

COMPETING WITH IT: By Gautam Ray, Waleed A. Muhanna, and Jay B. Barney

# THE ROLE OF SHARED IT-BUSINESS UNDERSTANDING

*Studying why some firms  
derive more competitive  
advantage and value than  
others using IT resources.*

During the last two decades the levels of business spending on IT have surged. This growth in IT investments has catalyzed significant interest as to whether, and if so how, the anticipated economic benefits of investments in IT are being realized [4, 5, 7]. However, the disillusionment with IT following the failure of many dot-com

ventures and the subsequent economic downturn has led many to question the strategic value of IT. In May 2003, for example, *Harvard Business Review* published an article by Carr [3] dramatically titled “IT Doesn’t Matter,” engendering a huge controversy about the strategic value of IT. Carr’s core premise is that IT is a commodity factor of production and therefore provides distinction to none.

This article examines the question of IT business value and IT competitive advantage from the perspective of the resource-based view (RBV) and reports the results of an empirical study that sheds light on the conditions that lead some firms to be more successful than others in using commonly accessible IT. We find that Shared IT-Business Understanding—the level of shared domain knowledge and common understanding between the IT and the line managers regarding how IT can be used to improve the performance of a specific

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process—is a key IT capability that affects performance. We also find that IT resources such as generic information technologies, technical skills of the IT labor, and IT spending, per se, are not likely to be sources of competitive advantage. However, we take issue with Carr's conclusion that because core IT hardware and software components and some application software are neither scarce nor difficult to imitate, it follows that "IT doesn't matter" strategically. We find that the effects of explicit IT resources such as technical skills of the IT work force, generic information technologies used, and IT spending are contingent on the level of the Shared IT-Business Understanding. In other words, in the right setting, technical skills of the IT labor, generic information technologies, and IT spending, do matter strategically. We discuss the implications of our findings, and contrast them with Carr's recommendations for IT management.

### COMPETITIVE ADVANTAGE FROM IT

In the resource-based view, competitive advantage depends on unique (firm-specific) resources. Resources that are valuable but common can only be a source of competitive parity; resources that are valuable and rare can be a source of temporary competitive advantage; and resources that are valuable, rare, and costly to imitate can be a source of sustained competitive advantage [1, 12].<sup>1</sup>

Resource-based theory suggests that IT can enable a firm to gain a competitive advantage in at least three different ways. First, if a firm possesses valuable, rare, and costly to imitate IT resources, the application of those resources to information-intensive processes can generate competitive advantages. In this case, IT resources can intrinsically be a source of sustained competitive advantage. Citing cases such as American Airlines and American Hospital Supply Corporation, Carr himself acknowledges that "[D]istinctive systems could and did provide the foundation for very strong and durable advantages during the buildout of the IT infrastructure." It is important to note that the core hardware and software components on which such "distinctive information systems" were built were readily available to competitors then as they are now. The fact that more standardized hardware and software components are available today at much lower prices does not mean that new distinctive information systems cannot be built—unless one puts a limit to human ingenuity.

Second, even if a firm's IT resources are not a

source of sustained competitive advantage, if these resources are used to realize the full competitive potential of non-IT resources that are valuable, rare, and costly to imitate, IT can enable a firm to gain sustained competitive advantages. For this reason, any effort to examine the competitive implications of IT should also include non-IT determinants of competitive advantage, especially those resources whose use is enabled or enhanced by IT resources. For example, Wal-Mart is able to achieve an economy of scale advantage by integrating its distributed stores using IT. In this case Wal-Mart achieves competitive advantage by leveraging its non-IT assets (distributed stores) with IT assets (computer hardware/software) that are available to all. Finally, a firm that has valuable, rare, and costly to imitate IT resources may be able to apply these resources to realize the full competitive potential of non-IT resources that are also valuable, rare, and costly to imitate.

### EMPIRICAL STUDY

Why are some firms able to exhibit greater success than others in leveraging IT? To shed light on this question we conducted a study to investigate the differential effects of different types of IT resources and capabilities on the performance of the customer service process in the insurance industry [9]. We surveyed IT managers in January 2000 to collect data about their firms' IT resources in the categories of Technical Skills, Generic Information Technologies used to support the customer service process, and IT Spending. The customer service managers provided information about their firms' customer service level.<sup>2</sup> Overall, we collected data from 104 firms that compete in the North American life and health insurance industry.

There are at least two reasons why the impact of IT resources should be examined on specific business processes, rather than on overall firm performance [8]. First, IT applications tend to be process-specific, and IT performance impact on a specific business process may not get reflected in aggregate firm-level measures of performance because those aggregate measures depend on the net effect of multiple business processes.<sup>3</sup> Second, it is possible for a firm's stakeholders (such as managers) to appropriate (for example, in the form of higher salaries) the profits that can be generated by a firm's

<sup>1</sup>A resource can be costly to imitate in the presence of isolating mechanisms such as path dependence, causal ambiguity, and social complexity [1].

