

RESEARCH ARTICLE OPEN ACCESS

Navigating Temporary Competitive Advantage: Pandemic-Driven Strategies in the Global Airline Industry

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Received: 28 April 2023 | **Revised:** 31 October 2024 | **Accepted:** 1 November 2024

Keywords: competitiveness | COVID-19 | global airline industry

ABSTRACT

The present study examines the evolution and dynamics of temporary competitive advantage (TCA) in the volatile airline industry. This is illustrated by using the context of COVID-19 pandemic to understand the risk faced by the global airline industry. By focusing on “healthiness” as a source of competitiveness, many airlines and the industry instituted distinctive initiatives to demonstrate and deliver hygienically dependable travel experiences. The airline companies adopted a host of new technologies and processes such as biometric boarding, digital health passports, general biometrics, and bring-your-own-device, to minimize face-to-face interactions and curtail the spread of the virus. These competitive strategies aimed to improve the companies' operational efficiency, and cost reduction. The avenues for future research and implications for practicing managers are identified and discussed.

1 | Introduction

In the last few years, the COVID-19 pandemic has crystallized the growing interconnectedness of national economies (Ciravegna and Michailova 2022; Peng et al. 2021) and brought to the forefront the strategic imperative of timely organizational responses (Amankwah-Amoah 2020, 2021). The COVID pandemic has influenced companies to embrace emerging technologies, engage in competitive online business activities, and fast-track their operations (Amankwah-Amoah, Khan, and Osabutey 2021; Amankwah-Amoah, Khan, Wood, and Knight 2021) to address skill obsolescence caused by the outbreak of the virus (Groysberg and Baden 2021). These COVID-induced changes have overlapped with the acceleration of disruptive technologies such as robotics, artificial intelligence, blockchain, and 3D printing to amplify the uncertainties and challenges faced by firms (Strusani and Hounghonon 2020; Amankwah-Amoah et al. 2024). In such hypercompetitive environments accompanied by short-lived periods of competitiveness, timely response to unfavorable business events is always crucial for nourishing

firm survival and sustainable competitive advantage (D'Aveni, Dagnino, and Smith 2010).

Although some scholars asserted that sustainable competitive advantage is rare and declining in the fast-changing business environments (D'Aveni 2010; Ruefli and Wiggins 2003; McGrath 2013), strategy and international business scholars have largely side-stepped the prospects of transient advantage (constantly changing advantage) in the wake of the pandemic. This omission in the current literature is surprising given that it is rare for organizations to maintain a truly enduring advantage (McGrath 2013), even more so during a pandemic. Against this background, the objective of this paper is to address this research deficit by examining the evolution and dynamics of transient advantage in the face of environmental uncertainties. We illustrate our contention by focusing on the evolution of “healthiness” as a source of temporary competitive advantage (TCA) in the wake of the COVID-19 pandemic in the global airline industry. By “healthiness,” we refer to the safe physical conditions surrounding firm activities that shield them from adverse security and health risks.

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This study offers important theoretical contributions. First, although there is a growing body of research on TCA (Dagnino, Picone, and Ferrigno 2021; D'aveni 2010; Sołoducho-Pelc and Sulich 2020), there remains limited insights on how pandemics can shape the development of competitive advantage temporarily. By utilizing the concept of healthiness in business competition, the study sheds light on how health-related innovations stemming from the crisis helped reduce human contact and face-to-face contact between airline employees and their customers. Furthermore, this study extends previous research on the COVID-19 pandemic (Ciravegna and Michailova 2022; Montiel et al. 2022) by developing the discourse to encompass how it has altered the competitiveness of firms and incentivized them to adopt new technologies to reduce personal contacts in a service industry. This study also highlights the influence of industry-specific pressures on companies' response to the pandemic. The remainder of the paper proceeds in the following manner. The next section presents a review of literature on TCA. Following this, the characteristics of the global airline industry are examined and used to illustrate our conceptualization. From the analysis, we outline several practical contributions and fruitful directions for future research.

