A review of the literature on cross-functional integration (2010-2020)

A review of the literature on cross-functional integration (2010-2020): Trends and recommendations

Debora Jeske and Thomas S. Calvard

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Abstract

Purpose: Structural and technological changes are driving functional reorganization in many organizations. To date, there are very few articles that explicitly, consistently and cumulatively focus on cross-functional integration. This paper aims to review and explore the literature that does directly address cross-functional integration.

Design: The authors conducted a literature review within the general management domain for the time frame 2010 to 2020 and identified 71 relevant articles that provide an overview of current practices and trends.

Findings: This conceptual article reviews this identified literature and outlines key trends, noteworthy articles and a summary of relevant theories, and provide an overview of outcomes linked to cross-functional integration in the literature. The article concludes with a set of recommendations for practitioners and an outline of potential research areas for academic researchers, including a call for more theory integration, building and testing in the area of cross-functionality.

Value: This article is the first of its kind to attempt to summarise the literature on cross-functionality (published between 2010 and 2020), a currently very fragmented field of study spread out across several different management disciplines.

Keywords: cross-functional integration, cross-functionality, boundaries, interdependence

Introduction

Today's discussions of organizational forms often focus on the long-term readiness of organizations. However, these discussions typically do not take account of the need to engage and tackle boundaries at a cross-functional level. As a result, the discussions can appear to be fragmented and lacking in specific theory-building and development (Pellathy, Mollenkopf, Stank and Autry, 2019).

In practice, many executives and managers continue to break down barriers and silos where greater cross-group collaboration may be needed (Casciaro, Edmondson and Jang, 2019; Kwan, 2019; Patrucco, Walker, Luzzini and Ronchi, 2019). The purpose of the current article therefore is to selectively review the recent management literature on cross-functional integration efforts, particularly those that have been observed between specific departmental functions such as accounting, logistics, sales and marketing (e.g. Le Meunier-FitzHugh and Piercy, 2010; Opute, 2014). In doing so, specific insights are generated that provide an overview of outcomes, processes and situational variables that impact the effectiveness of cross-functional integration efforts.

The remainder of this article proceeds as follows. First, we selectively review relevant articles in the broader management literature published between 2010 and 2020. By adopting a selective literature review, we were able to focus on those articles that were thematically most relevant within the management and across management disciplines. Conducting a systematic approach or

meta-analysis was not an option as the research on cross-functionality is not well established in any one discipline. In addition, the research foci and use of terminology varies widely. In our review section, we identify pertinent concepts related to cross-functionality and cross-functional integration. Second, we propose some enabling and constraining conditions of cross-functionality affecting working outcomes. Finally, we discuss and conclude the article by outlining further implications and describing an agenda for future research and practice.

Method

The concept of cross-functionality has been considered to some extent in the management literature to date. Therefore, and in order to clarify which resources already exist, the authors conducted a focused literature review to identify current and recent articles in the literature. This decision was based on the fact that organizational functions evolve rapidly and change due to various technological, economic and other contextual influences. The results of the last five to ten years would thus provide a more appropriate foundation for this article's discussion of potential propositions and trends.

The selective literature review was conducted for the years 2010 to 2020 using Google Scholar in May 2019, and a follow-up review of the literature was conducted in April 2020 to identify recent publications. While the initial keyword search focused specifically on literature sorted by relevance that used the term cross-functionality (2,660 hits), other related terms were more specifically helpful as they narrowed down the search. These included terms such as 'inter-functional collaboration' (235 hits; e.g., Canacott, Ellis and Tadajewski, 2018; Belasen and Rufer, 2014; Abraham and Reddy, 2010; Ashnai, Smirnova, Henneberg and Naudé, 2019), 'inter-departmental integration' (206 hits; e.g., Kahn, 1996) and 'inter-departmental collaboration' (1,240 hits; e.g., Cuijpers, Guenter and Hussinger, 2011; Danowski, 2010; Lee, 2020). Further terms identified included 'organizational configuration' (3,490 hits; e.g., Lohmann and zur Muehlen, 2019; Mohsen and Eng, 2016) and 'cross-group collaboration' (176 hits; e.g., Kwan, 2019).

