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THE IMPACT OF KNOWLEDGE SHARING AND RATIONAL PLANING ON IT-BASED ORGANIZATIONAL PERFORMANCE: AN EMPIRICAL ANALYSIS

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Abstract

Achieving the full worth of IT investments is an important task of top management but questions remain as to what factors lead to improved returns and how do such investments impact organizational performance. Using a postal survey of 273 CIO respondents, this study analyzed the relationship of knowledge sharing and rational planning to IT-based organizational performance. Knowledge sharing was assumed to be influenced by the support of top management for IT planning. Rational planning was represented by strategic IT alignment and the formal evaluation of IT investments. Using a structural equation modeling approach, study data revealed that top management support of IT predicted domain knowledge sharing which in turn predicted higher levels of rational planning. However, formal evaluation of IT investments was a higher and more significant predictor of IT-based organizational performance than alignment. Study results support top management support, knowledge sharing, and rational planning as predictors of IT-based organizational performance.

Keywords: Top management support, shared domain knowledge, IT investments, organizational performance

Introduction

The economic collapse of the new millennium has brought the issue of IT investments to the forefront of concern for top management. Past failures of such investments and the difficulty of relating these investments to improved organizational performance has forced companies to increase the scrutiny of IT expenditures (Compass, 1998, 1999).

Results of empirical studies linking IT expenditures to improved productivity or profitability have been contradictory. Despite the importance of such investments and the sizable expenditures involved, less than half of all companies report the calculation of a return-on-investment (ROI) of proposed investments and fewer still report post-audits of the investments to determine whether they are achieving full capability (Hoffman, 2002).

Top management support of IT has been shown to predict IT success (Basu, Hartno, Lederer, and Sethi, 2002). Such support leads to higher levels of knowledge sharing wherein IT managers and business managers combine domain knowledge of technology and business initiatives. Ranganathan and Sethi (2002) found a positive relationship between shared domain knowledge and planning rationality. If increased planning rationality could increase the success of IT investments, it should have a parallel effect on organizational performance. Exploitation of knowledge and technology resources is thus assumed to be predicated on processes that combine IT and managerial knowledge in order to create planning alignment and impose rational planning rules for the selection of IT investments.

The purpose of this paper is to examine how knowledge sharing and planning rationality are related to IT-based organizational performance. Study research is guided by the following three research questions:

1. What is the relationship between top management support and knowledge sharing?

2. How does knowledge sharing impact IT planning rationality?
3. How does IT planning rationality impact IT-based organizational performance?

The remainder of the paper is organized as follows. First, a theoretical background is provided. Next, operationlization of research constructs and study hypotheses are presented. Then, the methodology is described and results of analysis. Finally, results are interpreted and discussed including implications, limitations, and conclusions.

Theoretical Background

Top Management Support

Research has shown that top management's support is vital to IT success and the progressive use of information technology (Jarvenpaa and Ives, 1990). The absence of support can result in diminished returns on information technology investment and loss of market position (Bakos and Treacy, 1986). In its presence, business managers are more likely to share knowledge with IT managers and IT managers are more likely to have informal contacts with other managers (Lederer and Mendelow, 1988).

Knowledge Sharing

Knowledge sharing is critical for the alignment of IT with the business plan and also for the proper evaluation of IT investments. Optimum matching of technology with business processes requires the collaboration of other business managers and a future vision for IT (Reich and Benbasat, 1996). Sharing of IT and business knowledge promotes the mutual understanding of business initiatives and IT opportunities (Baets, 1996). This increased awareness of the business and IT domains can lead to higher alignment of IT with the business plan as managers have access to increased information.

Planning Rationality

Planning rationality, as a construct for decision making, has been interpreted in various ways. In economics, it can imply that all alternatives have been identified and evaluated. More contemporary strategists (Mintzberg and Westley, 2001) have noted that management actually chooses among a set of narrowly defined alternatives that reflect only a small amount of the information available. Limits to human cognition (i.e., bounded rationality) have been identified as the principal limitation to exploration. However, this does not explain the failure to explore the consequences of identifiable alternatives, particularly for major projects that are inherently risky such as those involving new technologies.

