Journal of Supply Chain Management
2020, 56(1), 54–72
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IMITATION OF MANAGEMENT PRACTICES IN SUPPLY NETWORKS: RELATIONAL AND ENVIRONMENTAL EFFECTS

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This study investigates the imitative use of management practices across a multitier supply network. Although imitation may take the form of any management practice, operationally, we focus on whether the buyer's control practices used with first-tier suppliers results in similar control practices being used by these first-tier suppliers with the second-tier suppliers. Drawing on institutional theory, we identify relational context (i.e., affective commitment) and environmental context (i.e., environmental uncertainty) as two important factors influencing the extent to which such imitation takes place. Using unique survey data of vertically linked supply chain triads, we generally find support for the occurrence of imitation and more so in cases of high affective commitment. The results regarding environmental uncertainty further reveal selectivity in imitative behavior, calling attention to the level of deliberateness in imitation decisions in supply networks. Besides contributing to theory on imitative behaviors in the supply chain, this study also generates practical implications on the spread of management practices across multiple tiers.

Keywords: *buyer/supplier relationships; supplier management; organizational learning and knowledge acquisition; survey methods; regression analysis*

INTRODUCTION

Companies are increasingly concerned with creating strategies for managing complex supply chains and are working toward intensified collaboration with supply chain partners. Despite a growing interest in the management of supply chain networks, what happens within multitier supply chains, and, particularly, how one link affects another link, remains largely unexplored (Mena, Humphries, & Choi, 2013). This is an important omission since firms embedded in such networks of interconnected relationships are likely to influence each other, rather than to operate in isolation (Borgatti & Li, 2009). There are many aspects of and mechanisms for this, but one prominent mechanism is interorganizational imitation, where organizations mimic the practices of others (Ordanini, Rubera, & DeFillippi, 2008). Although prior research has highlighted the value of imitation in explaining the usage of supply chain management practices (Turkulainen, Kauppi, & Nermes, 2017), we know very little about

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its determinants. This study seeks to provide further context regarding the imitation of practices across multiple tiers in a given supply chain.

Our theoretical framework is guided by institutional theory, which emphasizes the importance of an organization's social context in the form of network arrangements, and has led many to examine the mimetic adoption of organizational practices (Brass, Galaskiewicz, Greve, & Tsai, 2004). The diffusion of management practices in supply chains has been shown to operate through activation of network ties when a focal firm is facing a highly complex environment and is uncertain about the best response (McFarland, Bloodgood, & Payan, 2008). Not all adoptions of practices by others, however, carry equal weight for a given firm's adoptions. Organizations are more influenced by organizations to which they are strongly tied and about whom they have positive sentiments (Tate, Ellram, & Gölgeci, 2013). We therefore argue that imitation in supply chains is not devoid of relevant affective content and, more specifically, that imitation increases with increased levels of affective commitment. Moreover, given the context-dependent nature of many supply chain practices (Sousa & Voss, 2008), this study suggests that the common belief that environmental uncertainty enhances imitation does not apply to all types of management practices. Building on organizational contingency theory, we posit that, when faced with uncertainty, firms' tendency to imitate certain practices will be lessened or amplified depending on their relevance to the specific situation.

The overarching purpose of this research is, thus, to understand how both relational and environmental contextual factors affect the imitation of supply chain management practices. Our general contention is that, while network ties create the conditions for imitation to take place, it is the level of affective commitment along with environmental uncertainty that determines the extent of imitation of management practices in the supply chain.

To test our expectations, we conducted a survey and obtained a unique data set consisting of vertically linked buyer–supplier–supplier triads. In our empirical study, operationally, we focus specifically on control practices imitation. The test design considers imitation as an intended decision on the part of the first-tier supplier in response to observing the buyer's controls, resulting in similar controls being used by the first-tier supplier with the second-tier supplier.

By investigating imitation effects in this setting, our study demonstrates the importance of considering influences from outside the buyer–supplier dyad and incorporating multiple tiers into our understanding of certain supply chain management phenomena. This responds to recent calls for more multilevel conceptualization and research in supply chain management (e.g., Carter, Meschnig, & Kaufmann, 2015b). Prior research has noted, moreover, that in order to get a better grasp of the use of supply chain management practices, the way organizations select supply chain management best practices needs to be studied in more depth (Sousa & Voss, 2008). Applying theories that incorporate mimetic processes is an important step in that direction, as it brings new perspectives on the preferences that organizations develop regarding certain practices, and how these processes shape supply chain management patterns across multiple tiers. Not only is the empirical literature on the occurrence of imitation across multiple tiers quite limited in general, the questions of *whom* suppliers imitate, *when* they are more or less prone to do so and, particularly, whether suppliers are selective in *what* they imitate under specific conditions have been left unanswered, constituting the focus of this study.

Overall, our findings provide new insights on how the relational context affects the transfer of organizational practices, with greater imitative behaviors being found in situations where the supplier is more committed to the buyer firm. Moreover, while environmental uncertainty is generally thought to increase imitation, our study suggests that mimetic influence depends on relevance judgments. The result is a selective imitation of supply chain management practices to situations where this is considered most effective. Importantly, while this study specifically tested for control practices imitation, the insights from this study have application to the imitation of other supply chain management practices as well.

From a practical standpoint, such insights should improve firms' recognition of their own but also their supply chain partners' imitative tendencies and, more generally, contribute to a better understanding of the enablers as well as barriers to spreading various management practices across the supply chain.

The remainder of the paper is organized as follows. In the next section, we review relevant literature and introduce our research setting. We then outline the theoretical framework and develop our hypotheses. The empirical part of the study follows, including a description of the sample and data collection, measurement validation, analyses, and results. We conclude by discussing the academic and managerial relevance of the study, its limitations, and directions for further research.

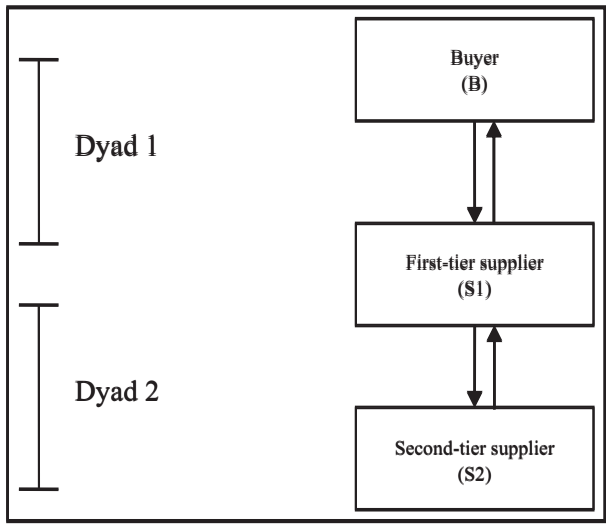
LITERATURE REVIEW AND RESEARCH SETTING

Interorganizational imitation occurs when the use of certain practices by an organization increases the likelihood of other organizations using similar practices (Haunschild & Miner, 1997; Ordanini et al., 2008). One of the most powerful sources of influence for imitative behavior and mimetic processes is an organization's

