

CIS 677-852 Information System Principles

Short Article Review Assignments 1-3

Spring 2004

Three article reviews were conducted as part of the introductory coursework including:

- [Measuring information technology payoff: a meta-analysis of structural variables in firm-level empirical research](#)
- [A framework for management information systems](#)
- [IT doesn't matter](#)

Assignment 1

Kohli, R., and Devaraj, S. "Measuring information technology payoff: a meta-analysis of structural variables in firm-level empirical research," *Information Systems Research* (14:2), 2003, pp. 127-145.

Demonstrating positive IT payoff is an ongoing challenge. With continuous changes in technology and the need to remain competitive, firms are forced to rely on ongoing IT investment for continued growth. Well defined structural variables can provide a means to consistently measure payoff. While this statistical approach has been practiced to some degree, execution and a need for improvement remain. "Therefore, there is need for a systematic analysis to understand the structural characteristics of past IT payoff studies and how they affect their outcomes." A meta-analysis of firm-level data indicates the need still exists.

Findings from a decade-long empirical study leading to the year 2000 indicate that perhaps a greater payoff could have been realized. The results are influenced by sample size, data source and industry. The focus of the 90's is best categorized by three questions: the what, how and where. The 'what' is measured by productivity coupled with profitability where the quality and completeness of the data are essential to the outcome. The differing time intervals for data collection and sample size describe the 'how'. The 'where' component targets the use of firm data for a given industry and also varies by industry with the goal of obtaining complete, required variables.

The dimensions surrounding the study indicate the influence focused on structural variables and propositions as follows: context, study characteristics, data source, dependent variables employed, data analysis. Identifying which variables are key differentiators will provide better metrics and ultimately a formula to determine impact.

It appears studies were encouraged as the year 2000 approached, compared to the initial timeframe of the early 90's. A means to provide data analysis was targeted to evaluate IT payoff results, as represented in Figure 1. Coupling the context of the industry sector with study characteristics such as aggregation of data, yield common measurements for data analysis. Adding to this a preferred firm-level data source and consistent variables employed, the data analysis method of choice could then be utilized to yield results and determine IT payoff.

In conclusion, this empirical study is an attempt to validate IT payoff characteristics emphasized by past research. "This meta-analysis contributes to the firm-level IT payoff literature by examining,

summarizing, and analyzing the empirical studies in an attempt to understand those positive and nonpositive results.” There are four instrumental steps recommended. The first being to gather data from a primary source. Second, to obtain information data from a centralized database. Third, to encourage a larger sample to include longitudinal or panel data. Fourth, to utilize productivity-based dependent variables.

The study has a style and approach different to those I have been exposed to. While I have been part of many different studies during the same time period, they were limited to the individual firm-level. At times there have been several divisions being evaluated simultaneously. Nonetheless, the studies did not span multiple firms. Having worked with meta-data and studying the transformation within a firm, I can appreciate the need for structured variables and consistent measures with respect to sample size, data source and industry. I believe strongly that the data source is your driver. I can appreciate the need to determine sample size and industry as a complement to ensure a comparison of like objects. Several projects I participated in that never received ample funding because the justification for payoff could not be determined, would have benefited from firm-level data awareness and analysis. Empirical studies such as this are essential to encourage IT investment for internal gains as well as maintaining a competitive edge.

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Assignment 2

Gorry, G., and Morton, M. “A Framework for Management Information Systems,” Sloan Management Review (14:2), 1989, pp. 49-61.

What is the motivation behind the paper?

Providing management with the essentials for decision making is an ongoing challenge for effective planning, resource allocation and implementation. The ever changing requirements of technology and the need to learn as you implement cause a deficiency in measurable data and accurate deadlines. While the framework for Management Information Systems is continuously challenged, better tools and technological advances lessen the challenge. Gorry and Morton’s motivation for this article is due to the “developments in two distinct areas within the last five years that offer us the potential to develop altogether new ways of supporting decision processes.” The motivation supports “the purpose of this article is to present a framework that helps us to understand the evolution of MIS activities within organizations and to recognize some of the potential problems and benefits resulting from our new technology”.

What is the contribution of the paper?

