IT and Competitive Differentiation: A Cross Category Industry Analysis

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In this study, we explore executive perspectives on the role of IT on competitive differentiation based on the examination of 665 executive interviews over a six year period. The study explores the role of industry, job position, and longitudinal trends on various factors that influence the impact of IT on organizational strategy. The findings indicate that there is strong agreement that IT serves as a source of differentiation among firms. The study reveals moderate differences among industries and across time dimensions but little variation among position titles with regard to the view of IT as a source of differentiation.

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I. INTRODUCTION

Many studies have focused on the potential for organizations to strategically deploy Information Technology (IT) to gain a competitive advantage. In the early days of business computing, some organizations leveraged proprietary technologies (e.g., American Airline's Sabre system) that their competitors lacked to gain a competitive edge. Over the past decade, most organizations began to replace or supplement proprietary business software with packaged, web-based, and outsourced technologies. This shift has, in some opinions, resulted in a reduction in the potential advantage that organizations can expect to gain from IT. To others, there is still a great potential for strategic use of IT.

In a much debated *Harvard Business Review* article, "IT Doesn't Matter" Nicholas Carr (2003) reveals trends that suggest that IT will become a commodity similar to electric power or railroads. While there is much evidence that IT, overall, remains strategically *important*, there may be factors that influence perspectives on the extent to which IT can serve as a source of *differentiation* between competitors. In this study, we look at the perspectives of several hundred executives of over a six year time frame to explore potential factors and trends related to IT's role in strategic differentiation.

We begin with a consideration of IT as a part of corporate strategy and competitive positioning. The investment and management of IT is recognized together with IT resource management. These lead into a discussion of the importance of IT and the perception that IT helps strategically differentiate the organization. The focus of this particular study is a cross industry comparison of the need for IT as a competitive strategy and its relationship with the other metrics in our proposed framework.

The rest of this research paper is organized as follows. In section two, we give a background of IT's role in corporate strategy, a framework for examining this role, and a brief discussion on varying differences and perceptions of IT across industries. In section three, we detail the methodology and research

questions addressed in the study. In section four, we show the results of the analysis and related discussion. Lastly, in section five we provide conclusions, limitations, and opportunities for future research on this subject.

II. BACKGROUND

2.1 Recent Evidence of IT and Competitive Advantage

To be agile, efficient, and competitive, enterprises need to excel at implementing change. This increasingly involves a significant Information Technology [IT] component. For enterprise CIOs, this means creating strategies to use their IT organizations as key business differentiators. Such strategies enable business agility and innovation, increases in the efficiency of existing business services, and improving the effectiveness of IT's business impact (see Figure 1). IBM's 2008 CEO study found that 83 percent of CEOs expect substantial change within their enterprises. They are becoming stewards of business agility and change – and, IT organizations serve as the primary engine for implementing these changes (Ptak, et.al, 2010).

In today's competitive environment, organizations succeed or fail based on how well they manage information – hence the importance of our study and the perception that IT plays a significant role as a differentiator. To address this reality, successful organizations devote substantial funds to secure their information advantages that then serve as a differentiator. New information technologies and methodologies are adopted, while old ones are dismantled or upgraded. The information manager must constantly seek to outperform competition. This can be accomplished in several ways such as acquiring new technologies, hiring the intelligent information professionals, and continuously monitoring their competitive environment (Desouza, 2009).

According to Gartner (2011) within four years most external assessments of enterprise value and viability will include explicit analysis of IT assets and capabilities. IT will continue to have an increasing impact on business performance, competitive advantage, risk management and transparency -and– the enterprises ability to merge, acquire and partner.

Over the past decade IT leadership has evolved from delivering basic information processing things on time and within budget to the handling of corporate-wide ERP and customer relationship management systems. Business leaders have come to view IT as a means to transform their business – perhaps even a core competency. As a result IT leaders are viewed as being on par with the VP of marketing or VP of finance or engineering. This is a key stepping-stone to the role of business intelligence officer enabling businesses to make decisions that impact the bottom line (King, 2000).
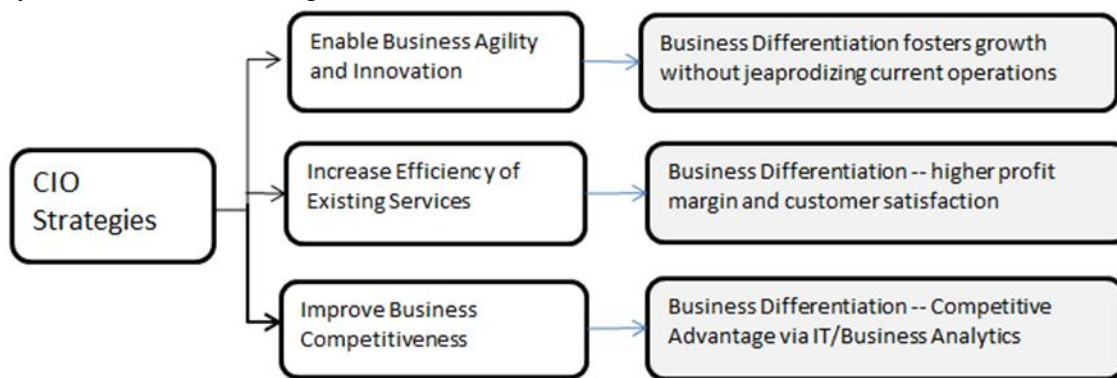
FIGURE 1. CIO Strategies leading to Business Differentiation

