate. First, much of the prescriptive IS management literature takes a rational view that the goal of IS is known and agreed to: to use computing in the "best" interests of the organization. Within this context, management seeks to deploy computing resources to facilitate their most productive use and to maintain managerial control over organizational information.

Another perspective – a behavioral view – suggests that individuals may value their personal goals and the needs of their own departments more highly than they do those of the organization at large. These individual goals may conflict with those of the organization. Extending this "rational versus behavioral" contrast, King [21] maintains that most decisions about IS allocation involve both political and economic factors, neither of which can be considered universally dominant.

This "rational versus behavioral" and "economic versus political" contrast mirrors King's [22] two theoretical perspectives for the social analysis of computing: systems rationalism and segmented institutionalism. Generally, this division distinguishes a normative, rational model from a sociopolitical, action approach. Zald [32] encompasses both perspectives in a "political economy" framework of organizational analysis. Building from analogies to governments and national economies, the political economy framework focuses on the intersection of the political life of organizations with the economy within organizations. At its base, political economy is the study of the interplay of power, the goals of the power-wielders, and productive exchange systems. The marketing channels literature has extended the political economy framework to the study of business relations [30]. Its basic unit of analysis is the customer/supplier relationship, analyzed in terms of (1) its economy (i.e., its economic structure and processes), and (2) its polity (i.e., its sociopolitical structure and processes). In applying political economy to allocating IS resources, the unit of analysis is the IS-line relationship.

3. A management model

In considering the IS-line relationship, it is helpful to consider the nature of such exchange relationships. Ongoing exchange relationships can take many different forms, from arms-length purchases through long-term associations and joint ownership. Macneil [24] contrasts the extremes of this relationship spectrum: discrete and relational exchange. The discrete transaction is the foundation on which concepts of exchange are built and is exemplified by an exchange of money on one side and an easily measured commodity on the other. It is in the departure from this anchor point of discreteness that the concept of relational exchange begins. For example, relational exchange occurs over time; each transaction is viewed in terms of its history and its anticipated future. The basis for future collaboration is supported by implicit and explicit assumptions, trust, and planning. Joint efforts related to both performance and planning are key, and participants expect complex personal, non-economic satisfactions [24].

We propose that the nature of the IS-line relationship depends on the nature of the relational exchange between IS and the line. Viewing the IS-line association as an exchange relationship and building on the relational contracting literature, we describe the IS-line relationship as "a coordinating strategy, based on a long-term relationship, to achieve higher performance through joint, mutually dependent action of independent actors." A "coordinating strategy" is a choice of management actions by at least two organizational participants to cooperate in performing joint tasks or to achieve joint goals [25]. A "long-term relationship" is an exchange relationship in which each transaction is viewed in terms of its history and its anticipated future [24]. "Mutual dependence" is created when participants must rely on the resources of their exchange partners to accomplish the desired level of performance [28]. Finally, the concept of "independent actors" assumes that participants have at least a degree of decision-making discretion or autonomy in managing the relational exchange. In essence, the relationship between IS and line organizations is a social contract, built over time, from which both IS and the line stand to benefit and to which both contribute.

3.1. A rational perspective

The initial task to be performed in studying IS-line relationships from a management perspective is to determine the relevant dimensions. Using a political economy framework, the dimensions of IS-line relationships are constructed from both a rational, efficiency-based perspective and a sociopolitical, action one. The rational framework concentrates on the relative efficiencies of various governance modes for managing transactions, such as vertical integration, contractual arrangements, and market exchange. Matching of the governance mode to transactions is done to "economize on bounded rationality while
simultaneously safeguarding the transactions against the hazards of opportunism" in order to minimize the costs of "running the system" [31]. A central motivation for modes of governance other than "markets" or "discrete transactions" is the existence of an anticipated serial or repeating set of exchanges. Characterizations of social contracts [24] strongly emphasize the long-term nature of the economic relationships such a relationship. Axelrod [1] argues that rational actors will cooperate if future transactions offer benefits that outweigh those available from short-run opportunist acts. Williamson and Ouchi [31] note that an extended relationship can lead to participant familiarity, permitting communication economies to be realized. Each of these researchers argues for the importance of the long-term nature of relational exchange from an efficiency perspective.

