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WHEN CONTEXT MATTERS: MAKING SENSE OF

EXECUTIVES' PERCEPTIONS OF IT PAYOFFS USING STRATEGIC INTENT FOR IT

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When Context Matters: Making Sense of Executives' Perceptions of IT Payoffs using Strategic Intent for IT

ABSTRACT

Despite significant progress in evaluating the productivity payoffs from information technology (IT), business executives remain critical of IT performance. In an attempt to improve our understanding of IT payoffs, we develop a process-oriented model to assess the impacts of IT on key business activities within the value chain. Our model includes corporate goals for IT as this provides an important context within which to evaluate IT payoffs.

In recognition of the increasing role that executives have in IT decisions, we surveyed executives on their goals for IT and on their perceptions of realized IT payoffs. Analyzing responses received from 304 business executives worldwide, we found that corporate goals for IT can be classified into four types: unfocused, operations-focus, market-focus and dual-focus. Furthermore, firms with more focused goals for IT perceive higher levels of IT payoffs throughout the value chain. Finally, we plotted the migration paths followed by firms over time as they reformulate their goals for IT to include a greater emphasis on delivering strategic capabilities.

Introduction

Although the productivity literature continues to report evidence of positive and, in some cases, excess returns to investment in information technology (IT), there is still a great deal of skepticism surrounding the issue of whether IT creates value for individual corporations. Judging from a recent international survey of CEOs in which fewer than 25% of respondents expressed satisfaction with the performance of their IT investments, the issue of IT payoffs is far from resolved (Compass 1999). Why then are CEOs and other senior executives so critical of IT? While the views of some executives might be tainted by cost overruns and expensive project terminations, we know from such success stories as Dell Computer and Cisco Systems that not all executives are equally scathing in their assessment of IT payoffs. On the contrary, executives in these corporations are adamant that IT has played a central role in their business success (Dell 1999). Such opposing views complicate the task of comparing IT payoffs across corporations. In order to make sense of these perspectives, we need to develop a context or framework within which to evaluate IT payoffs. In this paper, we argue that strategic intent or goals for IT provides such a context. Based on Porter's argument that corporations focus on two key business objectives, *operational effectiveness* and *strategic positioning*, we develop a set of contrasting goals for IT using contrasting areas of strategic emphasis (Porter 1996). The resulting framework provides a useful context for evaluating IT payoffs and for mapping the migration paths of these goals over time. As goals for IT evolve and adapt in response to needs for greater strategic capabilities, management practices and competence building will likely help to ease the transformation from one set of goals to another.

