



Inter-organizational routine replication: Evidence from major football championships

Andrea Furlan^a, Roberto Grandinetti^{a,*}, Francesco Rentocchini^{b,c}

^a Department of Economics and Management, University of Padova, Via del Santo 22, 35123 Padova, Italy

^b European Commission – JRC Seville, Seville, Spain

^c Department of Economics, Management and Quantitative Methods, University of Milan, Via Conservatorio 7, 20122 Milano, Italy

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ABSTRACT

We study the replication of organizational routines through key employee mobility in the context of major football championships. While discussed in the literature of evolutionary economics and in some management studies, this kind of routine replication lacks systematic empirical evidence. The empirical analysis exploits two related samples assembled from several web sources. Employing a combination of descriptive and econometric approaches we show that: 1) when a coach moves from one team to another, there is no significant difference between the routines he/she employs in the latter compared to the routines he/she employed in the former, and 2) when one team changes its coach, there is a significant change in the team routines.

1. Introduction

Replication of organizational routines is a process of remarkable importance, on the basis of which it is possible to explain a variety of different phenomena such as the development of chains of similar outlets in retail and other service sectors (Friesl & Larty, 2013), the emergence of new industries or geographical clusters through spinoffs from one or a few seed firms (Klepper, 2009a), the diffusion of organizational innovations from firms that have successfully developed them to others in the same industry through the mobility of knowledgeable employees (Wezel, Cattani, & Pennings, 2006).

These three examples represent as many forms of routine replication studied in the literature, particularly by the founders of evolutionary economics Nelson and Winter (1982) and other scholars who have followed in their footsteps (e.g., Hodgson & Knudsen, 2010; Klepper, 2009a): replication within the same organization, replication via spinoffs, and inter-organizational replication, i.e., imitative replication through the mobility of human resources from one firm to another. With reference to all the three forms, the non-avoidable presence of individuals who possess a consolidated experience of the routines to be replicated, or key employees, has been emphasized (Aime, Johnson, Ridge, Hill, 2010; Nelson & Winter, 1982; Wezel et al., 2006). Their role is of heightened criticality in the two forms of routine replication in which this process takes place outside the boundaries of the parent

organization (Grandinetti, 2022).

Many empirical studies have been conducted on the first form of replication (intra-organizational replication), and later on the second (spinoffs), while far less attention has been addressed to inter-organizational routine replication. Moreover, in these few papers (as indeed in almost all those on spinoffs), the fact that replication has occurred is tested with measures of competitive performance (of the parent and/or receiving organizations) that remain distant from organizational routines for what they are and how they work. From this limitation follows that studies on inter-organizational replication, while emphasizing and documenting the role of the individuals who hold the knowledge needed for routine replication (key employees), can say nothing about the same as managers (possibly) engaged in the demanding work of replication in the receiving organization.

In short, although routine replication via key employee mobility is discussed theoretically, empirical research on this topic is very scarce. Second, we lack clear direct evidence that the mobility of key employees from an organization to another is associated with the replication of the parent organization's routines in the hiring organization. To address this gap, our paper studies the replication of organizational routines through key employee mobility in the context of major football championships. Our work examines the replicability of organizational routines via mobility of key employees by using variables directly related to what is recognizable from a routine, namely, the actions of the actors

* Corresponding author.

E-mail addresses: andrea.furlan@unipd.it (A. Furlan), roberto.grandinetti@unipd.it (R. Grandinetti), francesco.rentocchini@ec.europa.eu (F. Rentocchini).

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participating in it (Feldman & Pentland, 2003). We do so through an analysis of events (team changes by football coaches) in major European football championships. An increasing body of work in organizational studies has used professional sports as test bed, particularly when suitable data is poorly available due to secrecy concerns (Aime et al., 2010; Kilduff, Elfenbein, & Staw, 2010; Kilduff Galinsky, Gallo, & Reade, 2016; Wolfe et al., 2005). In our paper, coaches are treated as key employees who can carry their playing routines from one team to another whenever they change the football club they coach for.

The empirical analysis exploits two datasets assembled from three different web sources. The first dataset comprises information on the 133 managers who coached at least 100 league games over the period 2007–17 in the five major European football championships. The dataset is matched with club-level statistics from teams they coached in the five major championships over the period 2006–2017 for a total of 658 observations. Our second database contains detailed yearly club-level statistics on all premier league teams over the period 2007–2017 for a total of 220 observations. We exploit the rich set of club-level statistics and develop a combined measure of organizational routines of the teams in any given year. We are also able to control for a number of intervening factors on the relationship between the change of a coach and the change in the team playing routines (e.g., coach experience, team value, championship, etc.).

We employ a combination of descriptive and econometric approaches aimed at testing our hypotheses and show that: 1) when a coach moves from one team to another, there is no significant difference between the routines he/she employs in the latter compared to the routines he/she employed in the former, and 2) when a team changes the coach, there is a significant change in the team main routines. Our theoretical contribution to the theory of routine replication rests on our main result, i.e., inter-organizational routine replication is possible when it is associated with the mobility of individuals who know the routines to replicate and have a chance to do it within the receiving organization. We show that the disruptive event of a coach change is what triggers the process of routine replication. This result suggests routines' scholars to focus their attention on the role of the agency of specific individuals to understand the creation of routines in disruptive, or exceptional, situations.

2. Theoretical background and hypotheses

In their book on organizational evolution, Nelson and Winter (1982: 134) claim that: “firms may be expected to behave in the future according to the routines they have employed in the past”. According to the founders of evolutionary economics, an organizational routine is relatively stable thanks to the specific knowledge it stores (like a “gene”), and can therefore determine highly patterned and repetitive behaviors in the time between one variation of the routine and the next. Twenty years later, Feldman and Pentland (2003: 95) state that “organizational routines can be defined as repetitive, recognizable patterns of interdependent actions, carried out by multiple actors”.

Both these contributions emphasize the collective nature of organizational routines (Pentland, 2011). Nelson and Winter (1982) consider organizational routines as the collective extension of individual skills, or multi-person skills as specified later by Winter (2005). Similarly, in the definition of Feldman and Pentland (2003) routines are conceptualized as interdependent (collective) actions that go above and beyond the individuals involved in the routines.

Even with this partial alignment between the two definitions, they derive from two different approaches. The focus of Nelson and Winter is on routine stability while the interest of Feldman and Pentland is focused on the intrinsic dynamic nature of routines. Not surprisingly, from these two visions two different and divergent lines of studies have emerged, i.e., the capabilities or entity perspective on organizational routines and the performative or practice perspective (Breslin, 2016; Parmigiani & Howard-Grenville, 2011; Pentland, Feldman, Becker, &

Liu, 2012).

Only recently, some scholars (D'Adderio & Pollok, 2020; Furlan & Grandinetti, 2020; Grandinetti, 2022) have brought the two perspectives closer, considering both to address the issue of replicability of routines in contexts different from those where they have been developed.

Following this direction, we adopt a definition of routines that integrate Feldman and Pentland's definition, the most widely used one in organizational studies of routines (Wolthuis, Hubers, van Veen, de Vries, 2022), with the knowledge dimension emphasized by Nelson and Winter, and the many evolutionary economists who followed them (e.g., Hodgson & Knudsen, 2010).¹ Based on this choice, routines are repetitive, recognizable patterns of interdependent actions (their performative aspect), involving multiple, interacting actor, and guided by specific knowledge. Our integration is essential because, in the absence of routine-specific knowledge, routines would look performatively different each time they are activated within the organization, i.e., they would not be stable. This condition is also the necessary premise for making routines replicable.

Regarding routine replication, we follow Szulanski and Jensen (2004: 349) when they state that “replicating a routine involves the creation of another routine that is similar to the original routine in significant respects”. Similarity “in significant respects” means that the copy of a routine is unlikely to be perfect (Nelson & Winter, 1982). An exact replication is hindered by random copy errors, or is deliberately avoided by giving room for micro-adaptations to the new organizational context (Hodgson, 2013). Going along with Jensen and Szulanski (2007), routine replication is a form of knowledge transfer. Following our definition of routines, we may add that a replication strategy uses the specific knowledge of a source (original) routine as the means, its end being to replicate the repetitive pattern of interdependent actions guided by that knowledge.

For a replication process to take shape, the source routine may not yet be at some point in its formation (Davies Frederiksen, Cacciatori, & Hartmann, 2018), but has reached a stable configuration in terms of knowledge and associated actions. This happens when: the performance of the routine is consistent with the needs of the organization; the employees participating in the routine have an established experience of interacting with each other (Dionysiou & Tsoukas, 2013); and finally, artifacts have been developed that – as codified form of the routine-specific knowledge – help the routine participants in carrying out their tasks correctly (D'Adderio, 2011).

2.1. Intra-organizational routine replication

Replication of organizational routines can take three different forms – intra-organizational replication, replication through spinoffs, inter-organizational replication – but the one most studied in depth is that which occurs within the boundaries of the same organization (Friesl & Larty, 2013). The interest on replication within an organization mostly derives from the growth of chain organizations, i.e., companies that grow creating similar outlets in retailing or other service sectors (the “McDonalds approach”), as well as the spread of franchising systems, considered a form very similar to intra-organizational replication (Winter, Szulanski, Ringov, & Jensen, 2012).

The key concept of these studies is that of template proposed by Nelson and Winter (1982). A template is a working example of successful routines that the replicator (unlike a possible imitator) can directly observe (Szulanski & Jensen, 2004; Winter & Szulanski, 2001).

¹ Feldman, Pentland, and followers also recognize a knowledge dimension of routines by identifying it in their ostensive aspect (as opposed to the performative aspect). However, the ostensive aspect has remained an ambiguous construct in the performative perspective literature (Grandinetti, 2022; Simpson & Lorino, 2016).

