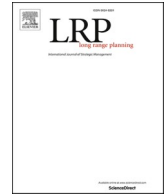




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How to beat early movers: The role of competitive strategy and industry dynamism on followers' performance in the telecommunications industry[☆]

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ABSTRACT

The idea of first-mover advantages is frequently used by both managers and academics alike. Despite its importance for understanding the performance of entry in new markets, the evidence remains mixed. Our study advances research on the entry timing-performance relationship by adopting a contingency perspective that includes both micro (competitive strategies) and macro (industry dynamics) dimensions to explain differences in entrants' profitability. In this paper we focus on follower firms and propose that cost leadership is the best strategy for them to successfully entering a market. In addition, recognizing the contingency effect of industry dynamism, we also examine how market growth and technology evolution affect the effectiveness of followers' competitive strategies. Specifically, we propose that followers will be better off by using cost strategies in growing markets, while when operating in contexts of technological change the performance of the cost leadership strategy will be lower.

Introduction

The interest in the study of market entry has grown steadily since the late 70s (Markman et al., 2019). However, the comprehension of the key factors that explain a successful market entry is still uncomplete. One reason is that the complexity of entry decisions is high and it is conditioned by numerous contingencies. Zachary et al. (2015) consider five interrelated factors that represent the contingencies that should be taken into account, so that research in this area could move forward: 1) *who?* – the relevant players; 2) *where?* – the area to enter; 3) *what?* – the type of entry; 4) *how?* – the strategies, resources, capabilities, and assets to enter; and, 5) *when?* – the contextual timing for entry.

Despite the recognition of the importance of contingencies in the study of entry timing (Suarez and Lanzolla, 2007; Dykes and Kolev, 2018; Mac Cawley, 2019), the analysis of the contextual factors surrounding entry timing is scarce (Fosfuri et al., 2013; Zachary et al., 2015; Yao et al., 2020). One possible reason is that “market entry research has relied on borrowed theory, mostly from

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economics" (Markman et al., 2019: 1252). Therefore, one of the major challenges for scholars is the development of new theoretical insights through asking challenging questions such as "Under what conditions some forces matter more than others?" (Markman et al., 2019: 1253). In other words, the addition of different contingencies to the analysis of the relation between order of entry and performance could contribute to fill the theoretical voids in the literature and to clarify the empirical relationship between order of entry and performance.

Building on the idea that the contextual factors that surround entry are important, recent papers on the literature of first-mover advantages (FMAs) have attributed an important role to competitive strategies (Castillo-Apraiz and Matey, 2020) and business models (Markides and Sosa, 2013) in the explanation of entrants' profitability. The main suggestion is that, to achieve a competitive advantage, pioneers may use different strategies from followers. Following Porter's (1980) categorization, scholars have generally distinguished between two main ways to achieve competitive advantages: differentiation and cost leadership. Recent research in this topic confirms that the order of entry explains differences in the competitive strategies followed by firms (Gómez et al., 2021). However, as we explain in the next section, the few studies that have considered competitive strategies provide contradictory arguments and have found contradictory results when it comes to explaining performance (De Castro & Chrisman, 1995; Durand and Coeurderoy, 2001; Fernández and Usero, 2009; Greve and Seidel, 2014; Castillo-Apraiz and Matey, 2020).

In order to examine the impact of competitive strategies on the profitability of pioneers and followers, we must bear in mind that the effectiveness of the competitive strategies may differ depending on industry dynamics (De Castro & Chrisman, 1995). Research on first mover advantages has emphasized the importance of industry dynamics to explain the profitability of pioneers and followers (Suarez and Lanzolla, 2007; Gomez et al., 2016; Asimakopoulos and Whalley, 2017). Market growth and technological change have been proposed as two macro contingencies that condition the profits that accrue to pioneers because of first moving (Suarez and Lanzolla, 2007). However, how these two macro market dimensions and competitive strategies interact to determine the profitability of pioneers and followers remains unexplored. For example, while followers choosing a cost strategy could benefit more from periods of high market growth, those late entrants accustomed to innovating because of the implementation of a differentiation strategy would be more likely to successfully navigate the shocks created by technological change.

Overall, this discussion suggests the exploration of two ideas that we analyze in this paper. Firstly, we study whether the use of a given competitive strategy is important for entry timing advantages (De Castro & Chrisman, 1995, Markides and Sosa, 2013, Durand and Coeurderoy, 2001, Fernández and Usero, 2009, Greve and Seidel, 2014; Castillo-Apraiz and Matey, 2020). In particular, our arguments lead us to propose that a cost strategy is the best for those followers that want to successfully enter new markets (Fosfuri et al., 2013).

Secondly, we study whether the fit between the order of entry and the competitive strategy chosen is contingent on industry dynamics. In other words, we argue that the ability of followers to take advantage of industry dynamics depends on the competitive strategy followed. In contexts with greater market growth, a cost strategy will show higher effectiveness. Conversely, in changing technology contexts, the effectiveness of the cost strategy will be weaker.

We test our hypotheses on panel data on the European mobile telecommunications industry and in the period from 2003 to 2017. This is a particularly relevant context in which to conduct our study. Recent reports point to a significant fall in prices and EBITDA margins in the European sector during the second decade of the twenty-first century (Abate et al., 2020). In an increasingly competitive environment like this, it is imperative to find out what the best strategy for companies is. As the literature on entry timing suggests, we use longitudinal data, focus on profitability and control for potential endogeneity. Our findings confirm the relevance of entering first to gain competitive advantages, as followers are consistently worse off than pioneers. Our study also reveals that the cost strategy leads followers to obtain the highest profitability levels and is the one that allows them to reduce the performance differences with pioneers to a higher extent. Our predictions on the moderating role of market dynamism on the relationship between a cost strategy and performance for followers find weak empirical support.

We contribute to the theory of first mover advantages by offering a contingency perspective that integrates both micro and macro dimensions (Markman et al., 2019; Zachary et al., 2015), namely, competitive strategies and industry dynamics. Therefore, our study goes beyond the stand-alone effect of the order of entry and builds theory by considering a wider variety of contingencies to obtain a more comprehensive understanding of entry-timing. Our study advances theory by considering factors on three out of the five areas suggested by Zachary et al. (2015) (i.e., when, how, and where).¹ In this way, we contribute to the theory on the topic by exploring its boundary conditions (Makadok et al., 2018).

In the micro side, we theorize in favor of an appropriate fit between a firm's order of entry and the competitive strategy, as suggested by the literature (Markides and Sosa, 2013). This approach assumes that there is an optimal fit between both, order of entry and competitive strategies. In that regard, instead of analysing the performance of the pioneers, as the majority of the studies does, our paper does focus on how followers perform in the different situations defined by the contingencies considered (Fosfuri et al., 2013). This is important, as the late entrants have received lower levels of attention in the entry timing literature (Dykes and Kolev, 2018; Yao et al., 2020). Empirically, we offer new evidence on the order of entry-strategy relationship, by considering that firm strategies could play a role in explaining performance (De Castro & Chrisman, 1995, Markides and Sosa, 2013; Durand and Coeurderoy, 2001; Fernández and Usero, 2009; Greve and Seidel, 2014).

In the macro side, our study incorporates the contingent effect that industry dynamism (Suarez and Lanzolla, 2007; Gomez et al., 2016) could exert on the effectiveness of followers' competitive strategies to compete. Therefore, by combining micro and macro

¹ As Markman et al. (2019) state, the number of contingency factors considered will be dependent on the entry context, not being necessarily the consideration of all the factors simultaneously.

aspects (Suarez and Lanzolla, 2007) we provide a more complete understanding of the potential of competitive strategies to obtain a competitive advantage when firms differ in their order of entry. To our knowledge, this possibility has not been explicitly contemplated either theoretically or empirically, but it might be essential to offer a more nuanced picture of first mover advantages (Lieberman and Montgomery, 1998, 2013; Tellis, 2014).

The rest of the paper is structured as follows. The next section includes a literature review and reveals the opportunities for additional research that we found. In section 3, we present the hypotheses that link order of entry, competitive strategy, industry dynamism, and profitability. Section 4 presents the research setting, the variables and the methodology used. Finally, the empirical results are presented in sections 5 and 6, and we discuss the relevance of our key findings in section 7.

Literature review on entry timing advantages

Despite decades of research, the analysis of the relationship between the order of entry and performance has produced puzzling results (Zachary et al., 2015). One approach that has been followed to clarify prior findings has been to explore how competitive strategies influence how each cohort of entrants competes and creates value (De Castro & Chrisman, 1995). Following Porter's (1980) categorization, scholars have generally distinguished between two main ways to achieve competitive advantages: differentiation and cost leadership. Whereas the former emphasizes the need to offer unique and high-quality products to reach a superior position, the latter seeks to gain advantages over rivals by becoming the lowest-cost producer in the industry. The research on this issue provides different theoretical arguments that lead to the proposal of different optimal strategies for pioneers and followers. Similarly, the evidence on the best strategy for pioneers and followers is contradictory. This has led researchers to call for more investigations on the role of business models (Markides and Sosa, 2013) and competitive strategies in the performance of early and late movers (Zachary et al., 2015).

A frequently repeated suggestion is that differentiation may be the most appropriate path for pioneers to gain market share, improve profitability and hinder prospective rivals' entry (Durand and Coeurderoy, 2001; Ruiz-Ortega and García-Villaverde, 2008). Similarly, it is frequently argued that follower firms should compete on a low-cost basis (Coeurderoy and Durand, 2004; Covin et al., 1999; Fernández and Usero, 2009; Ruiz-Ortega and García-Villaverde, 2008). However, several studies point to the use of differentiation actions such as product innovativeness (Robinson and Chiang, 2002; Shamsie et al., 2004), advertising efforts (Schnaars, 1994) or greater relative quality (Shamsie et al., 2004) as a suitable way to create competitive advantage and to catch up with pioneers. Other authors argue that followers could improve their performance vis a vis pioneers by imitating the products or strategies of the pioneers (Dykes and Kolev, 2018).

