

Resource-Based View of Information Systems: Sustainable and Transient Competitive Advantage Perspectives

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Abstract

The resource-based view (RBV), or resource-based theory, is one of the oldest and most influential theories in the field of information systems. This paper contends that it is timely to revisit, reflect on, and reposition RBV to ensure its continued disciplinary relevance and progress. In doing so, this paper (i) provides a succinct and sharp evaluation of the conventional RBV of information systems that firms use to establish sustainable competitive advantage, and (ii) makes an original contribution by introducing a contemporary RBV of information systems that firms can use to establish transient competitive advantage. Both these contributions should advance the current and future understanding of information systems as (a) an internal firm resource, (b) a source of competitive advantage, and (c) a driver of firm performance.

Keywords: Firm performance, Firm resource, Information systems, Resource-based view (RBV), Sustainable competitive advantage, Transient competitive advantage.

1 Introduction

The resource-based view (RBV), or resource-based theory, is a classical and influential theory in the field of information systems. The theory, derived from Edith Penrose's (1959) theory of firm growth, was introduced by Birger Wernerfelt (1984) and popularized by Jay Barney (1991). Since then, the seminal articles by the two RBV theorists—Wernerfelt and Barney—have been cited more than 85,000 times (as of December 20, 2017; see Google Scholar).

While most studies that use RBV are empirical, some scholars have chosen to review and propose ways forward for using RBV in future studies. The present paper is similar to the latter in the sense that it reviews the extant literature on the RBV of information systems. At the same time, it differs from the latter as it adopts and takes advantage of a resource-based approach by combining insights from existing reviews and recent studies on the RBV of information systems. It does so in order to accelerate its endeavour to offer an overview of the theory's usage in the field and to chart new directions for advancing the understanding of information systems from the RBV perspective.

2 RBV

The essence and logic of RBV can be clearly understood when broken down and organized as follows:

- a. Firms possess heterogeneous resources.
- b. Firm resources can be used to conceive, choose, and implement firm strategies.
- c. Firm strategies are likely to be different, if not similar, but not identical.
- d. Firm strategies contribute to and account for differences in firm performance.
- e. Firm performance is predicated on firm resources.
- f. Firm resources that are valuable, rare, inimitable, non-substitutable, durable, appropriable, and mobile (among others) can create and sustain competitive advantages.
- g. Firms with competitive advantages can enjoy myriad benefits, such as premium and rent yields (Amit & Schoemaker, 1993; Barney, 1991; Collis & Montgomery, 1995; Wade & Hulland, 2004; Wernerfelt, 1984).

3 Current RBV of Information Systems

Information systems represent both a product and a discipline. This duality in form can be distinguished using the RBV. Specifically, an information system is the resource of focus when it takes a product form—that is, the interrelated components of hardware, software, data, people, and process—in studies situated in the information systems discipline.

By drawing on existing reviews and recent studies of the RBV of information systems, this paper provides a general overview of the discipline's current understanding of the RBV of information systems, which takes the form of three major subsections, as follows (see Figure 1).