In other words, the source routine serves as a “genetic” template for the new one. Clearly, in the socio-organizational domain, replication seems hardly more difficult than in the biological domain. In fact, if the knowledge codified in the artifacts associated with a given routine, and easy to transfer, can support its replication, they are nonetheless insufficient in relation especially to the tacit dimension that characterizes the knowledge embedded in that routine and retained in the memory of routine’s participants (Grandinetti, 2018; Nelson & Winter, 1982). For this very reason, the transfer of routines within the boundaries of an organization is normally associated with those employees who hold critical knowledge of the source routines: some of them may transfer permanently to the organizational contexts in which the replicated routines will have to perform, or temporarily to train new participants in the routines (Nelson & Winter, 1982; Winter & Szulansky, 2001).

Another common theme of the studies on intra-organizational replication is the replication dilemma (Winter & Szulanski, 2001), that is the alternative between a substantial replication of routines that have proven to work successfully and a substantial variation of them to adapt to the new context. The empirical tests of the replication dilemma show that there is no one solution to it. It all depends on the specific characteristics of the case (D’Adderio, 2014; Ferriani, Garnsey, & Lorenzoni, 2012; Gupta, Hoopes, & Knott, 2015; Jonsson & Foss, 2011; Szulanski & Jensen, 2008; Winter et al., 2012; Boe-Lillegraven, 2019; D’Adderio & Pollock, 2020). For example, in their study on the Ikea’s international expansion, Jonsson and Foss (2011) find that in the opening of new stores the company adopts a flexible replication strategy where some standardized work routines are replicated in the new stores, while others such as those about pricing vary to respond to local conditions. In sum, replication is a strategy (Winter & Szulanski, 2001): it is the actors in charge of this strategy who decide the way forward.

2.2. Routine replication through spinoffs

Spinoffs, i.e., new ventures “founded by employees of firms in the same industry” (Klepper & Sleeper, 2005: 1291), are the second form of routine replication considered in literature. In this case, the founder of the firm “inherits” the routines of the parent firm – or better, their specific knowledge – and tends to replicate them in the new venture (Klepper, 2001). Replicating becomes even more difficult in the case of spinoffs where the routine to be copied is not available as a template (D’Adderio & Pollock, 2020).² As a consequence, the knowledge of the founder as former employee of the parent firm is crucial for replication to take place (Furlan & Grandinetti, 2016; Klepper, 2009a; Wright Tartari, Huang, Lorenzo, & Bercovitz, 2018).

Also spinoffs’ studies provide a solid empirical platform on routine replication. In a seminal contribution on the subject, Klepper (2002) studies the new entrants in the U.S.A. automobile industry during the period 1895–1966. He discovers that the most competitive new entrants were those founded by ex-employees with a long experience within the leaders in the industry. Phillips (2002) came to similar conclusions studying the genealogy of Silicon Valley law firms over the period 1946–1996. These two seminal papers were followed by several other empirical studies on other sectors or countries that, as shown by a review conducted by Klepper (2009a), collectively come to two main results. First, spinoffs have a higher performance than other types of entrants, in terms of the main performance measures. Second, spinoffs coming from high-performing incumbents perform better than those coming from less competitive incumbents. Subsequent studies confirm these finding arguing that what employees learn about parent companies matters (Andersson & Klepper, 2013; Cusmano et al., 2015; Dahl

² Instead, the role of artifacts does not differ significantly between the three forms of replication: in fact, artifacts are codified expressions of routine-specific knowledge, and consequently transferable by definition (Furlan & Grandinetti, 2016).

& Sorenson, 2014; Feldman, Ozcan, & Reichstein, 2019; Furlan, 2016). In short, the literature on spinoffs show that these new ventures can benefit from industry-specific knowledge embodied in the routines they inherit from their parent companies.

While the empirical evidence of routine replication through spinoff is abundant, these studies have not linked the source routines with the potentially replicated routines – as studies on intra-organizational replication have done – but only the competitive performance of parent companies with that of their spinoffs (Furlan & Grandinetti, 2016; Habersetzer, 2017; Klepper, 2009a). An exception is the recent work by Feldman et al. (2019), where the authors find strong evidence of a higher similarity between the routines of the spinoffs – observed across 10 organizational practices – and those of their parents compared to the similarity between the spinoffs’ routines and those of other incumbents.

2.3. Inter-organizational replication

The last form of routine replication is inter-organizational replication, that is imitation involving two incumbent organizations (imitatee and imitator) and carried out by moving employees. Nelson and Winter (1982) were the first to consider employee mobility a conduit through which routines “move” from one organization to another, maintaining that the best strategy for a firm seeking to imitate the routines of a competitor is to hire away from it those employees who have a deep experience of the routines to imitate. Therefore, as in the previous two forms, inter-organizational replication also relies on employees who have direct experience with the source routines (Mawdsley & Somaya, 2016). There can hardly be routine replication without the presence of these key employees who act as knowledge carriers between the context of the source routine and the context in which it is to be re-created as repetitive pattern of interdependent actions. Clearly, the fact that in spinoffs as well in inter-organizational replication the actors in charge of replication cannot access the template – i.e., a working example of the source routine (that routine in action) – makes their key role even more critical since the success of replication depends only on them.

Of the three forms of routine replication, inter-organizational replication is the least empirically investigated. To the best of our knowledge, there are in fact only two studies that address this issue (Aime et al., 2010; Wezel et al., 2006). Both highlight the role of key employees, defined as participants in the source routine who have the greatest chances, when they move to another organization, to be able to replicate the routine in the new organization.

Wezel et al. (2006) study the accounting sector in the Netherlands over the period 1880–1986. The authors conjecture that key employees moving from their parent firms either to another incumbent firms or to newly founded ones may replicate parent routines in the receiving organizations. The authors’ focus is on the replication of higher-order routines and the impact this process has on the parent performance, precisely on the risk of the organization dissolving due to the key employees’ departure. They find, among other things, that this risk is lower when the receiving firm is an incumbent rather than a new venture (spinoff). However, even if the authors consider the effects of mobility on the parent organization, their empirical study does not allow to distinguish whether these effects derive from the competitive weakening suffered by the parent companies and/or the strengthening of imitators.

This limit is surpassed by the contribution of Aime et al. (2010). The authors study the American football team of San Francisco that had developed a set of innovative and winning routines (the so called “West Coast Offense”). By comparing competitive events between this team and others in the American League, they discover that the performance of San Francisco (games won) was lower when competing with teams that had recruited an employee who was well experienced with those successful routines, i.e., a key employee. This finding leads the authors to conclude that imitating organizations can reduce the competitive gap with the leader if they can replicate its advantageous routines. The

authors also emphasize that the organizations that developed the West Coast Offense routines continued to perform well during the investigation period. They conclude that key employee mobility can lead to routine replication challenging “the simple argument that socially complex routines create sustainable competitive advantages because they are not easily imitated and do not rely on any single individual” (Aime et al., 2010: 85).

Despite the fact that both the works of Wezel et al. (2006) and Aime et al. (2010) are commendable for their empirical effort, they suffer from the same limitation found in almost all studies that have conceptualized spinoffs as a form of routine replication. In fact, both the studies on routine replication through key employees' mobility do not test the replication hypothesis by attempting to compare patterns of interdependent actions in parent and receiving organizations. Instead, both use competitive performance measures to show the supposed effects of the replication of routines on the imitator or the imitator. One can argue that the imitator might enjoy competitive benefits from hiring a key employee (or the imitator can suffer the consequences of losing a key employee) not because the key employee replicates the successful routines of the parent to the new organization but thanks to her ability to adapt, tweak or improve these routines. As we have seen, some studies on replication (versus adaptation) dilemma lead to this conclusion (Boe-Lillegraven, 2019; D'Adderio, 2014). These studies highlight that adaptive choices prevail especially when the context of origin and the context of destination present differences in terms of culture, environment and organization. Similarly, in a study of the migration of British football coaches between 1910 and 1950 in other countries, Taylor (2010: 138) shows that transferring “football knowledge across cultures was far from straightforward and that coaching ideas and methods were constantly adapted to suit local circumstances”.

In short, outstanding literature is not conclusive about the possibility to replicate routines through key employees' mobility between existing organizations. We aim to answer this question by following our definitions of routines and routine replication. To this end, we have chosen to study the head coaches of prestigious European football leagues as carriers of routine-specific knowledge and their mobility as a possible transfer of that knowledge, trying to recognize the performative expression of routines through measures close to a set of interdependent actions rather than performance measures of league teams (games won) as in the case of the paper by Aime et al. (2010).

2.4. Routine replication through coaches' mobility

The mobility of head coaches in team sports represents an appropriate empirical setting for our purposes for two main reasons. First, routines – which in such sports typically take the name of (playing) tactics (Gréhaigne & Godbout, 1998; Hewitt, Greenham, & Norton, 2016; Teoldo et al., 2022) – are found to be fully adherent to our definition of organizational routines as repetitive, recognizable patterns of interdependent actions, guided by specific knowledge, and involving multiple, interacting actors (players). Specifically, in a team game tactics are “the management (positioning and displacement/movement) of the playing space by players and teams” (Teoldo Guilherme, & Garganta, 2022: 22). These actions tend to be repetitive in specific situations such that it seemed fitting to compare sport teams to the superorganisms studied by sociobiologists (Duarte, Araújo, Correia, & Davids, 2012).