According to Valorinta (2011) the alignment of information technology and business functions is an important enabler for effective use of IT and organizational performance. Organizations that have aligned their IT operations and systems with strategic plans and organizational processes were better able to leverage new information technologies, optimize IT spending, and achieve competitive advantage. On the other hand, owing to the misalignment of IT and business operations, some organizations experienced costly, and even failed IT investments and missed opportunities.
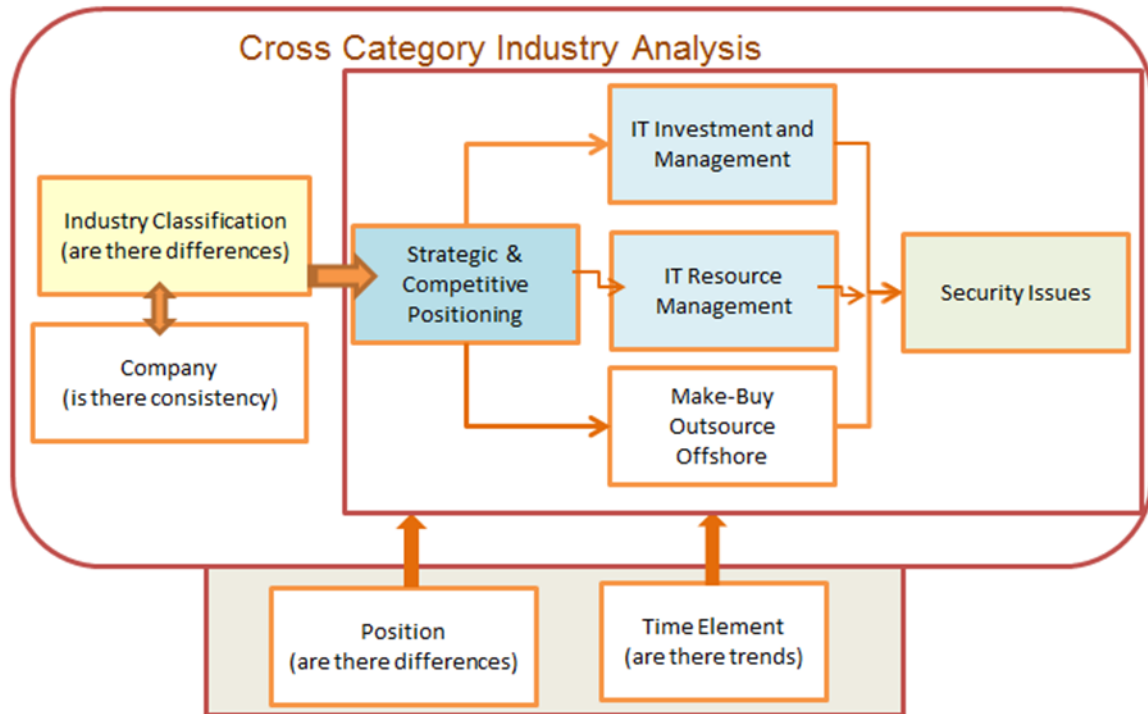

FIGURE 2. Cross Category Industry Analysis Framework

2.2 Strategic – Competitive Positioning

As with other forms of capital organizations are motivated to invest in IT to increase their productivity, to gain advantage over their competitors, and ultimately to increase their profitability. Competitive advantage through investment in IT alone, however, is difficult to achieve and sustain. The introduction of new information technologies can be replicated by competitors not withstanding productivity and profitability improvements gained through such innovations. Investments in IT are likely to remain differentiated when coupled with other sustainable advantage such as

scale, improved business processes and learning – these are more difficult to replicate. In some cases, retail in particular, new IT investments can yield differentiating capabilities (in our study the retail segment rated IT as the most important).

There are recent innovations in the use and deployment of IT within organizations. One of these is cloud computing. This approach constitutes a form of hybrid IT approach to enterprise computing in which an organization provides and manages some information technology resources in-house but uses cloud-based services for others. This allows the organization to maintain a centralized approach to IT governance, while experimenting with

alternative forms in the broad fields of social computing and virtualization. There are three forces driving this direction: the need to maintain control of data; the cost effectiveness of alternative IT implementations e.g. software as a service); and the desire for an IT department to rapidly respond to changes. Within our study we examined the need for security – this is discussed in a subsequent sub section.

2.2 IT Investment and Management

Perspectives on whether investing in IT is a viable means of gaining competitive advantage can be a matter of debate. While some subscribe to the theory that IT is becoming a commodity due to the prevalence of outsourcing, packaged software, and ability to acquire expertise equally across firms (Carr, 2003, 2004) others realize that while these trends change the nature of IT management, they understand that equal access to IT resources does not necessarily result in equal success of IT investments (e.g., the variation in success of ERP implementations). As a field, IT has had mixed results on the perceived success or failure of IT investments (IT Cortext, 2005). Until recently, most companies did not have proven methods to evaluate potential IT investments and measure their results (Brennan, 2002). The practice of offshoring can play a factor as organizations may be more (or less) reluctant to offshore based on their perceptions and experience with past projects. Due to the requirements of coordinating and monitoring offshoring partnerships, offshoring may impact the expansion of organizational practices for measuring and evaluating IT investments.

In general, the literature supports the notion that IT initiatives do not necessarily lead to a positive return on investment. We examined both offshore and outsourcing in our study and found that the importance of IT as a differentiator was not tied to either activity. A McKinsey Global Institute study (2001) on "U.S. Productivity Growth for 1995 to 2000" found a positive correlation between IT investments and productivity in only 6 of 59 industries. Strassmann [(2003) contends that his research confirms that "profitability and IT spending are unrelated" and that return on IT investments is a primary concern and appropriate measures are necessary to "distinguish fads from substance." He sees the biggest pitfall in IT decision making is embracing a solution without fully understanding the underlying needs.

2.3 IT Resource Management

Whether an activity adds to an organization's competitive advantage must be measured in the marketplace. Chamberland (2003) suggests a metric to assess activities in four major categories of strategic importance, ranging from "key activities" which are more apt to add the greatest strategic value to the organization, to "commodity activities," which are readily available in the marketplace and contribute no strategic value to the organization. He states that these key activities should generally be performed in-house while others become prime candidates for outsourcing. Whether an activity can be performed well internally depends on an organization's internal resources. Those resources are measured against a valuation metric. If it is found that an activity only provides a negligible (if any) competitive advantage to the organization, depending on the organization's ability to perform it in-house, it is more likely to be outsourced outright, or handled through some type of third-party relationship.

2.4 Make-Buy, Outsource, Offshore

The make-or-buy decision is a classic management issue. Every firm uses thousands of inputs, and for each there is a potential to either manufacture the input or acquire it on the market. In its broadest interpretation, this decision includes choices like hiring a consultant or employing internal labor to perform a given task. If a firm decides to make an input, it will transact

internally with a division or another part of the firm. If it decides to buy, it will contract with another organization. In either case, it is important to understand the decision criteria behind the transaction. The make-or-buy decision is sometimes treated as an accounting or financial decision. While it is important to perform accounting analyses and to choose the low-cost approaches, it is more important to understand the managerial basis of the decision.

