Theory Borrowing in IT-rich Contexts: Lessons from IS Strategy Research

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Abstract

While indigenous theorizing in IS has clear merits, theory borrowing will not, and should not, be eschewed given its appeal and usefulness. In this paper, we aim at increasing our understanding of modifying of borrowed theories in IT-rich contexts. We present a framework in which we discuss how two recontextualization approaches of specification and distinction help with increasing the IT-richness of borrowed constructs and relationships. In doing so, we use several illustrative examples from IS strategy. The framework can be used by researchers as a tool to explore the multitude of ways in which a theory from another discipline can yield understanding of IT phenomena.

Keywords

Theory borrowing, IT artifact, IT recontextualization, Constructs, Relationships

Introduction

The role of IS-specific theory and its contribution to the state and direction of the IS field remains a topic of extensive debate. A resounding constant within the debate is that IS theory development is essential, yet with little consensus on how this should be achieved (Hong et al., 2014). Indeed, IS is charged by its critics as engaging in habitual theory borrowing from other/allied disciplines at the expense of indigenous theory building; an abundance of middle-range theories at the expense of generalizable, grand theories, and persistent undertheorizing of the IT artifact (Grover and Lyytinen, 2015; Hassan and Lowry, 2015; Orlikowski and Iacono, 2001). In addition, the heavy reliance on theories not founded on IT-related constructs is deemed "distracting" (Benbasat and Zmud, 2003, p. 192). Accordingly, a strong and active stream of research encourages developing indigenous theories (Grover and Lyytinen, 2015) that are unlikely to be products of theory borrowing from other fields. Such theories will be "above and beyond the theories we import from other fields" (Markus and Saunders, 2007, p. iv).

While the merits of such theorizing are apparent, we argue that theory borrowing in IS will not, and should not, cease completely, particularly due to its appeal (Grover and Lyytinen, 2015) and potential usefulness (e.g., see Weber, 2003, p. x). Therefore, in addition to the searches for indigenous IS theories (Grover and Lyytinen, *forthcoming*), attention to the nature and quality of borrowing is also crucial.

We build on the premise that theory borrowing is legitimate if constructs are owned and if borrowed theories are adapted appropriately to our distinctive subject matter (Hassan, 2011; Markus and Saunders, 2007). Drawing from the studies within (Hong et al., 2014) and outside IS (Oswick et al., 2011), such borrowing can be characterized as IS recontextualization. In demarcating our subject matter, we note the debates on whether and what constitutes the field's intellectual core (King and Lyytinen, 2006; Whinston and Geng, 2004). While acknowledging critical commentaries (e.g., Galliers, 2003; 2006), in this paper we consider what IS recontextualization would look like in cases where the borrowed materials are *not* silent about the IT artifact.

In establishing a foundation for our study, we note that three key modes of theory borrowing in IS have been articulated: instantiating, extending, and modifying (Grover and Lyytinen, 2015). By definition, *instantiating* is unlikely to provide a basis for offering much IS-related theoretical insights as theory is foreign to IS and the recontextualization efforts are only minor. *Extending* encourages theory development to go beyond the borrowed theory by adding new constructs and relationships that are IS-related. It is in *modifying*, where "The model modifies constructs, configurations, and/or logic from the borrowed theory to the IS context" (Grover and Lyytinen, 2015, p. 278), that IT-rich recontextualization becomes key.

In pursuing our aim, we build on the literature on theorizing the IT artifact (Benbasat and Zmud 2003; Grover and Lyytinen, 2015; Orlikowski and Iacono, 2001; Straub, 2012); develop a framework of IT-rich recontextualized modifying of borrowed theories, and demonstrate this framework within the domain of IS strategy. The first dimension of the framework recognizes two approaches to IT-rich recontextualization: specification and distinction. *Specification* considers how the resulting theory can confer rich insights concerning the IT artifact, enabling non-nominal views of IT (Orlikowski and Iacono, 2001). *Distinction* involves how to make the borrowed instance uniquely different from other possible IS instances (internal distinction) and non-IS instances (external distinction) of the same theory. The second dimension of the framework recognizes that recontextualization can occur across two key elements of the borrowed theory[1]: constructs and relationships (Bacharach, 1989). *Construct* recontextualization is concerned with relabeling, redefining, redimensionalizing, and exemplifying constructs to offer rich insights about the IT artifact.

[1] For simplicity, we focus only on borrowing variance theories that aim at establishing a causal path between constructs.

Relationship recontextualization is chiefly about explaining theoretical mechanisms (namely, causal links, conceptual assumptions, boundary assumptions) for the influence of one construct on another by explicitly referring to particular aspects of the IT artifact.