network of ties (Brass et al., 2004; Soda, Zaheer, & Carlone, 2008). Studies have investigated interorganizational imitation in various network contexts. In the field of operations and supply chain management, the work has expanded from examining, for example, the adoption of total quality management (e.g., Westphal, Gulati, & Shortell, 1997), manufacturing practices (e.g., Ketokivi & Schroeder, 2004), and risk management tools (e.g., Zsidisin, Melnyk, & Ragatz, 2005) to the diffusion of environmental business practices (e.g., Tate et al., 2013), supply chain technologies (e.g., Liu, Prajogo, & Oke, 2016), and the use of supplier integration mechanisms (e.g., Turkulainen et al., 2017). Related work has shown that interfirm linkages within the supply chain provide an effective channel for the diffusion and imitation of management practices (e.g., Fu, 2012), and evidence on the spread of interfirm behaviors from one dyadic relationship to an adjacent dyadic relationship in the supply chain has been found (e.g., McFarland et al., 2008; Reusen & Stouthuysen, 2017). As the literature is only beginning to uncover the imitation of management practices across multiple tiers, the key motivation of this study is to shed further light on the occurrence of such imitation specifically in supply networks.

As noted in prior supply chain research, the smallest unit of a network that captures interrelational influences is a triad (Choi & Wu, 2009a). Accordingly, we consider a three-tier supply chain configuration in the form of vertical buyer–supplier–supplier triads. Figure 1, adopted from Reusen and Stouthuysen (2017), illustrates our research setting, which involves dyadic relationships at two levels. The first-level dyad involves the relationship between the buyer and its first-tier supplier (S1). The second-level dyad involves the relationship between the S1 and the second-tier supplier (S2). This conceptualization corresponds to an open triad as specified by Mena et al. (2013), where the supplier in the middle (i.e., the S1) occupies a mediating role. That is, we take the S1 as the focal firm and study how the dyadic relationship between the buyer and S1 influences the dyadic relationship between the S1 and S2. It is specifically through the S1's imitative tendencies that practices used to manage relationships across the supply chain tiers may come to resemble each other.

FIGURE 1
Triadic/Dual Dyadic Supply Chain Configuration



THEORETICAL FRAMEWORK AND HYPOTHESIS DEVELOPMENT

The proposed theoretical framework examines the determinants of supply chain management practices imitation and has an institutional theoretical foundation. Institutional theory has been widely used in studying imitative behavior, and network scholars have also pointed to its value in a supply chain context (see for example, Borgatti & Li, 2009). The central tenet of the institutional argument is that organizations are affected by other organizations and that imitation and the resulting isomorphism are key parts of organizational behavior. Traditionally, institutional theory emphasizes social influences on organizational behavior and suggests that organizations copy practices adopted by others to acquire legitimacy (DiMaggio & Powell, 1983). More recent developments in institutional theory, however, posit that mimickers may be economically motivated and that imitation occurs in an attempt to improve efficiency. According to this perspective, organizations respond to indications that specific actions are worthwhile to pursue (Haunschild & Miner, 1997). Although these variants may differ in the underlying motives that trigger imitation, they generally propose that organizations are more likely to adopt a practice if other organizations have done so too (Turkulainen et al., 2017). In this respect, we consider imitation to be present when the practices used by the S1 with the S2 mirror the practices used by the buyer with the S1, without presupposing any particular form of decision making or motivation underlying the imitative behavior (see also, Greve, 1998).

While theory holds that imitative behaviors can take many forms and may apply to various supply chain management practices, it finds particular applicability in practices that span organizational boundaries. Ketokivi and Schroeder (2004) note that, when engaging in mimicry, the imitator seldom has full access to the imitatee's manufacturing system. This is, generally, the case for any practice that is internally focused. However, external or interorganizational practices, such as influence strategies (McFarland et al., 2008), supplier integration mechanisms (Turkulainen et al., 2017), or external

performance measurement systems (Maestrini, Luzzini, Maccarrone, & Caniato, 2017), are directly observable and identifiable by supply chain members, such that they more readily can serve as examples to be emulated. In the context of this study, we concentrate on control practices as the subject of imitation.

Control constitutes an important part of supply chain management. Control is aimed at aligning buyer–supplier interests and refers to the practices used by exchange partners to manage risk in the supply chain and to gain control over their cooperative activities (Dekker, Sakaguchi, & Kawai, 2013; Lumineau & Henderson, 2012). In a buyer–supplier relationship, the buyer is often thought to be the "controller" (the firm exercising control) and the supplier the "controllee" (the target of control) (Liu, 2015; Stouthuysen, Slabbinck, & Roodhooft, 2012). Firms typically use a broad portfolio of different control practices, consisting of formal and informal controls (Bastl, Johnson, & Finne, 2019; Choudhury & Sabherwal, 2003; Kirsch, Sambamurthy, Ko, & Purvis, 2002; Ouchi, 1979). Formal controls can be subdivided into *outcome* and *behavior* controls. Outcome controls focus on the measuring and monitoring of results to be achieved, whereas behavior controls are to ensure that the processes are appropriate (Liu, 2015). Informal, or *social*, controls do not specify outcome targets or desirable behaviors. They instead focus on shared values and internalization of goals and involve socialization activities, such as frequent meetings and communications (Cousins & Menguc, 2006). Altogether, this means that the buyer firm may use various formal and/or informal controls toward the S1s as part of their day-to-day management. These S1s, in turn, act as controllers toward their suppliers. Being the "controllee" and the "controller" at the same time, the S1 sits between the buyer and the S2, allowing for the manifestation of imitative behavior.

From such a perspective, the context stretches beyond the dyad, where the influence of the buyer is not limited to the S1 but reaches the S2. Importantly, though, our setting fits with the decentralized situation described in Choi and Hong (2002), where the buyer delegates the responsibility of managing the S2s to the S1. As such, the buyer's management practices may be used to inform, but not dictate, practices usage further along in the supply chain. That is, suppliers may decide to follow or to model themselves after the buyer, such that similarity among firms results. However, suppliers ultimately have the latitude to choose their level of responsiveness and to work with their own suppliers in an autonomous way.

Against this background, actors in the network play an active role in the diffusion of supply chain management practices, rather than being inert entities that merely respond to inducements and constraints from their network ties (Choi, Dooley, & Rungtusanatham, 2001; Tate et al., 2013). In connection with institutional theory, we advance the argument that existing buyer–supplier relationships—as institutions—not only constrain and enable action but also actively orient it toward some possibilities over others; actors nonetheless remain active agents capable of reflexivity and deliberate decision making (cf. Cardinale, 2018; Kostova, Roth, & Dacin, 2008). Accordingly, we employ an active agency perspective, arguing that when S1s are exposed to the buyer's management practices, S1s will vary in their imitative response.