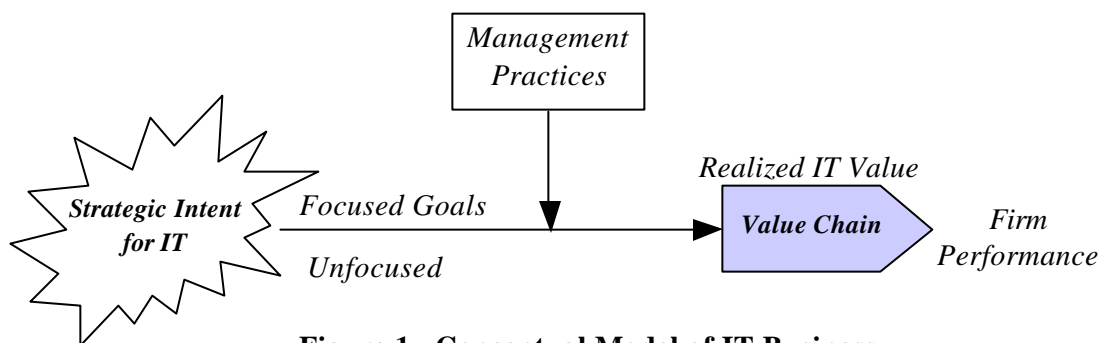


Figure 1. Conceptual Model of IT Business

In Figure 1, we present a conceptual overview of the relationship between strategic intent or goals for IT and realized IT payoffs, with management practices acting as a moderating variable. While payoffs from IT have traditionally been evaluated at the firm level, we adopt a multidimensional, process-oriented approach that identifies IT impacts at multiple points within the value chain. Various researchers have already highlighted the merits of adopting a process-oriented perspective on IT payoffs (Crowston and Treacy 1986; Bakos 1987; Kauffman and Weill 1989; Wilson 1993). Central to this perspective is a belief that the first order impacts of IT should be measured at lower operational process levels within the corporation, since this is typically the level at which the technology is implemented (Barua, Kriebel and Mukhopadhyay 1995). A related argument is that firms derive value from their IT investment through its impacts on intermediate business processes (Mooney, Gurbaxani and Kraemer 1995). These intermediate processes cover a wide range of operational and managerial processes that are usually associated with a firm's value chain (Barua et al 1995).

In order to evaluate the model, researchers at the Center for Research on Information Technology and Organizations (CRITO) at the University of California, Irvine joined with IBM Global Services and the Economist Intelligence Unit (EIU) to conduct a global survey of executives in large "Fortune 1000" type companies. During mid 1998, surveys were mailed to business executives (CEO, CFO and COO) in 1,500 firms. Responses were received from 304 executives – one per firm – yielding an overall response rate of 20.3%. Summary characteristics of the sample are shown in Table 1. Finally, we also conducted a series of hour-long interviews with 43 business and IT executives in 25 U.S. corporations, though for the purposes of this paper, we will concentrate solely on the survey data.

In the next section we explore our context variable, namely, the different goals that firms espouse for their IT investments. Using these goals, we then evaluate executives' perceptions of payoffs from IT within the value chain to identify if there is a relationship between corporate goals for IT and perceived IT payoffs. Finally, we identify migration paths used by firms as corporate goals for IT evolve and adapt in response to needs for greater strategic capabilities.

Table 1. Characteristics of the Sample (N=304)

Variable	Frequency	Percent
<i>Location</i>		
North America	183	60.2
Europe	78	25.7
Asia	43	14.1
<i>Revenues (1997)</i>		
Less than \$500m	112	36.8
\$500m – \$1b	41	13.5
\$1b – \$5b	67	22.1
\$5b – \$10b	39	12.8
More than \$10b	45	14.8
<i>Industry Group</i>		
Manufacturing	128	42.1
Wholesale / Retail Trade	39	12.8
Telecommunications / Utilities	19	6.3
Finance, Insurance & Real Estate	52	17.1
Business & Professional Services	66	21.7
<i>Respondents</i>		
CEO	38	12.5
CFO	37	12.2
Vice President	86	28.3
Director	85	28.0
Senior Manager	43	14.1
Other	15	4.9

Corporate Goals for IT: Defining Strategic Capabilities

Since executives are empowered to make strategic choices that can propel their corporations in any of several possible directions (Child 1972), it is not unreasonable to expect that they will also have different goals for IT that mirror their strategic choices. For example, corporate goals for IT could be highly focused or there might be a notable absence of focus with IT investments lacking overall direction and a sense of shared purpose. Even then, among those corporations with focused goals, there could be further differences in that some corporations might decide to focus more on internal operational issues while others might focus instead on strategic positioning and issues involving customers and competitors, both of which might be considered external to the corporation.

Table 2. Linking Business Strategy with Corporate Goals for IT

Business Strategy	Goals for IT
<i>Operational Effectiveness</i>	<i>Internal</i>
Efficiency	Reduce costs, increase productivity and speed
Effectiveness	Enhance overall organizational effectiveness
<i>Strategic Positioning</i>	<i>External</i>
Reach	Extend existing market and geographic reach
Structure	Change industry or market practices

As shown in Table 2, the distinction between *operational effectiveness* and *strategic positioning* can be translated directly into corresponding goals for IT. In definitional terms, operational effectiveness entails performing similar activities better than rivals, while strategic positioning entails performing different activities or performing similar activities, but in strategically different ways. Corporations that focus on operational effectiveness “get more out of their inputs than others because they eliminate wasted effort, employ more advanced technology, motivate employees better, or have greater insight into managing particular activities . . . operational effectiveness includes, but is not limited to, efficiency” (Porter 1996; p 62). Greater efficiency comes from using IT to lower operating costs and to improve productivity, while effectiveness comes from using IT to achieve flexibility and increased responsiveness to changing market needs.

