

STRATEGIC ALIGNMENT MATURITY AS A PREDICTOR OF EMPLOYEE AWARENESS OF ORGANIZATIONAL OBJECTIVES

Deb Sledgianowski, Hofstra University, Hempstead, New York

Abstract

IT-business alignment is a persistent information management concern. This paper presents findings from a study which investigated the influence of management practices and strategic choices on the mutual knowledge of IT and business objectives by IT and business executives. The Strategic Alignment Maturity (SAM) assessment instrument was used to assess maturity of management practices and strategic choices to facilitate alignment. Discriminant function equations were developed to estimate the impact of each of the SAM factors on respondents knowing their IT and business objectives. Communication maturity and Governance maturity were the most prominent predictors of employees knowing their objectives.

INTRODUCTION

IT-business strategic alignment is an ongoing concern of organizational leaders. Top IT executives and chief financial officers have ranked IT-business alignment as one of their primary issues (Luftman & McLean, 2004; Computer Sciences Corporation, 2007). This paper presents findings from a study which investigated the influence of management practices and strategic choices on the mutual knowledge of IT and business objectives by IT and business executives.

The concept of IT-business alignment stems from strategic management research which suggests that a fundamental concept of IT strategic planning is that IT objectives should be derived from business objectives or developed in conjunction with them (McLean & Soden, 1977; Applegate, McFarlan, & McKenney, 1996; Teo & King, 1997). The maturity of the information systems function effects strategic information systems planning, with IT-business alignment shown to improve the effectiveness of a firm's planning process (Lee & Pai, 2003).

This study contributes to the understanding of the effects of IT business alignment processes on employees' awareness of their firm's IT and business objectives. The Strategic Alignment Maturity (SAM) assessment instrument was used to assess maturity of management practices and strategic choices to facilitate alignment. This work should be of interest and utility to managers as they direct their management practices and strategic choices in the operational, tactical, and strategic aspects of decision-making relative to their organizational resources.

The next section of this paper provides a review of the literature about IT-business strategic alignment to support the proposed hypotheses, followed by a discussion of the constructs and hypotheses. This is followed by the research methodology, analysis and results, and discussion.

LITERATURE REVIEW

Previous research has examined the IT planning process and its links to strategic business planning (for example, Horovitz, 1984; Lederer & Mendelow, 1989; Teo & King, 1997; Reich & Benbasat, 2000). Horovitz (1984) provides a framework that defines steps and processes to strategic management. He identifies intellectual and social approaches to strategy formulation and implementation, whereby the intellectual aspect refers to the

tools and organizational arrangements used and the social aspect refers to the people involved in making the strategy happen.

Reich and Benbasat (1996) expand on Horovitz's concept and apply it to IT-business alignment. They suggest that the intellectual dimension pertains to "methodologies, techniques, and data used in the formulation of strategy" and that the social dimension pertains to "the choice of actors, their degree of involvement, and the methods of communication and decision making" relative to the process of strategic business planning. Reich and Benbasat (1996) define a social dimension of alignment as the degree to which an organization's executives mutually understand their IT and business objectives and are committed to carrying them out. Reich and Benbasat (1996 and 2000) examined the "level of mutual understanding" component of the social dimension by evaluating organizations' business and IT plans. They suggest that the understanding of current IT and business objectives by IT and business executives is a measure that can be used to assess the social dimension of alignment.

This study applies the SAM assessment methodology to assess management practices and strategic choices in an organization, which is considered to have some aspects of Horovitz's intellectual process of tools and organizational arrangements used in strategy formulation and implementation. The SAM framework is comprised of multiple management practices and strategic choices an organization can implement, each of which has the potential to facilitate IT-business alignment (Luftman, 2000). There are five different levels, or maturity, of implementation for these practices and choices (Sledgianowski, Luftman, & Reilly, 2006).

