Es-Sajjade and Wilkins *Journal of Organization Design* (2017) 6:12
DOI 10.1186/s41469-017-0022-1

Journal of Organization Design
a SpringerOpen Journal

RESEARCH Open Access

Design, Perception and Behavior in the Innovation Era: Revisiting the Concept of Interdependence

Abdelghani Es-Sajjade* and Terry Wilkins

* Correspondence:
aes.sajjade@gmail.com;
aessajjade@iau.edu.sa
University of Dammam, 2835 King Faisal Road, Dammam 34212, Saudi Arabia

Abstract

The innovation era has seen firms adopting a variety of organization designs with autonomous teams as their basic building blocks. Such organization designs have confronted firms with the challenge of managing complex task interdependence configurations. The predominant assumption within the organization design field for decades has been that task interdependence given by design would determine team behavior. We argue on theoretical grounds that research on interdependence should revisit the relationship between design and behavior. More specifically, we suggest social interdependence theory as a valuable complementary theoretical lens for examining the subtleties of how design shapes behavior and how behavior in turn may influence design. At the end of our discussion, we propose the implications for research and practice and present several research opportunities which are expected to further contribute to a better understanding of the strategic organization of innovation-led firms.

Introduction

The evolution of organization design can be divided into three historical eras: standardization, customization, and innovation (Miles et al. 1997). In each era, the progression of environmental demands caused managers to seek novel means to organize resources for the development of products and services. Table 1 summarizes these three historical eras across four dimensions.

Much has been written about the cataclysmic changes in organizations' environments which have confronted firms with conundrums, forcing managers to re-examine and rethink the science and art of organization design (Lewin and Stephens 1993). The significance of technological advancement and threat of creative destruction have caused firms to experiment with a multitude of increasingly complex organization designs due to the absence of "up-to-date" reference theories (Galbraith 2012; Gulati et al. 2012; Huber, 2016; Obel and Snow 2012). Examples of organization designs adopted by firms in the *innovation era* are the virtual organization (Markus et al. 2000), the spin-out organization (Ambos and Birkinshaw 2010), the cellular organization (Miles et al. 1997), the spaghetti organization (Foss 2003), the modular organization (Galunic and Eisenhardt 2001), and the ambidextrous organization (Tushman and O'Reilly 1996). An important common characteristic of these novel organization designs is that

Table 1 Organizational evolution in different historical eras (adapted from Miles et al. 1997)

	Organizational evolution		
Historical era	Standardization	Customization	Innovation
Key design variables	Hierarchy, centralized authority	Network	Teams, autonomous cells
Dominant organization design	Functional design	Divisional design, matrix	No dominant design
Key resource	Capital goods	Information	Knowledge
Influential manager	Chief operating officer	Chief information officer	Chief knowledge officer
Core capability	Specialization and segmentation	Flexibility and responsiveness	Design and creativity

they harbor task-interdependent teams which operate as self-organizing units and experience considerably autonomy (Baer et al. 2010; Miles et al. 2010; Pandza et al. 2011). Considering the importance of autonomous teams as building blocks of novel organization designs and the strategic requirement for productive interactions between them, we argue for a renewed interest, and close examination of issues of interdependence *between* teams. The discussion in this paper therefore focuses on the between-team level of analysis.

In traditional studies on task interdependence, a workforce is assumed which performs tasks in complete accordance with the organization design (Cheng 1983; Burns and Stalker 1961; Lawrence and Lorsch 1967; Thompson 1967). Task interdependence is defined as the extent to which the organization's tasks require its members to work with one another because of interdependent workflows (Thompson 1967). A subtle but important point made in other studies is that the task interdependence that is designed and the interdependence that is actually perceived or experienced by teams are not necessarily equal (Kumar et al. 1995; Nickerson and Zenger 2002; Ramamoorthy and Flood 2004; Sherman and Keller 2011). The actual or social experience of interdependence between teams is referred to as "social interdependence" (Johnson et al. 2006). The central problem we present in this paper is that given any sophisticated organization design for managing innovation (De Visser et al. 2010), teams could deviate from the designed task interdependence because they have a different perception and experience of interdependence. This could cause unexpected or even unwanted effects on task execution and performance. We propose that studies of interdependence in the innovation era should combine task and social interdependence theory (Deutsch 1949; Johnson and Johnson 2005) as it could contribute to a better understanding of how structure and behavior interact in organization designs with an increasingly important role for team collective agency (Pandza 2011) as a driving force behind self-organization.