Planning rationality can also be defined as the effective and efficient use of resources to support business objectives. To accomplish this, the IT function can align technology strategies with business strategies. Organizations that align IT with their business strategies generally outperform those who do not (Das, Zahra and Warkentin, 1991), and top management consistently ranks alignment of IT and business plan as a top priority (Niederman, Brancheau and Wetherbe, 1991).

For IT investments, rigorous analysis is essential to making the best possible choices (Earl, 1989). Careful consideration would include examination of projected costs and benefits prior to commitment, prioritization of investments by projected profitability, and post-audits to examine realized capabilities. Rationality in the IT planning process can impact organizational performance (Segars, Grover, & Teng, 1998). Planning rationality, in this study, is represented by both rationality in the planning process (e.g., alignment between the IT and business plans) and rationality in the decision making process (e.g., formal analysis of IT investments).

IT-Based Organizational Performance

Despite disappointments in IT investments, CEOs cite IT as a significant strategic resource (Compass, 1998, 1999). Because of the sizable investments in IT and its strategic capability, past research has attempted to link these investments with increased productivity and profitability. Because of timing issues and other influences, success has been limited. Furthermore, CIOs have been pressed to demonstrate positive returns, renewing attempts to measure the costs/benefits for IT expenditures although the majority of executives doubt the ability of measures such as ROI to fully capture the value of these investments (CIO Insight

2002). Strategic management research has established a positive relationship between planning rationality and organizational performance (Ranganathan & Sethi, 2002). Thus, processes that support rational planning and rational decision making choices for IT investments would also be expected to be positively associated with improved organizational performance.

Hypotheses and Operationalization of Study Variables

The Conceptual Model

Figure 1 presents the theorized relationships and eight constructs that are the focus of this study. Top management support of IT (F1) and IT-based organizational performance (F2) are measured as separate constructs. Shared domain knowledge is represented by two constructs: business domain knowledge sharing (F2) and IT domain knowledge sharing (F3). Rational planning is also represented by two constructs: alignment of the IT plan with the business plan (F4), and formal analysis of IT investments (F5). The six constructs were measured by 26 items. The eight paths represent the eight hypotheses to be tested in order to address the three research questions. Discussion of the constructs and presentation of hypotheses follow.

