Balancing Operational Efficiency and Service Quality: How Strategy Shapes Performance in the U.S. Airline Industry

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Purpose. We examine how operational efficiency (OE) and service quality (SQ) interact to influence profitability, contingent on a firm's strategic orientation (SO), whether focused or non-focused. Our study introduces a new perspective linking OE, SQ, and profitability through competitive priorities and the moderating role of SO.

Design/methodology/approach. Using U.S. airline panel data, we employ econometric analyses and robustness checks, including alternative model specifications, to validate our hypotheses and ensure result reliability.

Findings. We find that different dimensions of OE interact with SQ in varying ways to influence profitability. For both OE measures, their interaction with SQ negatively affects profitability, aligning with theoretical expectations, although the effects are not statistically significant. These results suggest potential contingency factors shaping this relationship. Furthermore, a firm's SO moderates the OE–SQ–profitability link. The effects are positive as hypothesized, with SO particularly moderating the interaction between labor productivity and SQ, indicating that aligning SQ and productivity with SO enhances performance.

Originality/value. Our research addresses conflicting findings in the literature regarding the relationship between OE, SQ, and firm performance by demonstrating the moderating effect of a firm's SO on this relationship. Our approach, examining the interaction between various measures of OE and SQ with profitability, offers a more value-driven and managerially focused perspective. The findings suggest that the effectiveness of balancing OE and SQ to drive profitability is contingent on the firm's SO.

Key Words: Operational Efficiency; Service Quality; Operations Strategy; Strategic Orientation; Profitability

1. Introduction

Operational efficiency (OE) and service quality (SQ) are essential yet often competing priorities. Balancing high OE with superior SQ is crucial for service firms seeking profitability and sustained competitive advantage (Silvestro and Lustrato, 2015; Ren et al., 2018; Mariani and Borghi, 2024). In competitive markets, firms must emphasize both OE and SQ to compete on cost and quality (Van Reenen, 2011; Kurokawa and Matsubayashi, 2017). For instance, in the airline industry, where profitability remains challenging (Cento, 2008), carriers such as United and Delta attract cost-sensitive customers through basic economy fares, competing with budget airlines like Spirit (Rains, 2024). Similarly, in hospitality, Marriott and Hilton serve diverse segments through offerings from Fairfield Inns to Ritz-Carlton properties (Wang and Chung, 2015). However, maintaining equilibrium between OE and SQ remains a central challenge for service firms, as their interaction and implications for profitability offer valuable managerial insights, particularly amid technological advancements reshaping service delivery models (Dai et al., 2024; Guo et al., 2025).

The pursuit of OE and SQ often involves conflicting priorities, as improvements in one dimension may detract from the other. Prioritizing OE can streamline processes but sacrifice personalized service, while emphasizing SQ may require resource-intensive practices that reduce efficiency. For instance, Sprint Airlines' 2024 bankruptcy illustrates the pitfalls of focusing on cost efficiency at the expense of SQ, underscoring the negative interactions firms must navigate (Isidore and Dmitracova, 2024). In sectors like healthcare, enhancing care quality while controlling costs remains equally challenging due to the complexity of balancing both objectives (Søgaard and Enemark, 2017). However, emerging technologies such as big data analytics, machine learning, and artificial intelligence (AI) now enable firms to enhance operations, productivity, SQ, and resilience simultaneously (Dai et al., 2024; Guo et al., 2025; Hariguna and Ruangkanjanases, 2024; Yao et al., 2025). These innovations call for a renewed examination of the interaction between OE and SQ in driving profitability. Service organizations, particularly in industries like airlines, hospitality, healthcare, and retail, face unique challenges stemming from dynamic customer interactions, fluctuating demand, and high operating costs (Cento, 2008; Parast et al., 2015; Xia and Zhang, 2010). Given these developments, it is essential to reexamine the long-term OE–SQ interaction to reconcile prior conflicting findings and clarify their collective impact on firm profitability.

Contingency theory posits that the effectiveness of management practices is contingent upon specific organizational and contextual factors (Luthans, 1976). Accordingly, the interaction between OE and SQ, as well as their combined effect on firm performance, may vary depending on such contextual contingencies. In particular, strategic orientation may serve as a critical contingency that shapes how firms manage the interaction between OE and SQ and the resulting impact on profitability. Strategic orientation (SO) - the guiding framework that shapes a firm's competitive behavior and resource allocations - has received limited attention as a contextual factor influencing the OE-SQ balance (Deutscher *et al*., 2016). Despite extensive research on the impact of SO in terms of the choice between focused and non-focused strategies on firm performance (Parast and Oke, 2022; Zhu and Westphal, 2021), little is known about how SO impacts the OE-SQ interaction. Given the dynamic and resource-intensive nature of balancing OE and SQ, SO may play a pivotal role in helping firms prioritize and align investments across these dimensions. As such, understanding whether and how SO enables firms to effectively manage the interaction between OE and SQ is critical for theory and practice, as it can reveal pathways to achieve profitability while maintaining competitive differentiation. Thus, we examine the following two main research questions:

1) *What is the impact of a possible interaction between OE and SQ on profitability?*
2) *What is the role of a firm's SO in moderating the interaction between OE and SQ in impacting profitability?*

To address these questions, we use longitudinal data from the US airline industry, a sector that exemplifies the inherent tension between OE and SQ (Cento, 2008; Sun *et al*., 2024). Due to the differences in resource heterogeneity and structural characteristics, the airline industry provides a suitable context to examine the role of a firm's SO. The empirical analysis, which distinguishes between focused (low-cost) airlines, such as Alaska Airlines and Southwest Airlines, and non-focused (full-service) airlines, such as United Airlines and American Airlines, allows us to explore the moderating impact of SO on the interaction between OE, SQ, and profitability. While the airline industry serves as a valuable context due to its distinct operational and competitive dynamics, the insights gained from our study likely extend beyond this sector. Industries such as healthcare, banking, hospitality, transportation, and retail, which face similar tensions between OE and SQ (Berta *et al*., 2010; Roets *et al*., 2018; Roth & Jackson III, 1995;

Talluri *et al*., 2013), could greatly benefit from insights into how SO moderates the interaction between these often-competing objectives.

This study makes two key contributions. First, we find that the interaction between the measures of OE and SQ is negative, suggesting a potential trade-off between the two. However, these effects are not statistically significant. While the directionality of the interactions aligns with our theoretical expectations, the absence of statistical significance limits our ability to draw firm conclusions. These findings may indicate that, although OE and SQ might be inversely related, the relationship is either weak or context-dependent. Second, we contribute to contingency theory by illustrating that a firm's SO moderates the relationship between OE and SQ and their combined influence on profitability. This underscores the crucial role of strategic alignment, providing evidence that the effectiveness of operational practices is contingent upon their alignment with a firm's SO.