This rational, efficiency-based perspective on the management of the IS organization is not new. In recent years, a broad spectrum of research on the economics of information systems management has emerged [4,18]. This research framework carries the basic perspectives of a normative, rational (or boundedly rational), efficiency-based model of the use of computing resources. It generally views organizations as networks of exchanges and seeks to determine the optimal organizational form for IS management by examining solutions to the problems of control and coordination of the exchange transactions. Henderson [13], in considering this perspective on the IS-line relationship, refers to it as "Partnership in Context." Drawing on his definition, and emphasizing the extended character of the social exchange relationship, we label our first major dimension of the IS-line relationship Sustainability, and define it as "the extent to which relational exchange participants believe in the relationship's stability and longevity."

A considerable body of research into human interaction behavior suggests that unrestrained self-interest maximization is not characteristic of human social relationships, particularly in extended relationships. While the risk of opportunist action is especially great in long-run relationships because termination cannot be achieved easily or cheaply, attitudes and social norms tend to reduce opportunist behavior in many long-term relationships [31]. Such reductions can be greatly aided by using expert, legitimate influence [16]. This highlights the importance of the second dimension of the IS-line relationship in this framework, which concerns the relative power and influence of the participants.

3.2. A sociopolitical perspective

Besides the efficiency considerations that highlight the importance of sustainability in a business relationship, managers engage in a variety of day-to-day actions across the work domains of both the IS and line functions [33]. From a political economy perspective, a major factor in the day-to-day operations of the IS-line relationship is the internal polity: the way authority is distributed, mobilized, utilized, and limited [32]. The level of influence of organizational actors, in this view, is directly related to their control of organizational resources [28].

Much IS research is directed to issues concerning power and influence and the IS organization. Jasperson, et al. [15], for example, review the power and influence literature in IS and find eighty-two published papers in the area. Henderson [13] draws on this power and influence perspective in IS-line relationships, and labels it "Partnership in Action." Drawing on the resource dependency model of organizational control and Henderson's characterization of influence in the IS-line relationship, we label the second dimension of the relationship as Influence, and define it as "the ability of participants to shape other participants' key decisions and policies that affect the relationship."

3.3. Participant perspectives

Much of the theoretical discussion above assumes a single universal view of the relationship. However, empirical studies have shown that participants in exchange relationships often view their relationship in distinct ways. The marketing channels literature, for example, has frequently found that the various members of a channel perceive characteristics of their relationship very differently. John and Reve [17] found that key informants from the two firms of a channel dyad have disparate views about the sentiments within the dyad. They conclude that:

The major problem is in "real" differences in perception between the informants across the dyad. ... It is reasonable to expect differences in perceptions among the actors. After all, wholesalers and retailers have very different roles and functions in the distribution system. The issue is not whether differences between informants from a dyad should exist, but rather the specification of a theoretically meaningful aggregation scheme for the separate reports. ([17]: p. 523, emphasis added)

The disparity of line and IS organization perspectives is almost axiomatic [23]. For example,
Keen [19] maintains that IS and business units have widely divergent perspectives, with different vocabularies and very little understanding of each other. We expect IS and line managers to have very different perspectives about the IS-line relationship.

Following John and Reve [17], we therefore posit that a key issue in studying the relationship between IS and line organizations is the specification of a theoretically meaningful aggregation scheme for the separate reports of IS and line managers. A central objective of this research is to develop a valid way of measuring the different perspectives of IS and line management on their relationship. In sum, we propose two dimensions to characterize the relationship: Sustainability and Influence. In addition, the perspectives of IS and the line toward these two dimensions are proposed to be different. These differences lead to four proposed constructs of the IS-line relationship:

1. The IS View of Sustainability
2. The Line View of Sustainability
3. The IS View of Influence
4. The Line View of Influence

Each of these four constructs must be addressed in a relationship model. This study aims to determine the relationship among these constructs and to investigate their effect on performance.

