



Organizational information systems

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Rate of return and influencing variables as viewed by top financial executives

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Received 31 May 2007
Revised 16 August 2007
Accepted 10 September 2007

Abstract

Purpose – The overall purpose of this paper is to analyze variables that influence how top financial executives view their return on information technology (IT) investment in their organizations. Specifically, relationships between a series of independent variables are measured against the dependent variable overall return on its technology investment. The goal is to determine what contributes to IT success in an organization so that all organizations can focus attention where needed and improve their IT operations.

Design/methodology/approach – An analysis of secondary data obtained from the 2003 Financial Executives International (FEI) comprehensive survey-based research on technology issues for financial executives was conducted. The study was carried out by the FEI and Computer Sciences Corporation. Regression analysis and other statistical methods were used.

Findings – The findings suggest that overall information return is rated medium to high by top financial executives. Variables that significantly and positively affect return include: progress on number one IT issue, seeing IT as a competitive advantage, and IT as a core competency. In addition, though just having an information systems (IS) strategic plan is a significant variable, if there is a plan and it is aligned with the overall corporate strategy, then this variable is positive and significant as well. Most view outsourcing as successful but outsourcing *per se* does not add to success.

Research limitations/implications – The study can be used as a basis for further exploration on the influences on technology success as well as serve as a preliminary model to analyze firm IS. Limitations of the study include that the only group included in the survey were financial executives. Non-response bias is also possible.

Practical implications – The findings can be used to guide management teams in emphasizing control of the important variables in implementing IS and IT that influence overall corporate returns.

Originality/value – The paper analyzes a large current sample set that empirically reviews a cross-section of major corporations' IS departments and their returns. In addition, it begins to explore the variables influencing overall IS returns.

Keywords Communication technologies, Project management, Information systems, Return on investment

Paper type Research paper



Introduction

The concept that information technology (IT) expenditures have not added to returns and productivity at the firm level has been the subject of debate for nearly two decades now. Numerous researchers have explored this issue and many have suggested strong returns when measured at the firm level (Brynjolfsson and Hitt, 1996; Dewan and

Industrial Management & Data
Systems
Vol. 108 No. 1, 2008
pp. 43-59
© Emerald Group Publishing Limited
0263-5577
DOI 10.1108/02635570810844070

Kraemer, 1998) while others have not seen significant increases in productivity or productivity as a result of increasing IT expenditures (Brynjolfsson, 1993). Primarily, all studies have been performed using published corporate data. But little work has been done by actually surveying key executives on their perceived rate of return. In addition, another area that has been very lightly explored is whether IT has been recognized as providing strong return on investment and what variables in an organization correlate with strong returns? In other words, what variables may influence returns on IT investment? This is an extremely important topic and is a major subject in this manuscript. This research explores secondary data from top financial executives primarily in the USA and Canada.

Background

The Productivity Paradox concept started in 1987 with Robert Solow, the Nobel prize-winning economist, who said that computers can be seen everywhere but in the productivity statistics (Solow, 1987). The Paradox as presented by Strassmann is that, despite large investments in IT, productivity as measured by cost of goods sold has not increased (McCune, 1998). IT capital vs output was studied over a five-year period and no correlation was found between IT spending and output increase (Brynjolfsson, 1993). The Productivity Paradox is simply that empirical investigations in the late 1980s and early 1990s seemed to show that IT investments by a variety of measures were not contributing to overall productivity gains. Since, then, however, a series of studies have provided different, more positive results for IT investments. The studies have included Brynjolfsson and Hitt (1996), Bharadwaj *et al.* (1999) and Dewan and Kraemer (1998).

Though there has been work on the Productivity Paradox, there has been little survey work performed, specifically within the firm, on internal views of IT productivity. Also, within the firms, there has been little work done on variables that influence IT returns. There is essential, since not all firms reap the same benefits from investment in IT.