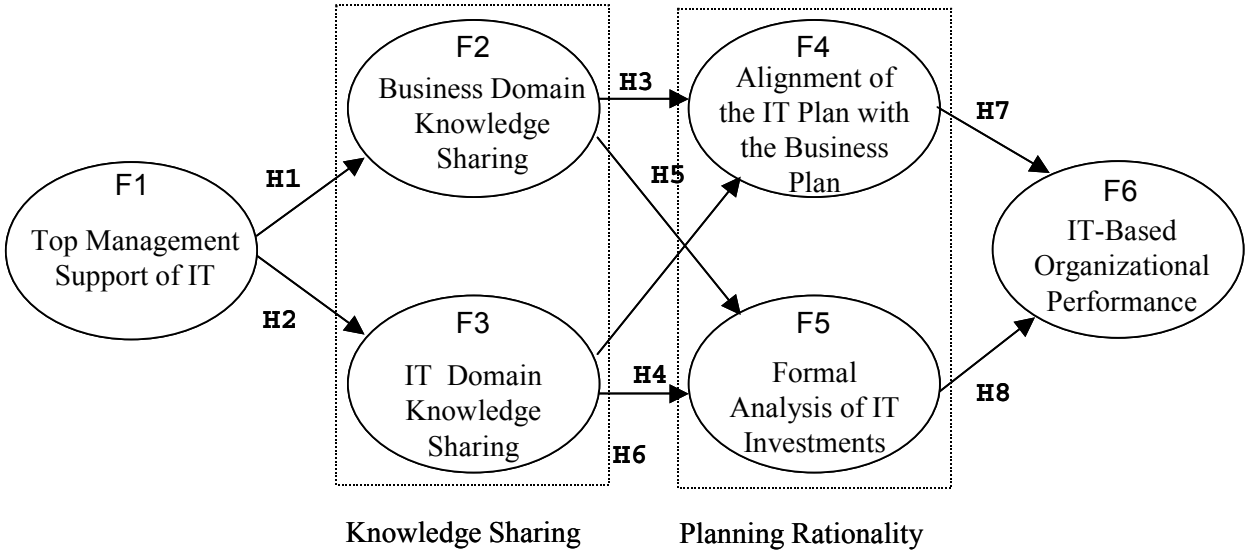


Figure 1. Theorized Model with Eight Hypotheses

Top Management Support of IT

Top management support of IT is indicated by the extent that executives value IT as a strategic asset, have knowledge of IT opportunities, and participate in IT planning (Jarvenpaa and Ives, 1991). CIOs have found top management support essential to IT success and researchers have linked it to improved performance (Choe, 1996). Top management support creates an environment in which IT managers can participate in business planning processes and share technical knowledge with other business managers (Lederer and Mendelow 1988). When top management becomes knowledgeable about and supports IT, other business managers are more likely to participate in IT planning processes and share domain knowledge (Raghunathan and Raghunathan, 1989). Lack of top management support can thwart the introduction of needed technologies. Hence, the following hypotheses:

H1: Top management support of IT is positively associated with the sharing of business domain knowledge with IT managers.

H2: Top management support of IT is positively associated with the sharing of IT domain knowledge with business managers.

Alignment of IT With the Business Plan

IT alignment is defined as the support of business objectives by IT strategies or investments and is accomplished via transformation of the business mission, goals, and objectives to the IT plan. Empirical research has shown IT alignment to be a positive influence on business performance (Bozarth and Edwards, 1997; Berry and Cooper, 1999), and has consistently been ranked as a top priority by top management (Niederman et al. 1991)

Shared knowledge between IT and business managers leads to increased IT alignment (Calhoun and Lederer,1990). When IT managers attend planning meetings, have frequent contacts with other business managers, and contribute to the formulation of business goals, IT investments are more likely to reflect business objectives (Rackoff, Wiseman and Ullrich, 1985; Bakos and Treacy, 1986). Business managers' knowledge of information assets and opportunities also contributes to IT alignment because it provides guidance for IT managers to develop and revise their strategies to mirror the dynamics of business planning. Understanding IT domain knowledge also assists alignment by ensuring strategies are implemented with the appropriate information technologies and that key IS initiatives are not abandoned. Hence, the following hypotheses:

H3: The sharing of business domain knowledge with IT is positively associated with the alignment of the IT with the business plan.

H4: The sharing of IT domain knowledge with business managers is positively associated with the alignment of the IT with the business plan.

Formal Analysis of IT Investments

Formal analysis of IT investments is defined as the regular measurement and prioritization of IT investments before commitment and the post-audit of performance on major IT investments. Organizations have used numerous methodologies for evaluation and have found that investments that support strategic business objectives may fare better with a formal analysis (Bacon, 1992; Papadakis, 1995).

Evaluation of IT investments is a complex process. A formal analysis requires proper rigor and participation by those most knowledgeable of the area (Grover, Teng, and Fiedler, 1998). IT investments cannot be evaluated in isolation but must reflect an overall knowledge of the associated business initiatives that they support. The sharing of domain knowledge assists managers in creating more focused strategies and leads to more extensive evaluation of IT investments (Strassman, 1997). Hence, the following hypotheses:

H5: The sharing of business domain knowledge with IT managers is positively associated with the formal analysis of IT investments.