Our study is timely and relevant from both theoretical and practical standpoints. Theoretically, we develop our theorization of the interaction between OE, SQ, and profitability based on the theory of competitive priorities, which explains how a firm can achieve a competitive advantage by emphasizing priorities such as cost, quality, delivery, and flexibility (Hayes and Wheelwright, 1984; Peng *et al*., 2011; Longoni and Cagliano, 2015; Chikán *et al*., 2022). While the relationship (i.e., trade-off) between OE and SQ has been explored in previous research, the need to reexamine and replicate such foundational questions remains crucial for advancing theories. As Pagell (2021) highlighted, replication and reevaluation are vital processes that help generalize findings and refine theoretical claims by testing them with new data sets. By doing so, our research contributes to the robustness and validity of prior assertions and enriches the existing literature by addressing voids and inconsistencies that have persisted over time. Practically, this research is timely and relevant as service organizations increasingly operate in volatile, customer-driven markets shaped by rapid technological progress and shifting consumer expectations. Cases like the recent bankruptcy of Sprint Airlines highlight the challenges organizations face when focusing heavily on cost efficiency while overlooking SQ, revealing critical areas that require careful management. Moreover, the operations management landscape is rapidly evolving due to technological advancements, including AI and big data analytics. These innovations are fundamentally reshaping operational processes, competitive dynamics, and customer expectations. As organizations adapt to these changes, strategies that effectively balance OE and SQ become increasingly critical. Firms are increasingly exploring new business models and adopting AI-driven solutions to boost efficiency and reduce operational costs while striving to maintain high levels of SQ. Thus, the benefits associated with any management practices in terms of improving productivity should be examined with respect to their impact on other firm activities, such as SQ, and their overall effect on firm performance.

2. Theoretical Background and Hypotheses

2.1 The Interaction Between OE and SQ

Research on the interaction between OE and SQ follows two perspectives. The first, grounded in competitive priorities, examines whether OE and SQ are negatively related or synergistic, emphasizing theoretical insights into their operational interaction (Roth and Jackson III, 1995; Peng et al., 2011). The second investigates their combined impact on firm outcomes such as profitability and customer satisfaction, highlighting the managerial implications of these interactions (Hung et al., 2015; Pourmohammad-Zia et al., 2021). The first approach is more theoretical, while the second is more practical, linking the OE–SQ interaction to firm performance. This study aligns with the latter, exploring how the combined interaction of OE and SQ influences profitability and how SO shapes this relationship.

OE–SQ Interaction in Services. The interaction between OE and SQ has long been debated in operations management. Some scholars argue that trade-offs are inevitable, as improving SQ often requires costly investments that reduce OE, while others contend that both can be achieved simultaneously through strategic alignment (Schroeder et al., 2011; Talluri et al., 2013).

Table 1 summarizes studies on OE–SQ interactions in services. One stream of research suggests firms incur additional costs and risks when pursuing both simultaneously (Roth and Jackson III, 1995; Lapré and Scudder, 2004; Berta et al., 2010; Roets et al., 2018). This view argues that firms should prioritize one competitive focus consistent with their SO. Sampson and Froehle (2006) found that increased service automation reduced customer satisfaction, while Xia and Zhang (2010) observed that U.S. retailers gained little from early online channel adoption. Similarly, automation may reduce personal interactions, weakening customer experience (Ferraro et al., 2024). In service contexts where customers shape delivery processes, this variability complicates achieving high OE and SQ simultaneously (Frei, 2003). Collectively, these studies emphasize a trade-off between OE and SQ.

Conversely, another research stream supports compatibility between OE and SQ. In healthcare, organizations such as the Cleveland Clinic and Mayo Clinic have achieved excellence in both OE and SQ by integrating technology and accountability systems (Raghupathi and Tan, 2008; Shortell and McCurdy, 2009). Cleveland Clinic's IT investments improved efficiency and healthcare SQ simultaneously (Raghupathi and Tan, 2008). Likewise, coordinated improvement programs in U.S. hospitals enhanced both OE and SQ (Shortell and McCurdy, 2009). The 2010 *Customer Service Champs* list showed that 11 of 25 firms earned top grades in both OE and SQ, demonstrating that simultaneous achievement is possible (Talluri et al., 2013).

Prior research shows mixed findings on the interaction between OE and SQ. Some studies find efficiency enhances SQ, while others reveal trade-offs where cost-cutting undermines customer experience. These inconsistencies may stem from a firm's SO, a critical yet often overlooked factor shaping priorities and resource allocation. Cost-focused firms may emphasize OE at the expense of SQ, whereas customer-centric firms may prioritize SQ and reduce efficiency. Incorporating SO clarifies when efficiency and quality complement or conflict, highlighting SO's central role in explaining divergent outcomes and deepening understanding of the OE–SQ relationship.

2.2 Strategic Orientation and Profitability in Service Organizations

SO refers to an organization's long-term commitment to strategic priorities guiding decision-making, resource allocation, and competitive positioning (Hakala, 2011). It reflects choices such as emphasizing cost leadership, innovation, or customer satisfaction that align operational capabilities with business strategy to enhance performance. In service organizations, SO shapes profitability by aligning resources and capabilities with market demands. It comprises multiple dimensions, including customer orientation, innovation orientation, and operational excellence (Grawe et al., 2009; Yao et al., 2025). This paper focuses on two: customer orientation and operational excellence, corresponding to SQ and OE, respectively. Examining how these SO dimensions interact with OE and SQ provides insight into how firms achieve sustained profitability.

SO offers a useful lens for understanding how airlines align internal capabilities with market demands to enhance profitability. The industry's two dominant strategic models, focused (low-cost) and non-focused (full-service) carriers, illustrate different SO emphases (Parast et al., 2015; Parast and Oke, 2022). Low-cost carriers such as Southwest and Spirit Airlines prioritize operational excellence and efficiency to minimize costs, often reducing service complexity. In contrast, full-service carriers like Delta and American Airlines emphasize customer orientation and innovation, offering loyalty programs, premium seating, and enhanced amenities. Thus, the SO framework effectively captures how airlines align resources and strategies with market conditions to manage performance trade-offs.

The Profitability Link. Understanding the interaction between SO, OE, and SQ is crucial for profitability (Kukanja and Planinc, 2020). OE minimizes waste and optimizes resources, directly improving margins by lowering costs (Oral and Yolalan, 1990). SQ focuses on exceeding customer expectations, fostering loyalty, and repeat business that drive revenue growth (Yee et al., 2010; Donthu et al., 2021; Li et al., 2023). When integrated effectively, OE ensures cost-efficient operations while SQ attracts and retains customers. SO guides how firms balance these priorities, aligning business models with resource allocation to sustain this efficiency–quality synergy. A dual focus on OE and SQ, shaped by SO, enables firms to achieve competitive advantage by balancing cost control with value creation.