Two researchers who have explored this area somewhat are Rico (2006) and Demirhan (2005). Rico (2006) not only reviewed forms of measurement for returns on IT but also suggested principles for successful enterprise architecture including: form a clear vision and stick to it; define early measurable objectives; think small, fast, and lean; manage like a well-run project; apply top-down systems analysis; create style guides and standards; think outside the box for tools. He also noted principles for successful return on investment including: use ROI as a success factor; etch the desired benefits in stone; establish early ROI objectives; operationalize a core set of metrics; continuously measure the payback; use automated tools to do the work; standardize ROI reporting.

Demirhan (2005) reports factors that affect IT investment strategies: IT cost decline, relative IT efficiency, switching costs, competition intensity, and firm characteristics. Overall, there is little practical research that details how IT returns are viewed at the firm level and little exploration of variables that may influence justification and organizational performance.

Though broadly there has been little work on the overall issue of what influences IT returns, some researchers have proposed certain variables and their influences on IT success. First, though there has been significant debate over the returns provided by

IT, most recent research has suggested a positive result (King, 2007a; Lee and Kim, 2006; Huang, 2005). As a result it is theorized that currently organizations are experiencing positive returns from IT investment. This will form the basis for our first hypothesis.

As noted some specific variables have been proposed as influencers of IT success. One of the major changes in IT organizations in the past several years has been the increase in outsourcing information systems (IS) labor and operations. King (2007b) suggests that there is a push to outsource all IT operations that “can be outsourced.” Loh and Venkatraman (1992) predicted significant cost savings from outsourcing. As a result, it is expected that outsourcing may be an influencing variable for IT success.

The development of a strategic plan is a common process for business success and leadership. But formal plans for IS are not always developed. Shupe and Behling (2006) suggest that deploying IT successfully requires formal planning and strategy. The development of a strategic plan is proposed to be an influencing variable. But Shupe and Behling (2006) also suggest that success in IT planning requires “a strategy based on understanding of the organization’s vision.” Therefore, it is expected that alignment of the IS plan with the corporate plan is desirable and a contributor to IT success. Levy *et al.* (2001) suggest strategic focus is a key variable for successful IS investments. Focused attention to key problems may thus be an influencing variable in IT success.

With the advent of outsourcing many have suggested that IS is not a core competency anymore. Carr (2003) has suggested that IT “doesn’t matter.” But others have disputed this claim (King, 2007b; Marchand, 2005). This study will propose that those who view IT as a core competency will have higher returns. According to King (2007b), “there is no denying that some firms have achieved sustained competitive advantage as a direct consequence of implementing such systems.” It is therefore proposed that those who see IS as a competitive advantage will achieve higher returns.

Finally, the issue of company size and its effect on IT productivity has been a topic of research discussion (Dozier and Chang, 2006). Peslak (2005) found that company size had no impact on IT productivity at the firm level. This study tests company size as an independent variable and its effect on the dependent variable, financial executive views on IS returns.

In summary, many variables have separately been proposed as influencing variables on IT success. They are outsourcing, strategic planning, IT strategic plan alignment, focus on most important issues, IT as a core competency, IT as a competitive advantage, and company size. These items will be studied to determine their relative influence on IS and IT success.

Hypotheses

As a result of the preceding literature review, a series of hypotheses are suggested:

- H1. According to top financial executives, companies achieve moderate to high returns from IT investment.
- H2. Companies that have outsourced IS activities or processes or plans to do so in the near future achieve higher returns on technology investment.
- H3. Companies with written IS strategic plans achieve higher returns on technology investments than those without written IS strategic plans.

- H4. Companies with written IS strategic plans aligned with corporate strategy achieve higher returns on technology investments.
- H5. Companies who have made more progress on addressing their number one IS issue, achieve higher returns on technology investments.
- H6. Companies who view IS as a core competency achieve higher returns on technology investments than those who do not.
- H7. Companies that have CEOs that consider technology a source of competitive advantage achieve higher returns on technology investments than those who do not.
- H8. Size of companies is not a significant variable in company technology investment returns.