While operational activities allow some flexibility in responding to market needs, they are not as capable as activities that create and enhance strategic positioning within an industry. For example, by redefining the notion of service offerings, Southwest Airlines’ focus on low cost, no frills air travel has made it one of the most successful airlines in the U.S. with record levels of profitability and consistent high marks for customer service. Dell Computer has also focused on strategic positioning by selling direct to its customers. In this way, firms can improve their performance by extending their access to customers in existing markets or by changing the prevailing structure or practices within an industry. Consequently, strategic positioning includes elements of reach – using IT to extend market or geographic reach, and structure – using IT to change industry or market practices. In Figure 2, we use this association between

business strategy and goals for IT to develop an a priori classification of firms based on whether their goals for IT emphasize operational effectiveness, or strategic positioning, or both.

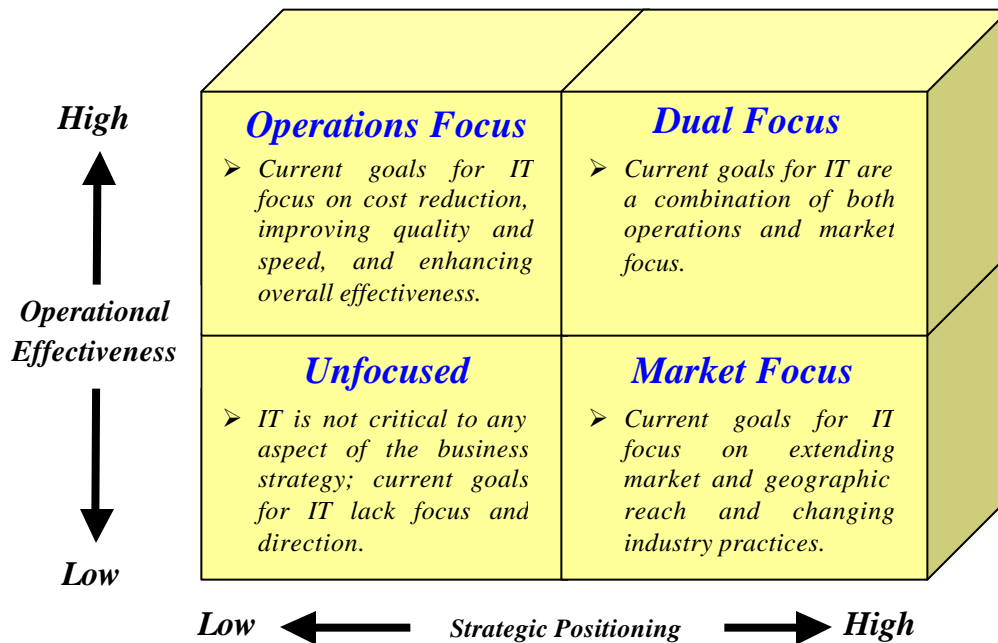


Figure 2. Corporate Goals for IT

Firms in the lower left quadrant are labeled “unfocused” since they have no clear goals for IT or are indifferent towards IT. This sense of indifference often leads to a situation in which IT spending is regarded as an expense to be minimized rather than an investment to be managed. It is likely that for business executives in these firms, past experiences with IT have been largely negative. As a result, they will likely adopt a wait and see attitude to technology investment, preferring to delay investment to the point beyond which there is no alternative.