Parallel to the proliferation of different theoretical arguments about which strategy is best for pioneers and followers, empirical evidence has not been able to tip the balance in favor of one strategy or the other. For example, while De Castro & Chrisman (1995) show that the performance of pioneers is similar with a differentiation and with a cost strategy, a cost orientation is the best option for pioneers in Durand and Coeurderoy (2001)'s study. Fernández and Usero (2009) study pioneers in the telecom service industry, concluding that implementing a higher number of differentiation actions is the best strategy for pioneers in this setting. Greve and Seidel (2014) conclude that early entrants with lower quality can still earn a competitive advantage. García-Villaverde et al. (2017) show that pioneering orientation makes firms more likely to use low-cost and innovation and marketing differentiation tactics. However, only low-cost and innovation tactics are positively related with firm performance (García-Villaverde et al., 2017). Finally, Castillo-Apraiz and Matey (2020)'s results point out that, contrary to expectations, a differentiation strategy does have a stronger impact on the performance of followers than on the performance of pioneers in the German pharmaceutical industry. Overall, this lack of consensus reveals the importance of further research on the role played by competitive strategies to explain variations in firms' performance (Gómez et al., 2021).

In this paper, we seek to tackle this puzzle in entry timing literature by delving into the relationship between order of entry, competitive strategy and firm performance. A deterministic model would assume that all pioneers follow a specific strategy, different from that of followers (see Lambkin, 1988). This is justified in terms of the ability of each cohort of entrants to take advantage of the isolating mechanisms. However, this correspondence between order of entry and competitive strategy (Kerin et al., 1992; De Castro & Chrisman, 1995) may be conditioned by other factors. Firstly, each cohort of entrants will not necessarily have similar resources and skills, strategic objectives or decision-makers. Consequently, we should not expect each cohort to follow a unique behavior (De Castro & Chrisman, 1995; Shamsie et al., 2004). Secondly, as management scholars have recently pointed out, firms may make mistakes when competing in changing and uncertain environments (Handley and Angst, 2015; Heracleous and Werres, 2016) and, as a result, they sometimes do not take optimal decisions. These misalignments will inevitably influence the achievement of competitive advantages. By delving into the interplay between the order of entry and competitive strategies, this study aims to clarify the ambiguous evidence regarding performance differences at the firm level.

In addition to this, Fosfuri et al. (2013) point out that, despite its importance in the field of strategy, only a limited number of studies have analyzed the role of the environment in the achievement and maintenance of entry timing advantages. Some scholars have drawn attention to this matter by either proposing or examining the effects of external contingencies on the consequences of entry timing decisions (e.g., Gomez et al., 2016; Lieberman and Montgomery, 2013; Suarez and Lanzolla, 2007; Zachary et al., 2015; Asimakopoulos and Whalley, 2017; Mac Cawley, 2019; Yao et al., 2020) and yet others have proposed their study as an extension of the role of the competitive behavior of the different cohorts of entrants (García-Villaverde et al., 2017). In particular, industry dynamism has been ascribed a key role in explaining the sustainability of first-mover advantages (Suarez and Lanzolla, 2007). In this case, the focus of research has been on two important dimensions that describe market evolution, namely, market growth and technological change. Very briefly, the idea is that these two dimensions should negatively affect pioneer performance. In the case of market growth

by providing followers the resources needed to effectively compete with pioneers. In the case of technological change, by changing the basis of competition, reducing the acquired advantages of pioneers.

Empirically, both [Gomez et al. \(2016\)](#) and [Asimakopoulos and Whalley \(2017\)](#) show that technological change is detrimental for the performance of the pioneer. Less clear is the effect of market growth on the profitability of first movers. [Gomez et al. \(2016\)](#) show that market growth benefits followers in terms of market share, but the influence of this variable is not significant when profitability is studied. [Yao et al. \(2020\)](#) show that market growth moderates the curvilinear relationship between the order of entry and performance. Contrarily to [Suarez and Lanzolla \(2007\)](#), [Yao et al. \(2020\)](#) argue that high levels of market growth benefit both early and late entrants, and their results confirm this hypothesis.

Despite significant progress being made on the study of the role of environmental conditions surrounding entry during the last years, this is still an open question that needs to be addressed ([Zachary et al., 2015](#)). In particular, the field lacks knowledge on how the external conditions that could affect the optimal fit between order of entry and firm-based factors (i.e., resources and capabilities, strategy or business models). As mentioned above, both market growth and technological change have been recognized as key dimensions to consider when studying entry timing. [Tellis \(2014, p. A17\)](#) also suggest that these dimensions are important when he argues that “a surge of later entrants learns from mistakes of pioneers, envisions opportunities and rides on the explosion of new superior technologies”. Pioneers “focus on the small initial market, failing to envision that vast mass market that they just opened up” ([Tellis, 2014, p. A17](#)). Accordingly, our study pays special attention to both dimensions, namely, to the role of new superior technologies and to the transition into a vast market.

When mixing both the micro and the macro dimensions that have been highlighted as important to understand first mover advantages, the picture that emerges is even more complex. Previous research has related both dimensions by suggesting that the profitability of the competitive strategies of pioneers and followers could be different depending on industry dynamics ([De Castro & Chrisman, 1995](#); [García-Villaverde et al., 2017](#)). However, to our knowledge the combined effects of this micro and macro dimensions on the analysis of first mover advantages has been overlooked. This is the reason why we pay attention to both competitive strategies and environmental dynamism in this study.

A final element that emerges when reviewing this literature is that the focus has been predominantly on early entrants ([Dykes and Kolev, 2018](#); [Yao et al., 2020](#)). Some of the research on FMAs points to the fact that these may disappear due to the competitive behavior of late entrants. These two reasons make it appropriate for our work to focus on followers, which become the main focus of attention in the following sections.

In conclusion, this review of the literature reveals that (1) the role of competitive strategies in first mover advantages is not well understood, (2) the effect of competitive strategies may depend on the environmental dynamics of the industry in which pioneers and followers compete and that (3) research on first mover advantages has mainly focused on early entrants, paying less attention to late entrants. Accordingly, our paper seeks to address this gap in the literature on entry timing by arguing that certain competitive strategies implemented by followers will show different effectiveness when different external conditions are considered. In the next section, we first argue that a cost leadership strategy is the best for followers. Second, we examined whether market growth and technological change moderate the relationship between the cost strategy and followers’ profitability.

Graphically, our model of analysis is presented below in [Fig. 1](#).

Hypotheses

As noted earlier, in this section we relate order of entry, competitive strategies and industry dynamics. Since the literature has paid less attention to the study of followers’ profitability, our hypotheses focus on them. First, we argue that followers’ profitability will be higher when they follow a cost leadership strategy. Then, we argue that this relationship is moderated by market growth and technological change.

It is important to clarify that our categorization of competitive strategies mainly focuses on cost leadership and differentiation-like strategies. By differentiation-like strategies, we understand those competitive strategies in which a firm focuses on improving the value perceived by the consumer, with independence of the costs borne by the firm. Therefore, our definition of differentiation-like strategies may include pure differentiation strategies, but also hybrid strategies. At the same time, we consider that being stuck in the middle offers the worst possible profitability (the empirical part provides a definition of each of the possible situations a firm can be in).

Competitive strategy and followers’ performance

The reasons to expect a better fit between a cost strategy and followers’ performance has to do with the characteristics of early

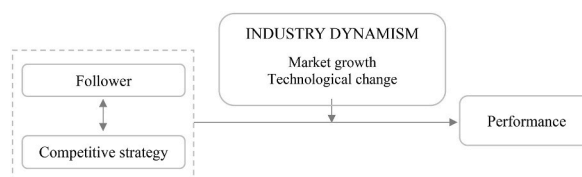


Fig. 1. Model of analysis.

adopters, the evolution of industries over time and the isolating mechanisms. On the one hand, according to Rogers' (1995) adopter categorization, two main types of consumer are identified during the first stages of market development: firstly, those individuals labeled as *innovators*, who show greater willingness to pay for innovative and high standard products, even when they are surrounded by uncertainty; and secondly, the category of *early adopters*, which mainly consists of individuals who act as influencers or opinion leaders in most social communities. While *innovators* play the role of introducing new products into the social system, *early adopters* are responsible for reducing uncertainty and giving advice to the largest customer segments. The two groups have substantial financial resources and enjoy higher social status. Moreover, they tend to use "the adoption of innovations as one means of getting there" (Rogers, 1995, p. 251).

On the other hand, the initial stages of market development are characterized by slow market growth (Levitt, 1965). This makes it highly unlikely that first movers can profit from cost reductions through scale economies (Agarwal and Gort, 2001). Additionally, the early stages of industry development tend to be characterized by uncertainty around product features and technology development (Day, 1981), which makes cost a secondary aspect when market competition is considered.

In this context, designing a strategy that emphasizes the value of a firm's offering for consumers shows the best fit with the isolating mechanisms suggested by Lieberman and Montgomery (1988)—namely, switching costs, technological leadership and pre-emption of scarce assets. The higher socioeconomic characteristics of first adopters, together with low market growth, create opportunities to take advantage of the three isolating mechanisms. For example, a first-mover may take advantage of the temporary absence of competition to build a base of loyal customers and influence their preference structure towards its product attributes (Carpenter and Nakamoto, 1989). This creates switching costs from which early entrants may extract a price premium. First movers may also pre-empt superior quality assets to satisfy current demands by offering the best product to the most profitable customer niches (Lieberman and Montgomery, 1988). Similarly, they can gain an advantage through technological leadership and use patent-protected knowledge to design offerings with the best performance characteristics, which may appeal to both *innovators* and *early adopters*. This logic supports the idea that the use of differentiation strategies that attract the most profitable consumers is the most profitable option for first movers.

However, the situation faced by followers is different. One important observation is that, as markets mature, uncertainty is reduced and more potential customers increase their willingness to acquire the new product. This is likely to lead to market growth and new entries. However, the type of customer that follower firms will face when entering the marketplace is completely different from that met by pioneers. According to Rogers (1995), the main categories of users that can be identified are, in order, *early majority*, *late majority* and *laggards*. As the innovation diffusion progresses in the social system, buyers tend to present lower risk acceptance levels, lower willingness to pay if success is not guaranteed and, in general, an inferior desire to acquire the newness. Given that adopters in more advanced stages of market development tend to see adoption as "an economic necessity and the answer to increasing network pressures" (Rogers, 1995, p. 249), a standardized product may be enough to satisfy consumer demand in later stages of the industry life cycle. Acquiring a standard quality and low-priced product might be their goal since they have more limited financial resources than earlier adopters.

