**A Multi-Theory View on Organizational Capability Strategy**

 **in Complex Knowledge-Intensive Firms**

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**INTRODUCTION**

Theories of organizational capability -- primarily concerned with explaining how some firms are able to perform strategic activities better than others (e.g. Eisenhardt & Martin, 2000; Teece, 2007) -- are slowly becoming the paradigmatic reference for explaining successful business strategies (Zenger, 2013). Increasingly, strategists are calling for refinements to our understanding of organization capability that include not only useful extensions to existing theory but also the *integration* of independent theoretical streams (Mahoney & McGahan, 2007). More recently, management scholars have suggested the value of creating integrative “maps” constructed by “stitching together” multiple theories from different domains to present a more “panoramic perspective” of their interrelated and complementary content (Kessler & Bartunek, 2014).

Our intention is to contribute to the development of a more integrated framework for examining organization capability applicable to complex firms, particularly those that are highly knowledge intensive and dependent on the knowledge possessed by highly-educated professionalized workers, such as professional human service organizations (e.g., hospitals, universities, and law, accounting, and financial service firms). We believe that progress toward greater conceptual synthesis is tendered through the confluence (“stitching together”) of three fairly distinct streams of thinking – Technology-Based Contingency Theory, Knowledge-Management Theory, and Transaction Cost Economics. We chose these theories because of what we see as their dominant influence on management thought, their complementary strengths and gaps, and their potential for integration and synthesis; generating important “bridging constructs” and causal interactions at their interface.

Technology-Based Contingency Theory (TBCT) focuses on the *activities* to solve problems or conduct productive tasks (see for example: Galbraith, 1973; Perrow, 1970; Thompson, 1967; Woodward, 1965). TBCT is prescriptively informative about the relationships between core task attributes and organization structure but inattentive to knowledge processes and market dynamics. Knowledge-Management Theory (KMT) focuses on the dynamics and management of organizational *knowledge and learning* (Argyris, 1999; Nonaka, 1994; Senge, 1990), which has been identified as critical for capability formation and performance differentiation in the modern organization (Grant, 1996; Kogut & Zander, 1992; von Nordenflycht, 2010; Winter, 1987). KMT elevates attention to knowledge resources and the integration of tacit knowledge but tends to be vague on functional structure prescriptions and the micro-economic underpinnings for the value of knowledge assets. Fusing TBCT and KMT can lead to an expanded view of methods and tools for applying knowledge to solve core problems. However, neither stream places much importance on knowledge providers as potentially self-interested and political beings or the economic arrangements by which they transact with the organization. Transaction Cost Economics (TCE) focuses on economizing the *asset exchanges* (transactions) underlying a firm’s activities (see for example: Williamson, 1975, 1985). TCE is prescriptively informative about the relationships between asset specialization and uncertainty, exchange risks and costs, and economic structure but inattentive to functional structure and, particularly, organizational learning costs. Thus, although each draws attention to certain theoretical dynamics important to consider when conducting research on or making decisions for complex organizations, each also creates risks that other potentially critical factors may be overlooked.

In this paper, we propose a framework that synthesizes what we view as essential and complimentary elements of these three conceptual streams. This integrated framework focuses on core task activities, knowledge dynamics, and transaction factors. It recognizes the primacy of knowledge management to the success of most modern organizations. It thus posits that the capability for superior organizational performance (efficiency, effectiveness, dynamic adaptability) is the result of the “fit” between core task attributes, knowledge requirements and dynamics, and structural arrangements (economic and organizational). By allowing core task technology, economic relationships with knowledge providers, and structural design to vary simultaneously at the subunit level, we believe the added richness and realism of our consolidated framework may offer additional explanatory value.

In the sections that follow we, first, elaborate the key elements of Technology-Based Contingency Theory (primarily as related to “core task technologies”), Knowledge-Management Theory, and Transaction Cost Economics. Next, we identify the connections and gaps among the theories, as well as the constructs that emerge at their interface. Panoramic constellations of theory (or “meta-maps), in addition to offering a more complete and accurate picture of reality, must also offer pragmatic guidance to practicing managers (Kessler & Bartunik, 2014). Accordingly, we conclude with a discussion of the theoretical implications and practical applications that arise from our framework, placing particular attention to lessons transferrable to complex professional human service organizations.

**Theoretical Background**

As the field of strategic management has evolved, theories of organizational capability (e.g., Barney, 2001; Eisenhardt & Martin, 2000; Teece et al., 1997, 2007, 2014) have slowly replaced theories of market positioning (e.g., Porter, 1980, 1996) for explaining successful business strategies (Zenger, 2013). Theories of organizational capability are primarily concerned with explaining how firms generate superior performance through effective and efficient transformation of inputs into outputs. Many authors emphasize that assembling unique resource configurations (also referred to as core competencies; e.g., Prahalad & Hamel, 1980) and selecting the appropriate form of corporate governance are more important to business strategy today than necessarily protecting products against imitation or raising barriers to the mobility of rivals (e.g., Argyres & Zander, 2012). This shift is based on increasing empirical evidence that strategies focused on firm-specific resources and sources of value creation tend to be more effective for sustaining competitive advantage than strategies focused on industry competitiveness, particularly in highly dynamic sectors where market power is not sufficiently strong to sustain superior performance (Hawawini, Subramanian & Verdin, 2003).