Second, in a typical game of tactical (routinized) knowledge (Teoldo et al., 2022), head coaches are the privileged managers of that knowledge. They are key employees as defined by Aime et al. (2010), who therefore hold the routine-specific knowledge necessary for routine replication, but they are also actors who are in the right position to do that when they reach the destination team. In fact, the hiring teams seek new coaches to reverse a negative trend or at least improve their performances. Such an ambitious mandate requires the coach to have extensive freedom in organizing his/her new team. Even if it is not obvious that this freedom is granted to the new coach (Gammelsæter,

2013), every change of coach is an event that opens a window on a possible routine replication process.

Studies that have analyzed coaches in team sports confirm that the work of a coach is not so different from the work of a manager (Berman, Down, & Hill, 2002; Erhardt, Martin-Rios, & Harkins, 2014; Potrac, Jones, & Armour, 2002; Taylor, 2010). During an interview an expert English football coach synthesizes in the following way his coaching activity: “Instruction is an important thing; they've [the players] got to be told what is expected of them in any particular system that you are playing. My job then is to make sure that when they [the players] go out on a Saturday they are clear about their individual jobs within the wider team framework, give them rope to express themselves but let them know the importance of organization. They need to know their organization and they need to know their options when they receive the ball. They need to know how to defend and what each other are expected to do so there is a concrete base to fall back on. The only thing you can do is give them a basic organization, so if everything else goes wrong, they've at least got an organization to fall back on. I would say that is the main priority of the first team coach” (Potrac et al., 2002: 191). This is a superb way of describing the work of management.

In light of the above discussion, we can develop our hypotheses around the routine replication through the mobility of coaches, i.e., individuals who know the routines and manage their replication in a different context from the original one. Consider a coach X that leaves the team A where he/she worked in the period (year) $t - 1$ and moves to the team B where he/she will work for the period (year) t substituting the former coach Y. The transition from one period to the next will also result in team A replacing coach X with a new coach W. There is routine replication if both the following hypotheses are confirmed (Fig. 1):

Hypothesis 1. When a coach moves from one team to another, there is no significant difference between the routines he/she employs in the latter compared to the routines he/she employed in the former.

Hypothesis 2. When one team changes its coach, there is a significant change in the team main routines.

3. Research design

Our work examines the replicability of organizational routines via mobility of key employees. As game routines relate to the actions of players and teams in the playing space, they are “related to what may be observed of the behavior of players and the team in the field” (Teoldo et al., 2022: 22). A large amount of statistical information about the

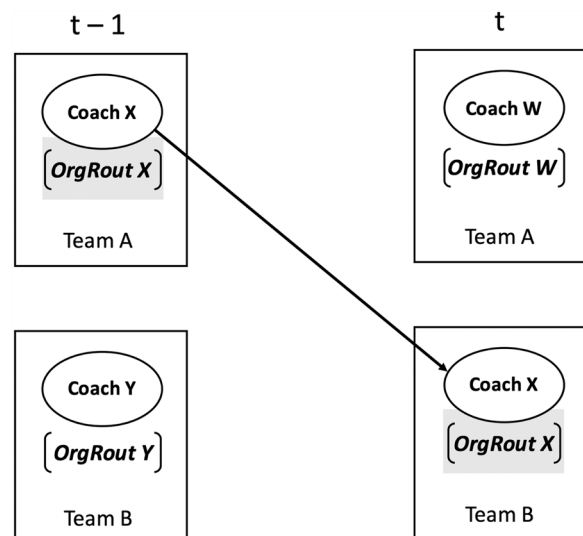


Fig. 1. Coach mobility and routine replication.

players' actions such as the number of long balls in a game is collected on the games and on the underlying playing tactics (routines) enacted in the games (Hughes & Franks, 2005; James, Mellalieu, & Hollely, 2002).³ This richness of data offers the possibility to unveil the presence in the hiring team of routines that are significantly similar to the original ones. We do so through an analysis of events (games associated with football managers changing team) in the five major European football championships (UK, Spain, Germany, Italy and France). These country-level championships provide a particularly fitting context for our purposes in relation to the number of observable events within a given time period and the number of useful variables for which information is available.⁴

3.1. Data

We combine information and build two distinct datasets, which have been assembled from three different (web) sources. There are several reasons why we rely on two databases instead of one. First of all, as explained in the previous section, we aim at testing two different (although related) research hypotheses which refer to two distinct levels of analysis i) manager-level when a coach moves from one team to a new team, and ii) team-level when a team changes coach. Second, data availability is a major issue for the construction of a unified database. In fact, detailed statistics for teams coached by the selected managers are not always available as there are years when some managers coach in second-tier divisions on foreign leagues which are not adequately covered by existing football analytics data. Finally, for the analysis carried out at the team-level (point ii above), we believe focusing on a single league (i.e., premier league) allow us to minimize the effects of institutional factors which may influence the impact of a manager change at the team level.

Before proceeding with the scraping of the web sources, we checked the compliance with current regulations and practices. First, we checked websites' terms of use. None of them reported problems in relation to the publication of results from the analysis of websites' content. Second, for each website we retrieved the robots exclusion protocol file (robots.txt) which contains information on website parts amenable to scraping by web crawlers. For all of the three websites, the robots exclusion protocol files allow scraping of all sections. Finally, we checked whether retrieving information from any of these websites would infringe the general data protection regulation, which prevents the release of information that could be used to identify a specific individual. As we aggregate the data and use them to infer general behaviors only, we are confident our data collection is in line with GDPR provisions.

Our first database has the football manager as the main unit of observation. Our first exercise focuses on football managers as we are interested in seeing whether a coach changing team changes also the routines that he/she has implemented up to that point in time. One can think of it as a test of the embeddedness of the routine in a key employee. To gather relevant information for football coaches, we focus on the top five football championships: English Premier League, Spanish Liga, French Ligue, Italian Serie A and German Bundesliga. Our starting point

³ Teoldo et al. (2022) develop a general analysis of this link by identifying a number of tactical principles of the game in the offensive and defensive phases respectively, such as the principle of penetration in the former and the principle of balance in the latter. Each principle is codified in terms of its specific characteristics, spatial reference, purposes, player(s) who perform, examples of actions.

⁴ For the same reasons, competitions such as the FIFA World Cup are not suitable contexts for studying the phenomenon of routine replication.

is the 133 managers who coached at least 100 league games in one of the above championships over the years 2006–2017.⁵ For the selected 133 managers, we retrieve manager- and team-level information from transfermarkt.co.uk over the period 2006–2017.⁶ Notably, we gather information at the team-level (team name, position of team in previous year standing, number of players, proportion of foreign players and team monetary value) and manager-level (age, manager nationality year and name of team change) as well as year of coaching and the league the team belongs to. We also collect team-level playing statistics (e.g., number of shots, number of passes, etc.) from the online source whoscored.com for all the teams coached by the 133 managers in the five main championships.⁷ This information is available on a shorter time period (2009–2017) due to the difficulty in collecting this type of data. Our final sample comprises information about 133 managers over the period 2009–2017 for a total of 658 observations.

Our second dataset has the team as main unit of analysis. Here we are interested to see whether, by changing the football manager, a team can replicate and acquire the new routines thanks to the mobility of a key employee which transfer his/her own routine to the team. To this purpose, we build a database where the team is the main unit of analysis. Notably, we retrieve team- and coach-level information similar to the one for the first database but conduct the analysis at the team-level only. We retrieve manager-level and some team-level information from the website transfermarkt.co.uk. We do so for all premier league teams over the period 2007–2017. We collect team-level information such as team name, position of team in previous year premier league standing, number of players per team, proportion of foreign players in each team and team value. From the same source, we also retrieve information about the coach, such as his/her age, the year he/she coached a premier league team as well as his/her nationality. Finally, we retrieve team-level playing statistics (e.g., number of shots, number of passes, etc.) from premierleague.com for the same time period (2007–2017).⁸ We ended up with information on 20 premier league football teams over the period 2007–2017 for a total of 220 observations.

3.2. Methods

From a methodological point of view, we run an econometric model to control for several intervening factors on the relationship between the team (coach) change of coach (team) and organizational routines (playing tactics), notably unobserved time-invariant and observed time-varying factors. Our estimating models can be written as:

⁵ We do so to avoid selecting coaches who stay in a league for a short period of time, which is for less than ten games per year on average, as we expect these managers to do not have the sufficient time needed to implement their playing routines within the team.

⁶ Transfermarkt is a popular website containing information on the football transfer market. The website offers general football-related data, such as results and coach information, football news and estimations of market value at the individual and team levels for a large number of football leagues.

⁷ Whoscored.com contains detailed statistics for the top five leagues in Europe from OPTA Sportsdata. OPTA Sportsdata is a firm specializing in the collection, analysis, distribution and supply of live sports data with a key expertise in football data. Football match performance data from OPTA Sportsdata has been widely used in the betting industry, broadcasting, online and mobile media as well as professional football clubs. Data collection is carried out live via a combination of software and human work: a team of three analysts usually codifies about 2000 events (e.g., different types of shots, blocks etc.) per game thanks to internally developed software (Bialik, 2014).

⁸ Premierleague.com is the official website of the Premier League and is a private company owned by its 20 member football clubs, which make detailed playing statistics available to the general public (for further information see <https://www.premierleague.com/about>).

$$OrgRout_{manager,t} = \alpha + \beta_1 Change_{manager,t-1} + \mathbf{x}_{manager,t}^T \delta + \mu_{manager} + \tau_t + \varepsilon_{manager,t} \tag{1}$$

$$OrgRout_{team,t} = \alpha + \beta_1 Change_{team,t-1} + \mathbf{x}_{team,t}^T \delta + \mu_{team} + \tau_t + \varepsilon_{team,t} \tag{2}$$

where *manager/team* refers to the manager or team depending on whether the first or the second dataset is used for estimation and *t* is a given year. τ_t indicates a series of year dummies; μ_i denotes the unobserved manager/team specific effects; \mathbf{x}^T is the vector of control variables; ε_{it} is the error term. For estimation purposes we employ a panel data approach. Notably, we apply a within estimator (Wooldridge, 2010) which removes the time-invariant covariates taking into account unobserved factors which are likely to affect both the probability of change (team or coach) and organizational routines (e.g., coach ability).