The focus was on identifying all those papers that discussed cross-functionality as a potentially long-term strategy involving the actual – structural or physical integration of functions - implying an effort requiring careful change management (Higgins, 2005). Mere knowledge integration to combine distributed knowledge across various organizational boundaries as mentioned by Lin and Chen (2006) was not the focus of the literature search. Articles were considered relevant when they contained the key terms, and when they were relevant to the management sciences. Following a scan of article titles, journal titles, and abstracts, the number of potential candidate papers was reduced significantly once we further ensured that the articles selected focused on cross-functionality, integration and so on. Only English language texts were considered in this review. This led to the identification of 81 sources. Once we excluded articles not sufficiently related to management, book chapters and theses, we arrived at a final total of 71 conference or journal articles on cross-functionality that were relevant to our queries and were published over the last ten years (2010-2020) in management and organizational domains.

Results

Cross-functional research prevalence

This search and review revealed that the concept of cross-functional integration and cross-functionality has been taken up by authors in a variety of management disciplines, such as logistics and supply chain management, marketing and research and development (R&D). For example,

many articles focused on cross-functional endeavours between marketing and other functions, such as: R&D (de Clercq, Thongpapanl and Dimov, 2011; Hausberg and Leeflang, 2019; Lin, Wang and Kung, 2015; Belasen and Rufer, 2014); logistics (Lopes Pimenta, Lago da Silva and Tate, 2016); IT (Buckley, 2015); purchasing (Ashnai et al., 2019); sales (Canacott et al., 2018; Hausberg and Leeflang, 2019); corporate communications (Neill and Jiang, 2017); and operations (Piercy, 2010). Other cross-functional combinations in the literature included contexts related to product development (Coradi, Heinzen and Boutellier, 2015; Porter and Heppelmann, 2015); cross-functional project teams including two or more functions (Ståhle, Ahola and Martinsuo, 2019; Anthony, Green and McComb, 2014); engineering (Clercq, Thongpapanl and Dimov, 2013); and customer service (Claro and Ramos, 2018). Further in-depth reading on the cross-functional integration literature by studied function is provided by Ashenbaum, Blair and Brewer (2020).

Theories and theoretical perspectives

A short overview demonstrates the range of different theories that have been applied. Ghobadi, Daneshgar, and Low (2010) used social independence theory (Deutsch, 1949) and the cooperative model of knowledge sharing (Loebecke, van Fenema & Powell, 1999). Nakata and Im (2010) utilised group effectiveness theory (Hackman, 1987). Belasen and Rufer (2014) found the competing values framework for corporate communication useful (Cameron et al., 2006). Mohsen and Eng (2016) reference the motivation-ability-opportunity (MAO) framework (MacInnis et al., 1991) and configuration theory (Ordanini et al., 2014). Piercy and Ellinger (2015) build on Disconfirmation theory (Oliver 1980, 2010). More recently, Ashbaum and colleagues (2020) generated a new research model that integrates various theories such as contingency theory, information richness theory and findings from the integration literature.

Other well-known organisation**a**l theories have also been examined and used to explore cross-functionality. Cuijpers, Guenter, and Hussinger (2011) as well as Rosado Feger (2014) specifically refer to organizational information processing theory (Galbraith, 1974). Engelen, Brettel, and Wiest (2012) consider Resource dependency theory (Pfeffer and Salancik, 1978). Neill and Jiang (2017) draw on Stakeholder theory (Freeman, 1984). This suggests that there are a wealth of different theories are already considered in this inter-disciplinary and multi-disciplinary domain. No clear consensus emerges regarding the type of theories that are adopted.

Definitions of cross-functional integration

Several publications are notable for the clarity and explicit nature of their definitions and discussion of various concepts related to cross-functionality. Two particularly noteworthy articles in logistics journals can be highlighted here. Both define key concepts in ways that take stock of the past while offering future guidance to functions that have not been included in cross-functional integration efforts.

The first article is an article by Pellathy et al. (2019). These authors provide an excellent overview of key concepts and definitions around cross-functionality, including integration, collaboration, coordination and communication. They also clearly differentiate between dimensions and attributes, alternative terminology and list additional resources for each of these concepts. Their article furthermore features an overview of foundations to help readers understand research directions in the literature on cross-functionality, noting the importance of integration of goals, activities and knowledge.

