

Understanding Sustainable Delivery Organized by Construction Firms: An Analytical Framework

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Abstract

Pressure is mounting for construction firms to practice sustainable development. However, it is argued that sustainability remains conceptual and unactionable in the empirical context. To address this problem, we use the method of literature review to establish an analytical framework to guide the contextual understanding of how construction firms deliver projects sustainably. First, we situate sustainability within a project context. As a result, activities that might be challenged when considering sustainability in project delivery are identified, including the definition of deliverable criteria, project scheduling, procurement, and risk management. Second, based on institutional logic, we propose an analytical framework of hybrid organizations. Constituent elements of the framework, including incompatibility, centrality, structure, tension, and response, are theoretically interpreted. Next, we investigate the constraints that construction firms may encounter when hybridizing sustainability perceptions in their practice. Particularly, business logic and sustainable logic are carefully analyzed and compared. Finally, we briefly discuss how to contextualize this analytical framework in sustainable project delivery. Overall, this paper contributes to an analytical framework for a contextual understanding of sustainable project delivery in construction firms.

Keywords

Sustainable delivery, hybrid organization, institutional logic, tension management, construction firm.

1. Introduction

Sustainable development is a significant global concern, which presents challenges to various sectors. In the construction sector, project delivery is required to be conducted in a sustainable manner for both the construction and operation phases (Aarseth et al., 2017). Thereby, various principles and prescriptions are introduced. For example, project procurement is required to achieve social justice by preventing bribery and other non-ethical behaviours (Silvius, 2013; Tharp, 2013). Nevertheless, the current practice of sustainable delivery remains inefficient (Armenia et al., 2019; Hueskes et al., 2017). Some studies suggested a feasible direction by detailing these prescriptions (e.g., Stanitsas et al., 2021). However, we argue that such a single direction is problematic since detailed prescriptions might remain conceptual rather than practical. Therefore, we suggest an empirical understanding of how construction firms could conduct sustainable development is also significant. In practice, construction firms are traditionally guided by business orientation to deliver projects within cost, time, and quality constraints. However, introducing sustainability means the business focus is hybridized with a sustainability orientation. These two orientations are interrelated but potentially competing, thus creating tensions in practice (Laasch, 2018). Against this background, we propose an analytical framework to guide empirical investigation to understand how construction firms could deliver projects sustainably.

The remainder of this paper is structured as follows: Section 2 explains how sustainability can be understood in a project context. Moreover, we identify the project activities that are being challenged in sustainable development, which implies the pressures on firms. To navigate the empirical understanding, we establish an analytical framework of hybrid organizations. Section 4 provides a preliminarily contextualized understanding of the framework. Notably, a comparison between business and sustainable perceptions is conducted. Finally, section 5 presents the conclusion and future work suggestions.

2. Understanding sustainability in the project context

2.1 Defining sustainability

The definition of sustainability is encompassing, yet ambiguous (Hopwood et al., 2005; Kiani Mavi et al., 2021). One common meaning aligns with the 1987 World Commission on Environment and Development report:

“development that meets the needs of the present without compromising the ability of future generations to meet their own needs.” More theoretically, sustainability is often conceptualized as a three-dimensional term comprising environment, society, and economy (Elkington, 1997). These three dimensions are complementary but potentially contradictory (Kaivo-oja et al., 2014) and must be considered simultaneously (Azapagic & Perdan, 2000). Furthermore, some additional dimensions can be found in the literature, such as technology (Hasna, 2007), temporality (Howe, 1997; Seghezze, 2009), and psychology (Corral-Verdugo et al., 2010; Seghezze, 2009). Overall, despite extensive attempts to define sustainability, it remains conceptually ambiguous. Such “constructive ambiguity” (Robinson, 2004) could hinder the implementation of sustainability (Hugé et al., 2013). It is argued that sustainability should be contextualized to produce a concrete and operational definition (Briassoulis, 2001). For example, when discussing corporate sustainability, Van Marrewijk (2003) emphasises that the best definition should match the organization’s aims, intensions, and fit with its strategy. Thus, the context-specific understanding of sustainable development is fundamental and significant. In this paper, we will establish an analytical framework to help understand sustainable project delivery through the lens of construction firms.

2.2 Delivering projects for sustainability

Projects as an instrument for change are pivotal to sustainable development (Silvius et al., 2012). As mentioned above, some principles and prescriptions are introduced for construction firms to adhere to, which place new demands on delivery activities. Some detailed considerations for sustainable practice are reviewed below.