To illustrate the adoption of these IT-rich recontextualization approaches, we use several examples chiefly from IS strategy (ISS) research. Our focus on ISS has several motivations: there is much discourse around IS as a conglomerate of subtopics and more in-depth discussions of each subtopic can provide a rich understanding that can guide future research. ISS has been seen to be a top concern of CIOs over the decades (e.g., Luftman et al., 2015), and continues as a dominant concern with such ISS subtopics as alignment of IT with the business remaining a top concern for over 10 years (Kappelman et al., 2019). It is a particularly important topic in the current digital era in which many businesses are becoming increasingly digitally enabled and transformed (Barley et al., 2017; Davison and Ou, 2017; Vial 2019). Moreover, ISS is generally recognized as adopting a nominal view to the IT artifact (see Grover and Lyytinen, 2015, p. 279; also, Orlikowski and Iacono, 2001, p. 128), so we seek examples of the 'capturing' of IT in the ISS research.

Our contribution is twofold. First, we contribute to studies on embedding IT in IS research (e.g., Akhlaghpour et al., 2013; Grover and Lyytinen, 2015; Orlikowski and Iacono, 2001; Straub, 2012) by further clarifying and formalizing IT-rich recontextualized approaches of specification and distinction. Second, we contribute to ISS research by exploring several specific examples of how the IT artifact is embedded in it, demonstrating that IT is not always nominal in this domain. Overall, we add to the debate on theory borrowing within IS (Grover and Lyytinen, *forthcoming*; Truex et al., 2006) and provide some further directions for moving away from nominal views of IT in ISS.

IT-Rich Recontextualization of Borrowed Theories – A Framework

When theories from outside a reference discipline are borrowed, they are subject to recontextualization. As Oswick et al. (2011, p. 323) put it, "Effectively, recontextualization involves a process of repackaging, refining, and repositioning a discourse (or text) that circulates in a particular community for consumption within another community". Researchers who have studied similar borrowing modes, including contextualization (Hong et al., 2014), domestication (Oswick et al. 2011), and modifying (Grover and Lyytinen, 2015), consider that some core constructs and relationships might be added or removed from the borrowed theory. What we mean by IT-rich recontextualization is much narrower, however.

Here, we delve into how unique IS insights can be infused in the constructs and relationships of the borrowed theory.

To increase our understanding of IT-rich recontextualized modifying of borrowed theories, we draw from past research on developing IS theories (Benbasat and Zmud, 2003; Grover and Lyytinen, 2015; Orlikowski and Iacono, 2001; Straub, 2012) to develop a 2×2 framework (Table 1). The first dimension, recontextualization approach, distinguishes specification and distinction. The second dimension, borrowed theory element, considers that specification and distinction can be applied to the borrowing of both the key components of a theory – constructs and relationships (Bacharach, 1989). Given our speculation that, when borrowing theories in IS, the IT artifact often remains nominal until the empirical part of a paper, this framework excludes recontextualized operationalizations to emphasize recontextualized theorizing. Below, we explain each dimension of the framework in detail.

		Recontextualization Approach	
		Specification	**Distinction**
Borrowed Theory Element	**Construct Recontextualization**	1. Modifying the borrowed constructs for specific IS phenomena centered around the IT artifact.	3. Explaining how some aspects of the modified conceptualizations are unique to IS phenomena concerning specific IT artifacts.
	Relationship Recontextualization	2. Modifying the borrowed causal links by drawing upon IS phenomena centered around the IT artifact.	4. Explaining how some aspects of the modified causal links are unique to IS phenomena concerning specific IT artifacts.

Table 1 – A Framework of IT-rich Recontextualized Modifying of Borrowed Theories

Specification

Specification refers to the efforts made to describe the IT artifact *per se* or that is embedded in the surrounding IS phenomena. It strives to avoid borrowing where "IT is treated within the confines of the borrowed theory at high level abstraction without any or little specificity" (Grover and Lyytinen, *forthcoming*, p. 9). Specification recognizes that, were the IT artifact absent in a theory, the study might be subject to the "error of exclusion" (Benbasat and Zmud 2003, p. 189). From this perspective, a study might be criticized for having "no reference to any specific technology" (Orlikowski and Iacono, 2001, p. 128). Specification is therefore a necessary (but insufficient) condition for adopting the non-nominal views of IT (e.g., the ensemble view). While such specificity is recognized as a key characteristic of native IS theories (Straub, 2012), we explore specification in theory borrowing.

