

Editorial

Cross-Functional Integration Revisited: Exploring the Conceptual Elephant

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Despite multiple decades of previous research, cross-functional integration (CFI) remains a poorly understood concept. We argue for definitional clarity to differentiate CFI from other related concepts, such as interfirm integration or supply chain integration. We also argue for theoretical grounding to provide context for understanding the role of CFI within a firm as well as between firms. This article provides a foundation for researchers to move forward in creating a broader understanding of CFI as a focal construct of interest within the supply chain domain.

Keywords: integration; cross-functional integration; supply chain integration; theory development; theory development; construct clarity

INTRODUCTION

Cross-functional integration (CFI) seems to be one of those notions we all “know it when we see it,” but there does not appear to be consensus about what integration really is. Terms such as “CFI,” “intrafirm integration,” “interfirm integration,” and “supply chain integration,” are often used interchangeably, which only adds to the confusion and may well be limiting scholars’ ability to produce and extend relevant and rigorous research related to CFI. While conceptual and practical understandings of CFI have evolved dramatically over the past several decades, we contend that CFI remains a “challenged” construct. In order for the plethora of research that incorporates CFI to be both timely and timeless, scholars need to address two critical issues: first, the construct must be clearly defined in order for research results to be meaningfully interpreted across the many streams of literature that include notions of CFI. Second, CFI needs to be incorporated into theoretically based research so that a more holistic understanding of the construct’s role can be developed.

Regarding the definitional issue, Table 1 traces a history of CFI definition development, and is meant to be illustrative rather than exhaustive of the extant research on CFI. Note that we have included literature on supply chain integration in an attempt to demonstrate the level of confusion that has arisen within the supply chain discipline. Is it any wonder that the results of research on the impact of CFI on performance are so mixed? Pagell (2004) provides one of the clearest definitions of CFI, and differentiates between different types of integration across the inter- and intrafirm boundaries. Our initial conceptualization of CFI was consistent with Pagell’s (2004, 460) distinction of CFI as an

intrafirm concept of functions working together to achieve firm goals. That is, CFI refers to:

a process of interdepartmental interaction and collaboration in which multiple functions work together in a cooperative manner to arrive at mutually acceptable outcomes for their organization.

In developing this special topic forum (STF), we now recognize that definitional aspects of the construct need to be further clarified and agreed upon by scholars as to elements of locus and domain (who is involved and what do they do?), substance (what is integrated?), range (is CFI a state of being, or does it occur in degrees?), and level (where does it occur within a firm? Is it a strategic concept only, or does it occur at operational, tactical, or even between individuals within a firm?). As Table 1 illustrates, although the concept of CFI has been around for decades, scholars are still in the early stages of genuine construct development.

Regarding the issue of theory, most research incorporating CFI over the years has remained atheoretical. Yet, as noted by Fawcett and Waller (2013), well-grounded theory helps drive better understanding of vital, intricate decision-making phenomena. Because CFI occurs within dynamic business contexts, embedding CFI within theoretically based research will enable scholars to broaden their research agenda beyond the admittedly important, but singular issue of whether CFI positively impacts firm performance. Importantly, scholarly research needs to also clearly define the boundary conditions of CFI, so as to better understand and predict issues such as (1) how much, and when CFI is most advantageous; (2) the role of CFI in dynamic supply chain competitive situations; and (3) the relationships between constructs such as CFI and broader notions of supply chain integration.

These two critical issues of definition and theory-driven research led us to revisit the topic of CFI. Contrary to common thinking that there is too much research on CFI, or it has become passé, we contend that there needs to be *more* research on CFI. Because integra-

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Table 1: A history of cross-functional focus on integration