Project deliverable criteria. Traditional criteria for project delivery reflect a narrower scope by emphasizing time, cost, and especially quality (e.g., PMBOK Guide). However, by incorporating sustainability, the narrow scope became increasingly inadequate. In this instance, the boundary of deliverable criteria is stretched (Labuschagne et al., 2005; Silvius & Schipper, 2016). On the one hand, more environmental, social, and economic requirements need to be considered in the project’s objectives and intended output (e.g., Shen et al., 2010). On the other hand, from the point-of-view of time, projects should not only be constructed in a sustainable manner, but, more importantly, operated as such for a long term (Aarseth et al., 2017). That means the deliverable criteria should be redefined more sustainably from the perspective of the entire life cycle.

Project scheduling. When defining and sequencing the project activities, some specific activities or methods can be considered and introduced (Silvius & Schipper, 2014). Jaillon and Poon (2008), for example, recognized that prefabrication in dense urban environment (like Hong Kong) is sustainable than conventional cast in-situ construction. The study shows the prefabrication can significantly improve the quality control, environmental performance, site safety, and reduce the labour demand. In addition, some advanced methods are proposed to balance the multiple sustainable considerations when scheduling project activities (e.g., Askarifard et al., 2021; Habibi et al., 2019). That also means, these specific sustainability-oriented activities implicitly require that project management profession, especially project managers, updates the scheduling capability.

Project procurement. Both the procedure and the selection criteria of suppliers can impact sustainability in project procurement (Silvius & Schipper, 2014). For the procurement procedure, it is essential to ensure fairness and transparency in the process to achieve social justice (Ogunsanya et al., 2019). For example, Owusu et al. (2019) suggest that “cleaner” procurement actions should be deliberately taken in the contract and the post-contract phase to prevent corruption in the developing countries. For the selection criteria of suppliers, the sustainable performance of potential suppliers should be appraised carefully (Jahangirzade et al., 2021). For example, construction materials used in the project should be environmentally friendly, durable, and recyclable.

Project risk management. A risk is an uncertain event or condition that, if it occurs, can affect a project’s objective (PMBOK Guide). Logically, as the project’s objectives change to achieve sustainability, the risk will change and need to be re-identified. At the very least, environmental and social risks should be included. Meanwhile, other risk management activities, such as risk assessment and treatment, should also be adjusted (Chawla et al., 2018; Winnall, 2013). Limited work notes how risk treatment can be achieved in an extensive stakeholder landscape in sustainable development.

These demands for delivery activities pose challenges for construction firms to think about how sustainability should be incorporated. Arguably, the detailed prescriptions remain conceptual and without considering the practical limitations. Thereby, we suggest that exploring how sustainability could be incorporated empirically is also necessary. To navigate the contextual understanding, we will establish an analytical framework that investigates how construction firms organize sustainable project delivery.

3. Conceptualizing an analytical framework of hybrid organizations

3.1 Institutional logics

From a neo-institutional perspective, institutional environments provide meaning and constraints to social actors and shape their actions (e.g., Meyer & Rowan, 1977). Such influence can be carried through “institutional logics” (Friedland & Alford, 1991), and exerts on organizations via regulations, normative prescriptions, and cognitive expectations (Scott, 2013). Thornton and Ocasio (1999: 804) defined institutional logics as “the socially

constructed, historical patterns of material practices, assumptions, values, beliefs, and rules by which individuals produce and reproduce their material subsistence, organize time and space, and provide meaning to their social reality.” Accordingly, institutional logics can be used to understand the relationships among organizations, actions, and broad institutional environments.

Moreover, the environment at any given time imposes multiple institutional logics on organizations. Sometimes, the influence or demands from different logics might be competing (Pache & Santos, 2010). These competing logics create tensions that can confuse organizations and ultimately impact their behaviours (e.g., Thornton, 2002). Researchers argue that organizations experience these conflicts differently (Fiss & Zajac, 2004; Greenwood & Hinings, 1996). Particularly, when logics influence the organization equally, rather than one logic dominating another, conflicts can be more extensive and severe (Besharov & Smith, 2014). Thus, in some situations, the competing institutional demands may lead to organizational paralysis or breakup (Pache & Santos, 2010).

3.2 Hybrid organizations

Hybrid organizations have long been recognized by scholars. Their existence seems to be counterintuitive, since the combination of opposing institutional logics that conventionally do not go together (Battilana & Dorado, 2010). For example, biotechnology firms are hybridized with competing logics from academic and business sectors (Powell & Sandholtz, 2012). Such heterogeneous characteristic challenges the understanding of organizational behaviour (Greenwood et al., 2010). Accordingly, hybrid organizations can also offer a lens to understand how generative possibilities might be realized. Early studies tended to treat hybrids as binary, characterizing organizations as either hybrid or not (e.g., Albert & Whetten, 1985). Recently, some scholars put forward that the configurations of hybrid organizations can vary along with some variations (Battilana & Lee, 2014; Besharov & Mitzinneck, 2020). Meanwhile, studies also start to explore the consequences of these varied configurations (e.g., Besharov & Smith, 2014). For example, Smith and Besharov (2019) investigate the changed configurations of business and social mission inside a social enterprise, as well as their varied consequences in terms of strategic tension and identity meaning. This section develops a conceptual framework for understanding configurations of hybrid organizations and their consequences. Figure 1 indicates a summary.