In contrast, “operations-focus” firms in the upper left quadrant have clearly defined goals for IT centered on operational effectiveness. Based on a series of interviews we conducted with business and IT executives during the initial stages of this research, we noted that operations-focus firms use IT to reduce operating costs and enhance the overall effectiveness of business operations by focusing on quality, speed flexibility and time-to-market. Executives in these firms believe that by using IT to gain greater control over their internal processes, they will be better able to respond to competitive challenges.

Meanwhile, “market-focus” firms in the bottom right quadrant use IT to enhance their strategic positioning. Based on our interviews with senior executives, we found that market-focus firms use IT to create or enhance a value proposition for their customers. This does not imply that market-focus firms are deficient at using IT for operational purposes. Indeed, one could argue that in order to ensure the success of a customer-oriented strategy, there should be some emphasis on operational issues.

The notion that some firms might assign greater weight to external issues in their goals for IT might seem like an anomaly. There is an argument that highly innovative companies, especially those at the forefront of electronic commerce development, are more likely to focus on carving out a market niche and offering superior customer service before turning to more operational issues. Indeed, reacting to the notion that Dell’s high rate of growth was such that Dell, as a multi-billion dollar company was forced to run on an infrastructure more suited to a smaller company, Michael Dell noted, “we had to shift our focus away from an external orientation to one that strengthened our company internally” (Dell 1999; p. 59).

Finally, while some firms chose between operational effectiveness and strategic positioning, a growing number of firms recognize that IT can support both foci simultaneously. Firms that embrace this “dual-focus” approach, extend their use of IT beyond operational effectiveness to include market reach and new market creation. Based on our interviews with executives in dual-focus firms, we found that their goals for IT address both top line (revenue growth) and bottom line (profitability) issues. To achieve this level of performance, dual-focus firms need to be astute managers of IT. In sharp contrast to unfocused firms, dual-focus firms are fully convinced that IT is key to their current and future success.

Measuring Current Goals for IT

Strategic intent or corporate goals for IT were measured using four items (derived from Table 2). Executives were asked to rate the extent to which they agreed with each item using a 7-point Likert scale where “1” indicates “do not agree” and “7” indicates “agree completely” (all survey items are listed in the appendix). Based on executives’ responses to these items, firms were assigned to one of four quadrants

shown in Figure 2. For example, if executives rated four or less on each item, they were assigned to the “unfocused” group since their responses suggested they had no discernible goal for IT. If executives rated five or above on the first two items (operational effectiveness) and four or less on the second two items (strategic positioning), they were assigned to the “operations-focus” group. Alternatively, if executives rated four or less on the first two items and five or above on the second two items, they were assigned to the “market-focus” group. Finally, if executives rated five or above on all four items, they were assigned to the “dual-focus” group. In this manner, the 304 firms in our study were assigned as follows: unfocused: 48 (16%); operations-focus: 138 (45%); market-focus: 25 (8%); dual-focus: 93 (31%). A summary of the mean scores for each item and for each group is given in Table 3.

Table 3. Executives’ Goals for Current IT Investments

<i>What are your goals for current IT investments?</i>	Unfocused (N=48)	Operations Focus (N=138)	Market Focus (N=25)	Dual Focus (N=93)
Operational Excellence				
Reduce our costs, increase quality and speed	3.56	5.97	4.68	6.29
Enhance the effectiveness of our overall performance	4.02	5.74	5.28	6.42
Strategic Positioning				
Extend our market and geographic reach	2.60	3.19	5.36	5.72
Help us to change industry and market practice	3.21	3.39	4.96	5.70

Differences between the groups are significant at the .001 level.