### 3.4. Performance impacts

For this study, the measurement of IS performance serves two purposes. First, IS performance is used to test the nomological/predictive validity of the IS relationship model by assessing the relationship between performance and the dimensions of the IS-line relationship developed above. Second, the results of this assessment should provide pragmatic management insights into the practical impacts of the nature of the IS-line relationship on the performance of the IS organization.

Assessing IS performance has long been recognized as problematic [14]. It is well accepted that no single metric is adequate to assess IS performance fully [8]. We conceptualize the performance of IS organizations for this study using two aspects: process-product and internal-external. The process-product component reflects the tradition of measurement in organizational control theory [10]. Both types of measures should be used because there is a potential conflict between the efficiency of the IS process and the quality of the IS product. The internal (or inward-looking) and external (or outward-looking) aspect mirrors the conceptualization in much organizational studies research, contrasting a task view of performance (with IS as a production function) with an organizational or service view (with IS as a service provider for the business) [26]. In summary, we conceptualize the measures of performance of IS organizations as having two major constructs: operational and service. Within these two constructs, there are two types of indicators: process and product.

### 4. Research design

The first step in the measurement development process is to identify an initial set of items as candidates for the relationship scales. We developed candidate indicators in two ways. First, candidate items were devised from published research articles that have discussed or attempted to measure similar constructs. Second, a series of interviews was conducted with managers of exchange relationships with customers or suppliers as well as with internal IS-line relationships. By using both types of sources, we are more likely to generate indicators with content validity. We use items with proven reliability when they are available in the literature, but we are also able to ensure our indicators are meaningful and relevant for IS-line relationships through field interviews.

A pilot questionnaire was tested using from two to six IS and line managers from five organizations to determine if any questions were confusing for any reason. Based on the results of the pilot test, any questions determined to be poor were deleted or rephrased.

Typical past studies of the IS-line relationship have relied on single key informant data from only one side of the relationship (e.g., user satisfaction). Even studies that gather data from both sides of the relationship have rarely tested the validity of measures across the relationship. Participating organizations were asked to identify distinct IS organizations serving a specific client line organization. Five of the seven organizations asked all of their existing IS-line relationships to participate, and in the two cases where all were not asked to participate we received assurances from the organization that the selection presented a representative range of relationships.

Our principal research instruments were a questionnaire asking about characteristics of the IS-line relationship to be completed by participants in the relationship and a questionnaire asking about aspects of performance of the IS units to be completed by organizational stakeholders. For each identified relationship, we asked that at least three IS and three line personnel be designated to complete the relationship questionnaire, and we requested that two outside stakeholders be identified to complete a performance assessment questionnaire. Altogether,
there were 846 relationship questionnaires and 262 performance questionnaires distributed, with 669 (79%) relationship and 146 (56%) performance questionnaires returned. Table 1 summarizes the study participation.

Table 1: Study participation by organization

| Company's Identified Participating Performance Industry Relations Relationships Data |
|----------------------------------|-------------------|-------------------|-------------------|-------------------|
| Pharmaceutical                  | 10                | 9                 | 4                 |
| Insurance                        | 13                | 11                | 0                 |
| Oil & Gas                       | 37                | 35                | 26                |
| Consumer Good                   | 5                 | 3                 | 2                 |
| Computer Mfg.                   | 33                | 30                | 25                |
| Insurance                        | 17                | 17                | 17                |
| Automotive                      | 17                | 16                | 12                |
| **Totals:**                      | **132**           | **121 (92%)**     | **86 (65%)**      |

5. Model operationalization

The indicators for the model constructs are shown in the appendix. Each construct has three indicators in the measurement model. The first indicator is a general assessment of the relationship as a whole. This involves a relatively complex mental analysis for each response, which can lead to relatively high measurement error. We counteract this problem by phrasing the questions in as simple terms as possible and by anchoring the questions to the specific relationship of interest (replacing the terms in brackets in each question with the names of the actual IS or line organization being asked about). For these general questions, we average the responses of the pair of related questions as the value for the indicator. For such complex assessments, the use of item pairs is preferable to single items because they are likely to be more reliable than individual questions alone [7].