By considering the IT artifacts as technical objects (Markus and Silver 2008, see p. 625) we recognize six ways in which the IT artifact could be specified. *Specifying the taxonomic nature of the IT artifact* adopts a pluralistic view of the IT artifact (recognized as the IS artifact – Lowry et al., 2017) and explains how an IT artifact belongs to one taxon or a combination of taxa. When an IT artifact is labeled accordingly, attention is shaped to a particular (although often vaguely defined) subset of artifacts. *Specifying the IT artifact as a specific IS product* distinguishes two related but differing forms of technical objects: IT and IS (in terms of products not the research disciplines—Hassan, 2006). While IT can be any digital technology, (e.g., the Internet), IS is a particular category of IT used by organizations to represent their business processes according to Weber (2003). *Specifying key configurations within and across IT artifacts* regards the IT artifact as an assemblage of key sub-components. Orlikowski and Iacono (2001, p. 131) explain that, "IT artifacts are usually made up of a multiplicity of often fragile and fragmentary components, whose interconnections are often partial and provisional and which require bridging, integration and articulation in order for them to work together". Further, key configuration of multiple IT artifacts can be specified as a system of systems (e.g., in specifying enterprise architecture). S*pecifying holistic attributes of the IT artifact* focuses on describing an IT artifact using some of its attributes or that of its key subcomponents. *Specifying features/functionalities* views the

IT artifact as a collection of various interrelated features/functionalities[2] that, individually or taken together, could enable or support users to perform certain tasks. Decomposing an IT artifact into features/ functionalities allows researchers to avoid having a black box view of technology (Benbasat and Zmud 2003; Jasperson et al., 2005; Orlikowski and Iacono, 2001). *The purposeful nonspecificity of the IT artifact* recognizes that when research claims are generalizable to all IT artifacts, researchers might opt to justify the lack of IT specificity.

Table 2 provides several illustrative examples from the IS strategy context.

[2] Features and functionalities can be distinguished. Features are the "building blocks or component parts of a technology" (Griffith, 1999, p. 475), and "The functionality of a system refers to the range of operational tasks it supports" (DeSanctis et al., 1994, p. 322). In this chapter, we use these terms interchangeably.

Table 2. Specification Approaches: Illustrative Examples from IS Strategy Research

Approach	Description	ISS Examples
Specifying the taxonomic nature of the IT artifact	The IT artifact could belong to one taxon or a combination of taxa (e.g., technical systems, information and data, digital products, techniques and methodologies, policies, certifications, standards, patents, communities and ecosystems).	IT infrastructure (Tallon and Pinsonneault, 2011), decision making algorithms (Gallliers et al., 2017; Newell and Marabelli, 2015), data warehouses (March and Hevner, 2007), data visualization dashboards (Zammuto et al., 2007), digital offering (Ross et al., 2019), enterprise systems (Tan et al., 2004), blockchain (Beck et al., 2018), business intelligence (Shollo and Galliers, 2016), data analytics techniques and methodologies (Chen et al., 2012; Günther et al., 2017), information security policies (Cram et al., 2017), security certifications (Hsu, 2009), data interchange standards (Zhu et al., 2006), software patents (Mykytyn et al., 2002)
Specifying the IT artifact as a specific IS product	The IT artifact can be any digital technology or IS which is a particular category of IT (Hassan, 2006) used by organizations to represent their business processes (Weber, 2003) and is often recognized by specific system types (Ein-Dor and Segev 1993).	Interorganizational information systems (Johnston and Vitale, 1988; Saraf et al., 2007) including EDI (Mukhopadhyay et al., 1995), multisided platforms (Leong et al., 2019) customer relationship management (CRM) systems (Setia et al., 2013), knowledge management (KMS) systems (Joshi et al., 2010; Pavlou and El Sawy, 2006, 2010), enterprise software (Ceccagnoli et al., 2012; Tan et al., 2004), strategic decision support systems (March and Hevner, 2007; Sabherwal and Chan, 2001), and enterprise social media platforms (Baptista et al., 2017; Rode, 2016; von Krogh, 2012).
Specifying key configurations within and across IT artifacts	The IT artifact can be regarded as a holistic package or an assemblage of key sub-components (Orlikowski and Iacono, 2001) or multiple constituting IT artifacts (systems of systems).	*Subcomponents:* decomposing an ERP system into different functional modules (Benders et al., 2006). *Configuration of multiple IT artifacts:* Integration is defined as "the extent to which the IS applications of a focal firm work as a functional whole in conjunction with the IS applications of its business partners" (Saraf et al., 2007, p. 324).
Specifying holistic attributes of the IT artifact	The IT artifact can be described by some of its holistic attributes (characteristics).	Customizability (Nevo and Wade 2010), flexibility (Tallon and Pinsonneault, 2011); Information quality and information completeness (Setia et al., 2013); Complexity (Meyer and Curley, 1991); Ubiquity (Carr, 2003); Fragility and unreliability (Butler and Gray, 2006); Scalability (O'Leary, 2013; Tallon and Pinsonneault, 2011); Maturity (Karimi et al., 1996; Venkatesh et al., 2007); Newness (Barki et al., 1993; Swanson and Ramiller, 2004); Uniqueness (Piccoli and Ives, 2005); representation (Weber, 2003).
Specifying features/ functionalities of the IT artifact	The IT artifact can be viewed as a collection of various interrelated features/functionalities that could enable or support users to perform certain tasks. Features/functionalities can be distinguished as core vs. optional (DeSanctis et al. 1994; Griffith, 1999; Bui 2017), autonomous vs. user-controlled, enabling vs. inhibiting (Leonardi and Barley, 2008), and functionalities vs. dysfunctionalities (Jasperson et al. 2005).	*Optional*: Customizability of the off-the-shelf IT artifacts (Nevo and Wade, 2010; Piccoli and Ives, 2005); *Autonomous*: automatic data anonymization (O'Leary 2013); *User-controlled*: Features of social software requiring an active use (von Krogh 2012); *Inhibiting*: Access identifiability in the user interface to violating access policies (Vance et al., 2013); *Functionalities*: Conveyance, presentation, and convergence as three functionalities of collaborative work systems (Pavlou and El Sawy 2010), Predicting future states (March and Scudder, 2019); *Dysfunctionalities*: Hindering the pursuit of meaningfulness in work using datafication to track worker activities (Stein et al. 2019);
Purposeful non-specificity of the IT artifact	The IT artifact might be intentionally unspecified, with the justification that research claims are generalizable to all IT artifacts.	A study on the strategic use of IT might argue that the findings would hold for any type of IT in organizations, hence IT non-specificity. We did not find an example of such argument in ISS, perhaps implying that most researchers consider their findings as simply generalizable irrespective of the technology (blackboxing the IT).