We argue that contingency theory is the missing link in understanding the relationship between OE, SQ, and profitability. Through a contingency theory perspective (Donaldson, 2001; McAdam *et al*., 2019), SO can impact the nature of the interaction between OE and SQ and, more importantly, their interaction effect on profitability. SO can determine whether they can harmonize OE and SQ or must prioritize one over the other, as it shapes how firms approach their competitive priorities. Further research into this link, especially in service contexts like the airline industry, can clarify the boundary conditions under which firms can achieve both OE and SQ to improve profitability. To this end, we next hypothesize the nexus of relationships between OE, SQ, and SO with respect to their impact on profitability.

2.3. Hypotheses

We build our argument regarding the interaction between OE, SQ, and their impact on profitability using the theory of competitive priorities, which discusses how firms can develop their operations strategy by identifying their competitive priorities (Hayes and Wheelwright, 1984; Peng *et al*., 2011). Because a firm's competitive priorities guide decisions about resource allocation, firms need to identify supporting forces that could lead to competitive advantage (Boyer and Lewis, 2002).

Table 1. Relevant Studies on Competitive Priorities and Firm Performance in Services

Study	Method & Sample	Theoretical perspective	Findings
(Roth and Jackson III, 1995)	Structural equation modeling of survey data, 135 retail bankers	Absorptive capacity theory	Total factor productivity and SQ are negatively linked.
(Athanassopoulos, 1997)	Data envelopment analysis (DEA); 68 commercial bank branches in Greece	N/A	Product range and service reliability are negatively linked to the branch's level of accounts serviced.
(Johnston and Jones, 2004)	Conceptual	The theory of swift and even flow	The relationship between OE and customer productivity (and satisfaction) is not consistently positive or negative.
(Lapré and Scudder, 2004)	Performance improvement path analysis and multivariate analysis of secondary data;10 largest US airlines	Theory of performance frontiers	Better-performing airlines align with the sand cone model when operating far from asset frontiers but face trade-offs near these frontiers.
(Berta *et al.*, 2010)	Template analysis; Multiple-case study of directors of care of Ontario long-term care homes	N/A	Simultaneously achieving both high efficiency and high quality of care is exceedingly challenging.
(Rosenzweig and Easton, 2010)	Meta-analysis of 64 research papers	Theory of performance frontiers	Contrary to the classical trade-offs model, manufacturers generally do not experience trade-offs between quality, delivery, flexibility, and cost, though findings vary depending on research design and variable operationalization.
(Nand *et al.*, 2013)	ANOVA analysis of longitudinal secondary data; Australian civilian airline industry	Theory of performance frontiers	Firms trade-off capabilities when their asset and operating frontiers are close and accumulate capabilities when the asset frontier expands significantly or when the gap between the frontiers is large
(Talluri *et al.*, 2013)	DEA of transaction records from service-driving agencies and ANOVA of survey data; service-driving agencies	Service quality theory	Service firms with excellent operating efficiency also experience superior SQ.
(Roets *et al.*, 2018)	DEA; Belgian computerized railway traffic control centers	N/A	Production tasks with fluctuating workloads are more predisposed to human error when represented by binding cost allocation constraints and high efficiency within a traffic control center. This is related to balancing the efficiency-safety trade-off.
(Pourmohammad-Zia *et al.*, 2021)	Game-theoretic perspective to numerical experiments and a case study; a supplier, a manufacturer, and multiple processed food retailers	Game theory	Vendor-managed inventory and cost-sharing contracts improve chain performance by balancing retailer incentives and manufacturer cost efficiency.

Strategic management research highlights challenges in simultaneously pursuing cost leadership and differentiation strategies, reinforcing the notion of interactions and trade-offs (Rozentale and van Baalen, 2021; Campbell-Hunt, 2000). Porter (1996) argues that organizations must prioritize and compete on specific dimensions, as pursuing multiple strategic priorities often limits a firm's ability to deliver value effectively. For example, in healthcare, achieving both high efficiency and high-quality care simultaneously is reported to be highly challenging (Berta *et al*., 2010). A compelling example from the airline industry further illustrates this point: Continental Airlines' attempt to compete with Southwest Airlines through Continental Lite failed due to a misalignment between its broad organizational structure and the requirements of a low-cost strategy. This misalignment led to operational inefficiencies, such as delays and cancellations, and increased customer complaints. The airline struggled to balance OE (low cost) and SQ, particularly in serving its elite customers. These examples and theoretical perspectives indicate an interaction between OE and SQ, implying that simultaneous improvements in both dimensions may adversely affect a firm's financial performance.

The interaction between OE and SQ can deteriorate firm performance (profitability) when efforts to enhance one dimension undermine the other. OE improvements often involve cost-cutting and standardization, which can conflict with the customization and attention to detail necessary for high SQ. This misalignment can lead to reduced customer satisfaction, increased service recovery costs, and operational rigidity, hindering a firm's ability to adapt to customer needs. Furthermore, overemphasizing OE may strain employees, decrease morale and productivity, and negatively affect SQ. Accordingly, the following hypothesis is proposed:

H$_1$: *The interaction between operational efficiency (OE) and service quality (SQ) has a negative effect on profitability.*

We argue that a firm's SO, which guides decision-making and resource allocation to align with competitive priorities, moderates the interaction between OE and SQ in impacting profitability. Research highlights organizations' need to create a strategic fit between SO and structural, operational, and decision-making processes (Al-Surmi *et al*., 2022; Ghonim *et al*., 2022). Different SOs necessitate diverse resource distributions, influencing the balance between OE and SQ and their overall effect on profitability.

Typically, firms with a focused SO that rigidly prioritize either cost efficiency (e.g., OE) or differentiation (e.g., SQ) often operate closer to their asset frontiers, which can constrain their ability to achieve simultaneous improvements in both OE and SQ. For example, a low-cost orientation often prioritizes cost reduction strategies, which can lead to impersonal or rigid customer experiences that detract from SQ (Deutscher *et al*., 2016). These rigidities limit the firm's ability to reconcile competing priorities, exacerbating the negative interaction between OE and SQ with respect to their impact on profitability. Conversely, non-focused firms can respond adaptively to potential trade-offs between OE and SQ by drawing on diversified resources and capabilities (Grawe *et al*., 2009). For example, these firms may leverage cross-functional teams, advanced process innovations, and data-driven insights to optimize cost efficiency without sacrificing customer satisfaction (Zhu and Westphal, 2021). This ability to synchronize operational goals across traditionally competing domains reduces the likelihood that investments in OE undermine SQ or vice versa, ultimately enhancing profitability. It also enables firms to enhance both OE and SQ (Porter, 1996) and mitigates the negative interactions that might otherwise compromise profitability.