In our first empirical model (Eq. 1) the interest is to see whether a “football manager changing team” (i.e., a manager changes team during the period of observation) has any effect on the routines the football manager adopts in the team he/she is about to coach (compared to the one he/she was coaching before). The estimates are conducted (at the football manager level) for 133 managers coaching 130 different teams over a nine-year period (2009–2017). In our second empirical model (Eq. 2), we estimate whether a “team changing the football manager” (i.e., in a given year the team changes the coach) significantly affects the playing routines of the team. This analysis is instead conducted on the data at the team level for 20 premier league teams over the period 2007–2017. Again, our approach differs from that of Aime et al. (2010): while they focus on a single team which developed new routines and compare competitive events between this team and others, we conduct our analysis on several different organizations and we take into consideration a set of different routines (which we measure more directly in the form of playing tactics by football managers).

3.3. Dependent variable: organizational routines

Our dependent variables are the playing routines of a team in each year. Our purpose is to gauge whether the routines of the team where the coach used to work are similar to the routines of the team where the coach starts to work (Hypothesis 1) and whether the playing routines of a team change when a new coach arrives (Hypothesis 2). Measuring the routines poses some serious challenges related to the fact that routines are not things (Feldman, Pentland, D’Adderio, & Lazaric, 2016) but are organizational phenomena (or processes) that combine a knowledge dimension and a performative dimension (patterns of interdependent actions) as underlined by our extended definition of routines. Although these two dimensions are inseparable and intertwined when routines are working (Pentland & Feldman, 2005), they remain conceptually and empirically different. We chose to focus on the performative aspect of the game routines since we had the chance to retrieve relevant yearly indicators of the playing routines of each football team. These indicators are cumulative measures of the actual patterns of actions enacted by the players in each game. Consequently, records that keep track of the actual processes (rather than the inputs or the outputs) of a routine capture the performative aspect of the routines (Pentland, 2003).

Unlike Aime et al. (2010), we do not measure organizational routines

Table 1
Playing measures.

Name	General term	Description
Outblock	Number of outfielder blocks	Prevention by an outfield player of an opponent’s shot reaching the goal
Goal	Number of goals	Goals scored
Long pass	Number of long balls	An attempted/accurate pass of 25 yards or more
Pass	Number of passes	Average number of passes attempted (passes, through balls, crosses)

through competitive performance measures but using the team-level playing statistics collected as previously described. Table 1 presents the playing measures we employ and provides a description for each of them.

We used four direct measures of the club-level playing statistics: i) number of outblocks (an outblock is a prevention by an outfield player of an opponent’s shot reaching the goal); ii) number of goals (goals scored),⁹ iii) number of long balls (an attempted/accurate pass of 25 yards or more) and iv) number of passes (average number of passes attempted, short passes, long balls, through balls, crosses). It is worth mentioning how each of the chosen measures mainly refers to a different part of the football pitch (defence, midfield and attack) and tend to characterize the three main football roles (defender, midfielder and attacker).

The combination of the measures we select is aimed at providing a proxy for the routine(s) attributed to the coach’s playing style and tactics which are executed by the team (Hewitt et al., 2016; Teoldo et al., 2022). Our ensemble of measures should be taken as a succinct way to evaluate the unique coaching style and tactics characterizing each football manager. In order to exemplify our approach, we compare two teams coached by two prestigious football managers, respectively Mourinho and Guardiola. There is ample recognition of the different playing styles of the teams coached by the two managers.¹⁰ José Mourinho’s playing tactics are mainly based on robust defense, fast transition from defense to attack (i.e., counterattack) and capitalizing on the mistakes of the opponent teams. On the opposite, Pep Guardiola’s style focuses on possession, circulating the ball to exploit space created by players’ movements and create chances to score goals.

To show how the chosen measures can help capturing the different playing routines implemented by the two coaches, we provide a comparison between two specific matches played by the two teams coached by the two managers.¹¹ To make the comparison more compelling we have tried to keep several external intervening factors fixed. First, we selected two football managers with extensive international experience (e.g., they coached and won in different major European championships before coaching the two selected teams in the premier league). We selected two teams, Manchester United (coached by Mourinho) and Manchester City (coached by Guardiola), characterized by an excellent winning tradition and competitive culture. Not only, the two teams are also from the same city in the UK, they also were coached by the Mourinho and Guardiola during the same season (2017/2018). At the end of the season Manchester City and Manchester United respectively ranked 1st and 2nd in the final standing, which points to a similar ability to express their true playing tactics/style when playing against lower ranked teams. We focus on two matches played (and won) by the two teams against the same opponent (Watford), which ranked 14th at the end of the season. Moreover, the two matches were not far apart in time (they were played at approximately two month-distance one from the other). Finally, in order to control for a possible “home advantage” effect, we consider away games only, which means when played in Watford stadium. Our purpose here is to show how our selected measures are

⁹ As the number of goals may point to the outcomes of the routines rather than routines themselves, we perform a robustness check where we include the number of shots instead of the number of goals. We confirm the core results from our analysis. These additional results are available from the authors upon request.

¹⁰ See, for example: <https://www.thetimes.co.uk/article/different-styles-but-same-success-for-pep-guardiola-and-jose-mourinho-bknnmzhv5>.

¹¹ We have also compared the average value of the same playing statistics for season 2017/2018 for the two managers. Differences are still quite relevant and in the direction expected, with Guardiola’s team scoring more goals (103 vs 67), attempting more shots (666 vs 510) and completing more passes (28,248 vs 20,070) while Mourinho’s team totaling more intercepts (113 vs 56) and relying more on long balls (1152 vs 1074). We thank one of the Reviewers for pointing this out.

extremely different between the two teams (Manchester United and Manchester City), which point to the different playing styles of the two coaches, even when taking into consideration the same opponent under similar environmental characteristics (e.g., same stadium, similar date, etc.). Table 2 reports relevant measures entering our organizational routine indicator. The table shows some stark differences between the two managers, which relate to the measures we take into consideration. Manchester City attempted more shots (28 vs 15) and consequentially scored more goals (6 against 4) than Manchester United. The number of passes by Manchester City is also much higher compared to Manchester United (nearly twice as much), which resonates well with the offensive playing tactics based on possession adopted by Guardiola. On the contrary, Manchester United totaled a much higher number of blocks and long balls compared to Manchester City which point to the more defensive style characterizing the playing routines implemented by Mourinho's team. All in all, we believe that this helps to exemplify how the chosen measures provide an adequate coverage of the different playing routines (tactics) developed by the coach and its staff.

Since organizational routines are pattern of behaviors that might cut across different parts of the organization, we combine the four measures into one latent variable using Confirmatory Factor Analysis (CFA) under the assumption that the routines at the team level are developed jointly and not separately on the different areas of the playing field.¹² In other words, we treat the four measures as reflections of the same latent variable that is the organizational routine that have generated them. Since our study is longitudinal, we have a yearly combined measure of the performative aspect of the routines.

Fig. 2 shows the factor loadings of each measure on the latent variable while Table 3 contains fit indexes of the CFA. Overall, the model fits the data well.

3.4. Independent and control variables

Our independent variable is a dummy that takes on the value one when a manager changes teams in a given year (in the manager-level analysis) or when a team changes manager in a given year (in the team-level analysis) and zero otherwise.

To account for intervening factors on the playing routines of each team in each year, we include similar controls in both analyses (manager- and team-level).

First, we control for the manager experience by including manager's

Table 2

Guardiola vs Mourinho routines: Manchester City and Manchester United in the premier league 2017/18 against Watford.

	16/09/2017		28/11/2017	
	Watford	Man City	Watford	Man Utd
Final league ranking 2017–2018	14	1	14	2
Goals	0	6	2	4
Shots	7	28	12	15
Blocks	17	11	10	18
Passes	312	637	496	346
Long balls	42	41	41	72

¹² To check the robustness of our results to a broader definition of organizational routines, we estimate an alternative latent variable from a confirmatory factor analysis comprising a wider set of playing statistics. In addition to the four measures used so far, we add eleven other indicators (reaching a total of 15): number of yellow cards, number of shots, number of tackles, number of penalties conceded, number of total crosses, number of total clearances, number of offsides, number of head shots, number of freekicks, number of own goals and number of interceptions. Regression results by using the latent factor resulting from this broader set of playing statistics confirm our core findings. Results are available from the authors upon request.

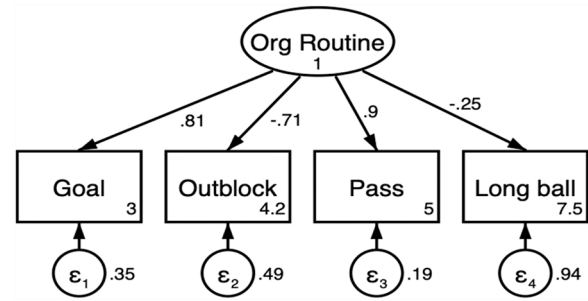


Fig. 2. Confirmatory factor analysis for the latent organizational routine construct.

Table 3

Fit statistics of the confirmatory factor analysis.