The management practices and strategic choices comprising the SAM framework are categorized into six components, each having five levels of maturity, a description of each of the components follows along with the proposed hypotheses associated with the components and their relationship to knowing IT and business objectives. According to the framework, Communication maturity is the degree to which an organization is effective at sharing information for mutual understanding and the methods used to promote this.

Communication has long been associated with IT-business alignment. Calhoun and Lederer (1990) found that a lack of communication of top management's objectives could account for the business function's dissatisfaction with strategic information systems planning. Reich and Benbasat (2000) found that shared domain knowledge and communication between IT and business managers positively influence alignment. Rockart, Earl, and Ross (1996) suggested that communication ensures that business and IT capabilities are integrated into the business effectively. Luftman, Papp, and Brier (1999) reported that the IT functions' understanding of the business was one of the top three enablers of alignment. Therefore,

Hypothesis 1a: Higher levels of Communication maturity are associated with higher levels of Knows IT Objectives.

Hypothesis 1b: Higher levels of Communication Maturity are associated with higher levels of Knows Business Objectives.

Competency/value measurement maturity refers to the management decisions and strategic choices an organization makes when determining the value and contribution of

IT to the firm. Henderson, Venkatraman, and Oldach (1996) suggested that value management is a valuable mechanism for ensuring that maximum benefits are achieved from IT investments and as such, are a means to facilitate IT-business alignment. Research suggests that measures of business contribution should be multidimensional (Maltz, Shenhar, & Reilly, 2003) and IT and business measures should be integrated (Luftman, Bullen, Liao, Nash, & Neumann, 2004, p. 382; Van Der Zee & De Jong, 1999). Therefore,

Hypothesis 2a: Higher levels of Competency/value Maturity are associated with higher levels of Knows IT Objectives.

Hypothesis 2b: Higher levels of Competency/value Maturity are associated with higher levels of Knows Business Objectives.

Governance maturity refers to the choices organizations make when allocating decision rights for IT activities such as prioritizing projects and controlling budgets and IT investments (Henderson et al., 1996). Henderson et al. (1996) suggested that governance is a valuable mechanism to facilitate IT-business alignment. They saw governance as a mechanism for specifying IT decision-making capabilities within the organization and with strategic alliances and partners. Therefore,

Hypothesis 3a: Higher levels of Governance Maturity are associated with higher levels of Knows IT Objectives.

Hypothesis 3b: Higher levels of Governance Maturity are associated with higher levels of Knows Business Objectives.

Partnership maturity pertains to how IT and the business perceive the contribution of each other. Sharing risk and responsibility of IT initiatives requires trust and mutual respect between IT and business partners (Ross, Beath, & Goodhue, 1996). Effective long-term partnerships are sustained when IT and business partners exhibit trust and positive attitudes toward the potential contributions of each other (Henderson, 1990).

Hypothesis 4a: Higher levels of Partnership Maturity are associated with higher levels of Knows IT Objectives.

Hypothesis 4b: Higher levels of Partnership Maturity are associated with higher levels of Knows Business Objectives.

Scope and architecture maturity refers to the management decisions and strategic choices an organization makes when allocating resources toward its information technology infrastructure, including its reach and range. Keen (1996, p. 152) suggested that IT architecture, integration, infrastructure, and standards should be defined from the organization's goals, and that IT infrastructure should be an early consideration when defining business goals. Therefore,

Hypothesis 5a: Higher levels of Scope and Architecture Maturity are associated with higher levels of Knows IT Objectives.

Hypothesis 5b: Higher levels of Scope and Architecture Maturity are associated with higher levels of Knows Business Objectives.

Skills maturity refers to the organization's cultural climate toward change and innovation. Strategic alignment is a process of continuous adaptation and change (Henderson & Venkatraman, 1993). The adoption and diffusion of IT throughout an organization is better enabled when an organization anticipates change. Being ready for change may increase the potential for change efforts to be more effective (Armenakis, Harris, & Mossholder, 1993).

Therefore,

Hypothesis 6a: Higher levels of Skills Maturity are associated with higher levels of Knows IT Objectives.

