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Abstract

This paper undertakes an evaluation of Resource-based Theory (RBT) to assess the extent of support, both theoretical and empirical, for IT’s contribution to sustainable competitive advantage. Specifically, the paper focuses on four MISQ papers that have utilised an RBT approach: two of these papers are empirical, one conceptual, and one a literature review of IS RBT studies. The main conclusion is that although RBT may be a useful tool for conceptualising IT factors that might lead to a sustainable competitive advantage, efforts to date have failed to support the theory empirically. This means that RBT, at least as it has been discussed in the literature so far, is not a strong weapon for rebutting people such as Carr, who argue that IT does not matter.

Keywords

Resource-based theory, resource-based view, sustainable competitive advantage, organisational impact of IS, information systems resources, Does IT matter?

INTRODUCTION

Resource-based Theory (RBT) proposes that firms obtain a sustainable competitive advantage by exploiting their heterogenous resources (Barney 1991). Heterogenous resources are rare, valuable and appropriable. A firm that possesses heterogenous resources may enjoy a competitive advantage in the short term (Wade and Hulland 2004). If the heterogeneous resources are non-imitable, non-transferable and non-substitutable, then the competitive advantage may be sustained over the longer term (Barney 1991).

Using RBT as a frame of reference, several IS researchers have attempted to demonstrate a link between IT and sustainable competitive advantage. Whether or not IT is a source of sustainable competitive advantage, however, is a topical issue. The recent Harvard Business Review article and book by Nicholas Carr titled, respectively “IT Doesn’t Matter” and “Does IT Matter?” have evoked a huge response. In essence, Carr argues that IT is rapidly becoming a commodity and therefore, although it is essential like electricity and rail services, is not likely to be a source of competitive advantage for many firms. Hal Varian (2004), a respected Berkeley economist, seems to agree with Carr:

“Asking whether information technology matters is like asking whether electricity matters. In one sense it certainly does. Without electricity, commerce would grind to a halt. But skill in the management of electricity isn't particularly useful to most companies, since electricity is now so cheap and so commonplace that it can't really be a source of competitive advantage to anyone. …

“So Mr. Carr's main thesis is right. It is not information technology itself that matters, but how you use it.”

However, the equally respected author and consultant, Don Tapscott (2004), disagrees. Under the heading “Carr's Blueprint for Failure” he says:

“This is not just an academic debate. The post-dotcom world, a tough economy, and considerable C-level cynicism about IT and innovation in general provide fertile ground for Carr's perspective. The trouble is, some companies might actually implement his recommendations—spend less; follow, don't lead; focus on vulnerabilities, not opportunities. Taken together, this is a blueprint for failure.”
Rather than responding emotionally to Carr, as many commentators seem to have done\(^1\), researchers and practitioners need to examine the evidence to decide whether Carr is right or wrong. Reviewing the literature, we decided that the strongest theory for explaining the use of IT to achieve sustainable competitive advantage appears to be resource-based theory (RBT), or the resource-based view (RBV), of the firm\(^2\). Thus we decided to investigate whether RBT was a useful theory for IS researchers in demonstrating a nexus, or otherwise, between IS resources and sustainable competitive advantage. If evidence shows that IS heterogeneous and immobile resources lead to competitive advantage, Carr is probably wrong. If not, Carr may be right. Thus the question we pose in this paper is:

*Is RBT valid for demonstrating a link between IS resources and sustainable competitive advantage? In other words, do the arguments and evidence presented in the literature empirically support RBT or not?*

To help answer this question, four RBT papers published in MISQ were examined. MISQ was chosen because it is considered the leading journal of IS research\(^3\), consequently, it most likely represents the current state of thinking in the RBT field. This paper is organised as follows: First, RBT is defined and discussed; second, a critique of the four RBT MISQ papers is undertaken; and third, the paper concludes with a discussion of the utility of RBT for evaluating whether IT is a source of sustainable competitive advantage, and for evaluating Carr’s claim that IT does not matter.