<sup>2</sup>We also collected data about some indirect measures of customer service such as firms' customer retention, and the number of complaints received by insurance regulators for every dollar of insurance premium written by a firm.

<sup>3</sup>For example, in a manufacturing company, IT investments may be made to implement a computer-aided design (CAD) system. The impact of IT on product design may not carry over and affect firm performance, if the firm does not perform other activities such as manufacturing and marketing in a competitive manner.

IT resources, before those profits are reflected in a firm's aggregate performance. Therefore, it is important that the impact of IT be measured at the activity/process level where the prime effects are expected to be realized. We first discuss a tacit resource, Shared IT-Business Understanding, and then discuss the impact of three explicit IT resources (Technical Skills, Generic Information Technologies, and IT Spending) on process performance.

**Shared IT-Business Understanding.** Shared IT-Business Understanding refers to the shared domain knowledge and common understanding between the IT and line managers about a specific business process and how IT can be used to improve the performance of that process [6]. Others have also referred to this as the absorptive capacity about IT [2]. Therefore, Shared IT-Business Understanding is the knowledge that IT managers possess about a specific process, the knowledge the line managers possess about the potential opportunities to apply IT to improve the process, and the common understanding between IT and line managers regarding how IT can be used to improve process performance.<sup>4</sup> Shared IT-Business Understanding enables the organization to conceive, implement, and use innovative IT applications to improve process performance.

Shared IT-Business Understanding is a tacit resource that develops over time. The trust, interpersonal relationship, and a shared body of firm-specific knowledge between IT and line managers can take years and numerous joint development projects to develop. To the extent that Shared IT-Business Understanding is valuable and heterogeneously distributed across firms, it can be a source of competitive advantage, since it is not subject to low-cost imitation. We agree that IT is not scarce at all, however, that does not mean IT does not have the potential to provide a competitive advantage. What is actually scarce is the innovative use of IT, as a number of letters to the editor in response to the Carr article suggest [11]. Firms that have unique insight and expertise, what we refer to as Shared IT-Business Understanding, to use IT in innovative ways derive competitive advantage from IT. We find that firms with high levels of Shared IT-Business Understanding achieve superior customer service performance, even though all firms have access to the same information technologies.

**Technical IT Skills, Generic Information Technologies, and IT Spending.** Technical IT Skills are the codifiable skills needed to develop IT applica-

tions.<sup>5</sup> Generic Information Technologies, on the other hand, refer to the commonly available hardware and software technologies.<sup>6</sup> These technologies are generic in the sense that they are available from multiple suppliers for those who wish to source them, but are lacking in specificity in the sense that though aimed at the customer service process, they are not specific to any firm. We find that the Technical Skills of the IT labor are not associated with superior customer service performance. While these skills can be very valuable, since they are widely available—either through hiring employees or consultants with these skills—they are usually not rare or costly to imitate. Thus, Technical Skills, by themselves, are not likely to be sources of distinctive advantages. Similarly, Generic Information Technologies may be valuable in an absolute sense—investing in these technologies can enhance customer service compared to not having these technologies. However, since most firms have access to these technologies, such generic technologies, per se, are not associated with superior process performance.

Firms have a strong incentive to invest in the IT assets necessary to provide competitive customer service. However, IT Spending, per se, does not lead to superior customer service performance.<sup>7</sup> To the extent that IT assets are equally available to all participants, no firm gains an advantage from their IT Spending per se. Consistent with our hypothesis, we found no association between the level of IT Spending and relative customer service performance.

Of course, these results do not mean that firms should not invest in generic information technologies and other tangible aspects of customer service. Clearly, these kinds of explicit resources are required if a firm is to provide a competitive level of customer service. Moreover, our empirical analysis shows the impact of explicit IT resources (Generic Information Technologies, Technical Skills, and IT Spending) on process performance is conditional on the firm possessing a high degree of Shared IT-Business Understanding. The interaction between Shared IT-Business Understanding and explicit IT resources demonstrates that in the right setting (namely, high levels of Shared IT-Business Understanding) IT does improve relative performance. After all, it is the Shared IT-Business Understanding that drives how IT resources like Generic Information Technologies, Technical Skills, and IT Spending are deployed and used to improve performance.

<sup>4</sup>As a dyadic construct, Shared IT-Business Understanding was measured using data collected from both the IT and Customer Service managers.

<sup>5</sup>Technical Skills were measured as skills in programming languages and application development methodologies.

<sup>6</sup>In the insurance industry context Generic Information Technologies include scanning technology, network with agents, call-tracking systems, and computer-telephony integration.