Distinction

Distinction refers to efforts dedicated to delineating the various instances of borrowed constructs and relationships by highlighting what is unique to the particular IT artifact (or its surrounding IS phenomena) under study. Distinction leverages specification, for example, in order to differentiate features and functionalities of two IT artifacts. We discuss two approaches of internal and external distinction and their sub-categories.

Internal distinction is within IS and builds on the idea that "Information technologies differ with respect to their intrinsic characteristics" (Piccoli and Ives, 2005, p. 760). To make an internal distinction, specification can be used to capture the variations between different ITs rather than adopting a homogenous view of IT. Internal distinction can also be used to theorize, for example, varying perceptions, abilities and actions about similar IT artifacts.

External distinction can be made between the IS and non-IS versions of the borrowed theories, recognizing that "we should look to how uniquely the theory base applies to IS" (Straub, 2012, p. v). Giving the example of the replaceability of "IS" with "marketing" in some IS strategy theories, Orlikowski and Iacono (2001) suggest that the IS and non-IS distinction made in a theory must be evident. We identify four external distinction approaches. *Distinguishing IT from non-IT instances of the same theories* involves explaining what is unique to an IS take on the borrowed theory. *Distinguishing IT from non-IT technologies* explains how the way a theory is borrowed to examine an IT artifact can be distinguished from such borrowing for a non-information technology. *Recognizing the similarity (hence the concurrent value added) to non-IT technologies,* in contrast to the other external distinction strategies, involves explicitly acknowledging and explaining the generalizability of the modification of a non-technology-related theory to IS to the understanding of non-IT technologies (e.g., manufacturing technologies). *Distinguishing the IS angle from other angles for the same IT artifact* recognizes that various cognate disciplines, such as computer science, have a vested interest in the IT artifact (Hassan and Will, 2006). The last approach is purposeful non-distinction which pairs with the purposeful non-specificity approach explained above. Table 3 summarizes the above and provides several examples from the IS strategy context.

Having discussed the specification and distinction approaches, we next take a closer look at how these approaches can be applied in recontextualizing constructs and relationships.