Outsourcing is a choice that lies in the corporate policy, not just business strategy, area, as it modifies the firm's boundaries as a legal entity and generally involves top management decision makers. Affecting company-wide resource allocation policies and asset management practices, outsourcing decisions often involve several divisions in large, diversified companies, as in the case of IT outsourcing operations. Several factors are at work simultaneously that are likely to increase outsourcing: rapid technological change, increased risk and the search for flexibility, greater emphasis on core corporate competencies, and globalization. In this broader context, outsourcing is the result of a complex change in the cost boundaries facing firms as they choose between inside and outside production.

The question of what to produce internally and what to outsource is often asked. (Over the last two decades, organizations have sought to enhance efficiencies and expand their capabilities by giving larger role to their suppliers in creating and delivering value to their end customers. Moving beyond the traditional 'make' or 'buy' decisions, companies sought to view their vendors as partners that signaled a shift from adversarial arm's length relationships to deeper cooperative relationships. In our study this was confirmed as certain business sectors – consumer products and energy – utilized both offshoring and outsourcing.

Outsourcing can be considered as a continuum. At one extreme outsourcing can be seen in the form of hiring temporary labor or machines and at the other extreme, complete responsibility for the regular and continuous design, build and delivery of manufactured parts for integration within other assemblies. In the middle are various forms of consultancy and skills provision. Time is reflected across the continuum with short-term market exchanges at one end and long-term, relational exchanges at the other.

In certain industries, outsourcing may often by the only viable business model, either for all firms or for a subgroup of firms. Case in point is the practice of newspapers outsourcing some of their news gathering activity (particularly, news gathering in other countries) to external entities such as Reuters and the Associated Press. In the absence of such an arrangement, it would not be possible for most newspapers to publish in their pages news happenings in various parts of the world. However in our study the Media sector did not place a high emphasis on outsourcing.

Technological developments in the macro environment can be a driver of a firm's decision to outsource an activity that was previously performed in-house. Technology can also be a driver of a firm's decision to perform in-house an activity that had been outsourced. By leveraging technology to automate, it might be possible to make redundant an outsourced activity. If contracting out parts of the operation is cheaper than doing it yourself, it is a clear case for outsourcing – provided it does not compromise the firm's core competencies. This enables organizations to not only make efficiency gains but also allows them to focus more clearly on those activities that it can better perform in-house (Hendry, 1995).

Companies could also outsource their IT to streamline the management agenda and focus on the firm's core business. Senior executives often consider the IT function a commodity service best managed by a large supplier. Using a value chain analysis, this eliminates/outsources activities that do not provide primary value to the organization. If managers do not see a strategic

role for IT then IT outsourcing is viewed as a means of conserving managerial effort and focusing on areas with greater strategic potential. Firms can outsource a significant portion of the IT infrastructure and still retain aspects such as critical applications development that are viewed as strategic. A number of firms in our study have outsourced the majority of their IT operations yet rate IT as being important and serving as a differentiator.

2.5 Security Issues

Information security -- protecting the confidentiality, integrity and availability of electronic information -- is an important issue for businesses. Security incidents cost money regardless of the size or scale of the business operation. Most all businesses regardless of size need to have a web presence interact with their suppliers and customers via the internet and perhaps have offices or presence in different geographical areas. These changes dramatically increase security risk. Security solutions exist to support businesses of all sizes but do not necessarily take into account the specific nature of the business. In our study virtually all firms considered security to be very important.

Organizations need to view their systems on a wider basis by thinking in broad terms about security. The majority of organizational knowledge is stored in digital form "somewhere." Beyond these formal corporate mechanisms are data stored in a wide variety of places and media. A company typically has data stored on the workstations of all workers within and beyond the boundaries of the company. Work group and collaboration teams have data stored on networks both local and virtual. Communication occurs in a wide variety of modes such as email, messaging, voice mail, the telephone and direct contact. The majority of these data sources can also be saved in digital form – the company's digital assets. Without the knowledge to defend its digital assets, the company is lost, and these potential losses can

grow everyday as employees, suppliers, and customers continue to pour the contents of their personal and business lives into databases, PDAs, personal computers, and Web servers, through routers, hubs, switches, cell phones, gateways, copper, coax, the air itself.

The majority of businesses today have at least a rudimentary security program in place, and many programs are evolving and growing in maturity. As these programs have grown, so has the need to move beyond the view that security is just a technical issue. Security should be integrated with the fabric of a business. Information security programs need to move from tactical implementations of technology to become strategic partners in the business. Given the variety of knowledge flow and the need for security organizations face a daunting task to manage their knowledge in today's work place.

III. RESEARCH QUESTIONS AND METHODOLOGY

To investigate the ramifications of IT as a differentiator across industries, we offer the following research questions:

Research Question 1: Strategic Importance of IT

Is IT an Important Differentiator? And does it differ across Industries? To what extend do executives view IT as important? To what extent do executives view IT as source of competitive differentiation? Is there a trend confirming or refuting that IT is becoming less important over time? And does the view of IT differ by industry and over time?

Question 2: Role of Outsourcing on Strategic Differentiation

Do executive perceptions of IT as a source of competitive differentiation have a relationship with their perceptions on their organization's tendencies to buy (rather than

develop) software, on outsourcing of IT functions or plans to use offshore labor to reduce costs? And does it differ across industries and over time?

Question 3: Role of IT Project Management on Strategic Differentiation

Do executive perceptions of IT as a source of competitive differentiation have a relationship with their perceptions on the success of IT investments, the management of IT projects, and the mechanisms that effectively measure and justify IT expenditures? And does it differ across industries and over time?

Question 4: Role of IT Business Systems Effectiveness and Business Intelligence on Strategic Differentiation

Do executive perceptions of IT as a source of competitive differentiation have a relationship with their perceptions on the effectiveness in the collection, storage, and dissemination of data to support business operations and the use of technological resources to help decision makers gain strategic insights? And does it differ across industries and over time?