**RESOURCE-BASED THEORY**

In this section, RBT is briefly outlined and discussed in the context of a theory of the firm. Resource complementarity and its implications for RBT are then outlined. Finally, since sustained competitive advantage (SCA) is an important element of RBT, it is also closely examined.

**Background**

RBT posits that firms compete on the basis of heterogeneous resources. Adopting the definitions used by Wade and Hulland (2004, p.109) resources are “assets and capabilities that are available and useful in detecting and responding to market opportunities or threats.” Assets may be intangible or tangible. As shown on the left of Figure 1—which is closely based on Wade and Hulland’s (2004) Figure 1, p.119—the three key attributes of resource heterogeneity are: value, rarity, and appropriability (Grant 1991, Barney 1991). Firms exploit heterogenous resources to earn short-term competitive advantage. In RBT, once a firm’s short-term competitive advantage is recognised, it is assumed that competitors will seek to duplicate that advantage by acquiring similar resources. If they are unable to do so, the firm is said to have achieved *sustained* competitive advantage (SCA) (Grant 1991, Barney 1991). As shown on the right of Figure 1, to achieve SCA, heterogeneous resources must also be inimitable, non-substitutable and imperfectly mobile (Barney 1991, Conner 1991). Thus in RBT, the six key attributes shown in Figure 1 (and defined in Wade and Hulland (2004), Table 4, p.118) describe qualities of the heterogeneous resources used for achieving SCA.

\[
\begin{align*}
\text{Competitive advantage phase} & \quad \text{leads to} \quad \text{Sustainability phase} \\
\text{Productive use of firm resources which are:} & \quad \text{Short-term} \quad \text{Is sustained over} \\
- \text{valuable} & \quad \text{competitive} \quad \text{time due to resource:} \\
- \text{rare} & \quad \text{advantage} \quad - \text{inimitability} \\
- \text{appropriable} & \quad \text{which} \quad - \text{non-substitutability} \\
\end{align*}
\]

Figure 1: The Resource-Based View Over Time

**Theory of the Firm**

Conner (1991) noted that RBT is grounded in the strategic management literature as an attempt to provide a ‘theory of the firm’. According to Holmstrom and Tirole (1989), two main questions are addressed by a theory of the firm: (1) Why does the firm exist? and (2) What determines its scope? In terms of the first question, most researchers agree that firms exist to maximise profit (Conner 1991). Academic interest in the first

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\(^1\) Two “voices from the great debate” reported on the cover of Carr’s book say “Hogwash”, Steve Ballmer, CEO Microsoft, and “… dead wrong…” Carly Fiorina, CEO, Hewlett-Packard.

\(^2\) In the literature, the terms “RBT” and “RBV” are used interchangeably. We use the acronym RBT in this paper.

\(^3\) MISQ is the top-ranked IS journal according to the *Institute for Scientific Information*, Web of Knowledge, Journal Citation Reports (July 2004).
question, therefore, lies in identifying the principal mechanisms by which firms maximise profit. RBT argues
that firms maximise profit through the attainment of SCA. RBT then identifies those strategic resources and
capabilities that may lead to SCA. The emphasis of RBT is on answering the first question above. RBT, howe
ever, can also be used to answer the second question by drawing upon transaction cost economics theory
(Williamson 1975) to demonstrate how firms structure themselves to protect their strategic resources.