Fit statistic	Value	Description
<i>Likelihood ratio</i>		
chi2_ms(5)	3.46	model versus saturated
chi2_bs(10)	306.45 * **	baseline versus saturated
<i>Population error</i>		
RMSEA	0.058	Root mean squared error of approximation
90% CI, lower bound	0	
upper bound	0.158	
pclose	0.337	Probability RMSEA <= 0.05
<i>Baseline comparison</i>		
CFI	0.995	Comparative fit index
TLI	0.985	Tucker-Lewis index
<i>Size of residuals</i>		
SRMR	0.022	Standardized root mean squared residual
CD	0.878	Coefficient of determination

age (Age) as a control. The age of a football manager can affect the playing tactics he/she develops. For example, younger coaches might be more likely to absorb or develop new tactics compared to older managers.

Second, we include in our analyses a set of team-level controls aimed at checking team characteristics which are likely to affect playing tactics. *League ranking - 1* is the position achieved in the previous year league ranking by the team under consideration. Past achievements might affect the change of routines by team managers and property. For example, football teams performing poorly can decide to change the playing tactics considerably by hiring new managers to improve future league rankings. *Team size* is the number of team players in a given year. *Avg team value* is the average value of the team and is measured as the ratio of the overall team value in million euros and the number of players within the team.¹³ Both variables aim at controlling for the quality of players hired by the team and the resource endowment of the team: teams with rich owners are more likely to hire more popular and skilled football managers and players and this in turn is likely to affect playing tactics development. We also include the proportion of foreign players in the team for a given year (*Foreign*) in order to control for the difficulty of changing the team's routines in an environment characterized by cultural and linguistic heterogeneity (such as in the presence of players coming from different countries).

Finally, we include three sets of fixed effects. A first set refers to year fixed effects (2006–2017 for the analysis at the manager-level and 2007–2017 for the analysis at the team-level), which controls for shocks that may have affected playing routines through time (e.g., financial crisis). Second, in the analysis at the manager level we consider league

¹³ Team market value comes from transfermarkt and is the aggregation of individual players' market value. The website follows a crowd-based approach in the estimation of players' market value. For advantages and disadvantages in such an approach, please refer to the discussion in Müller et al. (2017).

fixed effects to control the differences among the five major championships under consideration.¹⁴ Third, in the analysis at the team-level we include managers' nationality fixed effects. This is to control for the effect of the training received by the coach in his/her own country of origin (i.e., different countries tend to adhere to different playing styles).¹⁵

On a final note, it is worth stressing that our panel data estimates (i.e. the within estimator) control by default for manager- and team-level time invariant characteristics and thus provide even further control for unobservable time invariant factors which can affect the development of playing tactics (e.g., manager's ability; team's long-lasting reputation).

4. Findings

From Table 4 presenting descriptive statistics for our variables, we notice that 22% of the 658 manager-year observations show a team change, notably out of 133 unique managers nearly 79% experienced at least one team change in the period under consideration. Similarly, the 43% of the 220 team-year observations show a change of manager, which corresponds to 81% of the 37 teams having experienced a change of manager in the period under consideration.

Fig. 3 reports the distributions of observations before and after change according to the values of the estimated organizational routine for teams. It shows a stark difference between the two distributions with the values of organizational routines becoming more skewed (skewness changes from 0.6 to 0.92) after a team changes manager. The difference before/after is also confirmed by a test of difference of the means of the two distributions ($t = 1.82$; $p\text{-value} < 0.1$) and the non-parametric Kolmogorov-Smirnov test ($d = 0.17$; $p\text{-value} < 0.1$). Conversely, Fig. 4 shows the change of team for managers. The two distributions (before and after a manager decides to change team) look much more alike compared to the previous case with a less skewed distribution after change (skewness decreases from 2.15 to 1.74). Nevertheless, the differences between the two distributions remain significant in the t-test and the Kolmogorov-Smirnov non parametric test ($t = -1.89$; $p\text{-value} < 0.1$ and $d = 0.1$, $p\text{-value} < 0.1$ respectively).

Naturally, the evidence above is mainly descriptive as it entails tests on bi-variate relationships only. We now move to test our main hypotheses by using the regression framework presented in the previous section, which should grant a more robust empirical validation of our results.

The empirical analysis explores whether the routines of the team where the coach used to work are similar to the routines of the team where the coach starts to work (Hypothesis 1) and whether the playing routines of a team change when a new coach arrives (Hypothesis 2). As previously described, the estimation is conducted on two samples: i) a first sample containing information for 133 football managers from the top five football championships over the period 2009–2017, and ii) a second sample comprising information for 20 premier league teams over the period 2007–2017. The results are reported in Table 5 and Table 6 respectively.

In each table the first two columns report the results for ordinary least squares (OLS) where the model is estimated as a simple pooled cross-sectional model. Columns 3 and 4 in both tables report the results for fixed-effects panel data estimators (within estimator). For both specifications, the second columns (Columns 2 and 4 respectively) add to a baseline specification, containing our independent variable (change of team/manager), a set of team-level controls. Our preferred

¹⁴ This is not needed in the analysis at the team-level as in that case we focus on one single league (premier league).

¹⁵ We don't do so for the analysis at the coach-level because our preferred estimation strategy (panel data within estimator) already controls for time invariant individual effects.

specification is the one in Column 4 in both tables, as it controls for both individual/team-level fixed effects and team-varying effects. When looking at the results for control variables, average team value positively contributes to explain the change in organizational routines both at the manager and team levels (Columns 2 and 4 in Table 5 and Table 6). Past ranking in the championship and manager experience (proxied via his/her age) is (negatively) associated with the change in organizational routines only at the team level (Columns 2 and 4 in Table 6).

We now come to the core of our analysis. As all columns in Table 5 and Table 6 show, both of our hypotheses find support. Table 5 shows that *Change* is not significantly associated to *Organizational routines* ($\beta = 0.024$, $p > 0.1$ in our favorite specification). This result is confirmed in all of the four different specifications (Columns 1–4 of Table 4) and it supports Hypothesis 1: when a coach moves from one team to another in one of the five major football championships, there is no significant change in the routines of the two teams. This confirms the idea that a coach tends to replicate the routines on the team where he/she has worked. Conversely, Hypothesis 2 predicts that when one team changes its coach, there is a significant change in the team main routines. Columns 1–4 of Table 6 show the result of the test of this hypothesis. In all specifications, *Change* is significantly associated with *Organizational routines* ($\beta = -0.015$, $p < 0.05$ in our favorite specification). We then find support for the hypothesis that a team changes its organizational routines when a new coach is employed.

5. Discussion and conclusions

In this paper we have shown that the mobility of key employees from one organization to another can be an effective vehicle for replication of organizational routines defined as patterns of interdependent actions guided by specific knowledge. We have closed a gap in the literature that has so far verified the replicability of routines for intra-organizational replication (D'Adderio & Pollock, 2020; Friesl & Larty, 2013) and, more recently, for replication via spinoffs (Feldman et al., 2019), leaving the replication of routines among extant organizations without any empirical evidence based on measures capable of capturing the specific nature of routines. Our study supports the idea that inter-organizational routine replication is a feasible process, and shows that this form of replication, like the other two, also pivots on individuals who possess substantial experience of the routines to be replicated.

But who are these key employees? What is the profile of a key employee? We maintain that, to be effective in their replication effort, key employees need to be knowledgeable about the routines to be replicated (in other words they need to have accumulated a deep experience about the inner workings of the routines) and they need to have the necessary power in the receiving organization to adopt a replication strategy. The coaches of our study certainly meet these two conditions. High-ranked coaches a) are perfectly knowledgeable of the playing routines of their teams (in many cases they are the inventors of such routines), and b) have the power to impose these routines on the players of the team they are coaching. As we discussed in the theoretical section, in a typical game of tactical (routinized) knowledge (Teoldo et al., 2022), head coaches are the privileged individuals who hold routine-specific knowledge necessary for routine replication, but they are also actors who are in the right position since they have the power to replicate. Labeling these actors simply as "key employees" – as we have often done in this paper following the two contributions we have been confronted with (Aime et al., 2020; Wezel et al., 2006) – is thus reductive because it marks their first prerogative, while the second leads to qualifying them as managers engaged in the replication process within their new organization.

These two common factors of key employees/managers (i.e., experience about the source routine and power to replicate) help us to highlight some similarities across studies that deal with the different types of routine replication (i.e., intra-organizational replication, replication via spinoffs and inter-organizational replication).

Table 4
Descriptive statistics.

Manager-level (n = 658)						Team-level (n = 220)				
Variable	mean	p50	sd	min	max	mean	p50	sd	min	max
Goal	54.41	48	21.51	23	166	43.90	40	14.43	15	94
Outblock	119.84	109	47.19	47	402	134.46	135	31.71	53	225
Pass	17297.6	15718	4924.2	10724	41136	15881.4	15115.5	3171.4	9478	28241
Long pass	1311.5	1209.5	380.9	754	3008	2280.9	2262.5	303.0	1462	3176
Organiz. routine	0.22	0.16	0.17	0	1	0.29	0.24	0.18	0	1
Change	0.28	0	0.45	0	1	0.43	0	0.50	0	1
Age	50.32	50	6.78	36	72	51.17	51	8.30	34	71
League ranking – 1	9.28	9	5.43	1	20	10.50	10.5	5.78	1	20
Team size	36.27	35	6.67	22	66	35.81	35	5.50	21	50
Foreign	0.50	0.5	0.15	0.03	1	0.63	0.62	0.12	0.37	0.92
Avg team value	4.31	2.73	4.05	0.47	27.91	5.54	3.85	4.01	0.78	19.26

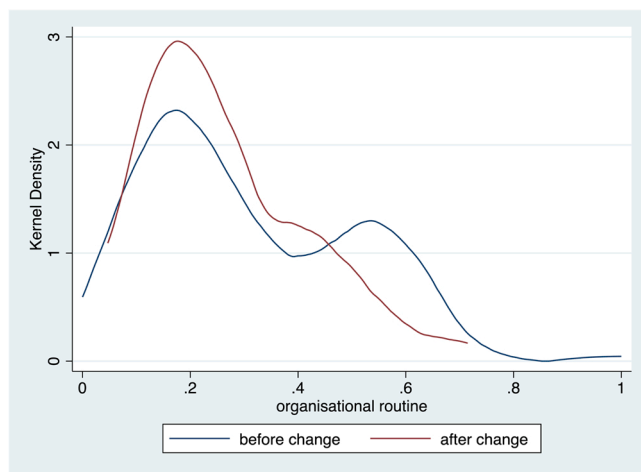


Fig. 3. Organizational routines and team changing the football manager.