As an alternate indicator approach, we first assess the role of each participant separately for each characteristic. We then operationalize these indicators of the relationship as a multiplicative interaction term. This approach emphasizes the strength of interaction between the two roles (IS and line).

There are a number of advantages to this measurement scheme. From a "multi-trait, multi-method" perspective, the two types of measures (general and calculated assessment) can be thought of as different methods. Operationalizing the measures in this way provides a stronger test of the validity of the measurement scheme than would have been possible if the same types of measures for each indicator had been used. That is, the extent to which these two types of indicators agree provides a much stronger test of validity than if only one or the other type of indicator was used.

6. Analysis and results

A researcher who ignores measurement validation implicitly assumes that the theoretical constructs of interest are measured perfectly and without error – an assumption that is rarely appropriate and one that can greatly impact the findings of the researcher's theory testing. Following the explicit criteria outlined by Bagozzi [2], we assess the validity of our measurement approach as an operationalization of our specified model. Bagozzi describes six criteria for validity:

1. Theoretical meaningfulness of concepts
2. Observational meaningfulness of concepts
3. Internal consistency of operationalizations
4. Convergent validity
5. Discriminant validity
6. Nomological validity

These criteria can be viewed as six sequential "hurdles" that the measurement model must pass before one can claim the measures as valid.

The first two criteria involve semantic issues and, therefore, do not have explicit statistical tests associated with them. Theoretical meaningfulness of a concept "refers to the nature and internal consistency of the language used to represent the concept" ([2]: p. 117). To be meaningful, a construct must reflect the language used to represent the theory. While the labels for our two dimensions (Sustainability and Influence) might be criticized, their descriptions have been derived from earlier research on social contract theory, organizational economics, and organizational power, and they are consistent with these prior theories. In addition, in pilot testing with IS and line managers, the terminology used in the instruments was discussed at length, and no major confusion about construct definitions or descriptions was found.

The observational meaningfulness of concepts "refers to the relationship between theoretical variables (which are unobservable) and their operationalizations (which, of course, are observable)" ([2]: p. 121). To assess this criterion, one must determine whether the questions are clear and are, in fact, related to their constructs. The appendix shows the questions used to measure each construct. In the pilot studies, managers were explicitly asked if the questions were clear and measured what they claimed. The evidence from the pilot and interviews suggested that these indicators tap the respondents' view of the proposed constructs.

Having discussed the semantic components of validity examination, we examine the rest of the Bagozzi [2] criteria by translating the conceptual
The model discussed above can be tested with data using estimation procedures in confirmatory factor analysis (CFA) implemented in the LISREL program. Unlike exploratory factor analysis, CFA allows precise descriptions of factor structures and their loadings are specified based on theoretical models. Thus, for example, it is possible with CFA to specify that each indicator loads on only one factor.

The best assessment of model fit in CFA is still an area of some controversy, and there are a variety of statistics available for that purpose. The probability level associated with a $\chi^2$ statistic indicates the probability ($p$) of attaining a larger $\chi^2$ value given that the hypothesized model is supported. The higher the value of $p$, the better the fit – and, in general, values of $p > 0.05$ are considered as an indication of satisfactory fit. Due to some concerns over the appropriateness of the $\chi^2$ statistic as the sole measure of model fit, many researchers complement it with Bentler and Bonnet's normed index (BBI), which assesses the improvement in the variance explained by a proposed model from that of a null model (which specifies mutual independence among the indicators). BBI can be regarded as an indication of the practical significance of the model in explaining the data, and the rule of thumb is that BBI should be greater than 0.90.

Our approach to determining the most suitable measurement model for measuring the constructs of the IS-line relationship involves comparing each model's statistics within a set of nested alternate models – with each model proposing a different explanation of the underlying indicators.\(^1\) The list below summarizes the results for seven different measurement models – each with its own proposed underlying relationships among the twelve indicators of the study.