A second article of note is by Lopes Pimenta et al. (2016). These authors outline relevant factors regarding the formal and informal application of cross-functional integration. In practice

and in the literature, cross-functional integration is often implemented more informally at the team and project level. However, broader and more sustainable cross-functional integration needs to be a more formally and strategically reinforced to be most effective in the long-term (e.g., Chinta and Kloppenborg, 2010). This formal strategic support is an important consideration for all business units and functions wishing to establish cross-functionality in some form across traditional functional boundaries.

In the current review, the definition of Pellathy et al. (2019, p. 5) is adopted, according to which cross-functional integration can be defined as "an ongoing process of collaboration, coordination and communication, in which the different internal functions that manage a company's supply chain work together to maximize outcomes for their firm and external exchange partners". Cross-functional integration therefore describes the degree to which social dimensions of work such as interaction, communication, information sharing, but also coordination and joint involvement are present among cooperating business functions (Song and Montoya-Weiss, 2001).

Pellathy et al. (2019) go further in defining the three dimensions of cross-functional integration: collaboration, coordination and communication. The first process dimension is cross-functional *collaboration,* involves an "ongoing process in which the different internal functions that manage a company's supply chain establish common goals and objectives and work together to achieve them" (Pellathy et al., 2019, p. 5). The second process dimension of cross-functional integration is cross-functional *coordination*, the "ongoing process in which the different internal functions that manage a company's supply chain focus on optimizing overall supply chain processes by jointly managing the flow of operational activities" (Pellathy et al., 2019, p. 5).

The third process dimension is cross-functional *communication*. This dimension captures the "ongoing process in which the different internal functions that manage a company's supply chain work together to maintain a reciprocal flow of information that supports collective decision making and action" (Pellathy et al., 2019, p.5). This communication-oriented focus can also be seen in cross-functional project teams in order to manage information flows for internal and external customers as well (Chang, Jiang, Klein, and Wang, 2019; Ganotakis, Hsieh, and Love, 2013; Ståhle et al., 2019). Terminology can become a barrier in cross-functional teams and integration, unless enough effort is invested in cross-functional communication (Ashenbaum et al., 2020).

Known outcomes of cross-functional integration

There are a number of potential benefits associated with cross-functional integration according to the existing literature. Outcomes of cross-functional efforts have been reported in relation to innovation (Belasen and Rufer, 2014; Centindamar, Phaal and Probert, 2016; Cuijpers et al., 2011; Marasquini Stipp, Lopes Pimenta and Jugend, 2018; Miller, Thomas and Roeller, 2020; Su, Chen and Wang, 2018; Yang and Tsai, 2019) and innovation management (Hausberg and Leeflang, 2018). Frequent, related links are also made with creativity (Ng, Jee and Anuar, 2012), new product development (Belasen and Rufer, 2014; Graner and Mißler-Behr, 2014; Hirunyawipada, Beyerlein and Blankson, 2010; Hemonnet-Goujot, Manceau and Abecassis-Moedas, 2019; Hendler, 2019) and product innovation (de Clercq et al., 2011; de Clercq et al., 2013; Engelen et al., 2012; Ghobadi, Daneshgar and Lowdi, 2010; Hirunyawipada et al., 2010; Jugend et al., 2018; Nakata and Im, 2010; Pérez-Luño, Bojica and Golapakrishnan, 2019; Tsai, Hsu and Fang, 2012; Tsai and Hsu, 2012, 2014). These results align with the finding that effective functional integration and interdependence are significant predictors of knowledge exploration and exploitation (Gonzalez, 2019; Szalavetz, 2018). This means that issues such as excessive interdependence and inefficiency, limited functional career progression and conflict and communication challenges due

to the very different specializations and terminologies need to be considered (e.g., Barke and Prechelt, 2018; Belasen and Rufer, 2014; Majchrzak, More and Faraj, 2012).