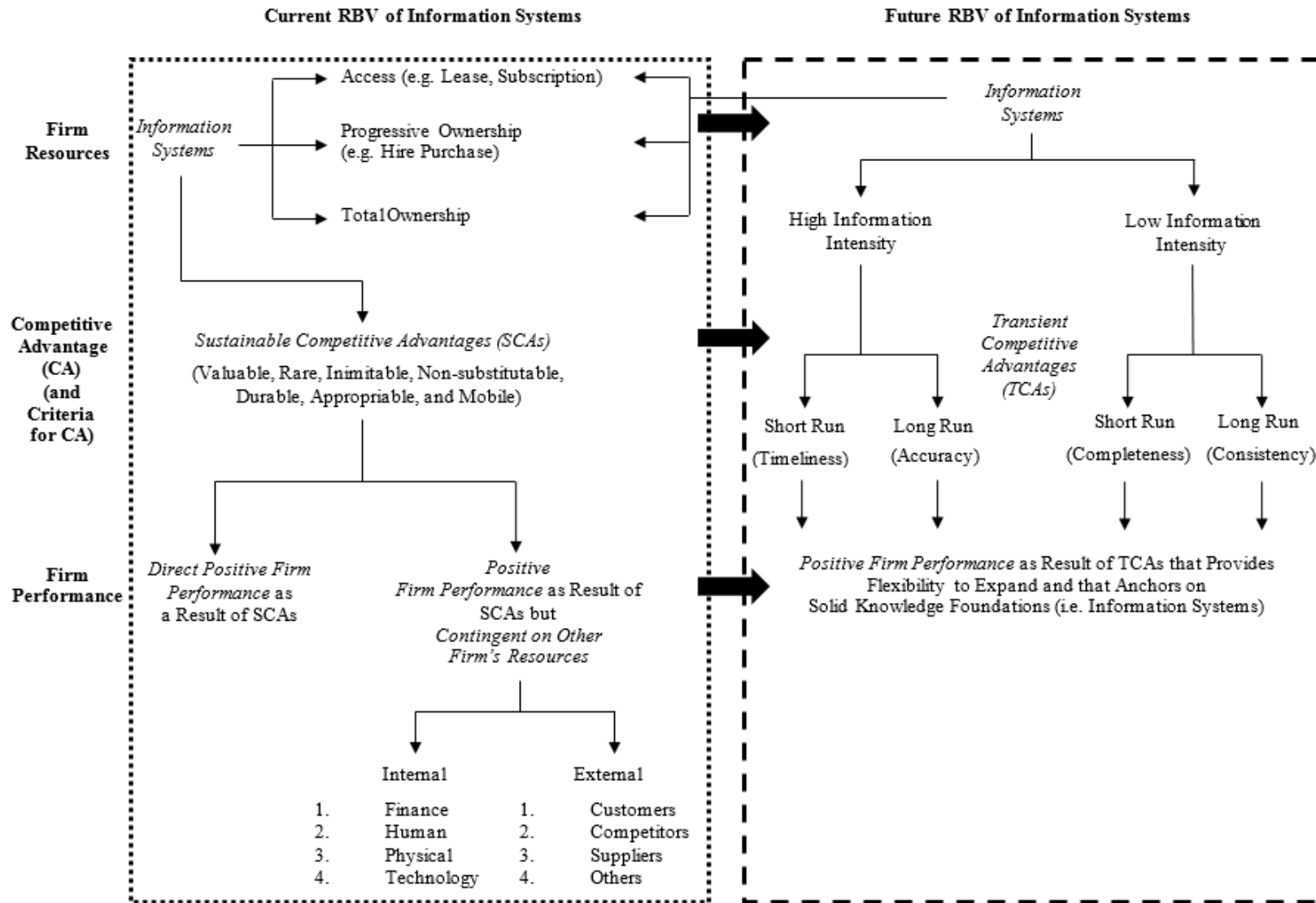


Figure 1 Current and Future RBV of Information Systems

3.1 Information Systems as an Internal Firm Resource

Firm resources can be internal (or inside-out) and external (or outside-in) to the firm. Internal resources are assets owned and controlled by the firm, such as financial, human, physical, and technological resources; whereas external resources are assets that may be earned and controlled, to a certain extent depending on various factors like industry attractiveness and structural autonomy, but not necessarily owned by the firm, such as customers, competitors, and suppliers, among others (Anggraeni, 2014; Dierickx & Cool, 1989; Hulland et al., 2007; Wade & Hulland, 2004). This suggests that information systems are an internal firm resource because the acquisition, integration, and usage of its interrelated components are owned and controlled by firms, be it in the form of access (e.g. lease, subscription), progressive ownership (e.g. hire purchase), or total ownership.

