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Strategic operational response to newcomers: A longitudinal analysis

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ABSTRACT

When a new competitor enters a market, incumbents are faced with a crucial decision on how to respond. While prior studies have shown incumbents' marketing mix adjustments, such as pricing, in response to new entrants, there has been little research on how they adjust operationally. Accordingly, this study empirically investigates how incumbents operationally respond to new entrants. A large panel data from the US airline industry consisting of 12 airlines with 16,602 quarterly route-level observations over 14 years is analyzed to investigate the strategic adjustments of incumbents' operational priorities in response to new rivals. The findings suggest that incumbents become more operationally focused in response to newcomers. Additionally, we find that business strategy, market competition, and market dominance impact incumbents' operational responses to an entry. The study offers valuable insights for operations managers and policymakers of companies operating in competitive environments.

1. Introduction

The entry of new rivals into a market often disrupts the existing dynamic and urges incumbent firms to rethink their strategies. This is a common occurrence across many different industries. For example, Starbucks made a splash when it entered the Chinese coffee shop market, while Southwest and Delta expanded their routes in the airline industry. Red Bull also caused a stir when it entered the U.S. beverage market. Such new entrants typically strive to gain a foothold by offering higher quality products or services at lower costs (Aghaie et al., 2022), escalating the competitive intensity in the market. This increased competition can adversely impact demand and disrupt the operations of existing firms (Chen et al., 2020; Luoma et al., 2018). In response, incumbents often devise various competitive reactions to defend their market position (e.g., Basdeo et al., 2006; Hauser and Shugan, 2008; Homburg et al., 2013; Macário and Van de Voorde, 2022). Prior studies have extensively investigated how incumbents adjust their marketing strategy (e.g., price, product, and promotion strategies) to defend their market. However, given the operationally disruptive impacts of the rivals' entry, incumbents need to implement operational strategy adjustments in response to new market entrants. Surprisingly, to the best of our knowledge, incumbents' operational response to new entrants has not been fully explored yet. This is of paramount importance as the efforts that are made behind the scenes on the operational side can significantly impact firms' competitive position (Boyer and Lewis, 2002; Lin and Wu, 2014; Peng et al., 2008; Roth and Van Der Velde, 1991).

In the operational context, to achieve a competitive advantage, firms strategically allocate their resources across various operational priorities, including quality, cost, flexibility, and delivery (Boyer and Lewis, 2002; Ward et al., 1998; Rosenzweig and Roth, 2004). Similarly, we argue that, to remain competitive, incumbents strategically configure their operational priorities in response to an entry. Drawing on the conceptual framework established by Ward et al. (1998), we define operational responses to entry as the strategic configuration of the four main operational priorities —cost, quality, delivery, and flexibility. Ward et al. (1998) established the foundational idea that operational strategy involves managing trade-offs among these operational priorities, categorizing strategic configurations broadly into either a focused or a broad approach (Ketokivi and Jokinen, 2006; Parast and Oke, 2022). A focused response entails emphasizing a single operational priority (e.g., Boyer and Lewis, 2002; Skinner, 1974), whereas a broad approach involves balancing resources across multiple operational

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priorities simultaneously (e.g., Ferdows and De Meyer, 1990; Flynn and Flynn, 2004).

Therefore, we specifically investigate focused vs. broad incumbents' operational response when faced with new market entrants. Further, as the strategic orientation of a firm can significantly shape its operations strategy (Dohale et al., 2022; Joshi et al., 2003; Skinner, 1969), we extend our analysis to examine the influence of business strategy on incumbents' operational response following a new market entry. Finally, the market's competitive dynamics significantly influence the strategic decisions companies make regarding their operations, shaping how they adapt and compete (Corbett, 2008; Ward & Duray, 2000). Thus, we also investigate the role of market competition and incumbents' market dominance in their operational response to an entry.

To address our research questions, in line with prior studies on competitive dynamics at a market level, we conducted an empirical analysis using a market-level dataset from the U.S. airline industry (e.g., Ethiraj and Zhou, 2019; Prince and Simon, 2015). This dataset is suitable for our study since markets can be identified as routes between two airports, where market entry into a certain route could be recognized when a new airline starts operating flights on that route (Dixit and Chintagunta, 2007; Gerardi and Shapiro, 2009).

Our results indicate that in response to entrants, incumbents become operationally focused. Additionally, we show that focused business strategy, market competition, and market dominance influence the strength of incumbents' focused operational response to newcomers. The likelihood of using a focused operational response is higher when incumbents have a focused business strategy. Also, in highly competitive markets, incumbents adopt a broader operational response, whereas incumbents with less market dominance become more operationally focused.

By examining the operational responses to market entry, this study contributes to the operations management literature (e.g., Elango, 2005; Friedrich et al., 2022; Roth and Van Der Velde, 1991; Swink and Song, 2007). Previous research has mainly focused on studying single variable reactions (e.g., pricing, advertising, or capacity) to an entry. However, this study analyses entry reactions in a bundle of operational dimensions. Our study is aligned with the notion of the focused factory and applies the resource-based view (RBV) in a market dynamics context (Srivastava et al., 2001), where we articulate how firms maintain strategic flexibility by using their resources and capabilities, allowing them to adapt their operational strategy considering market competitive dynamics when challenged by new entrants (Johnson et al., 2003; Markman and Waldron, 2014). We demonstrate how firms align their operational responses at the market level with their overarching business strategies. This alignment reflects classical strategic management insights, which emphasize that functional strategies, such as operations, should be shaped by the broader strategic posture of the firm (Anand and Ward, 2004; Hayes and Wheelwright, 1984). By examining this relationship in the context of market entry, we extend the strategic alignment literature and connect it with the stream of research on competitive dynamics. We also shed light on the distinctive operational response incumbents implement when facing a new competitor and highlight the importance of considering business strategy, market competition, and market dominance (Srivastava et al., 2001). Building upon the focused factory literature, we show that incumbents utilize a more focused operational response to new entrants (Skinner, 1974; Skinner, 1996). The RBV provides us with a sound theoretical lens to address how a firm's business strategy and market competitive dynamics can shape the incumbent's operational strategy at the market level (Barney, 1991; Eggers and Park, 2018). Therefore, this study further expands the application of RBV by demonstrating how business strategy, market competition, and market dominance impact firm response in times of disruption.

In light of our findings, we offer insights and managerial recommendations applicable when new competitors enter the market. Our results indicate that incumbents will adopt a focused response by enhancing one operational priority, particularly cost efficiency. We advise incumbent and entrant managers to consider this response. With incumbent firms focusing on cost efficiencies, new entrants will have little choice but to be prepared to compete on cost as well. This will trigger a price war, which will erode the other operational priorities. However, factors such as the incumbents' business strategy, market dominance, and the level of market competition can influence the incumbents' operational response to new entrants. Therefore, managers of entrant firms should consider these factors before entering a new market to enhance their chances of survival and success. Finally, the competitive landscape for airlines is changing. There is anecdotal evidence that consumers are shifting their purchasing behavior and are willing to pay more for a premium experience (Weed, 2023). This has led to an influx of new airlines that focus on the premium experience (Gunther, 2023; Steinberg, 2020). As such, we recommend that incumbent managers focus on improving aspects other than cost, such as the quality and flexibility of their flights.

This study also has important implications for policymakers. They can design regulations and policies that encourage competition and improvements on diverse set of operational performance dimensions. Traditionally, policymakers have concentrated on observing price reductions in response to new market entrants. However, our findings suggest that the price reduction is merely one aspect of a larger 'operations strategy'. While incumbents focus on cost-cutting, they often sacrifice other key elements such as quality, delivery, and flexibility. This means they may inadvertently harm consumer welfare. Therefore, it is crucial for policymakers to adopt a macro-level lens to observe and address any anti-competitive behaviors of firms responding to new entrants in the market. By doing so, policymakers can ensure that consumers benefit from a more dynamic and competitive market environment, where firms are incentivized to improve their services and compete on a diverse range of operational priorities.

2. Literature Review

Market entries profoundly impact a market's structure, often resulting in incumbents needing to react swiftly and sometimes aggressively to defend their competitive position (e.g., Chang and Sokol, 2022; Goolsbee and Syverson, 2008). Considering that four failures occur for each successful entry (Horn et al., 2005), one stream of literature focuses on the entrants and examines the antecedents of successful entries (e.g., Gomez et al., 2021; Luoma et al., 2018; Zachary et al., 2015; Spann et al., 2015; Suarez and Lanzolla, 2007). Research in this area often relies on the First Mover's Advantage Theory and contingencies for successful entry.