Contingency theory emphasizes SO as a pivotal factor influencing the interaction between OE and SQ and their collective impact on profitability. In industries like airlines, focused strategies tightly aligned with asset frontiers constrain flexibility, while non-focused strategies afford broader adaptability, suggesting a stronger OE-SQ link for non-focused firms. In the airline industry, a focused strategy targets a specific market segment by offering tailored services. Low-Cost Carriers (LCCs) like Ryanair focus on budget-conscious travelers through low fares and limited services, while premium airlines like Singapore Airlines cater to business and luxury travelers with high-end amenities. This approach builds brand loyalty and OE but limits market reach. In contrast, a non-focused strategy serves a broad market with diverse service offerings. Major carriers like Delta Air Lines and Lufthansa provide both economy and premium services across extensive route networks. This strategy maximizes market potential but comes with higher operational complexity and cost challenges.

These arguments underscore the role of SO in moderating the interaction between OE and SQ, with implications for how firms approach operational priorities and performance outcomes. They collectively establish that a non-focused SO enables firms to better navigate the potential trade-offs between OE and SQ and reduce their negative interactions in impacting profitability. Thus, we propose the following hypothesis:

H_2: *A firm's strategic orientation (SO) moderates the (negative) interaction between OE and SQ in impacting profitability. Specifically, the three-way interaction between OE, SQ, and SO (focused vs. non-focused) will be positive, indicating that the negative interaction effect of OE × SQ on profitability is attenuated for non-focused carriers.*

3. Methodology

This study uses secondary data acquired from the US Department of Transportation's Bureau of Transportation Statistics (www.bts.gov). We conducted a comprehensive measurement and analysis of the operational performance of both non-focused airlines (e.g., United Airlines) and focused airlines (e.g., Alaska Airlines) from 2003 to 2019. The study encompasses 121 observations for focused airlines and 72 observations for non-focused airlines. Annual data for each airline were obtained and analyzed to mitigate the impact of seasonality or external factors such as holidays or extreme weather events, following the approach recommended by Lapré and Scudder (2004).

We used the airline industry for three main reasons. First, few studies examine the link between competitive priorities and firm performance (profitability) in the service industry. Second, for various operational performance measures in the airline industry, longitudinal data can be used to address our research questions. Third, as discussed earlier, airlines have been generally grouped into two clear-cut categories based on their SO, allowing us to effectively investigate the influence of their business strategy on the relationship between OE, SQ, and firm performance (profitability).

3.1. Variables and Measures

Operational efficiency. To capture the multidimensional nature of OE in the airline industry, we employ two complementary productivity measures. The first measure, Labor Productivity, reflects how effectively an airline utilizes its human resources and is calculated as the number of annual passenger enplanements divided by the number of employees. This measure is widely recognized as a critical organizational performance indicator (Datta et al., 2005) and aligns with established recommendations for assessing productivity in service industries (Chiu and Huang, 2011). Moreover, it enhances the generalizability of our findings across different sectors (Datta et al., 2005). The second measure, Capacity Productivity, is computed as the ratio of Revenue Passenger Miles (RPM) to Available Seat Miles (ASM), which serves as a standard industry indicator of load factor and reflects how efficiently an airline utilizes its available capacity. Together, these labor-based and asset-based metrics offer a robust and comprehensive assessment of OE, well-suited to the labor- and capital-intensive nature of airline operations.

Service quality. Our measure of SQ is on-time performance (OTP), defined as whether a flight arrives within 15 minutes of its scheduled time. We use the percentage of flights that are on time each year per airline as the measure of SQ. Flight OTP is a key measure of SQ in the airline industry because it directly impacts customer experience and satisfaction (Prince and Simon, 2009; Parast *et al*., 2015).

Profitability. To measure an airline's profitability, we used the ratio of operating profit to operating revenue, in line with research on the airline industry (Tsikriktsis, 2007; Parast *et al*., 2015; Parast and Oke, 2022).

Firm size. In line with prior research, firm size was measured by the number of employees (Chen *et al*., 2023; Csiki *et al*., 2023).

Flight time. We included average flight time as a control variable to control the effects of flight distance on ticket price and profitability. Given that airlines use different aircraft types and fly different flight distances, using average flight time allows us to control for the variation in flight distance and its impact on quality, cost, and profitability. On longer flights, fixed costs (e.g., crew, maintenance) are spread over a greater distance, potentially lowering the cost per mile flown. We calculated the average flight time by dividing the total flight time per year by each airline's total number of flights.

Merger. A merger involves consolidating two organizations into a single, new entity. The primary motivations behind mergers are often to enhance profitability or mitigate risk. Capturing the impact of mergers is crucial because they can alter an organization's operational scope and scale. In the airline industry, we account for mergers by using a dummy variable that indicates the occurrence of a merger and the creation of a new entity (Parast and Oke, 2022).

Strategic orientation. We used dummy coding to delineate airlines' SO (business strategy) (Focused airlines coded as zero; non-focused as one). While there are different approaches to categorizing airlines based on their SO, they all divide airlines into two groups. We follow the classification used by Parast *et al*. (2015) and Parast and Oke (2022), where the distinction between airlines is made based on their product, process, and market focus. Airlines such as United Airlines and Delta Airlines provide various products (e.g., economy, economy plus, premium economy/premium plus, and business class), use different types of aircraft in varying sizes, and serve various markets and customers. In contrast, airlines such as Southwest and JetBlue offer limited products, use a limited aircraft type (typically one or two), and generally cater to cost-sensitive (budget) and leisure travelers. From a logistics and network perspective, non-focused airlines use a hub-and-spoke logistics system to transport passengers, allowing them to offer a higher level of routing flexibility than focused airlines that generally use a point-to-point logistics system.

3.2. Descriptive Statistics

Descriptive statistics. Tables 2 and 3 present statistics on each variable's mean and standard deviation. Focused airlines have slightly better SQ (79.80) than non-focused airlines (78.97). Focused airlines have a higher level of labor productivity than non-focused airlines (2520.30 to 1257.90). Non-focused airlines perform slightly better in capacity productivity (82.62 vs. 81.33). Non-focused airlines are approximately five times larger than focused airlines (65,795 to 13,073). Non-focused airlines have a longer average flight time (131.67) than focused airlines (101.89).