Question 5: Role of IT Security on Strategic Differentiation.

Do executive perceptions of IT as a source of competitive differentiation have a relationship with their perceptions on the effectiveness of their ability to manage security and minimize security risks in support business operations? And does it differ across industries and over time?

Methodology

The investigation based on these research questions consisted of personal interviews with 665 senior level executives over a six year period (2005 to 2010). The interviews were conducted primarily face-to-face by MBA graduate students at their place of employment. The subjects were offered confidentiality -- their names and affiliations were not revealed in the data set. Most of the interviews were conducted with executives in a relatively large city in the Midwestern United States. Thus, the findings in this research paper may be limited if there are regional differences in perspectives. Consistent with other academic empirical research, the subject pool was not limited to one respondent per organization, thus the results should be interpreted with the potential that large companies may have multiple entries.

The executives were asked to comment on a series of questions about IT strategy and provide a rating on Likert scale (5=strongly agree, 3=neutral, 1=strongly disagree). The comments generally consisted of a narrative discussion related to each question. The questions included the following which are relevant to this study:

- Information Technology is very important to the strategic success of our organization.

- Our use of IT helps differentiate us from our competitors.

- In examining major software investments, we typically seek to purchase solutions rather than develop them in-house.

- We are looking increasingly at outsourcing many of our IT functions.

- We are looking increasingly to reduce costs by using offshore IT outsourcing.

- Most of our investments in IT have been successful.

- We have implemented mechanisms that effectively measure and justify IT expenditures.

- We manage IT projects effectively.

- We are efficient in the collection, storage, and dissemination of data to support business operations.

- We are able to use our technological resources to help decision makers gain strategic insights.

- We are comfortable with the technical resources we have in place to manage security so that risks are minimized throughout.

- We have effective personnel measures in place (usage, policies, employee education, etc.) to minimize risks of security breaches or compliance issues.

In this exploratory study, the ensuing analysis and findings section depicts results of these scaled items broken down among the following dimensions: mean values by industry classification, mean values by position title classification (CIO, CEO, other), correlation between each item and the differentiation item (item two in the bulleted list above), and a trend line chart depicting mean value by year (2005-2010).

IV. ANALYSIS AND FINDINGS

Research Question 1: Strategic Importance of IT

The question as to whether IT is a strategically important resource had generated a great deal of controversy in the past decade initiated by Carr's (2003) publication of "IT Doesn't Matter" in the *Harvard Business Review*. Figure 3 reveals that there is statistically significant correlation between the strategic importance of IT and the use of IT to differentiate from competitors. Based on the survey Information Technology is regarded as being very important to the strategic success of

our organization with an overall mean value of 4.75. Figure 3 shows the trends over time as being relatively invariant. With respect to IT being a source of competitive differentiation the mean value was 3.9. The trend line shown in Figure 3 follows a similar path to that of the importance of IT but appeared to have somewhat greater variation. As one might expect, there is a very significant correlation between perspectives on IT as being strategically important and IT as differentiator (R= .351, p=.001).

With respect to the industry categories respondents across all industries rated IT to be very important. In terms of differentiation, there does appear to be substantial variation where respondents from service industries (insurance, professional services) and technology industries seem to have greater agreement that IT serves as a basis for differentiation than respondents from manufacturing, energy, and retail industries. From a job position standpoint there were virtually no differences in the means between CIOs and CEOs with respect to IT being important and a differentiator. These results confirm that all business sectors consider IT to be very important and that IT is a significant source of differentiation. Over time these perceptions have remained consistent. The business implications based on this study are clear – businesses need to provide a place for IT at the senior executive level.

Research Question 2: Role of Outsourcing on Strategic Differentiation

Those who subscribe to the arguments set forth in" IT Doesn't Matter" may view the common practice of buying software from vendors as evidence that that IT is declining in strategic importance due to the equal availability of IT resources among competing firms. The results of this study would not support this view due to the lack of a statistical relationship between buying software and decreased perceived importance of IT as a basis for

Category	Percent	IT Impt	IT Diff
Consumer Products	12.07%	4.66	3.67
Energy	1.31%	4.75	3.00
Financial Services	19.09%	4.80	3.92
Health	7.01%	4.79	3.91
Insurance	2.94%	4.94	4.33
Media	3.10%	5.00	4.05
Manufacturing	10.93%	4.68	3.46
Non-Profit	2.94%	4.83	3.89
Other (Anonymous)	22.19%	4.54	3.93
Professional Services	6.20%	4.79	4.08
Retail	3.59%	4.91	3.55
Technology	7.01%	4.70	4.12
Transportation	1.47%	4.67	3.78
Grand Total		4.76	3.86

Industry Classification (are there differences)

Strategic & Competitive Positioning

1. Information Technology is very important to the Strategic Success of our

R = 0.351
p = .001

2. Our use of IT helps differentiate us from our competitors

Position (are there differences)

Time Element (are there trends)

Importance of IT Over Time
5=strongly agree, 1=strongly disagree
— IT is Important
--- Use IT to Differentiate

Position	Percent	IT Impt	IT Diff
0-CIO (CTO, MIS,IT)	49.92%	4.76	3.97
1-CEO(Pres, Ex VP)	25.94%	4.76	4.01
2- Other	24.14%	4.73	3.62
Grand Total		4.75	3.90

FIGURE 3. IT Strategic Importance and Differentiation

competition. Of course, the overall high mean results for strategic importance of IT and IT as basis for differentiation also serve to refute some of the conclusions of "IT Doesn't Matter" and related literature.

The practice of outsourcing IT, particularly when it includes offshore labor has received a great deal of attention in recent years. Research Question 2 examines the relationship between the IT as a Differentiator and the practices of outsourcing and offshoring of IT. As shown in Figure 4, there doesn't appear to be a statistically significant correlation between IT as a differentiator and the practices of purchasing IT, outsourcing and offshoring. This conclusion is further supported by the lack of differences in mean ratings for those factors among those that viewed IT to be a differentiator and those that did not.