Thus, the first point to note about RBT is that it views the firm as a whole unit, and its principal interest is in
how that unit attains a SCA. Emphasis is placed on explaining the overall objectives of the whole firm, rather
than on the objectives of units within the firm. For example, not all units within a firm are profit centres
(accounting, information technology, quality control, to name a few). These units’ objectives are more likely to
be cost focused and/or efficiency focused, than SCA focused. Second, in addition to focusing on a firm’s
overall goals, it should also be noted that RBT probably only applies to large firms, which make up a relatively
small proportion of all firms in the market. Connor (2002, p.312) suggests that RBT describes successful
organisations with market power that, by definition, are likely to be a small proportion of the corporate
population. Smaller businesses, however, do not have the same objectives as their much larger counterparts.
Typically, smaller businesses are cost focused, customer driven, reactive, and concerned with short-term results
(Connor 2002). Moreover, the smaller the organisation, the less likely there is to be separation of ownership
from control, hence the more likely it is that the objectives of the owner-manager will be paramount to the firm’s
objectives. Reinforcing this view that RBT is unlikely to be relevant to small firms, McDowell (1994) analysed
three classes of small business objectives: a) objectives of the owner, b) objectives of the owner’s family, and c)
objectives of the business itself. For all three categories, McDowell (1994) did not find that attaining and
sustaining a competitive advantage was an important goal for small business owner-managers. Furthermore,
there was evidence to suggest that most objectives did not accord with the traditional notion of finance theory –
maximisation of the value of the firm. This is an integral part, however, of a ‘theory of the firm’.

Summarising, our first conclusion is that RBT as ‘a theory of the firm’ attempts to explain the objectives and
resources of whole firms rather than different organisational units within each firm; and that the theory is more
applicable to larger firms able to exercise market power than smaller firms who make up the majority of firms.

**Sustained Competitive Advantage**

It is generally accepted that the dependent variable in RBT is sustained competitive advantage (SCA) (Wade and
Hulland 2004, p.129). According to Barney (1991 p.102), a firm is said to have a competitive advantage if it is
implementing a value-creating strategy, not currently implemented by competitors; and has a SCA when efforts
by competitors to replicate that value-creating strategy have ceased. This makes SCA a difficult concept to
measure as it is based upon the actions of competitors, rather than upon the actions of the firm in question.
Mata et al. (1995, p.488) say “There is little doubt that in a wide variety of circumstances, IT can add value to a
firm. However, IT adding value to a firm – by reducing costs and/or increasing revenues – is not the same as IT
being a source of sustained competitive advantage.” On the same point, Wade and Hulland (2004) note that
researchers have resorted to analysing related constructs such as above-average performance because of the
difficulty in measuring SCA. Finally, Connor (2002, p.313) warns that without identifiable and measurable
qualities, the dependent variable is susceptible to a broad range of interpretations rendering it of little value.

As shown in Figure 2, heterogeneous resources and SCA are central components of RBT. The outer rings of Figure 2
represent possible expansions of RBT over time as new perspectives and insights add to our understanding of RBT.
For example, the notion of dynamic capabilities (Teece et al. 1997) is an extension of RBT. The point of Figure 2 is that
no matter how large the theory expands, heterogeneous resources and SCA are critical components of RBT, thus
forming the core of the theory.

However, in empirical studies of RBT, the dependent variable, SCA, is often not measured. Reasons for not
measuring SCA include:

- SCA is difficult to measure or cannot be measured objectively at all
- SCA does not reflect the objectives of a unit within the organisation, such as a cost centre
- SCA does not reflect the objectives of smaller firms

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4 According to the Australian Bureau of Statistics, in 2000-2001, there were a total of 1,281,700 businesses in
Australia, and 96.2% of these were small businesses (ABS 2001).
Due to resource complementarity, the effect of the resources on SCA cannot be isolated. In addition, in theoretical discussions of RBT, SCA is also often not discussed (at least explicitly). For example, Wade and Hulland (2004) suggest that Rockart et al. (1996), Ross (1996), and Feeney and Willcocks (1998) all provide support for RBT; yet none of these papers uses SCA as its dependent variable. Therefore, the most that can be said of these studies is that they provide indirect support for RBT.

In summary, many researchers adopt their own interpretation of SCA and/or heterogeneous resources. We argue, however, that changing the core theme of RBT reduces the validity of any test of that theory.

Resource Complementarity

IS resources almost always play a complementary role with other firm resources (Wade and Hulland 2004). Complementarity refers to how one resource may influence another, and how this interaction may affect competitive position (Teece 1986). Since it is unlikely that a single IS resource will lead to a SCA, the presumption is that virtually all resources exhibit complementarity. RBT fails, however, to adequately address complementarity (Wade and Hulland 2004). The most likely reason is that RBT views the firm as a whole unit and how it combines all of its strategic resources to exploit a SCA. Complementarity, therefore, only becomes an issue when RBT is used to analyse parts of the firm, or a subset of the firm’s resources. It then becomes nearly impossible to divorce the individual effects of a subset of resources from other resources.