In a conceptual piece, Suarez and Lanzolla (2007) argue for the consideration of the pace of technology and market evolution for first movers. Additionally, Zachary et al. (2015) conduct a *meta*-analysis on entry-timing manuscripts and establish a framework that provides a "foundational understanding of the conditions, methods, implications, and strategies of entry timing" (p. 1). In an empirical piece, Gomez et al. (2021) find that pioneers offer higher quality service and demand higher prices as compared to followers. However, this advantage diminishes over time. Spann et al. (2015) examine pricing strategies in the digital camera industry. Using dynamic pricing theory, they find that new product launches follow a market pricing strategy as opposed to a differentiation or skimming price strategy. Luoma et al. (2018) focus on potential strategies for entrants to mitigate strong incumbent responses. In particular, in an experimental setting, they show that entrants can avert strong retaliatory incumbent responses by fostering perceptions of high aggressiveness or low commitment to the market.

While the entrant's success depends on various strategic factors, a competitor's entry dramatically alters the dynamics of the market (Doherty and Delener, 2001) and prompts incumbents to modify their strategies to maintain their profits and market share (Borkovsky et al., 2012). Research in this domain has examined both the ways incumbents

deter entry (e.g., Aghaie et al., 2023; Uzunca and Cassiman, 2023; Cookson 2018; Wang et al., 2016) and respond to new market entrants (e.g., Chang and Sokol, 2020; Prince and Simon, 2015; Goolsbee and Syverson, 2008).

Studies on entry deterrence have examined a broad range of strategic actions incumbents can use to discourage potential entrants, including improvements to quality (Aghaie et al., 2022), increases in capacity (Cookson, 2018), strategic investments (Uzunca and Cassiman, 2023), and patent allocation (Conti et al., 2022). In an empirical setting examining the U.S. Airline Industry, Aghaie et al. (2023) show that improvements in quality can delay entrants into the market. Interestingly, they find that reducing prices can expedite a potential entrant into the market. Cookson (2018) investigates the American Casino Industry and finds that casinos can deter rival casinos from entering the market by increasing their capacity. Uzunca and Cassiman (2023) introduce a new deterring mechanism in which they call entry diversion. Using evidence from the semiconductor industry, they show that when incumbents expand capacity beyond demand growth, they can effectively divert entrants into other submarkets. Lastly, in the pharmaceutical industry, Conti et al. (2022) demonstrate that incumbents can delay generic drug entry through strategic patent additions to FDA-approved drug applications, particularly when litigation is involved.

Previous literature on incumbents' responses to new market entrants has primarily focused on pricing adjustments and changes to the marketing mix. In the context of the airline industry, researchers have shown that incumbent airlines cut fares in response to the entrance of low-cost carriers (Alderighi, 2012), both the threat and actual entry of AirTran (Aydemir, 2012), and the entry of Southwest (Goolsbee and Syverson, 2008). Incumbents in other industries also respond through price reductions, including the magazine industry (Simon, 2005), newspaper industry (Seamans and Zhu, 2014), hospitality industry (Chang and Sokol, 2022), and the pharmaceutical industry (Ellison and Ellison, 2011). Scholars have also investigated incumbents changing other aspects of the marketing mix, including product offerings (Bourreau et al., 2018; Seamans and Zhu 2014), distribution changes (Park et al., 2021; Hauser and Shugan, 2008), and promotional activities (Hauser and Shugan, 2008; Ellison and Ellison, 2011).

The studies thus far have predominantly concentrated on market and financial strategies with less emphasis on operational priorities, namely cost, quality, flexibility, and delivery. A handful of studies have examined these priorities individually. For example, in the context of Taiwan's hospitality industry, Chang and Sokol (2022)investigate Airbnb's entrance on incumbent hotels. They find that high-quality hotels respond by improving their product quality and service offerings. Similarly, Prince and Simon (2015)demonstrate that incumbent airlines lower their quality in response to Southwest's entry. However, operational dimensions are often interdependent, with prior scholars identifying two main approaches in configuring operational priorities: a focused approach, where firms enhance a single operational priority, and a broad approach, where firms attempt to balance multiple priorities simultaneously (Boyer and Lewis, 2002).

As such, our study aims to contribute to the literature and improve our understanding of how entrants impact the strategic positioning of incumbents in terms of their operational priorities. Specifically, we examine whether firms respond to new competition by reinforcing a focused operational approach (e.g., emphasizing cost or quality) or by broadening their priorities to compete on multiple dimensions. By exploring these strategic responses, we contribute to the literature by providing a more comprehensive analysis of how firms navigate trade-offs between cost, quality, flexibility, and delivery in response to new competitors. Additionally, we provide a nuanced understanding of how incumbents' business strategy, market competition, and market dominance shape these responses. Table 1 provides a summary of the literature and our unique contributions to it.

Table 1
Review of literature on competitive response to market entry.

Study	Context	Key Findings
Shankar, 1997	Price-Inelastic Industries	Analytical findings identify conditions under which incumbents should accommodate, or retaliate, or not react to a late mover's entry.
Simon, 2005	Magazine Subscription	Incumbents in the magazine industry respond to new entrants based on three factors: incumbent age, corporate scope, and market concentration. Newer incumbents, multi-market incumbents, and incumbents in concentrated markets are more likely to aggressively respond to new entrants.
Goolsbee and Syverson (2008)	U.S. domestic airline industry	Incumbents cut fares in response to Southwest Airlines' entry, but no support for capacity expansion response.
Hauser and Shugan (2008)	N/A	Incumbents who want to maximize profit should decrease awareness advertising and distribution budget. While overall profits decrease—if consumer tastes are uniformly distributed—a price decrease increases defensive profits.
Mccann and Vroom (2010)	Hotel industry	Instead of viewing entry as a threat, incumbent firms can benefit from agglomeration effects.
Alderighi (2012)	European passenger aviation industry	Full-service airlines reduce business and leisure fares when low-cost carriers enter the market.
Aydemir (2012)	U.S. domestic airline industry	The incumbent legacy and low-cost carriers reduced their prices in response to both the threat and actual entry of AirTran airline.
Ellison and Ellison (2011)	Pharmaceutical industry	Pharmaceutical companies respond to entry through price changes, advertising expenditures, and product mix.
Goetz and Shapiro (2012)	U.S. domestic airline industry	Incumbents with higher market share are more likely to opt for codeshare with their partners in response to a competitor's threat.
Seamans and Zhu (2014)	U.S. newspaper industry	Newspapers adjusted their business model in response to Craigslist, resulting in lower classified-ad rates, higher subscription prices, decreased circulation, more differentiation, and lower display-ad rates.
Prince and Simon (2015)	U.S. domestic airline industry	Results suggest that airlines lower their quality in response to Southwest's entry or threat of entry, in order to reduce costs.
Wang et al. (2016)	N/A	Conditions under which an incapacitated incumbent will block, deter, or accommodate a capacitated entrant. Depending on the capacity constraint, incumbents either do nothing, reduce prices, or allow entry. In branding models, incumbents should invest in improving consumer preference's while also increasing its prices.
Guo, Yu, and Gimeno (2017)	U.S. domestic airline industry	In response to entry, incumbents use ambiguous language in their corporate communications to conceal their strategies and actions.
Bourreau et al. (2018)	French mobile telecommunication industry	Estimates indicate that a new entry in the mobile telecommunications market made incumbents to introduce fighting brands in response.
Cookson (2018)	American casino industry	In response to the threat of entrants, incumbents increase their capacity to

(*continued on next page*)

Table 1 (*continued*)

Study	Context	Key Findings
		deter rivals from entering the market.
Parise (2018)	U.S. domestic airline industry	Incumbents tend to increase the maturity of their debt when they perceive a threat of competition. Also, airlines are willing to trade the benefits of short-term financing for lower rollover risk when faced with entry threats.
Du et al. (2019)	N/A	Incumbent and entrant biasness in overestimating or underestimating each other's ability can hurt their own performance.
Ethiraj and Zhou (2019)	U.S. domestic airline industry	Incumbents react to the threat of entry by expanding their capacity. Also, firms' strategic orientation and market characteristics moderate the intensity of this reaction.
Pan et al., (2019)	U.S. IT industry	Incumbents lower R&D expenditures in response to the threat of entry. Also, network effects and technological cumulativeness will moderate this link.
Tomy (2019)	U.S. banking industry	Community banks use accounting discretion to deter entry by raising loan loss provisions and appearing less profitable after the threat of entry.
Wen and Zhu (2019)	Mobile app industry	Platform owners may adjust their strategies to respond to market entry by reducing innovation and increasing app development prices.
Chang and Sokol (2022)	Taiwan Hotel industry	Airbnb entry results in low-quality hotels competing on price and high-quality hotels competing on differentiation
Husairi et al. (2021)	Consumer Electronics	Early entry and wider product line breadth lead to greater survival in product category.
Park et al. (2021)	U.S. newspaper industry	When new platforms enter a multi-sided market, incumbents should consider how customers vary in their tendencies towards using multiple platforms or sticking to one.
Wilson et al. (2021)	U.S. broadband industry	In addition to incumbents, potential entrants, before entering a market, consider adjusting their entry strategies according to the possibility of future entry of competitors
Aghaie et al. (2022)	U.S. airline industry	Incumbents' relational market-based assets and capacity expansion facilitate a price-cut strategy to deter entrants
Conti et al. (2022)	Pharmaceutical Industry	Incumbent firms respond to generic entry via Paragraph IV by increasing the number of produced patents they add to an FDA-approved drug application. This action helps pharmaceutical firms delay generic entry when there is litigation.
Uzunca and Cassiman (2023)	Semiconductor Industry	Investments by incumbents effectively divert entry into submarkets beyond demand growth.
This study	**U.S. domestic airline industry**	**Investigation of the incumbents' operational response to market entry considering the role of business strategy, market competition, and market dominance**