We share the view that further development of capability theory requires consolidation of concepts and models; part of a broader call for theoretical integration by strategic management theorists (Mahoney & McGahan, 2007). Unfortunately, we as yet lack a coherent and well-integrated theory of organizational capability (Wilden, Devinney & Dowling, 2016), partly due to the fact that authors come from very different research traditions (Di Stefano, Peterof & Verona, 2014). Di Stefano et al (2014) identified many of the varied theoretical paradigms and “languages” of which dynamic capability theory is currently composed. Wilden et al (2016) have comprehensively mapped the “architecture” (authors, articles and research domains) that encompasses the evolving “building blocks” of dynamic capability research. However, neither attempted to “stitch” together various key capability constructs into a “meta-map” of cause and effect relationships for operationally guiding research and practice. That is our intent here in suggesting the integration and synthesis of the three conceptual streams discussed below.

Technology-Based Contingency Theory (TBCT).

The dominant overarching contribution of general contingency thinking is that there is no single best organization form for optimal performance; rather it is dependent upon many factors such as its environment, strategy, size, and technology (Burns and Stalker, 1961, Galbraith, 1973; Lawrence & Lorsch, 1967; Thompson, 1967). Accordingly, contingency theorists have sought to illuminate the optimal alignment or fit between an organization’s strategy and its operating environment, between its strategy and requisite core task technologies, and between its core technologies and requisite structural forms. In this paper, we focus on the latter link between core task technology and operating structure because it is there that important “micro-foundations” of organizational capabilities are most effectuated (Felin et al., 2005, 2012, 2015; Helfat & Peteraf, 2015); what we refer to as “Technology-Based Contingency Theory” (TBCT).

TBCT focuses on the activities of core tasks (i.e., those vital to strategic capabilities) at the subunit level of organizations, with the objective of understanding and prescribing the optimal alignment between “core task technology” and organizational operating (or functional) structure, including grouping schemes, optimal span of control (number of managerial reports) and degrees of centralization of authority and formalization of rules (Woodward, 1965). “Technology” is viewed very broadly by this school to include any tangible and intangible means to transform inputs into outputs, including information, knowledge, methods and tools. Although, Woodward (1965) and Thompson (1967) assumed that organizations have a single dominant task technology, Perrow (1967) recognized that organizations can deploy multiple task technologies that vary at the sub-unit level.

The dominant logic of TBCT is that core task technology determines functional structure. The role of the manager is to choose, according to the demands of their task technology, the appropriate functional design features for organizational units. The element of core task-technology viewed by TBCT theorists as most salient to determining structure is the *information processing demands* that derive from *uncertainty*; driven by task complexity and dynamism.

Perrow (1967) emphasized *task variability* and *problem analyzability* as central underlying task characteristics determining organization structure. Task variety is the frequency of unexpected and novel events that occur in the transformation process, making it difficult to predict facts in advance when variety is high. Task analyzability concerns potential for individuals to solve problems using objective, routinized procedures (e.g., sequencing actions through procedural processes). Low analyzability (e.g., need for ad hoc sequencing of actions) places greater reliance on judgment and experience rather than on formal rules and routines.

As the amount of uncertainty that a subunit faces from high variety and low analyzability increases, so too does the need for increased information processing capacity. Thus the ability to deal with uncertainty much relies on structural mechanisms for collecting appropriate information, applying information in a timely fashion, transmitting information without distortion, and handling high volumes of information (Daft & Lengel, 1986). TBCT research establishes the unique information processing capabilities of various types of organization structures, indicating that flatter, flexible, decentralized “organic” structures are better than hierarchical, centralized, formalized “mechanistic” forms for providing the autonomy and discretion to deal with greater uncertainty (Burns & Stalker, 1961; Keller, 1994; Larkey & Sproull, 1984; Lawrence & Lorsch, 1967; Tushman & Nadler, 1978).

One important type of uncertainty for which structural controls are needed is that created when critical interrelated elements of core task activities must be coordinated within and across organizational subunits (Galbraith, 1973; Thompson, 1967; Van de Ven & Drazin, 1985). When units are highly *interdependent* for the accomplishment of an objective, such as in the case of educational programs and healthcare delivery, then high uncertainty is created due to the challenges of frequent and accurate cross-unit communication. Frequent reciprocal adjustments between functional departments increase the need for more information processing and, therefore, for more specific horizontal coordination mechanisms, such as liaisons and teams.