Table 3. Distinction: Illustrative Examples from IS Strategy Research

Approach	Description	ISS Examples
Internal – Technology Variance	Adopting a heterogenous view of IT, hence attempting to capture the variations between different IT artifacts (or concepts centering on IT artifacts) across different recontextualized versions of the same theory.	Oh and Pinsonneault (2007, see p. 249) capture how different IT applications in the manufacturing industry are associated with different strategic values; Scott and Vessey (2002) distinguish the way in which two companies managed similar IT artifacts (variants of SAP R/3 ERP) with contrasting outcomes; Mata et al. (1995) suggest that managerial IT skills are heterogeneously distributed across firms; Ray et al. (2005) distinguish between tacit and explicit IT capabilities
External – Distinguishing IT from non-IT technologies	Explaining how the recontextualized version of the borrowed theory is different than the non-IT instances of the same theory. In simpler cases one can speak of certain characteristics of the IT artifact that make the unmodified instances of a borrowed theory inadequate for understanding IS phenomena (Grover and Lyytinen, 2015). In extreme cases, one can "identify a set of generic characteristics of information technology that cause the existing theories about technology fail" (Weber, 2003, p. vii).	Grover and Lyytinen (forthcoming) discuss five fundamental attributes of digital technologies that enable differentiating them from other technologies and warrant further theorization efforts; Wade and Hulland (2004) offer a theoretical "basis for comparison between IS and non-IS resources, and thus can facilitate cross-functional research" (p. 109); An ISS study can discuss the specific strategic purposes only associated with IS, but no other technological assets, such as manufacturing and R&D facilities.
External – Recognizing the similarity to non-IT technologies	Explaining how the borrowing of the theory to IT concurrently adds value to understanding non-IT technologies.	We did not find any examples in the ISS context. The two key antecedents in TAM (Davis, 1989) – perceived usefulness and perceived ease of use – developed by modifying the theory of reasoned action, are useful not only for examining information technology adoption but also for understanding the adoption of other technologies.
External – Distinguishing the IS angle from other angles to the same IT artifact	Explaining how borrowing the theory to IS increases our understanding of an IT beyond what is learned about it in other fields of research (Hassan, 2006).	We did not find any examples in the ISS context. As Hassan (2006) suggests, by building on the business and social aspects of the specified IT artifact, an ISS study can specify how the adopted view of an IT artifact is linked to, but departs from, the examination of similar IT artifacts from a computer science viewpoint.
External – Purposeful non-distinction	Explaining how the borrowing would apply to any technology, in conjunction with purposeful non-specificity.	We did not find any examples in the ISS context. To complement purposeful non-specificity, by referring to the similarities across different IT artifacts, an ISS study can explain why recontextualizing the borrowed theory would not be different for other IT artifacts.

Construct Recontextualization Using Specification and Distinction

Constructs refer to "conceptual abstractions of phenomena that cannot be directly observed" (Suddaby, 2010, p. 346). To recontextualize borrowed constructs for use in an IT-rich context, one should "adapt them to reflect a unique IT or IS component" (Benbasat and Zmud 2003, p. 193) with a view to "clarifying the IS nuances involved" (*ibid*.). Construct recontextualization considers that the specification of an IT artifact can appear in four complementary forms: construct labels, definitions, dimensions, and exemplifications. *Recontextualizing construct labels* involves revising the labels of borrowed constructs with the specified IT artifact in mind.

A good practice in theorizing is ensuring construct clarity according to Barki (2008) and Suddaby (2010), especially by offering formal definitions (Wacker, 2004). Thus, *recontextualizing construct definitions* concerns modifying construct definitions by making explicit reference to the specified IT artifact (per se or embedded in surrounding IS phenomena). General rules for offering a formal conceptual definition (Wacker, 2004) apply. A multidimensional construct can be modeled in different ways, including the latent (higher order) and aggregate (multiplicative or additive) approaches (Law et al., 1998). Thus, *recontextualizing construct dimensions* of a borrowed multidimensional construct can involve adding or removing dimensions. Further, we note that exemplification via providing concrete examples is vital for developing theoretical ideas *(*Jaccard and Jacoby, 2009). Accordingly, *recontextualization by exemplification* to complement recontextualized construct labels and definitions, rich exemplification provides a further opportunity for specification. Examples can also be used to make a distinction between various takes on the same construct.

Table 4 summarizes the above and provides several examples from the IS strategy context.