In summary, as a result of resource complementarity, it is not clear how IT resources contribute to SCA. Moreover, heterogeneous resources and SCA are critical components of RBT and omission, or different interpretations of these components, reduces the validity of the theory.

CRITIQUE OF FOUR RESOURCE-BASED PAPERS FROM MISQ

The above definitions and discussion of issues concerning the theory of the firm, sustained competitive advantage, and resource complementarity set the scene for the following critique of the four MISQ papers. In this section, the insights from four MISQ papers on RBT, namely, Mata et al. (1995), Bharadwaj (2000), Santhanam and Hartono (2003), and Wade and Hulland (2004), are critically examined. The first paper is conceptual, the second two are empirical, and the last paper is a review and synthesis of the literature.

Mata, Fuerst and Barney (1995)

Mata et al. (1995) conducted a conceptual analysis of IT/IS and RBT. They define resource heterogeneity as meaning that different firms have different resources and different capabilities (Barney 1991), and resource immobility as meaning that competitors face a cost disadvantage in developing, acquiring and using a similar resource. Mata et al. (1995) argue that resource heterogeneity is necessary for achievement of competitive advantage, and in addition, resource immobility is necessary for SCA. They identify five attributes of IT resources that might be sources of competitive advantage (customer switching costs, access to capital, proprietary technology, technical IT skills, and managerial IT skills) and use RBT to assess whether these attributes might lead to SCA. Based on their analysis they conclude that one of these, namely managerial IT skills, is the most likely source of SCA. Supporting this conclusion, they argue that (a) successful IT managers can and do establish close working relationships among those in IT, and between IT and other business functions, and (b) these close working relationships take a long time to establish and are thus difficult to replicate by competing firms.

In interpreting Mata et al.’s (1995) findings, it is important to understand that although they consistently use SCA as their dependent variable, and despite Wade and Hulland’s (2004, pp.110-111) claim to the contrary, they did not empirically identify a link between managerial IT skills and SCA. Rather, they use analytical reasoning to deduce that a link is likely to exist between managerial IT skills and SCA—in the right set of circumstances.

Bharadwaj (2000)

Bharadwaj (2000) conducted an empirical analysis of IT capability and firm performance using RBT as the study lens. She found there was a significant relationship between superior IT capability and firm performance: “Viewed from a resource-based perspective, the empirical findings indicate that IT capability is [a] rent generating resource that is not easily imitated or substituted” (p.186). In the Bharadwaj study, superior IT capability was claimed for firms identified by Information Week as IT leaders in at least two of the four years of the study data, 1991-1994. Superior performance was judged relative to a control sample of firms of a similar size, within a similar industry (a total of 56 matched-pairs). Bharadwaj (2000) analysed five profitability ratios

5 Knowledge-based theorists such as Alavi and Leidner (2001), however, believe that a single resource (knowledge) may lead to a sustainable competitive advantage.

6 Mata et al. (1995) do report on p.449 that Wal-Mart may have gained SCA from managerial IT skills.
and three cost ratios over four years (1991 – 1994) for both the IT leaders and the control sample. This analysis revealed that firms with superior IT capability had significantly higher profitability ratios and significantly lower cost ratios in each of the four years.