More specifically, we propose that the S1's imitation of the buyer's practices for use with the S2 is influenced by their interpretation and perceptions of those practices, which are shaped by two important factors: the specific relational context and the external environmental context. Our main argument is that, whereas relational factors will influence suppliers' mimetic tendencies by determining *whom* they will imitate, environmental conditions will determine *when* and *what* they imitate.

The existence of control practices imitation in buyer–supplier–supplier triads has been documented in prior research (Reusen & Stouthuysen, 2017), so it provides an interesting set of practices that can be examined in more detail to understand the determinants of imitative behavior in such a setting. In what follows, we discuss each of the identified contextual factors (i.e., relational and environmental), and develop our hypotheses for imitation as applied to the three types of control (i.e., outcome, behavior, and social). Other than previous work that has treated imitation as the copying of an entire set or portfolio of controls (Reusen & Stouthuysen, 2017), we consider the imitation of each control type separately, which accounts for the flexibility firms have in copying some of the practices within the portfolio and, most importantly, enables us to detect patterns of selective imitation if they exist.

Relational Context

While there is wide acceptance of the idea that networks of relations influence imitative behavior, the institutional literature also suggests that organizations tend to copy other organizations with whom they relate and identify (Sahlin & Wedlin, 2008). In fact, given a firm's general imitation propensity, not all other firms' practices are equal to the firm, and the concrete act of imitation may depend on some features of their relational context (Kostova & Roth, 2002). In supply chain relationships, the relational context that connects two firms has been widely used to characterize exchange relationships (Carey, Lawson, & Krause, 2011). This relational context can be described by the level of affective commitment. Affective commitment has been defined as a party's intention to continue an exchange relationship based on positive regard for and attachment to the other

party (Stanko, Bonner, & Calantone, 2007). Most studies have focused on the relational context in dyadic relationships (Kim & Henderson, 2015) and have not extended its implications toward triadic relationships in supply chains. We argue, however, that the level of affective commitment in the first-level dyad may influence how the second-level dyad is managed. If a relationship is characterized by high affective commitment and firms experience states of attachment and identification toward another, then they are increasingly likely to display matching behaviors (Kostova & Roth, 2002). Specifically, affective commitment often entails a desire to be closely associated with a partner and thus may lead to a greater willingness to resemble. Moreover, a firm that identifies with a partner will likely share the values and the beliefs of the partner embodied in the practice that is being transferred. Together, these arguments suggest that the level of attachment and common interests afforded by affective commitment is likely to promote imitation of practices along the supply chain.

Applied to our context, the higher the affective commitment, as perceived by the S1, the higher the supplier's reliance on the buyer's controls to manage the relationships with its own suppliers. Since the buyer firm typically uses a broad portfolio of controls on the S1, this allows for the imitation of different types of control, including outcome, behavior, and social controls.

Thus, we predict the following:

H1a: The first-tier supplier's affective commitment toward the buyer is positively related to the extent to which the first-tier supplier imitates the buyer's *outcome controls* for use with the second-tier supplier.

H1b: The first-tier supplier's affective commitment toward the buyer is positively related to the extent to which the first-tier supplier imitates the buyer's *behavior controls* for use with the second-tier supplier.

H1c: The first-tier supplier's affective commitment toward the buyer is positively related to the extent to which the first-tier supplier imitates the buyer's *social controls* for use with the second-tier supplier.

Given that the impact of relational context is not practice-specific, we expect similar relational effects across various practices. Yet while the above identification-based imitation processes apply to any type of practice, we expect the environmental conditions under which firms operate to have an important bearing on the appropriateness of the use and, by extension, the imitation of specific practices, as elaborated on below.

Environmental Context

Building on early theoretical developments, a large body of literature has assumed that uncertainty enhances imitation (Haunschild & Miner, 1997). With regard to supply chains, uncertainty is a key element of the environmental context (Wong, Boon-Itt, & Wong, 2011). More specifically, environmental uncertainty refers to the degree to which firms' external environment in terms of its competitors' actions, technology, and consumer tastes and preferences is characterized by an absence of pattern, unpredictability, and unexpected change (Gordon & Narayanan, 1984). These unpredictabilities and sudden changes in the external environment result in a high information processing demand for firms. In such situations, firms are particularly likely to be receptive to information implicit in the actions of others (Lieberman & Asaba, 2006). In other words, firms who perceive high levels of environmental uncertainty may be more motivated to look at other firms for some assurance about how to act. In our setting, this implies that, under conditions of uncertainty, the supplier would be more likely to follow the buyer's management practices for use in interactions with its own suppliers.

However, whereas environmental conditions may create the uncertainty that typically drives imitation, by its own nature uncertainty also constrains the use of particular supply chain management practices, thereby limiting imitation potential. Organizational contingency theory has recognized the importance of contextual factors and the implausibility of a single "best practice" approach (e.g., Lawrence & Lorsch, 1967). More recently, scholars also called for a contingent application of supply chain management practices, with environmental uncertainty constituting an important contingency factor (e.g., Sousa & Voss, 2008). Prior research, for example, has identified environmental complexity and dynamism as important external contingencies that in part determine the feasibility of specific flexibility strategies (Ketokivi, 2006). Also, while supply chain integration is often considered as a tool to cope with uncertainty, it has been voiced that supply chain integration is not universally beneficial and that its value is contingent on environmental context (Flynn, Koufteros, & Lu, 2016; Wong et al., 2011). The main point is that certain practices are more appropriate than others in dealing with the uncertainties a specific firm is confronted with. In the context of control design, Speklé (2001) likewise pointed to uncertainty as a contextual factor that needs to be considered, suggesting that control devices should be tailored to the realities of the environment, particularly emphasizing the importance of maintaining sufficient flexibility to allow for adaptation to events as they unfold.

Thus, on the one hand, the institutional argument suggests that reliance on imitation increases with environmental uncertainty but, on the other hand, uncertainty also inhibits the use and effectiveness of management practices that are ill-suited to inherently uncertain environments, resulting in the paradoxical situation of higher rates of imitation under less desirable conditions.

It is thus worthwhile investigating whether suppliers account for environmental uncertainty as an important relevance criterion in their imitation decisions. Prior research has introduced the notion of reflective imitation, indicating that practices previously adopted by others are influential only if those practices are perceived as relevant (Greve, 1998; Li, Qian, & Yao, 2015). Therefore, starting from the S1's identification-based imitative tendency, we further expand our model by considering how the relationship between affective commitment and imitation is moderated by environmental uncertainty. Since the three types of control are differentially suitable to handle environmental uncertainty (Harmancioglu, 2009; Langfield-Smith, 2008), and adhering to the contingency logic and active agency perspective, it is reasonable to expect that it will impact the imitation of each control type accordingly.

When firms are faced with high levels of uncertainty, it is particularly difficult to specify outcomes to be realized and to monitor the achievement of these performance targets. If desired outcomes cannot be clearly articulated and accurately measured, outcome controls will not be useful (Das & Teng, 2001; Kirsch et al., 2002; Langfield-Smith, 2008). The relevance of outcome controls, thus, clearly depends on the level of environmental uncertainty. Considering that, when exposed to the buyer's controls, S1s act as active agents, we propose that they will take these relevance considerations into account in their imitation decisions. Under conditions of uncertainty, outcome controls would be viewed by the S1 as inappropriate or ineffective for the particular situation and would logically result in a lower propensity to imitate. In other words, for outcome controls, we expect that the buyer's influence in the form of identification-based imitation is *weaker* under conditions of environmental uncertainty.