**Mn: Null Model** (each indicator measures an independent factor).

Results: $\chi^2 = 1119.79$ (df:66); $p < 0.001$.

**M1: Single Factor Model** (all indicators share a single underlying factor).

Results: $\chi^2 = 561.37$ (df:54); $p < 0.001$; BBI = 0.50.

**M2: Two Views Model** (the six indicators answered by IS respondents share one factor, and the six indicators answered by line respondents load on a second factor).

Results: $\chi^2 = 257.91$ (df:53); $p < 0.001$; BBI = 0.77.

**M3: Four First-Order Factors Model** (the twelve indicators load on four underlying factors – the factors proposed by our model).

Results: $\chi^2 = 61.87$ (df:48); $p < 0.086$; BBI = 0.94.

**M4: Two Views Model** (same four first-order factors as M3, but adds two second-order factors, representing the perspectives of the two relationship participants).

Results: $\chi^2 = 64.59$ (df:49); $p < 0.067$; BBI = 0.94.

**M5: One Second-Order Factor Model** (same as M4 except one second-order factor instead of two).

Results: $\chi^2 = 104.97$ (df:50); $p < 0.001$; BBI = 0.91.

**M6: Multi-Trait, Multi-Method Model** (traditional model; each indicator is explained by two factors: a trait factor (Sustainability or Influence) and a method factor (IS or line)).

Results: $\chi^2 = 55.04$ (df:40); $p < 0.057$; BBI = 0.95.

To determine the preferable model between M3 and M4, one checks whether the improvement in the $\chi^2$ statistic for M3 (when compared to model M4) is statistically significant. The difference in the $\chi^2$ statistics for the two models is 2.72 ($64.59-61.87$), with 1 degree of freedom (49-48). This is not a significant improvement ($\chi^2$ (df:1) = 2.72, $p > .05$), so the model M4 is therefore preferable, as it is more parsimonious (because it has more degrees of freedom). In comparing models M4 and M6, one follows the same basic procedures. The difference in the $\chi^2$ statistics for the two models is 9.55, with 9 degrees of freedom. Again, this is not a significant improvement ($\chi^2$ (df:9) = 9.55, $p > .05$), so M4 is the preferable model, based again on parsimony.

Model M4, therefore, emulates the structure of the relationships among the indicators most efficiently. Figure 1 shows the CFA results for the parameters for this model. For each parameter, the figure illustrates the standardized maximum likelihood estimate. Using this model and the results shown in the figure as a basis, we can complete the tests of validity outlined by Bagozzi [2].

The **internal consistency of operationalization** assesses reliability (whether the measures are free from random error and therefore yield consistent results). In CFA, reliability is conceptualized as representing the proportion of measure variance attributable to the underlying construct.

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\(^1\) Due to space constraints, full results for these models are not presented here. Full results for all models and analyses are available on request from the author.
The appendix shows the results of the reliability tests for the measurement model. Values of $p_i$ greater than 0.50 indicate that more of the variance of an indicator is explained by the theoretical construct than by error components. Similarly, a value of $p_i$ greater than 0.50 implies that the variance explained by the theoretical construct is more than that by its error components. The results show all indicators and constructs to be reliable [3]. We therefore conclude that the measures provide an internally consistent operationalization of the theoretical constructs.

Convergent and Discriminant Validity. The next criteria Bagozzi [2] provides for establishing measurement validity are convergent and discriminant validity. CFA provides a means of simultaneously assessing the convergent and discriminant validity of a set of measures by testing that each indicator loads only onto its associated theoretical construct.

More specifically, convergent validity refers to the degree to which two or more measures of the same theoretical construct are in agreement. Figure 1 shows that the factor loadings on the constructs ($\lambda$'s) were all large and of practical significance. Each indicator is strongly related to its underlying theoretical construct, confirming the convergent validity of the measures of the relationship.