H6: The sharing of IT domain knowledge with business managers is positively associated with the formal analysis of IT investments.

IT-Based Organizational Performance

In this study, IT-based organizational performance is defined as the improvement in firm level productivity and profitability as a result of IT investments. IT cannot directly affect financial performance but must be coupled with business initiatives to do so (Boynton et al. 1994; Shin 2001). IT alignment increases the likelihood that IT investments will ultimately be implemented as originally envisioned and more closely support the intended business initiatives. IT alignment and IT investment evaluation have been found to have a positive affect on IT perceived value (Tallon, Kraemer, and Gurbaxani, 2000). Those companies who are able to select the best IT investments will have a greater chance of positively influencing the financial performance of the company (Kayworth, Chatterjee, and Sambamurthy, 2001). Hence, the following hypotheses:

H7: The alignment of the IT plan with the business plan is positively associated with IT-based organizational performance.

H8: The formal analysis of IT investments is positively associated with IT-based organizational performance.

Methodology

Survey Instrument Development

Instrument development followed the four phase approach prescribed by Churchill: (1) construct domain specification, (2) construction of items, (3) data collection, and (4) measurement purification. To ensure reliability and validity of the instrument and survey data, care was taken to achieve each of the ideal survey attributes espoused by Malhotra and Grover (1998). These attributes are shown in the appendix together with measures taken to achieve them.

A two-stage process was used to perfect the questionnaire and provide for content validity. In the first stage, the questionnaire was piloted on MIS professors from a research university. In the second stage, the revised instrument was given to twenty CIOs in the local area who were asked to evaluate the instrument. Fourteen of the CIOs responded and, based on their comments, the final instrument was developed. The questionnaires were mailed directly to the CIOs of 1,097 medium to large U.S. corporations using a mailing list that had been randomly derived from a national list of over 9,000 companies. Survey questions all followed a seven-point Likert scale anchored at "Strongly Disagree" and "Strongly Agree". Each of the eight study construct was measured by at least three items..

Data Collection

Data collection was accomplished using a postal survey mailed directly to senior IT managers. To reduce the possibility of single informant bias that might result from exaggeration and self-promotion, and to encourage participation, the CIOs were advised that results would be completely anonymous. Perceptual measures are frequently used in MIS research. They have been shown to parallel objective data (Tallon et al. 2000), and cogent arguments have been advanced for using the CIO as the key informant for questions regarding the use of IT within the organization. When using single informants, it is desirable to select the most experienced and knowledgeable person. To further encourage participation, a summary of findings was offered and the chance to participate in a lottery for a PDA.

Survey Results

After four weeks, a total of 204 completed surveys had been received. Thirty-three unopened surveys were returned indicating that the recipient was no longer at the address. An additional 11 surveys were returned with a note that the company did not respond to surveys. Thus, at least 44 surveys were never received by the intended CIOs. A second set of questionnaires was sent to 400 randomly selected non-respondents. After seven weeks, usable responses were provided by a total of 273 respondents providing an unadjusted response rate of 24.8 percent. This rate is fairly high to that experienced by other surveys when sampling the senior officer (Byrd and Turner 2001).

The largest percentages of responses came from manufacturing (41%), computers and communication (9.5%), finance and insurance (9.2%), utilities (8.8%), and wholesale and retail industries (7.7%). The respondents were highly educated with an average of 4.7 years of college, had an average of 17.5 years of IT experience, and 15.1 years experience with their industry. Approximately 70 percent of the companies had annual revenues exceeding $1 billion.

Non-Response Bias

Non-response bias was established by comparing the average values for each of the constructs for the first four week versus last three week time intervals in which the completed surveys were received (Armstrong and Overton 1977). T-tests of the mean differences for each of the constructs failed to reveal any significant difference or trends over the seven-week period, thus suggesting the absence of non-response bias in this study.