Compared to outcome controls, behavior controls are considered to be more effective under conditions of uncertainty. Directly managing and coordinating suppliers' activities through the use of behavior controls might be better suited to deal with the uncertainties, because it focuses on the processes rather than on the outcome itself (Das & Teng, 2001; Kirsch et al., 2002; Langfield-Smith, 2008). The difficulty of setting performance criteria in advance and effectively evaluating achieved performance in rapidly changing and uncertain environments, as such, does not significantly handicap behavioral controls. In applying this line of thought to the imitation of behavior controls, we again follow the argument that the S1s' relevance judgments will determine their imitative behavior. The notion that behavior controls are valuable under conditions of uncertainty, combined with the widespread idea that uncertainty makes others' actions and practices more influential in guiding decision making, leads us to propose a higher tendency to imitate. More specifically, for behavior controls, we expect that environmental uncertainty will *strengthen* the buyer's influence in the form of identification-based imitation.

Besides, firms may rely on informal or social controls in uncertain situations. Scholars have indicated that social controls provide the flexibility to deal with the inevitable uncertainties that arise in interfirm relationships (Das & Teng, 2001; Langfield-Smith, 2008; Poppo & Zenger, 2002). Social controls are not explicitly designed, but entail the alignment of goals through socialization activities. They allow the partners to move forward with a less fully specified contract or less strict monitoring under the assumption that contingencies will be addressed in good faith. Since social controls are particularly appropriate to the situation, and uncertainty is generally thought to foster imitation, S1s would be more inclined to imitate these controls in the presence of uncertainty. As such, for social controls, we expect that environmental uncertainty will *strengthen* the buyer's influence in the form of identification-based imitation.

Together, this leads to the following hypotheses:

H2a: The relationship between the first-tier supplier's affective commitment toward the buyer and the first-tier supplier's imitation of the buyer's *outcome controls* for use with the second-tier supplier will be weakened by environmental uncertainty.

H2b: The relationship between the first-tier supplier's affective commitment toward the buyer and the first-tier supplier's imitation of the buyer's *behavior controls* for use with the second-tier supplier will be strengthened by environmental uncertainty.

H2c: The relationship between the first-tier supplier's affective commitment toward the buyer and the first-tier supplier's imitation of the buyer's *social controls* for use with the second-tier supplier will be strengthened by environmental uncertainty.

In summary, both relational and environmental factors suggest testable hypotheses relevant to predicting

the occurrence of imitation across the supply chain. The key premise of our predictions is that relational context and environmental context interact with each other when influencing the imitation of supply chain management practices and that this influence differs depending on the specific practice under consideration.

SAMPLE DESIGN AND DATA COLLECTION

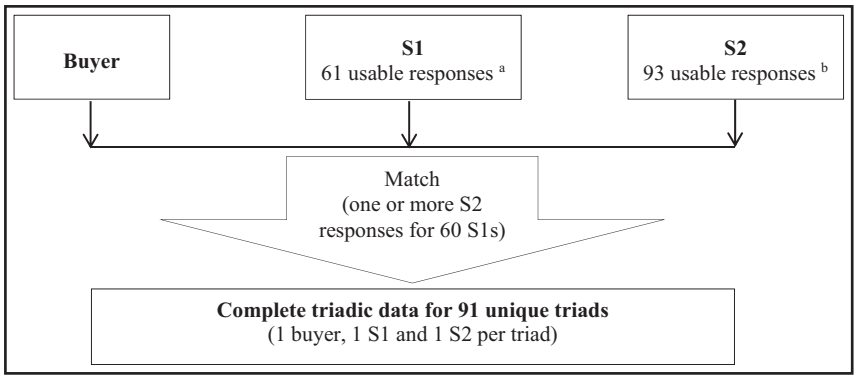
We collected survey data from partner firms working together in close buyer–supplier relationships. In particular, we study a vertical supply chain consisting of three members (i.e., buyer–supplier–supplier triads). We gained the cooperation of a buyer firm—a large, Fortune 500, consumer goods manufacturer that outsources various production and service functions. In this setting, it is common for S1s, in turn, to outsource to one or more S2s, which provides a good context for investigating imitative behavior. Especially because the buyer is regarded as an organization of high prestige, it likely serves as a role model for other companies upstream in the supply chain. Previous research has shown that organizations tend to imitate the practices of firms with certain traits, such as large size, high prestige, or good performance that give them confidence in imitation (Haunschild & Miner, 1997). Because the buyer in our setting exhibits these traits, it presents a good candidate to be imitated. Our research setting thus provides both the necessary network conditions and the motivational context for imitation to take place.

Our research design involves a multilevel effort, with data collected from two parties in the supply chain network (i.e., the buyer's S1s and S2s). First, we obtained contact information of S1 principals for a random selection of 1,000 S1s from the buyer's supplier database. These S1 principals are the buyer's primary contacts and are typically boundary-spanning supply chain managers who perform important functions with respect to relationship management. In general, boundary spanners are individuals responsible for the management of the firm's business relationships by representing their own firm and frequently interacting with boundary spanners at partner firms. The S1 principals, thus, constitute an important link in the triad and tend to be more closely involved in these relationships than other members of the organization. As such, they are not only considered to be qualified respondents, they are also in the right position to identify the S2s. We asked each S1 principal surveyed to select at least three S2s with whom they had recently done business. We then asked the S2 informants to respond to all questions using their relationship with the S1 as the context. This procedure ensured that we obtained matching triads.

The survey was mailed to the target respondents during the spring of 2012. We sent emails with one set of survey questionnaires to the S1s and another set to the S2s. We re-sent the survey questionnaire to nonresponders approximately one month after the initial mailing. We received 61 S1 responses and 96 S2 responses. To evaluate informant quality, we had respondents assess their ability to respond to the questionnaire items, their level of involvement with the partner firm, and their knowledge of their firm's dealings with the partner firm. On a five-point scale, the average scores for the S1 informants on these questions were 3.97 (s.d. = .35) and 4.07 (s.d. = .37) considering their relationship with the buyer and their own suppliers, respectively. The survey instrument for the S2s likewise included informant quality checks, specifically related to their firm's dealings with the S1 who identified them. We excluded 2 S2 respondents with a low score on all three informant quality questions. The average informant quality score for the remaining S2 informants was 3.91 (s.d. = .44). We further eliminated 1 S2 response because of missing data. This left 61 usable S1 responses and 93 usable S2 responses. The S2 respondents named 60 of the contacted S1s. Of those 60, multiple responses were received for 13 S1s (i.e., ranging from 2 to 8 S2 responses for a single S1). We treated these cases where two or more S2s identified the same S1 as one-to-one unique relationships. Notably, out of the 93 usable S2 responses, 2 S2s could not be matched to an S1. As such, matching of the buyer, S1 responses, and S2 responses resulted in complete data for 91 triads. Figure 2 summarizes the data collection and matching process. Table 1 presents the key sample characteristics of all S1 and S2 firms (i.e., S1 age, S1 size, S1 location, S1 and S2 industry).