Table 2. Descriptive Statistics and Correlations (Non-Focused Airlines)

Variables	Firm Size	Average Flight Time	Labor Productivity	Capacity Productivity	Service Quality	Profitability
Firm Size	1	.513**	-.226*	.404**	.168	.413**
Average Flight Time		1	-.511**	.410**	-.183	164
Labor Productivity			1	.223*	.388**	.423**
Capacity Productivity				1	.207	756**
Service Quality					1	423**
Profitability						1
Mean	64,795	131.67	1257.90	82.62	78.97	.0324
SD.	23,212	18.15	270.74	4.19	4.17	.0732

**p< .05, * p < .10

Tables 2 and 3 also present the first-order correlations between variables for both groups of airlines. Firm size and profitability are significantly correlated in both groups (r = .413; r =.280), albeit the strength of the relationship is stronger for non-focused airlines. We also see different behaviors between different dimensions of OE. For non-focused airlines, there are significant correlations between labor productivity and profitability (r = .423) and between capacity productivity and profitability (r = .756). Only capacity productivity significantly correlates to profitability for the focused airlines (r = .267). Both groups have a significant correlation between SQ and profitability, with the magnitude of the correlation being higher for non-focused airlines (.423 vs. .254).

Table 3. Descriptive Statistics and Correlations (Focused Airlines)

Variables	Firm Size	Average Flight Time	Labor Productivity	Capacity Productivity	Service Quality	Profitability
Firm Size	1	.083	.017	-.139	-.065	.280**
Average Flight Time		1	-.366**	.440**	-.118	.327**
Labor Productivity			1	.086	-.232**	-.098
Capacity Productivity				1	247**	.267**
Service Quality					1	.254**
Profitability						1
Mean	13,073	101/89	2,520.39	81.33	79.80	.0663
SD.	12,999	33.71	806.81	4.69	5.87	.0822

** p< .05; * p < .10

4. Econometric specification and estimation strategy

Group-level fixed effects model. We begin our analysis by assuming that unobserved airline-specific heterogeneity is identical across airlines. Under this assumption, we measure a group effect for SO (focused vs non-focused) and avoid perfect collinearity between SO dummies and airline dummies (Parast et al., 2015; Parast and Oke, 2022). Thus, the cross-sectional time series model can be explained as follows:

$$Profitability_{it} = \beta_0 + \beta_1\ Size_{it} + \beta_2\ Merger_{it} + \beta_3\ FlightTime_{it} + \beta_4\ SO_i + \beta_5\ X_{it} + \sum_{s=2004}^{2019} \delta_s\, Y_{s,t} + u_{it}$$

Where $Profitability_{it}$ is the profitability measure for airline i in year t, $Size_{it}, Merger_{it}$, $FlightTime_{it}$ are control variables, SO_i is the time-invariant SO dummy. X_{it} are one or more time-varying measures of SQ and/or OE. $Y_{s,t}$ are year dummies (2004,…, 2019) with 2003 omitted, and $u_{it}$is the idiosyncratic error term.

The interaction of OE and SQ. Table 4 presents the results and reports the unstandardized coefficients and the standard errors (in parentheses). Hypothesis H_1 examines the interaction effect between OE and SQ on profitability. Model 1 specifically tests this relationship by focusing on the interaction between labor productivity, a key dimension of OE, and SQ. The interaction term (labor productivity × quality) is negative, which is in line with our hypothesized direction; however, it is not statistically significant ($B_{Unstandardized}$ = -8.93E-7; $\beta_{Standardized}$ = -.786; p >.10). The lack of statistical significance implies that we cannot conclusively assert this moderating effect. This result may point to other unobserved contingencies, which we explore in the next section.

The moderating effect of SO. Here, we examine whether the firm's SO moderates the relationships between OE, SQ, and profitability. Hypothesis H_2 is concerned with the role of SO in moderating the interaction effect of OE and SQ on profitability. The hypothesis proposes that

SO moderates the interaction effect of OE and SQ on profitability, where the interaction effect of OE and SQ on profitability is hypothesized to be different between the two groups of firms with different SOs.

Table 4. Results

	Model 1	Model 2
Year Fixed Effect	Yes	Yes
Intercept	-.770** (.270)	-.669** (.323)
irm Size	.022** (.008)	.023** (.008)
SO	-.059** (.017)	-.026** (.225)
Merger	-.022 (.016)	-.026 (.016)
Flight Time	.001**(.004)	.001**(.0003)
Labor Productivity	.8.62E-5 (1.0E-4)	5.157E-5 (.0001)
SQ	.006** (.003)	.005 (.004)
SQ× SO		-.002 (.003)
Labor Productivity × SQ	-8.93E-7 (1.7E-6)	-5.001E-7 (1.60E-6)
Labor Productivity × SO		4.042E-6 (3.64E-5)
SO × Labor Productivity × SQ		1.275E-6** (5.54E−7)
Variance Components		
Regression	.549	.587
Residual	.545	507
Measures of Fit		
R^2_{adj}	.428	458

** $p < .05$; * $p < .10$

Model 2 examines the three-way interaction of SO × labor productivity × SQ. As expected, SO moderates the two-way interaction of labor productivity and SQ on profitability ($B_{Unstandardized}$ = 1.275E-6; $\beta_{Standardized}$ = .813, p<.05). The coefficient is statistically significant and positive, suggesting that the moderating effect of SO on the interaction between labor productivity and SQ and their effect on profitability is more pronounced for non-focused airlines.

The results reveal a significant three-way interaction between SO, SQ, and labor productivity, suggesting that the effect of labor productivity on profitability is contingent upon both the firm's SO and its SQ levels. Specifically, the findings imply that for non-focused (full-service) airlines, SQ amplifies the positive impact of labor productivity on profitability, consistent with the notion that non-focused carriers differentiate themselves through both service and operational excellence. In contrast, the same synergistic effect is not observed in focused (low-cost) carriers, whose business models emphasize cost efficiency over service enhancements. This underscores the importance of aligning multiple capabilities, strategy, quality, and efficiency to drive superior performance in non-focused (full-service) airlines.

5. Robustness Tests

We conducted a series of robustness tests to ensure that our results were not sensitive to the methodological procedures employed. Given the time-series nature of our data, we first examined the presence of autocorrelation to determine whether the residuals in the regression model are autocorrelated. We applied the Durbin-Watson (DW) test, where DW values ranged from 2.029 to 2.340, within the recommended range of 1.5–2.5 (King, 1983). These results suggest that autocorrelation did not inflate the standard errors in our models. Next, we assessed the distribution of the error term to verify normality by examining residual histograms, which indicated approximate normal distribution (Singer and Willett, 2003). To identify potential outliers, we examined Cook's Distance, which had a maximum value of 0.388, well below the recommended threshold of 1.0 for influential observations (Cohen et al., 2003). We also examined homoscedasticity to verify whether the variance of regression disturbances remained constant across observations (Greene, 2012). This assessment, conducted by plotting unstandardized residuals against unstandardized predicted values, revealed no discernible pattern, indicating the assumption of homoscedasticity was met.