Reference	Context	Definition	Comments
Bowersox et al. (1995)	Logistics Leverage as a strategic differentiator		Emphasizes the importance of the coordination of the interaction between marketing and logistics for competitive advantage
Morash et al. (1996)	The boundary spanning interfaces of logistics, production, marketing, new product development (NPD)		Focus on interfunctional process integration, examining capabilities at the interface between functions
Kahn and Mentzer (1996)	Logistics integration with other functions	CFI is a process of “interdepartmental interaction and interdepartmental collaboration that brings departments together into a cohesive organization.” (p. 9)	Interaction is a behavioral, structural, dimension; collaboration represents an attitudinal dimension
Ellinger et al. (1997)	Integrated logistics	Coordination of all logistics activities within a system to minimize total costs and maximize customer service	The emphasis is on intrafunctional activities
Kahn and Mentzer (1998)	Marketing’s integration with other departments	CFI is a function of interdepartmental interaction and collaboration	Collaboration is found to have a stronger impact on firm performance than interaction
Ellinger et al. (2000)	Marketing and Logistics integration	Focus on the behavioral dimensions of CFI: collaboration, consultation, and information exchange	First to link marketing/logistics integration to firm performance
Mollenkopf et al. (2000)	Marketing and Logistics integration	CFI is a function of information dissemination and coordination of activities	Focus on factors that enable or hinder CFI
Calantone et al. (2002)	Manufacturing–Marketing interface in the NPD process	Integration is the extent of cooperation and the degree of shared understanding across the two functions	Cross-functional harmony is a function of marketing–manufacturing integration and relationship quality
Pagell (2004)	Operations, purchasing, and logistics integration	Grounded in the collaboration and interaction definition; includes specific reference to CFI as a process	The first attempt to provide definitional distinction between supply chain, interfirm, intrafirm, functional, cross-functional forms of integration
Chen et al. (2007)	Firm-wide integration	Grounded in collaboration and interaction definition; focus on marketing/logistics collaboration	Focus on firm-wide integration
Daugherty et al. (2009)	Firm-wide integration		Firm-wide integration as a capability. Differentiates between marketing/logistics relationship effectiveness and firm-wide integration
Chen et al. (2009a)	Supply Chain process integration	Supply Chain Integration as a process of managing activities across multiple functions	Clearly differentiates between internal and external integration
Oliva and Watson (2011)	Sales and Operations Planning process	Integration involves detailed evaluation, planning, and execution at strategic, operational, and tactical levels of the firm	Focus on microlevel processes that facilitate integration; takes a process perspective regarding integration

Continued.

Table 1: (Continued)

Reference	Context	Definition	Comments
Mollenkopf et al. (2011)	Marketing-operations interface	Communication and coordination across functional boundaries to align toward common goals	Includes discussion of integration versus alignment
Schoenherr and Swink (2012)	Supply Chain Integration	Supply chain integration involves internal integration (cross-functional) and external integration (with customers/suppliers) to facilitate efficient flows of goods, money, and information to maximize customer value	CFI is an element of supply chain integration
Stank et al. (2012)	Demand and Supply Integration	Using organizational processes to balance customer and supply information so as to enhance relevant value creation	CFI is embodied within the notion of “demand” functions and “supply” functions
Jin et al. (2013)	Firm-wide and Supply Chain Process Integration		CFI remains a struggle; Supply Chain Process Integration is an increasing focus, particularly with first-tier partners and is linked to performance
Mackelprang et al. (2014)	Strategic Supply Chain Integration	Acknowledge lack of universally accepted definition, but associate it with the level to which a firm strategically links and aligns processes with suppliers and customers	Internal integration is a dimension of supply chain integration

tion can be considered “SCM’s focal concept of interest” (Frankel et al. 2008, 17), scholars have a responsibility to clearly define and debate the notion of CFI, and to invoke both theory development and theory-testing research to more fully position the construct within the pantheon of supply chain management (SCM) concepts. Autry et al. (2014) have recently made this same argument for the concept of supply chain integration. We concur with their notion, but urge scholars to clearly delineate between CFI and supply chain integration, as the former focuses primarily on intrafirm issues of integration, and the latter extends the notion to the inter-firm domain.