Table 4. Construct Recontextualization Using Specification and Distinction Approaches: Examples from IS Strategy Research

Locus	Description	ISS Examples
Recontextualized construct labels	Using specification and/or distinction to increase the IT-richness of the borrowed construct labels.	Grover and Lyytinen (2015, p. 278) observe that "a construct like 'asset specificity' (AS) in transaction cost economics (TCE) is used to study outsourcing but modified to 'system specificity'". More specific references to an IT artifact are feasible.
Recontextualized construct definitions	Using specification and/or distinction to increase the IT-richness of the borrowed construct definitions. A construct can be linked to a specified IT artifact in five ways: by focusing on the IT artifact *per se, by referring to its properties,* by referring to the functional affordances (Markus and Silver, 2008; Volkoff et al. 2013), and perceptions, and abilities/actions surrounding the artifact (Benbasat and Zmud, 2003). These approaches are means to implementing the material, socio-material, and social views of the IT artifact.	*Conceptualizing the IT artifact (or its properties) on its own***:** Digital design, defined as information quality for a customer service unit, is theorized to influence customer service capabilities (information quality and completeness) (Setia et al., 2013), internal distinction of flexible IT infrastructures by describing them as "scalable, adaptable, compatible and modular" (Levallet and Chan, 2019, p. 3); *Conceptualizing the functional affordances of the IT artifact:* core IT affordances in firms (namely, collaborative affordance, organizational memory affordance, and process management affordance) (Chatterjee et al., 2015). *Conceptualizing the IT artifact as an object of actions and abilities:* Planning the specified IT artifact: Planning approaches (Earl, 1993), strategizing (Galliers 2011), strategic planning (Lederer and Hannu, 1996), exploration and exploitation of the IT artifact (Marabelli and Galliers 2017); Acquiring the specified IT artifact(s): Outsourcing (Lacity et al., 2009) such as outsourcing logistics systems (Willcocks et al., 1999); Implementing the specified IT artifact(s): aligning (Karpovsky and Galliers, 2015); the misalignment resulting from the implementation and use of a KMS (Dulipovici and Robey, 2013); Using the specified IT artifact(s): system use as strategy practice (Arvidsson et al., 2014); *Structuring the/by the specified IT artifact(s):* reshaping the structure of value networks (Pagani 2013), the interpretive flexibility of technology (Orlikowski 1992); *Governing the specified IT artifact(s):* linking IT governance to organizational performance via strategic alignment (Wu et al. 2015); *Protecting (or protection from) the specified IT artifact(s):* difficulties in maintaining a competitive advantage via patenting or secrecy (Mata et al., 1995); network security as a key IS competencies (Cragg et al., 2011).
Recontextualizing construct dimensions	Specification and distinction can be used to re-define, add, or remove IT-rich dimensions to borrowed constructs.	The adaptation of the notion of shared domain knowledge in the examination of the social dimension of alignment by Reich and Benbasat (2000) is reconceptualized to consider the two dimensions of "IT-knowledgeable business managers and business-knowledgeable IT managers" (p. 84).
Recontextualization by exemplification	Providing specific examples of constructs.	Piccoli and Ives (2005) blend in several examples in defining IT concepts. For instance, in defining the visibility of IT, they refer to two specific IT artifacts "The visibility dimension can be conceptualized as a continuum spanning from internal systems (e.g., Harrah's Entertainment's engine for data analysis) to public systems (e.g., Lands' End Live: Web-based chat with customer service agents)" (p. 760).

Relationship Recontextualization Using Specification and Distinction

From a variance view to theory, relationships are construed as propositions at more generalizable (abstract) levels and hypotheses at less generalizable (concrete) levels (Bacharach, 1989). Relationships refer to the explanations of *what* constructs are related, as well as *how* and *why* they are related (Whetten, 1989). We suggest that borrowed relationships can be recontextualized by applying specification and distinction to four elements a relationship: constructs in various structural positions, causal links, assumptions, and boundaries.

Recontextualizing the constructs in various structural positions of a theory considers different roles that constructs play in a proposition, namely being independent, dependent, and path-modifying variables and explains the implications of making these IT-rich. For example, exercising distinction to a path-modifying variable can illustrate how a relationship would be different for different IT artifacts. While the views on causality in IS research are several, our focus on *recontextualizing causal links* stems from our causal ontology of mechanisms: the "real physical, psychological, and/or social processes that connect inputs and outputs under certain conditions" (Markus and Rowe, 2018, p. 1263). For brevity, we particularly focus on a subset of these processes: causal links as a common practice in specifying such process. We view causal links as hidden mediators and consider them subject to IT recontextualization. *Conceptual assumptions* are made to explain why there is a relationship between two constructs (Whetten, 2002). For example, including a causal link usually means that two theoretical assumptions (that A impacts C, and C influences B) are explained but are taken-for-granted as being true. When theories are borrowed without being challenged, their underlying assumptions are inherited (Alvesson and Sandberg, 2011). The borrowed assumptions can be relaxed, denied, and revised, however (Rivard, 2014). *Boundary assumptions* involve the assumptions about values, time and space within which a theory works as specified (Bacharach, 1989). In recontextualizing such assumptions, one can build on the nature of the specified IT artifact, suggesting why a particular causal link does not hold or works differently in the IT context.