With respect to the Industry categories most industries indicated a preference towards purchasing (Make-Buy) (as opposed to developing in-house) while a few industries (Media, Technology and Transportation) seemed to less focused on purchasing of IT. Outsourcing and offshoring varied considerably by industry and were rated much lower in importance – especially in industries such as Professional Services and Non-Profits where there may tend to be smaller companies which are less capable of benefiting from these services. Over time these components appeared to be invariant, though there seemed to be a moderate upward spike in 2010 in purchasing and outsourcing of IT. Variation in job positions did not seem to have a major influence on perspectives for outsourcing, purchasing, or offshoring of IT.

The business implications based on our study show that there is a common thread of purchasing software rather than develop systems in-house. Several reasons were cited for this practice -- the availability and quality of off-the-shelf packages; and, the high cost to develop and maintain software developed in-house.

Outsourcing is regarded separately from software purchases. Several large firms have chosen to outsource their IT operation to domestic firms (e.g. consumer products and

Category	Percent	Purchase	Outsource	Offshore
CONSPROD	12.07%	4.13	3.67	3.63
ENERGY	1.31%	3.75	3.57	3.13
FINSVC	19.09%	3.48	2.75	2.69
HEALTH	7.01%	3.71	2.95	2.25
INSURANCE	2.94%	3.44	2.67	2.14
MEDIA	3.10%	3.11	3.06	2.40
MFG	10.93%	3.73	2.91	2.30
NONPROFIT	2.94%	3.56	2.50	1.44
OTHER	22.19%	3.96	2.54	1.95
PROFSVC	6.20%	3.41	2.43	1.74
RETAIL	3.59%	3.50	2.65	2.30
TECH	7.01%	3.14	2.50	2.97
TRANS	1.47%	3.22	3.00	1.88

Position	Percent	Purchase	Outsource	Offshore
0-CIO (CTO, MIS,IT)	49.92%	3.65	2.81	3.65
1-CEO(Pres, Ex VP)	25.94%	3.73	2.86	3.73
2- Other	24.14%	3.44	3.06	3.44
Grand Total		3.62	2.88	3.62

		IT Impt	IT Diff
5. In examining new information systems, we typically seek to purchase solutions rather than develop them in-house	Purchase	R= .053	R=-.041
7. We are looking increasingly at outsourcing many of our IT functions	Outsource	R=-.006	R=.003
8. We are looking increasingly to reduce costs by using offshore IT outsourcing	Offshore	R=-.028	R=.067

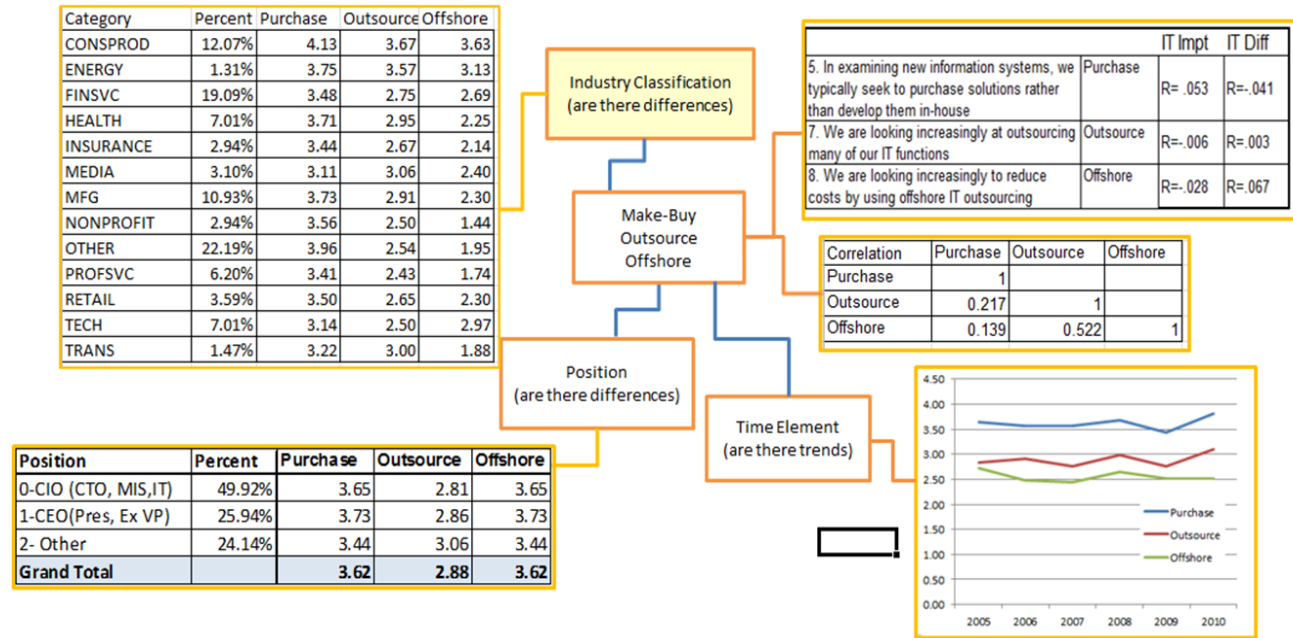| Correlation	Purchase	Outsource	Offshore
Purchase	1		
Outsource	0.217	1	
Offshore	0.139	0.522	1

FIGURE 4. IT Outsourcing and Differentiation

energy sectors). Whereas other sectors (e.g. financial services, professional services, and insurance) tended not to offshore or outsource. This does not fit with perceptions that consulting firms outsource a major part of their operations.

Question 3: Role of IT Project Management on Strategic Differentiation

The factors that influence the success or failure of large IT projects have been the subject of numerous academic and industry studies. In recent years, there has been greater focus on the accountability of IT expenditures and, in turn, an increased effort to measure and track metrics of IT projects in a consistent manner. In exploring perspectives on IT as a source of competitive advantage, it would be expected that executives would be influenced by their organization's ability to manage projects, their track record on past projects, and the effectiveness on their ability to justify, track and measure IT project metrics.