Methodology

In order to test these hypotheses, specific data were required from actual corporations. There were two possible methods to obtain this data: primary survey and review of secondary information. After exploring the possible options, we found a rich and robust dataset that was available from Financial Executives International (FEI). FEI is “the preeminent association for CFOs and other senior finance executives.” It has . . . CFOs, VPs of Finance, Treasurers, Controllers, Tax Executives, Academics, Audit Committee members [in] companies large and small, public and private, cross-industry (FEI, 2006). In 2003, the FEI commissioned a large-scale study of “technology issues for Financial Executives.” The data were obtained from this sixth annual survey of Technology Issues for Financial Executives conducted by the FEI and Computer Sciences Corporation (CSC). The survey instructions follow:

Financial Executives International (FEI) and Computer Sciences Corporation (CSC) are conducting the sixth annual survey of Technology Issues for Financial Executives. This initiative explores and reports on IT from the perspective of the financial executive. Through this survey, we will gain current perspectives on topics such as: the most important financial management issues; the role of technology in enabling (or constraining) decision making and business operations; the impact of technology on business strategy; and the methods used to evaluate technology investments, among others.

. . .

- I. Demographics
- II. Top Financial Management Issues
- III. Information Systems Strategies
- IV. Technology Applications
- V. Managing the IS Function (FEI, 2003).

As a part of this study, specific information was obtained from top financial executives on IS success. These questions and responses were sufficiently detailed and pertinent to our hypotheses to serve as the bases for testing this study’s hypotheses. The main advantage is the large data set and the independent collection from a private membership trade group.

According to the FEI:

Participation for 2003 set a record – 607 completed surveys were received – a 17 percent increase over the prior year. The overall survey respondent demographics match relatively

well with the overall make-up of the FEI membership in terms of industry, company size, and location of respondent. Consistent with previous surveys, the survey was distributed to one individual, the senior most FEI member by title, in each company. FEI and CSC limited the distribution to these executives to ensure each 'decision making' entity would be represented and weighted only once in the statistical analysis (FEI, 2003).

All data have been collected and furnished by the FEI and CSC and remains their property. Use for academic and research purposes was obtained by the author. The author wishes to sincerely thank the organization for their cooperation.

Demographics of participants

Overall, there were 607 responses from major corporation financial executives who completed the survey. There were 607 total respondents but 148 saw their IT returns as "unknown." These respondents were excluded from further analysis. The demographics of the remaining 459 usable responses follow.

Table I illustrates the level of organization that the respondents were based. Nearly, 87 percent are located at the corporate level with 11 percent at the divisional level. There is strong top corporate financial executive representation in this group.

The geographic mix of participants is strongly US-centric (Table II). This represents the general member mix of FEI. Even though it is an international organization, non-US and Canada participation is nascent.

The size distribution is skewed to the membership, with 75 percent of the participants employed by companies with over \$100 million in sales (Table III).

This is clearly a group of senior executives. Table IV shows that only 15 percent are not senior executives.

	Frequency	Percent	Valid percent	Cumulative percent
Valid				
Corporate	397	86.5	86.5	86.5
Group of sector	10	2.2	2.2	88.7
Division, wholly owned subsidiary, or operating unit	52	11.3	11.3	100.0
Total	459	100.0	100.0	

Table I.
Level in organization
of respondent

	Frequency	Percent	Valid percent	Cumulative percent
Valid				
Canada	52	11.3	11.4	11.4
Europe	5	1.1	1.1	12.4
USA	395	86.1	86.2	98.7
Other	6	1.3	1.3	100.0
Total	458	99.8	100.0	
Missing System	1	0.2		
Total	459	100.0		

Table II.
Country where
respondent is based

Analysis of demographics

The respondent group was diverse in many of the demographic categories. In order to determine whether those variances affected the overall rating on the enterprise projects, a series of ANOVA were performed. The significance results of these analyses are shown in Table V. An ANOVA analysis found no significant difference (at $p < 0.05$) between perceived return rates based on industry, where the organization was based or whether the responder was a senior executive or not. Size of the organization was also not found to be a significant variable. The data set did not need to be stratified by demographics.

Questionnaire

The overall questionnaire included 41 questions in categories but sub-questions and ranked responses raised the overall individual data points to more than 180. From this overall report a small subsection were used to analyze the relevant hypotheses. Selected responses from the demographics section were included as well as specific questions related to influences on perceptions of overall technology return in the top financial management issues and IS strategies sections. The questions used, as well as response choices, are shown in the Appendix.