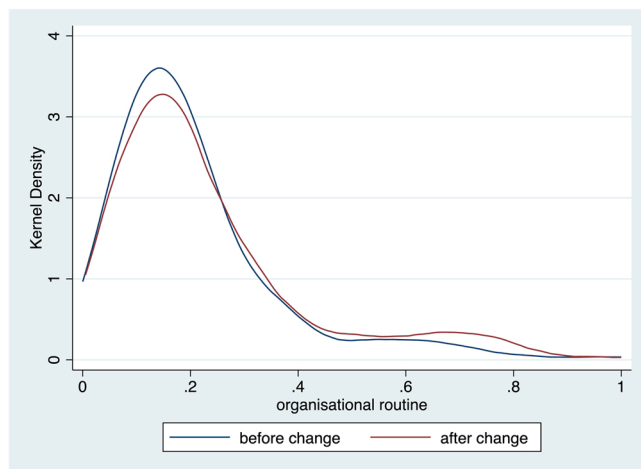


Fig. 4. Organizational routines and football manager changing team.

The experience about the source routines has been emphasized by studies on all forms of replication. Nelson and Winter (1982: 124) effectively illustrate the point when they recall that, if a firm wants to imitate a routine developed by an incumbent, it must “try to hire away from the imitator those employees that the imitator would reasonably want to transfer to a new plant in an attempt to replicate the existing one”. In the case of spinoffs, several authors identify the spinoffs’ founders explicitly as key (experienced) employees or implicitly qualifying them as “inheritors” of the routine-specific knowledge contained

Table 5
Effects of “football manager changing team” on the manager’s organizational routines (playing tactics) – manager-level database.

	Manager’s organizational routines			
	(1) OLS	(2) OLS	(3) Panel	(4) Panel
Manager changing team	0.016 [0.016]	0.016 [0.015]	0.024 [0.015]	0.024 [0.016]
Age	-0.000 [0.001]	-0.001 [0.001]	0.002 [0.004]	-0.006 [0.004]
League ranking – 1		-0.001 [0.001]		0.002 [0.002]
Team size		0.003 * * [0.001]		0.003 [0.002]
Foreign		-0.008 [0.050]		-0.003 [0.062]
Avg team value		0.018 * * * [0.002]		0.018 * * * [0.003]
Year fixed effects	Yes	Yes	Yes	Yes
League fixed effects	Yes	Yes	Yes	Yes
Manager fixed effects	No	No	Yes	Yes
Observations	658	658	658	658
R ²	0.053	0.248	0.046	0.123

Notes: Change is a 0/1 indicator variable equal to one if the manager changes team in the specified period. The dependent variable in all columns is the predicted latent factor from the confirmatory factor analysis outlined in Fig. 2. The first two columns show results from ordinary least square regressions without controlling for manager fixed effects. Columns 3 and 4 report results from the panel within estimator which controls for time invariant effects at the manager level. Robust standard errors are given in parentheses.

in the parent (Agarwal, Echambadi, Franco, & Sarkar, 2004; Furlan & Grandinetti, 2020; Klepper, 2001). Other studies show that the longer the founders’ industry-specific experience in the parent company, the higher the survival probability of the spinoff (Furlan, 2016). It is argued that the more time employees have experienced the routines, the better the quality of the routines that are replicated in the spinoff (Klepper, 2001, 2009b).

As for the freedom or power to replicate, even if it is something that is not explicitly discussed in the literature on replication, most of the studies implicitly presume that key employees have the power or the freedom to replicate the routines in the new context. In many cases of intra-organization replication (e.g., replication of routines in a new store or in a new plant) as well as in all spinoffs, this freedom comes with the fact that the replication occurs in a greenfield context. When key employees do not have to deal with pre-existing organizational context and power’s coalitions, replication is easier since resistance to change is kept to a minimum. This explains why it is more difficult to copy routines faithfully through inter-organizational replication than through spinoffs (Campbell et al., 2012; Hodgson, 2013; Wezel et al., 2006) even if both forms of replication suffer from the fact that the source routines are not available as a template.

Table 6
Effects of “team changing the football manager” on the team’s organizational routines (playing tactics) – team-level database.

	Team’s organizational routines			
	(1) OLS	(2) OLS	(3) Panel	(4) Panel
Team changing manager	-0.052 *** [0.018]	-0.020 ** [0.010]	-0.021 ** [0.010]	-0.015 ** [0.007]
Age	0.003 [0.003]	-0.003 *** [0.001]	-0.003 *** [0.001]	-0.003 *** [0.001]
League ranking – 1		-0.010 *** [0.002]		-0.008 *** [0.002]
Team size		0.005 *** [0.001]		0.002 [0.001]
Foreign		0.143 ** [0.066]		0.092 [0.079]
Avg team value		0.025 *** [0.003]		0.018 ** [0.007]
Year fixed effects	Yes	Yes	Yes	Yes
Nationality fixed effects	Yes	Yes	Yes	Yes
Team fixed effects	No	No	Yes	Yes
Observations	220	220	220	220
R ²	0.530	0.874	0.456	0.609

Notes: Change is a 0/1 indicator variable equal to one if the team changes manager in the specified period. The dependent variable in all columns is the predicted latent factor from the confirmatory factor analysis outlined in Fig. 2. The first two columns show results from ordinary least square regressions without controlling for team fixed effects. Columns 3 and 4 report results from the panel within estimator which controls for time invariant effects at the team level. Robust standard errors are given in parentheses.

The role of key employees on the replication of routines sheds light on the importance of the individuals in explaining routines’ dynamics. We share the position of Felin and Foss (2009) in their claiming the need for individual-based, microfoundations of routines’ theories (Furlan & Grandinetti, 2020). In the dominant literature, routines are defined and interpreted as collective (organizational) level concepts “that embody prior learning and are environmental activated and selected for” (Foss & Felin 2009: 159). Even if original developments of the concept of routine claim an intellectual heritage from the Cyert and March’s (1963) behavioral theory and the role of individual decisions and agency, this heritage has been overlooked by subsequent theoretical advancements. Our study shows that the role of individual agency (i.e., key employee’s mobility) is of paramount interest in understanding routines’ emergence (Bapuji, Hora, & Saeed, 2012; Furlan & Grandinetti, 2016).

However, the role of individuals in explaining routine dynamics is likely to change during the lifecycle of a routine. The assignment of a new coach to a team is an exception for the organizational activity of the team. Managing exceptions requires intentional deliberation and effortfulness in what an organization should do (Felin & Foss, 2009; Felin Foss, Heimeriks, & Madsen, 2012). The way in which exceptions are dealt with provides a window to understand how routines emerge in the first place. We show that when organizational exceptions are dealt with the transfer of key employees, the espoused solution is the replication of previous routines in the new organizational context. The movement of a routine from an organization (the parent organization) to another (the receiving organization) is heavily shaped by individual choices of the coaches. As a logical consequence, we believe that studying the individual characteristics of key employees and their intra-organizational interactions is of a paramount importance if one is aimed at understanding and unpacking routines’ dynamics. Future research should delve into the characteristics and traits (both cognitive and behavioral) of the key employees to produce normative propositions about how routines can be successfully replicated.

Our empirical evidence about the replication of routines associated with the movement of key employees does not consider the performance implications of such replication. In other words, even if a routine is replicated, it does not mean that the copied routines produce good

performances and bring an advantage to the host organization, which in general is the aim of inter-organizational imitation. In the context of European football, several empirical studies have analyzed the relationship between coach mobility and receiving team performance, without arriving at convergent results on whether coach succession produces an average positive or negative team scores (Dobson & Goddard, 2011; Gamson & Scotch, 1964; Grusky, 1963).

There are many reasons that could lead to a failure of the coaches’ succession strategy, including a lack of awareness on the part of the coaches that their routines may require adaptation to the new local context (Taylor, 2010). Our results are in line with this explanation. If the prevailing choice, as we have showed, among the moving coaches is to replicate the routines they used in the teams they left, this could create a fitness problem for the new contexts. This problem is what Winter and Szulanski (2001) – focusing on the growth strategy of chain organizations – define replication dilemma between a copy as faithful as possible to the original and an adapted version. A similar problem can be faced by the founders of spinoffs (Ferriani et al., 2012; Furlan & Grandinetti, 2016, 2020) and also by those key employees who want to replicate their experience in the organizations that recruited them. We maintain that an opportunity exists to adopt a general view of the replication dilemma that is not limited to the so-called McDonalds’ approach (i.e., intra-organizational replication) but can be extended to all forms of routine replication.