Notwithstanding the important contributions of TBCT, it appears inadequate for designing effective organizations when there is a need to conduct highly complex, knowledge-intensive activities. Clear distinctions between technology, information, and knowledge are necessary for a more sophisticated contingency theory of organization applied to knowledge-intensive industries. Although Perrow (1967, 1970) originally identified knowledge as an important aspect of core task technology, TBCT has more commonly focused on information and on physical tools for information processing and production (with few exceptions, e.g., Birkinshaw et al., 2002). Yet, solving problems requires appropriate *knowledge* about the task environment and its dynamics, and how information and tools may be applied to change it. Further, since much of the critical knowledge needed to tackle mission-centric core problems in knowledge-intensive firms resides in people, we need to question TBCT’s proclivity to view knowledge providers as benevolent, thus ignoring exchange risks associated with opportunism. In the next two sections we address each of these apparent TBCT gaps.

Knowledge-Management Theory (KMT).

KMT can itself be viewed as an amalgam of conceptual streams concerning the nature and role of knowledge in organizations, sharing the premise that knowledge management drives performance. One stream, the “Knowledge Based View (KBV) of the firm” (e.g., Grant, 1996; Kogut & Zander, 1992) − which originates from and extends the Resource Based View (e.g., Barney, 1991; Penrose, 1959; Wennerfelt, 1984) − establishes knowledge as a firm’s most strategically significant resource. KBV identifies variations in the knowledge bases and capabilities among firms as the major determinants of sustained competitive advantage and superior performance. According to KBV, “productive knowledge” (Winter, 2003) plays a crucial role in enabling the firm to transform inputs into valuable outputs by determining how other resources are applied along the transformation process (Arrow, 1971; R.N. Nelson & Winter, 1982). The ability of a firm to generate unique value to the end consumer depends on “sticky” knowledge (Szulanski, 1996, 2000) that is socially complex, accumulated over time through context-specific learning and practice, and thus difficult to imitate or transfer (Dierichx & Cool, 1989; Nonaka & Takeuchi, 1995). Since the process of accumulating knowledge is to a great degree ill-defined, contextually specific, and grounded in unique historical pathways (Barney, 1991), firms differ from each other in the degree they possess such firm-specific, path-dependent knowledge. The organization creates value by integrating specialized knowledge (Grant, 1996) or through unique knowledge about how to recombine existing resources based on the internal network between individuals and groups --“combinative capabilities” or “meta-routines” (Kogut & Zander, 1992; R.N. Nelson & Winter, 1982; Zollo & Winter, 2002. From this perspective, *the firm exists to facilitate knowledge generation, accumulation, transfer, and integration*.

Towards the purpose of unleashing and leveraging critical knowledge assets, another KMT stream illuminates the *dynamics and management of organizational knowledge and learning* (Argyris, 1999; Nonaka, 1994; Senge, 1990; Weick, 1993). For example, Nonaka and his colleagues consolidated research from many fields to elaborate a knowledge-dynamics model describing the processes by which different types of knowledge are created, transformed and transferred in organizations (Nonaka, 1994; Nonaka & Takeuchi, 1995; Nonaka, Toyoma & Byosiere, 2001). Nonaka and Takeuchi (1995) contend that knowledge is fundamentally humanistic and related to action. They make the critical distinction between *tacit* and *explicit* knowledge (based on Polyani’s seminal 1983 work on cognition; it may be noted that the field of artificial intelligence makes parallel distinctions between “non-decomposable, declarative” versus “decomposable, procedural” knowledge, e.g., Anderson 1980; Newell & Simon, 1972; Simon, 1991). Tacit knowledge (i.e., knowing how) is inherently *embodied* in individuals, arises out of human experience, and defies expression in formal and systematic language. In contrast, explicit knowledge (i.e., knowing about) can be expressed in formal language and *embedded* in documents, protocols (i.e., formally specified routines), and even programmed into machines.

Nonaka and Takeuchi (1995) argue that the tacit knowledge, initially created by and embodied in individuals, may become organizational knowledge through a dynamic, spiral-like process flowing through four “modes” of knowledge conversion and transfer: 1) socialization (from tacit to tacit knowledge), 2) externalization (from tacit to explicit knowledge), 3) combination (from explicit to more complex explicit knowledge), and 4) internalization (from explicit to tacit knowledge). Through socialization routines, context-specific and inarticulable tacit knowledge may be transferred to others inside and outside the organization through shared experiences, demonstrations, and informal dialogue, to become their tacit knowledge; much in the way that apprentices learn their craft through observation and imitation. Externalization occurs when it becomes possible to articulate and convert some aspects of tacit knowledge in explicit forms, to become the basis for more formally communicated knowledge. Combination involves converting explicit knowledge into increasingly more complex and systematic sets of explicit knowledge though communication among members of organizations or professional associations. Finally, internalization involves the process of individuals converting explicit knowledge to tacit knowledge by learning how to apply codified knowledge in practice. A *beneficial spiral* emerges when the ongoing interaction between tacit and explicit knowledge is dynamically elevated and shared vertically and horizontally, within and between organizations.