Given the features of these latter categories of users, it is likely that cost pressures increase as the market grows and that followers find more adequate to compete through a cost leadership strategy to capture the demand not willing to pay for the pioneers' offering or "previously uneconomic to serve" (Day, 1981, p. 65).²

In addition to these arguments, it is also important to consider that as markets evolve, real prices tend to decrease due to increasing rivalry (Mac Cawley, 2019). As a result, later entrants may benefit from implementing a cost leadership strategy that focuses on cost reductions. The implementation of a cost leadership strategy may also be consistent with the lower need of investments directed to improve consumer knowledge of the product/service, as the uncertainty about the latter is considerably reduced as the market develops (Yao et al., 2020). Finally, cost reductions also allow followers to diminish prices and compensate for buyer-switching costs (Fernández and Usero, 2009).

Taken together, these arguments lead us to propose that the cost strategy is optimal for followers. Accordingly, we state that:

Hypothesis 1. Followers using cost strategies will obtain better performance than using differentiation-like strategies.

The moderating role of industry dynamism on followers' performance

Up to now, we have argued in terms of the most suitable competitive strategy to grant each cohort of entrants a greater performance advantage when industries follow a typical development pattern. However, when analyzing entry timing advantages, scholars have recently noted the importance of considering a wider variety of external forces that may affect the ability of firms to achieve success, such as the evolution of consumers' needs and technological and market changes (Fosfuri et al., 2013; Lieberman and Montgomery, 2013). Recent research on entry timing reflects on the way the pace of evolution of environmental level conditions may enable or disable the isolating mechanisms that give rise to first-mover advantages (Suarez and Lanzolla, 2007). Along with this theoretical approach, the influence of industry dynamics on entry timing advantages has been empirically confirmed (Durand and Coeurderoy, 2001; Gomez et al., 2016; Asimakopoulou and Whalley, 2017). Nevertheless, to our knowledge, the joint effect of macro and micro aspects on performance is unexplored. We therefore seek to advance entry timing advantage research by considering both followers' competitive behavior and the influence of environmental contingencies. We argue that certain environment level conditions will affect

² Although it is well-known, by following a cost leadership competitive strategy we understand competing to be the lowest costs producer in the industry (Porter, 1980).

the effectiveness of the competitive strategy that is assumed to be optimal for follower firms (i.e., cost strategy). To do that, we focus on the role of industry dynamism, and we examine the influence of the pace of market growth and technological change (Suarez and Lanzolla, 2007).

Market growth and followers' performance

The pace of market evolution is generally characterized by presenting initial stages of low demand, followed by a period of rapid growth in which sales take off, and a phase of maturity and decline (Levitt, 1965). As the market grows and an increase in demand takes place, followers will have a greater opportunity to enter successfully and meet emerging customer groups (Day, 1981). As previously suggested, the cost strategy will offer a better fit for followers to compete successfully with pioneers in an industry with a typical evolution. However, markets may be heterogeneous in terms of the pace of market evolution. We argue that this significantly influences the effectiveness of the isolating mechanisms that give rise to early entry advantages (Suarez and Lanzolla, 2007) and, consequently, the chance for later movers to enter successfully and reduce the performance advantage of the pioneer. Therefore, the pace of market growth might shape followers' opportunities to benefit from a cost strategy. We suggest that the effectiveness of followers' cost strategy will be better when market growth is higher for three main reasons.

Firstly, the ability of a firm to pre-empt scarce assets has been identified as an effective driver to achieve first-mover advantages. However, in contexts with a higher pace of market growth, the existence of enough resources (such as potential buyers, suppliers or distribution channels) for all potential entrants is guaranteed, facilitating followers' successful entry (Suarez and Lanzolla, 2007). In these environments, there will be a faster emergence of new sorts of consumers, whose preferences (e.g., demand for low-cost products) will significantly differ from those of innovators and early adopters, as previously noted (Rogers, 1995). Accordingly, we would expect later movers in contexts of high market growth to have more opportunities to meet a greater number of potential buyers demanding standardized and low-cost products.

Secondly, a highly growing market will diminish first-mover advantages derived from learning curves, since it allows later entrants to "travel along the experience curve more quickly" (Gomez et al., 2016, p. 268). To the extent that cost advantages are a function of firms' cumulative experience and market leadership (Kerin et al., 1992), rapid market growth will result in greater opportunities for followers to build a strong cost position in a shorter time. Higher rates of market growth may also allow to build a strong cost position more quickly thanks to economies of scale and scope, especially in those activities characterized by high capital investments.

Thirdly, higher rates of market growth could disable switching costs that usually favor first-mover advantages. Potential entrants in the initial stages of market development must deal with the fact that a broad portion of the market is already committed to the incumbent's product (Lieberman and Montgomery, 1988). However, in a context of high market growth, the proportion of locked-in buyers will be notably reduced (Beggs and Klempere, 1992). This means that the initial locked-in consumers, who show a better fit with the early entrant offering, will quickly reduce their weight on total demand as a new group of buyers appears on the market. Therefore, we expect that the opportunities for followers with a cost strategy to gain acceptance and perform better will be higher when market growth is also higher.

Under these assumptions, our second hypothesis states that:

Hypothesis 2. Market growth moderates the relationship between a cost strategy and the performance of followers, so that when market growth is higher the profitability of followers increases.

Technological change and followers' performance

Technology evolution refers to exogenous technical changes that shift the competitive marketplace by modifying the systems needed for producing outputs and creating value (Lavie, 2006). Technological discontinuities have traditionally been seen as a catalyst for market dynamism since new opportunity windows arise for potential entrants after its emergence (Lee and Malerba, 2017). In that regard, Tellis (2014) reflects on how later movers may leverage the exploitation of new opportunities that arise from the appearance of superior technologies. Suarez and Lanzolla (2007) discuss how the pace of technology evolution may potentially enable or disable FMAs. Empirically, the evidence confirms the detrimental effect of technological changes for early entrants' advantage (e.g., Bohlmann et al., 2002; Gomez et al., 2016). Our study delves into this relationship, taking into account the way followers compete in contexts of technological change.

As argued in hypothesis 1, cost leadership is the best competitive strategy for follower firms to achieve competitive advantages (see, for instance, Coeurderoy and Durand, 2004; Fernández and Usero, 2009; Ruiz-Ortega and García-Villaverde, 2008). However, when environmental-level factors are considered, this statement seems to be subject to other nuances (Suarez and Lanzolla, 2007). In particular, it is argued that contexts of rapid technological evolution allow latecomers to invent around and compete with improved products. It seems that, in those contexts, they might have greater opportunities to benefit from superior quality products, which would be closer to a differentiation orientation. This leads us to consider that, in contexts of technological change, followers may also take advantage of improvements in the service or the product that they commercialize, as well as from a cost strategy. Therefore, although in the case of followers the cost strategy is preferred, when technical change takes place, it might not be as aligned with the external environment as in contexts in which technical change does not take place. Accordingly, we contend that the performance of the followers' cost strategy will be lower in environments characterized by higher technology dynamism than in contexts where technology changes at a smooth pace. Our arguments are presented in more detail below.

It has been claimed that technology evolution could affect early entrants' chances of sustaining advantages from technology leadership (Bohlmann et al., 2002). For instance, a smooth pace of technology evolution usually favors first movers, as later entrants have fewer opportunities to challenge their competitive advantage by using improvements to differentiate their product (Suarez and

Lanzolla, 2007). However, rapid technology environments reduce the effectiveness of patents in protecting innovations, giving later entrants greater possibilities to invent around (Lieberman and Montgomery, 1988) and come up with improved products to compete on differentiation. Moreover, in the case of competence destroying (Tushman and Anderson, 1986) technological change, the value of the patents owned by the pioneers may quickly lose their value, disabling technology leadership as an isolating mechanism and equilibrating the arenas in which pioneers and followers compete. In these contexts, once the technological change takes place, the clock may almost be set to zero for all the cohorts of entrants, and a differentiation strategy may be as good as a leadership strategy to compete.

Technological change also creates uncertainty over the performance trajectories of new technical innovations within an industry (Bower and Christensen, 1995), thus creating greater difficulties for firms to pre-empt strategic assets such as technological resources or potential consumers (Suarez and Lanzolla, 2007). Not only old valuable strategic assets may lose their value because of technological change, but new valuable strategic assets may be as difficult to identify and appropriate for followers as for pioneers, reducing the advantages of asset pre-emption as an isolating mechanism.

In consonance with these ideas, previous studies state that first movers face greater disadvantages in markets when technology is advancing rapidly, especially if (i) they are unable to switch to the newer technology because of their economic or managerial commitment to the older one (Bohmann et al., 2002); or (ii) they refuse to adopt the newness because it does not meet their current consumers' demands (Bower and Christensen, 1995). In such contexts, followers will have the opportunity to benefit from advanced technologies that allow them to provide higher quality in their offerings to the newly opened market and this reduces the relative advantage that a cost leadership strategy may provide for them. This means that the use of a differentiation-oriented strategy (via improved products) could serve as an appropriate pathway for latecomers when technology changes.

Switching costs derived from consumers' preference formation (Carpenter and Nakamoto, 1989) are also influenced by technology dynamism. In markets of high technological change, it is less likely that consumers will commit themselves to a learning process for a single product, which may quickly become obsolete (Suarez and Lanzolla, 2007). In such contexts, later movers will meet a lower proportion of locked-in consumers since uncertainty and skepticism about product benefits are expected to lower buyers' loyalty and commitment towards a unique product. If no product becomes the category prototype, followers could find greater opportunities to establish a customer base through differentiation of the attributes of their new product.

All in all, the arguments presented in this section suggest that a cost strategy will show an inferior alignment with the environmental conditions of an industry that has experienced a technological change, and this should reduce the effectiveness of this strategy when used by followers. Therefore, our last hypothesis states that:

Hypothesis 3. Technological change moderates the relationship between a cost strategy and the performance of followers, so that when technological change happens the profitability of followers decreases.

In sum, our first hypothesis proposes the existence of an optimal fit between each cohort of entrants and certain competitive strategies to successfully compete in a stable marketplace. In particular, we propose the cost strategy to be the optimal choice for follower firms to compete when markets follow a typical development pattern. However, when an industry shows higher dynamism, we contend that the effectiveness of the competitive strategy that is presumed to offer better adjustment with follower firms will differ. Specifically, in contexts of high market growth, the cost strategy will be better aligned with the environmental conditions. Conversely, contexts of technological change will offer a worse fit with followers' cost strategies.