3.2 Information Systems as a Strategic and Sustainable Competitive Advantage

Competitive advantage is the advantage that a firm (a) has over its competitors, (b) develops using its resources, and (c) uses to drive superior performance (Barney, 1995; Peteraf, 1993). Generally, information systems, as an internal firm resource, are considered to be more powerful than an external firm resource in establishing competitive advantage (Mahoney & Pandian, 1992; Ravichandran & Lertwongsatien, 2005). This may be attributed to the chain (or multiplier, spillover) effect that comes from having an information advantage, as an information advantage facilitates the creation of other competitive advantages, such as cost and differentiation advantages (Lubit, 2001; Porter & Millar, 1985). More importantly, the sustainability of information systems as a competitive advantage is difficult but rewarding. It allows firms to detect and respond to market opportunities and threats, such as to counter and protect against resource imitation, transfer, or substitution (Wade & Hulland, 2004). The keys to sustaining the competitive advantage of information systems can come from greater alignment between alternative (e.g. business) and information system strategies (Choe, 2003; Liang & You, 2009), complementary synergies with other internal and external firm resources (Hulland et al., 2007; Ravichandran & Lertwongsatien, 2005), innovation (Grant, 1999; Shin, 2006), which may be incremental, or even better, ground-breaking (Coulthard & Keller, 2016; Lim, 2016), and systematic and timely upgrades of organizational (e.g. expertise, skills) and functional capabilities (e.g. hardware, software) (Kraaijenbrink et al., 2010; Liang & You, 2009; Ravichandran & Lertwongsatien, 2005; Seddon, 2014).

3.3 Information Systems as a Driver of Firm Performance

The concept of firm performance is simple—it relates to how well the firm performs (Bi et al., 2015; Cosic et al., 2015; Someh & Shanks, 2016). However, the extent to which information systems can effectively play a role as a firm resource that drives firm performance is rather complex due to its inconsistency, as demonstrated by Wade and Hulland (2004) in their seminal review and by Liang and You (2009) in their meta-analysis of the RBV of information systems. Specifically, in some cases, direct effects are reported, where the relationship between information systems and firm performance tends to be positively rather than negatively related; in other cases, contingent effects have been reported, where information systems ought to interact with other internal and external firm resources in order to effectively drive firm performance, especially in the long run (e.g. organizational commitment and investment; environmental complexity, munificence, and turbulence). Such effects, according to Wade and Hulland, are predicated upon Clemons and Row's (1991) "strategic necessity hypothesis,"

which suggests that whether or not information systems will effectively play a role in driving firm performance, and the extent of performance as a result of that drive, is dependent on the strategic role of information systems in relation to the firm and its competitors. In other words, information systems may be crucial for a firm’s operations, but that does not imply that this firm resource is automatically translated into a competitive advantage, especially when firms face competitors whose strategies are substantially different from theirs. Nevertheless, the means to sustain firm performance through information systems is similar to that dedicated to sustaining competitive advantages (e.g. innovation, upgrades of capabilities; Cooper & Molla, 2014; Liang & You, 2009; Ravichandran & Lertwongsatien, 2005).

4 Future RBV of Information Systems

Notwithstanding the extant contributions of the existing RBV of information systems, specifically the theorization of information systems as (a) an internal firm resource, (b) a strategic and sustainable competitive advantage, and (c) a driver of firm performance, this paper asserts that the continued relevance and usefulness of RBV for information systems research will require a fresh injection of thought-provoking ideas and further extensions to existing evaluation criteria to accommodate alternative and future RBVs of information systems. The rationale behind this contention is that the omnipresence and proliferation of ground-breaking technologies spearheaded by technological revolutions (e.g. artificial intelligence, blockchain, crowdsourcing, and the Internet of Things) may erode the sustainability of existing competitive advantages held by firms. This may be seen especially in firms that are innovative but not agile enough to detect and respond to change, and therefore they fail to build and sustain a rich and dynamic portfolio of competitive advantages (McGrath, 2013). Such propositions herein are supported by the Marshallian quasi-monopoly and equilibrium argument that competitive advantages will continue to emerge but eventually become obsolete over time.

Given the above, firms operating in today’s competitive environments can expect to encounter and learn about the diminishing luxury of time and stability, where change is the only constant. In that process, firms should recognize and work to bring in innovations in information systems that can provide them with a portfolio of transient competitive advantages (instead of sustainable competitive advantages). In that sense, firms that are information-intensive will seek to develop and grow their information systems with different competitive resource attributes at two stages: introductory (short run) and maturity (long run) (see Figure 2).