<sup>7</sup>A firm's IT Spending is measured as its Annual IT budget.

## IMPLICATIONS FOR IT MANAGEMENT

Based on our findings, we conclude that performance advantage from IT rests less on the level of IT spending and more on how IT resources are deployed in a firm-specific manner. This requires that firms develop Shared IT-Business Understanding. The general implications of our findings stand in sharp contrast with Carr's recommendations [3] that firms should "spend less," "follow, [not] lead," and "focus on vulnerabilities, not opportunities."

### Focus Less on Spending and More on Innovation.

The empirical findings suggest that IT spending, intrinsically, has little to do with the value a firm derives from IT. This is consistent with the notion that IT value is dependent on how IT is used [11]. This requires firms to develop unique insight about how IT can be used to improve different processes of the firm through Shared IT-Business Understanding. A firm-specific understanding between IT and line managers regarding how IT can be employed to improve the performance of a process is more important than the IT investment by itself. In other words, firms should strive to lead in IT innovation, which may or may not require leadership in IT spending. A related point here is that a specific IT application may only provide a temporary competitive advantage. However, a firm with Shared IT-Business Understanding will be able to innovate continuously to stay ahead of competition.

### View IT as a Key Enabler and Competitive Tool.

Carr recommends that firms' should follow, rather than lead. The rationale is that given the rate of innovation in the IT sector firms will get more for their money by delaying the IT investment. However, this is a competitive parity argument. If a firm has an opportunity to gain a competitive advantage with an innovative IT application, it should not delay the investment just because it will get more for its IT expenditure. As our study shows, higher IT spending, or more generic information technologies, do not necessarily lead to superior customer service. However, unique insight about how explicit IT resources can be used to improve specific processes—what we refer to as Shared IT-Business Understanding—is a source of competitive advantage.

A firm may risk competitive preemption by delaying the investment. If a firm innovates with a new IT application, competitors must follow suit to establish parity. They may buy the technology at a lower price, but are likely to remain secondary players for a long time. Examples abound: once Ebay established itself in the auction business, Yahoo and others may have bought the IT to run auctions at a lower price, but are still playing catch-up in that realm. This suggests it is

not prudent to trade opportunities for competitive advantage for computing power. Delaying IT investments may be justified only when there are no competitive costs.

**Manage Vulnerabilities, Capitalize on Opportunities.** Carr suggests that IT management should become "boring." He recommends that IT should be managed to reduce its costs and risks, implying that firms take a defensive posture with respect to IT. We could not disagree more. The value that can be derived from IT is only limited by the imagination of the executive. The IT industry is providing processing power, bandwidth, and storage capacity at continually declining prices. It is up to business and IT managers to devise imaginative uses of technology. As stated by Joseph Schumpeter [10], innovation is the engine of economic growth, and innovations in IT provide the perfect platform for other sectors of the economy to pursue their own innovations. This is in line with the empirical findings suggesting IT value and competitive advantage from IT are dependent on managerial insights—what is referred to here as Shared IT-Business Understanding—about business innovations that can be brought about using explicit IT resources. In this regard we contend that since explicit IT resources are available to all, this in fact increases the importance of IT management, as purely technology-based advantages, if they ever existed, do not exist now.

## CONCLUSION

The empirical findings suggest that Shared IT-Business Understanding is critical to deriving value and competitive advantage from IT. This raises the question: how can firms develop this strategic differentiator. Fundamentally, firms' hiring, training, and retention policies and practices must reflect the need for increased IT literacy among business professionals and increased business literacy among IS professionals. For line managers, developing Shared IT-Business Understanding entails understanding what information can be captured, stored, and processed in organizational processes, and how current/emerging technologies can be used to transform these business processes to enable new strategies. IT managers, on the other hand, need to appreciate how the structural forces (including relationships with customers and suppliers, and the nature of rivalry in the marketplace) impact competition in the industry in which their firm operates. Also, IT managers must develop an understanding of the firm's key assets and capabilities and the strengths and weaknesses of the business processes through which the firm implements

its business strategy. Finally, shared understanding can also be fostered and nurtured through integrated business and IT planning at both the strategic and tactical levels and the maintenance of a reward structure that encourages collaboration.

It is clear that Shared IT-Business Understanding that enables a firm to conceptualize innovative IT applications is very specific to the firm and needs to be developed and accumulated over time through various knowledge-sharing and trust-building initiatives. Therefore, this resource is difficult to source from outside. In this regard, the advice of consultants is not likely to be very useful, for while they may bring know-how about the industry, they tend to lack specific knowledge about the firm. A firm-specific Shared IT-Business Understanding will enable a firm to continuously design and implement improved processes that can keep the firm ahead of its competition. **□**

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