Empirical analysis

Data and sample

Research setting: the mobile communications industry

To test our hypotheses, we use longitudinal data of mobile network operators in the European mobile telecommunications industry for the period 2003–2017. It is convenient to note that this industry has been previously used to assess the existence of FMAs during the first decade of the 2000s (see, for instance, Gómez and Mañas, 2011; Gomez et al., 2016; Fernández and Usero, 2009). Research on this industry has also examined the impact of firms' competitive behavior in the context of entry timing. However, extant studies focus on firm actions and reactions, and not on strategy types (Fernández and Usero, 2009) or they do not analyze their effect on firm performance (Gómez et al., 2021). Macro aspects have been also explored on the entry timing framework, particularly in the case of industry dynamics (Asimakopoulos and Whalley, 2017; Gomez et al., 2016). Yet these studies do not consider the role played by firms' competitive strategies.

For the purpose of this study, our multi-country sample considers a total of 69 companies that operate in 19 markets.³ The data used to develop the empirical analysis come mainly from the GSMA Intelligence Database (2017), which provides quarterly information on several dimensions of interest for our analysis. For example, the database provides information on the date of entry of each operator in each country, specifying the operator's name, day, month and year of entry. Similarly, the database also provides information on the technologies used by each operator at any given time (e.g., GSM, WCDMA or LTE). In both cases the information is available in a separate listing, without any time restriction. This makes it possible to identify the order of entry of each operator in each market. In

³ Our dataset includes the following European countries: Austria, Belgium, Croatia, Finland, France, Germany, Greece, Ireland, Lithuania, Montenegro, the Netherlands, Norway, Poland, Portugal, Serbia, Slovakia, Spain, Sweden and the United Kingdom.

addition to this, the database provides information on several variables that are available for each operator and for each country. This is the case of EBITDA margin, prices or other variables that characterize the activity of the operators. This information is restricted in time and is only available from the year 2000 onwards. Additional information has been collected from the International Telecommunication Union, press releases, and operators' consolidated annual reports. All variables defined from these databases are measured on a quarterly basis.

Description of variables

Dependent variable. Most traditional studies on FMAs have evaluated market share when assessing pioneer performance (Szymanski et al., 1995; VanderWerf and Mahon, 1997). Since using market share might influence the estimation of pioneer effects (VanderWerf and Mahon, 1997), scholars have stressed the importance of using profitability measures to evaluate first-mover advantages (Lieberman and Montgomery, 1998). Accordingly, we use a firm's EBITDA (earnings before interests, tax, depreciation, and amortization) in our empirical test. Concretely, our dependent variable, *EBITDA margin*, is measured through the firm's EBITDA expressed as a percentage of the total firm revenues.

Independent variables

Order of entry. To understand our definition of the order of entry it is important to note that, in the telecommunications sector, the emergence of a new market took place with the shift from fixed to wireless technology (Fuentelsaz et al., 2015). However, despite the first generation (1G) of mobile phones becoming commercialized in the late 1980s, it was not until the emergence of the second generation (2G) when the real take-off of wireless technology took place and its diffusion process accelerated. The second generation has been followed by the third (3G), fourth (4G) and fifth (5G) generations. Consistent with the literature on the telecommunications market, we treat these generations as "generational technological changes" (Lawless and Anderson, 1996) and not as the creation of a new market (Li et al., 2019). An important issue is that the generational changes in the mobile telecommunications sector have occurred gradually (Jakopin and Klein, 2012; Fuentelsaz et al., 2008; Asimakopoulos and Whalley, 2017) and technologies have coexisted to a greater or lesser extent. These generational technological changes have not led to modifications in the functionality of the product or in the typical consumer that are significant enough to create a new market (Jakopin and Klein, 2012; Fuentelsaz et al., 2008; Asimakopoulos and Whalley, 2017). As Lieberman and Montgomery (2012, 2013) point out, this clarification is important to understand the type of pioneer disadvantages that the followers in our sample are facing. This definition of the market and of generational technological changes is also consistent with previous papers on first mover advantages in this sector (see, for example, Gómez and Maicas, 2011, Jakopin and Klein, 2012, or Gómez et al., 2021). Importantly, it is more consistent with the theory used in this paper than alternative approaches.

With this definition in mind, we understand that a company is a pioneer when it is the first to enter the market after the appearance of the second generation (2G) in a given country. Similarly, we define a *follower* dummy that takes the value 1 if the firm enters a particular market in second place or later.⁴ *Follower* equals 0 if the firm is the first mover to enter the market (or the first firms, if they enter within a six-month horizon) (Gomez et al., 2016).

Competitive strategy. Scholars in the management field have employed a wide diversity of methods to conceptualize firms' competitive strategies (see, for instance, Bowman & Ambrosini, 1997; Pertusa-Ortega et al., 2009; Spanos et al., 2004; Thornhill and White, 2007; White, 1986). In line with White's (1986) study, we categorize competitive strategies using a two-dimensional chart, whose axes are price and cost inefficiency. According to Porter (1980), differentiation-oriented organizations are more involved in producing better quality products, which may be reflected in a higher customer willingness to pay (Lieberman et al., 2016). Thus, we link higher prices to a differentiation-like strategy. On the other hand, firms following cost strategies fail to achieve high-quality levels because their efforts are mainly aimed at diminishing product-related expenditures (Nayyar, 1993; Zott and Amit, 2008) while improving general cost structures. Hence, firms following a cost orientation strategy will show a higher cost-efficiency.

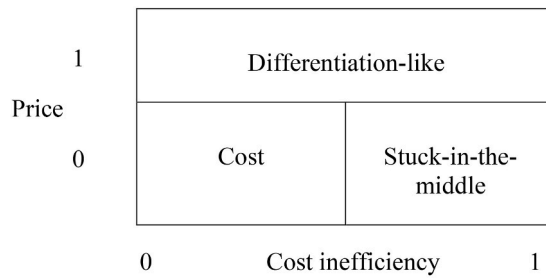
Fig. 2 distinguishes between three main competitive strategies: differentiation-like (i.e., differentiation and hybrid strategies),⁵ cost leadership and stuck-in-the-middle. The differentiation-like quadrant includes firms that maintain higher price levels than the market average. Firms in the cost quadrant show lower prices and a better cost structure, while stuck-in-the-middle firms have lower prices and lower cost efficiency levels.⁶

Consistent with the meta-analysis by Campbell-Hunt (2000), we measured the axes variables relative to competitors in the market

⁴ Note that the earliest followers (i.e., the next entrants after those considered pioneers) in our sample take, on average, more than 4 years to enter the market after the first-mover does. For this reason, we assume that the type of consumers and the industry conditions that follower firms face are significantly different from that met by pioneers.

⁵ Note that White's (1986) categorization distinguishes between pure differentiation and hybrid strategies (those showing cost and differentiation advantages) in separate quadrants. Our contention is that, on average, the cost leadership strategy will offer a better fit for followers than a differentiation-like strategy. Accordingly, we consider this broader category of the differentiation strategy to test our hypotheses and refer to it as a differentiation-like strategy.

⁶ The stuck-in-the-middle strategy is, by definition, less efficient than differentiation or cost leadership. According to Porter (1980), the firm that gets stuck in the middle is almost guaranteed low profitability, as it fails to achieve either cost advantages or a high degree of uniqueness. However, it is important to realize that, given the categorization of the competitive strategies shown in Fig. 2, there might be firms in a stuck-in-the-middle position performing as well as cost leaders if both show cost efficiency levels close to the average value.



Source: Own elaboration based on White (1986).

Fig. 2. Competitive Strategy categories.

in the same period (Coeurderoy and Durand, 2004; Franco et al., 2009; Shamsie et al., 2004). Concretely, the ratio of relative prices per country is obtained by dividing an operator's quarterly average revenue per user⁷ (ARPU) by the maximum ARPU generated by any competitor in the same period. The ratio of cost inefficiency is obtained in two steps. Firstly, we divide each firm total operating expenditure incurred in the period by the number total of connections (subscriptions) registered on the mobile network. Then, we calculate the relative cost position of each firm by dividing the value obtained by the maximum in the market. The greater the value of this ratio, the more inefficient the operator is, and the further it is from a cost leadership strategy.

To classify the competitive strategy followed by a firm, we calculate the mean values of both relative prices and cost inefficiency per country and quarter. Once the country mean is obtained, we categorize the competitive position of each firm to the national average.⁸ A firm that presents values below the mean in both measures will be labeled a cost leader. The corresponding dummy, *cost strategy*, will take a value of 1 for that firm; otherwise, it will take a value of 0. Firms presenting values above the national average for relative prices are classified as differentiators: for these cases, the dummy *differentiation-like strategy* will take a value of 1, and 0 otherwise. Finally, firms that present values above the mean in the cost inefficiency ratio and below the mean in the case of the ratio of the relative prices are considered firms with a stuck-in-the-middle position. The corresponding *stuck-in-the-middle strategy* dummy will equal 1 for those firms, and 0 otherwise. Firms following a *differentiation-like strategy* are used as the base case in our empirical analysis.

Industry dynamism. To evaluate how environmental contingencies influence the order of entry-strategy relationship, we use two main dimensions identified by prior studies as reflecting the industry dynamism: *market growth* and *technological change* (Suarez and Lanzolla, 2007). Both variables are measured at the market level. Regarding the former, our *market growth* variable measures the percentage variation in the number of subscribers in a market in comparison to the previous period (Gomez et al., 2016). Specifically, we divide the number of new mobile subscribers in a specific quarter in that country by the total of mobile subscribers in the year-ago quarter. On the other hand, the *technological change* variable focuses on the transition from 3G to 4G,⁹ which is considered an important generational technological change in the telecom industry (Li et al., 2019). In particular, we define a dummy variable that takes value 1 from the time the first company adopts a 4G standard in a given country and 0 previously. In line with Gomez et al. (2016), we assume that the 4G technology is available in that country from the "first adoption" moment.

Control variables. Apart from the variables described above, we also control for other factors. Firstly, we control for possible firm-specific effects by including three dummy variables (Gómez et al., 2021): *merger*, *part of a group* and *incumbent*. The *merger* variable equals 1 when the firm is the result of an acquisition or a merger process, and 0 otherwise. The *part of a group* dummy takes a value of 1 when an operator is majority-owned by a multinational telecommunications group; otherwise, it takes the value 0. Finally, the *incumbent* dummy equals 1 if the firm was previously established as the incumbent that provided fixed-line services in the market, and 0 otherwise.