The importance of creating a “space” conducive to the creation and flow of knowledge, stressed by Nonaka and Takeuchi (1995), has been reinforced by many scholars in the field of organizational learning and change. In particular, the socialization process, in which tacit knowledge is transferred, benefits from an open organization culture that balances individual competition and group cooperation (Holste & Fields, 2010), promotes inquiry and trust (McHugh, Groves & Alker, 1998; O’keefe, 2002,) and fosters the development of shared understanding (Wang & Ahmed, 2003) and shared “mental models” (Argyris,1990; Senge, 1990). A number of methods have been prescribed to foster robust knowledge exchange and deeper organization learning through such processes as action learning, collaborative inquiry, and appreciative inquiry (see for example, Argyris, 1990; Cooperrider, 1986; Senge et al., 1994).

Thus, KMT contributes to the further development of an organization capability theory particularly applicable to knowledge-intensive firms by helping us more deeply understand the importance and locus of tacit knowledge, and the contextually-specific and path-dependent (historically grounded) ways in which unique and highly specialized knowledge can be unleased and leveraged for advantage. At the same time, KMT also has notable shortcomings. Generalizability is limited by a focus on the uniqueness of knowledge possessed or developed by a firm, plus a heavy reliance on descriptive case analyses. Also, remarkably little actual analysis has been carried out on the process of applying knowledge resources in production (Spender, 1996), and there is little attempt to establish the micro-economic foundations for the value of specific knowledge assets (Foss & Foss, 1998b). In addition, as highlighted by Nickerson and Zenger (2004), KMT appears somewhat unclear about the best organizational structure for creating and transferring knowledge: Some assert that formal hierarchical control can help to facilitate knowledge transfer because sharing through horizontal communication may not occur without structured direction and support (Arrow, 1971; Kogut & Zander, 1992; 1996, Nahapiet & Ghoshal, 1998). However, most authors warn that overly hierarchical structures impede creativity and innovation because they constrain the creation and transfer of new knowledge, which they see as best done via flatter, more flexible, decentralized structures promoting horizontal communication (Argyris, 1990; Conner, 1991; Conner & Prahalad, 1996; Demsetz, 1988). Winter (1997) asserts that only non-bureaucratic rules and directives are compatible with knowledge integration requirements, involving decentralized decision making and team-based structures with fluid membership tapping into specialized individual knowledge as needed. Grant (1996) prescribes *hybrid structures* in which the amount and form of hierarchical control vary according to the degree of reciprocal interdependence needed to integrate knowledge – with softer more organic controls for teams, and more bureaucratic controls where knowledge workers contribute in a more pooled or sequential fashion (similar to Thompson’s 1967 rationale for functional structure). In regard to incentive systems for encouraging knowledge transfer and integration, Grant (1996) and Foss and Foss (1998b) assert that “*low-powered incentives*” that arise from developing a sense of *shared context* (i.e., an open organization culture that values inquiry, shared understanding and mental models, trust, appreciation, and reciprocity) will be more effective than “blunt incentives” based on wages and promotions earned by performance on objective measures.

Another KBT gap is that knowledge processes are simply assumed to be better conducted through longer-term employment arrangements (Grant, 1996; Winter, 1987). This tends to neglect the potential of market dynamics for creating and transferring knowledge (Argyres & Zenger, 2012), and the potential transactional (asset exchange) conflicts arising out of self-interested opportunism, and thus does not compare the impacts of different economic governance structures for managing knowledge exchanges (e.g., arms-length transactions versus longer-term employment contracts), as discussed further in the next section.

Transaction Cost Economics (TCE).

TCE is rooted in the economic Theory of the Firm (Coase, 1937; Williamson, 1975, 1985, 1996) which essentially views firms as governance structures for managing bundles of asset transactions (exchanges) between providers and buyers. Assets can be tangible (e.g., facilities, equipment) or intangible, (e.g., brands, human capital and knowledge). TCE asserts that organization performance can be greatly enhanced by finding the most comparatively efficient ways of arranging its economic exchanges. Accordingly, TCE grapples with determining when it is better for a firm to secure and manage its asset exchanges *externally* via arms-length market transactions versus *internally* by bringing them inside the firm. The critical role of management is seen to be as agents constantly aligning the firm’s economic structure for asset control (i.e., external versus internal) with the constantly changing nature of its key exchange relationships in a way that minimizes transaction costs.

For TCE, it is the *attributes and costs of exchange relationships* that drive choices regarding firm governance (economic) arrangements (for fuller treatment of transaction cost sources and types see, for example, Rindfleisch and Heide’s 1997 comprehensive review of TCE literature). The *two key transaction attributes* most relevant to us here are the *specificity* and *uncertainty* of asset exchanges. Asset specificity refers to the highly customized and non-transferable nature of assets that may be involved in certain transactions (Williamson, 1975, 1985), rendering them difficult to redeploy to other transactions and limiting their “salvage value” (or second-best-use) should the transaction be abandoned. This creates risks of “hold ups” should either of the exchange parties asymmetrically incur substantial costs in re-negotiating a prior transaction. Both environmental and behavioral uncertainties also contribute to transaction costs. Reminiscent of contingency theory, environmental uncertainty refers to the unpredictability, complexity and/or changeability of the circumstances surrounding an exchange (Klein, Frazier & Roth, 1990). Behavioral uncertainty arises from the difficulty of monitoring and evaluating the contractual performance of exchange partners, leading to potential transaction conflicts; in fact, risks from possible opportunistic exploitation of assets by either party is a central focus of TCE (Williamson, 1985).