Interpersonal and team-focused benefits have also been reported in relation to better resource management, resource acquisition and conflict management (de Clercq e al., 2013; Ghobadi, 2011; Huo, Zhang and Guo, 2016; Kwan, 2019; Lee, 2020), as well as skill development and talent management (Lee, 2020; Levenson, 2012). Cross-functionality can therefore contribute to how employees develop and deliver products and services (Rowe et al., 2005), while also enhancing the innovation processes of improving product/service quality and people management practices as well as business performance (Khanuja and Jain, 2019; Le Meunier-Fitzhugh and Massey, 2019; Lee, 2020; Leuschner et al., 2013; McDermott et al., 2019).

Situational and contextual influences

Several situational and contextual factors have been identified as instrumental in the pursuit of cross-functional integration efforts. The key articles are briefly outlined in this section.

According to Oliva and Watson (2011), information quality and constructive engagement in terms of how information is processed are critical to effective cross-functional communication, which is one of the three dimensions mentioned by Pellathy et al. (2019). Indeed, different goal consensus and sufficient understanding of the full picture are necessary to facilitate cross-functional efforts and reduce possibilities of conflict (e.g., Chang et al., 2019; Enz, Schwieterman and Lambert, 2019; Le Meunier-Fitzhugh and Massey, 2019). Cross-functional interactions and information sharing in regular cross-functional team meetings can ensure that functions learn about the perspectives of the other functions, reducing potential functional biases and clarity for all involved (Enz et al. 2019; Le Meunier-Fitzhugh and Massey, 2019).

A further two constructs of importance are procedural quality and alignment quality (Oliva and Watson, 2011). Procedural quality captures how information is validated and decisions across functions are made, while alignment quality reflects the efforts of functions to jointly pursue goals and synchronize appropriate actions in their pursuit of agreed goals (Oliva and Watson, 2011). These two constructs can facilitate both cross-functional collaboration and coordination, the remaining two of three dimensions (Pellathy et al., 2019).

At a team level, cross-functionality may be subject to the existence of a range of team integration mechanisms, processes and emergent states (Le Meunier-Fitzhugh and Massey, 2019; Rosado Feger, 2014). As Lee (2020) notes, there are hidden costs when organisations promote collaborations across departments or business units due to the various norms, cultures, and distinct ways of working in each of the departments. Lopes-Pimenta et al. (2016), moreover, propose that integration depends on team boundary spanning activities, the level of team integration required, the presence of integration factors, the formality and longevity of team relationships. According to another review by Marasquini Stipp et al. (2018) and the work by Le Meunier-Fitzhugh and Massey (2019), team cross-functionality may also be fostered by top management support, trust, team reward systems, physical proximity, job rotation, inter-functional meetings, adequate communication and the behaviours and attitudes of team members. Indeed, several authors emphasize that it is important to establish cross-functional relationships to lead processes and manage interfaces between functions (Piercy and Lane, 2007; Le Meunier-Fitzhugh and Massey, 2019; Ståhle et al. (2019).

The adoption of cross-functional integration efforts may also depend on sector, organizational characteristics and (inter)national circumstances (e.g., Lee, 2020). In the case of business process management, regulatory processes and requirements have also led to the adoption of more cross-

functional roles (Lohmann and zur Muehlen, 2019). Some research has shown that organizational size may play a role, with smaller organizations being able to achieve cross-functional coordination and integration more effectively through more flexible structures (Rowe et al., 2005). Geographic separation between units is posited to negatively affect cross-functional integration efforts given the greater barriers to communication and contact across distance (Coradi et al., 2015; Jugend et al., 2018).

Cross-functional interaction and collaboration are also stronger in organizations that exhibit more collectivist orientations in their surrounding national and corporate cultures, valuing connection and unity across ever-greater units (Engelen et al., 2012). The degree to which organisations are bureaucratic should not automatically be considered a barrier to cross-functionality. It is entirely possible for more flexible and responsive forms of organizing to emerge which can operate successfully within bureaucratic entities (Graetz and Smith, 2009). There is no inherent reason why certain organizational forms are less likely to accommodate flexible forms of organizing. In sum, cross-functional integration and collaboration are an option for all kinds of organizations.