5.1. Limitations and further research

There are some limitations to our study that also provide insights for future research. First of all, we relate our measures of routines as repetitive patterns of actions carried by a group of actors to particular individuals, the coaches, capable of recreating (replicating) the routines they know in a new team. However, although these individuals are central to replication, this process as well as the formation of routines and their functioning remain collective processes embedded in the organizational context in which they take place. This collective and organizational dimension of routines and their replication – which involves the coach, his/her technical staff, and the team’s players – is outside the scope of our research. A future study could, for example, control whether there is more replication when the coach moves along with one or more staff members or team players, as suggested in general by some recent theoretical contributions (Furlan & Grandinetti, 2020; Grandinetti, 2022).

Secondly, our discussion about the profile of key employees in relation to their characteristics (i.e., knowledge of the source routines and power to replicate) is largely speculative. We rightfully assume that these characteristics are present in the analyzed coaches, but we do not have a direct measure of these two characteristics. We encourage studies that directly measure the profile of key employees using these two and maybe other individual variables.

Thirdly, our study found that coaches tend to replicate their playing routines from one team to another whenever they change the football club they coach for. However, we did not analyze the reasons why this may not happen, leading to some form of adaptation to the new context in which the coach operates. Future research might address this issue. In particular, an important variable that could be measured in a quantitative analysis is the cultural distance between the context of origin and the context of destination (Taylor, 2010). Such cultural distance might have an effect on the extent to which the coach has to adapt the routines to the new team where he/she ends up coaching.

Fourthly, the databases we used to test our hypotheses regarding routine replication associated with coach change did not allow us to assess whether replication was paying off, that is, whether the teams in which routines were replicated improved their performance. Even if it is precisely underperforming teams that push football clubs to replace coaches, our research could not provide an answer to the replication dilemma in the specific context in which it was conducted. We urge

scholars to address this issue by matching information about the replication of the routines with data on the performances of the teams. Using this data, future research can establish what are the (boundary) conditions under which replication is successful and, conversely, when replication is not a desirable strategy.

5.2. In search of generalization

Finally, there is the issue of generalizability of our results on football context to most contexts, which we have already touched on in the theoretical section. Given the importance of this issue, it is needed to be taken up now in light of the results we have found and discussed. In this regard, it should first be said that the definition of organizational routines adopted in our research – i.e., repetitive, recognizable patterns of interdependent actions, involving multiple, interacting actors, and guided by specific knowledge – is quite general because it comes from the combination of two quite general approaches to routines (performative perspective and capabilities perspective). As some studies on team sports tell us (e.g., Teoldo et al., 2022), the playing routines that football coaches develop and transfer when they change team are fully adherent to this definition of organizational routines. In other words, the issue of generalizability of our results does not concern the nature of the routines being studied. It should also be pointed out that our analysis concerns inter-organizational routine replication, the least studied of the three forms of routine replication. Looking only at this form, in top football leagues, routines in general and transferred routines in particular have a visibility that is not possible in other sectors and contexts. The mobility of their carriers (coaches) is perfectly traceable through the media. Moreover, there is a large amount of statistical information about the players' actions and the underlying routines. This richness of data makes our research context and, more in general, team sports effective settings for studying several organizational phenomena as reviewed by Wolfe et al. (2005) and Day et al. (2012). As originally noted by Goff and Tollison (1990), and succinctly summarized by Wolfe et al. (2005: 185): “Doing research within sport mimics laboratory research in that hypotheses can be tested in relatively controlled field environments”. The same reviews highlight that the peculiar characteristics of sport organizations do not prevent generalizations from the results obtained by the empirical research. In our case, where the focus is on transfers of routines between two competing organizations through the mobility of key employees, what makes the chosen context “exceptional” is its transparency. If a manager who has acquired a long experience and produces positive results in directing R&D departments is recruited by a company that wants to reorganize its R&D department or to create it from scratch, he/she (and his/her work) does not end up on mass media and data bases. However, from our point of view, the work of that R&D manager and of a newly recruited football coach are not so different. After all, both exploit their experience in developing new routines in the organization from which they are recruited.

Ultimately, the mobility of head coaches in top football leagues represents an appropriate empirical setting to study inter-organizational routine replication. That said, our results need to be supplemented by empirical studies involving sectors and replication contexts other than that of our research in order to confirm routine replication and highlight any differences regarding how it occurs. Preferable methodologies are either in-depth, ethnological approaches to longitudinal case studies or surveys collecting information on specific aspects of the routines adopted by the firms (imitatees and imitators) and other variables related to the replication context (imitatees).

Even if our empirical setting is ideal to study inter-organizational routines replication, there are some potential differences with more traditional organizational contexts that are worth mentioning. As we maintain in the discussion section, there are two main traits that define the best candidate for routine replication: experience about the source routines and power/freedom to replicate them. Considering the first aspect, there is no reason to believe that the case of coach mobility

differs from other analogous situations with regard to the relevance that this factor has on routine replication. However, the case of coach mobility can be more favorable for inter-organizational routines replication than other organizational settings since coaches can use extensive statistical and visual documentation of how their playing routines worked in the teams they left, something reminiscent of the “working template” that favors intra-organizational replication over other forms of routine replication (Grandinetti, 2022). Similarly, concerning the power to replicate, the stringent performance expectations usually placed on the new coach by the new club as well as the closed relationship that is normally established between the coach and his/her playing team can make the replication context of coach mobility more favorable for routine replication than other more traditional settings. Both variables, experience and power, thus offer useful insights for developing future inter-industry studies on inter-organizational routine replication.

Declaration of Competing Interest

The authors report no declarations of interest.

Data Availability

Data will be made available on request.

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References

- Agarwal, R., Echambadi, R., Franco, A. M., & Sarkar, M. (2004). Knowledge transfer through inheritance: Spin-out generation, development, and survival. *Academy of Management Journal*, 47(4), 501–522.
- Aime, F., Johnson, S., Ridge, J. W., & Hill, A. D. (2010). The routine may be stable but the advantage is not: Competitive implications of key employee mobility. *Strategic Management Journal*, 31(1), 75–87.
- Andersson, M., & Klepper, S. (2013). Characteristics and performance of new firms and spinoffs in Sweden. *Industrial and Corporate Change*, 22(1), 245–280.
- Bapuji, H., Hora, M., & Saeed, A. M. (2012). Intentions, intermediaries, and interaction: Examining the emergence of routines. *Journal of Management Studies*, 49(8), 1586–1607.
- Berman, S. L., Down, J., & Hill, C. W. (2002). Tacit knowledge as a source of competitive advantage in the National Basketball Association. *Academy of Management Journal*, 45(1), 13–31.
- Bialik, C. (2014). The people tracking every touch, pass and tackle in the World Cup. (<http://fivethirtyeight.com/features/the-people-tracking-every-touch-pass-and-tackle-in-the-world-cup/>).
- Boe-Lillegraven, S. (2019). Transferring routines across multiple boundaries: A flexible approach. In M. S. Feldman, L. D'Adderio, K. Dittich, & P. Jarzabkowski (Eds.), *Routine dynamics in action: Replication and transformation* (pp. 1–10). Emerald.
- Breslin, D. (2016). What evolves in organizational co-evolution? *Journal of Management and Governance*, 20(1), 45–67.
- Campbell, B. A., Ganco, M., Franco, A. M., & Agarwal, R. (2012). Who leaves, where to, and why worry? Employee mobility, entrepreneurship and effects on source firm performance. *Strategic Management Journal*, 33(1), 65–87.
- Cusmano, L., Morrison, A., & Pandolfo, E. (2015). Spinoff and clustering: A return to the Marshallian district. *Cambridge Journal of Economics*, 39(1), 49–66.
- Cyert, R. M., & March, J. G. (1963). *A behavioral theory of the firm*. Prentice-Hall.
- D'Adderio, L. (2011). Artifacts at the centre of routines: Performing the material turn in routines theory. *Journal of Institutional Economics*, 7(2), 197–230.
- D'Adderio, L. (2014). The replication dilemma unravelled: How organizations enact multiple goals in routine transfer. *Organization Science*, 25(5), 1325–1350.
- D'Adderio, L., & Pollock, N. (2020). Making routines the same: Crafting similarity and singularity in routines transfer. *Research Policy*, 49(8), Article 104029 (1–15).
- Dahl, M. S., & Sorenson, O. (2014). The who, why, and how of spinoffs. *Industrial and Corporate Change*, 23(3), 661–688.
- Davies, A., Frederiksen, L., Cacciatori, E., & Hartmann, A. (2018). The long and winding road: Routine creation and replication in multi-site organizations. *Research Policy*, 47(8), 1403–1417.
- Day, D. V., Gordon, S., & Fink, C. (2012). The sporting life: exploring organizations through the lens of sport. *Academy of Management Annals*, 6(1), 397–433.
- Dionysiou, D. D., & Tsoukas, H. (2013). Understanding the (re)creation of routines from within: A symbolic interactionist perspective. *Academy of Management Review*, 38(2), 181–205.