Hypothesis 6b: Higher levels of Skills Maturity are associated with higher levels of Knows Business Objectives.

This study proposes that each of the six components of SAM are predictors of mutual awareness of IT and business objectives by IT and business executives.

METHODOLOGY

Data to test the hypotheses and model were drawn from a cross-sectional field study of 116 IT and business executives from 10 business units across seven organizations (Sledgianowski et al., 2006). The respondents completed the SAM instrument as part of a strategic alignment assessment (see Appendix A for retained items and their factor loadings and Appendix B for sample assessment item). The assessment program was offered to all organizations which were current members of The Conference Board or SIM. According to the web sites of these two organizations, SIM membership consists of over 3,000 IT leaders and The Conference Board membership consists of executives from over 2,000 companies. Membership in the two organizations may overlap, as some executives may belong to both.

The seven organizations participating in the study included one government agency, two chemical manufacturers and four firms in the financial and insurance industry. Each organization was located in the United States. The number of employees ranged from approximately 1,000 employees to over 50,000 employees. For the five publicly held companies, total revenue ranged from \$300 million to \$5.5 billion. A total of 116 completed questionnaires were received from business and IT executives. Of these, 63 self-identified as belonging to a business function, and 53 self-identified as belonging to an IT function. The title of responding executives ranged from "Staff" to "CEO," with the majority being either "VP" or "Director". Research suggests that knowledge of strategy depends on employee function, level, and position (Miller et al., 2007). To mitigate differences, and because my study is interested in strategic level objectives, respondents at the executive level were used.

Measurement of Constructs

Strategic alignment maturity was assessed using the SAM assessment instrument.

An earlier paper (Sledgianowski et al., 2006) empirically tested and validated the SAM assessment instrument using the same data set used in the current study. The instrument identified six factors (Communication, Competency/value, Governance, Partnership, Scope and Architecture, and Skills, with five distinct Maturity levels, comprised of 22 items to measure strategic alignment maturity.

There are two components to the Knowing Objectives construct. One measures the degree to which respondents know their business objectives, called Knows Business Objectives and the other one measures the degree to which respondent know their IT objectives, called Knows IT Objectives.

This study operationalizes Knowing Objectives by using an adaptation of the measurement used by Reich and Benbasat (1996) to measure the social dimension of linkage from a content perspective. Their study sample included a total of 45 informants who were interviewed about their knowledge of their firm's objectives. This study had 116 respondents who completed questionnaires, thus requiring a different approach to obtaining this information.

At the time when developing these constructs, the strategic management literature did not offer a current list of common IT and objectives that could be developed into a multiple-choice measurement. Zviran (1990) provided a list of common IT and business objectives of Israeli organizations, but it was felt that many of these objectives are dated. So, this study set out to determine some current common IT and business objectives. The construct used to measure Knows Objectives consisted of two open-ended questions included in the survey instrument that asked respondents to list their organization's three most important IT objectives and their three most important business objectives. For example, a business objective at one organization was, "Increase ROI by 8%" and an IT objective was, "Implement broker workstations". The survey instrument also contained two check boxes for the respondent to indicate if they did not know their IT or business objectives.

DATA ANALYSIS

Procedure to Analyze Knowing Objectives

The IT and business objectives data set was independently analyzed by the primary researcher and two judges who, because of extensive academic training and practitioner experience, were deemed well qualified to formulate a proficient and impartial opinion as to the level of agreement of the respondents objectives with the "definitive" objectives.

For the comparison examining most-senior respondents, two analyses were done with the IT and business objectives: one analysis determined whether the respondents knew their organization's "definitive" business objectives and the second analysis determined whether the respondents knew their organization's "definitive" IT objectives. Six of the seven participating firms indicated their objectives at the organizational level. The remaining firm indicated their objectives at the business unit level with four different business units represented. So, a total of 10 sets of business and IT objectives were collected.