Consistent with the diverse nature of the buyer's supplier base, the age of the S1s in the sample ranges from 2 to 179 years, with an average of 47 years. The sample covers small to large S1 firms, although most of the respondents came from medium-sized to large firms with more than 500 employees. The majority of the surveyed S1s are located in North America and Europe, reflecting the buyer's global operations. In terms of industry sector, the S1 and S2 responses relate to multiple industry groups. The industry classification in the survey questionnaire was based on two-digit SIC codes, belonging to four general industry groups—namely, manufacturing, transportation, finance and real estate, and services. The data indicate that the industries in our sample are representative of the functions primarily outsourced by the buyer, with the largest representation by manufacturing and service sectors, respectively.

FIGURE 2
Data Collection Overview.



[a]Out of the 61 Usable S1 Responses, 1 S1 Could Not Be Matched to a S2. [b]Out of the 93 Usable S2 Responses, 2 S2s Could Not Be Matched to an S1

MEASURES AND VALIDATION

Scales used to measure the constructs were drawn from the available literature. Table 2 summarizes the scale items used for the dependent variables. Table 3 summarizes the scale items of the independent and control variables. Table 4 reports summary statistics and correlations for all variables in our model.

Dependent Variables

We examine control practices imitation in the form of upstream control similarity between the buyer and the S1 and between the S1 and the S2. Previous studies have relied on similarity scores to investigate imitative behavior, given that imitation is manifested by greater similarity between firms' practices (e.g., McFarland et al., 2008; Westphal, Seidel, & Stewart, 2001). Based on the existing literature, we construct a list of different practices to exercise control (e.g., Choudhury & Sabherwal, 2003; Cousins & Menguc, 2006; Dekker, 2004; Liu, 2015; Mahama, 2006; Mouritsen, Hansen, & Hansen, 2001; Stouthuysen et al., 2012). We include both formal and informal controls and, more specifically, control practices that reflect the three control types: outcome, behavior, and social. All responses use a five-point scale, ranging from "used not at all" to "used extensively." We ask the S1s to rate the extent to which the buyer used specific control practices toward them, and we ask the S2s to rate the extent to which the S1 used specific control practices toward them.

Similarity of use for each control type is determined by Equation 1, which is derived from Westphal et al. (2001) and McFarland et al. (2008) and adapted to our study context. We take the absolute difference between the control practices used by the buyer toward the S1 (*CB*) and the control practices used by the S1 toward the S2 (*CS*) and convert this into a similarity score by subtracting it from the highest value possible. Higher scores indicate greater imitative use of the particular type of control.

$$\gamma_i = 5 - \left|CB_{ij} - CS_{ij}\right| \quad (1)$$

where
i = control type identifier, 1–3;
j = triad identifier, 1–91.

Independent Variables

Environmental uncertainty refers to the degree to which the S1's external environment in terms of its competitors' actions, technology, and consumer tastes and preferences is characterized by an absence of pattern, unpredictability, and unexpected change. To measure environmental uncertainty, we use a multi-item scale adapted from Srinivasan, Mukherjee, and Gaur (2011). Affective commitment reflects the S1's desire to continue the relationship because of the positive affect toward and identification with the buyer. We measure affective commitment using a multi-item scale developed by Kumar, Scheer, and Steenkamp (1995). The independent variables reflect the S1's perspective, as the S1's perceptions are considered to be the most important predictors of their imitative behavior.

Control Variables

We control for sample characteristics such as S1's firm age (i.e., number of years since the foundation of the firm) and size (i.e., a dummy variable with number of employees larger than 1,000 or less than or equal to 1,000). It has been shown that a lower level of experience might lead to greater imitative behavior (e.g., Henisz & Delios, 2001; Li et al., 2015) and that

TABLE 1

Sample Characteristics

Age S1 (Number of Years)	Average Values 47.00	
	Frequency in Sample	Percentage of Sample
S1 (n = 60)		
Size S1 (number of employees)		
<100	2	3.3
100–500	9	15.0
501–1,000	11	18.3
>1,000	34	56.7
Unknown	4	6.7
Location S1		
Africa	1	1.7
Asia	2	3.3
Australia	0	0
Europe	16	26.7
North America	40	66.7
South America	1	1.7
Industry sector S1		
Manufacturing	40	66.7
Transportation	4	6.7
Finance and real estate	1	1.7
Services	12	20.0
Multiple	3	5.0
S2 (n = 91)		
Industry sector S2		
Manufacturing	53	58.2
Transportation	9	9.9
Finance and real estate	0	0
Services	29	31.9
Multiple	0	0

organizations are more likely to imitate the strategies of their size peers (e.g., Haveman, 1993; Turkulainen et al., 2017). We also control for relationship duration and contact frequency between the buyer and S1, as these might indicate strong ties and influence the occurrence of imitation. Relationship duration is operationalized as a single-item measure that asks S1s to indicate the number of years and months they have worked with the buyer. Contact frequency measures the perceived level of interaction between the buyer and S1. This multi-item measure is based on Doney and Cannon (1997).

We include dependence as a control variable to isolate the effects of our theorized variables from confounding influences due to coercion. A powerful buyer may coercively push specific practices to be adopted in the supply chain (e.g., Tate et al., 2013; Zsidisin et al., 2005). In this case, suppliers are required to comply with the demands of the dominant buyer, creating sameness throughout the supply chain that is not the result of imitation. Therefore, we control for situations where coercion would be more plausible, such as when the supplier is highly dependent on the buyer. Dependence is operationalized as a single-item measure asking the S1 to report the percentage of total sales accounted for by the buyer firm, as commonly done in the literature (e.g., Carey et al., 2011; Pandit, Wasley, & Zach, 2011). We use the natural logarithm in our model.

What looks like imitation may also be firms' independent responses to a common external stimulus. Similar control may, for instance, be shaped by a common cultural context. Scholars have noted different preferences for certain types of control in various countries (e.g., Li, Xie, Teo, & Peng, 2010). While the buyer's headquarters in our study are in the United

TABLE 2

Control Practices Scale Items

Outcome control[a]
Open book accounting to create transparency in supplier's results
Financial incentive system in the form of benefit sharing
Information systems designed to help monitoring the outputs delivered by the supplier
Behavior control[a]
Information systems designed to help monitoring behavior of the supplier
Joint alliance board serving as an authority structure in which both partners have control over the activities performed
Interorganizational chart to clarify the roles and responsibilities of the partners in the relationship
Task groups including employees of both partners to carry out the activities and to facilitate and monitor the processes
Social control[a]
Face-to-face communication to help establish shared norms and beliefs
Joint task groups or cross-functional teams including employees of both partners to enhance shared decision making and goal setting
Regular joint meetings to understand the relationship's goals, values, and norms
Workshops and training practices to stimulate shared understandings and common goals

Buyer's use of control practices toward S1s is reported by S1s, and S1s' use of control practices toward S2s is reported by S2s.
[a]Items measured on a five-point Likert-type scale (1 = "used not at all" and 5 = "used extensively").