To test the robustness of our findings with respect to productivity measures, we introduced an alternative metric, capacity productivity, in addition to labor productivity. While labor productivity captures employee efficiency in passenger transportation, capacity productivity measures how effectively airlines leverage available seating to maximize revenue. Table 5 summarizes the results for both measures.

Model 1 examines the interaction between labor productivity and SQ, consistent with prior analyses reported in Table 4. Model 2 evaluates the interaction between capacity productivity and SQ. While the coefficient for this interaction was negative, as hypothesized ($B = -5.001E-7$; $\beta = -2.028$; $p > .10$), the magnitude of the effect differed from labor productivity, suggesting the impact of productivity-SQ alignment may vary across productivity types. Model 3 examined the three-way interaction of SO × labor productivity × SQ, while Model 4 assessed SO × capacity productivity × SQ. For Model 4, the three-way interaction was positive but not statistically significant ($B = 2.062E-5$; $\beta = 0.827$; $p > .10$), suggesting that the benefits of aligning capacity productivity with SQ may be context-dependent. Overall, only one interaction achieved statistical significance, but the directional consistency across models supports a contingency view: the effectiveness of productivity–quality alignment depends on the firm's SO and the type of productivity measure employed. Non-focused (full-service) carriers appear to derive the most benefit from jointly leveraging productivity and SQ, with labor productivity showing the most robust effect.

Table 5. Results with the alternative measure of productivity

	Model 1	Model 2	Model 3	Model 4
Year Fixed Effect	Yes	Yes	Yes	Yes
Intercept	-.770** (.270)	-2.339 (1.773)	-.669**(.323)	-.566 (1.683)
Firm Size	.022** (.008)	.021** (.009)	.023** (.008)	.024** (.008)
SO	-.059** (.017)	-.076** (.018)	-.026** (.225)	-1.187** (.227)
Merger	-.022 (.016)	-.020 (.016)	-.026 (.016)	-.060** (.017)
Flight Time	.001** (.004)	.0003 (.0002)	.001** (.0003)	.0003 (0002)
Labor Productivity	.8.62E-5 (1.0E-4)		5.157E-5 (.0001)	
Capacity productivity		.022 (021)		.003 (.020)
SQ	.006** (.003)	.024 (.022)	.005 (.004)	.004 (.021)
SQ× SO			-.002 (.003)	-4.16E-5 (.001)
Labor Productivity × SQ	-8.93E-7 (1.7E-6)		-5.001E-7 (1.60E-6)	
Labor Productivity × SO			4.042E-6 (3.64E-5)	
Capacity productivity × SQ		-.0002 (.0003)		-1.191E-5 (.2.48E-4)
Capacity productivity × SO				.012**(.004)
SO × Labor Productivity × SQ			1.275E-6** (5.54E−7)	
SO × Capacity productivity × SQ				2.062E-5 (2.67E-5)
Variance Components				
Regression	.549	.548	.587	.640
Residual	.545	.538	507	.446
Measures of Fit				
R^2_{adj}	.428	.430	458	.518

Alternative model specification. To account for airline-specific variations not captured by SO or other fixed effects, we applied a mixed-effects model specifying airline as a random effect (Parast et al., 2015; Parast and Oke, 2022). This approach captures differences in airline operational practices, including management decisions, mergers, and acquisitions, enhancing the generalizability of the findings. The model can be expressed as follows:

$$Profitability_{it} = \beta_0 + \beta_i X_{it} + u_i + \epsilon_{it}$$

where β_0 represents the overall intercept, β_i the fixed effect of each predictor, u_i the airline-specific random effect, and ϵ_{it} the residual error. Mixed-model results indicated a negative interaction between labor productivity and SQ (β = -0.0003, p < .10) and a positive but nonsignificant interaction between capacity productivity and SQ (β = 0.0001, p > .10). The moderating effect of SO was positive for both labor productivity × SQ (β = 0.0005, p > .10) and capacity productivity × SQ (β = 0.001, p > .10). Variance components for both the repeated measures and random intercept were significant, indicating substantial within- and between-airline variability.

Comparing the mixed-effects and fixed-effects models revealed two key observations. First, the three-way interaction SO × labor productivity × SQ was significant in the fixed-effects model, whereas the mixed-effects model highlighted the two-way interaction between labor productivity and SQ. This difference underscores the importance of accounting for airline-specific characteristics, which can substantially influence the observed relationships. Second, the interaction between capacity productivity and SQ was negative in the fixed-effects model but positive in the mixed-effects model, suggesting that context matters: individual airlines may experience variable interactions between productivity and SQ, yet these factors generally complement each other across the industry when accounting for random effects. Across both models, the positive three-way interaction emphasizes the critical role of SO in ensuring that productivity and SQ improvements jointly enhance profitability.

To further assess the contribution of airline-specific characteristics, we computed the intraclass correlation coefficient (ICC), which captures the proportion of variance in profitability attributable to differences between airlines. Values ranged from 0.50 to 0.75, indicating that airline-specific factors are crucial determinants of profitability. Random effects effectively capture unobserved heterogeneity, while time-varying operational factors, such as changes in OE or on-time performance, contribute to within-airline variance.

In summary, the robustness tests reinforce the importance of considering both firm-level SO and airline-specific characteristics when evaluating the impact of OE and SQ on profitability. Labor productivity consistently showed the most robust synergy with SQ, and the moderating role of SO highlights that the benefits of aligning productivity and SQ are contingent on a firm’s strategic identity and internal capabilities. These findings support the contingency theory perspective, emphasizing that superior performance arises from tailoring productivity and quality initiatives to the firm’s dominant SO and operational context.

6. Discussion

The interaction between OE SQ and their joint impact on profitability remains an enduring challenge for service organizations. Firms often question whether improvements in OE and SQ can occur simultaneously or if gains in one dimension compromise the other. This tension becomes more complex when considering the firm’s SO. Prior research on competitive priorities and operations strategy has explored these relationships with mixed results. Our findings contribute to this ongoing debate by offering two new perspectives. First, by incorporating multiple dimensions of OE (e.g., labor and capacity productivity), we show that the magnitude and direction of the OE–SQ interaction depend on how OE is measured. Second, we demonstrate that a firm's SO moderates this relationship, influencing how OE and SQ jointly affect profitability. Drawing on contingency theory (Donaldson, 2001; McAdam et al., 2019), we argue that strategy serves as a key contextual factor shaping the effectiveness of operational and quality initiatives.