3. Hypothesis development

The entry of a new competitor constitutes a significant change in the business environment, necessitating strategic adjustments by incumbents. This adaptation involves sensing the new competitive threat, seizing opportunities to counter this threat, and reconfiguring their resources accordingly (Chang and Sokol, 2022; Eisenhardt and Martin, 2000; Goolsbee and Syverson, 2008; Luoma et al., 2018). From an operational standpoint, the emergence of new competitors may disrupt the incumbents' usual course of action and operations because of the demand variations. To handle such operational disruptions, we propose that incumbents are likely to make adjustments in their operational strategies. The entry of a new competitor, therefore, triggers the need for incumbents to evaluate and adjust their operational priorities (specifically cost, quality, flexibility, and delivery) to defend their market position effectively.

As discussed previously, operational strategy literature identifies two main operational approaches that determine how firms configure their operational dimensions: focused vs. broad approach. In a focused approach, firms allocate resources to a single operational dimension, while in a broad approach, they spread their resources in multiple dimensions (Ketokivi and Jokinen, 2006; Parast and Oke, 2022). When a new competitor enters the market, incumbent firms face a strategic imperative to respond. Due to the bounded nature of resources, firms must make critical choices about where to invest their efforts to maintain competitiveness (Barney et al., 2021). The concept of a focused operational strategy emerges as a logical response underpinned by this notion. Rather than dispersing resources thinly across multiple areas(a response that may lead to suboptimal performance in all) firms are theorized to benefit from concentrating their efforts on one dimension that can be developed into a significant competitive capability.

The literature on focused factory also provides an appropriate theoretical perspective to articulate the incumbents' response to new entrants. Both manufacturing and service organizations have investigated the idea of the focused factory (Brumme et al., 2015; Ketokivi and Jokinen, 2006; Thirumalai & Devaraj, 2024). The core idea is that a firm that has expertise in a limited range of products or services and focuses on specific tasks and markets, is more likely to achieve better results than firms that have a wider range of operational processes, equipment, services and products (Huckman and Zinner, 2008; Skinner, 1974; Tsikriktsis, 2007).

Using longitudinal data from the U.S. airline industry, Parast and Oke (2022) showed that airlines that are employing a more focused strategy are more responsive to service disruption, alluding to the fact that a focused strategy allows the firm to become more resilient to external shocks and changes in the business environment. Given that the emergence of new entrants could disrupt the normal course of actions and operations of the firm, a focused response is expected to improve the responsiveness of the incumbents in facing threats from new entrants. By adopting a focused response, incumbents can deepen their expertise, optimize their processes, and potentially achieve economies of scale in the chosen dimension, all of which are advantageous when responding to market entry challenges.

Hypothesis 1. *In response to a market entry, incumbent firms become more operationally focused.*

The resource-based view of the firm suggests that firms should identify their core competencies and distinctive resources as these are the sources of sustained competitive advantage (Barney, 1991; Coates and McDermott, 2002). By identifying, mobilizing, and integrating such resources, firms achieve sustainable competitive advantage through the development of a business strategy. When unique priorities are identified, the development of a business strategy (strategic positioning) involves leveraging these competencies to create a unique and valuable market position. A firm's unique capabilities and competencies shape the formation of the business strategy, allowing the firm to compete effectively in different markets (Randhawa et al., 2021; Teece et al., 1997; Varadarajan, 2020). Business strategy is defined at the corporate level and can influence all strategic aspects of the firm. The literature emphasizes that there should be an alignment between a firm's operational and business strategy (Anand and Ward, 2004; Das and Canel,

2022; Hayes and Wheelwright, 1984). Given our emphasis on operational responses within markets, we argue that the reconfiguration of operational priorities at the market level (or operational strategy) is influenced by the business strategy at the firm level. When firms align their operational strategy with their business strategy, they are better positioned to leverage their unique strengths and focus on priorities that offer the most competitive advantage (Chahal et al., 2020; Ketokivi and Schroeder, 2004; Zajac et al., 2000). In our context, we expect that adjustments in operational strategy due to an entry will be influenced by the firm's business strategy.

When a new competitor enters the market, incumbents with a more focused business strategy (i.e., cost leadership strategy) are more likely to adopt a more focused operational response in that market—reinforcing their pre-existing competitive advantage by concentrating resources on their primary operational priority. For example, in the airline industry, low-cost carriers[1] operating under a cost leadership strategy will double down on cost efficiency in response to an entry, as this approach aligns with their existing capabilities and market positioning (Kwoka and Batkeyev, 2019; Parast et al., 2015). Conversely, incumbents with a broader business strategy (i.e., differentiation strategy) have more diversified operational priorities and are likely to shift toward a less focused response. Therefore, building on the first hypothesis, we assert that incumbents with a focused business strategy are more likely to become more operationally focused in response to new entrants compared to those incumbents with a broad business strategy. This is because firms that already have a focused strategy at the corporate level are better equipped and have the capabilities and experience to implement such a strategy at the market level to respond effectively to new market competition.

Hypothesis 2. *Incumbents' focused business strategy strengthens the link between market entry and focused operational response.*

The actions and investments of firms are influenced by a variety of internal and external factors. Due to inherent variations among markets, firms adopt different approaches to managing their processes to align with their specific internal and external environments (Corbett, 2008; Coreynen et al., 2020; Du and Kim, 2021; Grant, 2021; Ward et al., 1995). Market dynamics impact the incumbent's competitive advantage (Donaldson, 1987; Han et al., 2001; Ibrahim and Harrison, 2020). Here, we identify two market-related competitive factors that can shape the incumbent's response to an entry: the level of market competition and market dominance.

Market competition reflects the external environment for an incumbent. The level of competition in a market significantly influences how incumbents respond to new entrants. In highly competitive markets, firms face intense pressure to adapt and differentiate (Becerra et al., 2020; Huang, 2023; Lee, 2009). With multiple incumbents pursuing diverse strategies, new entrants further complicate the competitive landscape (Porter, 1979). Incumbents often adopt broader strategies to address these threats, such as reducing fares, adding destinations, or enhancing service quality, as seen in the U.S. airline industry. Consequently, incumbents often spread their resources across various areas, such as geographic expansion or offering new services, diluting their ability to focus on a single operational response. This results in a weaker link between market entry and focused strategies, as incumbents must manage multiple competitive pressures.

In contrast, low-competition markets allow for a stronger link between market entry and focused responses. With fewer competitors and more stable market dynamics, incumbents can tailor their strategies specifically to respond to new entrants. For example, in a small market, incumbents might respond to a low-cost entrant by lowering fares. The predictability of competitive threats in low-competition markets enables incumbents to allocate resources more narrowly and adopt targeted responses. This stability and concentrated resource allocation strengthen the ability of incumbents to implement focused strategies. Overall, in high-competition markets, incumbents will be less focused while managing entry threats, while in low-competition markets, they have a more focused operational response. Thus, we hypothesize:

Hypothesis 3. *Market competition weakens the link between market entry and focused operational response.*

The firm's market dominance is an important internal factor that can shape the incumbents' operational response related to the threats of new entrants (Rietveld et al., 2020). Building upon the resource-based view of the firm, Nath et al. (2010) show that the market strategy of the firm is the key determinant of firm performance. Given the linkage between the market strategy and the operational strategy, a firm with a much higher level of market dominance is expected to possess superior performance in operational capabilities (Akerlof et al., 2024; Gotteland et al., 2020).

Market dominance weakens the link between market entry and focused response. Dominant firms often have substantial resources, established customer bases, and economies of scale, allowing them to implement a less focused response to new entrants. Dominant firms typically operate with a wide strategic scope, offering diverse products or services and serving multiple customer segments (Akerlof et al., 2024; Cozzolino et al., 2021; Uzunca and Cassiman, 2023). This broad approach reduces their need to respond narrowly to competitive threats posed by new entrants. For example, in the U.S. airline industry, market-dominant airlines may counter new entrants through broad strategies like fare adjustments across multiple routes, loyalty programs, or expanded partnerships, rather than concentrating efforts on a single operational area.