This paper revolves around two important ideas: (a) the idea of potential asymmetries between designed (task) interdependence and perceived (social) interdependence and (b) the possibility of teams behaving in ways differently from the designed task interdependence in cases where designed and perceived interdependence are not equal. The first idea relates to the cognitive and emotional experience of interdependence and its (mis)alignment with organization design, while the second relates to the behavior resulting from interdependence and its (mis)alignment with organization design.

Interdependence: organization design or social perception?

Managers within firms have to make design decisions across a considerable number of dimensions—e.g., which organization design to adopt (Adler 1995), which opportunities to pursue (Foss et al. 2015), and how to group individuals in specialized units (Siggelkow 2011). Once these decisions are made, teams are expected to interact according to certain designed task interdependence. Corporate researchers are for example expected to interact closely with product developers who use their research to further develop existing or create new products. The expected behavior by organization design, however, is often not observed. To shed light on this problem, we focus on the relationship between two forms of interdependence. The first type derives from the organization design and allocation of tasks to different teams, referred to as "task interdependence" (Thompson 1967). The second derives from the degree to whether and how teams perceive any interdependence to exist between them which we refer to as "social interdependence" (e.g., Deutsch 1949). In the following two paragraphs, we elaborate on each respective form of interdependence.

Task interdependence

In the organization design literature, a task can be defined as "the means by which the work is accomplished" (Wageman 1995: 145). Two tasks are said to be interdependent if the value generated from performing each task is different when the other task is also performed, versus when it is not performed (Puranam et al. 2012). A central argument coming from the organization design field is the more complex the task, the higher the task interdependence involved in that particular configuration, i.e., members need to interact more (intensively) to accomplish the task. Moreover, if the complexity of the task increases, then the coordination required to integrate the collective set of tasks will decreasingly depend on impersonal forms of coordination such as hierarchy, rules, and programs but more on interpersonal forms of coordination emphasizing interaction (Becky and Ockhuysen 2009; Van de Ven et al. 1976). An important example of the latter form of coordination is the team-based design, and several studies have therefore explicitly focused on teams in their analysis of task interdependence (e.g., Adler 1995; Astley and Zajac 1991; Baer et al. 2010).

Despite the advent of autonomous teams in the innovation era, the organization design literature has largely attributed changes in task interdependence to top managers or designers (e.g., Kapsali 2011; Puranam et al. 2012; Rivkin and Siggelkow 2003) because they have the authority and power to (re)design. This explanation ignores local agency (Es-Sajjade and Pandza 2012; Kapsali 2011) and seems to overestimate the capacity of designers in independently shaping organization design, particularly in large decentralized organizations with complex structures (De Visser et al. 2010). Moreover, an important question which has not received sufficient attention is that if team behavior can be different from the behavior expected by organization design, then when and why are such deviations likely to occur? We argue that the answer to this question lies in a better understanding of the notion of *social* interdependence.

Social interdependence

Social interdependence theory stems from the discipline of social psychology. Deutsch (1949) derived two types of social interdependence: positive and negative. Positive

interdependence relates to a situation in which a psychological perception exists of positive correlation among mutual goal achievement. This means that the concerned parties perceive that they can only attain their goals if each respective counterpart, to which they are linked in a cooperative structure, also attains its goals. Conversely, negative interdependence implies a negative correlation among mutual goal attainments. Here, there is a psychological perception that goals can only be achieved if the counterpart, to which they are competitively linked, does not attain its goals. Studies in which social interdependence theory, implicitly or explicitly, is used for understanding behavior in organization designs for managing innovation are limited (Victor and Blackburn 1987). Furthermore, researchers have by and large remained silent about the reciprocal relationship and potential tensions between formal organizational structures and emerging psychological perceptions.

It is intuitive to argue that team behavior deviates from the expected behavior when task (design) and social (perceived) interdependence are misaligned. Social interdependence is the interdependence that is actually experienced by teams, and which explains the way they behave. Social interdependence is not necessarily different from the task interdependence but also not necessarily equal. Managers may for example fail to connect reward structures with task interdependence. If teams are rewarded for team-level performance but not for inter-team level performance, then local optimization instead of global optimization may be preferred. In other words, teams may ignore the designed interdependence if it does not lead to a superior realization of their performance objectives. Albeit a simple thought, the literature does not extensively report on asymmetries between task and social interdependence. We next turn to a brief summary of selected studies on task interdependence which include mismatches between task and social interdependence (Kumar et al. 1995; Ramamoorthy and Flood 2004).