Evaluating IT Business Value

Given such differences among corporate goals for IT, it is not unreasonable to expect that payoffs from IT will also vary from one focus type to the next. Accordingly, we compiled a set of 30 items to assess the impacts of IT investments at multiple points along the value chain (items are listed in the appendix). These items were derived from an extensive review of the literature on IT impacts and were validated in two previous surveys of business executives in 1995 and 1996. The 30 items were grouped into six process areas – *process planning and support*, *supplier relations*, *production and operations*, *product and service enhancement*, *sales and marketing support* and *customer relations*. In this way, the 30 items (5 items per process) span the value chain, capturing a range of IT impacts across both primary and secondary activities (Porter 1985). In order to measure IT business value, executives were then asked

to evaluate the impacts of IT on each item using a 7-point Likert scale where “1” indicates “low realized impacts” and “7” indicates “high realized impacts”. Respondents were asked to restrict their answers to value already realized rather than value expected in the future.

In Figure 3, we present a graphical overview of the data on perceived IT payoffs within the value chain for each of the four focus types. The graph yields evidence of distinct “levels” of IT payoffs that are consistent across the entire breadth of the value chain. Specifically, dual-focus firms realize the highest “level” of IT business value, followed by market-focus, operations-focus and finally unfocused firms. An analysis of variance verifies that there are significant differences on perceived IT impacts between the four focus types at each point along the value chain.

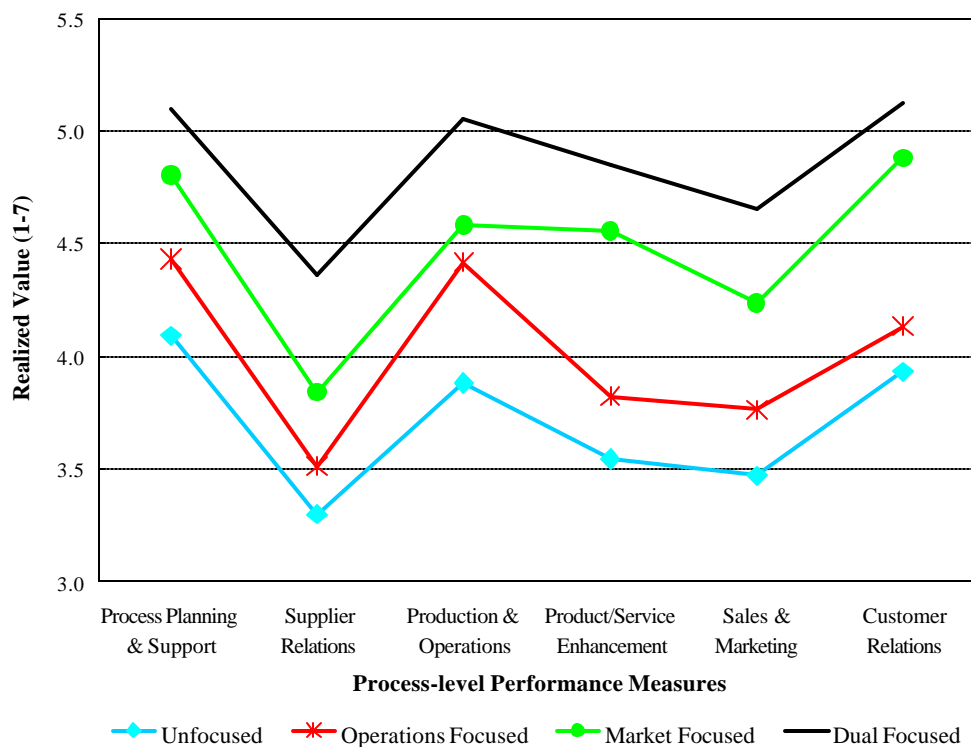


Figure 3. Realized IT Business Value

Further analysis of the “peaks” across each of the different levels points to a link between the primary locus of IT business value within the value chain and goals for IT. For example, for operations-focus firms, the primary locus of IT business value occurs in *production and operations* – activities which

are central to a business strategy that emphasizes operational effectiveness. In contrast, market-focus firms realize their highest IT payoffs in *customer relations*; again, consistent with a business strategy that emphasizes strategic positioning. Finally, for dual-focus firms, the primary locus of IT business value occurs at two points: *production and operations* and *customer relations*. Once more, the locus of value is consistent with a combined focus on operational effectiveness and strategic positioning. Finally, unfocused firms realize consistently lower IT payoffs than all other focus types – consistent with their indifference towards IT and overall lack of goals for IT.