Moreover, market dominance allows incumbents to rely on their advantages in resources and capabilities rather than focusing on a highly focused response. Their scale and influence enable them to maintain competitive positioning through practices such as leveraging operational efficiencies or enhancing existing services, rather than engaging in focused cost-cutting. This contrasts with smaller incumbents, who may lack such flexibility and are more likely to adopt narrowly focused strategies to defend specific market niches and respond to new entrants. Hence, we propose:

Hypothesis 4. *Market dominance weakens the link between market entry and focused operational response.*

4. Methodology

4.1. Data

We use aviation data and statistics from the Federal Aviation Administration (FAA) database to test our hypotheses. The following characteristics make the U.S. airline industry suitable for our analysis. The industry has a substantial economic impact and faces operational complexities inherent to its service-oriented nature. As city-pair routes exhibit the attributes of competitive markets, we can observe multiple entries across diverse geographic markets. Therefore, the industry presents an ideal context for analyzing market dynamics and competition. This relevance, alongside the industry's alignment with the broader service sector, positions our work as potentially informative for analogous contexts. The use of a single industry dataset also strategically enhances our study's internal validity by controlling for industry-specific confounding effects, improving our results' reliability (Eilert et al., 2017).

Each route between city pairs is considered a distinct market with identifiable competitor entries. Our final sample contains 678 markets with 1399 occurrences of market entry. We can also obtain extensive information on competing firms' competitive operational performance

[1] – In the airline industry, carriers have one of two main business strategies: the low-cost carrier model (focused business strategy) and the full-service carrier model (non-focused business strategy).

dimensions (e.g., operating cost, quality, flexibility, and delivery) at the market level (Claussen et al. 2018; Dixit and Chintagunta 2007). Furthermore, many studies investigating market entry have been conducted in the airline industry context and we used those as a guide for our research (Ethiraj and Zhou, 2019).

We collect airline carriers' attributes and operations from the U.S. Department of Transportation (DOT) between 2006 and 2019. Data from the following four datasets are collected and analyzed: *"DB1B," the Airline Origin and Destination Survey, "OTP," the Airline's On-Time Performance, "B43," the Annual Inventory of Airframe and Aircraft Engines*, and *"10-k," the annual financial and operations report*. Based on the significant operating presence of airlines within our study's timeframe, panel data of 16,602 observations is collected from major carriers (American, Continental, Delta, Northwest, United, and US Airways) and low-cost carriers (Airtran, Alaska, Frontier, Jet Blue, Spirit, and Southwest).

4.2. Variable Operationalization

4.2.1. Dependent variable

Our dependent variable is the incumbents' operational response to entry, which is defined as the strategic configuration of the four main operational priorities, including cost, quality, flexibility, and delivery, in response to market entry. In operations management research, it is well established that strategic priorities manifest through operational performance outcomes. Firms design their operations strategy to achieve specific competitive advantages, and the realized performance serves as an observable indicator of strategic intent (Boyer and Lewis, 2002; Anand and Gray, 2017). Prior studies argue that since operational priorities guide resource allocation decisions, measuring actual performance outcomes is a reliable way to infer firms' strategic emphasis (Lapre' and Scudder, 2004; Nand et al., 2013; Ketokivi and Jokinen, 2006). Therefore, given that our study relies on secondary data, we follow prior established methodologies that use operational performance dimensions as proxies for strategic priorities. In the following, we explain how each operational performance dimension is operationalized.

Operational Performance Dimensions. Consistent with the extant literature, this study considers four main operational performance dimensions: cost, quality, delivery, and flexibility (Boyer and Lewis, 2002; Ward et al., 1998; White, 1996; Rosenzweig and Roth, 2004). These dimensions are also frequently discussed as desired or achieved "capabilities.".

The standard measure for the airline's operating *costs* is the cost per available seat mile (Lapre' and Scudder, 2004; Nand et al., 2013; Ramdas and Williams, 2006). Our measure of per-market operating cost is calculated by multiplying the number of total available seats offered by an airline in each route by the reported quarterly operating cost per seat mile for a specific carrier (Lapre' and Scudder, 2004).

We define operating *quality* as the operational quality of the aircraft deployed in the flight at a certain route. Compared to older aircraft, newer models are installed with more advanced cabin technology, fuel efficiency, better safety features, ease of maintenance, avionics, and in-flight entertainment. Therefore, we chose the aircraft's model as a proxy for the flights' operational quality (Wei and Hansen, 2005).

Airlines' on-time performance is used to measure the *delivery* performance of the flights in a given market. This measure has been similarly used in previous airline-related studies (e.g., Nand et al., 2013; Sivakumar et al., 2014; Tsikriktsis, 2007). When a flight arrives at the gate within 15 min of the scheduled arrival time indicated on the carrier's schedule, it is considered "on time." (BITRE 2008). Therefore, we calculate the average delay for all flights for airlines within a certain quarter for different routes.

Flexibility within an airline's operations can be characterized by the variety of flight options provided on a given route. In our analysis, we operationalize flexibility as the number of unique aircraft models an airline deploys for each route within a quarter. This approach, as detailed by Claussen et al. (2018), involves tallying the daily distinct flights an airline offers, which serves as a proxy for the airline's ability to meet varying customer demands and tailor its flight schedule for enhanced service provision on a specified route.

Operational Responses to Entry. The strategic configurations of the four operational performance dimensions named above in response to an entry are defined as operational responses to entry. According to previous literature on operations strategy, we use the concept of focused vs. broad operational configuration models (Ketokivi and Jokinen, 2006; Parast and Oke, 2022). A focused response is measured by the extent to which operational performance dimensions of quality, flexibility, cost, and delivery are focused on a single performance dimension (e.g., operating cost efficiency) and vice versa. To show this, we used the variance between four dimensions. When the variance is low, all dimensions are around similar levels (i.e., broad response), and when the variance is high, mainly one dimension is very different than the others (i.e., focused response). We normalized each dimension before calculating the standard deviation for the four dimensions to make them comparable. Specifically, each operational dimension was calculated and normalized at the market level, thus inherently incorporating the performance of rivals operating in the same market. By normalizing these dimensions relative to rivals within each specific market, we ensured that each incumbent's operational performance measure accurately reflects its competitive positioning. To control our results for the unit of measure and magnitude of dimensions, we calculate the coefficient of variation (CV) by dividing the standard deviation by the mean.

The operational response measure is continuous, ranging from "complete focus" where an incumbent invests solely in one dimension while neglecting others to "complete broadness," where the incumbent evenly distributes investments across four dimensions. These extremes are possible in theory but are less likely to be observed in practice. Firms typically operate somewhere between these two ends of the spectrum. For example, a firm might choose to invest primarily in one or two dimensions, leaning toward a more focused operational response (closer to complete focus). However, it could distribute resources across multiple dimensions unevenly, leading to a broader, less focused approach (closer to complete broadness).

4.2.2. Independent variable

Our independent variable is market entry. Market entry is defined as an airline's attempt to start offering nonstop flights on a specific route. We adopt the method used by Prince and Simon (2015) to measure market entry. Since our goal is to capture operational responses to market entry, we considered the time periods before, during, and after entry. This way we can measure the changes in coefficient of market entry over time with respect to our dependent variable. Therefore, we created three sets of dummy variables, quarters preceding the entry (E^{-4}, E^{-3}, E^{-2}, E^{-1}), the quarter in which the entry occurs (E^{0}), and quarters after the entry (E^{1}, E^{2}, E^{3}, E^{4}).

4.2.3. Moderating variables

Focused Business Strategy. In the U.S. airline industry, carriers pursue one of two business strategies with distinct operational implications: focused and non-focused business strategies (Lapré & Tsikriktsis, 2006; Parast and Oke, 2022). Focused airlines are low-cost airlines that streamline costs by operating point-to-point flights, using a homogeneous fleet, and targeting a limited set of destinations (Lapre' and Scudder, 2004; Tsikriktsis, 2007), which enhances operational efficiency and cost control. On the other hand, non-focused (or full-service) airlines offer expansive route flexibility through a hub-and-spoke network, manage a diverse fleet, and aim to serve a wide array of markets, aligning with the strategy of flying 'anywhere to everywhere' (Cook and Goodwin, 2008; Mayer and Sinai, 2003). While focused carriers concentrate on cost-effectiveness, non-focused airlines capitalize on the economies of scale that come with network growth and a

broader service reach. We use a dummy variable in our model called "Focused Business Strategy" that codes low-cost airlines as 1 and full-service airlines as 0. Based on our data, Airtran, Alaska, Frontier, Jet Blue, Spirit, and Southwest are categorized as low-cost carriers. Also, American, Continental, Delta, Northwest, United, and US Airways are coded as major or full-service carriers.