Similar to Reich and Benbasat's (1996) study, the definitive objectives were based on the objectives of the most-senior respondent. The definitive objectives were defined as the three IT objectives identified by the most-senior IT respondent from each

business unit or organization and the definitive business objectives were defined as the three business objectives identified by the most-senior business respondent from each business unit or organization. The most-senior respondent for each firm or business unit was determined by examining each respondent's title as self-reported on the survey instrument. Confirmation of the most senior respondent was made, in all cases, by checking annual reports or organization web sites.

The three definitive IT objectives and the three definitive business objectives were compared to each respondent's written objectives and the respondent was assigned a value of "knows" or "does not know" corresponding with whether they knew one or more of the definitive objectives (knows) or whether they did not know any of the definitive objectives (does not know). For example, looking at the IT objectives of one organization, their top three business objectives, as identified by the most-senior respondent, a Vice-President, for their firm were: (1) Profitable Growth, (2) Innovation, and (3) Highly qualified people. Each written business objective response of the respondents from that company were compared to these three definitive objectives to determine if none, one, two, or all three of their stated business objectives matched these definitive objectives as defined by the most-senior executive. All differences in scores between the judges were reconciled, resulting in complete consensus.

Due to an insufficient number of firms participating in this study to warrant an organizational level analysis of whether each firm's IT objectives referenced their business objectives, it was decided to examine this construct at the individual level, thus focusing on whether the strategic alignment maturity mechanisms affect individual respondent's understanding of objectives.

RESULTS

Discriminant function analyses were performed to determine whether the six factors identified by the Strategic Alignment Maturity model can be used to create discriminant equations to predict whether IT and business employees know their firm's IT and business objectives.

The six factors (COMM, COMP, GOV, PART, SCOPE, SKILLS) were used as predictor variables. The scores for each of the six factors were computed as the mean of the items making up each factor. The six factors were entered into the analysis together, assuming equal priority of the factors.

Knows IT Objectives

The first discriminant function analysis used "Knows IT Objectives" with most-senior respondents' responses as "definitive" as the grouping variable. Eleven cases were excluded from the analyses due to missing objectives (no objectives were listed and the respondent did not indicate that they did not know any of the IT objectives). Of the 105 useable responses, 12 respondents listed three IT objectives, eight respondents listed two IT objectives, 39 respondents listed one IT objective, and 46 respondents indicated they did not know any of their organization's IT objectives.

Two groups were used for the analysis; one group containing all respondents who did not know any IT objectives (n = 46) and the other group containing all respondents who knew one or more IT objectives (n = 59). This model was able to significantly

predict group membership into two groups for the six predictor variables (Wilks' lambda = .840, and $\chi^2(6) = 17.428$, $p < .01$).

Table 1: Results for Most-senior Respondents IT Objectives as Definitive with 2 Groups

Criteria	Results
Group Sizes	
Group 1: Know no objectives	46
Group 2: Knows 1 or more objectives	59
Significance level of linear discriminant function	.008
Assumption of equality of group dispersion matrices (p for Box's M)	.210 ⁷
% of original grouped cases correctly classified	68%
% Expected to be correctly classified by chance	
Group 1:	43%
Group 2:	56%
Overall ⁸ :	50%
% Correctly classified, cross-validated	
Group 1:	48%
Group 2:	75%
Overall:	63%
% Overall improvement over chance ⁹	26%

Table 2 shows the pooled within-group correlations of each of the six predictor variables with the discriminant function. This structure matrix shows us COMM is most highly correlated with the discriminant function at 0.773 and PART at 0.244 is least correlated. The loadings on a structure matrix can be likened to factor loadings, following similar criteria for interpretation as factor analysis. Interpreting variables with a loading of 0.40 and above, the PART variable, with a loading of .244, was dropped from the discriminant function.