Data Analysis and Results

Study data were analyzed using structural equation modeling (SEM) in which parameters are estimated by minimizing the discrepancy between the model implied covariance matrix and the observed covariance matrix (Jöreskog and Sörbom 1989). SEM

is a confirmatory approach that provides explicit test statistics for establishing convergent and discriminant validity important to MIS research (Straub 1989). A maximum likelihood discrepancy function approach was adopted using EQS, a multivariate analytical software.

The robustness of SEM using MLE for a multi-factored model that explains a phenomenon such as alignment has been demonstrated in prior MIS research (Ranganathan and Sethi, 2002; Segars, Grover and Teng 1998; Jöreskog and Sörbom 1989). A two-phase approach was used. In the first phase, a confirmatory factor model (e.g., the measurement model) was used to measure the fit between the theorized model and observed variables and to establish reliability and validity. In the second phase, results of the measurement model were used to create a structural model in order to measure the theorized relationships.

Reliability and Validity

In this study, content validity was supported by the standardized factor loadings, shown in Table 1, that are generally high (only 2 of the 26 loadings are less than .60) and highly significant ($t > 2.96$). Reliability was established by calculating the Cronbach alpha coefficients and composite reliability indices, shown in Table 2, for each of the six constructs. These all exceed the recommended minimum of .70 (Nunnally 1978; Fornell and Larcker 1981).

Table 1. Survey Items and Loadings

	STD LOAD	T-VALUE
TOP MANAGEMENT SUPPORT		
TM agree that intangible IT benefits should be funded.	.832	19.1
TM recognize strategic potential of IT	.884	19.2
TM are knowledgeable about IT assets/opportunities.	.784	17.4
TM are familiar with competitor's strategic use of IT.	.555	9.7
TM believe IT contributes significantly to firm financial performance.	.809	18.8
SHARING OF BUSINESS DOMAIN KNOWLEDGE WITH IT		
IT managers regularly attend business meetings.	.718	11.4
IT managers are involved early in project planning.	.704	13.2
IT managers participate in setting business goals and strategies.	.613	10.5
IT managers have regular informal contacts with business managers.	.714	11.5
IT planning involves evaluation of future information needs of business managers.	.611	9.5
SHARING OF IT DOMAIN KNOWLEDGE WITH BUSINESS MANAGERS		
A variety of business managers are actively involved in the process of IT planning.	.749	18.8
Managers from several areas are involved in the selection of IT investments.	.730	15.4
A variety of business managers participate in setting IT goals and strategies.	.913	17.5
Analysis of IT investments accounts for both tangible and intangible benefits.	.696	12.9
IT ALIGNMENT WITH THE BUSINESS PLAN		
The IT plan is a formal written document.	.794	15.8
The IT plan aligns with firm mission, goals, and strategies.	.931	16.1
The IT plan contains quantified goals and objectives.	.742	12.5
The IT plan contains detailed action plans/strategies that support firm direction.	.705	11.4
FORMAL IT INVESTMENT EVALUATION		
TM regularly measures the costs/benefits of IT investments prior to commitment.	.740	11.4
TM prioritizes IT investments based on the expected impact on firm performance.	.698	10.6
TM post-audits the return on and success of major IT investments.	.695	11.3
IT-BASED ORGANIZATIONAL PERFORMANCE		
IT has contributed significantly to improved efficiency of operations.	.580	11.7
IT has contributed significantly to increased customer satisfaction and loyalty.	.783	8.9
IT has contributed significantly to increased ROI.	.972	10.3
IT has contributed significantly to increased market share of products/services.	.655	8.6
IT has contributed significantly to increased sales revenues.	.642	11.9

Table 2. Reliability and Validity Measure

CONSTRUCT	Composite Reliability Coefficient	Cronbach's Alpha Coefficient	Variance Extracted Estimate
Top Management Support	.89	.90	.61
Business Domain Knowledge Sharing	.81	.84	.45
IT Domain Knowledge Sharing	.86	.88	.60
IT Alignment	.87	.88	.63
Formal IT Investment Evaluation	.75	.78	.51
Organizational Performance	.85	.85	.55

Goodness-of-fit, in the final structural model, was established by multiple indices to negate bias associated with use of a single index (Bollen and Long 1993). The indices used for this study were the ratio of chi-square to degrees of freedom (χ^2/df), the Tucker Lewis or Non-Normed Fit Index, the Comparative Fit Index, the Bollen Fit Index, the Standardized Root Mean Squared Residual, and the Average Absolute Standardized Residual.