States, we collect data from S1s from different geographical regions. We constructed a dummy variable equaling 1 if the S1 is also located in the United States and 0 if the S1 is located elsewhere. Besides location, we control for industry similarity between the buyer, the S1, and the S2, because this might also have a positive influence on the similarity of control usage. Firms operating in the same or similar

TABLE 3

Independent and Control Variable Scale Items

Affective commitment[a]
Even if we could we would not drop the buyer firm because we like being associated with them
We want to continue as a supplier of the buyer firm because we genuinely enjoy our relationship with them
Our positive feelings toward the buyer firm are a major reason we continue to work with them
Environmental uncertainty[a]
The rate at which products/services are becoming obsolete in the industry is very fast
Actions by competitors are hard to predict
Demand and consumer tastes are hard to predict
The production technology in this industry changes fast
Technological advances in this industry are hard to predict
Consumer demand for our products/services is very unstable
Contact frequency[a]
The buyer firm's personnel often visit our place of business
The buyer firm's personnel make more calls than those of other client firms
The buyer firm's personnel spend considerable time getting to know our people
Relationship duration
Length of relationship with buyer firm: . . . years and . . . months
Dependence
Percentage of total sales from buyer firm: . . . %

All measures reported by S1.
[a]Items measured on a five-point Likert-type scale (1 = "strongly disagree" and 5 = "strongly agree").

TABLE 4

Correlation Matrix and Descriptive Statistics

	1	2	3	4	5	6	7	8	9	10	11	12
Dependent variables												
1. Outcome control imitation												
2. Behavior control imitation	−.008											
3. Social control imitation	.007	.280**										
Independent variables												
4. Affective commitment	.178	.195	.364**									
5. Environmental uncertainty	−.167	.400**	.231*	.219*								
Control variables												
6. Age S1	−.094	.125	.310**	.395**	.407**							
7. Size S1	−.039	.294**	.258*	.274*	.210	.475**						
8. Relationship duration	−.052	.213*	.589**	.290**	.256*	.589**	.273*					
9. Contact frequency	.035	.287**	.451**	.234*	.588**	.487**	.283**	.556**				
10. Dependence	−.001	.021	.099	.046	.208*	.076	−.173	.030	.501**			
11. Location	.266*	.046	−.104	.056	−.127	−.206	−.316**	−.085	−.206	.151		
12. Industry similarity	−.083	.150	.120	−.016	.092	.311**	.331**	.261*	.219*	−.106	−.184	
Mean	4.12	4.31	4.01	3.54	3.58	55.20	.67	8.33	3.32	.21	.60	2.13
Std. Dev.	.69	.73	1.02	.60	.97	48.02	.47	8.36	.78	1.06	.49	1.26
Min.	2.00	2.00	1.75	1.67	2.00	2	0	.20	1.33	.01	0	1
Max.	5.00	5.00	5.00	4.67	4.67	179	1	41.00	4.67	33.00	1	4

* and ** represent significance levels of .05 and .01, respectively (two-tailed).

industries often use similar approaches to control (e.g., Davila, 2005). We created a categorical variable that reflects the degree of similarity between buyer, S1, and S2 industry, constructed as follows: firms sharing the same 2-digit SIC code, being the most similar, were coded four; firms sharing the same 1-digit but not the same 2-digit SIC were coded three; firms were coded two when they did not share the same 1- or 2-digit SIC but shared the same general SIC category; and if the firms shared none of these industry similarities, the variable was coded one.

Measurement Validation

The measurement validation involved multiple steps, subjecting multi-item measures to a systematic assessment of unidimensionality, reliability, and validity. More details are provided in Appendix S1, including measurement model estimates, item loadings, and construct reliabilities. For each multi-item construct, we calculated individual scores as mean scores of the combined scale items to be used in the analyses.

Furthermore, we note that since our survey research design effectively deals with common method bias through careful survey design *ex ante*, testing or controlling for it *ex post* is unneeded. Our survey research design, in fact, reduces the risk of common method bias by following recommendations from the literature, such as obtaining measures of the predictor and criterion variables from different sources, protecting respondent anonymity, and reducing evaluation apprehension (Flynn, Pagell, & Fugate, 2018; Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Since part of our key variables is not self-reported, we were also able to eliminate problems associated with self-serving biases.

ANALYSES AND RESULTS

Hypothesis Tests

To test the hypotheses, we conduct hierarchical regression analysis with ordinary least squares (OLS), incrementally adding the variables of interest and their interactions. Each variable was mean-centered before producing the interaction terms in order to minimize potential multicollinearity. We also calculated the variance inflation factors (VIF) for each regression coefficient. All scores are lower than 2.5 and thus within acceptable levels.

We estimate separate regression models for the imitation of outcome, behavior, and social controls. Model 1 presents the base model, which includes only the control variables. Model 2 adds the main effects of our theoretical variables of interest, namely affective commitment and environmental uncertainty. Model 3 introduces the interaction term between affective commitment and environmental uncertainty. Table 5 reports the regression results, along with statistics for the incremental changes in explanatory power.

As can be seen for each type of control, when adding our two predictor variables, the model shows a significant increase in R-squared, as compared with the model's respective baseline, suggesting that these variables contribute significantly in explaining imitative control use.

As a first step in our analysis, Model 2 is used to examine whether identification-based imitation is occurring. More specifically, testing for the effect of affective commitment, we find the predicted positive relation with imitation. That is, we find a positive significant relation with imitation of outcome controls ($\beta = .207$; $P < .10$) and social controls ($\beta = .230$; $P < .05$), although the effect did not reach significance for behavior control imitation ($\beta = .080$; $P > .10$). These results provide empirical support for H1a and H1c, whereas we do not find evidence to support hypothesis H1b. While it appears that affective commitment favors the imitation of outcome and social controls rather than behavior controls, the results broadly confirm the logic of identification-based imitation.

Next, we examine the moderating impact of environmental uncertainty on such identification-based imitation, as presented in Model 3. We predicted that uncertainty would weaken the effect of affective commitment for outcome controls, whereas it would strengthen the effect for behavior controls. However, looking at the results, the addition of the interaction term does not increase explained variance and the interaction terms are not significant. Therefore, H2a nor H2b are supported. The results do reveal a significant main effect for environmental uncertainty. The effect of environmental uncertainty is negative for outcome control imitation ($\beta = -.285$; $P < .05$), but positive for behavior control imitation ($\beta = .391$; $P < .01$), as we would expect. Turning to the effects on social control imitation, the model shows a significant increase in explained variance and shows a significant yet negative interaction term between affective commitment and environmental uncertainty ($\beta = -.211$; $P < .05$). This indicates that as the level of environmental uncertainty increases, the positive relationship between affective commitment and social control imitation becomes weaker, rather than stronger, inconsistent with H2c.