3.3 Configurations and consequences of hybrid organizations

For configurations, at least three elements of hybrid organization could be identified in the extant literature. The first one concerns the incompatibility of institutional logics. That is, to what degrees do logics enable contradictory or consistent perceptions and related practices (see Besharov & Smith, 2014; Raynard, 2016). In other words, logic incompatibility is used to describe situations where perceptions of multiple institutional logics are difficult to integrate, and related practices are difficult to adhere to simultaneously. In addition, the centrality can also represent the configurations of logics. It is defined as “the degree to which multiple institutional logics are treated equally valid and relevant to organizational functioning” (Besharov & Smith, 2014, p. 369). Accordingly, centrality is higher when multiple institutional logics are equally instantiated in organizational functioning. By contrast, centrality is lower when only one principal logic guides core organizational practices. A third element is the structure, which involves how related practices governed by institutional logics are structured within organizations. Two distinctive types of structurization - blended and differentiated hybridization, are recognized (Besharov et al., 2019; Greenwood et al., 2011). For the former, practices related to multiple institutional logics are combined and blended. Whereas for the latter, practices are compartmentalized into subgroups influenced by different institutional logics (see Ebrahim et al., 2014). Studies also show that blended and differentiated structurization can be co-exist in hybrids (Besharov & Mitzinneck, 2020).

For consequences, a concerning one for hybrid organizations is the need to manage tensions. The three elements discussed above are not just for describing configurations of hybrids, but also have implications for understanding the consequential tensions. In more detail, incompatibility would directly influence the tensions generated inside hybrids (see Besharov & Smith, 2014). The higher the incompatibility of institutional logics, the more tensions are likely to generate. Similarly, tensions may be extensively magnified in hybrid organizations where the centrality is high. As for the structure, blended organizations might have more conflicts since multiple separated subgroups, guided by different logics, may seek to dominate in integrated activities. There are also some studies exploring responses to tensions. For example, based on Oliver (1991)’s work, Pache and Santos (2010) propose several strategic responses to competing logics, including compromise, avoidance, defiance, and manipulation. More specifically, compromise is an attempt to partially comply with requirements from different institutional logics. Avoidance means hybrids try to ignore such requirements. Defiance indicates explicit rejection of at least one of the demands from institutional logics. Manipulation is an active attempt to alter the demands. After that, the potential results of these strategic responses are further discussed (see Pache & Santos, 2021).

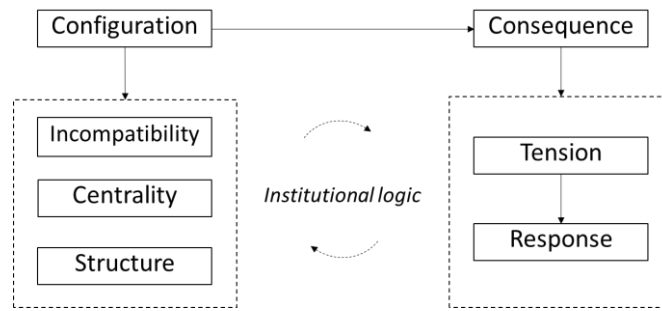


Figure1: Analytical framework of hybrid organizations.

4. Contextualizing the analytical framework in sustainable project delivery

4.1 Competing institutional logics at play

Previously, the construction firm is mainly guided by the business logic, which pays attention to profitability. With the introduction of sustainability, the business logic is hybridized with the sustainability logic. These two logics are interrelated and potentially competing (Montiel & Delgado-Ceballos, 2014), which may generate tensions on the delivery practice, and eventually harm sustainable development. Understanding how these two logics manifest and conflict in practice is the first step to figure out how construction firms could deliver projects sustainably. A detailed contrast between business and sustainable logics is shown in Table 1.

Table 1: The contrast between business and sustainable logics.

Business logic	Sustainable logic
	Economic orientation
Profit-orientation	Environmental orientation
	Social orientation
Short-term based on projects	Long-term orientation
Medium-term based on firms	
Project level	System level
Organizational level	

Profit-orientation vs. economic, environmental, and social orientations. First, the economic efficiency for project delivery may be the opposite of the profit maximization for construction firms. For example, corporates may overuse the material or workforce to create additional revenue from the project clients, which might not be economically efficient for projects *per se*. Then, for the environmental dimension, it is evident that committing to environmental performance may imply a high cost (Schaltegger & Synnestvedt, 2002), such as the development of new environment-friendly but costly construction techniques or materials. Similarly, some studies highlight the conflicts between economic and social dimensions that exist in many situations (e.g., Boyd et al., 2017; Orlitzky et al., 2003).