THEORETICAL LENSES WITHIN THIS STF

The theoretical lenses applied by the three sets of authors fall well within the purview of what we sought: high-quality manuscripts that develop, test, and/or validate theory as related to CFI, while also providing implications for practitioners. The realm and disciplinary “home” of any theory employed was open, and we encourage the transfer of theoretical developments from other disciplines as a starting point for addressing appropriate research questions and providing a more fertile ground for the theoretical development of understanding and knowledge as related to CFI. Two essential criteria were assessed for STF submissions: rigor and relevance, both of which are necessary for good scholarly research (Mentzer 2008). Rigor relies upon properly developed and agreed upon constructs, as well as proper research design, both of which should be replicable. Indeed, a review of McGrath’s (1981) discussion of the three-horned dilemma reminds researchers of the challenges of producing “good” research that carefully and fully acknowledges the dilemmatic trade-offs, and establishes a research trail of evidence to enable replication by others. Relevance means the research is pertinent, important, and connected to issues that matter, either to scholars and/or practitioners. We now examine the three papers below.

Each article brings a different *theoretical lens* and *unit of analysis* into play. Stolze, Murfield, and Esper utilize Social Capital Theory; their unit of analysis is the individual. Swink and Schoenherr examine CFI through the lens of Information Processing Theory; their unit of analysis is the firm. Enz and Lambert frame their research within the Relational View; their unit of analysis is the group/team.

There are primarily two *thematic* issues expressed across the articles: performance and behavioral. Two of the papers (Swink and Schoenherr; Enz and Lambert) address financial implications of CFI; the former focuses on the financial performance implication directly, while the latter considers the interplay of financial performance results and subsequent relationship evolution. Two of the papers (Stolze, Murfield, and Esper; Enz and Lambert) address how behaviors and relationships impact the development, maintenance, and evolution of CFI.

Although there is thematic overlap, the specific *research questions* differ. Stolze, Murfield, and Esper investigate whether, and how, CFI can be engendered within an organization at the individual employee level, taking into account his/her social network and related social capital. Swink and Schoenherr address how

integration affects firm profitability and its underlying dimensions of efficiency and productivity, and test the moderating effect of supply chain process span on such integration. Notably, they utilize objective data from firms' financial records, which represents a significant advance over traditionally employed perceptual measures of performance collected via surveys. Enz and Lambert investigate social interaction and financial performance and the linkages between the two constructs to better understand how relationships are perceived and how firm-level behaviors change when financial data are provided to managers to assess the value of joint initiatives in supplier–customer relationships.

Theoretical contributions are clearly evident in all three papers. Stolze, Murfield, and Esper validate existing research regarding the role of relational embeddedness as a foundational construct within the realm of social capital. They also validate the existence of multiple social networks (ideation, key enabler, and friendship networks) that can facilitate integration. Perhaps most notably, while CFI has primarily been conceptualized as a firm-level integration of processes and/or strategies, Stolze, Murfield, and Esper reveal that integration begins with the individuals involved in it. Swink and Schoenherr test the effects of internal integration on cost and asset utilization that can be traced to SCM operations; in doing so, they validate a bevy of scholarly intuition which hypothesizes that CFI should lead to improved performance. Their results are an interesting mix of effects (and noneffects). Notably, the noneffects confirm a scholarly supposition that the nonsignificant results oftentimes provide some of the most interesting and topical grist for scholarly attention going forward. Enz and Lambert employ both qualitative and quantitative methods to provide evidence that a firm's relationships with suppliers and customers should include both a perceptual and objective component. Moreover, those components should not be examined independently of the other. The authors provide a significant contribution toward the importance of cross-functional and cross-firm teams in enhancing relational value.

As the STF papers illustrate, the use of multiple theoretical lenses enables better understanding, explanation, and prediction of the role of CFI within a firm and in a supply chain context. No one of these theoretical approaches is more "right" than another; each adds a unique perspective to the understanding of CFI and brings to mind a thought-provoking article published several years ago that seems highly relevant to our discussion. Boyer and Swink (2008) discuss the concept of "empirical elephants," and argue for the use of multiple research methods to more clearly understand supply chain phenomena, lest we as researchers continue to act like blind men each describing an elephant from a single (methodological) perspective. We assert that the same rationale applies to CFI: it has become a conceptual elephant, in which different disciplines and authors have each described or measured CFI in ways that create multiple, separate understandings of the same phenomenon. The three papers comprising this STF provide an improved view of the CFI phenomenon. Equally as important, they provide compelling evidence that scholars' future efforts must better clarify the definition of CFI with respect to its domain, scope, relevant units of analysis, antecedents, and consequences, such that CFI *can be clearly differentiated from other forms of integration*. In this way, scholarly research can reach a consensus regarding CFI, as well as advance its theoretical foundations and related role in practice.