Table 2: Six Predictor Variables and the Standardized Canonical Discriminant Function

Structure Matrix

Variables	
COMM	.773
GOV	.671
SCOPE	.636
SKILLS	.540
COMP	.583
PART	.244

Using the five predictor variables, a discriminant function equation is comprised with the standardized canonical discriminant function coefficients (see Table 3):

$$\text{Score} = 0.483\text{comm} + 0.119\text{comp} + 0.264\text{gov} + 0.287\text{scope} + 0.112\text{skills}$$

Table 3: Two Groups Using Most-senior Respondents IT Objectives as Definitive

Variables	
COMM	.483
COMP	.119
GOV	.264
SCOPE	.287
SKILLS	.112

Standardized coefficients

The coefficients for each variable can be interpreted as the larger the coefficient, the greater the contribution of the respective variable to the discrimination between groups. As can be seen from the equation, Communication has the greatest contribution followed by Scope and Architecture, Governance, Competency and Value Measurement, and then Skills with the weakest contribution. This equation can be used to compute a canonical variable score for each case indicating the classification grouping, either knows IT objectives or does not know IT objectives, based on the predictor variable values.

Knows Business Objectives

The next discriminant function analysis used "Knows Business Objectives" as the grouping variable. Fourteen cases were excluded from the analyses due to missing objectives (no objectives were listed and the respondent did not indicate that they did not know any of the business objectives), resulting in a total of 102 cases included in the "Knows Business Objectives" grouping variable. Of the 102 useable cases, 14 respondents were identified as "knows three business objectives", 31 respondents were identified as "knows two business objectives", 39 respondents were identified as "knows one business objective", and 18 respondents were identified as "knows no business objectives."

Two groups were used for the analysis; one group containing all respondents who knew one or more business objectives (n = 84) and the other group containing all respondents who did not know any business objectives (n = 18). The model using two groups, "knows one or more business objectives" and "knows no business objectives", was able to significantly predict group membership into two groups for the six predictor variables (Wilks' lambda = .818, and $\chi^2(6) = 19.459$, $p < .01$). By chance alone, this model should correctly predict 50% of the 102 cases (see Table 4). The percent correct using this classification model is 25% greater than by chance alone and 21% greater than chance with cross-validation. This classification accuracy significantly exceeds the classification accuracy expected by chance.

Table 4: Most-senior Respondents Business Objectives as Definitive with Two Groups

Criteria	Results
Group Sizes	
Group 1: Know no objectives	18
Group 2: Knows one or more objectives	84
Significance level of linear discriminant function	.003
Assumption of equality of group dispersion matrices (p for Box's M)	.043
% of original grouped cases correctly classified	89%
% Expected to be correctly classified by chance	
Group 1:	18%
Group 2:	82%
Overall:	71%
% Correctly classified, cross-validated	
Group 1:	33%
Group 2:	98%
Overall:	86%
% Overall improvement over chance	21%

The structure matrix in Table 5 reveals that GOV is most highly correlated with the discriminant function at 0.681 and PART is least correlated at 0.029.

Table 5: Pooled Within-group Correlations Between the Six Predictor Variables and the Standardized Canonical Discriminant Function for Two Groups and Knows Business Objectives

Structure Matrix

	Function
	1
GOV	.681
COMM	.487
COMP	.419
SCOPE	.219
SKILLS	.042
PART	.029

Interpreting variables with a loading of 0.40 and above, the three variables with a loading less than 0.40 (PART, SKILLS, and SCOPE) were dropped from the discriminant function, leaving COMM, COMP, and GOV.

Table 6: Standardized Discriminant Function Coefficients for Two Groups, Knows Business Objectives by Three Predictors Using Most-senior Respondents
Business Objectives as Definitive

	Function
	1
COMM	.162
COMP	.080
GOV	.847

Standardized coefficients

Using the three predictor variables, a discriminant function equation is comprised with the canonical discriminant function coefficients:

$$\text{Score} = 0.162\text{COMM} + 0.080\text{COMP} + .847\text{GOV}$$

As can be seen in the equation, GOV has the greatest contribution, followed by COMM and then COMP. This equation can be used to compute a canonical variable score for each case, indicating the classification grouping, either knows business objectives or does not know business objectives, based on the predictor variable values.