Figure 5 reveals that there is a relatively strong correlation between organizations that regard IT to be a source of competitive differentiation and the measures related ROI of

past IT projects and organizational mechanisms to measure and justify IT investments with a less significant correlation with the effective project management measure. The chart depicting these factors over time provides support that organizations are increasingly emphasizing measuring and justifying IT investments but shows inconsistent trends on the effectiveness and ROI of IT projects. This finding is a potentially important wake-up call for organizations that have not yet made a deliberate effort to formalize the measurement and tracking of metrics around IT investments, as this practice becomes increasingly common and is viewed widely as a key to gaining competitive advantage from such investments.

Industry difference show little variation in terms of ROI of past investments and effectiveness of project management, with above average means only in industry classifications with fewer observations in the data set. There is greater variation among industries in their focus on mechanisms to measure and justify IT investments, with professional services well below the mean (likely due to the smaller average size of firms and less emphasis on

Category	Percent	Invstmt	Measure	Manage
CONSPROD	12.07%	3.68	3.99	3.87
ENERGY	1.31%	3.88	3.81	4.33
FINSVC	19.09%	3.74	3.54	3.73
HEALTH	7.01%	3.81	3.71	3.81
INSURANCE	2.94%	3.89	3.83	3.45
MEDIA	3.10%	3.89	3.42	3.47
MFG	10.93%	3.70	3.51	3.75
NONPROFIT	2.94%	3.89	3.56	3.64
OTHER	22.19%	3.75	3.74	3.67
PROFSVC	6.20%	3.87	2.60	3.15
RETAIL	3.59%	3.64	3.86	4.08
TECH	7.01%	3.85	3.58	3.21
TRANS	1.47%	3.33	3.67	4.00

Industry Classification (are there differences)

IT Investment and Management

		IT Impt	IT Diff
3. In the past, most of our investments in IT have resulted in positive return on investment	Invest	R=.163	R=.181
4. We have implemented mechanisms that effectively measure and justify IT	Measure	R=.065	R=.176
6. We manage IT projects effectively	Manage	R=.039	R=.084

Correlation	Invstmt	Measure	Manage
Invstmt	1		
Measure	0.179	1	
Manage	0.114	0.372	1

Position (are there differences)

Time Element (are there trends)

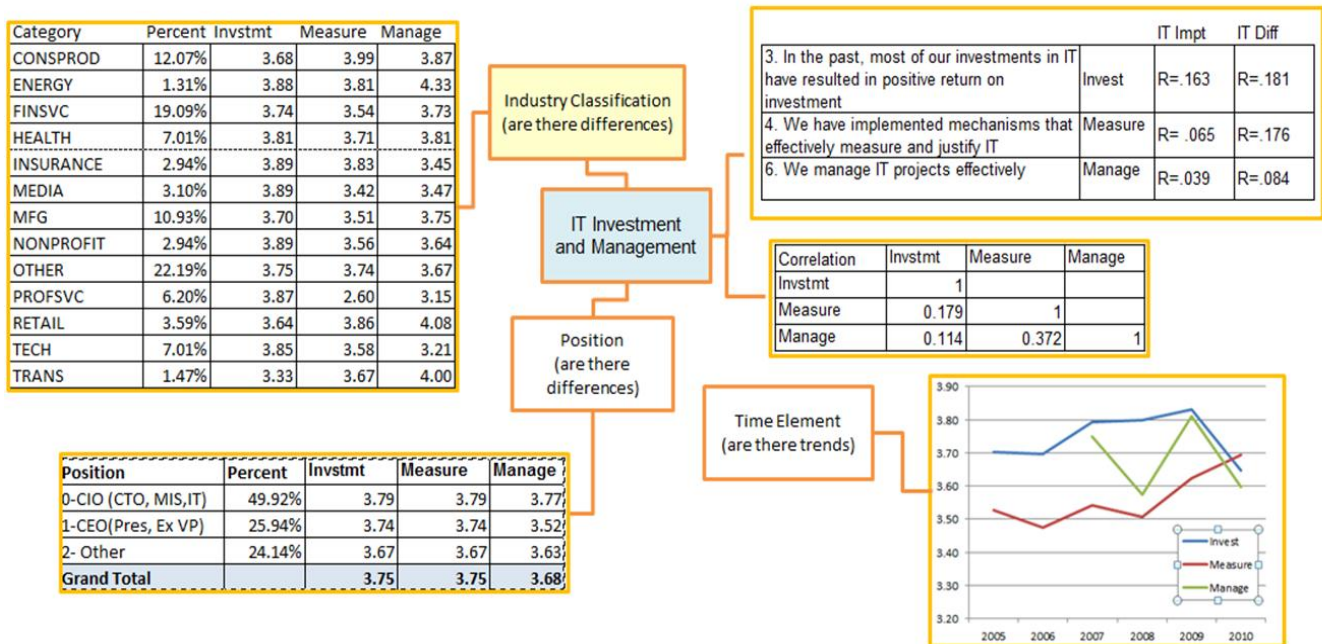| Position	Percent	Invstmt	Measure	Manage
0-CIO (CTO, MIS,IT)	49.92%	3.79	3.79	3.77
1-CEO(Pres, Ex VP)	25.94%	3.74	3.74	3.52
2- Other	24.14%	3.67	3.67	3.63
Grand Total		3.75	3.75	3.68

FIGURE 5. IT Project Management and Differentiation

formal metrics). In terms of position descriptions, there is relatively consistent agreement among CIO and CEO along these measures with only a slightly higher mean for IT project management effectiveness.

Question 4: Role of Business Systems Effectiveness and Business Intelligence on Strategic Differentiation

Much of the strategic focus of major IT investments over the past decade, particularly in large business, has centered on enterprise systems and business intelligence implementations. Organizations have increasingly strived to integrate data, streamline business processes, and leverage their ability to gain strategic insights from their business data. As shown in Figure 6, there is a very strong correlation between perspectives on IT as a source of differentiation and success of organizations to efficiently collect, store, and disseminate business data, and provide technologies to provide strategic insights. The data supports the notion that the success of ERP and Business Intelligence investments are consistent with views that IT can be a source of differentiation. This finding has potentially interesting implications for business leaders who might otherwise view investments in packaged software as being unimportant strategically.