2 | Temporary Competitive Advantage: Conceptualization

The concept of TCA (D'aveni 2010; Sołoducho-Pelc and Sulich 2020) traces its roots in the general literature on competitive advantage (Barney 1991; Porter 1980). It points to the resource-based perspective on sustainable advantage which emphasizes firms' ability to utilize their resources and capabilities to develop and maintain superior performance over an extended prior of time (Barney 1991; Barney and Clark 2007; Kraaijenbrink, Spender, and Groen 2010). The strategic imperative and necessity for a timely response to the unpredictability of changes in the business environment have further elevated the interest in and importance of TCA (Dagnino, Picone, and Ferrigno 2021; Sołoducho-Pelc and Sulich 2020). In turbulent business environments, new sources of competitive advantages emerge and then evaporate quickly. Thus, TCA necessitates proactive strategic renewal and upgrading of firm resources and expertise. Unlike the concept of sustainable competitive advantage, TCAs fleet with a very limited window of opportunity for firms to capture and capitalize on resources and dynamic capabilities that can offer value for businesses (D'aveni 2010).

In their pioneering work, Teece, Pisano, and Shuen (1997, 516) defined dynamic capabilities as “the firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments.” The dynamic capabilities theory contends that competitiveness is predicated on the ability to identify, sense, and capitalize on market opportunities in a timely manner (Teece 2000; Teece, Pisano, and Shuen 1997; Luo 2000; Rothaermel and Hess 2007). A growing body of research has shown that dynamic capability can be translated into sensing and seizing new opportunities, as well as transforming capacity, which involves renewing and replenishing firms' resources to respond to environmental disturbances (Teece 2007).

By viewing sensing, seizing, and transforming capacity as the pivotal and disaggregated pillars in developing dynamic innovation capability, organizations would be able to develop innovation capability to outwit their competitors (Teece 2007).

In an era of fast-changing business environments and environmental upheavals, the traditional sources of competitive advantage can be quickly eroded (Dagnino, Picone, and Ferrigno 2021; Karadag and Poppo 2023). In these conditions, strategic resources can deplete and lose their practical utility in organizations (Karadag and Poppo 2023). The literature on TCA has emerged as new streams of research that support and complement resource-based perspective on sustainable competitive advantage rather than seeking to supplant it (D'aveni 2010; McGrath 2013; Dagnino, Picone, and Ferrigno 2021). TCA emphasizes the potential erosion of firms' competitiveness at least in the short-term (Sirmon et al. 2010; Dagnino, Picone, and Ferrigno 2021), which may stem from external factors like competition, recession, and pandemic.

Owing to scarcity of resources and resource depletion during crises, businesses are likely to engage in inter-firm collaborations to combine, boost, and amplify the effects of existing resources and capabilities (Dagnino, Picone, and Ferrigno 2021). By combining their technological and technical capabilities with suppliers or rival firms, businesses can enhance their product development and innovative activities to deliver transient advantage (Cousins et al. 2011). The degree of collaboration and resource recombination can be predicated on industry structure, which may influence the conduct and actions of firm competitiveness in both hostile and benign business environments (see Christmann, Day, and Yip 1999; Caves and Porter 1978; Porter 1980). The industry structure perspective is based on established knowledge that structural conditions like market entry and exit barriers can shape the behaviors and conduct of firms, which in turn determine their overall performance and industry profitability (Christmann, Day, and Yip 1999; Miles 1993). We summarize the above theoretical viewpoints in Table 1.

In contrast to the notion of sustainable competitive advantage, the concept of transient advantage recognizes the realities of a rapidly changing business landscape and short-term superiority through the possession and utilization of unique resources and capabilities. It emphasizes the importance of capturing momentary market opportunities to remain relevant in the marketplace. Firms that fail to create barriers to service/product imitation will lose competitive advantage to their rivals who in turn mimic the competencies of the concerned competitors, thereby leading to the erosion of their market share (Hill and Jones 2009). Hence, the first-mover advantages will generally fade when rival firms catch up via imitation or me-too products (Lieberman and Montgomery 1988).

3 | Competing on Healthiness: A Conceptual Development

Competing on healthiness can help businesses deliver product/service to their customers without threat of harm and insecurity. Healthiness is synonyms to soundness, cleanliness, hygiene,

TABLE 1 | Relevant theoretical viewpoints.