There are a number of less-than-desirable issues with the Bharadwaj study. The first is the confusing variety of different terms she uses to describe the dependent variable(s) in RBT studies. For instance, at various times during the paper, she uses the following terms: superior business performance (p.169, p.174), sustained performance (p.170), firms’ overall effectiveness (p.170), competitive advantage (p.171, p.172, p.176), sustained competitive advantage (p.171), business growth and improved competitiveness (p.171), higher revenues and/or lower costs (p.176), and higher profit ratios (p.176). Eventually, after using the terms “revenue” and “cost” to describe her dependent variables:

“Firms that are successful in creating IT capability in turn enjoy superior financial performance by bolstering firm revenues and/or decreasing firm costs. Firms that incur the costs of IT without developing an IT capability will be at a comparative disadvantage.” (Bharadwaj 2000, p.176)

she introduces the actual hypotheses tested in her study (p.176):

H1 : Superior IT capability will be associated with significantly higher profit ratios
H2 : Superior IT capability will be associated with significantly lower cost ratios

Confusion arises because higher revenues are not the same as higher profitability, higher profitability is not the same as higher profitability ratios, and higher profitability ratios are not the same as SCA. Bharadwaj does not explain why she chose profitability ratios and not SCA for her hypotheses. In addition, as discussed in points 1 through 6 below, there are a number of other methodological issues with the Bharadwaj study.

1. Use of a pair-wise comparison with one firm within the same industry, rather than with the industry itself.

IT-leader firms were matched by size and industry code to a control sample firm. However, since one of the main objectives of Bharadwaj’s paper is to take ‘a resource-based perspective’, a more appropriate control would probably be the focal firm’s industry, not just one firm within its industry. This is because competitive advantage, whether sustained or otherwise, suggests above-normal performance relative to an industry in general, not to just one firm “randomly” selected from within an industry. This problem was subsequently addressed by Santhanam and Hartono (2003) in their replication and extension of Bharadwaj’s study.

2. Qualitative analysis of the IT leaders and not the control sample

The central theme of RBT is that some firms are able to exploit resources that are heterogeneous and immobile. A necessary condition for satisfying resource heterogeneity is that no other firm has the same resource. Although Bharadwaj’s (2000) focal firms have been identified by Information Week as “IT leaders”, she does not establish that her focal firms have distinctive resources compared to the control firms. Her study does report qualitative evidence concerning the IT capabilities (p.182, 184-5) of her focal firms, but it does not consider IT capabilities of the control sample. It could be argued that the focal firms must be special to have been identified by Information Week, and that the control firms were less special, but lack of investigation of the control firms certainly weakens the study.

3. The issue of whether higher profitability ratios is the result of superior IT capabilities

Superior IT capability may not necessarily be the cause of superior profitability. Superior profitability may be due to a host of other factors, e.g., product pricing strategies, superior customer service, branding, and so on. Equally, it could be that firms with superior financial performance can afford to invest more in IT, i.e., that superior financial performance is the main driver of the extent and scope of IT.

4. The second hypothesis, H2, provides no additional information beyond the first, H1.

Bharadwaj’s two hypotheses test the same thing because the cost ratio is equal to 100 minus the profit ratio. To illustrate, suppose firm X has revenue of $100m, total costs of $70m and profit of $30m. Return on sales (ROS), defined as profit/sales is 30%, and the cost ratio (OEXP/S), defined as cost/sales is 70%; that is 100 minus ROS equals OEXP/S. Thus if a focal firm is compared to a control firm, and one firm has a higher ROS than another, then by definition it must also have a lower OEXP/S. Therefore, tests of H2 provide no additional information over H1.

5. The ratios tested are highly correlated.

7 Some additional issues that also apply to the Santhanam and Hartono (2003) study are included in the next section
Another concern with Bharadwaj’s research design relates to the high correlation of the ratios used. This means that it was highly probable from the outset that all ratios would either reject, or all ratios would fail to reject the two hypotheses. The fact that all ratios strongly supported her hypotheses (p.182) sounds impressive. However, these results should be considered in conjunction with the high positive correlation of profitability ratios and the perfect negative correlation between ROS and OEXP/S explained in the preceding point 4.

6. The ratios do not test what Bharadwaj claims they test

In the quotation above, Bharadwaj frames the hypotheses in terms of “bolstering firm revenues and/or decreasing firm costs.” In row 1 of her Results Table (Table 3, p.183) she reports that mean return on assets (ROA) for the IT leaders was higher than ROA for the control group in years 1991-1994. However, this is not a test of either hypothesis. Discovering that return on assets (net income/total assets) is higher for Firm X than for Firm Y does not necessarily imply that Firm X has higher revenue and/or lower costs, it may well be that Firm X has lower total assets.