Sherman and Keller (2011) for example show how actual team behavior does not meet expected behavior when managers do not correctly assess the task interdependence between teams, leading to coordination problems. A fundamental finding of this study is that when the deviation between task and social interdependence increases, the deviation between optimal and actual integration of activities (coordination) increases. The authors further demonstrate how managers in some cases do not implement optimal modes of integration because they incorrectly assess task interdependence between teams. This is an important departure from the assumption in the organization design literature that managers correctly assess task interdependence (Thompson 1967. In their study of the US Department of Defense which consists of four divisions with a total of 20 departmental branches, they found deviations in managerial assessment of task interdependence to occur in approximately one third of the cases. These deviations were found to adversely impact coordination performance.

Kumar et al. (1995) also refer to social interdependence but from a different angle. They assert that in a given interdependence configuration, teams may have different perceptions about task interdependence. When teams experienced asymmetric interdependence, this had implications for conflict, trust, and commitment. The authors add that, with increasing interdependence asymmetry, teams' trust in and commitment to other teams decreased, while conflict increased. Furthermore, configurations in which teams perceived high symmetric interdependence were shown to lead to higher trust, stronger

commitment, and lower conflict. Thus, this study shows how task interdependence is open to different interpretations with considerable implications for team interactions such as conflict which could distract the attention of teams from focusing on innovation performance to focusing on day-to-day problems and quarrels (De Clercq et al. 2013).

We question whether designers sufficiently consider the possibility (and its consequences) of different social interpretations between teams when certain designs are expected to be implemented in a top-down manner. For designers, the expectation of collaborative or competitive team behavior requires a detailed analysis of the psychological goal structures between teams which may not always be apparent. A thorough investigation using for example interviews, surveys, or pilot designs to better understand the relation between design and perception could considerably enhance the continuity and effectiveness of organization design. This may seem onerous in an era where decisions and implementation are expected to be rapid and intuitive, but we argue that the costs of "slowing down" in this case are considerably less than the costs of potential deviations between designed and perceived interdependence (i.e., unproductive team behavior such as conflict and lack of trust).

Altogether, studies of social interdependence suggest researchers interested in organization design should revisit the interdependence construct by distinguishing between organization design and social perception. This is an important distinction since research shows that they are not necessarily equal and that when they are not equal, there are implications for team behavior. In sum, we have discussed the following antecedents of asymmetries between task and social interdependence:

- Incorrect assessment of interdependence by managers
- An incentive structure which leads to preference for local within-team optimization
- Diverging interpretations of interdependence between teams
- Negative perceptions of a given designed interdependence

Consequently, the actual impact of mismatches between task and social interdependence depends on the significance of a given mismatch.

Significance of interdependence asymmetries

The mismatch between designed and perceived interdependence is likely to be more significant in a number of cases. First, if there is fierce rivalry within the firm between certain professional groups with distinct identities (Pratt et al. 2006), then it may be naïve to expect that these groups will simply follow behavioral procedures given by design. Baer et al. (2010) explain how many firms design a competitive interdependence between groups to bring challenge and enhance creativity. The idea behind this is that a context of competition between groups creates a context of collaboration within groups. Challenging this assumption, their study of creative teams reveals how fierce intergroup rivalry actually undermined collaboration within groups which adversely impacted their creative performance. The authors suggest "competition by design" proved only effective in cases of low (perceived) competition which implies that when teams experience fierce instead of mild competition, benefits for creative performance will not be realized.

For a second case of significant mismatches between design and perception, it is important to consider the external demands imposed on firms in the innovation era characterized by turbulent environments (Ethiraj and Levinthal 2004; Volberda 1999) where change is more rule than exception. Teams therefore have to continuously deal with shifting structures and relationships. The example of corporate ventures is illustrative. Although embedded within a straightforward design of inception, incubation, growth, and integration, this type of venture is characterized by continuous threats and changes from within and outside the firm. The corporate venture may be seen as a threat (potential cannibalization) or may be simply rejected by a powerful mainstream business manager who is not interested in a future adoption of the venture because there is no reward system in place that encourages "venture-friendly" behavior. Cases, where mismatches between task and social interdependence could lead to significant impact for corporate ventures, are

1. Management have not created an environment where corporate ventures are allowed to move freely within and outside the corporate walls depending on the dynamic and shifting presence of opportunities and resources (Chesbrough 2006).
2. There is no reward system that encourages the venture and mainstream business to exhibit behavior complying with designed task interdependence (conflict between task and social interdependence arising from a short- versus long-term orientation).
3. The corporate venture could potentially cannibalize the mainstream business and hence there is more of an incentive for fierce competition than there is for productive collaboration and future integration.