The framework presented by Gorry and Morton dates back to 1971 and suggests that MIS serves the decision making process. To date, management is continuously looking for ways to better manage planning and resource allocation but still is challenged. Concepts introduced in 1971 remain but can be addressed with newer vehicles (ie. Decision Support Systems). There is also a greater understanding of “what” is available and “how” to obtain information. As the article suggests however, knowing the types of resources that are required and the ways they can be used still poses a challenge. Although newly implemented systems often include tools to satisfy management, an understanding of management’s expectations should be evaluated prior to taking on a new IS implementation. The framework needs to be implemented throughout an organization in order to enable effective use of enterprise information systems.

What are the three main points of the paper?

The three key points to the article are framework development, decision making within the framework and the implications of the framework. As presented by Gorry, framework development depends on three decision areas: strategic planning, management control, and operational control. While the decision making effort within the framework encompasses the three decision areas, the varying factor is the degree that each

category is structured with an ultimate goal to be above the line with structured decision making. The third point ultimately identifies the implications of the framework across the three decision areas where level of detail and level of managerial involvement vary due to the decision area. The granularity of each decision area also varies as the information systems process evolves from strategic planning to management control and ultimately operational control.

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Assignment 3

The misconception that IT investment is an essential strategic direction is still prevalent. Carr draws attention to this misconception by suggesting to the reader that “What makes a resource truly strategic—what gives it the capacity to be the basis for a sustained competitive advantage—is not ubiquity but scarcity.” Furthermore, Carr supports his motivational statement by demonstrating the tangible reasons this is justified. Organizations continue to invest in new technology without maximizing the gain of the current investment and carefully evaluating the next window of opportunity. Similarly, Zwass notes the strategy is to identify a segment in the market that can serve as a differentiator of a superior fashion. Personal computers, for example, are continuously replaced before the need is actually realized, causing unnecessary expenditures with no strategic gain. This type of overinvestment and overspending typically does not yield payoff and lacks strategic direction. Zwass also states that “the pursuit of competitive advantage cannot be based on a single information system.” The corporate platform as a whole must be enhanced to support the strategy.

A difference exists between IT investments that yield ubiquity and those that do not. Striving for a proprietary technology within the window of opportunity will give an organization a higher profit than their competitors. As Zwass mentions (p. 81), reengineering the product development process improves response time to the market. Carr’s contribution therefore comes into play “But history shows the power of an infrastructural technology to transform industries always diminishes as its buildout nears completion.” IT investment isn’t always the solution, at times a different approach will yield a greater gain. Furthermore, in comparing Carr’s perspective with that of Kohli, both show historically that for payoff, organizations should be focusing on strategic value rather than engaging in additional IT investment solely to compete. Often IT has been unable to successfully and strategically utilize recent technological advances when they’re out acquiring another IT investment. “When a resource becomes essential to competition but inconsequential to strategy, the risks it creates become more important than the advantages it provides. In regards to receiving IT payoff on new investments, the focus should be on proprietary technologies. Investments such as additional data storage can be wasteful in today’s economy where organizations are struggling to show profit. For instance, economic conditions at present are forcing organizations to reduce waste by limiting the amount of data storage permitted by employees. Best practices and successful resource management will affect the bottom line far more effectively than IT investment.

Carr and Kohli’s articles were published around the same time; Spring 2003. I think Carr and Kohli are in essence debating the same point. Both studies are scrutinizing IT payoff. While Carr is comparing fundamentals and tangibles within an organization, Kohli’s assessment is based on consistent sampling. The question remains “Is IT investment an enabler for efficiency and competition?” I think it is but, as Carr mentions, the window of opportunity is small but yields significant gain. A more consistent gain is in cost reduction obtained by the “New Rules for IT Management”. Kohli’s empirical research study also indicates that data results and analysis are not available consistently which demonstrates perhaps that the systems resulting from IT investment don’t readily provide a gain. We can only hope that with the recent economic situation, more organizations will realize this. Companies are struggling to show profit.

References:

1. Carr, N.G. “IT Doesn’t Matter,” HBR at Large, May 2003, pp. 41-49.
2. Kohli, R., and Devaraj, S. “Measuring information technology payoff: a meta-analysis of structural variables in firm-level empirical research,” Information Systems Research (14:2), 2003, pp. 127-145.
3. Zwass, V. “Foundations of Information Systems,” Boston: Irwin McGraw-Hill, 1998, pp. 81, 87.

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