Additional Analyses

In this section, we report results of additional tests that extend the above findings and estimate an alternative specification to evaluate the robustness of our results.

Subsample tests. In order to further gauge the occurrence of imitation, we conduct a follow-up analysis

TABLE 5

Regression Results

	Dependent Variable Outcome Control Imitation						Dependent Variable Behavior Control Imitation						Dependent Variable Social Control Imitation					
	Model 1		Model 2		Model 3		Model 1		Model 2		Model 3		Model 1		Model 2		Model 3	
	Std. Coeff.	*t*-value	Std. Coeff.	*t*-value	Std. Coeff.	*t*-value	Std. Coeff.	*t*-value	Std. Coeff.	*t*-value	Std. Coeff.	*t*-value	Std. Coeff.	*t*-value	Std. Coeff.	*t*-value	Std. Coeff.	*t*-value
Control variables																		
Age S1	−.069	−.491	−.056	−.395	−.069	−.485	−.164	−1.208	−.282	−2.105*	−.269	−2.007*	−.16	−1.383	−.227	−1.911†	−.205	−1.772†
Size S1	.006	.044	−.017	−.132	−.037	−.288	.29	2.283*	.252	2.067*	.273	2.229*	.134	1.233	.089	.829	.124	1.178
Relationship duration	−.127	−.894	−.198	−1.42	−.201	−1.443	.082	.592	.146	1.106	.149	1.132	.553	4.683***	.535	4.559***	.539	4.737***
Contact frequency	.255	1.808†	.402	2.629**	.367	2.357*	.266	1.945†	.038	.265	.075	.509	.196	1.674†	.173	1.342	.233	1.832†
Dependence	−.182	−1.503	−.136	−1.154	−.135	−1.142	−.016	−.133	−.06	−.535	−.062	−.553	−.008	−.08	.002	.024	−.001	−.006
Location	.315	2.838**	.281	2.591*	.269	2.475*	.178	1.652	.162	1.571	.175	1.691†	−.018	−.194	−.057	−.624	−.036	−.409
Industry similarity	−.049	−.436	−.029	−.262	−.03	−.277	.055	.508	.091	.873	.093	.893	−.068	−.732	−.027	−.295	−.024	−.273
Independent variables																		
Affective commitment			.207	1.845†	.23	2.021*			.08	.746	.056	.517			.23	2.433*	.19	2.043*
Environmental uncertainty			−.302	−2.351*	−.285	−2.204*			.409	3.353***	.391	3.193**			.009	.082	−.021	−.202
Affective commitment × environmental uncertainty					.123	1.155					−.128	−1.271					−.211	−2.435*
Model fit																		
R^2	.121		.203		.216		.172		.281		.295		.394		.436		.475	
F-value	1.625		2.292*		2.205*		2.471**		3.514***		3.348***		7.714***		6.952***		7.230***	
R^2-change			.082		.013				.108		.014				.042		.039	
F-change			4.190*		1.334				6.100**		1.616				2.989†		5.928*	

†, *, **, and ***, represent significance levels of .10, .05, .01, and .001, respectively (two-tailed).

building on the idea that firms attend to, and are influenced by, the actions of similar others more than dissimilar others. Previous studies have found, for example, that industry similarity enhances firms' sensitivity to other firms' actions (e.g., Henisz & Delios, 2001; Huang, Gattiker, & Schroeder, 2010). Thus, while our previous model incorporates a direct link to control for industry similarity, industrial context could also function as a key moderator of imitation. We therefore explore whether industry similarity influences the strength of our proposed imitation effects, as described in Appendix S2.

The observations regarding industry similarity are theoretically consistent with imitation as a key driver of our findings, as the effects are more pronounced in subsamples in which we would expect the effects to be stronger. That is, the tendency to imitate is stronger when the triad shares observable characteristics—here, industrial context, which likely reflects the relevance and transferability of the practices under consideration.

Alternative imitation measure. We estimate the regression model with an alternative, more direct, imitation measure as dependent variable. Although the alternative measure only assessed control practices imitation as a whole, without specifying the specific type of control, it allows for a robustness test of the impact of the proposed contextual factors on the occurrence of imitation. The measurement details and results are presented in Appendix S3.

Since we obtain similar patterns of results when regressing the control variables (which are generally expected to be associated with imitative behavior) on the direct imitation measure and the similarity measures, this raises confidence that the similarity measures are picking up imitation effects. In addition, the significant values for increases in R-squared and associated F-statistics as compared to the base model indicate that our predictor variables are important in explaining imitation. The results confirm the existence of identification-based imitation, with greater imitative use in situations where the supplier is more committed to the buyer firm. Furthermore, it is interesting to observe that, for the direct measure of imitation, the interaction effect between affective commitment and environmental uncertainty is positive and significant.

DISCUSSION AND CONCLUSIONS

This research develops and tests a model on the conditions under which supply chain management practices imitation in a multitier supply network is likely to take place. Using a unique data set of vertically linked buyer–supplier–supplier triads, the study provides novel evidence on the occurrence of supply chain management practices imitation and makes both academic and managerial relevant contributions.

By investigating the occurrence of imitation, this study contributes to multitier supply chain research in moving beyond the traditional dyadic perspective. Following earlier calls (e.g., Carter, Rogers & Choi, 2015a; Mena et al., 2013), we adopt a multilevel perspective, specifically acknowledging that the effects of firm behavior are not confined to dyadic relationships and that interactions between vertically connected dyads are important to consider. The study further contributes to existing literature by taking a more contextual approach in understanding imitative behavior in supply chains. Studying the impact of relational and environmental contextual factors, and distinguishing among different types of management practices, we provide evidence not only about *whom* and *when* firms in the supply chain imitate, but also about *what* they imitate under specific conditions.

In general, we find that the relational context, and the affective nature of the relationship between the buyer and the supplier in particular, stimulates imitation of control practices. More specifically, when suppliers feel committed to the buyer and identified with it to a greater extent, we observe higher levels of imitation. As commitment proves to be an important determinant of imitation, this supports the argument that imitation in supply chains is not devoid of affect and complements prior network research (e.g., Tate et al., 2013) suggesting that organizations are more influenced by others they are more strongly tied to and about whom they have positive sentiments.

With regard to the environmental context, we find distinct effects for each control type. The interaction of environmental uncertainty with affective commitment fails to produce a significant effect for outcome and behavior control imitation. Yet the opposing main effects of environmental uncertainty on outcome and behavior controls, generally, support the idea that mimetic influence depends on relevance judgments. Moreover, we find that environmental uncertainty attenuates, rather than fosters, identification-based imitation of social controls, particularly when operating in dissimilar industries. The main conclusion from these results is that uncertainty does seem to matter for imitation, with the nuance that it affects imitation of specific practices differently, depending on its imitative content.