6.1. Theoretical implications

Our first contribution provides new insights and empirical evidence regarding the interaction between OE and SQ and their joint impact on firm profitability. To address the mixed findings in the literature, we examined this relationship using two approaches: (i) incorporating multiple measures of OE, and (ii) accounting for the firm's SO. Our results indicate that both labor and capacity productivity negatively interact with SQ in influencing profitability. Although the coefficients are not statistically significant, the direction of these effects supports the hypothesized trade-off between OE and SQ. These findings help explain the inconsistent results reported in prior studies by highlighting how different conceptualizations of OE can lead to divergent conclusions about its relationship with SQ. While some studies emphasize cost- and time-based dimensions of efficiency (e.g., Hod et al., 2016), others advocate a more multidimensional view that includes customers, labor, and other firm resources (Richey et al., 2022). As Johnston and Jones (2004) note, the relationship between productivity measures can vary in sign depending on the dimension examined. Our study extends this line of inquiry by showing that simultaneous improvements in OE and SQ may, under certain conditions, reduce profitability. By decomposing OE into its distinct dimensions, we demonstrate that the strength of the negative interaction effect with SQ is not uniform across these dimensions, underscoring the need for a multidimensional perspective when evaluating OE and its implications for firm performance.

Our second theoretical contribution provides empirical evidence on the significant role of a firm's SO in shaping the relationship between OE, SQ, and profitability. We find that the complementary effect between OE and SQ is stronger for firms (airlines) with a non-focused SO, offering novel insights into how organizational strategy influences the balance between efficiency and quality. This finding is particularly important given the longstanding debate on whether OE and SQ are compatible or exhibit trade-offs. By integrating SO into our model, we demonstrate that it significantly moderates the interaction between OE and SQ competitive priorities and their resulting impact on firm performance. Specifically, the positive three-way interaction among SO, OE, and SQ suggests that non-focused service providers can mitigate the negative interaction effect of OE and SQ on profitability. Although only one of the interaction terms is statistically significant, both are positive and align with contingency theory, which posits that the effectiveness of management practices depends on their fit with the firm's strategy and internal capabilities. In this context, non-focused (full-service) carriers appear to benefit most from integrating productivity and quality improvements, particularly through labor productivity. Firms pursuing broader, non-focused strategies are thus more capable of managing the inherent tension between OE and SQ, gaining greater performance advantages than focused firms. A plausible explanation for this lies in the role of innovation, which enables firms to reconcile operational objectives that are often at odds, such as financial performance and sustainability investments (Eccles and Serafeim, 2013). Hence, the stronger combined effect of OE and SQ on profitability among non-focused service providers may reflect their superior capacity for innovation, offering an unexplored yet promising avenue for understanding the interplay between OE, SQ, and profitability.

To sum up, our findings extend prior research in the operations strategy literature by highlighting the critical role of SO and its influence on competitive priorities (Boyer and Lewis, 2002; Wiengarten et al., 2019). This study also bridges a gap between strategic management and operations management research. While the strategic management literature has long emphasized SO but largely overlooked its interplay with OE and SQ (Deutscher et al., 2016; Hakala, 2011), the operations management literature has focused extensively on OE and SQ (Athanassopoulos, 1997; Hod et al., 2016; Talluri et al., 2013) without adequately considering how SO moderates their relationship. From a theoretical standpoint, our work advances operations strategy research by elucidating the nature and magnitude of the interaction between OE and SQ as contingent on the firm's SO. Specifically, we demonstrate that organizations pursuing a non-focused strategy are better equipped to manage the negative interaction between OE and SQ, potentially due to their greater capacity to develop slack resources and organizational buffers (Voss et al., 2008). Such slack resources enable firms to absorb competing demands across operational priorities, thereby mitigating performance trade-offs and enhancing overall profitability.

To the same end, our results also advance contingency theory and corroborate the idea of "fit." Contingency theory asserts that firms' behaviors depend upon many internal and external factors (Luthans, 1976). Due to intrinsic differences across organizations, firms adopt different processes to better suit their internal and external environments (Donaldson, 2001). Our findings provide further evidence for the idea of fit, indicating that service providers align their structure and processes differently. This requires organizations to emphasize different sets of capabilities to remain competitive. We examine one such contingency, SO, which was identified in prior research (O'Regan and Ghobadian, 2006; McAdam *et al*., 2019). We empirically show how a firm's SO moderates the relationships between OE and SQ and their impact on profitability. This allows firms with a broader SO to mitigate the potential (negative) interaction between OE and SQ, thereby competing more effectively across different dimensions of competitive priorities, such as cost and quality.

As an additional contribution, our results also provide important insights into the direct effect of OE and SQ on profitability. In all models, the direct effects of OE and SQ on profitability are positive. This suggests that both dimensions of competitive priorities impact profitability. However, emphasizing both simultaneously may lead to a trade-off, where the interaction effect becomes negative, thereby deteriorating profitability. The interactions between OE and SQ impacting profitability arise from inherent tensions in their simultaneous pursuit. OE emphasizes cost minimization, process standardization, and optimization, often at the expense of flexibility and service customization, key elements of high SQ. For instance, while Toyota's lean manufacturing system achieves exceptional efficiency, it may be less responsive to unexpected customer needs, potentially compromising SQ. Similarly, airlines that reduce staffing to cut costs may experience longer customer response times, negatively impacting satisfaction. In construction, efficiency-driven strategies like standardized design can expedite project delivery and reduce costs but may conflict with client preferences for customization, thereby diminishing perceived service value. Amazon exemplifies this trade-off; while its highly automated logistics system delivers operational excellence, occasional issues with product quality and limited human interaction may undermine customer experience. Conversely, Southwest Airlines maintains low-cost efficiency with minimal frills, yet lacks the premium service levels offered by competitors such as United Airlines. Achieving alignment between OE and SQ requires innovation, as illustrated by Tesla, which merges automated production with customer-centric features for a niche market (Furr and Dyer, 2020). These examples underscore the importance of aligning strategic priorities and resource allocation to avoid operational bottlenecks, preserve customer satisfaction, and sustain profitability.

Our findings provide a more integrative theoretical framework for understanding how competitive priorities interact to influence firm performance. We advance the competitive priorities literature by incorporating insights from contingency theory, showing that the trade-off between OE and SQ varies depending on a firm's SO. In addition, we contribute to the contingency theory literature by demonstrating that structural characteristics, such as the business model, shape how firms manage and reconcile tensions between competing operational priorities. This dual contribution underscores the importance of strategic alignment in achieving effective operational outcomes.