Market Competition: In a competitive market, numerous firms typically compete to improve their shares. To quantify market competition within the airline industry, our study employs the Herfindahl–Hirschman Index (HHI), a widely recognized metric of market competition (Duanmu et al., 2018; Flammer, 2015). The HHI is calculated by summing the squared market share percentages of all airlines operating within a specific route.

Market Dominance. A high level of dominance indicates that a firm can maintain a significant share of the total sales in the market. This share indicates the extent to which a company can claim a dominant position over its competitors in the market (Shamsie, 2003). When it comes to airlines, market dominance on a particular route is measured by comparing the airline's market share in terms of number of passengers to that of other carriers operating on the same route (Borenstein, 1989).

4.2.4. Control variables

Incumbents' operational response at the time of a rival's entry may be impacted by industry, market, and firm characteristics. To account for such characteristics, we control for the following variables.

Market size. We consider the number of airlines operating on a certain route to control the market size (Gerardi and Shapiro 2009). Depending on the number of incumbents in a market, the competitive behaviors against an entry may change. For example, in markets with a few players, it is more likely that incumbents respond more actively to an entry.

Market Share. Having a greater share of firm-level sales in comparison to competitors provides more resources to the incumbent firms. This may impact the way incumbents respond to new entrants as they can take advantage of resources they have in other markets to deter new entrants from a certain market. We measure market share based on the quarterly proportion of the total number of passengers each carrier serves.

Firm Size. Well-established airlines with a large national network have more capabilities. For example, bigger airlines may have greater access to financial resources (Claussen et al. 2018), have more experience and infrastructure, and may therefore have more market dominance in, say, price wars (Dixit and Chintagunta 2007). Thus, depending on its size, incumbents can develop a different operational strategy. In our model, we use the total number of aircraft used by a carrier to measure the airline's size.

Utilization. Utilization is an important factor in measuring the incumbents' operational performance which could impact how incumbents decide on developing different operational dimensions. We measure the utilization by calculating the load factor which is the percentage of available seats sold to passengers (Prince and Simon 2015).

Market Demand. Market demand plays a crucial role in attracting new entrants and determining the impact on incumbents. We assess market demand by calculating the quarterly total number of passengers in the market.

Market Distance. Airlines are more motivated to operate on short-haul routes as their cost structure necessitates a rapid turnover (Berry and Jia, 2010). This means that short-haul markets are more competitive for incumbents to keep their market share. Therefore, we use a control variable that represents the distance between the origin and destination airports for each route.

Fuel Price. Fuel costs are one of the major expenses for airlines. Fuel price variations may have an enormous impact on an incumbent airline's operational performance, impacting how they respond to a rival's entry. Therefore, our model includes quarterly fuel prices (Mollick and Amin, 2021).

Table 2 summarizes the descriptive statistics of all variables and illustrates their correlation matrix.

4.3. Estimation method

We followed Prince and Simon (2015)'s method to test the relationship between market entry and the incumbent's operational strategy. Dummy variables are created to account for the periods before, during, and after entry. In addition, to account for the time-varying variables that are not observable (e.g., seasonality, demand variations, and service costs), we incorporate annual and quarterly dummy variables. In addition, to control for the unobserved incumbent- and rival-specific characteristics, we add incumbent and rival dummy variables (IncRiv) (Greenfield 2014, Mayer and Sinai 2003). These fixed effects consider any underlying variations among competitors that can affect incumbents' responses to entry. The unit of analysis for this study is at the firm-market-quarter level. To account for heteroskedasticity, we clustered standard errors by firm and market (Eilert et al. 2017, Panagopoulos et al. 2018). The average Variance Inflation Factor (VIF) for all variables is 1.24, with all VIFs being less than 1.82, indicating that our results are not impacted by collinearity. The following equation represents our econometric model:

$$\begin{aligned} IncOR_{ijt} = {} & \beta_0 + \beta_1 E_{ijt}^{-3} + \beta_2 E_{ijt}^{-2} + \beta_3 E_{ijt}^{-1} + \beta_4 E_{ijt}^{0} + \beta_5 E_{ijt}^{1} + \\ & \beta_6 E_{ijt}^{2} + \beta_7 E_{ijt}^{3} + \beta_8 E_{ijt}^{4} + \beta_9 MarketSize_{ijt} + \beta_{10} MarketShare_{ijt} + \\ & \beta_{11} MarketDemand_{it} + \beta_{12} MarketDistance_{i} + \beta_{13} LoadFactor_{ijt} + \\ & \beta_{14} FirmSize_{it} + \beta_{15} FuelPrice_{t} + \beta_{16-28} IncRiv_{i} + \\ & \beta_{29-33} Quarter + \beta_{34-54} Year + \varepsilon_{ijt} \end{aligned} \quad (1)$$

Here, $IncOR_{ijt}$ refers to the incumbent i's operational response to entry on route j at quarter t. The E variables serve as dummy variables to represent quarters before, during, and after an entry. The actual market entry is indicated by the variable E^0. E^{-1} and E^1 represent one quarter before and after the entry if they are equal to one. We set the fourth quarter before entry as our reference period. Therefore, $\beta_1 - \beta_8$ in equation (1) represents how operational responses change in quarters before and after entry in comparison with the fourth quarter before entry.

The incumbents, rivals, and time-fixed effects are included in the estimation models for the following reasons. First, the time-fixed effects allow us to consider all time-variant variables that can possibly impact our dependent variables, such as year and quarter effects. Second, since each rival has its own operational performance configuration, each rival can provoke different incumbents' responses; Accordingly, a rival's entry impact on the incumbent's operational performance configuration can vary from rival to rival. Thus, we include rival-specific fixed effects in our model to address this issue. Third, incumbents themselves can hold certain resources and performance dimensions that could be unobserved in our model. Our estimation models include incumbent-specific fixed effects to account for such effects.

5. Results

The results of our analysis of incumbents' operational reaction to a market entry are shown in Table 3. As shown in column 2, the incumbent's operational response measure significantly increases in quarters of entry and following the entry ($E^0 = 0.043$ $p < 0.01$, $E^1 = 0.032$ $p < 0.01$, $E^2 = 0.027$ $p < 0.01$, $E^3 = 0.014$ $p < 0.05$, $E^4 = 0.013$ $p < 0.05$) relative to four quarters before the entry. The higher values of this variable indicate more heterogeneous allocation among operational performance dimensions (focused operational response). Hence, as the values of the operational response variable increase significantly over the post-entry periods, we can conclude that after entry, incumbents mainly focus on a single performance dimension (implementing a more

Table 2
Correlation Table.

	Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1)	**Operational Response**	1.000											
(2)	**Entry (E^0)**	0.0509***	1.000										
(3)	**Focused Business Strategy**	0.0299***	0.0641***	1.000									
(4)	**Market Competition**	0.0569***	−0.007	0.0225**	1.000								
(5)	**Market Dominance**	−0.0719***	−0.0487***	−0.4701***	−0.0931***	1.000							
(6)	**Market Size**	0.0332***	0.0842***	0.3441***	0.1185***	−0.5607***	1.000						
(7)	**Market Share**	0.1168***	0.003	−0.0373***	0.0723***	0.0623***	−0.0711***	1.000					
(8)	**Firm Size**	−0.2655***	−0.0203**	−0.263***	−0.0874***	0.2026***	−0.097***	−0.0424	1.000				
(9)	**Utilization**	0.1366***	−0.001	−0.0277***	−0.001	−0.004	0.0385***	0.162***	−0.0488***	1.000			
(10)	**Market Demand**	0.011	−0.002	0.0806***	−0.0727***	−0.1861***	0.3795***	−0.0492***	0.001	0.0365***	1.000		
(11)	**Market Distance**	0.0313***	−0.0154*	−0.0584***	−0.1342***	0.0483***	−0.0691***	0.008	−0.0705***	0.0256**	0.029***	1.000	
(12)	**Fuel Price**	−0.0207**	−0.054	−0.2446***	−0.008	0.1947***	−0.3272***	0.0317***	−0.1034***	−0.0158*	−0.1051***	0.0302***	1.000

focused strategy) rather than multiple performance dimensions. The overall pre and post-entry patterns imply that incumbent firms have a more diverse set of performance dimensions before entry in comparison to after entry. In other words, after a rival's entry, incumbents alter their performance dimension configuration from a more diverse approach to a more focused approach. Therefore, we find empirical support for Hypothesis 1.