Although chi-square is also recognized as a measure of goodness-of-fit, it is affected by the size of correlations within the model and, for small samples, can produce inaccurate probability values (Hartwick and Barki 1994). Because it is not uncommon for significant chi-square values to coexist with good model fit, it was replaced with the χ^2/df ratio. These same measures have been used in past MIS research (Segars, Grover, and Teng 1998; Sabherwal 1999).

Table 3 presents measures of reliability and goodness-of-fit for the final structural model. All indices were well within the recommended ranges and the final measurement model was deemed acceptable (Bollen 1989; Bentler 1990).

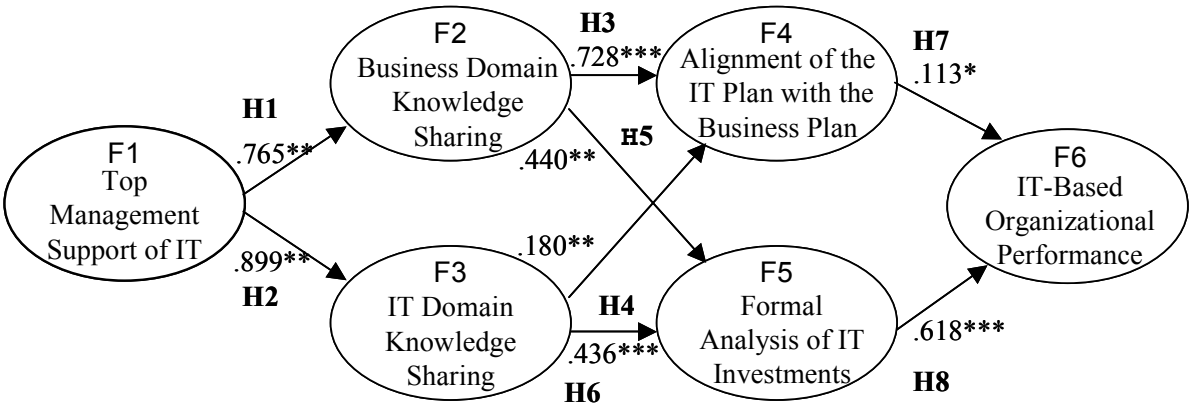
Evidence of construct validity was provided by measures for content validity, convergent validity, and discriminant validity (Venkatraman and Ramanujam, 1987). Content validity was based upon the pilot test (Cronbach, 1971). Convergent validity was established by the high factor loadings and high levels of significance for the indicator variables. Evidence for discriminant validity was established by the variance extracted test that assesses the amount of variance explained by the construct as compared to the amount ascribed to random measurement error (Fornell and Larcker, 1981). From Table 2 it can be seen that five of the six constructs explain 50 percent or more of the variance (e.g., the variance extracted estimate). While it is desirable that the constructs exhibit estimates of .50 or larger, it is common for the estimate to be below .50 even when reliabilities are acceptable. Thus, each of the constructs was accepted as representing a separate phenomena.