Secondly, to control for potential industry-level effects, we include the variables *number of competitors* and *market penetration* as both could affect the opportunities that firms have to benefit from a particular competitive strategy (Porter, 1980). The former counts the number of competitors per country in each period (Gomez et al., 2016). This is used as a measure of market rivalry. In the case of *market penetration*, it is measured as the total number of connections per market expressed as a percentage share of the total country

⁷ Shy (2002) uses revenue per subscriber as a proxy for prices in the cellular phone market.

⁸ Note that the competitive strategy of each firm is defined per country and quarter in relation to the competitive position of its rivals in the market. Consequently, our analysis only considers those country-quarter combinations for which we have complete information from all market players, so that we can use their information to classify their strategies. Similarly, in no case do we have observations corresponding to monopolistic countries. This reduces the number of observations available per country and explains why the observation window starts in 2003.

⁹ As mentioned above, the mobile telecommunication industry has experienced several technological changes. From its emergence with the transition from the first generation (1G) to the second generation (2G) during the last decade of the 20th, through the launch of the third generation (3G) that took place in the early 2000s, to the recent take-off of the fifth generation (5G). Prior studies have studied the transition from 2G to 3G (see Fuentelsaz et al., 2020; Gomez et al., 2016). However, we focus on the transition from 3G to 4G because it is the main disruption experienced in most European countries in our observation window. Accordingly, this disruption is the one considered to define the variable technological change in our study.

population (Fernández and Usero, 2009). This variable is included as a proxy of the degree of market maturity.

Thirdly, we include *country dummies* to control for contextual factors (such as political, economic or social conditions) that might influence the implementation and effectiveness of firms' competitive strategies. Finally, we define a set of *year dummies* and *quarter dummies* to assess any time-specific influences.

Descriptive statistics

Table 1 presents the descriptive analysis and correlations of the variables considered to measure the empirical model. Our final sample includes a total of 1,088 observations for the period covering from 2003 to the second quarter of 2017. Overall, Table 1 shows that the correlation among all the variables included in our model is moderate. Collinearity diagnostics reveal that none of the variance inflation factors exceeds the recommended threshold of 10 (Hair et al., 1995; Marquard, 1970), showing a mean VIF value of 1.26. This provides evidence that there are no multicollinearity concerns among the explanatory variables.

The descriptive analysis shows that firms have an average *EBITDA margin* of 0.266. Furthermore, we can observe that the *EBITDA margin* is negatively correlated with a late entry and a stuck-in-the-middle strategy, while positively correlated with the cost strategy variable. Regarding the industry dynamism variables, Table 1 shows an average *market growth* of 0.036. This result reflects a slower pace of market growth than shown in prior studies developed within the mobile telecommunications industry (see, for instance, Gomez et al., 2016). In the case of *technological change*, the mean of the variable is 0.294. This shows that, on average, the technological discontinuity considered has been experienced by almost a third of the sample.

Methodology

In this study, we use a dynamic panel-data system GMM (Arellano and Bond, 1991) that allows us to consider the dynamic nature of our data and potential endogeneity concerns. As Roodman (2009) states, this method is particularly suitable for the situations in which current observation of the variable of interest (firm performance) is conditioned by its own past realisations. The introduction of lags of the dependent variable reduces possible specification problems. Furthermore, this method relies on a set of internal instruments from the model, eliminating the need for searching instruments outside the model. Finally, the method allows to avoid heteroskedasticity and autocorrelation issues.

Results

Table 2 presents the results of estimating a system GMM model over our sample¹⁰. As can be seen in Table 2, the first column presents the baseline model, which considers the influence of the control variables. Column 2 includes the *follower* dummy to analyze order of entry effects on firm performance. In Column 3, the competitive strategies followed by firms are considered. Finally, Column 4 includes the interaction effect between the *follower* dummy and the competitive strategies defined to test our first hypothesis.

First of all, results in Column 2 shows that the coefficient of the variable *follower* is negative and significant ($\beta = -0.0704$; $p < 0.01$). This confirms that the order of market entry is a significant predictor of firm profitability and, particularly, that entering a market as a follower has a detrimental effect on profitability. In other words, it supports the evidence found in prior studies regarding the existence of FMAs in the mobile telecommunications industry (Bijwaard et al., 2008; Gómez and Maicas, 2011; Jakopin and Klein, 2012; Domínguez et al., 2021).

The entry order effect remains negative and significant in Column 3, where the variables capturing the competitive strategy are included. Being stuck-in-the middle offers firms lower profitability levels than a *differentiation-like strategy* ($\beta = -0.113$; $p < 0.01$). However, no differences are found for the comparison of differentiation and cost strategies ($\beta = 0.0162$; $p > 0.10$).

The effect of competitive strategy on followers' profitability

Column 4 incorporates the interactions between the order of entry and the defined competitive strategies. As can be seen, the interaction effect between the *follower* dummy and the *cost strategy* is positive and statistically significant ($\beta = 0.0693$; $p < 0.10$). This is in line with our expectations, as follower performance appears to be higher when followers pursue a cost leadership strategy than when they choose a differentiation strategy. The interaction of the *follower* dummy and the *stuck-in-the-middle strategy* presents a negative but non-significant coefficient ($\beta = -0.0517$; $p > 0.10$).

To facilitate the interpretation of the two-way interactions, we followed Mitchell (2021). First, we test the overall significance of the interactions between the two competitive strategies and the order of entry dummy. The results show that the interactions are statistically significant ($\text{Chi}2 = 4.73$; $p < 0.10$), thus confirming that the effect of the competitive strategy differs according to the order of entry into a market. Second, to gain a greater understanding of the nature of this interaction, we compute the average *EBITDA margin* as a function of the firms' order of entry and the competitive strategy followed. The results of this analysis are presented in Fig. 3.¹¹ Given that the focus of our analysis is on the most profitable strategy for follower firms, Fig. 3 shows the mean performance of follower

¹⁰ The command "xtabond2" is used in Stata to estimate the model (Roodman, 2009)

¹¹ We used the 'margins' command in Stata to calculate firm performance in the competitive scenarios considered and the 'marginsplot' command to graph the results.

Table 1
Descriptive analysis and correlations.

Variable	Obs.	Mean	Std. Dev.	Min	Max	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]
[1] EBITDA margin	1,088	0.266	0.258	-2.072	1.525	1.000										
[2] Follower	1,088	0.540	0.499	0	1	-0.292	1.000									
[3] Stuck-in-the middle strategy	1,088	0.134	0.341	0	1	-0.305	0.125	1.000								
[4] Cost strategy	1,088	0.381	0.486	0	1	0.111	0.119	-0.309	1.000							
[5] Market growth	1,088	0.036	0.045	0.001	0.278	0.010	-0.023	0.089	-0.068	1.000						
[6] Technological change	1,088	0.294	0.456	0	1	-0.081	0.016	-0.047	0.047	-0.301	1.000					
[7] Merger	1,088	0.128	0.334	0	1	-0.079	0.010	-0.005	0.142	-0.157	0.309	1.000				
[8] Part of a group	1,088	0.870	0.336	0	1	0.089	-0.153	0.015	0.004	-0.137	0.033	-0.066	1.000			
[9] Incumbent	1,088	0.286	0.452	0	1	0.224	-0.282	0.014	0.108	0.025	-0.033	-0.169	0.056	1.000		
[10] Number of competitors	1,088	3.440	0.666	2	5	-0.225	0.014	-0.159	0.016	-0.165	0.282	-0.001	-0.090	-0.095	1.000	
[11] Market penetration	1,088	1.220	0.240	0.402	1.858	0.058	-0.091	-0.068	0.069	-0.414	0.293	0.198	0.201	0.008	0.032	1.000

Table 2
The effect of order of entry and competitive strategy on profitability (System GMM).

	(1)	(2)	(3)	(4)
Follower		-0.0704*** (-2.95)	-0.0766*** (-2.93)	-0.0999*** (-2.94)
Cost strategy			0.0162 (0.92)	-0.0222 (-0.97)
Stuck-in-the-middle strategy			-0.113*** (-3.06)	-0.0806*** (-2.93)
Follower*Cost strategy				0.0693* (1.94)
Follower*Stuck-in-the-middle strategy				-0.0517 (-0.94)
Merger	-0.0252 (-0.92)	-0.0369 (-1.22)	-0.0542* (-1.69)	-0.0462 (-1.30)
Part of a group	0.0368** (2.10)	0.0158 (0.93)	0.0245 (0.98)	0.0304 (1.17)
Number of competitors	-0.0175 (-1.07)	-0.0165 (-0.95)	-0.0288 (-1.44)	-0.0289 (-1.31)
Market penetration	-0.114 (-1.28)	-0.108 (-1.13)	-0.142 (-1.25)	-0.170 (-1.39)
Incumbent	0.0490** (2.53)	0.0327** (2.01)	0.0370** (2.04)	0.0408** (2.21)
Lagged EBITDA margin	0.499*** (4.68)	0.465*** (4.31)	0.364*** (3.19)	0.324*** (2.73)
Country controls	Yes	Yes	Yes	Yes
Year controls	Yes	Yes	Yes	Yes
Quarter controls	Yes	Yes	Yes	Yes
Constant	0.343** (2.54)	0.409*** (2.71)	0.545*** (3.02)	0.578*** (3.00)
N	1,088	1,088	1,088	1,088
Wald chi2	26723.8***	31518.7***	28733.6***	58497.5***
AR (1)	-1.88*	-1.91*	-1.98**	-2.04**
AR (2)	1.22	1.23	1.29	1.34
Hansen Statistic	16.40	17.27	18.67	17.61

t statistics in parentheses * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

firms with different strategies. To test [Hypothesis 1](#), we use the contrast command in STATA to compare the predicted *EBITDA margin* of a differentiation-like and a cost strategy.

[Fig. 3](#) reveals that the suck-in-the-middle strategy offers followers the lowest profitability as their average *EBITDA margin* is 0.096 ($p > 0.10$). More importantly, the average *EBITDA margin* for a follower with a differentiation-like strategy is 0.228 ($p < 0.01$), while their average *EBITDA margin* with a cost strategy is 0.276 ($p < 0.01$).¹² The contrast of the differentiation with the cost leadership strategy confirms that there are significant differences in profitability in the case of follower firms ($p < 0.10$). Overall, the results of these analyses give support to [Hypothesis 1](#).