In summary, Bharadwaj claims to have undertaken one of the first empirical tests of the resource-based view of IT. Empirically, however, she did not test the dependent variable SCA even though she had opportunity to find a close proximate by using industry averages in her pair-wise comparison tests. Moreover, Bharadwaj did not test whether the firms with superior IT capability possessed heterogeneous IT resources. We conclude that although Bharadwaj referred frequently to RBT in her paper, she empirically tested something other than RBT.

Santhanam and Hartono (2003)

Santhanam and Hartono (2003) undertook a replication and extension of the Bharadwaj (2000) study. Using the same 56 IT leaders, Compustat datasource, and eight ratios, they analysed the period 1995 to 1997. In terms of the pair-wise comparison, Santhanam and Hartono (2003) overcame the problems associated with choosing a single firm as the benchmark (as in Bharadwaj 2000) by using the industry as the basis for comparison. Essentially, Santhanam and Hartono found that IT leaders had significantly higher profitability ratios and significantly lower cost ratios in each of the three years analysed, irrespective of the statistical tests employed.

Santhanam and Hartono’s paper contains eight hypotheses with H1 (profitability) and H2 (cost) essentially the same as Bharadwaj’s H1 and H2. Since the method is similar, the same problems identified in Bharadwaj’s paper also apply to Santhanam and Hartono’s paper (apart from the choice of benchmark). Some additional observations, however, need to be made about Santhanam and Hartono’s (2003) research design and its relationship with RBT.

1. The definition of SCA does not depend on a specified calendar period

Santhanam and Hartono (2003) presume that by extending the period to between 1995 and 1997 provides evidence of a SCA. Barney (1991, p.102) wrote “the definition of sustained competitive advantage does not depend on the calendar period of time during which a firm enjoys a competitive advantage... rather, whether or not a competitive advantage is sustained depends upon the possibility of competitive duplication.” This equilibrium view of SCA is echoed in Grant (1991, p.123). It is reasonable to draw attention to this equilibrium view of SCA, since Barney (1991) and Grant (1991) are used by Santhanam and Hartono (2004, p.128) as justification for testing the sustained effects of IT capability. Armed with this equilibrium view of SCA, it might be possible to achieve a SCA in a relatively short period, as long as competitors have ceased their efforts to duplicate the strategic resources/capabilities. Therefore, extending the study time window by a further 3 years does not provide conclusive evidence of SCA. Rather, Santhanam and Hartono’s study merely shows that the higher profitability (and, by definition, lower cost) ratios of the 56 IT leaders—which are not necessarily evidence of SCA—are long-lasting.

2. Superior IT capability is not the same as resource heterogeneity

The second issue deals with the notion of IT leaders and the presumption that superior IT capability leads to superior financial performance, which in turn, leads to SCA in the long-run. According to RBT, immobile heterogenous resources are the cause of SCA. Being an IT leader is not the same as having immobile heterogeneous IT resources (which must be valuable, rare, appropriable, inimitable, non-substitutable, and immobile). As such, in addition to problems with the dependent variable discussed with respect to the Bharadwaj (2000) paper, there is a misfit between the RBT model (Figure 1) and Santhanam and Hartono (2003) and also Bharadwaj’s (2000) interpretation of the independent variable in the model. A possible explanation for this problem is that the theory itself says very little about how strategic assets are created, maintained and employed in producing a SCA (Connor 2002).