These attributes create *two types of transaction costs* (Rindfleisch & Heide, 1997). *Opportunity costs* arise from the failure to anticipate the need for and thus invest in certain assets (adaptation failure), and the failure to properly select appropriate providers and the consequent productivity losses due to adjustment problems. Williamson (1985) and other TCE authors affirm that adaptability of transactions is the central problem for organizations. *Safeguarding costs* arise from the amount of effort needed for *ex ante* screening and negotiating, and *post hoc* monitoring and coordinating of contracts to protect against risks of opportunism.

TCE prescribes *arms-length market-based exchanges* as the default preferred economic structure for the firm to manage its exchange relationships (based on the "invisible hand" competence of markets to adapt automatically; Hayek, 1945). At the extreme, this might include leasing all its equipment and information systems, and engaging all its human capital as independent contractors through pay-for-performance arrangements (i.e., outsourcing, contingent employment). TCE then considers circumstances where deviation from market-based transactions would economize transaction costs. Greater *internalization of assets* is seen as increasingly more efficient when transactions with providers are (or become over time) highly frequent, uncertain, and specific (emphasizing the "visible hand" competence of hierarchies to adapt intentionally; Barnard, 1938). That is because high transaction uncertainty and specificity (customization requirements) create risks for the firm relying primarily on market-based economic structure. Negotiating, monitoring, and enforcing the contractual safeguards required in order to induce parties to make highly customized asset investments (such as in buildings, equipment, brand, and learning) become very costly, particularly in the face of uncertainty and bounded rationality (Simon, 1991), which limits the ability of agents to foresee all future contingencies and contract against them in an efficient way.

With its roots in the then industrial economy of the mid 1930s (Coase, 1937), TCE has been criticized for being inattentive to economics of *knowledge transactions*, and particularly neglectful in regard to *tacit knowledge and learning costs* (Foss and Foss, 1996a, 1996b, 1998b; Jiang, 2011). Knowledge assets have features that require special treatment in making transaction cost analysis. For instance, *ex ante*, it is especially difficult for the buyer to inspect knowledge assets or develop tangible criteria for their evaluation and pricing. *Ex post*, it is especially difficult for the buyer to judge easily if the purchase has been fulfilled as contracted, and the seller of knowledge assets can still own and exploit their knowledge (Barney, 1999). Williamson (1981:1562) acknowledged that “when requisite information is distributed among a number of individuals -- all of whom understand their specialty in only a tacit, intuitive way -- a simple contract to transfer the asset cannot be devised.” Further, “the corporation is not just an instrument for organizing transactions; it is also an instrument for learning" (Teece, 1990: 59). Therefore, on top of the contractual “hazards” that TCE is used to handling, capitalizing on knowledge assets involves costs relating to the learning process through which knowledge assets get adsorbed, assimilated, and internalized by the buyer.

It is important to note here that some work in TCE and evolutionary theories of economics (Dosi & Marengo, 1994, 2000; Foss, 1998; R.N. Nelson & Winter, 1982) has attempted to integrate elements of KMT to partly remedy some of TCE’s traditional gaps in regard to tacit knowledge and learning. For example, Jiang (2011) introduces the concepts of *knowledge specificity* and *learning costs* to better account for the difficulty of transferring and integrating the tacit knowledge embodied in individuals. For her, knowledge specificity arises with “tacitness” and the unique developmental paths that create it. Learning costs refer to the more intangible costs (human and intellectual capital, rather than financial capital) involved in assimilating and integrating knowledge assets. She asserts, therefore, that calculation of knowledge-management transaction costs must include not only opportunity and safeguarding costs but also learning costs.

Other authors use ideas from the property rights literature to provide economic explanations for knowledge management dynamics (Foss, 1998; Foss & Foss 1998a, 1998b; Hart & Moore, 1990). For example, Foss and Foss (1998b: 23) convincingly show how property rights − as social contracts defining or delimiting the range of privileges granted to individual asset owners − can be used to explain transaction efficiencies regarding integration of tacit knowledge, path dependency and organizational routines. They state:

Capabilities and routines change over time as learning takes place on several levels of the firm. Accumulation of skills and the evolution of norms, values, shared exceptions, and conventions are strongly influenced by the allocation of user rights in a firm and how broadly these rights are defined. The history of interaction among members of the firm, the time horizon of the firm, and the “social contract” of prior developed solutions to coordination and incentive problems set constraints for re-delineation and allocation of rights and thus for the evolution of new knowledge.