Key theoretical underpinnings	Key premise and explanation	Key references
The resource-based theory	Exceptional firm performance is predicated on the acquisitions, possessions, and deployments of superior firm-specific valuable resources and capabilities.	Barney (1991); Wernerfelt (1984); Mahoney and Pandian (1992)
Dynamic capabilities perspective	Firm competitiveness is centered on the ability to adapt, renew, and deploy firm-specific capabilities and resources in a more efficient manner.	Teece, Pisano, and Shuen (1997); Teece (2007)
The industry structure perspective	Firm competitiveness is predicated on industry structure.	Caves and Porter (1978)

and wellness of the business surroundings, which can be vital sources of firm competitiveness. It denotes the state of firms' offerings, products, or services as being free from diseases such as Ebola Virus Disease and COVID-19. These have elevated the importance of health innovations in business processes with the specific aim of protecting and preserving the health of internal and external stakeholders such as employees and customers in delivering the products and services of the organization (Quick, Macik-Frey, and Cooper 2007). This line of reasoning is buttressed by the fact that people-centered care has now become a source of competitiveness for firms seeking success in a post-pandemic environment (Silverman et al. 2021). To this end, some key businesses have made genuine attempts to adhere to best practices and "rules of the game" to curtail the spread of the virus in their premises.

Firms which compete on healthiness adopt a range of measures to deliver hygienically dependable customer experiences and address the health concerns of their key stakeholders. They develop their strategic "healthcare credentials" around people, product, and service as a source of competitive advantage underpinned by modern technologies that emphasize on disease prevention and precautionary measures. By setting their strategies on healthy conditions and wellbeing of their stakeholders, firms can also achieve and maintain sustainable organizational goals. This argument is consistent with strategic management and international business literature that has long established that firms' ability to accomplish a sustainable competitive advantage is predicated on possession and wise deployment of their distinctive resources and capabilities (Barney 1991; Teece, Pisano, and Shuen 1997), which have continued to show prominence in contemporary strategy discourse (Grant 2010).

Healthiness encompasses not only the absence of contaminated conditions or minimization of risks of injury, illness, and disease, but also how such conditions are cultivated or developed to enhance worker and organizational performance. Healthiness, per se, is a multidimensional construct encompassing the physical work environment and organizational guideline and culture, which play an instrumental role in enhancing firm performance. As suggested by Park et al. (2022), health initiatives can extend beyond hygiene to encompass ethical and sustainable responses to stakeholder expectations.

Organizations prioritizing healthiness during crises and major healthcare emergencies are more likely to receive favorable ratings from stakeholders and attract top talent. Effective physical layout and design, including lighting, ventilation, indoor

environmental quality, temperature control, and noise, can play a crucial role in cultivating healthiness as a source of TCA. Firms which adhere to safety measures such as proper signage, emergency exits, fire extinguishers, and hazard controls has the potential to gain temporary advantages in the marketplace, attract customers and foster confidence among stakeholders. Thus, safe physical environmental conditions that shield firms from security and health risks are criteria for business success. In this direction, Castillo et al. (2023) emphasizes ethical commitments to customer and employee well-being as a key element in the health-focused strategies that can deliver advantages for organizations.

During adverse health events, a high level of healthiness is likely to reduce employee absenteeism, and increase customer and other stakeholder engagement in business activities. Healthiness elevates sustainable business practices and mitigates risks of customers and clients visiting business premises. Accordingly, competing on healthiness can help firms differentiate themselves from their rivals.

4 | The Global Airline Industry: A Brief History and Illustration

The global airline industry has been shaped and reshaped by a host of national and international regulatory changes, market reforms, treaties, and conventions (Belobaba, Odoni, and Barnhart 2015; Doganis 2005; Hanlon 2006; Morrison and Winston 2010). At the International Civil Aviation Conference in Chicago 1944, over 50 nations around the globe agreed on the regulatory framework for a more competitive global industry. One significant development was the formation of the International Air Transport Association (IATA) in 1945, established as the "vehicle for inter-airline cooperation in promoting safe, reliable, secure, and economical air services" (IATA 2024). At its founding, the IATA had just over 50 members from around 30 nations, and it has since grown tremendously, with over 330 members from 120 nations in 2024 (IATA 2024). This transformation is further exemplified by the US Airline Deregulation Act of 1978, which was instrumental in ushering in a more liberal environment. Over time, this led to the emergence of new sources of competition and the rise of low-cost carriers such as Southwest Airlines (O'Connell and Williams 2005). The low-cost airline business model, successfully experimented by Southwest Airlines in the United States, emphasizes point-to-point flights, online/digital payment methods, and high-density seating arrangements. This

model enabled them to achieve operational efficiency and offer low-cost fares (Doganis 2005; Morrison and Winston 2010). Consequently, low-cost carriers captured market share from legacy airlines, leading to the adoption of their business model by airlines such as Ryanair and EasyJet in Europe. This model has since been adopted globally as a viable business strategy. For instance, the US Airline Deregulation Act 1978, the creation of the European Common Aviation Area (ECAA), Transport Liberalization in Asia Pacific Region, and adoption of the Yamoussoukro Declaration 1988 in Africa, have all been instrumental in opening the global airline industry (Amankwah-Amoah and Debrah 2011; Doganis 2005).