WHERE DO WE GO FROM HERE?

Given the discussion above, we identify a number of avenues for future research that can be explored to further elucidate the notion of CFI and its role in a firm and a supply chain. The following avenues are not an exhaustive list of research topics, but provide important suggestions for future research.

Understanding the context within which CFI occurs

The current notion of CFI ignores the *context* within which it occurs, or attempts to occur. Generally speaking, most firms tend to be functionally oriented not process oriented; however, CFI seems to be not so much about departments/functions integrating but rather about integrating around a sequence of activities, for example, a process. CFI seems to require organizational infrastructures and processes that enable the effective and accurate processing of information, including its dissemination to appropriate constituents within the firm so that decisions can be made and actions taken. Further, Chen et al. (2009a,b) suggest that casting a discussion of CFI within a process perspective can be extremely beneficial because it naturally shifts focus away from functional units to the actual business activities that are enacted within and between firms in a supply chain context. Thus, CFI might be more appropriately titled CFPI (cross-functional process integration). This condition thus appears to be a beneficial avenue for future investigation. A related opportunity exists for research which concerns the condition of firm alignment, as discussed by Pagell (2004). Specifically, the current conceptualization of CFI ignores the requirement for vertical alignment within a firm; that is, functions must be aligned to the firm's larger strategic objectives *as well as* to the more traditional horizontal integration of functions/departments. In other words, vertical and horizontal alignments are both necessary, but insufficient, conditions. In sum, without contextualizing CFI within a process perspective as well as ensuring it is consistent with the larger objectives of the firm, the CFI concept will remain poorly understood.

Understanding the role and theoretical scope in CFI research

Scholars must consider the theoretical scope regarding CFI research in SCM. While supply chain literature is replete with "grand theories" (Merton 1957) that have been borrowed from other disciplines, such theories exist at a level of abstraction and generality that far exceed the bounds of the applied disciplines within the supply chain domain. Middle-range theories, in contrast, exist at a level of increased granularity to explain and predict behavior and outcomes within delimited conceptual ranges, and are particularly useful in applied disciplines in which managerial problems need to be solved. In other words, whether discovery and/or justification is the aim, the critical issue to keep in mind is that the purpose of middle-range theories is to accommodate both theoretical rigor and contextual relevance as it relates to the particular research endeavor at hand (Lindblom and Cohen 1979). Middle-range theories provide value due to their ability to be consolidated (with their peer midrange theories) into a more comprehensive set of ideas. They can also "sit within" the grand theories to help explain specific phenomena in a given discipline,

or they can emerge from empirical findings within a specific domain of knowledge (Brodie et al. 2011) to aid in predicting behavior and/or performance (as in the articles in this STF). Since CFI has been so prevalent in a variety of supply chain literature streams over the years, yet has remained fairly atheoretical, perhaps its biggest role will be at the midrange theory level, to help describe, explain, and predict supply chain specific phenomena. Thus, midrange theories offer a promising, unexplored avenue of future CFI research.

Understanding the importance of unit of analysis in CFI research

The unit of analysis in CFI research should be broadened so as to contribute to the understanding of CFI's conceptual domain. At least four different perspectives can be employed to produce different insights on CFI phenomena. One, *individuals'* actions across functional boundaries form the basis for what is often measured as firm-level CFI. Thus, a microfoundations approach (Foss 2011; Oliva and Watson 2011) can shed much light on the origins and manifestation of CFI at the individual level. Two, individuals work in groups, teams, and departments. The plethora of research addressing CFI at the functional level essentially addresses CFI at a *group level within an organization*. Third, CFI can be conceptualized at the *firm level* with regard to how an organization's structure is designed to achieve a goal that is determined jointly, rather than being mandated or determined in isolation. Fourth, CFI can occur at the *interfirm level* as firms engaged in supply chain relationships must coordinate the flow of information, goods, and finances across firm boundaries. Buying and supplying activities represent different functional perspectives that must work together to achieve firms' corporate and supply chain goals. Essentially, interfirm CFI is an extension of group level analysis that extends across firm boundaries. In sum, different units of analysis will enable researchers to explore a variety of different challenges, opportunities, and objectives for investigation.