The existence of distinct levels of IT business value (coinciding with goals for IT) appears to reflect different levels of experience with using IT to deliver strategic capabilities. For example, as firms become more proficient at using IT to support the business strategy, they develop particular skills or competencies that can enable them to progress to more complex goals for IT. In that sense, dual-focus firms are further along the experience curve than market-focus firms, who in turn are further along than both operations-focus and unfocused firms. Experience curves can also be represented by a step function in that, at each step there is increasing executive commitment to IT and a greater emphasis on using IT to deliver strategic benefits.

From Current to Future Goals for IT: Plotting Migration Paths

The need to consider changes in strategic capabilities in response to imposing market challenges and opportunities suggests that there should be some consideration of how IT competencies and resources can be changed to meet this need. What can we say therefore about future goals for IT investments? Is there necessarily a relationship between current and future goals for IT, in that future goals constitute a logical extension of existing goals? How might a corporation's current level of experience with IT influence its choice of future goals for IT?

Perhaps the most important question is whether corporations plan to become more focused in their strategic use of IT. The fact that firms with more focused goals enjoy, at least in perceptual terms,

greater payoffs from IT might be sufficient incentive for executives to consider reformulating their future goals to assign a more strategic role to IT.

Table 4. Executives' Goals for Future IT Investments

<i>What are your goals for future IT investments?</i>	Original Classification using Current Goals for IT			
	Unfocused (N=48)	Operations Focus (N=138)	Market Focus (N=25)	Dual Focus (N=93)
Operational Excellence				
Reduce our costs, increase quality and speed	5.33 (50%)	6.30 (6%)	5.72 (22%)	6.51 (3%)
Enhance the effectiveness of our overall perform.	5.85 (46%)	6.37 (11%)	6.20 (17%)	6.70 (4%)
Strategic Positioning				
Extend our market and geographic reach	4.06 (56%)	4.22 (32%)	6.12 (14%)	6.13 (7%)
Help us to change industry and market practice	4.79 (49%)	4.69 (38%)	5.60 (13%)	6.29 (10%)

Differences between the groups are significant at the .001 level.

Numbers in parentheses indicate a percentage difference between current and future goals.

Accordingly, we asked executives to identify their future goals for IT (in three years time) using the same type of questions used to measure current goals for IT. Table 4 presents the mean scores for each of the four items. Clearly, every focus type intends to make greater use of IT though the extent of the increase is dependent on existing goals for IT. For example, unfocused firms show the greatest increase with future goals for IT showing a significant emphasis on both operational effectiveness and strategic positioning. Operations-focus firms show significant increase in strategic positioning since they are already making extensive use of using IT internally for operations purposes. In contrast, market-focus firms show a greater increase in operational excellence, consistent with an existing emphasis on strategic positioning. Finally, dual-focus firms show relatively small increases in both operational excellence and strategic positioning since they are already extensive users of IT in both domains.

Using this information, we can assign a future focus to the corporations in our sample and plot the migration path between their current and future goals for IT. Table 5 shows, descriptively, the transition between current and future goals for IT. It is interesting to note that, without exception, all firms are planning on making greater strategic use of IT – unfocused firms are especially keen to make greater use of IT in the future. Thirty-eight percent of these firms plan to move to an operations-focus, while 18% are moving to market-focus. Interestingly, 38% plan to leap to dual-focus, though the extent to which this is a

realistic prediction remains the subject of some dispute as unfocused firms are burdened with underperforming IT investments (see Figure 3).