- Dobson, S., & Goddard, J. (2011). *The economics of football* (second ed.). Cambridge University Press.
- Duarte, R., Araújo, D., Correia, V., & Davids, K. (2012). Sports teams as superorganisms: Implications of sociobiological models of behaviour for research and practice in team sports performance analysis. *Sports Medicine*, 42(8), 633–642.
- Erhardt, N., Martin-Rios, C., & Harkins, J. (2014). Knowledge flow from the top: The importance of teamwork structure in team sports. *European Sport Management Quarterly*, 14(4), 375–396.
- Feldman, M. P., Ozcan, S., & Reichstein, T. (2019). Falling not far from the tree: Entrepreneurs and organizational heritage. *Organization Science*, 30(2), 337–360.
- Feldman, M. S., & Pentland, B. T. (2003). Reconceptualizing organizational routines as a source of flexibility and change. *Administrative Science Quarterly*, 48(1), 94–118.
- Feldman, M. S., Pentland, B. T., D'Adderio, L., & Lazaric, N. (2016). Beyond routines as things: Introduction to the special issue on routine dynamics. *Organization Science*, 27(3), 505–513.
- Felin, T., & Foss, N. J. (2009). Organizational routines and capabilities: Historical drift and a course-correction towards microfoundations. *Scandinavian Journal of Management*, 25(2), 157–167.
- Felin, T., Foss, N. J., Heimeriks, K. H., & Madsen, T. L. (2012). Microfoundations of routines and capabilities: Individuals, processes, and structure. *Journal of Management Studies*, 49(8), 1351–1374.
- Ferriani, S., Garnsey, E., & Lorenzoni, G. (2012). Continuity and change in a spin-off venture: The process of reimprinting. *Industrial and Corporate Change*, 21(4), 1011–1048.
- Friesl, M., & Larty, J. (2013). Replication of routines in organizations: Existing literature and new perspectives. *International Journal of Management Reviews*, 15(1), 106–122.
- Furlan, A. (2016). Who lives longer? Startups vs spinoffs founded as proprietorships. *International Journal of Entrepreneurial Behavior & Research*, 22(3), 416–435.
- Furlan, A., & Grandinetti, R. (2016). Spinoffs and their endowments: Beyond knowledge inheritance theory. *Journal of Intellectual Capital*, 17(3), 570–589.
- Furlan, A., & Grandinetti, R. (2020). Can routines be inherited? A microfoundational approach to spinoffs. *European Management Review*, 17(4), 885–899.
- Gammelsæter, H. (2013). Leader succession and effectiveness in team sport: A critical review of the coach succession literature. *Sport, Business and Management*, 3(4), 285–296.
- Gamson, W., & Scotch, N. (1964). Scapegoating in baseball. *American Journal of Sociology*, 70(1), 69–72.
- Goff, B. L., & Tollison, R. D. (1990). Sports as economics. In B. Goff, & R. Tollison (Eds.), *Sportometrics* (pp. 3–14). Texas A&M University Press.
- Grandinetti, R. (2018). Is organizational evolution Darwinian and/or Lamarckian? *International Journal of Organizational Analysis*, 26(5), 858–874.
- Grandinetti, R. (2022). A routine-based theory of routine replication. *Sustainability*, 14(14), 8254.
- Gréhaigne, J. F., & Godbout, P. (1998). Formative assessment in team sports in a tactical approach context. *Journal of Physical Education, Recreation & Dance*, 69(1), 46–51.
- Grusky, O. (1963). Managerial succession and organizational effectiveness. *American Journal of Sociology*, 69(1), 21–31.
- Gupta, A., Hoopes, D. G., & Knott, A. M. (2015). Redesigning routines for replication. *Strategic Management Journal*, 36(6), 851–871.
- Haberstetter, A. (2017). The role of pre-entry experience of firm founders in peripheral regions: Routines, business contacts, and local starting conditions. *Growth and Change*, 48(4), 769–786.
- Hewitt, A., Greenham, G., & Norton, K. (2016). Game style in soccer: What is it and can we quantify it? *International Journal of Performance Analysis in Sport*, 16(1), 355–372.
- Hodgson, G. M. (2013). Understanding organizational evolution: Toward a research agenda using generalized Darwinism. *Organization Studies*, 34(7), 973–992.
- Hodgson, G. M., & Knudsen, T. (2010). *Darwin's conjecture: The search for general principles of social and economic evolution*. University of Chicago Press.
- Hughes, M., & Franks, I. (2005). Analysis of passing sequences, shots and goals in soccer. *Journal of Sports Sciences*, 23(5), 509–514.
- James, N., Mellalieu, S. D., & Hollely, C. (2002). Analysis of strategies in soccer as a function of European and domestic competition. *International Journal of Performance Analysis in Sport*, 2(1), 85–103.
- Jensen, R. J., & Szulanski, G. (2007). Template use and the effectiveness of knowledge transfer. *Management Science*, 53(11), 1716–1730.
- Jonsson, A., & Foss, N. J. (2011). International expansion through flexible replication: Learning from the internationalization experience of IKEA. *Journal of International Business Studies*, 42(9), 1079–1102.
- Kilduff, G. J., Elfenbein, H. A., & Staw, B. M. (2010). The psychology of rivalry: A relationally dependent analysis of competition. *Academy of Management Journal*, 53(5), 943–969.
- Kilduff, G. J., Galinsky, A. D., Gallo, E., & Reade, J. J. (2016). Whatever it takes to win: Rivalry increases unethical behavior. *Academy of Management Journal*, 59(5), 1508–1534.
- Klepper, S. (2001). Employee startups in high-tech industries. *Industrial and Corporate Change*, 10(3), 639–674.
- Klepper, S. (2002). The capabilities of new firms and the evolution of the US automobile industry. *Industrial and Corporate Change*, 11(4), 645–666.
- Klepper, S. (2009a). Spinoffs: A review and synthesis. *European Management Review*, 6(3), 159–171.
- Klepper, S. (2009b). Silicon valley: A chip off the old detroit bloc. In D. B. E. Audretsch, & R. Strom (Eds.), *Entrepreneurship, growth, and public policy* (pp. 79–118). Cambridge University Press.
- Klepper, S., & Sleeper, S. (2005). Entry by spinoffs. *Management Science*, 51(5), 1291–1306.
- Mawdsley, J. K., & Somaya, D. (2016). Employee mobility and organizational outcomes: An integrative conceptual framework and research agenda. *Journal of Management*, 42(1), 85–113.
- Müller, O., Simons, A., & Weinmann, M. (2017). Beyond crowd judgments: Data-driven estimation of market value in association football. *European Journal of Operational Research*, 263(2), 611–624.
- Nelson, R. R., & Winter, S. G. (1982). *An evolutionary theory of economic change*. Belknap Press.
- Parmigiani, A., & Howard-Grenville, J. (2011). Routines revisited: Exploring the capabilities and practice perspectives. *Academy of Management Annals*, 5(1), 413–453.
- Pentland, B. T. (2003). Sequential variety in work processes. *Organization Science*, 14(5), 528–540.
- Pentland, B. T. (2011). The foundation is solid, if you know where to look: Comment on Felin and Foss. *Journal of Institutional Economics*, 7(2), 279–293.
- Pentland, B. T., & Feldman, M. S. (2005). Organizational routines as a unit of analysis. *Industrial and Corporate Change*, 14(5), 793–815.
- Pentland, B. T., Feldman, M. S., Becker, M. C., & Liu, P. (2012). Dynamics of organizational routines: A generative model. *Journal of Management Studies*, 49(8), 1484–1508.
- Phillips, D. J. (2002). A genealogical approach to life chances: The parent-progeny transfer among Silicon Valley law firms, 1946–1996. *Administrative Science Quarterly*, 47(3), 474–506.
- Potrac, P., Jones, R., & Armour, K. (2002). "It's all about getting respect": The coaching behaviors of an expert English soccer coach. *Sport Education and Society*, 7(2), 183–202.
- Simpson, B., & Lorino, P. (2016). Reviewing routines through a pragmatist lens. In J. Howard-Grenville, C. Rerup, A. Langley, & H. Tsoukas (Eds.), *Organizational routines: How they are created, maintained, and changed* (pp. 47–70). Oxford University Press.
- Szulanski, G., & Jensen, R. J. (2004). Overcoming stickiness: An empirical investigation of the role of the template in the replication of organizational routines. *Managerial and Decision Economics*, 25(6), 543–563.
- Szulanski, G., & Jensen, R. J. (2008). Growing through copying: The negative consequences of innovation on franchise network growth. *Research Policy*, 37(10), 1732–1741.
- Taylor, M. (2010). Football's engineers? British football coaches, migration and intercultural transfer, c. 1910 – c. 1950s. *Sport in History*, 30(1), 138–163.
- Teoldo, I., Guilherme, J., & Garganta, J. (2022). *Football intelligence: Training and tactics for soccer success*. Routledge.
- Wezel, F. C., Cattani, G., & Pennings, J. M. (2006). Competitive implications of interfirm mobility. *Organization Science*, 17(6), 691–709.
- Winter, S. G. (2005). Developing evolutionary theory for economics and management. In K. G. Smith, & M. A. Hitt (Eds.), *Great minds in management* (pp. 509–520). Oxford University Press.
- Winter, S. G., & Szulanski, G. (2001). Replication as strategy. *Organization Science*, 12(6), 730–743.
- Winter, S. G., Szulanski, G., Ringov, D., & Jensen, R. J. (2012). Reproducing knowledge: Inaccurate replication and failure in franchise organizations. *Organization Science*, 23(3), 672–685.
- Wolfe, R. A., Weick, K. E., Usher, J. M., Terborg, J. R., Poppo, L., Murrell, A. J., ... Jourdan, J. S. (2005). Sport and organizational studies: Exploring synergy. *Journal of Management Inquiry*, 14(2), 182–210.
- Wolthuis, F., Hubers, M. D., van Veen, K., & de Vries, S. (2022). The concept of organizational routines and its potential for investigating educational initiatives in practice: A systematic review of the literature. *Review of Educational Research*, 92(2), 249–287.
- Wooldridge, J. M. (2010). *Econometric analysis of cross section and panel data*. MIT Press.
- Wright, M., Tartari, V., Huang, K. G., Di Lorenzo, F., & Bercovitz, J. (2018). Knowledge worker mobility in context: Pushing the boundaries of theory and methods. *Journal of Management Studies*, 55(1), 1–26.