Table III.
Size of organization
sales (in \$)

	Frequency	Percent	Valid percent	Cumulative percent
Valid				
Less than 100 m	204	44.4	44.7	44.7
100-499	139	30.3	30.5	75.2
500-999	42	9.2	9.2	84.4
1-5B	54	11.8	11.8	96.3
More than 5	17	3.7	3.7	100.0
Total	456	99.3	100.0	
Missing System	3	0.7		
Total	459	100.0		

Table IV.
Senior executive status
in organization

	Frequency	Percent	Valid percent	Cumulative percent
Valid				
Senior	386	84.1	84.8	84.8
Not senior	69	15.0	15.2	100.0
Total	455	99.1	100.0	
Missing System	4	0.9		
Total	459	100.0		

Table V.
Significance of ANOVA
variance between groups

	<i>p</i> -value
Industry	0.092
Country	0.962
Senior executive	0.733
Size	0.100

The key question for *H1* and *H2* is question 4 in Section III:

4. What overall return is your organization obtaining on its technology investments?
(Mark only one).
- High
 - Medium
 - Low
 - Negative
 - Unknown

This is the overall measure of return as perceived by the top financial executives. The demographic questions are noted in Section I. This is followed by the specific return questions. First, there is a focus question (II-3) that determines how much progress has the organization made on addressing their number one issue. Question III-5, does your organization have a written IS strategic plan, is a dichotomous variable – either yes or no. If the organization does have a plan, there is a follow-up question (III-6) that asks how well the plan is aligned with the organization's overall strategy. The next questions are on how IS is viewed (core competency, III-7 and competitive advantage, III-8). Finally, there are questions that explore the extent of outsourcing. The first was turned into a dichotomous variable of those that outsourced and those who did not (III-9a). Question II-9b explored the success level of outsourcing.

It is important to note the scaling of these variables. Return ranged from 1 to 4 so a lower number indicated higher return. Also, outsourcing, written plan, core competency, outsourcing, and competitive advantage all were scaled yes (1) and no (2). As a result regression coefficients related directly (not negatively) to return. Plan alignment was scaled the opposite ranging from not at all (1) to fully aligned (5). Therefore, a negative coefficient here results in higher return. "Progress on number one issue" ranges from substantial progress (1) to substantial deterioration (5) returns to a positive relationship.

Results

The data set was analyzed via SPSS 15.0 using multiple regression analysis and other statistical methods. Each of the proposed hypotheses was studied:

- H1.* According to top financial executives, companies achieve moderate to high returns from IT investment.

Though many past studies have found a negative correlation between IT expenditures and productivity, more recent studies have suggested a positive link. As a result, it was expected that financial executives would report moderate to high returns on their IT returns. The survey found that of the 459 usable responses, 72.1 percent of the firms report high or medium returns on their technology investments (Table VI).

	Frequency	Percent	Valid percent	Cumulative percent
Valid				
High	59	12.9	12.9	12.9
Medium	272	59.3	59.3	72.1
Low	112	24.4	24.4	96.5
Negative	16	3.5	3.5	100.0
Total	459	100.0	100.0	

Table VI.
Return on technology

Only 24.4 percent found low returns and 3.5 percent reported negative returns. There were 607 total respondents but 148 saw their IT returns as “unknown.” This large unknown response is a concern since it suggests that nearly 25 percent may not have mechanisms in place to understand and/or measure their returns on IT investments.

Generally smaller companies are more likely to express ignorance of their returns on technology investments. Though the overall average is 24 percent, companies with more than \$5 billion in revenue reported unknown returns in 15 percent of the cases and companies with \$1-5 billion in revenues reported unknown returns in only 11.5 percent. The highest rate of unknown returns were small firms of less than \$100 million with 26.4 percent unknown rate. This finding, though not part of the original intent of the study, may be useful in highlighting a measurement problem that small- and medium-sized firms are encountering.

The last step was to determine whether the results reported were statistically different from average. The average of those reporting on the 1-4 scale was 2.1852 vs an expected mean of 2.5.