Discriminant validity refers to the degree to which one theoretical construct differs from another and can be assessed by testing that the correlations between the pairs of constructs are significantly different from unity. The proposed measurement model (M4) has two second-order factors and four first-order factors. The value of $\Phi_{2.1}$ in Figure 1 shows the correlation between the two second-order factors to be 0.50, which is clearly less than one. In addition, the largest of the correlations among the first-order factors is 0.71, also clearly less than unity. Formal tests of discriminant validity through the use of comparing nested models also confirmed the discriminant validity of the model.

Nomological Validity. The final Bagozzi [2] criterion is nomological validity. Testing the nomological validity of the measurement model involves testing the predictive validity of the IS-line relationship model by relating its constructs to IS performance measures. Specifically, we examine the relationship between the IS-line relationship model and two dimensions of IS performance: operational performance and service performance. The indicators and reliability characteristics of our measures of IS performance are listed in the appendix. This is accomplished by adding a structural relationship from the IS-line measurement model to the performance measurement model, and is shown in Figure 2.

As with our earlier analyses, Figure 2 emerged as the best model after analyzing a number of other, nested models. The model demonstrates an excellent fit with the data ($\chi^2 = 140.11$, df = 127, $p = .20$), which establishes the predictive ability of the model. Thus, all of Bagozzi's [2] criteria are satisfied by the model, and validity is established. This model suggests that the IS view of the IS-line relationship predicts operational performance, while the line view predicts service performance. In essence, IS and the line each self-optimize their own views of the relationship. If IS views the relationship with the line as strong, stakeholders rate their operational performance higher. Similarly, if the line views the relationship as strong (i.e., that both participants feel they have influence and see the relationship as sustainable), stakeholders rate the service performance of the IS organization more highly.
7. Summary and conclusions

The goal of this study was to build and test a model of IS-business relationships to develop a better understanding of these relationships and provide new insights into their successful management. That is, our intent was to develop a model of and for the management of IS-line relationships. The first dimension of the IS-business relationship, Sustainability, addresses the rational, efficiency-based issues of managing relationships and emphasizes the extended or long-term nature of relational exchanges. The second dimension, Influence, concerns the sociopolitical, action-based issues of managing relationships and emphasizes the importance of participants' relative influence and/or dependency. The model integrates diverse approaches to organizational analysis (e.g., social contract theory, transaction cost analysis, and resource dependency analysis), and the results demonstrate the power in this combination. Further, we discuss the importance of the disparate perspectives of the participants and argue that these perspectives are so different in IS-line relationships that they form the basis for separate theoretical constructs. Finally, by combining the relationship model and a measurement model of IS performance within a structural equation modeling framework, we demonstrate an impact of the IS-line relationship on IS performance.

The study makes a number of methodology contributions. By using informants from both IS and line organizations, we were able to test the reliability and validity of our model. In addition, the use of two types of measures (direct general assessment and calculated interactions) provided a strong test of validity. In particular, the interaction conceptualization was strongly validated. Because the proposed model is so new, it is not realistic to expect to generalize these results broadly until they are replicated and related theories are developed and tested. This study engaged a large sample of IS-line relationships in a range of firms, industries, and geographic areas. The potential for building on the results to establish generalizability is therefore strong. However, the primary focus of this study has been to establish internal validity rather than generalizability (or external validity). We have not, for example, related these results to various organizational environment factors. As a result, generalizing these results to other environments and firms must be approached with caution.

The most important contributions of the study, however, are practical. First, it's often posited in management that you get what you inspect – not what you expect. The ability to measure the organizational characteristics of the IS-line relationship provides a basis for management to take direct actions to improve the IS-line relationship (such as implementing a relationship training and awareness program). Second, an important implication of the study is that the IS and line perspectives on their relationship are very different. The difference is more than a simple role bias and is, in fact, indicative of a theoretically meaningful difference. The message to practitioners is that it is important to use representatives of both sides of a relationship to assess the quality of the link between them, since their views are so different. Finally, though these measurement issues necessarily complicate any assessment by management of the quality of the organizational relationship, such an assessment is still useful due to the demonstrated association between the IS-line relationship and IS performance. As such, this study can be a step toward narrowing the divide between the IS and line groups, and improving the contribution of IS in meeting the business needs in organizations.