In column 3, we show the moderating effect of focused business strategy on incumbents' operational response over the periods of market entry by adding the interaction term (Business Strategy) to the previous model in column 2. The interaction terms of operational responses and focused business strategy ($E^n \times$ Business Strategy, where n is the entry period) indicate that incumbents' reactions to entry are aligned with their business strategy. The values of entry variables during and after entry ($E^0 \times$ Business Strategy = 0.094 $p < 0.01$, $E^1 \times$ Business Strategy = 0.057 $p < 0.01$, $E^2 \times$ Business Strategy = 0.049 $p < 0.01$, $E^3 \times$ Business Strategy = 0.056 $p < 0.0$) turn significant and positive, representing a focused operational approach. In fact, low-cost airlines become more operationally focused on routes where an entry occurs. Therefore, Hypothesis 2 is supported.

In column 4, the presence of market competition as a moderating variable has a significant impact on the coefficients of operational responses during and after entry, especially in markets with low competition. This is evident where the coefficients of interaction terms ($E^0 \times$ Market Competition = -0.017 $p < 0.05$, $E^1 \times$ Market Competition = -0.017 $p < 0.01$, $E^2 \times$ Market Competition = -0.022 $p < 0.01$) become significant and negative. This implies that incumbents are less focused when the market competition is high. Therefore, we can conclude that Hypothesis 3 is supported.

In column 5 of Table 3, the moderating impact of incumbents' market dominance is taken into consideration. Our findings suggest that incumbents with higher market dominance tend to be less operationally focused than those with lower market dominance. Column 5 shows that the coefficients of operational responses during the entry periods ($E^0 \times$ Market Dominance = -0.026 $p < 0.01$, $E^1 \times$ Market Dominance = -0.019 $p < 0.01$, $E^2 \times$ Market Dominance = -0.019 $p < 0.01$, $E^3 \times$ Market Dominance = -0.019 $p < 0.01$) become negative and significant (a less focused operational approach), which supports Hypothesis 4.

5.1. Robustness checks

To show that our results remain consistent under varying conditions we conduct a series of robustness checks that we explain in this section.

5.1.1. Endogeneity and Causal Inference

Endogeneity exists when there is a correlation between the independent variables and the error term. We address this issue by estimating our main analysis with a control sample matched using the Propensity Score Matching (PSM) algorithm. Our matching criteria utilize the average market fare, market distance, number of airlines, and the year-quarter time variable. These criteria are good indications of the likelihood of an entry, as average market fare accounts for the potential profitability of a route. Airlines routinely use yield management to maximize profit, and so the average market fare is a good indicator of the supply and demand during a specific quarter. Market distance allows us to capture the type of aircraft needed, which can influence whether an airline's current fleet is suitable for entering a route. Airlines could also be dissuaded from entering a route based on the competitive nature of the route as captured by the number of airlines. The number of airlines highlights the competitive nature of a specific route, so it is important to include it as a matching criterion. Lastly, the year and quarter capture unobservable airline characteristics for a specific quarter, which could influence their decision to enter a route.

Once a suitable control group is found, we rerun our main analysis with the control sample. We assess the quality of our matching using the method suggested by Rubin (2001) based on Rubin's B and Rubin's R

Table 3
Main Analysis Results.

Models	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**
Moderator	*N/A*	*N/A*	*Focused Business Strategy*	*Market Competition*	*Market Dominance*
E^{-4}		0.001	0.004	0.004	−0.001
		(0.008)	(0.008)	(0.007)	(0.008)
E^{-3}		−0.004	−0.002	−0.002	−0.005
		(0.007)	(0.008)	(0.007)	(0.008)
E^{-2}		−0.007	−0.003	−0.007	−0.008
		(0.008)	(0.009)	(0.008)	(0.008)
E^{-1}		−0.016*	−0.019*	−0.014*	−0.017**
		(0.008)	(0.008)	(0.008)	(0.008)
E^0		**0.043*****	**0.007**	**0.046*****	**0.040*****
		(0.007)	(0.009)	(0.007)	(0.007)
E^1		0.032***	0.011	0.034***	0.030***
		(0.007)	(0.008)	(0.007)	(0.007)
E^2		0.027***	0.009	0.029***	0.025***
		(0.007)	(0.009)	(0.007)	(0.007)
E^3		0.014**	−0.007	0.014***	0.012*
		(0.007)	(0.008)	(0.006)	(0.007)
E^4		0.013**	0.009	0.013***	0.013*
		(0.007)	(0.008)	(0.007)	(0.009)
Moderator			−0.054***	0.002	0.003
			(0.012)	(0.005)	(0.006)
E^{-4} × Moderator			−0.035*	−0.008	0.002
			(0.018)	(0.042)	(0.008)
E^{-3} × Moderator			−0.030	−0.000	0.001
			(0.019)	(0.025)	(0.008)
E^{-2} × Moderator			−0.042*	0.005	−0.001
			(0.017)	(0.007)	(0.008)
E^{-1} × Moderator			−0.004	−0.005	−0.004
			(0.017)	(0.021)	(0.008)
E^0 × Moderator			**0.094*****	**−0.017****	**−0.026*****
			(0.013)	(0.008)	(0.007)
E^1 × Moderator			0.057***	−0.017***	−0.019***
			(0.013)	(0.006)	(0.006)
E^2 × Moderator			0.049***	−0.022***	−0.019***
			(0.0138)	(0.007)	(0.007)
E^3 × Moderator			0.056***	−0.005	−0.019***
			(0.013)	(0.006)	(0.007)
E^4 × Moderator			0.017	−0.002	−0.013*
			(0.012)	(0.007)	(0.007)
Market Size	−0.007	−0.011*	−0.007	−0.009	−0.014**
	(0.005)	(0.005)	(0.005)	(0.007)	(0.006)
Market Share	0.807***	0.805***	0.795***	0.809***	0.808***
	(0.177)	(0.179)	(0.176)	(0.179)	(0.180)
Firm Size	−0.000***	−0.000***	−0.000***	−0.000***	−0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Utilization	0.029***	0.029***	0.0283***	0.029***	0.030***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Market Demand	0.000	0.000	0.000	0.000*	0.000*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Market Distance	−0.000	−0.000	−0.000	−0.000	−0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Fuel Price	0.022**	0.022**	0.020**	0.023***	0.021***
	(0.007)	(0.006)	(0.007)	(0.007)	(0.007)
Constant	0.708***	0.706***	0.724***	0.700***	0.709***
	(0.022)	(0.023)	(0.023)	(0.022)	(0.023)
Year & Quarter Fixed Effects	Included	Included	Included	Included	Included
F-value	32.48***	27.49***	25.52***	21.19***	22.73***
R^2	0.130	0.133	0.141	0.135	0.135
N	16,602	16,602	16,602	16,602	16,602

*p < 0.10, ** p < 0.05, *** p < 0.01.
E^0 indicates the quarter of entry, **E^{-4}** to **E^{-1}** represents the four quarters before entry, and **E^1** to **E^4** represents the four quarters after entry.
Column 2 provides the results of the impact of entry on the incumbents' operations strategy. A significant coefficient for E^0–E^4 indicates that the incumbent has adjusted their operations strategy in response to the entry.
Columns 3–5 present the results when including moderators such as business strategy, market competition, and market dominance, respectively. A significant coefficient for the interaction between E^0–E^4 and a moderator indicates that the specific moderator has either alleviated or amplified the impact of entry on the operations strategy.

values. Rubin's R indicates the absolute standardized differences in means of the covariates between the treatment and control groups. All calculated Rubin's B statistics are within the acceptable threshold of 25 %. Rubin's R values are used to assess the ratio of variances of the covariates between the treatment and control groups which are generally within the acceptable range of 0.5 and 2. The results of Propensity Score Matching are presented in Table 4, column 1. The results are consistent with our main analysis in terms of the sign, magnitude, and significance of the entry variables.

5.1.2. *Alternative model Specification*

Following Prince and Simon (2015), we estimate our main analysis

Table 4
Robustness Check Results.