6.2. Practical implications

Our study has several implications for service operations managers. Regarding the implications of our findings for managers and practitioners in the service industry, we showed that it is important to realize the interaction between different dimensions of OE and SQ and their overall impact on profitability. As such, managers should recognize that the interaction between OE and SQ is not one-size-fits-all. Our analysis shows that although capacity productivity demonstrates a larger numerical interaction with SQ, only the labor productivity interaction is statistically significant. This suggests that labor productivity plays a more decisive role in shaping the OE–SQ–profitability relationship. The finding underscores the importance for service operations managers to carefully recognize and manage this tension when allocating resources, ensuring that efforts to improve efficiency or quality do not inadvertently undermine profitability.

The second implication for operations managers in the service industry is that they need to be mindful of the value of the services they bring to their customers and how the customers interact in choosing the focal service. For example, the customers of focused services may be engaged in a benefit vs. cost analysis and may be concerned that the lower cost of focused services may mean a lower-grade product and SQ. Such an interaction from the customers' viewpoint may hurt focused services in the long term. The recent evidence of Spirit Airlines filing for bankruptcy highlights that sole reliance on cost-cutting and efficiency-driven policies can harm firms in the long term by diminishing SQ outcomes. It is crucial to recognize that a certain level of service SQ must be maintained, even when a firm's SO is primarily focused on cost efficiency.

The third implication is that operations managers should realize that competitive priorities such as OE and SQ would impact firms differently. It is important to realize that managers interested in benchmarking best practices should be mindful of the impact of the firm's SO on the interaction between competitive priorities and their impact on profitability. It is also important to note that firms with a broader SO (non-focused) are more likely to benefit from competing on both OE and SQ, particularly in highly competitive markets. These firms may also have the potential to raise the competitive standard for firms with a highly focused SO on cost efficiency. The industry practices validate our findings regarding the capability of non-focused service providers in that regard. While non-focused airlines successfully attracted cost-sensitive customers by offering Basic Economy seating, focused airlines struggled to compete with them (Mitchell, 2024). From a much broader perspective, our findings suggest that firms that are broader in terms of their SO would be able to compete more effectively in multiple dimensions and address the inherent interaction between OE and SQ, which can strengthen their competitive position in the market. Interestingly, low-cost airlines have recently recognized the need to 'upscale' their products and services to compete more effectively, signaling a significant shift in their business model (Schweitzer and Martínez, 2024). This renewed strategy aligns with our findings, which highlight that a broader SO enables firms to address both OE and SQ simultaneously.

We recommend that operations managers measure multiple dimensions of OE and examine their interaction with SQ. Our findings show that while the interaction of capacity productivity with SQ is not statistically significant, it exhibits a numerically larger negative effect, suggesting potential risks if overemphasized. In contrast, the labor productivity and SQ interaction is statistically significant, highlighting labor productivity as a more decisive driver of the OE–SQ–profitability relationship. High capacity utilization can strain resources, potentially compromising SQ and reducing customer satisfaction, which may ultimately erode profitability. Therefore, managers should balance efficiency and SQ, recognizing that even non-significant negative effects, such as those from capacity productivity, can have meaningful operational and financial consequences.

6.3. Limitations and future research

Our study has several limitations that need to be addressed. First, we used objective measures of OE and SQ. While some benefits exist in using (single) objective measures to reduce measurement error (Hair *et al*., 2009), these measures may not fully capture the totality of OE and SQ. For example, a more robust measure of OE could be obtained by incorporating cost items in both inputs (e.g., employee salary) and output (ticket price). Similarly, we used OTP to measure SQ. While this measure has been widely recommended for assessing SQ, using other SQ dimensions, such as customer surveys, could provide a more holistic assessment of SQ. Nevertheless, future studies should develop multidimensional OE and SQ measures based on the available data.

The interaction between OE and SQ in relation to profitability, particularly when viewed through the lens of SO, can be effectively explored using an inductive research approach. This method allows researchers to generate insights and identify patterns directly from empirical data rather than relying on predetermined hypotheses. It is especially valuable for examining how different SOs influence the relationship between OE and SQ and their combined effects on firm performance. The adaptability of inductive reasoning supports the discovery of unexpected relationships and subtle dynamics that may be missed by traditional deductive methods. Furthermore, qualitative inductive research can uncover the underlying mechanisms through which OE, SQ, and SO interact. A central research question that emerges from this approach is how SO enables the alignment of OE and SQ in ways that enhance profitability.

While the concept of SO provides a useful framework for distinguishing between broad airline strategies, such as focused (low-cost) carriers focused on OE and non-focused (full-service) carriers emphasizing customer experience and SQ, it tends to oversimplify the strategic complexity of airlines. Classifying carriers strictly into these two categories overlooks the nuanced strategic positioning many airlines adopt, such as hybrid models that combine elements of both cost efficiency and differentiated services. This limited granularity may obscure important intra-group variations and strategic evolutions driven by market competition, technological innovation, and shifting consumer expectations. Therefore, while SO offers a helpful starting point, more fine-grained analyses are needed to capture the dynamic and multidimensional nature of airline strategy. Future studies could explore the development of more nuanced measures of SO beyond the common dichotomous categories currently available in the literature. In our study, we propose the use of the term *strategic flexibility* as a valuable alternative to SO for distinguishing airlines (Volberda, 1996; Tae et al., 2020). From this perspective, focused airlines typically operate a limited range of aircraft, whereas non-focused airlines demonstrate greater flexibility by managing a more diverse fleet to support multiple service models. This view more accurately reflects the operational and strategic complexity of airlines in today's competitive market.

This study addresses the interaction between OE and SQ and their impact on profitability in the service industry context. We should be careful in generalizing this study's findings to other industries, such as manufacturing. In addition, the airline industry is categorized as a capital-intensive service industry that adheres to some form of regulation. Thus, the study's results can be generalized to other industries with similar characteristics, such as transportation, hospitality, healthcare, and utility industries. Future research should assess the validity of the findings of this study in other manufacturing and service organizations.

7. Conclusion

This study revisits the longstanding debate on the compatibility of OE and SQ, particularly regarding how their interaction affects firm profitability. Our findings challenge the notion that firms must inevitably choose between these two priorities. Instead, we demonstrate that the relationship between OE and SQ, and its effect on profitability, is more nuanced, depending on how OE is measured and the SO of the firm.

We disaggregate OE into labor and capacity productivity and find that while OE and SQ each enhance profitability independently, their interaction often reduces it. This underscores the necessity of a multidimensional view of OE, demonstrating that the OE-SQ trade-off is both dimension-specific and context-dependent. We also discover that SO plays a critical role: non-focused firms manage the efficiency-quality balance more effectively, supporting a contingency approach. For practitioners, this indicates the need to align OE and SQ strategies with their business model and operational priorities.

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