They assert that the social contract for use of property (knowledge) rights ensures a higher level of performance as well as greater space of action for managers to reallocate decision and income rights in ways which help the firm achieve its goals. Echoing Grant (1996), they further assert that hierarchical rational control and “blunt” incentives impede the development and utilization of local knowledge and that combining *“low-powered” incentives* to create a shared context (valuing common goals, mutual understanding, appreciation, trust, reciprocity) can help integrate and use local knowledge and produce competitive advantage.

The sum of the above discussion is that TCE views *internalization* of exchanges as a decidedly more efficient economic structure for producing and using knowledge assets than external, arms-length market-based contracting. Although TCE generates considerable empirical support for the causal relationship between transaction attributes (such as uncertainty and asset specificity), transaction costs, and the choice of best economic governance mechanism, aspects of economic organization that do not turn on incentive-conflicts have been overly neglected. Learning processes, cognition, and path-dependence still remain poorly integrated in the economic theories of organization, and almost no attention is given to how to functionally organize human assets.

Thus, each of these three theoretical streams has its own strengths and limitations. Although each draws attention to certain theoretical dynamics important to consider when refining and testing theory or making organizational decisions, each also creates risks that other potentially critical factors may be under-emphasized or even overlooked. Next, we present a framework that attempts to integrate these three conceptual streams and briefly illustrate its value, particularly for knowledge-intensive organizations.

**Toward AN INTEGRATED FRAMEWORK:** **FROM MINI-MAPS TO META MAP**

Each of the theoretical streams discussed above posits different but, we argue, complimentary paths to superior organization performance capability. Figure 1 offers a framework for integrating and synthesizing the three streams. In this framework, following Kessler & Bartunek (2014), we have “stitched together” key constructs from each theory (“mini-maps”) into an overall “meta-map” that allows us to identify important constructs that bridge their boundaries. In developing this framework, we have purposefully chosen to focus on organizational *sub-units* as the level of analysis (consistent with TBCT). This decision was inspired by our interest in the behavior of *complex* organizations which, by their very nature, comprise constellations of mission-centric tasks that may vary considerably with respect to the variables being studied, each searching for the best fit between their core task and structure.

The left of Figure 1 shows what we view as a mini-map of the key constructs and causal pathways of TBCT. Following contingency theory’s overarching focus on the alignment between organization environment, strategy, and structure, TCBT posits that the key to superior organization performance lies in creating the optimal fit between the information processing requirements of a sub-unit’s core task activities and its choices about operating structure. Prescriptively, the greater task complexity, dynamism, and interdependence that characterize knowledge-intensive organizations serve to increase uncertainty and dictate more organic organization designs grouped around reciprocal interdependency. However, TBCT is mostly inattentive to the *knowledge* processes and market dynamics that have become so central to modern organizations.

The middle of Figure 1 adds a mini-map of what we view as key KMT constructs. KMT brings an emphasis on knowledge as the most strategically important organization resource, positing that the key to superior performance capability lies in developing distinctive systems --path-dependent meta-routines-- for managing knowledge dynamics better than competitors. Such systems would create beneficial “spirals” of explicit and, particularly, tacit knowledge generation, accumulation, transfer and integration. Highly effective spirals would require accelerating socialization and the development of shared context and mental models. However, although KMT elevates attention to knowledge resources and the integration of tacit knowledge, standing alone it is vague on functional structure prescriptions.

Integration and synthesis: The synthesis of TBCT and KMT leads to an expanded view of methods and tools for applying knowledge to solve core-task problems. As shown at their interface, *knowledge and learning* emerge as key contingency factors to consider, particularly for knowledge-intensive types of organizations. Beyond the expected TCBT prescriptions for “organic” structures fostering collaborative interdependence to fit such contingencies, organizational *learning systems* emerge as a key operational design feature. Prescriptively, such systems would be characterized by meta-routines for managing knowledge dynamics, supported by low-powered incentives created by a culture fostering shared context and reciprocity.

However, the synthesis of the above two streams remains largely blind to knowledge providers as potentially self-interested and political beings and the economic arrangements by which they transact with the organization. The further addition of TCE theory partially addresses this gap.

On the right of Figure 1 is a mini-map of what we view as key TCE constructs and pathways. TCE posits that the key to superior performance lies in maximizing the economic efficiency of an organization’s asset exchanges. It is prescriptively informative about the relationships between asset specialization and uncertainty, transaction (exchange) risks and costs, and economic structure. For the most part, however, TCE is neglectful of functional structure and, particularly, knowledge assets and organizational learning costs.

Integration and synthesis: Three “bridge constructs” surface at the interface of KMT and TCE: *knowledge* asset exchanges, *knowledge* specificity, and *learning* *costs*. Learning costs become a significant factor when determining the most efficient asset exchange structure for complex knowledge-intensive firms, especially for those in which exchanges with individuals embodying highly specific tacit knowledge predominate, along with a strong need for knowledge exchanges among members of cross-disciplinary teams. In addition to the traditional TCE prescription for *internalizing* such exchanges due to high asset specificity and uncertainty, prescriptions for *hybrid* economic structures manifest, with varied economic governance structures recommended depending on the intra-organizational variation in team knowledge-exchange interdependency; an operating structure contingency-like variable.