DISCUSSION AND IMPLICATIONS

This study set out to determine whether greater maturity levels in one or more of the Strategic Alignment Maturity factors could predict employees' knowledge of their organizations IT and business objectives. Support was found for most of the proposed hypotheses (see Table 7).

A discriminant function equation was developed to estimate the impact of each SAM factor relative to managers knowing their organization's IT objectives. While the derived function is significant, its predictive capability is moderate, with a 22% probability of being better than chance alone. The Communication dimension of the Maturity construct has the greatest contribution to the ability to discern between knowing and not knowing IT objectives.

A discriminant function equation was developed to estimate the impact of each SAM factor relative to managers knowing their organization's business objectives. Of the six SAM factors, only Communication, Competency, and Governance were significant to the discriminant function. Although the derived function is significant, its predictive capability is moderate, with a 30% probability of being better than chance alone. According to the resulting equation, the Communication dimension of the Maturity construct has the greatest contribution to the equation's ability to discern between knowing and not knowing business objectives. These results are as expected given the critical role of communication to sharing information between IT and business executives. Combined with the resulting strength of Communication in knowing IT

objectives, these results reaffirm the importance of Communication in knowing IT and business objectives.

Table 7: Hypotheses and Indication of Support

Hypothesis	Supported/ Not Supported
1a: Higher levels of Communication maturity are associated with higher levels of Knows IT Objectives.	Supported
1b: Higher levels of Communication maturity are associated with higher levels of Knows Business Objectives	Supported
2a: Higher levels of Competency/value maturity are associated with higher levels of Knows IT Objectives.	Supported
2b: Higher levels of Competency/value maturity are associated with higher levels of Knows Business Objectives	Supported
3a: Higher levels of Governance maturity are associated with higher levels of Knows IT Objectives.	Supported
3b: Higher levels of Governance maturity are associated with higher levels of Knows Business Objectives	Supported
4a: Higher levels of Partnership maturity are associated with higher levels of Knows IT Objectives.	Not Supported
4b: Higher levels of Partnership maturity are associated with higher levels of Knows Business Objectives	Not Supported
5a: Higher levels of Scope and Architecture maturity are associated with higher levels of Knows IT Objectives.	Supported
5b: Higher levels of Scope and Architecture maturity are associated with higher levels of Knows Business Objectives	Not Supported
6a: Higher levels of Skills maturity are associated with higher levels of Knows IT Objectives.	Supported
6b: Higher levels of Skills maturity are associated with higher levels of Knows Business Objectives	Not Supported

Since Communication maturity was the strongest predictor of knowing business and IT objectives, practitioners and managers looking to increase mutual knowing of IT and business objectives within their organization may benefit most by applying the more mature practices from the Communication maturity dimension as best practices, such as requiring the understanding of IT and business functions by tying it to performance appraisals; promoting a two-way informal and flexible communication style; and using rich communication methods such as face-to-face and telephone for communications requiring mutual consensus.

Additionally, the analysis of the participating firm's IT and business objectives provides a rich list of common objectives that can be used to develop a multiple-choice instrument to measure respondent's knowledge of IT and business objectives. Some of the common objectives are listed in Table 8:

Table 8: Common IT and Business Objectives

IT Objectives	Business Objectives
1. Cost effective IT infrastructure	1. Cost reduction/containment
2. Standardized hardware/software	2. Bottom line growth
3. ERP platform integration	3. Top line growth
4. Alternative distribution channel development	4. Alternative distribution channel development
5. Acquire/retain talented staff	5. Acquire/retain talented staff
6. Implement technology to improve business processes	6. Maintain customer base
7. Align IT with business needs	7. New product/service development

Zviran (1990) suggests that although objectives vary greatly from one organization to another, organizations, even in different industries, can share similar objectives (Zviran, 1990). Table 8 contains several similarities to Zviran's business objectives identified in 1990. For example, Zviran indicated business objectives such as (1) control and reduce costs, (2) increase revenue, and (3) improve services. This lends support to the notion that common business objectives are consistent over time.