Finally, external market forces can push organizations toward greater cross-functionality (Bigdeli, Kamal and de Cesare, 2012), especially when competitive change pressures are high (Pettigrew, Massini and Numagami, 2000) or the technological turbulence in the market is high (Silvia, Gomez and Lages, 2019). For example, many companies are challenged to find integrated solutions to customer demands, an issue which often calls for greater horizontal collaboration and inter-functional coordination (Casciaro et al., 2019; Silvia et al., 2019). Other research further argues that cross-functional collaboration in the form of cross-boundary collaboration can generate improvements in customer loyalty and profit margins (Gardner, 2015).

Discussion

This article has presented the results of a selective systematic review of a recent body of work on cross-functionality (2010-2020). The review enabled the authors to identify prominent resources on cross-functional integration that also provide key definitions and outline the dimensions associated with cross-functional integration. A discussion of benefits as well as barriers and appropriate approaches to address the latter followed. This discussion was complemented with a section that identified situational and contextual influences surrounding the processes and outcomes of cross-functional partnership opportunities. In doing so, the article provided a starting point upon which to build more substantive debates about applying the idea of cross-functional integration. To the best of our knowledge, this is the first paper that attempts to summarise the fragmented literature around cross-functionality.

Practical implications

The results of our review and the literature identified suggest that cross-functionality is implicit in many existing concepts and organizational designs. Support functions such as Human Resources often have the expertise to guide and manage many processes, while also being able to identify excellent collaborators whose expertise and networks span multiple functions (Casciaro et al., 2019). Working with these individuals is critical as they can act as role models in becoming cross-functional ‘cultural brokers’ that demonstrably act as a bridge or go-between, an adhesive to ensure cohesion and solidarity, and a form of interpreter that facilitates knowledge-based collaboration. Abraham and Reddy (2010) use the similar label of ‘integrators’ for those whose role is to mitigate challenges and help solve cross-functional problems. Both ‘cultural brokers’ and ‘integrators’

(Claro and Ramos, 2018) may therefore form important bridges that connect departments and help them to resolve interpersonal differences and build cross-functional social capital.

Some aspects of cross-functional integration require the concerted effort of multiple functions. From a resource-based perspective, collaborative resource prioritization may require both expertise and collaborative balancing of goals (Abraham and Reddy, 2010). Both alignment of departmental strategies and resource allocations will be required to ensure that those functions that are being brought together agree on structures, processes, systems and leadership decisions (see Higgins, 2005, for more strategy execution recommendations). It therefore remains useful, it may be useful to study changes in processes, boundaries and structures (including the move to the adoption of cross-functionality) in organisations overall (Graetz and Smith, 2009).

Specific managerial behaviours to be learned may include enabling employees to see matters from a different perspective or from the viewpoint of different functions, to organize productive dialogues between functions, to recruit staff from diverse groups and to encourage staff to engage and interact with various networks (Casciaro et al., 2019; Litchfield and Gentry, 2010). Managerial training could cover the success factors for promoting cross-functional integration, as well as how to tackle collaborative blind spots (Kwan, 2019) and deploy decision-making aids governing the choice and use of effective knowledge integration mechanisms (Tsai and Hsu, 2012). The trained managers may then also train additional team members to be aware of and manage their own boundary interactions effectively, building these capabilities in aggregate (Anthony et al., 2014). Leadership development is likewise a good means for training in-house cross-functional role models, actors whose behaviour and shows of cross-functional employee support will represent an important precondition to cross-functional integration (Hogg et al., 2012). Building on these ideas, the next discussion section outlines a number of recommendations and resources, followed by a number of suggestions for future cross-functional integration research and practice.

Recommendations and resources

The literature on cross-functionality provides a useful set of recommendations and resources which can aid management professionals wishing to learn more about cross-functional integration. Two of these were identified as useful starting points (namely Lopes Pimenta et al., 2016, and the work by Pellathy et al., 2019). In addition to these resources, the literature offered a number of suggestions for supporting the development of new strategies aimed at developing cross-functional integration. Due to the striking absence of cross-functional concepts in the HR literature (except for Anthony, Green and McComb, 2014; Marques, 2006), we would also encourage more work around cross-functionality in relation to specific functions like HR, and the role of resources needed to establish cross-functional collaboration between various adjacent functions (Bose and Jose, 2017).