Further integration emerges from synthesis across all three streams. As noted above, some recent work in TCE and evolutionary theories of economics serves to further reinforce the importance of constructs emerging from the integration of TBCT and KMT -- *learning systems, meta-routines,* and *shared context* as critical aspects of operational design.

DISCUSSION

 The overarching purpose of this paper is to make an incremental contribution toward advancing a more holistic model for generating organization capability in complex knowledge-based enterprises by suggesting an augmented theoretical framework to enhance strategic decision making and stimulate future research. Our work reflects a *typology* approach to theory building through review of existing literature and extraction of inter-related theoretical dimensions and causal interactions (as suggested by Cornelissen, 2017). We further followed the lead of Kessler & Bartunek (2014) by “stitching together” and “meta-mapping” three existing bodies of theoretical thought in an effort to expose a fuller range of factors that are worthy of consideration by mangers seeking superior performance in modern organizations.

To some degree, the need for greater integration has been recognized within the theoretical streams focused on here. Grant (1996) applied structural contingency prescriptions to knowledge management, and Birkinshaw et al. (2002) used knowledge attributes to predict structural contingencies. Jiang (2011) asserted that transaction cost economics must be joined with a theory of knowledge and production, and even Williamson (1999) acknowledged the complementarity of the "competence perspective" and the "governance perspective.” However, Foss and Foss (1998b) noted that, so far, there has been relatively little dialogue between organizational economists and knowledge-based theorists, even though some KMT authors see their work as complementary to organizational economics (e.g., Teece, Pisano and Shuen, 1997). In lamenting this lack of synergy, Foss and Foss (1998b: 13) state:

…for a number of reasons, we do believe that dialogue is necessary. First, there is the distinct possibility that knowledge-based theorists of the firm have in fact identified explanatory mechanisms and pointed to phenomena (e.g., learning, cognition, and path-dependence) that, while crucial to economic organization, have been neglected by economists of organization. Second, there is the opposite possibility that much of what knowledge-based theorists of the firm are saying is not at all in conflict with organizational economics, but is merely expressing insights about economic organization in a different theoretical language.

We view the greatest potential contribution of our integrative multi-theoretical framework to principally reside in elevating the “bridge constructs” we have identified from the periphery of design thinking to *core* considerations for practitioners making design decisions, and for researchers seeking to empirically confirm the relative effectiveness of various design configurations. While relevant to all complex knowledge-intensive organizations, we argue that our consolidated framework will be most salient and applicable to complex professional services (CPS) firms. CPS firms are distinguished by knowledge intensity, a high ratio of labor to capital, and a professionalized workforce (von Nordenflycht, 2010). Crafting and sustaining a competitive advantage principally relies on a sizeable stock of esoteric knowledge and specialized expertise (i.e., moderate to high tacit knowledge specificity) largely embodied in people rather than embedded in physical assets (Morris & Empson, 1998; Starbuck, 1992). We believe that more effective management of such firms can be achieved by elevating attention to: 1) knowledge and learning as core contingency factors; 2) learning systems, meta-routines, and shared context as core features of operating structure; and 3) knowledge asset exchanges and learning costs as core elements of economic governance structure.

To briefly illustrate our argument, we conveniently focus here on U.S. university-based business schools. From a strategic contingency perspective, the “core task problem” can be looked at as how to most effectively educate individuals about the nature of business and the practices needed for organizational and personal success, in a way that provides some differentiation and comparative advantage over other business schools (Holtom, & Diredoff, 2015). The typical business school may be viewed as a semi-professionalized entity engaging in a highly uncertain core task that mainly requires tacit knowledge embodied in individuals. These tacit knowledge assets may be fairly common or highly specific, are usually distributed along fragmented disciplinary lines, and are mostly applied in pooled and sequential fashions that often impede knowledge transfer and integration. Two of the key issues facing administrators of U.S. business schools concern curriculum innovation and economic structure

The issue of *curriculum innovation* centers around how to create greater curriculum relevance, coherence, and integration. There has been strong and consistent criticism of the dominant “cookie cutter” design typically comprised of “siloed” specialized knowledge assets that lack appropriate integration in a useful multi-disciplinary manner (e.g., Holtom & Dierdoff, 2015; Navarro, 2008; Porter & McKibbin, 1988; Watkins, 1996), as well as the worrisome misalignment between the competencies needed for managerial effectiveness and those that are being taught (e.g., Costigan & Brink, 2015).