Based on a one-sample *t*-test (Table VII), the scores are significantly different from the expected mean of 2.5 at a *p* value of <0.0001. Overall, hypothesis one is supported. According to top financial executives, companies achieve moderate to high returns from IT investment:

H2. Companies that have outsourced IS activities or processes or plans to do so in the near future achieve higher returns on technology investment.

Outsourcing is popularly viewed as a major cost saving initiative for IT departments. But some recent articles have suggested these gains are not as significant as initially anticipated. Overall, though, most articles have proclaimed gains and successes. Based on the sample of 459 firms that expressed known returns, a linear regression analysis was performed to determine if outsourcing significantly correlated with higher IT returns. The results of this analysis are shown in Table VIII.

Table VII.
One-sample test –
different from average

	<i>T</i>	df	Sig. (two-tailed)	Mean difference	95 percent Confidence Interval of the Difference	
					Lower	Upper
Return	-9.748	458	0.000	-0.31481	-0.3783	-0.2513

Table VIII.
Regression coefficients
for return – outsourcing

Model		Unstandardized coefficients		Standardized coefficients <i>β</i>	<i>t</i> <i>B</i>	Sig. Std. error
		<i>B</i>	Std. error			
1	(Constant)	2.200	0.058		38.250	0.000
	Outsour	-0.022	0.070	-0.015	-0.311	0.756

Note: Dependent variable: return

Contrary to expectations, firms that engaged or soon will engage in outsourcing of IS activities or processes did not achieve higher technology returns. The simple act of outsourcing did not automatically convey financial benefits to the organization. The actual coefficient of the regression was not significant at $p < 0.05$. *H2* was not supported. Companies that have outsourced IS activities or processes or plan to do so in the near future have not achieved higher returns on technology investment.

A separate issue was how outsourcing was viewed in general by firms. Of the 302 firms who are currently outsourcing, the average success rate on a scale of 1-4 with 1 highly successful, 2 moderately successful, 3 moderately disappointing, and 4 highly disappointing, the mean was 1.7252 which is well above a neutral rating of 2.5. A one sample *t*-test (Table IX) suggests this difference is significantly different than 2.5 at $p < 0.001$. Outsourcing arrangements are viewed as successful.

Finally, though it was determined that IS outsourcing did not automatically result in higher technology returns but for those who viewed outsourcing as a success, there was a correlation with higher returns. A follow-up question measured for those who are currently in an outsourcing arrangement, the degree of success of the outsourcing arrangement. The higher the financial executives viewed their outsourcing arrangement, the higher their return on technology investment. This was significant at $p < 0.004$ (Table X):

H3. Companies with written IS strategic plans achieve higher returns on technology investments than those without written IS strategic plans.

As noted, based on the sample of 459 firms that expressed known returns, regression analyses were performed to determine what variables if any significantly correlated with higher IT returns. One of the questions posed in the survey was whether the organization had a written IS strategic plan. Planning is one of the key components for successful IS projects, so it was expected that having a planning process worked through to a written document by itself would increase returns. This was found to be the case.

	<i>T</i>	df	Sig. (two-tailed)	Mean difference	95 percent Confidence interval of the difference	
					Lower	Upper
Ousucces	-12.364	313	0.000	-0.63057	-0.7309	-0.5302

Table IX.
One-sample test –
different from average

Model		Unstandardized coefficients		Standardized coefficients β	<i>t</i> <i>B</i>	Sig. Std. error
		<i>B</i>	Std. error			
1	(Constant)	1.942	0.089		21.724	0.000
	Ousucces	0.126	0.043	0.164	2.935	0.004

Table X.
ANOVA outsourcing
success significance on
technology return

Notes: Dependent variable: return; selecting only cases for which outscour = 1.00

The regression analysis showed a positive relationship between a written plan and returns at $p < 0.008$ (Table XI). *H3* was accepted. The development of a written plan for IS did show a significant impact on technology investment return. Companies with written IS strategic plans did achieve higher returns on technology investments than those without written IS strategic plans:

H4. Companies with written IS strategic plans aligned with corporate strategy achieve higher returns on technology investments.