The effect of industry dynamism on the effectiveness of followers' competitive strategy

Once the fit between the order of entry and the competitive strategy has been analyzed, we test whether industry dynamism moderates this relationship. In particular, we analyze the performance of followers choosing a cost strategy when *market growth* and *technological change* are included in the model (Hypotheses 2 and 3).

[Table 3](#) presents the results of a System GMM regression in which the variables measuring industry dynamism have been included. Column 1 includes the effect of the two variables, *market growth* and *technological change*. Therefore, this model augments the full model presented in [Table 2](#) (Column 4) by adding the direct effects of *market growth* and *technological change*. Column 2 shows the results of testing [Hypothesis 2](#) by considering the effect of *market growth* and all its possible interactions with the order of entry and the competitive strategies. Finally, Column 3 tests [Hypothesis 3](#) by considering the effect of *technological change* and all its possible interactions with the order of entry and the competitive strategies.

[Hypothesis 2](#) states that the performance of the cost strategy used by a follower will be higher in contexts of greater market growth. The results presented in [Table 3](#) (Column 2) reveal that the three-way interaction term of the variable *market growth* with the *follower*

¹² Our figures do not show confidence intervals. The reason is that according to [Mitchell \(2021\)](#) they could lead the reader to misinterpretations. Sometimes, confidence intervals can be very overlapping and lead the reader to make inappropriate statistical inferences about comparisons between groups. Tests performed with the "contrast" command allow us to adequately assess whether there are significant differences between our groups of interest.

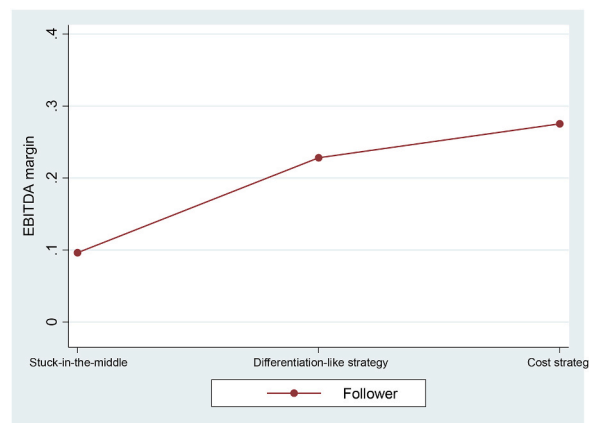


Fig. 3. Followers' profitability in the telecommunications sector by competitive strategy.

dummy and the *cost strategy* is positive but non-significant ($\beta = 1.747$; $p > 0.10$). This does not provide support for [Hypothesis 2](#).¹³

As we previously did with [Hypothesis 1](#), we applied the two steps described above to understand this result. First, the moderating effect of market growth shows an insignificant statistic when the three-way interactions are evaluated jointly ($\text{Chi}^2 = 2.26$; $p > 0.10$). Second, we computed the average *EBITDA margin* for followers pursuing a cost strategy, for high and low levels of market growth ([Mitchell, 2021](#)). This allows us to test the significance of the cost strategy slope as market growth changes. The result of this analysis shows that the slope of this line is not significantly different from zero (the value of the slope is -0.123 "; $p > 0.10$). This means that market growth does not moderate the relationship between a cost strategy and the performance of followers. Accordingly, the evidence does not support [Hypothesis 2](#).

Finally, [Hypothesis 3](#) affirms that the effectiveness of the cost strategy used by a follower will be lower in contexts of technological change than in contexts of no technological change. As can be observed in [Table 3](#) (Column 3), the three-way interaction term of the variable *technological change* with the *follower* and the *cost strategy* dummy presents a non-significant coefficient ($\beta = -0.0763$; $p > 0.10$).¹⁴ Similarly, the three-way interactions are non-significant when evaluated jointly ($\text{Chi}^2 = 1.87$; $p > 0.10$). As before, we computed the average *EBITDA margin* of followers implementing cost strategies, both in contexts of technological change and of no technological change. In this case, the slope of the cost strategy is not significantly different from zero either (the value of the slope is -0.057 "; $p > 0.10$). Accordingly, the evidence does not offer support to [Hypothesis 3](#). In other words, technological change does not moderate the relationship between a cost strategy and the performance of followers.

Further analyses

In this section we develop three additional analyses. First, we test whether industry dynamism increases the profitability differences of followers with a cost leadership strategy versus other competitive strategies. Second, we reproduce all the above analyses from the pioneer's point of view, to find out how the applied strategy and industry dynamics influence the advantages of the pioneers. Third, we compare the profitability of the follower with that of the pioneer in different situations defined by competitive strategies and industry dynamics.

Our description below mainly focuses on the two strategies that offer the best performance, namely, differentiation and costs. However, to provide a description of the performance of the operators as complete as possible, in the figures we also provide information on the profitability of being stuck-in-the-middle.

Industry dynamics and followers' performance with a cost vs a differentiation strategy

In [Section 5](#) we have seen how our predictions about the moderating role of industry dynamism on follower performance have not received empirical support when followers follow a cost strategy ([Hypotheses 2 and 3](#)). In that section, we looked at what happens to a follower who has chosen a cost strategy under different situations of market growth and technological change. In other words, what we did was to compare the cost follower with itself. In this subsection, we change the benchmark and test whether market growth and technological change moderate the profitability of a follower, but now comparing the cost strategy with the differentiation strategy.

To compare whether *market growth* increases the differences in the profitability of followers with a cost leadership strategy versus those with a differentiation strategy, we firstly evaluate the slope of the differentiation strategy as market growth changes. The results from this analysis show that the slope of this line is not significantly different from zero (the slope is -2.001 "; $p > 0.10$). Accordingly,

¹³ Similarly, the triple interaction involving the stuck-in-the-middle strategy is not significant.

¹⁴ Similarly, the triple interaction involving the stuck-in-the-middle strategy is not significant.

Table 3
Followers' competitive strategy and industry dynamism on profitability.

	(1)	(2)	(3)
Follower	-0.0999*** (-2.99)	-0.0379 (-1.16)	-0.0986** (-2.36)
Cost strategy	-0.0220 (-0.98)	-0.0303 (-1.16)	-0.0270 (-1.05)
Stuck-in-the-middle strategy	-0.0807*** (-2.93)	-0.0871*** (-2.82)	-0.0605** (-2.22)
Follower*Cost strategy	0.0697** (1.98)	0.0143 (0.36)	0.0922** (2.22)
Follower*Stuck-in-the-middle strategy	-0.0505 (-0.93)	-0.109 (-1.64)	-0.0653 (-1.05)
Market growth	-0.346 (-0.90)	-0.256 (-0.82)	-0.356 (-0.94)
Technological change	-0.0130 (-0.52)	-0.0125 (-0.52)	0.00814 (0.32)
Follower*Market growth		-1.745 (-1.50)	
Cost strategy*Market growth		0.131 (0.35)	
Stuck-in-the-middle strategy*Market growth		0.188 (0.37)	
Follower*Cost strategy*Market growth		1.747 (1.48)	
Follower*Stuck-in-the-middle strategy*Market growth		1.677 (1.29)	
Follower*Technological change			-0.00997 (-0.19)
Cost strategy*Technological change			0.0213 (0.55)
Stuck-in-the-middle strategy*Technological change			-0.0783 (-1.48)
Follower*Cost strategy*Technological change			-0.0763 (-1.25)
Follower*Stuck-in-the-middle strategy*Technological change			0.0572 (0.57)
Merger	-0.0461 (-1.30)	-0.0424 (-1.26)	-0.0477 (-1.35)
Part of a group	0.0302 (1.18)	0.0254 (0.93)	0.0319 (1.22)
Number of competitors	-0.0241 (-1.15)	-0.0227 (-1.21)	-0.0275 (-1.17)
Market penetration	-0.189 (-1.46)	-0.157 (-1.39)	-0.187 (-1.48)
Incumbent	0.0404** (2.22)	0.0493** (2.44)	0.0418** (2.33)
Lagged EBITDA margin	0.328*** (2.90)	0.333*** (2.90)	0.326*** (3.03)
Country controls	Yes	Yes	Yes
Year controls	Yes	Yes	Yes
Quarter controls	Yes	Yes	Yes
Constant	0.626*** (2.88)	0.569*** (3.07)	0.648*** (2.89)
N	1,088	1,088	1,088
Wald chi2	58154.6***	66044.6***	2968379.8***
AR (1)	-2.00**	-1.99**	-2.01**
AR (2)	1.32	1.32	1.35
Hansen Statistic	16.91	18.39	16.50

t statistics in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

as in the case of the cost strategy, market growth does not moderate the performance of followers choosing a differentiation strategy either.

We may also be interested in assessing whether there is a difference between cost and differentiation strategies at high and low levels of market growth. To facilitate the interpretation of the results, we should take a look at Fig. 4 which shows the average EBITDA margin for followers pursuing different competitive strategies, for high and low levels of market growth. To represent Fig. 4, the values for market growth were set as one standard deviation below and above the mean (Aiken and West, 1991).

To test this, we performed two comparative analyses using the values at the left and right ends of Lines 1 and 2 in Fig. 4. The results of these analyses confirm that, when market growth takes a low value (mean -1 s.d.), there is no significant difference in the

performance of followers with a cost leadership or differentiation strategy ($p > 0.10$). However, in a context of high market growth (mean + 1 s.d.), the performance of followers using a cost strategy is significantly larger ($p < 0.10$) than the performance with a differentiation strategy (by 0.136 units). As Fig. 4 illustrates, the reason is not so much the better performance offered by the cost strategy in high-growth situations as the worsening of the performance offered by the differentiation strategy. This evidence is in line with the idea that the cost strategy is more profitable for followers in contexts of high market growth.

We replicate these analyses to test whether there is any performance difference between a cost and a differentiation strategy when considering technological dynamism. As confirmed above (Section 5), technological change does not moderate followers' profitability when using a cost leadership strategy. Similarly, the slope analysis confirms that technological change does not moderate the performance of followers choosing a differentiation strategy (the slope is "-0.002"; $p > 0.10$). As we have done with market growth, we also test whether there are performance differences between the cost and the differentiation strategy for followers in each of the two situations of technological change considered. To that aim, Fig. 5 represents the average EBITDA margin for followers pursuing different competitive strategies in different contexts of technological change.