In terms of more specific resources, a good number of articles underpinning the current review provide these for management practitioners, in the form of measures, tools and surveys that enable them to capture cross-functional efforts. Practitioners seeking interview guides on cross-functionality may find the resources provided by Marasquini Stipp et al. (2018), and Foerstl, Hartmann, Wynstra and Moser (2013) helpful. Other researchers list several measures in their work, such as scales to assess cross-functional integration (Pellathy et al., 2019; Nakata and Im, 2010; Yang and Tsai, 2019), cross-functional collaboration (Tsai et al., 2012), coordination and information exchange (Mohsen and Eng, 2016), and team characteristics contributing to cross-functionality (Nakata and Im, 2010). A number of other resources exist for those tasks carried out to develop teams, projects and practices. These include methods to assess conflict handling

between functions, for example (Buckley, 2015; de Clercq et al., 2013). Guidance and issues related to the implementation of cross-functional incentive and compensation management are discussed in Rosado Feger (2014), Oliva and Watson (2011). Furthermore, Lin et al. (2015) provide a more general overview of cross-functional collaboration in terms of leadership, trust and knowledge creation.

Future research opportunities

As the majority of research reviewed in this article focuses on management sciences more generally, a number of interesting research avenues remain. Some of these are briefly outlined here.

First, more research on high, moderate and low levels of cross-functional integration could help develop a clearer picture of the change management challenges involved. One option would be to examine extreme cases of cross-functional collaboration where the collaborating partners are very diverse (e.g., Bruns, 2013) or risk management is a concern (e.g., Duhamel, Carbone, and Moatti, 2016). High integration may suffer distinct problems in blurring, diluting or disrupting the identity of various functions, testing the limits of intergroup cooperation and differentiation, with some looser coupling likely to be needed to prevent full integration (Hitt, Hoskisson and Nixon, 1993). Low integration, however, risks isolating some functions further (Charan, 2014).

Second, research on the above topics should be complemented by historical, longitudinal and process studies of how functions change. This proposition could expand on recent ideas by Casciaro et al. (2019) on 'cross-silo' leadership and management practices that connect experts, including development of inquiry skills and hiring for curiosity and empathy. Ghobadi and D'Ambra's (2012) research study may be useful, as they developed an instrument to assess overall cooperative and competitive relationships within new cross-functional teams before their formation in order to develop appropriate strategies and actions for the new team. The authors acknowledge that due to the multitude of different keywords, search functions and languages, our review is limited to those articles in the English language that could be retrieved using our keywords and the readily accessible tool Google Scholar. Further reviews in this area may be worth conducting to capture the fragmented field and to promote a better understanding of cross-functionality over time

And third, cross-functional research will likely benefit most from a balanced approach that explores the key constructs associated with integration and collaboration, while also reflecting on the possible resistances arising due to established ways of working intra-functionally (e.g. Canacott et al., 2018). Many individuals will have intra-functional diversity or experience of multiple functions in an organization that could be highly beneficial for cooperative and innovative performance (Bunderson and Sutcliffe, 2002). However, harnessing that for a collective integration will require complex intergroup leadership and boundary spanning capabilities. Appropriate theory-building efforts will be key to these research endeavours. The variety of different theories adopted in recent years suggests that there is a possibility for interested researchers to engage in more focused theory-building around cross-functionality. This might be achieved by combining and consolidating some of these theories effectively to achieve more coherence and parsimony in the field.

Conclusion

The results of our review showed that cross-functional integration is far from a new idea in general management and organizational research. Indeed, an array of benefits and barriers are already known in many management disciplines. However, the explicit engagement with cross-functional integration in the literature has too often been piecemeal or minimal. Even when this was not the case, the concept has been dismissed as merely synonymous with particular types of teams or strategic work. If one accepts the argument that cross-functional competencies and integration efforts are desirable and important, these issues are unlikely to go away and bear regular and cumulative reviewing. The current article provides a starting point.

Conflicts of Interest

No conflict of interest has been declared by the authors.

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