3. Most firms have some degree of IS resource heterogeneity

Santhanam and Hartono (2003) and Bharadwaj (2000) compare each IT leader firm with the industry and a control firm, respectively. In doing so, they are assuming that being the best in an industry is the equivalent of
resource heterogeneity. By implication, they have also assumed the benchmark firms did not have heterogeneous IS resources. However, we argue that when IT/IS is viewed as a pool of various IT/IS resources (for examples, IT business/partnerships, external IT linkages, business IT strategic thinking, IT business process integration, IT management, and IT infrastructure) at least some of the IT/IS resources in that pool will be unique. Hence, most firms will have heterogeneous IT resources, at least to some degree. If so, Santhanam and Hartono (2003) and Bharadwaj (2000) have done little more than compare profitability ratios of two groups of firms with unknown differences in their IS resource heterogeneity. This is not a sound test of RBT. The key to this argument rests in both Santhanam and Hartono’s (2003) and Bharadwaj’s (2000) presumption that being the best equates to resource heterogeneity and that the comparison firms do not possess IS heterogeneous resources.

In summary, Santhanam and Hartono (2003) framed their study in terms of RBT, but despite providing a stronger control group for SCA than Bharadwaj (2000), they did not maintain the integrity of RBT in their empirical analysis.

Wade and Hulland (2004)

Wade and Hulland (2004) conducted a literature review of RBT and IS studies that employed RBT. After commenting that RBT "is a robust theory that has received wide acceptance in other management fields" (p.131), they conclude that “the resource-based view of the firm is a useful tool for researchers to understand if, and how, particular parts of the firm affect the firm at large” (p.131). RBT is useful, they suggest, for three reasons:

1. **“the theory provides a cogent framework to evaluate the strategic value of information systems resources”** (p.109) “through a well-defined dependent variable” (p.110), namely sustained competitive advantage (SCA);
2. **“by way of a defined set of resource attributes”** (p.110), RBT “provides guidance on how to differentiate among various types of information systems—including the important distinction between information technology and information systems—and how to study their separate influences on performance” (p.109);
3. **“by using the same set of resource attributes defined above”** (p.110), “the theory provides a basis for comparison between IS and non-IS resources, and thus can facilitate cross-functional research” (p.109).

A critical analysis of each of these three claims, plus two additional comments, follows.

1. **RBT provides a cogent framework for evaluating the strategic value of information systems resources**

Wade and Hulland (2004: 129-131) point out that many dependent variables have been used in IS research, making it difficult to relate one set of findings to another. This leads them to argue that RBT is useful because it provides an agreed upon outcome construct, i.e., SCA. They also point out, however, that researchers using RBT (e.g., Bharadwaj 2000) have found that SCA is difficult to operationalise and have resorted to using related constructs. Hence, they are back to their original position, with different dependent variables making comparison of findings difficult! We conclude that this claimed advantage for RBT is yet to be demonstrated.

2. **RBT provides guidance on how to differentiate among various types of information systems**

Wade and Hulland (2004) claim that RBT is useful because it provides guidance on how to distinguish between IT and IS—IT being asset based, while IS is a mixture of assets and capabilities formed around the productive use of IT. In addition, Wade and Hulland (2004) used previous studies to provide a categorisation of IS resources. Extensively, they relied upon Feeney and Willcocks (1998) nine core capabilities (leadership, business systems thinking, relationship building, architecture planning, making technology work, informed buying, contract facilitation, contract monitoring, and vendor development); Ross et al. (1996) three IT assets (human, technology and relationship) and Bharadwaj’s et al. (1998) six dimensions of IT capability (IT business/partnerships, external IT linkages, business IT strategic thinking, IT business process integration, IT management, and IT infrastructure).

However, these differentiations/distinctions among different types of IS are not an outcome of RBT, but simply proposals by Wade and Hulland for use in future studies of RBT. These same differentiations/distinctions may be applied to any theory and are therefore not a benefit of RBT.

3. **RBT provides a basis for comparison between IS and non-IS resources,**

Wade and Hulland (2004) also claim that RBT is useful because it provides a basis for comparison of IS and non-IS resources contribution (if any) to long-term firm competitiveness. Wade and Hulland (2004 p.132)
advocate that “once the role of IS resources has been explored and defined, it can be compared on equal terms with the roles played by other firm resources to eventually form an integrated understanding of long term firm competitiveness.” We agree that it would be useful if RBT can be used in this manner. Some obstacles must be overcome, however, before studies involving IS resources and non-IS resources can be compared on equal terms; such as: a) consensus as to how to measure the dependent variable SCA in either IS or non-IS studies; b) consistency in research method is required; and c) a method for isolating the affects of a single resource, or a subset of resources, on SCA is also important. When these empirical problems are rectified it may then be possible to compare studies on ‘equal terms’.