Table 3. Final Structural Model Measures of Goodness of Fit and Reliability

Test Statistic	Study Value	Recommended Value
Chi-Square	432.4	
Degrees of Freedom	193	
χ^2 / df	2.23	$\leq$ 3.00
Reliability Coefficient	.95	$\geq$ 0.70
Non-Normed Fit Index	.92	$\geq$ 0.90
Comparative Fit Index	.95	$\geq$ 0.90
Bollen Fit Index	.95	$\geq$ 0.90
Standardized Root Mean-Square Residual	.07	$\leq$0.08
Average Absolute Standardized Residual	.06	$\leq$ 0.10

The Structural Model

The final revised research model with path coefficients appears in Figure 2. All of the path coefficients are positive, indicating positive relationships, and all of the coefficients are significant. The coefficient of determination for the model was very high (0.716) implying that the model accounts for approximately half of the variation in the dependent variable ($R^2 = 0.50$). Thus, the model is reasonably successful in accounting for the variability in the dependent variable, IT-based organizational performance.



*, **, *** refers to significance with p<.05, .01, and .0001 respectively.

Figure 2. Structural Model with Path Coefficients

Discussion and Conclusions

The study makes several useful contributions. First, the study provides new evidence to support the importance of top management support to IT success. Second, the study provides empirical support for the importance of both IT and business shared domain knowledge. Third, the study empirically tests a new construct: the formal evaluation of IT investments. Finally, the study provides a new model demonstrating the power of rational planning to positively impact IT-based organizational performance.

Support for Hypotheses

Using 273 observations provided by industry CIOs, survey data supported all eight of the study hypotheses. Table 4 summarizes the model support for all of the eight study hypotheses. All three research questions were answered in the affirmative sense:

1. There is a positive and significant relationship between top management support and the sharing of domain knowledge.
2. The sharing of domain knowledge has a positive and significant impact on IT planning rationality.
3. IT planning rationality has a positive and significant impact on IT-based organizational performance.

These findings underline the importance of top management support and provide evidence of the efficacy of IT planning rationality. Extending recent research by Reich and Benbasat (1996) and Ranganathan and Sethi (2002), this study indicates that shared domain knowledge is indeed valuable to creating a rational planning environment.

Table 4. Support of Study Hypotheses

Hypotheses	Supported	Path Coefficient
H1: Top management support of IT is positively associated with the sharing of business domain knowledge with IT managers.	YES	.765***
H2: Top management support of IT is positively associated with the sharing of IT domain knowledge with business managers.	YES	.899***
H3: The sharing of business domain knowledge with IT is positively associated with the alignment of the IT with the business plan.	YES	.728***
H4: The sharing of IT domain knowledge with business managers is positively associated with the alignment of the IT with the business plan.	YES	.180***
H5: The sharing of business domain knowledge with IT is positively associated with the formal analysis of IT investments.	YES	.440**
H6: The sharing of IT domain knowledge with business mangers is positively associated with the formal analysis of IT investments.	YES	.436***
H7: The alignment of the IT with the business plan is positively associated with improved organizational performance.	YES	.113*
H8: The formal analysis of IT investments is positively associated with improved organizational performance.	YES	.618***
*, **, *** refers to significance with p<.05, .01, and .0001 respectively.		

Results suggest that when top management is actively involved with the IT planning process and knowledgeable about IT assets and opportunities, IT managers are more likely to become involved in business planning and acquire business knowledge via attendance at meetings and informal contacts with business managers. Business managers, following the lead of their superiors, are more likely to have informal contacts with and exchange information with IT managers. In this way, IT managers will acquire information about business initiatives and business managers will acquire information about IT assets and opportunities. Study data indicate a strong relationship between this sharing of knowledge and rational planning as represented by IT alignment and the formal evaluation of IT investments.