In contexts of no technological change, the profitability of followers who use a cost strategy is higher (by 0.065 units) than the profitability of followers using a differentiation strategy ($p < 0.10$). However, when technological change exists, cost leadership does not provide followers with greater performance than a differentiation strategy ($p > 0.10$). This is consistent with the idea that the cost strategy is more effective for followers in contexts of no technological change than in contexts where technological disruption has occurred.

Competitive strategy, industry dynamics and pioneers' performance

So far, our focus has been on followers, but our results also allow us to test the effects of competitive strategy and industry dynamics on pioneers. Figs. 6–8 show the profitability of the pioneers in each of the cases analyzed. Fig. 6 provides evidence on which strategy provides the best performance for pioneers, regardless of industry dynamics. Figs. 7 and 8 incorporate the moderating effect of market growth and technological change on the performance of the pioneers' competitive strategies, respectively.

Fig. 6 reveals that the average EBITDA margin of pioneers competing with a differentiation strategy is 0.328 ($p < 0.01$). Fig. 6 also shows that pioneers choosing a cost leadership strategy have an average EBITDA margin of 0.306 ($p < 0.01$).¹⁵ The comparison of the pioneers' profitability with a cost and a differentiation strategy reveals that the differences are not significant ($p > 0.10$). Therefore, unlike followers, for pioneers the competitive strategy (costs or differentiation) does not seem to be relevant when it comes to understanding their profitability.

To evaluate the moderating effect of market growth on the three competitive strategies that pioneers can follow, we should look at Fig. 7. The slope of Line 1, which represents the performance of pioneers with a cost strategy, is not significant (the slope is "-0.124"; $p > 0.10$). Similarly, the slope of Line 2, representing the performance of pioneers with a differentiation strategy is not significant (the slope is "-0.256"; $p > 0.10$). This confirms that market growth does not moderate the relationship between competitive strategies and performance, in the case of pioneers. We also compared the cost vs the differentiation strategy (Line 1 vs Line 2) to test whether there were performance differences between pioneers using either strategy when market growth takes a low (mean - 1 s.d.) and a high value (mean + 1 s.d.). We found no significant differences when comparing both strategies in contexts of high ($p > 0.10$) and of low market growth ($p > 0.10$).

Finally, we tested for the moderating effect of technological change for pioneers (Fig. 8). The slope of Line 1, representing the performance of a pioneer with a cost leadership strategy, is not significantly different from zero (the slope is "0.029"; $p > 0.10$). The slope of Line 2, showing the performance of a pioneer with a differentiation strategy, is not significant (the slope is "0.008"; $p > 0.10$). The comparison between Lines 1 and 2 shows that the performance differences between a cost and a differentiation strategy are not significant neither in contexts of technological change ($p > 0.10$), nor in contexts of no technological change ($p > 0.10$).

Therefore, the conclusion is that market growth and technological change are not moderators of the relationship between competitive strategies and pioneer profitability.

How to beat early movers: a comparison of pioneers vs. followers

In this last analysis, we compare the profitability of the follower with that of the pioneer in different situations defined by the competitive strategies followed and the dynamics of the industry. As previously done, we first present the results showing the effect of order of entry and competitive strategies on firm performance (Fig. 9). We then incorporate the effect of market growth and technological change in Figs. 10 and 11, respectively. Since our study focuses on follower firms, we mainly pay attention to scenarios in which followers reduce the performance advantages gained by pioneers.

First, Fig. 9 compares the differences in profitability between pioneers and followers. As a general assessment, we can observe that followers do not outperform pioneers in any case, regardless of the strategy applied. The smallest differences arise when followers choose a cost leadership strategy. More importantly, only when both entrants compete on costs, followers are able to reduce the advantages of the former, since in this case we find no significant differences in profitability levels between pioneers and followers ($p > 0.10$). This is consistent with the idea that followers can reduce the performance advantage of pioneers to a greater extent with a cost

¹⁵ The stuck-in-the-middle strategy offers pioneers the lowest profitability, as their EBITDA margin is 0.248 ($p < 0.01$).

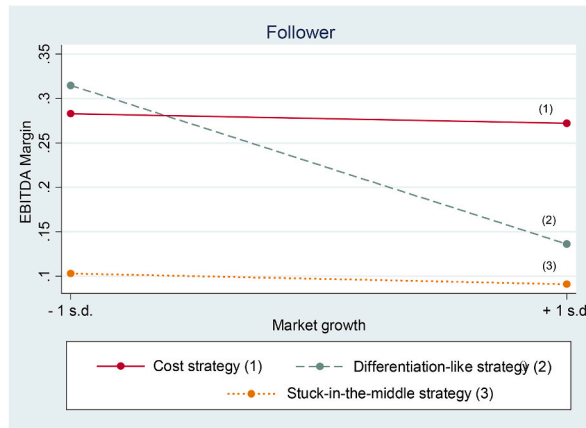


Fig. 4. The effect of market growth on followers' profitability (strategies comparison).

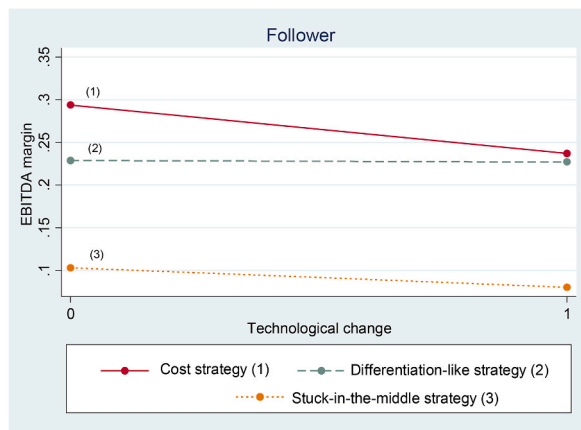


Fig. 5. The effect of technological change on followers' profitability (strategies comparison).

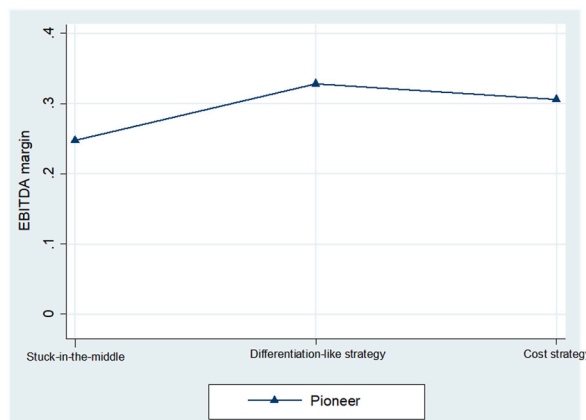


Fig. 6. Pioneers' profitability in the telecommunications sector by competitive strategy.

strategy. However, in cases where pioneers implement a differentiation strategy, they obtain a higher average *EBITDA margin*, regardless of the strategy chosen by followers. The performance of pioneers with a differentiation strategy is significantly larger ($p < 0.05$) than the performance of followers pursuing a cost strategy (by 0.053 units). Similarly, the performance of pioneers with a differentiation strategy is higher (by 0.100 units) than that of followers with a differentiation strategy ($p < 0.01$).

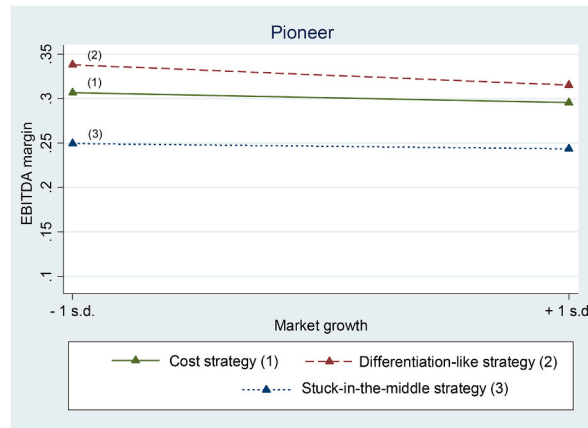


Fig. 7. The effect of market growth on pioneers' profitability (strategies comparison).

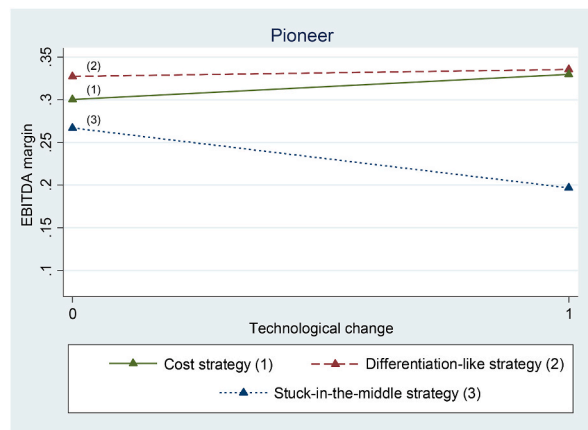


Fig. 8. The effect of technological change on pioneers' profitability (strategies comparison).

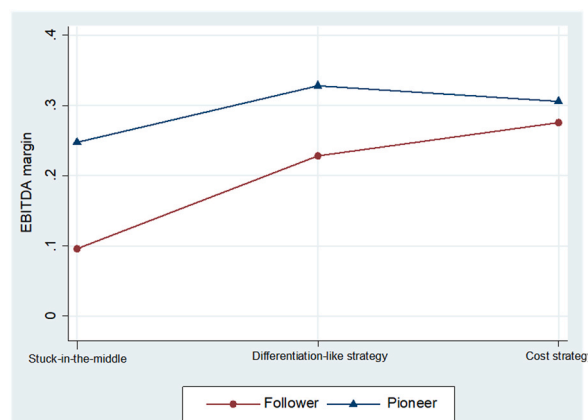


Fig. 9. Profitability of pioneers and followers by competitive strategy.

To evaluate the impact of market growth, we should look at Fig. 10, which shows the average EBITDA margin for pioneers and followers with different strategies and in different situations of market growth. In particular, we should focus on the left and right side of Fig. 10, as we are interested in the differences in pioneers' and followers' profitability competing with different strategies in contexts of low (mean -1 s.d.) and high market growth (mean +1 s.d.). In a context of low market growth, there are significant differences in

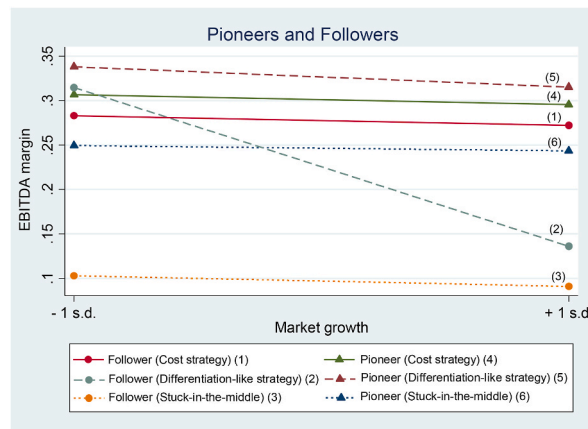


Fig. 10. The effect of market growth on the order of entry-performance relationship.