The same was not true for the IT objectives identified by Zviran in 1990. The IT objectives identified in his study were more oriented toward providing information through applications, for example, (1) provide timely information on customer orders, (2) provide reliable information on the organization's financial situation, and (3) incorporate information systems in customer account control. The IT objectives identified in the current study were more oriented toward infrastructure and resource issues.

LIMITATIONS AND FUTURE RESEARCH

Like any research, this study has several limitations which should be understood before generalizing the results to other contexts and which also provide opportunity for future research. Limitations with the sample size at the organizational level ($N = 7$) preclude the ability of this study to make any generalizations at the organizational level. Future research should consider a larger sample size using more organizations or business units.

The definitive objectives used for comparison relied on self-report of these measures, which were obtained from the most-senior respondent from each organization. The possibility exists that the most-senior respondents from one or more of the participating organizations did not know their organization's actual objectives. Comparing all of the other respondent's responses from that organization with the senior-most respondent's responses would propagate the error.

Additionally, multiple choice selections for IT and business objectives should be used instead of open-ended answers to increase the reliability and consistency of

responses. General IT and business objectives provided in the previous section could be used as a basis for this.

A consideration for future research with a larger sample size is to compare the definitive IT objectives to the definitive business objectives within each organization to determine if the definitive objectives are aligned with one another; this would be a true measure of the content of strategic alignment.

REFERENCES

- Applegate, L. M., McFarlan, F. W., & McKenney, J. L. (1996). *Corporate Information Management*. 4th ed. IL: Irwin.
- Armenakis, A. A., Harris, S. G., & Mossholder, K. W. (1993). Creating readiness for organizational change, *Human Relations*, 46(6), 681-702.
- Calhoun, K. J. & Lederer, A. L. (1990). From strategic business planning to strategic information systems planning: The missing link. *Journal of Information Technology Management*, 1(1), 1-5.
- Computer Sciences Corporation (CSC). 2007. *Critical Issues of Information Management. Annual Report*.
- Hair, J. E., Anderson, R. E., & Black, W.C. (1995). *Multivariate Data Analysis*. NJ: Prentice Hall.
- Henderson, J. C. (1990). Plugging into strategic partnerships: The critical IS connection. *Sloan Management Review*, 31(3), 7-18.
- Henderson, J. C., & Venkatraman, N. (1993). Strategic alignment: Leveraging information technology for transforming organizations. *IBM Systems Journal*, 32(1), 4-16.
- Henderson, J. C., Venkatraman, N., & Oldach, S. (1996). Aligning business and IT strategies. In J. Luftman (Ed.), *Competing in the Information Age* (21-42). NY: Oxford University Press.
- Horovitz, J. (1984). New perspectives on strategic management. *Journal of Business Strategy*, 4(3) 19-33.
- Keen, P. G. (1996). Do you need an IT strategy? In J. Luftman (Ed.), *Competing in the Information Age* (137-178). New York: Oxford University Press.
- Kerlinger, F. N. (1986). *Foundations of Behavioral Research*. (p 417). NY: Holt, Rinehart and Winston.
- Lederer, A. L., & Mendelow, A. L. (1989). Coordination of information systems plans with business plans. *Journal of Management Information Systems*, 6(2) 5-19.
- Lee, G. & Pai, C. (2003). Effects of organizational context and inter-group behavior on the success of strategic information systems planning: an empirical study. *Behavior & Information Technology*, 22(4), 263-280.
- Luftman, J. N., Bullen, C. V., Liao, D., Nash, E., & Neumann, C. (2004). *Managing the Information Technology Resource*, NJ: Prentice-Hall.
- Luftman, J. N. (2000). Assessing business-IT alignment maturity. *Communications of the Association of Information Systems*, 4(14), 1-50.
- Luftman, J. N., Papp, R., & Brier, T. (1999). Enablers and inhibitors of business-IT