Table 5. Goals for Current and Future IT Investments

Current Focus	Number	Future Focus			
		Unfocused	Operations Focus	Market Focus	Dual Focus
Unfocused	48 (16%)	3 (6%)	18 (38%)	9 (18%)	18 (38%)
Operations Focus	138 (45%)	–	73 (53%)	–	65 (47%)
Market Focus	25 (8%)	–	–	6 (24%)	19 (76%)
Dual Focus	93 (31%)	–	–	–	93 (100%)
Total	304	3 (1%)	91 (30%)	15 (5%)	195 (64%)

The dominant migration path for all firms seems to begin with unfocused and proceed via either operations-focus or market-focus to dual-focus. For example, while 16% of the firms in our sample began in the unfocused quadrant, only 1% of firms plans on being in this quadrant in three years time. In contrast, while 31% of firms started in the dual focus quadrant, after three years, this number has more than doubled to 64%. The primary punctuation point on this path from unfocused to dual-focus seems to be operations-focus in that firms focus first on operational issues before turning to more strategic issues. Thus, it appears that firms must first gain control over the use of IT for operations and then use the technical and information infrastructure so created as a base or springboard for market exploitation. In other words, firms cannot simply choose to use IT for market exploitation without having first developed IT which supports their critical business activities. Consequently, if firms must focus their IT investments, it is suggested that they focus on operational excellence as a first order of business.

Changes in corporate goals for IT, as described by business executives, are significant for several reasons. First, there is increasing recognition among business executives that IT can deliver strategic-level benefits, in addition to the more traditional cost-savings and productivity gains. Second, it appears that business executives are willing to revise their goals for IT to take these strategic capabilities into account.

Third, the existence of migration paths suggests that firms tend to follow a particular pattern of IT development that is related to their previous experience.

No Pain, No Gain: Future Goals and IT Spending Intentions

Although executives might accept the need to pursue a greater strategic orientation in their use of IT, their ability to deliver the necessary capabilities is largely a function of the amount of additional resources directed to IT. We therefore asked executives to indicate their current level of IT spending (as a percentage of corporate revenues) and their future IT spending intentions – did they intend to increase, decrease or sustain their current level of IT spending? The results of this analysis indicate that of those firms migrating to more strategic goals for IT, 73% of unfocused firms, 68% of operations-focus firms and 63% of market-focus firms support an increase in their IT budgets – respondents were not asked to indicate a specific percentage increase. This seems to suggest that the further a corporation has to migrate, the more likely it is to increase IT spending.

Table 6. Current IT Spending (as a percentage of revenues)

Current Focus	Current Level of IT Spending	For Firms Adopting a New Focus		
		Operations Focus	Market Focus	Dual Focus
Unfocused	4.43%	2.85%	4.20%	8.00%
Operations Focus	3.70%	–	3.17%	3.53%
Market Focus	6.23%	–	–	8.30%
Dual Focus	4.90%	–	–	–

Table 6 shows the level of current IT spending for all firms. It is interesting to note that market focus firms have the greatest level of IT spending, though as indicated on the right hand side of the table, this is largely due to the fact that migrating market-focus firms are channeling large amounts of resources into IT. Perhaps one reason for this is that market-focus firms are obligated to install an IT infrastructure that is commensurate with a greater operational emphasis on IT.

Although executives in unfocused firms perceive low payoffs from their existing IT investments, they have a particularly high level of IT spending. In addition, there appears to be a correlation between current levels of IT spending and the migration path chosen by unfocused firms. Specifically, those firms moving to dual-focus (the longest migration path) are already spending significant amounts on IT (8%), whereas those moving to operations-focus (a shorter path) are spending much less (2.85%). This seems to confirm that executives have a reasonable grasp of their current IT payoffs and the strategic capabilities they represent, and that they are aware of the gap that exists between where they are now and where they want to be in three years time. Furthermore, executives realize that in order to make the transition to more strategic goals for IT, there needs to be a significant reassessment of IT budget needs.