Table 5 summarizes the above and provides several examples from the IS strategy context.

Table 5. Relationships Recontextualization Using Specification and Distinction

Approach	Description	ISS Examples
Recontextualizing the constructs in various structural positions (independent, dependent, and path-modifying variables)	Specification and distinction of the IT-rich concept as the source of change, as the modifier of change (path modifier), or as the recipient of change. The specification of the IT artifact (or its properties) on its own as an independent variable can lead to having IT-pure constructs that stem from a technology imperative view (Markus and Robey, 1988; Orlikowski and Iacono, 2001), it is possible to distinguish the material and social without implying determinism (Leonardi and Barley (2008), for example, conceiving affordances to have causal potential but not being deterministic (Markus and Silver, 2008, p.622).	*Source of change*: Ray et al. (2005) hypothesize the flexibility of IT infrastructure influences customer service performance; Mata et al. (1995) explain how the heterogenous distribution of managerial IT skills across firms influences sustained competitive advantage; Shaping strategy (McFarlan, 1984) such as IT as a digital option generator (Sambamurthy et al. 2003); Modifier of change: Fused with strategy (Bharadwaj et al., 2013) such as IS use as strategy practice (Arvidsson et al., 2014); *Recipient of change*: Implementing strategy such as reducing transaction costs (Clemons and Row 1991).
Recontextualizing causal links	Using specification and distinction to consider how the IT artifact (or its associated concepts) transfer change in the independent variable to the dependent variable. In simple terms, if a variance proposition stipulates that construct A influences construct B, construct C might be used as the causal link (see Mahoney, 2001). The borrowed causal link(s) can be recontextualized using the specified IT artifact/IS phenomena. Causal links could be explicit about the role of the specified IT artifact, or the perceptions, affordances, actions/abilities surrounding it in linking an independent variable to a dependent variable.	In explaining the path between possessing certain resources and superior firm performance through resource scarcity, Bharadwaj (2000, p. 173) refer to the IT infrastructure resources "that enable firms to (1) identify and develop key applications rapidly, (2) share information across products, services, and locations, (3) implement common transaction processing and supply chain management across the business, and (4) exploit opportunities for synergy across business units […]"; Peppard and Ward (2004, p. 187) discuss how IS competencies underlying IS capability can lead to firm performance: "The underlying IS competencies will determine the extent to which IT opportunities are incorporated in business strategy, the effectiveness of business operations through systems and technology support, how well the IT infrastructure is designed and resourced, the level of performance achieved by IT operations and the quality of its services, and the ability of an organization to deliver specific, measurable business benefits from IS/IT investment and deployment."; Mata et al. (1995, p. 500) make an internal distinction between the technical and managerial IT skills and argue that, among various IT attributes "[…] only IT managerial skills are likely to be a source of sustained competitive advantage."
Recontextualizing conceptual assumptions	Using specification and distinction to revisit (challenge or refute) the assumptions in borrowed theories. Particularly, one can achieve distinction by challenging the borrowed relationship using the specification of the IT artifact.	Mata et al. (1995) use distinction to suggest that due to the susceptibility of IT artifacts to reverse engineering and difficulties in patenting them, the assumed relationship of resource→inimitability by patenting→ competitive advantage that works for some other resources and technologies does not work for IT applications as they are difficult to patent, and patents do not protect enough against imitation.
Recontextualizing theoretical boundaries	Using specification and distinction to redefine the boundary assumptions (Bacharach 1989) about the values, time, and space to which the borrowed relationship applies, hence redefining the generalizability of the theory.	Kettinger et al. (1994) implicitly apply distinction to argue that RBV applies to strategic IS, not all technologies, arguing that "a strategic IS should reduce cost, add value, and create significant switching costs that result in financial benefit before the system is copied by competitors" (p. 39).

In conclusion

In this paper, we build on the literature that theorizes the IT artifact and develop a 2×2 framework for IT-rich recontextualized modification of borrowed theories in IS. The framework considers implementing specification and distinction to make the borrowed constructs and relationships IT-rich. It provides some pathways of embedding more IT in IS research, with particular reference to examples from the IS strategy literature.

We make two contributions. First, through formalizing specification and distinction, we provide a deeper appreciation of embedding the IT artifact in borrowed theories in IS. This has important implications for how IS scholars adapt theories from other disciplines. It renders visible a wide range of options available to IS researchers. The addition of elements within specification and distinction provides a language to describe and how borrowed theory is constructed. Indeed, enabling researchers to 'own' borrowed theory through specification or distinction unlocks—and stratifies—different ways to develop theory.