The above analysis indicates that where mismatches between designed and perceived interdependence are significant, the consequences are commonly negative.

Consequences of significant mismatches

Researchers have previously suggested there is a possibility for equifinal performance despite different organizational designs between firms (Gresov and Drazin 1997; Puranam et al. 2012). Within firms, this equifinality does not seem to hold which means that differences between task and social interdependence lead to differences in expected versus actual behavior with negative outcomes. Puranam et al. (2012) for example explain that in the case of broad incentives, individuals should be able to anticipate the action of the other to prevent suboptimal patterns of behavior, i.e., negative consequences. The role of managers is to focus on effective communication as broad incentives require symmetric epistemic interdependence, i.e., it is important for all involved parties included in the broad incentive structure to know whether their counterparts will actually act upon these broad incentives or not, making their own potential actions useful or futile. Asymmetries in knowledge between the concerned parties, therefore, may lead to negative consequences.

Johnson et al. (2006) demonstrate that for teams to shift from negative to positive experiences of interdependence is extremely difficult, while the shift from positive to negative interdependence is more common, which suggests negative consequences of potential mismatches are more likely. To remedy negative consequences is not

impossible, but it has been shown that groups that apparently shifted from a competitive to a cooperative experience of interdependence in reality exhibited performance that was similar to that of competitive rather than cooperative groups known as "cut-throat cooperation." Based on these findings, therefore, we argue that mismatches between task and social interdependence are more likely to lead to negative consequences.

Overall, social interdependence theory holds that the behavior in a given situation unfolds as it responds to the social perceptions of the situation at hand. This premise has implications for task interdependence because in the organization design literature, it has been argued that it is organization design which determines the behavior required to fulfill a task. From this, we derive that for a more comprehensive understanding of the intricate relationship between design and behavior, both theoretical perspectives need to be incorporated as a starting point for empirical studies on interdependence within organizations in the innovation era. We next turn to a concluding section in which we discuss the theoretical and practical implications and suggest avenues for future research.

Discussion and conclusion

Novel organization designs in the innovation era require researchers and managers to revisit the notion of interdependence. The preceding discussion has focused on two main ideas:

1. Task (designed) and social (perceived) interdependence are not necessarily equal.
2. In cases where they are not equal, the resulting behavior may be different from what is expected by design with potentially significant and negative consequences for performance.

Extant theory on task interdependence suggests a direct link between the decisions top managers make regarding task design and the resulting behaviors. We have challenged this premise and hope our paper will contribute to the understanding of researchers and innovation practitioners regarding (a) that asymmetries between task and social interdependence exist and are important, (b) that social interdependence can lead to distinct behavior different from the behavior expected by design, either productive or unproductive, and (c) that (a) and (b) could have significant implications for the success of innovation projects. We have summarized our ideas in Fig. 1.

Theoretical implications

Prior studies on mismatches between different forms of interdependence have focused on designed versus required interdependence (Tushman and Nadler 1978), task versus agent interdependence (Puranam et al. 2012), and external demands versus organization design (Ethiraj and Levinthal 2004). These studies revolve around cognitive issues of information processing requirements versus information processing capacity and have led to significant contributions in the organization design field. Our paper complements these advancements by elucidating additional sources and consequences of asymmetries rooted in social perceptions and behavior. This implies that