In addressing this issue, our framework directs administrators to focus on how *task assignment and learning systems* may be developed to break down the fragmentation along the lines of specialized functional disciplines that impede developing combinatorial knowledge about how to integrate disparate sets of tacit know how. What “sticky” meta-routines might be developed for managing the assimilation and combination of knowledge sets necessary for innovation and integration that could provide a business school with distinctive capabilities? How could knowledge increasingly be drawn from, and even created by, *multi-disciplinary* *teams* of faculty that closely interact in a reciprocally-interdependent fashion for cross-cutting curricula design innovation and delivery? What processes, incentives, and culture would need to be aligned with the more collaborative faculty structural form outlined above? What would incent and enable faculty members to more continually dialogue and coordinate their course contents? Would such “blunt” incentives as special bonuses contingent on team accomplishments be sufficient to get individual full-time faculty members to engage diligently in multidisciplinary team efforts? If not, how might “low-powered incentives” be strengthened by creating a stronger shared context (culture) of appreciation, reciprocity and collaboration to spur the high degree of socialization key to accelerating the tacit-explicit-tacit knowledge transfer “spiral” (Nonaka & Takuechi, 1995). In addition, how could stronger incentives for pedagogy and pedagogical research be implemented? Finally, how might the significant “learning costs” (Jiang, 2011) associated with all of the above be anticipated and funded?

The issue of *economic structure* centers on how to establish the optimal balance between the number of full time and part-time (adjunct) faculty. Pressure is increasingly being felt for cost containment owing to supply-side proliferation (Gaddis, 2000), demand-side stagnation (Brown, 2012, Clinton, 2016; McLeod, 2013), and growing student debt compelling attention to reducing the time and costs of degree completion. As a partial response, there has been a gradual shift in the knowledge asset-exchange mix --towards a more “arms-length” and less costly economic governance structure comprised of proportionately greater numbers of adjunct and part-time instructors and fewer full-time faculty, especially tenured professors (Arum & Roska, 2011; C. Nelson, 2016; Kezar & Maxey, 2013).

In thinking through the wisdom of this shift in economic structure, our framework directs administrators to consider implications for their unit’s *knowledge dynamics* and *learning costs*. What might be the effect of greater reliance on arms-length market-based exchanges on a type of enterprise so reliant on tacit knowledge exchange and integration, requiring strong socialization routines? How much comparative advantage would accrue to the school from its arms-length economic arrangements? How much protection would there be against the exchange risk that the school’s knowledge assets (e.g., programs and syllabi) may be appropriated by the contractors? In addition, what is the optimal way to manage and balance the “hybrid” economic and operational structures resulting from a significant split between full and part-time contracted knowledge workers? Specifically, is the best approach managing the cadre of part-time knowledge workers using a pooled, hierarchical, formalized, “mechanistic” approach, with “blunt” incentives and little in the way of institutional service or curriculum innovation expected, while at the same time employing a more “organic,” reciprocally-interdependent, team-based learning system for full-time faculty, with considerable expectations for “citizenship” contributions by them?

When extending the application of our proposed framework to other professional service settings, variances may exist in the relative importance of the factors and the consideration of others. For instance, European employment law, regulating the mix and duration of employment contracts, exerts greater constraining influences on choice of economic governance structure for organizations operating there. As another example, in the context of professional health services the degree of professionalization of knowledge workers (primarily physicians) and the amount of task (treatment) interdependence are meaningfully greater than in the educational context.

Nevertheless, we suggest that placing heightened attention on bridge constructs may yield superior performance outcomes regardless of setting. As a case in point, U.S. hospitals are presently confronting several major challenges as they grapple with the demands of national health reform initiatives. Chief among such challenges are pressures to create integrated delivery systems and growing demands form external stakeholders to provide greater “value” for the dollar. To successfully respond to these changing demands, hospital managers will need to forge stronger ties (economically and organizationally) with physicians and foster innovative programs that demonstrate measurable value for health insurance plans and patients. Application of our framework engenders several core questions: How might hospital executives best harness and leverage the implicit knowledge embodied in their service professionals? What mix of blunt and low-powered incentives might yield a stronger culture of shared commitment and collaboration among previously independent service providers? How might the associated learning costs be offset in the face of shrinking reimbursements? What is the optimal economic structure to govern the required mix of full-time (employed) and part-time (contracted staff) service professionals? How might such governance arrangements need to tempered to align with State-specific *corporate practice of medicine* laws? While not an exhaustive list, such questions exemplify the type of substantive issues that are inspired by the conceptual framework developed in this paper.

We readily acknowledge that the bridge constructs highlighted in our framework already *do* receive some attention in scholarship and practice. We merely assert that elevating them to a more central position in decision making and research will produce better insights and results. Further, we do not presume to have constructed a comprehensive framework. To the contrary, our goal in this paper is simply to offer a well-informed, but emergent, constellation of theoretical arguments, and to merge them into a vehicle for critically analyzing key antecedents that might lead to new reasoning regarding choices of economic and functional structure, thereby enhancing sub-unit performance for an important category of organizations. Toward this end, we invite scholars interested in organizational management to critically examine our proposed conceptual framework, engage us in dialogue, elaborate upon it where lacking, and advance our thinking to a point where formal propositions can be constructed and empirically tested.

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