As deregulation and market reforms spread from the US to Europe and Africa, favorable market conditions were created, fostering the global development of low-cost carriers. Consequently, the dominance of incumbent state-owned airlines weakened, forcing them to focus more on quality services and competitive pricing (Hanlon 2006). Accompanying deregulation and market reforms was the proliferation of privately owned airlines, which has competed against legacy/traditional airlines. This competition exerts downward pressure on airfares and leads to improvements in the quality of inflight services (Doganis 2005). Since the late 1980s, nevertheless, there has been a substantial shift toward greater adoption and implementation of open skies agreements (Doganis 2005). This can be partially attributed to the benefits that can be accrued from a more open industry in terms of airfares, consumer choice, and improved quality of services. Generally, the open skies agreements such as that signed by the Dutch and United States governments in 1992, resulted in increased access to international routes leading to increased competition in cross-border travel, trade, and investments (Doganis 2005; U.S. State Department 2016). Reflecting on open skies agreement and the changing landscape of the aviation market, many airlines capitalized on the opportunities to fly between the European Union and the United States without restrictions to launch services on new routes.

At the 1951 Fourth World Health Assembly, governments were urged to improve sanitary and environmental conditions at airports (World Health Organization 2009). Accompanying these developments, more countries adopted open skies agreements underpinned by greater market access to help airline industry operate on free pricing and code-sharing on higher frequency (Amankwah-Amoah and Debrah 2011; Chang and Williams 2001). The flexibility to operate between countries comes with health risk and the airline industry is seen as one of the first lines of defense in combating global pandemics as many viruses travel across national borders via domestic and international flights. In the aftermath of the COVID-19 pandemic outbreak, important stakeholders in the aviation ecosystem (such as governments, airports, regulators, airlines, and aircraft manufacturers) coordinated their activities to improve the conditions for travel and to reduce health risks (International Civil Aviation Organization 2022). The COVID-19 pandemic culminated in billion-dollar losses, bailouts, and job losses across the industry in all corners of the globe. In the early days of the pandemic, governments responded with border closures and bans on international flights. What followed in this highly competitive and

fast-changing airline industry was that, both legacy airlines and low-cost carriers were affected by the border closures instituted by governments at the height of the pandemic. Airline firms had to develop responsive strategies to help them survive in the market. Below, we outline a variety of functional activities and strategies that anchor healthiness as a source of competitiveness in responding to governments' policies on minimum face-to-face interactions to contain the virus.

4.1 | Competing on Inflight Cleanliness and Hygiene

At the heights of the COVID-19 pandemic, many airlines focused on high standards of cleanliness and hygiene measures such as screening passengers, wearing medical protective masks, inflight cleaning, and disinfecting aircraft to respond to the crisis (Otley 2020; Pilling 2021). In line with individual airlines' approaches, the International Air Transport Association's (IATA) guidelines also focus on protecting passengers and inflight crew from contracting the virus (Otley 2020). At operational level, the use of personal protective equipment, masks, disinfection, barriers, social distancing, and handwashing were introduced and accelerated to elevate the importance of safety measures being taken to address the crisis (Pilling 2021). In addition, compulsory face-covering and mask-wearing rules were introduced by governments/airlines to provide strict assurance toward minimizing the risk of COVID-19 transmission. Another approach adopted by airlines such as Delta was the use of pre-packaged and sealed inflight service items to minimize onboard touchpoints, thereby reducing the spread of the coronavirus during a flight (Otley 2020). Industry-leading safety measures and vaccinated workforce also became an asset for competing in the industry. Thus, the COVID situation demanded that organizations develop people-centered, healthy products, and quality service delivery systems to assure—customers about the healthiness of their products' outer conditions. In response to the crisis, global airlines intensified their cleaning regimes across the board to meet a threshold of healthy standards to minimize, if not to eliminate, any potential source of contamination. In trying to demonstrate the distinctiveness of their approaches, airlines such as Qantas highlighted that their cleaning standards:

“Exceed CDC and Airbus guidance ... deep-clean procedures with all touch surfaces, from seatbelts and tray tables to galleys and lavatories, being sanitized and disinfected thoroughly during every cleaning” (Otley 2020).