As noted in *H2*, the mere existence of an IS strategic plan correlated with higher technology returns. But the next question asked, refined this query by asking those who had a plan how well the plan was aligned with the organization’s overall strategy. This was an important qualifier. It was found that those who had a plan, the more the plan was aligned with corporate strategy, then the higher the technology returns (Table XII). This was significant at $p < 0.001$. (Note that negative coefficient supports higher return for this question). *H4* was supported:

H5. Companies who have made more progress on addressing their number one IS issue, achieve higher returns on technology investments.

Another variable related to work on the most important IT issues. The question was specifically “how much progress has your organization made in the past year addressing the #1 (technology) issue?” Based on the 444 firm’s financial executive’s responses there was a positive and significant correlation at $p < 0.001$ between progress made on the number one issue and return on IT investments (Table XIII). Companies who have made more progress on addressing their number one IS issue achieve higher returns on technology investments. *H5* is supported:

H6. Companies who view IS as a core competency achieve higher returns on technology investments than those who do not.

Table XI.
Regression coefficients
for return – IS plan

Model		Unstandardized coefficients		Standardized coefficients β	<i>t</i> <i>B</i>	Sig. Std. error
		<i>B</i>	Std. error			
1	(Constant)	1.914	0.107		17.882	0.000
	Plan	0.172	0.065	0.123	2.649	0.008

Note: Dependent variable: return

Table XII.
Alignment with corporate
strategy – coefficients^{a,b}

Model		Unstandardized coefficients		Standardized coefficients β	<i>t</i> <i>B</i>	Sig. Std. error
		<i>B</i>	Std. error			
1	(Constant)	3.019	0.247		12.246	0.000
	Aligned	-0.239	0.062	-0.270	-3.860	0.000

Note: ^aDependent variable: return; ^bselecting only cases for which plan = 1.00

The financial executives were asked whether they consider IS a core competency. Those who saw IS as a core competency also reported significantly higher returns than those who did not (Table XIV). This significance was at $p < 0.001$. The implications of this correlation could suggest that the more importance that IS has in an organization, then the more it is emphasized, reviewed and the better it is performed. *H6* was supported:

H7. Companies that have CEOs that consider technology a source of competitive advantage achieve higher returns on technology investments than those who do not.

Another question asked of the financial executives was whether they felt their organization's CEO considered technology a source of competitive advantage. This suggests even a higher level of importance in an organization, at the top executive management level. There was a correlation between these CEO views and technology return perception a level of $p < 0.001$ (Table XV). *H7* was accepted:

H8. Size of companies is not a significant variable in company technology investment returns.

As already suggested earlier in the demographic analysis, size of companies is not a significant variable in company technology investment returns. Regression analysis

Model		Unstandardized coefficients		Standardized coefficients β	<i>t</i> <i>B</i>	Sig. Std. error
		<i>B</i>	Std. error			
1	(Constant)	1.596	0.115		13.927	0.000
	Progress	0.256	0.048	0.244	5.355	0.000

Note: Dependent variable: return

Table XIII.
Regression coefficients
for return – most
important technology
issue

Model		Unstandardized coefficients		Standardized coefficients β	<i>t</i> <i>B</i>	Sig. Std. error
		<i>B</i>	Std. error			
1	(Constant)	1.629	0.104		15.734	0.000
	Core	0.356	0.063	0.257	5.645	0.000

Note: Dependent variable: return

Table XIV.
Regression coefficients
for return – core
competency

Model		Unstandardized coefficients		Standardized coefficients β	<i>t</i> <i>B</i>	Sig. Std. error
		<i>B</i>	Std. error			
1	(Constant)	1.819	0.096		18.997	0.000
	Competit	0.272	0.067	0.187	4.057	0.000

Note: Dependent variable: return

Table XV.
Regression coefficients
for return – competitive
advantage

found no significant correlation between company size and technology returns. *H8* was supported.