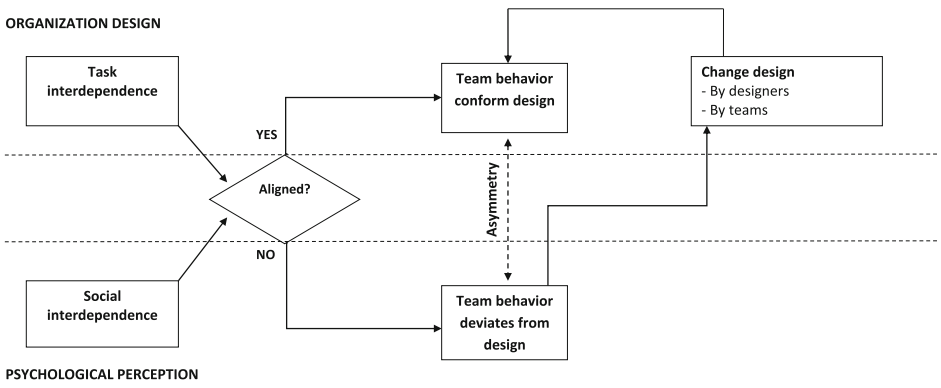

Fig. 1 Interplay between task and social interdependence

while there may be a match between the information processing requirements and capacity in a certain configuration, the perception of for example fierce rivalry between teams, i.e., one team believes its success depends on the failure of the other team, could still lead to interdependence asymmetries with adverse effects on important firm-level outcomes such as creativity and performance (Baer et al. 2010). We therefore propose a more vigorous inclusion of social interdependence theory in studies on organization design to account for the social and emotional complexity of organizational behavior that goes beyond information processing requirements versus capacity. Unfortunately, the potential of social interdependence theory has not been sufficiently capitalized on as it has mainly been studied in classroom settings and to a lesser extent in organizations (Wageman 1995). Those studies that use the theory in organizational settings (e.g., Gong et al. 2013; Hirst et al. 2009) do not include an organization design perspective and therefore do not reveal how task interdependence may affect social interdependence and vice versa. Such an approach is required to reveal the complex interplay between structure and behavior and ultimately, to lead to a better understanding of organizational decisions, actions, and outcomes (Gavetti et al. 2007).

These ideas provide some opportunities for further research. Future studies could examine additional antecedents that produce asymmetries between task and social interdependence. We have for example suggested the potential role of rewards and compensation. If teams are rewarded for team-level performance and not for inter-team collaboration, then there is an obvious incentive for local optimization, particularly if collaboration with other teams would delay or complicate performance. An intelligent design of compensation, in accordance with the desired behavior by design, is therefore crucially important for managers and organization designers. Extant research (Wageman 1995) has indeed shown the importance of aligning task and reward interdependence; a next interesting step would be to explore how reward interdependence could correct potential mismatches between task and social interdependence.

Researchers could also explore if there are any feedback loops when task and social interdependence are misaligned. If a different (from design) perception of a given task interdependence configuration exists, what would happen subsequently? Does this perception of interdependence matter at all for a given design or does the given design persist over time despite this perception? There is some promising evidence (Laloux,

2014; Langfred, 2007) revealing local, autonomous attempts to correct asymmetries. This is a particularly intriguing avenue for future studies as some very recent research has shown the potential role of feedback loops in correcting flawed initial designs (Lee and Puranam, 2015; Puranam and Swamy, 2016). These designs do not have to mean imminent collapse if managers are willing to utilize feedback as a trigger for organizational learning. Interestingly, Puranam and Swamy (2016) argue that flawed designs may even be superior than having no initial design at all if managers, designers and teams are willing and able to use powerful learning as a platform to get closer to optimal configurations of interdependence; in our opinion, characterized by a better match between task and social interdependence. Lee and Puranam (2015) corroborate this view by separating between beliefs (here: task interdependence) and action (here: social interdependence). The authors suggest that flawed strategies should be assumed, what is much more important is a precise implementation leading to the discovery of superior assessments. Additional research should reveal the micro-level processes by which teams respond when their social interdependence is different from the task interdependence, potentially helping the organization to arrive at superior designs.

Finally, we also very much encourage studies on the development of particular typologies characterizing different types of asymmetries between task and social interdependence which could help identify, predict, and prevent situations of unproductive interactions between teams (Snow and Ketchen 2014).

Managerial implications

Prevention is the best medicine and, hence for managers and designers, it is worth analyzing the impact of a given designed interdependence to detect potential asymmetries in an early stage. They could for example organize sessions where the involved teams are allowed to reflect and comment on a given design. To help reveal the perceived goal structure, they could ask questions as

1. Do you believe your goals could be achieved more effectively if you collaborate with the other team(s)? If no, please elaborate.
2. Do you believe your goals would be more difficult to achieve if you have to collaborate with the other team(s)? If yes, please elaborate.
3. Do you interpret the interdependence between you and the other team(s) as positive or negative? Please elaborate.
4. Do you believe cooperating with the other team(s) would lead you to earn greater rewards than if you would not cooperate with them? If no, please elaborate.

If subsequently these questions reveal a social interdependence which differs from the task interdependence, then managers could ask the involved teams to collaboratively propose a set of recommendations that would bridge the gap between design and perception. This could enhance the extent to which teams experience ownership of the new design and potentially improve the effectiveness of the interactions that would follow.