Discussion and Implications

Business executives worldwide differ systematically in their goals for IT. These differences are important as they influence the scale and direction of IT investment decisions and ultimately, the extent to which these investments will impact firm performance. Our research found four distinct perspectives or goals for IT: unfocused, operations-focus, market-focus and dual-focus. While executives in unfocused firms are indifferent towards IT, those in operations-focus firms emphasize IT investments for efficiency and effectiveness with market-focus firms focusing on using IT for market expansion or market creation. Finally, dual-focus firms have a combined focus on operational and strategic issues.

The payoffs from IT investments are directly related to these perspectives. In perceptual terms, dual-focus firms realize the greatest payoffs from IT, followed by market-focus, operations-focus and finally unfocused firms. This ordering of payoffs is maintained throughout the value chain. In addition, there is a relationship between goals for IT and the primary locus of IT value within the value chain. Specifically, dual-focus firms realize significant IT impacts in customer relations and in production and operations – areas that are consistent with a combined emphasis on using IT for operational and strategic issues. In contrast, operations-focus firms realize significant IT payoffs in production and operations – again, consistent with goals that emphasize using IT for operational issues.

The four perspectives also reflect different experience curves associated with using IT to deliver strategic capabilities. Dual-focus firms are further up the experience curve than market-focus, operations-focus and unfocused firms. These goals for IT are a useful indicator of how IT is used in the corporation and where IT impacts are likely to arise. If IT payoffs are in line with executives' goals and expectations, they will likely be satisfied with IT performance, a factor that will likely result in greater executive commitment to IT and greater IT spending. If executives' remain dissatisfied and critical of IT, there is every reason to expect that they will engage in a self-defeating downward spiral of IT cost-cutting.

The one remaining issue identifies competencies and management practices that corporations can use to help them make a successful transition to new goals for IT. Due to space restrictions, this is not presented here though the readers are directed to Tallon, Kraemer and Gurbaxani (1999) for a discussion of how strategic alignment and IT evaluation techniques, as two instances of management practices, can help firms to realize greater payoffs from IT investment.

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APPENDIX: IT Business Value Questionnaire

Goals for IT Investments

What are your current goals for IT? Please evaluate the following statements.

In our organization . . .

Do not agree Agree Completely
1 2 3 4 5 6 7

- IT should reduce our costs and increase quality and speed
- IT should enhance the effectiveness of our overall performance
- IT should extend our market and geographic reach
- IT should help us to change industry and market practices

What are your future goals for IT (in three years time)? Please evaluate the following statements.

In our organization . . .

Do not agree Agree Completely
1 2 3 4 5 6 7

- IT should reduce our costs and increase quality and speed
- IT should enhance the effectiveness of our overall performance
- IT should extend our market and geographic reach
- IT should help us to change industry and market practices

Current and Future IT Spending

How much do you currently spend on IT? (Include hardware, software, services, networking and IT personnel costs). _____ IT spending as % of total revenues

Do you expect the percentage of IT spending increase, decrease or remain the same within the next one to three years?

- _____ Increase
- _____ Decrease
- _____ Unchanged

IT Business Value

How does IT boost company performance in the following areas? Restrict your appraisal to value already realized rather than value expected in the future.

Does Information Technology . . .

Low Impact High Impact
1 2 3 4 5 6 7

Process Planning and Support

- PPS1 Improve internal communication and coordination
- PPS2 Strengthen strategic planning
- PPS3 Enable your company to adopt new organizational structures
- PPS4 Improve management decision making
- PPS5 Streamline business processes

Supplier Relations (Inbound Logistics)

- SR1 Help your corporation gain leverage over its suppliers
- SR2 Help reduce variance in supplier lead times
- SR3 Help develop close relationships with suppliers
- SR4 Improve monitoring of the quality or products / services from suppliers
- SR5 Enable electronic transactions with suppliers

Production & Operations

- PO1 Improve production throughput or service volumes
- PO2 Enhance operating flexibility
- PO3 Improve the productivity of labor
- PO4 Enhance utilization of equipment
- PO5 Reduce cost of tailoring products or services