Understanding behaviors that underlie CFI

A lengthy history of behavioral research dynamics (Thompson 1967; Lorsch and Allen 1973; Galbraith 1977; Lawrence and Lorsch 1986) posits that the effort required to achieve firm-level integration increases with the level of differentiation in an organizational environment. Differences among various functions' cognitive and emotional orientations (i.e., not only goals and objectives but also perspectives on time and relationships) create short-term conflicts and de-emphasize long-term organizational goals (Oliva and Watson 2011). Thus, CFI is clearly a dynamic process that occurs in a variety of settings and also involves a web of players. Given those conditions, social exchange and social network theories can provide significant understanding of CFI and its impact within the supply chain domain because they enable researchers to study more complex networks of relationships. Relatedly, we recognize and remember that the nature of a dynamic process such as CFI inherently includes change; as these complex networks of relationships evolve over time, relationship analysis becomes further complicated (Autry

and Golicic 2010) and thus presents a fruitful opportunity for investigation. Conducting such relationship analysis leads to another potential area of investigation: how do managers change their companies' relationships with partners as a result of assessing actual performance? (Greer and Ford 2009; Omar et al. 2012).

Traditional integration research has focused on functional and firm-level analyses that ignore the opportunity to achieve a more thorough understanding of CFI behaviors in several respects. Several authors have highlighted the need for a better, more detailed understanding of interdepartmental integration based on microlevel data (Griffin and Hauser 1996; Malhotra and Sharma 2002; Oliva and Watson 2011). Research is needed that explores CFI as a resource or dynamic capability, and thus, a deeper understanding of how to develop and manage that resource is imperative. Resource management theory (Sirmon et al. 2007, 2008) can provide a deeper understanding of how to develop and manage a CFI capability. Delving into the black box of CFI employing a microfoundations approach is critically important so as to allow scholars to understand the more granular context within which individual behaviors and actions take place (Foss 2011). Essentially, a microfoundations approach provides an opportunity to examine *how* CFI occurs.

Understanding the role of CFI on performance

Several researchers have identified the importance of measuring achieved (i.e., financial), rather than intended (i.e., perceptual) performance as an outcome of integration (Ellinger et al. 2000; Pagell 2004; Springinkle and Wallenburg 2012; Turkulainen and Ketokivi 2012). While the literature acknowledges the critical importance of measuring the impact of CFI on performance, mixed results over the years suggest an ongoing need for further and more clarified research. Clearly, substantial opportunities exist in this area. Researchers should also broaden their notions of performance to fit the wider lexicon of performance in the twenty-first century to also include social and environmental performance as firms are challenged to compete in an increasingly resource-constrained world. Additionally, a broader notion of performance may include a shift to identifying those relationships with the greatest potential for value [co]creation (Vargo and Lusch 2004; Von Hippel 2005). This shift should be based on long-term performance (broadly defined), rather than simply cost reduction or short-term profitability.

CONCLUSION

The five research directions above provide a suggested roadmap for better understanding the locus and domain, substance, range, and level of CFI. Several theoretical approaches have been identified, and there are certainly additional theories that can be applied to future research regarding CFI. Rather than being a passé and overresearched concept, CFI represents an exciting and challenging avenue for future research. In many ways, this STF raises more questions than it answers regarding the fundamental question of "what is CFI?" Because CFI has been deemed a focal concept of interest, we urge scholars to re-ignite

the stream of literature on CFI with rigorous research aimed at achieving consensus of what CFI is and is not (e.g., its boundaries) and thus theoretically differentiating CFI from other forms of integration. Additionally, that research stream should be grounded in theoretically based research which provides a thorough, holistic understanding of the CFI construct's role. The impactful and thought-provoking series of articles in this STF provide a beginning to achieve that objective, and we hope other scholars will be encouraged to follow their lead to provide further clarity regarding the "conceptual elephant" that currently exists.

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