Column	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Model	**PSM**	**Fixed Effect**	**Alternative DV**				**Continuous Moderating Variables**		**No Controls**
Moderator	*N/A*	*N/A*	*N/A*	*Focused Business Strategy*	*Market Competition*	*Market Dominance*	*Market Competition*	*Market Dominance*	*N/A*
E^{-4}	−0.014	0.004	−0.012	−0.009	−0.009	−0.020	0.009	0.004	−0.002
E^{-3}	−0.008	0.006	−0.020**	−0.016*	−0.015*	−0.036**	−0.010	−0.003	−0.013
E^{-2}	0.000	0.004	−0.030***	−0.022**	−0.025**	−0.039**	−0.023	−0.008	−0.013
E^{-1}	−0.001	−0.006	−0.032***	−0.029***	−0.026***	−0.037**	−0.003	−0.006	−0.025**
E^0	**0.097*****	**0.027*****	**0.051*****	**0.004**	**0.056*****	**0.085*****	**0.067*****	**0.095*****	**0.045*****
E^1	0.072***	0.016*	0.034***	0.017	0.041***	0.046***	0.036*	0.064***	0.0352***
E^2	0.080***	0.010	0.006	0.003	0.010	0.020	0.050**	0.057***	0.032***
E^3	0.055***	0.000	−0.001	−0.015	−0.004	0.022*	−0.010	0.050***	0.015*
E^4	0.038***	0.003	−0.001	0.005	−0.002	0.012	−0.003	0.033**	0.017**
Moderator				−0.070***	0.043*	−0.001	−0.033***	−0.040**	
E^{-4} × Moderator				−0.040*	−0.004	0.011	0.001	−0.006	
E^{-3} × Moderator				−0.047*	−0.064	0.022	0.009	−0.004	
E^{-2} × Moderator				−0.050**	0.005	0.016	0.014	−0.001	
E^{-1} × Moderator				−0.030	−0.085*	0.007	−0.001	−0.018	
E^0 × Moderator				**0.124*****	**−0.036**	**−0.072*****	**−0.017**	**−0.099*****	
E^1 × Moderator				0.047**	−0.066*	−0.024	−0.004	−0.058***	
E^2 × Moderator				0.014	−0.036	−0.027	−0.018*	−0.055**	
E^3 × Moderator				0.038*	0.023	−0.051***	0.009	−0.069***	
E^4 × Moderator				−0.008	0.002	−0.026	0.005	−0.034	
Market Size	−0.048***	0.031***	−0.023***	−0.017**	−0.024***	−0.026***	0.012*	−0.026***	
Market Share	−0.175***	0.726**	0.613***	0.599***	0.585***	0.621***	1.553***	0.830***	
Firm Size	−0.000**	−0.000***	−0.000***	−0.000***	−0.000***	−0.000***	−0.000***	−0.000***	
Utilization	0.047***	0.026***	0.024***	0.023***	0.024***	0.024***	0.028***	0.030***	
Market Demand	−0.000***	−0.000	0.000***	0.000**	0.000***	0.000***	0.000*	0.000	
Market Distance	−0.0000	0.073***	−0.0000	−0.000	0.000	0.000	−0.000	−0.000	
Fuel Price	0.030***	0.016*	0.029***	0.026***	0.028***	0.028***	0.024***	0.022**	
Constant	0.830***	−0.789***	0.683***	0.707***	0.669***	0.689***	0.716***	0.754***	0.664***
N	68,592	16,602	16,602	16,602	16,602	16,602	15,511	16,602	16,602

*p < 0.10, ** p < 0.05, *** p < 0.01.
E^0 indicates the quarter of entry, **E^{-4}** to **E^{-1}** represents the four quarters before entry, and **E^1** to **E^4** represents the four quarters after entry.
Column 1 provides the results of the analysis with a control sample using Propensity Score Matching.
Column 2 shows the results of the fixed-effect model estimation
Column 3 represents the results of the alternative dependent variable.
Columns 4–6 provide the results of adding moderators such as business strategy, market competition, and market dominance to the alternative dependent variable model. A significant coefficient for the interaction between E^0–E^4 and a moderator indicates that the specific moderator has either alleviated or amplified the impact of entry on the operations strategy.
Columns 7–8 present the results when including alternative moderators such as market competition, and market dominance, respectively. A significant coefficient for the interaction between E^0–E^4 and a moderator indicates that the specific moderator has either alleviated or amplified the impact of entry on the operations strategy.
Column 9 shows results without control variables to ensure that the effects are not driven by control variables.

with a series of ordinary least squares. In this section, we see if our results are robust to alternative model specifications. Specifically, we use a fixed-effects (within-transformation) estimation to re-estimate our base model. We do not include any estimations for moderations because the within-transformation purges time-invariant observations. Using a fixed-effects estimation also helps with addressing endogeneity concerns as the within-transformation pursues all time-invariant observations. Table 4, column 2 contains the results using a fixed-effects estimation. The results show consistency in sign and magnitude for the entry quarter and a quarter after entry.

5.1.3. Alternative measures

5.1.3.1. Alternate calculation of dependent variable. Our main estimation uses different measures to capture the four operational dimensions that we use in the construction of our dependent variable. In this section, we test to see if our results are robust to different delivery and flexibility measures while keeping our cost and quality measures the same. Recall that we used arrival delay for delivery and the number of distinct aircrafts in a quarter for flexibility. We alternate these measures by using the total average delay including arrival and departure delay for delivery and the number of flights offerings for flexibility. We then estimate our coefficient of variation and use this as a new dependent variable in our robustness check. Table 4, columns 3 – 6 contain results for using an alternative calculation of the dependent variable. The results are consistent with our main analysis.

5.1.3.2. Alternate moderating variables. In this section, we seek to see whether our results are robust to using a continuous measure for our moderating variables. Recall that in our main analysis, we

operationalized market competition and market dominance by dichotomizing both the number of airlines (HHI) and their market shares into high and low categories. In this section, we rerun our analysis using continuous measures. Columns 7 and 8 in Table 4 contain these results. We see that the level of market competition i.e., negatively moderates the incumbent's operational response. That is as market competition increases, incumbents will more likely pursue a non-focused strategy. Column 8 suggests that market dominance also negatively moderates our entry variables. Like market competition, our results suggest that as the market share of incumbents increases, the likelihood of them pursuing a non-focused strategy increases.

5.1.4. Model without control variables

Lastly, we want to ensure that our results are not driven by our control variables. In our last robustness check, we re-estimate our main model without any control variables. Column 9 suggests that the significance of the entry variables in our main model is not affected by our control variables.

5.2. Post-hoc analysis

We also take a step further and conduct a post-hoc analysis to uncover the underlying differences between reactions of individual operational performance dimensions (cost, quality, delivery, and flexibility). We analyze the post and pre-entry changes in individual performance dimensions using Seemingly Unrelated Regression (SUREG) to determine which performance dimension is prioritized before and after an entry. This method considers the trade-off effect of dimensions on each other and runs the equations of our analysis on those dimensions at the same time. As shown in Table 5, column 1, incumbents' cost factor in quarters preceding the entry is negative and significant. While in quarters following an entry, those coefficients turn positive and significant. This suggests that incumbent firms generally focus on increasing cost efficiency after an entry. Additionally, they improve their cost efficiency in quarters after an entry compared to the periods before entry. Quality, on the other hand, in comparison to periods before entry, doesn't change significantly. This indicates that airlines do not significantly change the drivers of quality (i.e., aircraft model) right after an entry. However, significant changes in quality can be seen in the immediate quarters before an entry which could be a cause of a threat of entry. Regarding delivery performance, a significant reaction is seen during and immediately after an entry. Surprisingly, the delivery performance reduces after entry compared to four quarters before entry. This result aligns with previous studies (e.g., Prince and Simon, 2015). Flexibility, similar to quality, does not have a significant change after an entry however, significant improvements are seen in quarters preceding an entry.

Table 5
Post-hoc Analysis Results.

Variables	Cost	Quality	Delivery	Flexibility
E^{-3}	0.060	−0.211	−0.354*	12.725**
E^{-2}	0.042	−0.412**	−0.258	10.872*
E^{-1}	−0.013	−0.222	−0.261	3.812
E^{0}	0.118***	0.540*	−0.656***	4.342
E^{1}	0.033	0.355*	−0.343	4.231
E^{2}	0.050	0.176	−0.135	−5.003
E^{3}	0.094**	0.428**	0.473	−17.335**
E^{4}	0.117***	0.515***	0.221	−11.033
Market Competitiveness	−1.787***	−8.681***	−0.769	563.046***
Market Share	0.032	−0.539**	−0.066	1.319
Firm Size	−0.001*	−0.001*	0.001	0.037***
Market Distance	−0.001	0.001***	0.002***	−0.095***
Utilization	−0.071***	−0.578***	0.029	−29.760***
Market Size	−0.001***	−0.001***	0.001***	0.002***
Fuel Price	−0.053	−0.505***	−1.247***	4.751
Time Fixed Effects	Included	Included	Included	Included
Constant	−9.524***	2002.95***	1.408	−173.834***
Observations	**16,602**	**16,602**	**16,602**	**16,602**

*p < 0.10, ** p < 0.05, *** p < 0.01.

Our results draw upon the concept of the 'threat of entry,' which suggests that the mere possibility of new competition can prompt incumbents to make strategic adjustments preemptively (Conti et al., 2022; Ethiraj and Zhou, 2019). This phenomenon is well-documented across various studies, where the anticipation of new entrants induces incumbent firms to alter their strategies to deter entry or to better position themselves against the potential competition (e.g., Cookson, 2018; Gruca and Sudharshan, 1995; Tomy, 2019; Uzunca and Cassiman, 2023; Wen and Zhu, 2019). Specifically, the operational adjustments captured in our study by analyzing data from both before and after the actual entry allow a comprehensive examination of the incumbents' strategic behavior throughout the entry period. This approach acknowledges that the strategic influence of potential entry extends beyond the point of market entry, influencing incumbent actions as soon as the threat is recognized.