Another important implication for practice is that although we have previously argued that a significant mismatch between task and social interdependence is more likely to lead to negative than positive consequences, this does not mean that there is absolutely nothing

firms can do to cope with such asymmetries once they have arisen. Managers can in fact use mechanisms based on design or based on principles of self-organization (Laloux 2014) to bridge any gaps. Regarding design, Nadler et al. (1997) propose that it is important for managers to think of ways to integrate the activities of teams in complex organization designs. They refer to this as "structural linking" which is crucial to ensuring teams keep contributing to corporate goals instead of them diverging into unrelated or even conflicting directions (Taylor 2010; Zhou 2013). A prevalent structural linking mechanism included in the organizational design of large organizations is the cross-functional interface (Jansen et al. 2009). Cross-functional interfaces generate horizontal connections between units. Examples are cross-functional teams, task forces, and liaison positions (Gupta and Govindarajan 2000). The term 'functional', however, refers to the functional organization design which was dominant in the standardization era. The innovation era, with its diversity in organization design, is less about functions but more about highly specialized autonomous teams. Cross-functional teams therefore should be instructed to integrate activities across different teams instead of higher-level functions. If the cross-functional interface comes across any obstacles to integration related to asymmetries between task and social interdependence then trained specialists from HR could be mobilized to act as "design doctors" and remedy issues of interdependence by for example redefining roles, work procedures, or adjusting compensation structures (e.g. introduce variable compensation between teams which need to collaborate instead of compete). The appropriate "remedy" may vary depending on the nature and significance of the mismatch.

Another mechanism that could help in solving issues with interdependence asymmetries is the democratization of design authority, i.e., implementing an organization design based on principles of self-organization (Schreyögg and Sydow 2010). Although academics have reported a myriad of organization designs in the current "innovation era," an overarching trend is that these developments have introduced teams as the core unit in the organizational system. Research has shown that these autonomous teams are able to independently reorganize tasks and activities within teams (Langfred 2007), so why would they not be able to do this between teams?

CEO Tony Hsieh's introduction of the "holacracy" design at Zappos is a popular case study of the democratization of organization design (Laloux 2014). The extremely flexible circle structure of this particular design allows teams and employees to create and shape interdependence based on perceived matches between task and competence. Design authority is completely distributed while behavior and performance are guided by vision and culture instead of hierarchy and structure. Researchers have previously argued for maintaining hierarchy as an important predictor of the success of "loosely coupled systems" (Ethiraj and Levinthal 2004) such as the holacracy to prevent a never ending search for a design that works for everyone. The Zappos' case study actually demonstrates that even in the absence of hierarchy (there are no managers in the holacracy design), firms can "evolve toward and stabilize on appropriate forms" (p. 430). We understand it may be too big a leap for established organizations to implement this abruptly but we encourage firms to at least experiment with these principles at specific peripheries, e.g., corporate venturing units or innovation management teams.

To conclude then, we encourage empirical studies integrating task and social interdependence to reveal how organization design shapes the behavior of autonomous teams in innovation-led organizations and how the consequent behavior in turn may influence

organization design. This would help increase understanding of the composite relationship between structure and behavior and potentially expand the range of potential drivers of interdependence from environmental and hierarchical factors to collective agency on the level of teams. A better understanding of the interplay between social/emotional factors and technical/design factors within and between teams is also important for the development of best practice and strategies for managers in the innovation era; an era in which tasks are complex, teams are multidisciplinary, and acceleration to market is imperative. New insights into interdependencies could improve product or service outcomes and lower the risks of project failure.

Acknowledgements
Not applicable.

Funding
This paper benefited from the Marie Curie FP7 ITN grant to the first author (Grant No.: 238382).

Authors' contributions
AES contributed to the academic elaboration of organization design and interdependence in the paper. TW contributed to assessing the practical relevance of the main idea of the paper and to reviewing the main conceptual argument for clarity and consistency. Both authors read and approved the final manuscript.

Ethics approval and consent to participate
Not applicable.

Consent for publication
Not applicable.

Competing interests
The authors declare that they have no competing interests.