The framework enables us to appreciate how some recontextualized theories are 'IT-light' while others are 'IT-rich'. IT-rich studies are specific about unique aspects of IT/IS phenomena and demonstrate a deep engagement with the IT artifact (Orlikowski and Iacono, 2001). For example, a study on IT investment that focuses only on a general dollar amount (the "proxy-capital" view in Orlikowski and Iacono, 2001) is IT-light. Yet it can be more IT-rich if, rather than just reporting an aggregated value, it uses specification and examines the value invested in various system types such as security and cloud systems, corresponding to the top concerns of IT leaders (Kappelman et al., 2019).

Further, we suggest that, whether a theory is instantiated, modified or extended (Grover and Lyytinen, 2015) or provides a light or rich understanding of the IT artifact, are separate (although interrelated) matters. On the one hand, even an extension of a borrowed theory might not be IT-rich as it might extend with constructs remote from the IT artifact and its surrounding phenomena. The extension is an IS contribution if it enriches our understanding of IT/IS phenomena; otherwise, the contribution is likely to have significant overlaps with other disciplines. On the other hand, even instantiation can be IT-rich. The true difference between being IT-rich or IT-light is in implementation (i.e., the extent to which construct conceptualizations and theoretical assumptions are enriched with IT-related phenomena).

It is noteworthy that, as specification involves a trade-off between too narrow and too broad IT artifact descriptions, we acknowledge the *specificity dilemma*. Like any other system, which is composed of sub-systems that can be decomposed into lower-level sub-systems, IT artifacts (and their attributes) can be decomposed into more detailed elements — an issue referred to as the repeating decomposition problem (DeSanctis and Poole, 1994; Markus and Silver, 2008). The specificity dilemma is also visible in the argument that while IT is usually unspecified in IS studies (Orlikowski and Iacono, 2001), when it is specified, it often provides "overly narrow views of technology" (*ibid*, p. 122). The specificity dilemma escalates into challenges in specifying the nomological network surrounding the IT artifact. In the ISS context, for example, Wade and Hulland (2004, p. 128) explain the challenges in defining IT resources: "Broadly defined resources have the advantage of being readily generalized beyond a specific research situation but can lose their explanatory value when applied to overly narrow or specific situations". Yet, "Narrow definitions help to fine-tune our understanding of specific resources and their effect on competitive position and performance in given settings" (*ibid*, p. 129). While acknowledging this dilemma, our view is that it should not stop all research from attempting to be specific about the IT artifact being studied. Specification will enable researchers to demonstrate which aspects are salient, and without it, "we have no language for making clear distinctions between types of constraints and affordances" (Leonardi and Barley, 2008, p. 166).

Our second contribution is to ISS research and is achieved by exploring several specific examples of how the IT artifact has been captured from a non-nominal view. In doing so, while Orlikowski and Iacono (2001) (similarly Akhlaghpour et al., 2013; Grover and Lyytinen, 2015) were looking for how researchers have viewed the IT artifact, we have looked for 'spelled-out' specifications of the IT artifact that clearly demonstrate how researchers have captured its material nature when linking it to social phenomena. Recognizing IT-light vs IT-rich borrowing enables us to note that, even when the same theories are borrowed, the level of IT-rich recontextualization can vary significantly. For example, we note that the same RBV theory has been borrowed in several different ways. In terms of constructs, asset capabilities and competencies have been specified on a range of nominal IT to attributes to specific systems, and distinction has been used for assets by mentioning six characteristics. Future studies could explore the variance in IT recontextualization by various studies that borrow the same theories.

Our study has some limitations that can be addressed by future research. First, in defining specificity, other ways of capturing the IT artifact, for example based on context (e.g., manufacturing, healthcare), organizational level of use (e.g., inter-organizational networks), or intended/realized user groups can be explored. Also, richer specifications can be provided by combining multiple approaches (e.g., by referring to specific features/functionalities of a particular system type). Second, while we attempted to provide examples of each approach from the IS strategy context, further systematic literature review is required to ensure certain approaches (such as distinction) are indeed less frequently used. Furthermore, we did not identify many applications of external distinction. This provides a partial explanation to the question as to why IS struggles to position itself as a distinct field. As distinction plays a key role in highlighting how the contributions of a study are IT-related, wider and more explicit applications of that are warranted. Through owning borrowed theories, the IS field can reinforce its identity by addressing the (false) dichotomy of pure borrowing versus indigenous theorizing.

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