The industry classifications show only moderate differences in the efficiency of business systems and analytics measures with manufacturing and health care indicating slightly lower averages for the efficiency item. The figure also indicates that CIOs have a slightly better opinion of their business systems and business intelligence technologies than other executive respondents. The trend over time shows a relatively flat, positive view of technologies to provide strategic insights (i.e., business intelligence) but somewhat sharp variations in perspectives on the efficiency of the collection, storage, and dissemination of business data.
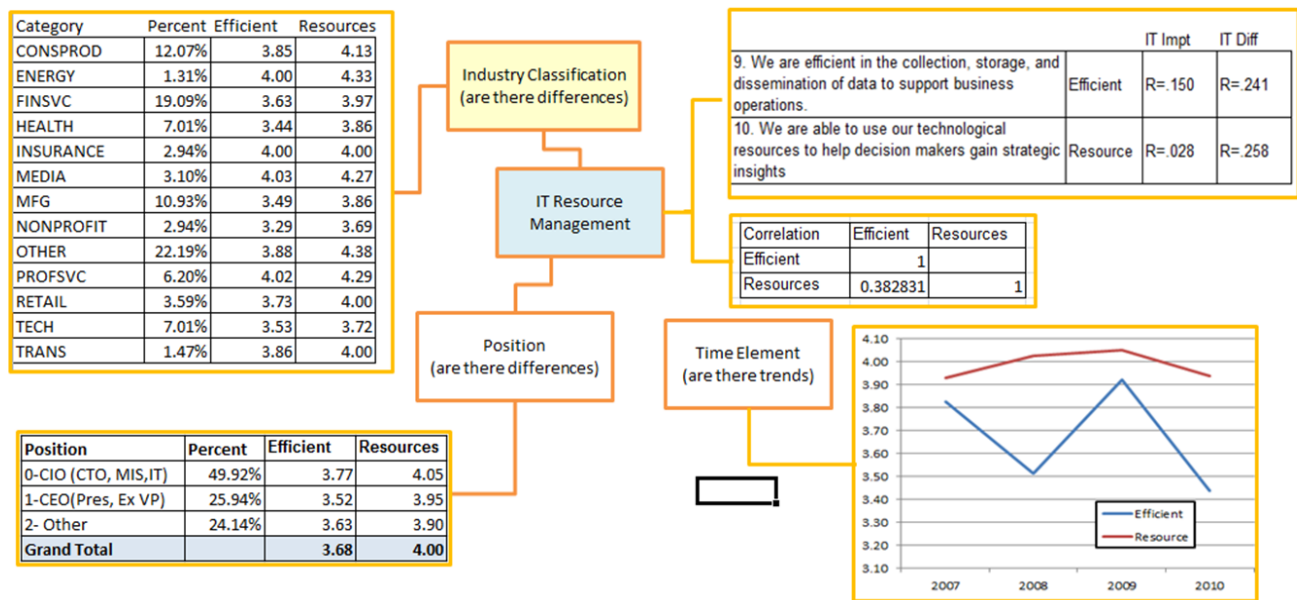
Category	Percent	Efficient	Resources
CONSPROD	12.07%	3.85	4.13
ENERGY	1.31%	4.00	4.33
FINSVC	19.09%	3.63	3.97
HEALTH	7.01%	3.44	3.86
INSURANCE	2.94%	4.00	4.00
MEDIA	3.10%	4.03	4.27
MFG	10.93%	3.49	3.86
NONPROFIT	2.94%	3.29	3.69
OTHER	22.19%	3.88	4.38
PROFSVC	6.20%	4.02	4.29
RETAIL	3.59%	3.73	4.00
TECH	7.01%	3.53	3.72
TRANS	1.47%	3.86	4.00

Industry Classification (are there differences)

IT Resource Management

Position (are there differences)

		IT Impt	IT Diff
9. We are efficient in the collection, storage, and dissemination of data to support business operations.	Efficient	R=.150	R=.241
10. We are able to use our technological resources to help decision makers gain strategic insights	Resource	R=.028	R=.258

Correlation	Efficient	Resources
Efficient	1	
Resources	0.382831	1

Time Element (are there trends)

Position	Percent	Efficient	Resources
0-CIO (CTO, MIS,IT)	49.92%	3.77	4.05
1-CEO(Pres, Ex VP)	25.94%	3.52	3.95
2- Other	24.14%	3.63	3.90
Grand Total		**3.68**	**4.00**

Figure 6. Role of Business Systems Effectiveness and Business Intelligence on Strategic Differentiation

Question 5: Role of IT Security on Strategic Differentiation

IT security is clearly one of the key issues that impacts organizations today. However, it is generally thought of as a cost of doing business rather than a strategic initiative (unless a major security incident impacts the business). As shown in Figure 7, there is no statistical correlation between the perceived effectiveness of security technologies or security policies and view of IT as a source of differentiation. The figure shows show little variation among perspectives of CIOs, CEOs, and other job categories on the topic of IT security. The figure does show some major differences in industries as those that deal with sensitive data (insurance and financial services) place greater emphasis on IT security technologies and policies. The trend chart shows an increasing focus on security personnel and policies from 2007-2009 as organizations adapted to the risks of internet usage, mobile computing, and other emerging risks.

V. CONCLUSIONS

This study reveals a few key insights into the nature of IT as a source of competitive advantage. The findings indicate that executives do view that IT is very important strategically and is widely viewed as a potential source of differentiation across firms. The data reveals that differentiation perspectives tend to be positively correlated with perspectives on the effectiveness of business systems and technologies that help decision makers gain strategic insights (i.e., business intelligence). Similarly, differentiation was found to be positively correlated with perceptions of positive ROI on past IT investments and organizational mechanisms to measure and justify IT investments. An interesting outcome of the study includes the lack of a correlation between sources of IT commoditization (outsourcing, offshoring) and strategic differentiation. The study also revealed some moderate differences in perspectives among respondents in different industry

Industry Classification (are there differences)

Security Issues

Position (are there differences)

Time Element (are there trends)

Category	Percent	Security	Personnel
CONSPROD	12.07%	4.13	4.21
ENERGY	1.31%	4.00	4.50
FINSVC	19.09%	4.41	4.36
HEALTH	7.01%	3.95	4.04
INSURANCE	2.94%	4.25	4.60
MEDIA	3.10%	3.42	3.46
MFG	10.93%	3.84	3.86
NONPROFIT	2.94%	4.00	3.71
OTHER	22.19%	3.63	3.86
PROFSVC	6.20%	4.00	3.43
RETAIL	3.59%	4.22	3.64
TECH	7.01%	4.21	3.86
TRANS	1.47%	4.17	3.43