Publisher's Note

Received: 14 February 2017 Accepted: 22 September 2017
Published online: 05 October 2017

References

Adler P (1995) Interdepartmental interdependence and coordination: the case of the design/manufacturing interface. Organ Sci 6(2):147–167
Ambos TC, Birkinshaw J (2010) How do new ventures evolve? An inductive study of archetype changes in science-based ventures. Organ Sci 21(6):1125–1140
Astley WG, Zajac EJ (1991) Intraorganizational power and organizational design: reconciling rational and coalitional models of organization. Organ Sci 2(4):399–411
Baer M, Leenders RTAJ, Oldham GR, Vadera AK (2010) Win or lose the battle for creativity: the power and perils of intergroup competition. Acad Manag J 53(4):827–845
Burns T, Stalker GM (1961) The management of innovation. Tavistock, London
Cheng J (1983) Interdependence and coordination in organizations: a role-system analysis. Acad Manag J 26(1):156–162
Chesbrough HW (2006) Open innovation: the new imperative for creating and profiting from technology. Harvard Business Press, Boston
De Clercq D, Thongpapanl NT, Dimov D (2013) Shedding new light on the relationship between contextual ambidexterity and firm performance: an investigation of internal contingencies. Technovation 33(4):119–132
De Visser M, de Weerd-Nederhof P, Faems D, Song M, Van Looy B, Visscher K (2010) Structural ambidexterity in NPD processes: a firm-level assessment of the impact of differentiated structures on innovation performance. Technovation 30(5):291–299
Deutsch M (1949) A theory of cooperation and competition. Hum Relat 2:129–152
Es-Sajjade A, Pandza K (2012) Reconceptualizing dynamic capabilities: a design science study on the role of agency, practical aspects of design science, communications in computer and information science Volume 286 (2012): 158–170. Springer, Berlin Heidelberg
Ethiraj SK, Levinthal D (2004) Bounded rationality and the search for organizational architecture: an evolutionary perspective on the design of organizations and their evolvability. Adm Sci Q 49(3):404–437
Foss N (2003) Selective intervention and internal hybrids: interpreting and learning from the rise and decline of the Oticon Spaghetti Organization. Organ Sci 14(3):331–349
Foss NJ, Lyngsie J, Zahra SA (2015) Organizational design correlates of entrepreneurship: The roles of decentralization and formalization for opportunity discovery and realization. Strateg Organ 13(1):32–60
Galbraith JR (2012) The future of organization design. J Organ Design 1(1):3–6
Galunic DC, Eisenhardt KM (2001) Architectural Innovation and Modular Corporate Forms. Acad Manag J 44(6):1229–1249