Taken together, this study adds to extant imitation studies by (1) providing concrete evidence on how firms' attachment and identification toward another affects the transfer of organizational practices in supply chains and (2) by advancing a contingency approach of imitation, emphasizing that imitation is not a context-independent choice. In doing so, the study not only enriches our understanding of the use

and adoption of supply chain management practices, but also contributes to two emerging line of thoughts in institutional theory.

First, we extend prior work suggesting that uncertainty and imitation relate in ways that are more complicated than commonly assumed (Gaba & Terlaak, 2013). Going back to the origins of institutional theory, DiMaggio and Powell (1983) associated the mechanisms of mimesis primarily with uncertainty. Yet while environmental uncertainty is a factor widely theorized to enhance imitation, also in supply chains (e.g., Kauppi, 2013), at the same time, contingency research has identified environmental uncertainty as an important contextual factor that may affect the effectiveness of a best practice (Sousa & Voss, 2008). No research to date, however, has considered integrating both of these perspectives. The notion that mimetic behavior increases with uncertainty has, in fact, been widely interpreted to apply generally. Our study is the first of which we are aware to theorize about and distinguish between the impact of environmental uncertainty on the imitation of practices that are differentially suitable to deal with uncertainty. The broader implication is that, to arrive at a more comprehensive understanding of how uncertainty drives imitation, it is critical to consider the content and application of the practices being copied.

Second, the apparently selective copying highlights the role of active agency on the side of the imitating firms. Although suppliers are exposed to the entire set of controls used by the buyer, our results suggest that efficiency-seeking behavior will still guide the firm's evaluation of different types of control and that some rational calculation is involved in imitation. This conclusion resonates with the assertion that imitation is not always as "irrational" as sometimes presumed by institutional theory (Turkulainen et al., 2017). Rather than viewing imitation as a mindless process by which organizations unconditionally imitate each other, our findings indicate that organizations imitating controls do this in a careful way. To the best of our knowledge, these observations represent the first empirical evidence suggesting that suppliers do not imitate buyer's practices indiscriminately, but do so with thoughtful consideration of the conditions they are facing and the specificities of the practices at issue. With this, our study moves toward a blended institutional perspective, as advocated, among others, by Cardinale (2018) and Kostova et al. (2008), where the broad concepts of social embeddedness of organizations are intertwined with the ideas of active agency.

While the evidence of this study is limited to the spread of control practices, the insights that emerge from it are relevant to developing further understanding of the diffusion or imitation of other supply chain management practices that are impacted by uncertainty, such as manufacturing flexibility strategies (Ketokivi, 2006), lean principles and practices (Browning & Heath, 2009), and supply chain integration mechanisms (Wong et al., 2011). Our findings also open up interesting avenues for more nuanced explorations of factors that are commonly believed to influence imitation. Considering different types of supply chain uncertainty (Flynn, et al., 2016), for instance, could help to provide further clarity on the notions of choice and deliberateness in imitation.

This study has important practical implications as well. To fulfill their objectives, organizations must be able to keep their supply chain under control and manage processes that extend beyond their boundaries. However, given the level of complexity that supply networks might reach, it would not be possible or desirable for any one firm to manage the whole of it. As supply chain managers struggle with what and what not to manage (Choi et al., 2001; Choi & Wu, 2009b; Maestrini et al., 2017), this study hints at potential indirect benefits resulting from suppliers' imitative tendencies. That is, being part of a network, firms may have good reasons for their supply chain management practices to be imitated and passed on along the chain. By understanding the occurrence of imitation and the determinants thereof, firms could maximize chances for imitation when it is indeed desired that practices spread in this manner. Our results suggest, for instance, that suppliers often do not internalize or diffuse ideas and practices from a buyer with whom they do not feel somehow associated. As such, building strong and committed exchange relationships would be particularly instructive for the purpose of encouraging and assisting supplier firms to adopt relevant management practices. Again, such strategies do not only pertain to control practices, but reasonably apply to any practice that could be diffused across the supply network.

To conclude, we must recognize the limitations of this study, at the same time pointing at opportunities for further research to extend and further validate our findings. First, our study is effectively a single quantitative case study of imitation in the supply chain of one buyer. In addition, while we believe the S1s are representative of the buyer firm's supply base, the response rate and sample size are small and there may be other biases we are unaware of. The same would hold for the S2 respondents. Hence, future research will need to explore imitation in other contexts with larger and more representative samples that can generalize to other networks.

Another limitation relates to the measures. We view our examination of imitation as an important step in the development of this construct, but see several

possibilities for future theoretical and empirical refinement. We attempted to compile a list of very specific control practices in order to have good coverage and to better capture the phenomenon of imitation. While the development of the control constructs was strongly grounded in the literature, its validation pointed to some weaknesses, and we acknowledge that the scale items may require modifications in future studies.

The results based on similarity scores for our dependent variables should also be interpreted with caution. To the extent possible, we have examined rival explanations of positive evidence for similarity between control practices, exploring the impact of tied firms having similar cultural backgrounds or experiencing similar industry conditions. We must acknowledge that other, more specific, features of the transaction context, if similar across tiers, may also affect control practices similarity. Future research aimed at uncovering imitation needs to account for relevant similarities in context as a potential alternative contributor to the observed similarities in practices usage.

To increase confidence that our similarity measure is capturing imitation, we provide a number of additional analyses and robustness checks. Since the observed effects are theoretically consistent with imitative use of controls and are highly comparable with those of the alternative, more direct measure of imitation, this provides substantial corroborating evidence for the envisaged concepts of imitation. The cross-sectional nature of the data may still pose constraints, however, when it comes to more detailed and dynamic analyses of how control choices affect each other. Our main tests are essentially based on the premise that the buyer's controls affect the supplier's controls, with affective commitment and environmental uncertainty as determinants. We acknowledge that it is challenging to establish causality in this research and that potential endogeneity issues could bias regression results. Future longitudinal investigations would be particularly insightful to further validate our results, better accounting for potential endogeneity and strengthening causal inference.

Finally, while we adopt a triadic study design, investigating how the buyer–supplier relationship influences the supplier–supplier relationship, a logical extension would be to consider whether the presence of direct connections between the buyer and the supplier's supplier would influence the dynamics. Additional insight could also be gained by further expanding the unit of analysis. For example, pointing to the wider network of relationships, how far imitation reverberates in the supply chain remains an interesting issue for further investigation. Moreover, if suppliers manage to copy practices in an appropriate way, a multitiered management system may result in improved efficiency and enhanced supply chain orchestration. While performance implications are beyond the present study's scope, a fruitful avenue for future research would be to examine the link between the imitation of practices and supply chain performance.

All in all, this research sheds light on the occurrence of practices imitation in multitier supply chains. It provides a first step in unveiling deliberateness and selectivity in imitative behavior and lays the foundation for the development of a contingency theory of imitation. We hope it will guide future research on supply chain management in new and interesting directions.

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SUPPORTING INFORMATION

Additional supporting information may be found in the online version of this article:

Appendix S1 Measurement validation.
Appendix S2 Industry similarity subsample tests.
Appendix S3 Robustness test with alternative imitation measure.