Discussion and implications

This study surveyed a broad group of top financial executives and resulted in important preliminary findings for both practitioners and researchers. These findings are among the first to explore how IT returns are viewed by management and also what variables seem to affect those views. It should be noted that the population and sample though large may not be applicable to all organizations due to the analysis of only returned surveys. There may be some non-response bias. Non-response bias is an inherent limitation of mail surveys but has not prevented publication of past research. In addition, the survey only records financial executives. It seems unlikely but other executives may have dissimilar views. The findings should be confirmed with more detailed and comprehensive studies. But the findings do represent a significant step forward in the exploration of IT returns and serve as a first step in that process.

The first finding of the study was that in general, financial executives view IT returns in their organizations favorably. Over 72 percent report high or medium returns on technology investments. This was tested and found to be significantly different from an average return rating. In general, practitioners can be confident that technology monies can be spent effectively to improve the profitability of their organization. This can dispel some of the gloom that IT does not matter anymore and also that monies are being wasted with no productivity gains. Of course, an organization does not automatically achieve these gains, 27.8 percent experienced low or negative returns, but it does suggest that good returns are possible, even likely, if managed properly.

Researchers can utilize this finding as another support that the Productivity Paradox is not active at the present time. Companies are reporting that IT does add to returns and is a productive expenditure for their organization. Researchers also can use the methodology of the study to support a fourth research line for IT productivity studies. Prior to this, studies have been focused on public firm level results, macroeconomic statistics, or individual company applications. This study suggests intra-firm ratings as another approach to understanding the returns, or lack thereof, within business organizations from IT expenditures.

The exploration of individual variables also provides interesting insight into the environment that result in higher IT returns. These findings should be of even greater interest to both practitioners and researchers since that suggest ways that returns may be improved. First, outsourcing according to King (2007b) and Loh and Venkatraman (1992) was proposed to increase IT returns. Our study of 459 firms overall, found no relationship between outsourcing IT and improved IT returns. This suggests that significant dollars are being spent on re-sourcing work from the USA to other parts of the world with no resultant financial benefit. Practitioners should carefully study their IT sourcing to affirm that their organization can achieve benefits from this activity. The study did find that those organizations that do view outsourcing as a success, do achieve higher returns. So successful outsourcing does improve profitability. But these results are by no means assured as the preceding comments suggest. Researchers can confirm these findings and explore the relationships behind these findings to determine

exactly what variables influence outsourcing success. This is a fertile area for future research.

The next area studied was strategic planning. Much attention has been placed on strategic planning in major organizations. The importance of a written IS or IT strategic plan has been suggested as important to success (Shupe and Behling, 2006). Our study found that the mere existence of a written strategic plan was sufficient to improve overall technology returns. Companies with written strategic plans had significantly higher returns at $p < 0.008$. In addition, alignment of IS strategic plans with overall corporate strategy was analyzed. The level of alignment was studied on a Likert scale. It was found that the higher the alignment, the higher the returns. This was significant at $p < 0.001$. This has important implications for practitioners who should first and foremost make sure they at least prepare a written strategic plan. They should also work with corporate strategic planning to assure that alignment with the corporate strategy is maximized. These activities can improve overall technology returns. Researchers can use these findings to further explore the relationship of strategic planning to both corporate success as well as technology returns. These relationships can be investigated to provide further guidance to practitioners.

The next variables investigated dealt with how IT is viewed in an organization. In turn, making progress on their number one IS issue, viewing IS as a core competency, and viewing technology as a competitive advantage were tested to determine their correlation with higher technology returns. All variables were significant at $p < 0.001$. Practitioners would do well to focus resources on emphasizing these relationships. Energies should be focused on the most important project(s). IS do matter and should be considered both a core competency in an organization as well as providing a competitive advantage if used properly. The downplaying of IS as a non-core competency and as not providing competitive advantage appear to result in lower returns within a business. Attention should be placed on IS and made a priority within companies. Researchers can further study this relationship to explore how IS specifically provides competitive advantage and why IS as a core competency does add to returns. Clearly, this holds significant implications to IS and IT as value-added management disciplines that can improve organization as well as macroeconomic activity.

The last variable studied was company size. Analysis found that size of companies did not correlate with views on technology returns. There was no difference in technology returns based on size. Though not proven, a logical assumption can be made that the other implications of this study can be applied to organizations of all sizes. Practitioners in all organizations can improve their technology returns as a result of this study.