6. Discussion

6.1. Discussion of results and Conclusion

Previous studies mainly investigated changes in incumbents' marketing strategy in response to a competitor's market entry (Goolsbee and Syverson, 2008; Robinson, 1988; Shankar, 1997). However, little has been known about whether and how incumbents respond to entry by adjusting their operational strategy. This study addresses the gap in the literature by investigating how incumbents adjust their operational strategy when a new competitor enters the market. This study provides new insights for managers and policymakers in competitive markets from an operational perspective. We contribute to the literature on market competitive dynamics and operations management by reflecting upon how existing incumbents react to an entry by leveraging their resources toward developing certain operational capabilities at a market level. According to the findings of this study, after a rival's entry, incumbents become more operationally focused within that market. Due to increased competition caused by the rival's entry, incumbents may have less access to the resources needed to invest in multiple operational performance dimensions. Subsequently, firms focus their scarce resources on developing mainly one operational performance dimension to gain a competitive advantage along that dimension. These results are in line with previous empirical studies that found that firms prioritize lowering their pricing after an entry (i.e., focusing on a cost dimension); incumbents put efforts into lowering their quality to be able to reduce costs in order to compete against the new entrant; and incumbents adopt a more focused response strategy to shorten the exit time for the new entrant (Goolsbee and Syverson, 2008; Prince and Simon, 2015).

In addition, our results indicate that business strategy, market competition, and market dominance play a crucial role in determining how incumbent firms will react to a new market entry. The incumbents' operational response is aligned with their business strategies. For example, airlines with a focused business strategy tend to become more operationally focused in response to new entrants. In a highly competitive market, incumbents are likely to opt for a broader approach as they need to differentiate themselves from the newcomers. Similarly, incumbents with a better presence and dominance in a market are found to adopt a broader operational approach due to greater resource availability.

Our post-hoc analysis uncovers the differences in reactions of individual operational performance dimensions, namely cost, quality, delivery, and flexibility. The findings show that incumbents generally tend to focus on improving their cost efficiency after an entry, while quality and flexibility do not have significant changes after an entry. However, significant improvements in quality and flexibility are seen in the quarters preceding an entry. Surprisingly, delivery performance reduces after an entry compared to four quarters before entry.

6.2. Theoretical contributions

Our findings make significant theoretical contributions to the operations management literature by shifting the focus from single-variable responses to market entry, such as pricing, advertising, or capacity adjustments, to a more comprehensive analysis of bundled operational responses. This approach allows for a deeper understanding of how incumbents strategically react to new competitors across various operational dimensions, thereby filling a gap in the existing research (Elango, 2005; Friedrich et al., 2022; Roth and Van Der Velde, 1991; Swink and Song, 2007).

Building on the concept of the focused factory (Skinner, 1974; Skinner, 1996), this study illustrates how incumbents employ a more focused operational strategy as a response to market entry, aligning with the broader strategic goals of the firm. The research extends the focused factory concept by demonstrating how operational focus is utilized not just for efficiency or quality improvements but as a strategic response mechanism in the face of competitive threats.

One of the key theoretical contributions of this study lies in demonstrating the strategic alignment between firm-level business strategies and market-level operational responses in the context of competitive entry. Specifically, our findings show that incumbent firms tend to configure their operational strategies in alignment with their overarching business strategies when responding to new market entrants. This alignment reflects classical strategic management principles that emphasize the fit between higher-level strategic direction and functional-level execution (e.g., Anand and Ward, 2004; Hayes and Wheelwright, 1984). By examining this relationship through the lens of market entry, our study extends the literature on strategic alignment and contributes to competitive dynamics discourse.

Moreover, the study applies the resource-based view (Barney, 1991; Eggers and Park, 2018) to the context of market entry, offering a robust theoretical lens to understand how a firm's unique resources and capabilities shape its strategic operational responses. The RBV posits that firms can achieve competitive advantage by leveraging resources that are valuable, rare, inimitable, and non-substitutable. This study extends the application of RBV by showing that a firm's operational strategies, shaped by its resource base, play a crucial role in how it responds to market disruptions such as new entrants.

By integrating the focused factory concept with the RBV framework, the study also highlights the role of business strategy, market competition, and market dominance in strategic decision-making. It shows that incumbents do not merely react passively to market entry; instead, they strategically deploy their operational capabilities to maintain or enhance their competitive position.

6.3. Practical implications

The findings of this study have several managerial implications for firms operating in competitive environments. The findings indicate that when a new entrant comes into their market, incumbent firms tend to prioritize enhancing one operational performance dimension, particularly cost efficiency. As such, new entrants need to be prepared to compete on cost and find ways to achieve cost efficiencies without sacrificing quality and flexibility. Moreover, the study suggests that new entrants may have an advantage in less competitive markets, where incumbents are more likely to prioritize improving quality rather than cost efficiency. Thus, new entrants may benefit from identifying less competitive markets where they can differentiate themselves by providing higher quality services than incumbents. Finally, it is important for new entrants to consider the role of business strategy, market competition, and market dominance of incumbents when developing their operational strategies. In highly competitive markets, new entrants may need to focus on cost efficiencies to compete aggressively with incumbents. In contrast, in less competitive markets, new entrants may be able to differentiate themselves by emphasizing quality and flexibility. Overall, new entrants need to be aware of the priorities that are critical in incumbents' business strategy and tailor their strategies accordingly. By understanding the strategic responses of incumbent firms, the role of business strategy, market competition, and market dominance, new entrants can develop more effective operational strategies and position themselves for success in the market.

Our research has significant implications for policymakers as well. Policymakers may wish to design regulations and policies that encourage firms to improve their operational performance in diverse dimensions such as cost, quality, delivery, and flexibility. Specifically, while policymakers have traditionally focused on preventing anticompetitive pricing behavior (Guiltinan and Gundlach, 1996), this study suggests that such policies may not be sufficient to ensure consumer welfare in the long run. Instead, policymakers need to pay attention to other operational performance dimensions, such as delivery, cost efficiency, quality, and flexibility, which are critical to consumer welfare. By doing so, policymakers can support the development of a more competitively healthy marketplace that benefits both businesses and consumers. Furthermore, policymakers need to understand that different operational performance dimensions may have different importance in different markets. As such, policymakers need to tailor their policies to the specific needs of each market to promote competition and consumer welfare effectively.

6.4. Limitations and future research

There are limitations to this study that could be addressed in future research. The current study focused on four operational performance dimensions: cost, quality, delivery, and flexibility. There could be other dimensions that are equally important to incumbents and could be affected by new entrants. For example, incumbents may focus on innovation, safety, or sustainability to respond to new entrants. Investigating these other dimensions and their impact on incumbents' response to new entrants would provide a more comprehensive understanding of how firms can best compete in a changing market.

Our study leverages the airline industry's vast scale and service operational intensity to provide insights into incumbent responses to market entries. Given the industry's significant economic contributions and the prevalence of operational challenges such as fleet management, route optimization, and service quality, our findings shed light on the broader service sector's reactions to competition. The airline industry's dynamic nature and competitive environment make it a valuable case for understanding strategic operational reactions. While this focus allows us to control for industry-specific confounding effects, enhancing internal validity in our analysis (Eilert et al., 2017), we recognize that our results may not fully represent all industries. Future research could, therefore, explore other contexts to further validate and extend the applicability of our conclusions.

Additionally, the study only looks at the immediate operational responses of incumbents to new entrants and does not consider the longer-term strategic implications of those responses. For example, an incumbent's response to a new entrant that is expected to be a long-term player in the market may differ from its response to a new entrant that is expected to exit the market quickly. Future research could address these limitations by examining the longer-term strategic implications of incumbents' responses to new entrants. For example, future studies could examine the impact of new entrants on incumbents' innovation and R&D strategies or on their partnerships and collaborations with other firms. Additionally, future studies could investigate the impact of government regulations and policies on incumbents' responses to new entrants.

CRediT authorship contribution statement

Ata Karbasi: Writing – review & editing, Writing – original draft, Validation, Supervision, Software, Resources, Project administration,

Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Sina Aghaie:** Writing – review & editing, Writing – original draft, Validation, Supervision, Project administration, Methodology, Conceptualization. **Kang Hsu:** Writing – review & editing, Validation, Software, Methodology, Formal analysis, Data curation. **Mahour Parast:** Writing – review & editing, Validation, Supervision, Conceptualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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