IT alignment can improve the implementation of IT investments. Strassman (1997) states that, without alignment, the IT investment will continually drift away from its intended capacity. This could be because of the erroneous assumptions made by the technology adapters and implementers as a result of a communications vacuum. However, when the underlying business initiatives are well understood, there is increased certainty about the intended

Research has not given the evaluation of IT investments its deserved attention. Empirical research has focused upon establishing a direct link between IT investments and organizational productivity or profitability. Regardless of whether such a link can be established, logic dictates that systematic and rigorous evaluation of IT investments should increase the expected returns on such investments, and that superior investments should lead to greater productivity and profitability. In the past, organizations may have avoided more rational planning approaches for two reasons. First, the decade preceding the new millennium was marked by an unprecedented enthusiasm for information technologies. IT had been heralded as possessing the power to transform organizations and convey competitive advantages. Large CRM and ERP systems were frequently undertaken with mandates from top management as competitive necessities. Second, methodologies, including ROI, were often insufficient to account for the important intangible benefits that usually accompany strategic IT investments. Arguments over the valuing of these benefits may have cast these methodologies as troublesome and ineffective. Study results indicate, however, that increased information from the sharing of domain knowledge can predict the formal evaluation of IT investments. Increased information may make it easier to identify benefits and value them.

Study data also show that rational planning predicts IT-based organizational performance. Both alignment and the formal evaluation of IT investments were positively and significantly related to the CIOs perception that IT could improve productivity and profitability as measured by five items. Surprisingly, alignment had a much weaker relationship than the formal evaluation of IT investments (a path coefficient of .113 versus .618) and much less significant ($p<.05$ versus $p<.0001$). Given the support of past research for the importance of IT alignment, this finding is highly interesting. Several explanations could be offered. First, it is possible that all companies practice alignment, but only the few who have formal evaluation methodologies experience a high level of IT-based organizational performance. In this case, alignment is a necessary but not sufficient condition. Second, the model only explains about 50 percent of the variability in the dependent variable. It is possible that, for firms that have formal evaluation methodologies, another variable exists that positively influences IT-based organizational performance.

Contributions for Researchers and Practitioners and Future Research

This study extends previous research on both the importance of top management support and rational planning. It also addresses a new construct: the formal evaluation of IT investments. These study findings could be further extended to gain increased understanding about rational planning and the importance of IT investment evaluation. Particularly, why is such evaluation a stronger predictor of IT-based organizational performance than alignment?

This study used both business and IT domain knowledge sharing as variables. The author is unaware of a similar study in which both were examined empirically. Shared domain knowledge appears to be an important predictor of rational planning and should be further investigated to confirm the relationships found in this study. The stronger relationship between business domain knowledge sharing, which increases IT managers' understanding of business initiatives, and IT alignment is logical and expected. When compared to IT domain knowledge sharing, the coefficient is much higher (.728 versus .180). While the sharing of IT domain knowledge with other business managers has an important impact on decision-making, it would not be as important to IT alignment, which is primarily in the venue of IT management. However, the sharing of IT domain knowledge with other business managers may have an important indirect effect. Study data shows the relationship with formal analysis of IT investments to be about the same for IT domain knowledge sharing as for business domain knowledge sharing (.436 versus .440). This is highly important considering the very strong relationship between the formal analysis of IT investments and IT impact on organizational performance.

Finally, the present model accounted for about 50 percent of the variability in the dependent variable. Other factors also influence IT-based organizational performance. It would be insightful to identify these factors and compare their influence to the present study variables.

Practitioners can also benefit from study findings. CIOs can benefit by fostering top management support where possible and taking proactive steps to engage with business managers in discussions about business initiatives. They should share with business managers information about IT opportunities and ensure that these managers understand the implications of adopting specific technologies and systems. Furthermore, they should push for a more formal evaluation of IT investments and seek ways to reflect intangible benefits of IT investments in calculations of ROI and other measures. Also, they should undertake post-audits of important systems to verify that the investments created the intended capacities. Such information could be useful in gaining the trust of top management and other business managers.

This study provides fresh evidence that top management support is critical to IT success. It also provides insights into the importance of shared domain knowledge to the IT department and to the organization. Foremost, it provides empirical evidence about the efficacy and importance of the formal evaluation of IT investments. In light of these findings, members of top management might give more attention to the IT process and particularly to the evaluation of the investments.

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