	High Information Intensity	Low Information Intensity
Transient Competitive Advantage in the Short Run (Introductory)	Critical Resource Attribute: <u>T</u> imeliness	Critical Resource Attribute: <u>C</u> ompleteness
Transient Competitive Advantage in the Long Run (Maturity)	Critical Resource Attribute: <u>A</u> ccuracy	Critical Resource Attribute: <u>C</u> onsistency

Figure 2 T-A-C-C Framework for Information Intensity and Transient Competitive Advantage

In the short run, transient competitive advantages can be acquired in two ways, depending on the information intensity of the firm. Specifically, high-information-intensity firms are reliant on the speed of information to gain transient competitive advantages, which occurs when information systems deliver information that excels in timeliness (e.g. for bitcoin and forex traders). In contrast, low-information-intensity firms place greater emphasis on information systems to furnish decision makers with information that excels in completeness (e.g. for marketing intelligence and research agencies), and in doing so, establish transient competitive advantages.

In the long run, existing firms strengthen their competitive positioning of existing competitive advantages, and simultaneously develop and pursue new avenues and opportunities for competition. Highly information-intensive firms will create opportunities to acquire additional transient competitive advantages, which can be carried out by channelling other internal and external resources in order to further improve the accuracy of the information generated by their information systems (on top of timeliness and many of the other critical resource attributes)—for example, fake news is more of a problem for mature social media than for newer ones that inherently lack credibility due to their newness. Finally, low-information-intensity firms will expand their portfolio of transient competitive advantages by investing their resources to strengthen the consistency of information produced by their information systems (on top of completeness and many of the other critical resource attributes). Consistency ensures reproducibility, establishes standardization, and offers the flexibility to expand that anchors on solid knowledge foundations.

5 Conclusion

The RBV of information systems is entrenched in the idea that information systems are (i) an internal firm resource, (ii) a source of competitive advantage, and (iii) a driver of firm performance. The conventional RBV of information systems can be applied to comprehend and build sustainable competitive advantages for firms that operate in relatively stable environments, whereas the contemporary RBV of information systems can be used to understand and develop transient competitive advantages for firms that operate in relatively agile and dynamic environments.

More importantly, future research on the RBV in information systems should consider exploring new and disruptive technologies to enrich our understanding of and the theory's value to information systems. Researchers should especially focus on those technologies that challenge pre-existing notions of the RBV. For instance, big data, cloud computing, crowdsourcing platforms, and the Internet of Things have all proven to be essential in generating competitive advantages. Yet, they challenge the conventional notions of both the RBV and information systems.

Specifically, big data is a recognized source of competitive advantage. Yet, it fails to adhere to the value, rarity, inimitability, and non-substitutable (VRIN) assumptions of the RBV theory (Braganza et al., 2017). Cloud resource, though developed to possess unique competencies, is neither rare nor inimitable (Mitra et al., 2017). The Internet of Things and crowdsourcing, on the other hand, are highly reliant on external sources of information (Santaro et al., 2017; Venanzi et al., 2016). Meanwhile, big data will also concede on this dependence, acknowledging that its roles will continue to morph as a long-term investment (Sedera et al., 2016).

Nevertheless, these ground-breaking sources of information can further enrich the contemporary understanding of the RBV with a common recognition of the need for open innovation regarding both strong internal systems and external sources of knowledge (Sedera et al., 2016; Santoro et al., 2017). Any independent reliance would lead to limited success and, potentially, even to an erosion of any competitive advantages that existing information systems may have once yielded (Braganza et al., 2017). Ultimately, the impact that new technologies have on a firm's information systems and performances are largely dependent on their internal competencies (e.g. managerial and staff capabilities) in adapting to these technological changes within a dynamic business environment in order to continuously develop transient competitive advantages (Wamba et al., 2017). Thus, exploring how contemporary disruptions affect firm's resources, competitive advantages, and performances will provide valuable insight into the future of the RBV of information systems.

To this end, the authors hope that the insights herein will stimulate greater research on RBV dedicated to advancing and supporting the current and future understanding of information systems.

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