Short-term based on projects and medium-term based on firms vs. long-term orientation. The essence of sustainability is intergenerational equity. Hence, long-term consideration in sustainability is a significant feature (Bansal & DesJardine, 2014). This orientation stands in sharp contrast to the temporary nature of project construction. Furthermore, for a construction firm, it usually mobilizes resources and coordinates activities in temporary project-based organizing. For example, firms spend several years to construct a mega-infrastructure, which might have a profound impact on generations. It is challenging for the profession to take long-term considerations into account.

Project and organizational level vs. system level. A system perspective means regarding sustainability as a complex interaction of the environment and society (Valente, 2010). Accordingly, the “system level” can be understood in two ways. First, firms are encouraged to stimulate their initiatives to address the sustainability challenges at the system level (Dyllick & Muff, 2016). Second, when pursuing such initiatives, firms should

consider the sustainable dimensions in a systemic way. However, traditional construction firms are prone to direct attention to the project level and organizational outcomes. Contributions to the system level are often overlooked. To sum up, when hybridizing the business and sustainable logics, construction firms need to consider multiple, interrelated, but potentially conflicting goals; balance the contrasting short-, medium-, and long-term time orientations; link together project, organizational, and system levels' contributions. Thus, the business and sustainable logics can be regarded as two competing institutional logics. Furthermore, how construction firms sustainably deliver projects in practice and navigate tensions can be empirically contextualized by the above analytical framework.

4.2 Contextual understanding of sustainable project delivery

Incorporating sustainable development into the project delivery can be regarded as a hybridization of business logic and sustainable logic. By virtue of the analytical framework, this section will contextualize a preliminary analysis on sustainable delivery from the perspective of construction firms, including the configurations and consequences of hybrid organizations.

The incompatibility of business logic and sustainable logic enables the contradiction or consistency of related activities conducted by construction firms. As mentioned before, construction firms might need to balance the specific bidding criteria when purchasing materials. The criteria for the lower price may conflict the criteria for environmental friendliness. Notably, the incompatibility of logics is not static, but may vary over time (e.g., Ramus et al., 2017). That means these two orientations in the construction firms may change at different points in time. Centrality stands for whether the business logic and sustainable logic are equally important, or one is dominant, and another plays a peripheral role. Empirically, the integration of sustainable practice into the project delivery could influence how firms organize the identify, mission, strategies, and practices (e.g., Yuan et al., 2011). Moreover, evidence shows that external actors (like government and clients) and internal actors (like leaders in construction firms) could shape the organizing of centrality (Pham & Kim, 2019). As for the structure element, some sustainable practices, such as life cycle cost analysis and material use considerations, can be directly blended into the project practice (Yates, 2014). However, some practices might be separated from traditional practices, such as specialized construction waste reclamation.

Sustainable concerns could give rise to tensions as they go counter business-as-usual practices (Scheyvens et al., 2016). Furthermore, according to the analytical framework, different configurations could theoretically result in different tension manifestations. The degree of incompatibility, for example, could obviously affect conflict generation and its level. Under such circumstances, more empirical studies could be taken to investigate manifestations and mechanisms of tensions in a sustainable project context. As for the response, construction firms are not passive recipients of competing logics, but will active response to pressures caused by competing logics. Among various responses, the strategy of “defiance” has attracted the attention of scholars, since organizations could ceremonially respond to pressures, but would not take real actions. For example, firms may use symbolic strategies to deal with social responsibilities (Marquis & Qian, 2014). Contextually analysing the tensions and responses would sharpen the understanding of sustainable delivery.

5. Conclusions and further research

The ambiguous definition of sustainability makes the concept incomprehensible and unactionable. Against this background, this paper puts sustainability into the project context to understand. Accordingly, some project activities that sustainability might impact are identified, including the deliverable criteria, project scheduling, project procurement, and risk management. Later, we used the method of literature review to propose an analytical framework of the hybrid organization to help understand how construction firms empirically organize sustainable delivery. Finally, the framework is preliminarily contextualized by describing how the business logic and sustainable logic are embedded in practice. Meanwhile, this framework can also help practitioners to check the sustainable activities in use and provide insightful ideas for future firms' development. As a whole, this paper contributes an analytical tool to explore sustainable practice empirically. Such a contextual lens could broaden our understanding of different pathways to sustainable development. We hope to stimulate further work that sheds light on a more nuanced analytical framework, empirical investigations, and a combination of “best practices” to guide the development of sustainability for construction firms.

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