8. References


Appendix: Indicator Questions

Indicators of Influence (Line $\rho_c = 0.90$; IS $\rho_c = 0.86$)

1. **Indicator G1**: General Assessment of Interaction. (Line $\rho_i = 0.64$; IS $\rho_i = 0.64$)
   
   Average of Two Responses:
   
   a. In general, the level of influence that members of [the IS organization] and [the line organization] have on each other's key decisions and policies is:
   
   b. In general, the ability of members of [the IS organization] and [the line organization] to affect each other's key decisions and policies is:

2. Calculated Assessments of Interaction.
   
   a. **Indicator M1**: Product of the Two Responses: (Line $\rho_i = 0.88$; IS $\rho_i = 0.77$)
      
      In general, the level of influence that members of [the line organization] have on key decisions and policies of [the IS organization] is:
      
      In general, the level of influence that members of [the IS organization] have on key decisions and policies of [the line organization] is:
   
   b. **Indicator M2**: Product of the Two Responses: (Line $\rho_i = 0.87$; IS $\rho_i = 0.81$)
      
      In general, the ability of members of [the line organization] to affect key policies and decisions of [the IS organization] is:
      
      In general, the ability of members of [the IS organization] to affect key policies and decisions of [the line organization] is:

Indicators of Sustainability (Line $\rho_c = 0.85$; IS $\rho_c = 0.85$)

1. **Indicator G1**: General Assessment of Interaction. (Line $\rho_i = 0.76$; IS $\rho_i = 0.56$)
   
   Average of Two Responses:
   
   a. In general, our ability to maintain a long-term, sustained strategy for the management of Information Systems in our business is:
   
   b. In general, the degree to which members of [the IS organization] and [the line organization] view their association as a long-term relationship is:

2. Calculated Assessments of Interaction.
   
   a. **Indicator M1**: Product of the Two Responses: (Line $\rho_i = 0.70$; IS $\rho_i = 0.75$)
      
      In general, the ability of line management to maintain a sustained, long-term strategy for the use of Information Systems is:
      
      In general, the ability of IS management to maintain a sustained, long-term strategy for the use of Information Systems in the line organization is:
   
   b. **Indicator M2**: Product of the Two Responses: (Line $\rho_i = 0.70$; IS $\rho_i = 0.87$)
      
      In general, the degree to which the management of [the line organization] takes a long-term (rather than a short-run) view of its relationship with [the IS organization] is:
      
      In general, the degree to which the management of [the IS organization] takes a long-term (rather than a short-run) view of its relationship with [the line organization] is:

Operational Performance ($\rho_c = 0.80$)

**Indicator 1**: In general, the quality of the work produced for [the line organization] by [the IS organization] is: ($\rho_i = 0.61$)

**Indicator 2**: In general, the ability of [the IS organization] to meet its organizational commitments (such as project schedules and budgets) is: ($\rho_i = 0.68$)

**Indicator 3**: In general, the ability of [the IS organization] to meet its goals is: ($\rho_i = 0.71$)

Service Performance ($\rho_c = 0.86$)

**Indicator 1**: In general, the ability of [the IS organization] to react quickly to the line organization's changing business needs is: ($\rho_i = 0.78$)

**Indicator 2**: In general, the responsiveness of [the IS organization] to [the line organization] is: ($\rho_i = 0.72$)

**Indicator 3**: In general, the contribution that [the IS organization] has made to [the line organization's] strategic goals is: ($\rho_i = 0.69$)

Each question was answered using this seven-point scale:

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Extremely Weak</td>
<td>Weak</td>
<td>Moderately Weak</td>
<td>About Average</td>
<td>Moderately Strong</td>
<td>Strong</td>
<td>Extremely Strong</td>
</tr>
</tbody>
</table>