- alignment. *Communications of the Association for Information Systems*, 1(11), 1-33.
- Luftman, J. N. (1996). Applying the strategic alignment model. In J. Luftman (Ed.), *Competing in the Information Age*, (43-69). NY: Oxford University Press.
- Maltz, A. C., Shenhar, A. J., Reilly, R. R. (2003). Beyond the Balanced Scorecard: Refining the search for organizational success measures. *Long Range Planning*, 36, 187-204.
- McLean, E., & Soden, J. (1977). *Strategic Planning for MIS*, NY: John Wiley & Sons.
- Miller, B.K., Bierly, P.E., Daly, P.S. (2007). The Knowledge Strategy Orientation Scale: Individual perceptions of firm-level phenomena. *Journal of Managerial Issues*, 19(3), 414-435.
- Reich, B H. & Benbasat, I. (2000). Factors that influence the social dimension of alignment between business and information technology objectives. *MIS Quarterly*, 24(1), 81-113.
- Reich, B H. & Benbasat, I. (1996). Measuring the linkage between business and information technology objectives. *MIS Quarterly*, 20(1), 55-81.
- Ross, J. W., Mathis Beath, C., & Goodhue, D. L. (1996). Develop long-term competitiveness through IT assets. *Sloan Management Review*, 31-42.
- Sledgianowski, D., Luftman, J., & Reilly, R. (2006). Development and validation of an instrument to measure maturity of IT business strategic alignment mechanisms. *Information Resources Management Journal*, 19(3), 18-33.
- Teo, S. H. & King, W. R. (1997). Integration between business planning and information systems planning: An evolutionary-contingency perspective. *Journal of Management Information Systems*, 14(1), 185-214.
- Van Der Zee, J. T. M. & De Jong, B. (1999). Alignment is not enough: Integrating business and information technology management with the Balanced Business Scorecard. *Journal of Management Information Systems*, 16(2), 137-156.
- Zviran, M. (1990). Relationships between organizational and information systems objectives: Some empirical evidence. *Journal of Management Information Systems*, 7(1), 65-84.

APPENDIX A
Retained Items Factor Analysis Loadings

Description	Loading
Communications Maturity	
Degree of understanding of the business by the IT function	0.67
Degree of understanding of IT by the business	0.67
Degree of knowledge sharing throughout the organization	0.64
Degree of richness of methods used for organizational learning	0.52
Competency/Value Maturity	
Degree of and orientation of integrated IT and business measures	0.81
Focus of the metrics and processes to measure IT's contribution	0.69
Frequency and formality of IT assessments and reviews	0.69
Focus of the metrics and processes to measure business contribution	0.67
Degree of continuous improvement practices	0.66
Governance Maturity	
Basis of IT investment decisions	0.76
Integration of IT project prioritization	0.72
Basis of budgeting IT resources	0.64
Partnership Maturity	
Perception of trust and value	0.85
Integrated sharing of risks and rewards	0.63
Business' perception of the role of IT	0.63
Scope/Architecture Maturity	
Degree of architectural integration	0.82
IT standards articulation and compliance	0.71
Degree of infrastructure transparency	0.58
Skills Maturity	
Degree of an innovation culture	0.74
Degree of a change readiness culture	0.71
Ability to attract and retain IT staff with technical and business skills	0.68
Degree of integrated locus of power in IT-based decisions	0.66

Adapted from Sledgianowski, Luftman, & Reilly, 2006

APPENDIX B

Sample Assessment Item

The following statements pertain to IT investment decisions. Our IT investment decisions are primarily based on IT's ability to:

- 1) Reduce costs.
- 2) Increase productivity and efficiency as the focus.
- 3) Traditional financial reviews. IT is seen as a process enabler.
- 4) Business effectiveness is the focus. IT is seen as a process driver or business strategy enabler.
- 5) Create competitive advantage and increase profit. Our business partners see value.
- 6) N/A or do not know