Gavetti G, Levinthal D, Ocasio W (2007) Perspective—Neo-Carnegie: the Carnegie school's past, present, and reconstructing for the future. Organ Sci 18(3):523–536
Gong Y, Kim TY, Zhu J, Lee DR (2013) A multilevel model of team goal orientation, information exchange, and creativity. Acad Manag J 56(3):827–851
Gresov C, Drazin R (1997) Equifinality: functional equivalence in organization design. Acad Manag Rev 22(2):403–428
Gulati R, Puranam P, Tushman M (2012) Meta-organization design: rethinking design in interorganizational and community contexts. Strateg Manag J 33:571–586
Gupta AK, Govindarajan V (2000) Knowledge flows within multinational corporations. Strat Management J:473–496
Hirst G, Van Knippenberg D, Zhou J (2009) A cross-level perspective on employee creativity: goal orientation, team learning behavior, and individual creativity. Acad Manag J 52(2):280–293
Huber GP (2016) Changes in the structures of US companies: action implications for executives and researchers. Journ Org Des 5(1):8
Jansen JJ, Tempelaar MP, Van den Bosch FA, Volberda HW (2009) Structural differentiation and ambidexterity: the mediating role of integration mechanisms. Organ Sci 20(4):797–811
Johnson DW, Johnson RT (2005) New developments in social interdependence theory. Genet Soc Gen Psychol Monogr 131(4):285–358
Johnson MD, Hollenbeck JR, Humphrey SE, Ilgen DR, Jundt D, Meyer CJ (2006) Cutthroat cooperation: asymmetrical adaptation to changes in team reward structures. Acad Manag J 49:103–119
Kapsali M (2011) How to implement innovation policies through projects successfully. Technovation 31(12):615–626
Kumar N, Scheer LK, Steenkamp JEM (1995) The effects of perceived interdependence on dealer attitudes. J Mark Res 32:348–356
Laloux F (2014) Reinventing organizations: a guide to creating organizations inspired by the next stage in human consciousness. Nelson Parker, Millis
Langfred CW (2007) The downside of self-management: a longitudinal study of the effects of conflict on trust, autonomy, and task interdependence in selfmanaging teams. Acad Manag J 50:885–900
Lawrence PR, Lorsch JW (1967) Differentiation and integration in complex organizations. Adm Sci Q 12(1):1–47
Lee E, Puranam E (2015) The implementation imperative: Why one should implement even imperfect strategies perfectly. Strateg Manag J 37(8):1529–1546
Lewin AY, Stephens CU (1993) Designing post-industrial organizations. In: Huber GP, Glick WH (eds) Organizational change and redesign: Ideas and insights for improving performance, vol 1. Oxford University Press, New York, pp 393–410
Markus ML, Manville B, Agres EC (2000) What makes a virtual organization work? Sloan Manag Rev 42(1):13–26
Miles RE, Snow CC, Fjeldstad ØD, Miles G, Lettl C (2010) Designing Organizations to Meet 21st-Century Opportunities and Challenges. Organ Dyn 39(2):93–103
Miles RE, Snow CS, Mathews JA, Miles G, Coleman H Jr (1997) Organizing in the knowledge age: anticipating the cellular form. Acad Manag Exec 11:7–20
Nadler D, Tushman M, Nadler MB (1997) Competing by design: The power of organizational architecture. Oxford University Press, Oxford
Nickerson JA, Zenger TR (2002) Being efficiently fickle: A dynamic theory of organizational choice. Organ Sci 13(5):547–566
Obel B, Snow CC (2012) Editorial: the future of organization design. J Org Des 1(1):1–2
Pandza K (2011) Why and how will a group act autonomously to make an impact on the development of organizational capabilities? J Manag Stud 48(5):1015–1043
Pandza K, Wilkins TA, Alfoldi EA (2011) Collaborative diversity in a nanotechnology innovation system: evidence from the EU Framework Programme. Technovation 31(9):476–489
Pratt MG, Rockmann KW, Kaufmann JB (2006) Constructing professional identity: the role of work and identity learning cycles in the customization of identity among medical residents. Acad Manag J 49(2):235–262
Puranam P, Swamy M (2016) How Initial Representations Shape Coupled Learning Processes. Organ Sci 27(2):323–335
Puranam P, Raveendran M, Knudsen T (2012) Organization design: the epistemic interdependence perspective. Acad Manag Rev 37(3):419–440
Ramamoorthy N, Flood PC (2004) Individualism/Collectivism, Perceived Task Interdependence and Teamwork Attitudes among Irish Blue-Collar Employees: a Test of the Main and Moderating Effects? Hum Relat 57(3):347–366
Rivkin JW, Siggelkow N (2003) Balancing search and stability: interdependencies among elements of organizational design. Manag Sci 49(3):290–311
Schreyögg G, Sydow J (2010) CROSSROADS—organizing for fluidity? Dilemmas of new organizational forms. Organ Sci 21(6):1251–1262
Sherman DJ, Keller RT (2011) Suboptimal assessment of interunit task interdependence: modes of integration and information processing for coordination performance. Organ Sci 22:245–261
Siggelkow N (2011) Firms as systems of interdependent choices. J Manag Stud 48(5):1126–1140
Snow CC, Ketchen DJ (2014) Typology-driven theorizing: a response to Delbridge and Fiss. Acad Manag Rev 39(2):231–233
Taylor A (2010) The next generation: technology adoption and integration through internal competition in new product development. Organ Sci 21(1):23–41
Thompson JD (1967) Organizations in action. McGraw-Hill, New York
Tushman ML, Nadler DA (1978) Information processing as an integrating concept in organizational design. Acad Manag Rev 3(3):613–624
Tushman ML, O'Reilly CA (1996) Ambidextrous organizations: managing evolutionary and revolutionary change. Calif Manag Rev 38(4):8–30
Van de Ven A, Delbeq A, Koenig R Jr (1976) Determinants of coordination modes within organizations. Am Sociol Rev 41:322–338
Victor B, Blackburn R (1987) Interdependence: An alternative conceptualization. Acad Manag Rev 12(3):486–498
Volberda HW (1999) Buidling the flexible firm: how to remain competitive. Oxford University Press, Oxford
Wageman R (1995) Interdependence and group effectiveness. Adm Sci Q 40(1):145–180
Zhou YM (2013) Designing for complexity: using divisions and hierarchy to manage complex tasks. Organ Sci 24(2): 339–355