Position	Percent	Security	Personnel
0-CIO (CTO, MIS,IT)	49.92%	4.07	3.95
1-CEO(Pres, Ex VP)	25.94%	3.95	4.02
2- Other	24.14%	4.05	4.07
Grand Total		4.06	3.98

		IT Impt	IT Diff
11. We are comfortable with the technical resources we have in place to manage security so that risks are minimized without	Security	R=-.004	R= -.007
12. We have effective personnel measures in place (usage policies, employee education, etc) to minimize the risks of security breaches or compliance issues.	Personnel	R=.071	R= .068

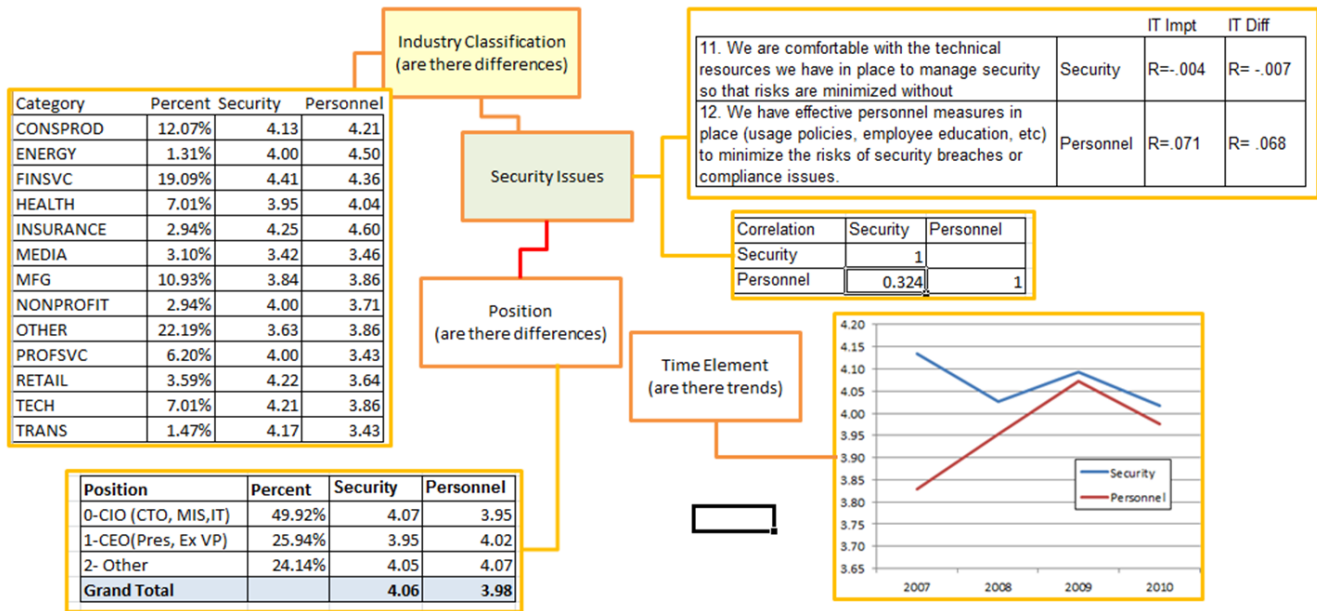| Correlation	Security	Personnel
Security	1	
Personnel	0.324	1

FIGURE 7. Role of IT Security on Strategic Differentiation

classifications and across time dimensions. The results showed generally strong agreement between position classifications, indicating that IT executives (CIOs) tend to be on the same page as CEOs and other executives on these perspectives.

There are a few potential limitations to this study. Interviews for this study were conducted primarily in one metropolitan city in the mid-western part of the United States. The perceptions of the respondents may not reflect the national or worldwide view of the subject matter. While interview subjects were granted assurances that results were confidential, there may be inherent bias in the results if respondents were reluctant to express criticism of their software systems or the role of IT in their organization. Despite these limitations, these findings provide an important foundation for future research on the research to develop models, and analyze in a more complex and rigorous nature, the issues raised in this exploratory study.

As a starting point the organization needs to consider the issues surrounding the introduction of technology. Antoniou and Ansoff (2004) in addressing technology as it applies to strategic design noted three major focus areas for managing a firm's technology. These were:

- Identification of future technologies and their impact on their organization's environment;

- Assessment of the firm's internal technology capability; and,

- Integration of technology in the organization's strategy.

A recent article in the Wall Street Journal by Ross and Weill (2011) addresses CEO concerns about IT. They note that the list of technologies that could offer companies significant benefits could also lead to disastrous consequences. But in the digital economy the CEO must realize that IT is the foundation for doing business. Companies are discovering that how they manage IT is crucial to their competitiveness. IT determines whether the company's dealings with customers and suppliers are efficient, scalable and timing; whether employees have the information they need to do their jobs; and whether employees throughout the

company see technology as a tool to move forward – or an anchor that keeps them running in place.

In Deloitte Consulting's experience (2004), there were three characteristics that distinguish those companies that were more successful in aligning IT and business:

- Executive agreement on the role of IT—where and how IT adds value to the business;

- Executive agreement on the right things—the right priorities and focus areas for IT;

- Doing the right things right—following through and delivering against expectations.

By modeling these three characteristics of executive agreement on the role of IT, agreeing on the right things and following through by doing the right things right, companies can emerge stronger and more focused. Executive agreement on the role of IT involves detailing business and technology aspirations and expectations, and determining where IT fits from an enterprise- level standpoint regarding strategy, spending and operations. IT alignment represents a strategic opportunity for businesses, particularly in an improving economy where seizing an early advantage can be a differentiator.

To create a sustainable competitive IT strategy (Unisys, 2009) requires that the IT organization be structured to provide IT services that are uniquely qualified in meeting business needs. To accomplish this, business strategy cannot be decoupled from IT optimization. In fact, the act of linking business and IT together is the very source for generating sustainable competitive advantage.

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