4. Are strategic IS resources the cause of SCA or vice versa?

Wade and Hulland’s (2004) RBT model (Figure 1) show IS resources leading to short-term competitive advantage, which in turn may lead to SCA. In other words, it is posited that IS resources cause SCA, not vice versa. Does the evidence support this assumed causality? This question is important, because Wade and Hulland also acknowledge the complementary nature of IS, and the process by which IS interacts with other resources is not well understood. By our reading of their paper, Wade and Hulland do not eliminate the possibility that performance provides the cash resources needed for investment in IS resources, not vice versa.

5. What makes an RBT study an RBT study?

Many studies reviewed by Wade and Hulland (2004) discuss IS resources/capabilities without directly relating their work to RBT or SCA. For example, Wade and Hulland’s Appendix lists twenty-four ‘Resource-based studies in IS research’. The fourth column in this list details Wade and Hulland’s comments on the use of RBT in these studies. According to their analysis, many of the studies they cite as RBT related were not directly related to RBT, or were only loosely connected with RBT, or “RBT was not measured”. A cynic might argue that any study that refers to IT/IS as a resource is a contender for being labelled a resource-based study. However, it is difficult to view IT/IS as anything other than a resource.

Summarising, this study’s examination of Wade and Hulland’s (2004) arguments suggests that their evidence in support of their claim that RBT is useful, is not as clear-cut as their paper would have us believe.

CONCLUSION: THE UTILITY OF RESOURCE-BASED THEORY FOR IS RESEARCHERS

Evidence in support of RBT appears to be the strongest defence against authors such as Carr (2003, 2004) who argue that because of the commodity nature of IT, IT is unlikely to be a source of competitive advantage. A series of robust empirically based studies framed in terms of RBT would be strong grounds for a convincing rebuttal of Carr’s arguments. However, due to the methodological issues identified in this paper, IS researchers have not yet empirically demonstrated a link between IT/IS and sustainable competitive advantage.

Based on the analyses in this paper, we agree with Mata et al. (1995) and Wade and Hulland (2004) that RBT may be a useful theory for ‘conceptualising’ the way that resources might be a source of competitive advantage. From an empirical perspective, however, we conclude that Bharadwaj (2000) and Santhanam and Hartono (2003) did not test what they set out to test. We also found specific problems with empirical RBT-based research:

- RBT is a theory of the whole firm rather than parts of the firm, e.g., it does not apply to cost centres.
- Sustained competitive advantage (SCA) is a core concept in RBT, yet many studies described as offering support for RBT (e.g., Ross (1996), Feeny and Willcocks (1998), Bharadwaj (2000)) are not framed in terms of the attainment of SCA, so their support is limited.
- The goals of RBT do not appear to be representative of the objectives of the vast majority of small businesses, whose goal is frequently to make normal profits, not SCA.
- RBT in IS research is framed around the proposition that IT/IS is the driver of firm performance, not vice versa, yet the two empirical studies reviewed in this paper simply tested association, and neither ruled out the reverse proposition.
- It is highly probable that most firms’ IT/IS, when considered as a pool of IT/IS resources, can be classified as heterogeneous.
- An additional problem for empirical testing is resource complementarity. Resource complementarity makes it difficult to divorce the effect of IT/IS from other contributors to a firm’s overall performance.

Our overall conclusion is that at this point in time RBT is not a valid tool for empirically demonstrating a link between IT/IS and sustainable competitive advantage; and RBT is not currently useful for rebutting people such as Carr (2003, 2004). We would like to emphasise, however, that RBT might ultimately prove to be helpful for IS research in the future, provided that the methodological issues discussed in this paper are adequately addressed.
REFERENCES


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