Indeed, high-touch surfaces and fixtures in the cabin were cleaned at greater frequency to disinfect any potential concentration of pathogens to reduce transmission of COVID-19. However, these measures largely provided some kind of temporary edge as many airlines over time also adopted the same approaches. By demonstrating evidence of deep cleaning and greater commitment to clean and safe inflight conditions, airlines instill confidence not only in employees but also travelers. The reality is that the pandemic influenced the airlines to

view the concept of a “safe and healthy travel experience” in the same way as the core principles of the global healthcare industry (Pilling 2021). The elevated concern of virus and its potential to spread during in-flight prompted airlines to develop measures related to the “management of COVID-related risks in their value adding activities including airport and passenger screening” (Pilling 2021) and improve the safety and travel experience for their customers.

4.2 | Digital Health Passports and Customer-Centric Orientation

An important manifestation of the concept of “competing on healthiness” accelerated by the COVID-19 pandemic is the growth of health passports, which offer an opportunity to update travelers’ data and demonstrate their health status in multiple countries outside their home nation (Hayward 2021). Health passports denote the holder’s status of health pertaining to specific diseases and demonstrate airlines’ response to global health crises. This digital verification helps airlines to streamline their processes and improve the travel experience for their passengers. Centered on collaboration between industry associations such as the International Air Transport Association (IATA), customers, airport authorities, aircraft manufacturers, and governments, digital health passports have emerged as a crucial customer service tool to ignite higher levels of confidence in air travel. The introduction of digital health passports also seeks to help travelers to conclude some traveling formalities prior to arriving at the airport. For instance, global airlines such as American Airlines introduced health passports to reduce bureaucratic red tape and make it easier to verify documentation pertaining to health (Hayward 2021).

In early 2021, German airline, Lufthansa explored the introduction of health passport schemes on some key international routes as a means of addressing the challenge faced by the industry (Boon 2021). This challenge revolved around governments’ demands on travelers and passengers to demonstrate a negative COVID test or show a proof of vaccinations in advance of travel. For Lufthansa and many airlines, adoption of health passports was vital consideration for reopening international travel fully to the masses and returning the industry to normality after the COVID-19 lockdown (Boon 2021). Presenting evidence of a negative COVID-19 test certificate prior to departure was an assurance to customers that air travel was safe from viral infection. IATA’s “Travel Pass” is another industry-level innovation which was adopted by airlines such as Singapore Airlines, Qatar Airways, Emirates, and Etihad to reduce the spread of the pandemic (Hayward 2021). The IATA Travel Pass is simply “a mobile application that helps travelers to store and manage their verified certifications for COVID-19 tests and/or vaccinations” (IATA 2022). In early 2021, the Middle East airline, Qatar Airways collaborated with governments and the IATA’s Travel Pass to launch a health passport as the first airline in the region to adopt the digital health passport to improve customer confidence in air travel (Bodell 2021a). It was concluded that the new digital platform for reviving and validating health data would help to deliver a safer, “secure and contactless experience for travelers” (Bodell 2021c).

Furthermore, Qatar Airways and Etihad Airways advanced their own health passport schemes. For instance, Qatar has broadened the IATA Travel Pass trial system and incorporated vaccination status, whereas Etihad’s “Verified to Fly” (which has paved the way for passengers to upload health information through a website or app) was also made available on most routes (Bodell 2021a). Viewing airlines and governments’ collaborations as essential, IATA worked with airlines to further document immunity and helped accelerate measures to reduce border-control measures imposed on airlines and air travelers during the period of the pandemic (Hayward 2021). The IATA’s efforts have also been amplified by the European Union’s adoption of a similar scheme. Many countries such as Saudi Arabia and Singapore have adopted the IATA Travel Pass for arrivals into the countries (Pande 2021). The requirement to prove health status is not new as many countries have mandated the requirements of yellow-fever certificates as a “travel passport” for decades (Hayward 2021). The IATA Travel Pass is generally seen as more reliable and efficient relative to the paper-based processes and procedures. Hence, the introduction of digital health passports paved the way for travelers to store, manage, and verify the outcome of COVID-19 tests.