Conclusion

High-IT returns in an organization are correlated with a strategic plan aligned with the organization's overall corporate strategy, having an IS strategic plan, progress on number one IT issue, seeing IT as a competitive advantage, and IT as a core competency but not company size nor outsourcing *per se*. If you have a plan and it is aligned with strategy then the relationship is also positive and significant. If you outsource and outsourcing is viewed as success, then this adds to return. This study provides a unique insight into the way IT projects are viewed and measured at the

highest level of an organization. It also specifically identifies the overall success rate as well as factors that influence success on IT projects in an organization. The study is a comprehensive and valuable addition to the study of the success of IT projects. Researchers can further explore the issues studied here and more deeply investigate project success, outsourcing, IT strategic plan alignment and the importance of IT as a competitive advantage. Practitioners can immediately incorporate these findings in their strategic, tactical, and operational IT planning. The need for an integrated IT plan with the general strategic plan has been demonstrated. Also companies do not automatically achieve gains via outsourcing. Careful study and control should be implemented to achieve potential gains. Companies of all sizes can use these results since it was found that company size was not a significant factor for these gains. Organizations that view IT as a competitive advantage that can creatively apply IT to create separation between them and their competitors are likely to achieve significant gains. Finally, focus on important issues is suggested to be important. Concentrated efforts to achieve gains on the number one IT issue was shown to be statistically significant.

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Further reading

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Appendix. Extracted questions from 2003 FEI survey

Section I

1. Describe the organization for which you are responding.
 - Corporat
 - Group or sector (multiple SBUs)
 - Division, wholly owned subsidiary, or operating unit (single SBU)
2. In what primary industry does your organization operate? (Select only one industry.)
 - Aerospace and defense
 - Chemicals
 - Consumer goods – durable
 - Consumer goods – non-durable
 - Distribution
 - Engineering and construction
 - Financial services – banking
 - Financial services – insurance
 - Financial services – other
 - Government
 - Healthcare – payor
 - Healthcare – provider
 - Healthcare – pharmaceuticals
 - Higher education
 - High-tech
 - Leisure and hospitality
 - Manufacturing – discrete
 - Manufacturing – process
 - Media and entertainment
 - Mining and metals
 - Oil and gas
 - Other nonprofit
 - Professional services
 - Publishing and printing

- Real estate
- Retail
- Telecommunications
- Transportation services
- Utilities
- Wholesale
- Other (Please specify.)

4. What is the size of your organization in annual revenues, stated in US\$?
 - Less than \$100M
 - \$100M-499M
 - \$500M-\$999M
 - \$1B-5B
 - Greater than \$5B
5. Where is your organization based? (Please mark one.)
 - Canada
 - Europe
 - USA
 - Other (Please specify.)
6. Are you the senior financial executive in your organization?
 - Yes No

Section II

3. How much progress has your organization made in the past year addressing the No. 1 issue?
Substantial No Substantial Progress Change Deterioration (1 2 3 4 5).

III. Information systems strategies

4. What overall return is your organization obtaining on its technology investments? (Mark only one.)
 - High
 - Medium
 - Low
 - Negative
 - Unknown
5. Does the organization for which you are responding have a written IS strategic plan?
 - Yes No
 - If no, please go to question 7.
6. How well aligned is this plan with your organization's overall corporate strategy?
 - Not at fully
 - All 2 3 4 aligned
 -
7. Is IS considered a core competency in your organization?
 - Yes No
8. Does your organization's CEO consider technology a source of competitive advantage?
 - Yes No
- 9a. Has your organization already outsourced any activities or processes, or does it plan to do so within the next year? (Y = currently outsourced; P = planned; N = no plans.)
 - Y P N
 - Accounting
 - IS
 - Production
 - Logistics
 - Sales and marketing

- Research and development
- Customer service
- Purchasing
- Payroll
- Human resources
- Other (Please specify.)

9b. If you are currently in an outsourcing arrangement, how successful has the arrangement been?

- Highly successful
- Moderately successful
- Moderately disappointing
- Highly disappointing
- No opinion (in progress or recently completed)

About the author

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