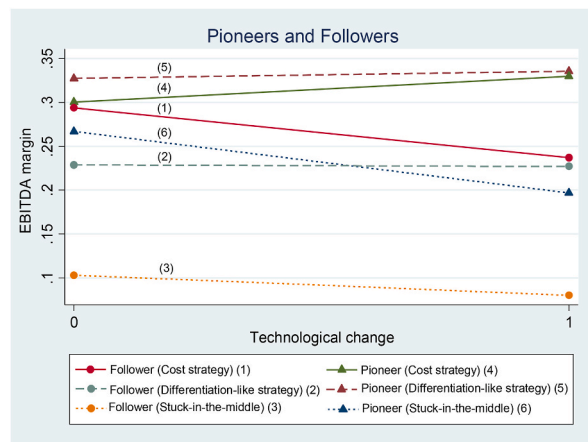


Fig. 11. The effect of technological change on the order of entry-performance relationship.

profitability between pioneers using a differentiation strategy (Line 5) and followers with a cost leadership strategy (Line 1) ($p < 0.05$), with the profitability of pioneers being higher (by 0.055 units).

These differences are no longer significant in a context of high market growth ($p > 0.10$). However, as shown in Fig. 10, the reason has less to do with the better results offered by the cost strategy for follower firms in high growth markets (Line 1, in Fig. 10) than with the worsening of the results offered by the differentiation strategy for pioneers (Line 5, in Fig. 10). When both entrants compete on a cost leadership basis (Lines 1 and 4), no differences in profitability are found between them neither in contexts of low market growth ($p > 0.10$) nor in contexts of high market growth ($p > 0.10$). Evidence from Fig. 10 reveals that cost leadership is the only strategy that allows followers to reduce the performance advantages obtained by first-movers when market growth occurs.

To evaluate the impact of technological change, we should look at Fig. 11, which shows the average EBITDA margin for pioneers and followers with different strategies and in different situations of technological change. From the data plotted in Fig. 11, we can conclude that there are no significant performance differences between pioneers and followers when both compete with a cost strategy (Line 4 vs Line 1) ($p > 0.10$) and there is no technological change. However, these differences become significant ($p < 0.05$) in contexts where a disruption occurred, increasing the pioneer advantage (by 0.093 units). Pioneers implementing a differentiation strategy in contexts of no technological change (Line 5) show a higher performance (by 0.033 units) than followers with a cost strategy (Line 1) ($p < 0.10$). Similarly, in contexts of no technological change, the performance of pioneers is significantly larger (by 0.099 units) than that of followers when both compete on differentiation (Line 5 vs Line 2) ($p < 0.05$). These differences increase when technological change takes place. Overall, Fig. 11 shows that followers are never able to catch up with pioneers when technological change occurs, regardless of the strategy implemented.

Conclusion and discussion

Our study advances research on the entry timing literature by adopting a contingency approach (Markman et al., 2019; Zachary et al., 2015). We focus on followers to explore the role of competitive strategy and industry dynamism in the traditional order of

entry-performance relationship. Firstly, we theorize in favor of an optimal fit between order of entry and competitive strategy. Specifically, we propose that cost leadership will be the most profitable strategy for followers. Secondly, we incorporate the contingent effect that industry dynamism could exert on the performance of the competitive strategy chosen by followers. We contend that the performance of the cost strategy will be higher in contexts of greater market growth, whereas cost leadership will be less effective in contexts of technological change. The empirical results obtained offer interesting insights that can be summarized in three main conclusions.

Firstly, it seems clear that entering late into a market leads firms to obtain inferior performance. Followers are consistently worse off than pioneers. In fact, our results reveal that the order of entry is the most important determinant of followers' performance, vis a vis competitive strategy and industry dynamics. This reinforces the evidence found in prior papers on the existence of first-mover advantages in the mobile telecommunications industry.

Second, our study reveals the way late movers should compete to perform better. Consistent with our arguments, cost leadership is confirmed to be the most suitable strategy for follower firms. The cost strategy leads followers to obtain the highest profitability levels and is the one that allows them to reduce the performance differences with pioneers to a higher extent.

Third, our prediction on the contingent effect of the industry dynamism finds weak empirical support. We may conclude that, in general, none of the two industry dynamics (i.e., market growth and technological change) moderate the relationship between a cost strategy and performance for followers. Only in cases where followers are in high market growth situations or where there is no technological change, there are significant differences in profitability between the cost strategy and the differentiation strategy. This gives some support to our hypotheses, as the effectiveness of the cost strategy is shown to be greater in a context of high market growth and lower in contexts of technological change.

Finally, although not the focus of our analysis, we can also draw interesting insights from the pioneer perspective. Our findings suggest that the competitive strategy chosen matters to a lower extent for pioneers than for followers. Although the differentiation strategy offers pioneers a better position when compared with followers, the competitive strategy chosen by pioneers shows no relevance in explaining the performance differences among them. In a nutshell, the effect of order of entry prevails over that of the strategy. Industry dynamism does not affect either the effectiveness of pioneers' competitive strategies.

Overall, these conclusions have both theoretical and managerial implications.

From a theoretical point of view, our paper makes progress on entry-timing research by delving into the factors that explain a successful market entry. In particular, our study goes beyond the stand-alone effect of the order of entry by adopting a contingency perspective (Markman et al., 2019; Zachary et al., 2015) that integrates both micro (i.e., competitive strategies) and macro (i.e., industry dynamism) dimensions. This improves current knowledge on the entry-timing phenomenon through the exploration of its boundary conditions (Makadok et al., 2018).

In the micro side, we argue for an optimal fit between competitive strategies and the order of entry. By doing so, we address recent demands on the need to explicitly consider the strategy followed by firms when explaining each cohort of entrants' performance advantages (Markides and Sosa, 2013). Moreover, we move beyond the pioneer focus and address how followers perform in the different competitive situations defined by the contingencies considered. The evidence obtained shows that the role of the competitive strategies in explaining profitability varies between pioneers and followers. While strategies are of little importance in the case of pioneers, cost strategy is the most suitable strategy for followers. This contributes to the emerging line of research aimed at investigating how follower firms can penetrate the market successfully and enjoy advantages over their rivals (Dykes and Kolev, 2018; Fosfuri et al., 2013; Yao et al., 2020).

In the macro side, our analysis incorporates the contingent effect of industry dynamics to study the effectiveness of followers' strategies. Addressing this research question is important because performance is conceived as a joint function of firms' order of entry and competitive strategies, which differ depending on industry dynamics (De Castro & Chrisman, 1995). The results contribute to advancing research on the most suitable competitive orientation for successful follower firms (De Castro & Chrisman, 1995; Durand and Coeurderoy, 2001; Shamsie et al., 2004) while complementing our understanding on the effect of industry dynamics on first-mover advantages (Asimakopoulos and Whalley, 2017; Gomez et al., 2016; Suarez and Lanzolla, 2007).

Regarding managerial practice, our study has several implications for market entry decisions. First of all, managers must take into account the relevance of entering first, as it has been broadly confirmed to confer firms' substantial performance advantages over their rivals. Second, managers have to keep in mind the relevance of choosing the right competitive strategy to successfully compete, particularly if entering the market late. While first-movers generally show good results regardless of the competitive strategy chosen, it seems clear that later entrants must implement a cost leadership strategy to benefit from a successful entry.

Finally, managers should also consider that the influence of market growth and technological change may be different depending on how these two dimensions manifest themselves. For example, Gomez et al. (2016) show that the switch from the second to the third generation harms the advantages of the pioneers. However, the results that we present in this document and that consider the change from the third to the fourth generation do not support that thesis. This could be explained by the nature of the generational technological change considered in our study which, being more incremental, could change the basis of competition to a lesser extent.

Limitations. This study is subject to some limitations which, in turn, point to new avenues to be considered in future studies. The first has to do with the research setting in which the study is based. It is convenient to note that the telecommunications industry has certain specificities that differentiate it from other industries and could shape our empirical analysis.

On the one hand, recent entry-timing research encourages scholars to go beyond the traditional dichotomy of pioneer vs. follower (Zachary et al., 2015). However, the telecom sector presents some peculiarities that might condition, to a certain extent, the definition of our order of entry variable. Specifically, this industry has traditionally exhibited regulated market access, which prevents free entry and restricts competition to a few firms in each country. As can be observed from the descriptive analysis, the average number of firms

per market is around 3 in our setting. This implies that the development of a more detailed categorization of entrants could make less sense in this context than in other industries.

On the other hand, the telecom industry has been characterized by a high level of dynamism since the emergence of mobile services. However, it is important to take into account that our study is performed in more advanced stages of market development. As a result, our setting is characterized by a slower pace of market growth and a different technological change than in previous studies (Gómez et al., 2016). It might be convenient, therefore, to replicate the empirical analyses in initial stages of this market development as well as across different research settings to know whether similar results are obtained.

Secondly, our study is based on prior entry timing research that conceptualizes industry dynamism in terms of market growth and technological change (Suarez and Lanzolla, 2007). It would be interesting to delve into the understanding of other environmental-level factors that may condition firms' competitive behavior and performance. Further studies could, for instance, analyze how the degree of development of formal and informal institutions (North, 1990) enables or disables the isolating mechanisms from which first-movers benefit (Fosfuri et al., 2013).

The last limitation has to do with the lack of reliable data to identify the strategy of a broader set of participants in the mobile telephony industry. For example, it would be interesting to explore the impact that the strategies of mobile virtual network operators (MVNOs) or some digital platforms might exert on competition. Although research on the industry tends not to consider MNVOs and there are sometimes difficulties in separating their activity from that of MNOs, it is to be expected that their importance will grow over time.

Author statement

All authors contributed equally to the development of the article and participated in the writing of all sections. The order of the signatures is alphabetical.

Declaration of competing interest

None.

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