In addition to IATA’s Travel Pass, travelers’ vaccinations and a list of all tests, air travelers also use VeriFLY to authenticate their credentials and meet specific requirements related to their health status (Hayward 2021). The VeriFLY app was created before the pandemic with the aim of helping airline businesses to streamline check-in and Transportation Security Administration screenings and became a useful digital health passport for airlines like the American Airlines and British Airways (Bodell 2021b). The VeriFLY has the capability to conduct a genuine assessment of travelers’ identity, strengthen airlines’ commitment to travelers’ data protection, and address the growing concerns that travelers’ private health data could be stolen or hacked (Bodell 2021c).

Paralleling these developments, many global airlines are seeking to harness health passports to improve customer experiences and reduce the stress of managing a plethora of travel paperwork at airports. Thus, there is real value of integrating digital health passports into the value chain of businesses and airlines to improve their competitiveness (Boon 2021). Although the concept of digital health passports is still in its infancy, a sizeable number of airlines that have used these digital travel capabilities include British Airways, Virgin Atlantic, Iberia, Alaska Airlines, United, Cathay Pacific, American Airlines, Qatar Airways, Singapore Airlines, and Lufthansa (Bodell 2021b). Indeed, one of the enduring outcomes of the COVID-19 pandemic is the growth of health passports as proof of health status appearing in the industry (Hayward 2021). The Travel Pass also became a commonly accepted industry standard to give travelers the confidence to return to air travel and used as a TCA tool.

4.3 | Biometrics and Boarding

Over the past 20 years, the airport authorities and some key airline stakeholders have been rapidly deploying biometric technologies and solutions to replace manual checks and

repetitive boarding processes. Biometric technologies such as facial recognition and other touchless boarding solutions have increasingly expedited passport control procedures (Singh 2022; Hayward 2021). Biometrics are reliable verification technology which are capable to reduce operational costs of airlines and bureaucratic document-validation processes as well as to minimize human contact in the activities of airlines (Singh 2022).

The benefits of using biometrics to reduce costs and improve efficiency can be demonstrated with the case of the Lufthansa where the one-step biometric boarding process was able to board 350 passengers onto its Airbus A380 within 20 min in the US due by using its automated passenger recognition to scan passengers' unique profiles (Kramer 2019; Singh 2021). The passengers experienced a smoother process in proceeding to the self-boarding gate where facial scans were delivered in real time to the US Customs and Border Protection (Kramer 2019; Singh 2021). Once a passengers' details were verified, they were officially "boarded" and could proceed through the departure gate to the flight. Since its experimentation in 2018, the one-step biometric boarding technology has been expanded to other US airports and some airports around the world (Kramer 2019).

Lufthansa is not the only airline reaping the benefits of biometric boarding. Due to the potential gains from the technology, around 62% of airlines are seeking to introduce self-boarding gates and utilize biometric and ID documentation with "half of the airlines are expected to have self-boarding gates using biometric only by 2024. This is a significant increase from just 5% of carriers in 2020" (Singh 2022). Around 65% of airlines were also estimated to have some kind of automated check-in place by the end of 2022 (Singh 2022). By reducing manual processes via biometrics, airlines can reduce the number of employees dedicated to document validation processes as well as to minimize human errors in their processes. These emerging identification and boarding technologies have gained prominence in the airline industry and been providing more accurate identity verification routines for many airlines (Hayward 2021; Singh 2022).

As a vital source of competitiveness and opportunities, biometric technology has become a "valuable asset in the context of the pandemic ... human contact is reduced alongside passenger touchpoints, cutting down the risk of spreading the virus" (Singh 2021). For instance, Emirates airline introduced biometric experience at Dubai in response to the pandemic (Singh 2022) to reduce cost and boost consumers' confidence in relying on the healthiness of air travel. This biometric boarding experience of airline travel may be the "lasting legacy" of the pandemic as it leads to a more customer-oriented industry with minimal personal contact (Hayward 2021). Indeed, a fundamental shift from purely paper-based approaches to airline healthiness features such as e-tickets, e-check-in, digital magazines, contactless gates, and biometric screening have improved operational efficiency (Hayward 2021). One of the global airline alliance groupings, Star Alliance (which include Air Canada, Ethiopian Airlines and Air China), contend that the introduction of "Star Alliance Biometrics" helped them meet their "passengers' expectations for a more touchless and hygienically safe travel experience, especially in a new era of air travel" (Star Alliance 2022).

Therefore, these airlines have been able to exploit their complementary capabilities in the industry.

4.4 | Bring-Your-Own-Device (BYOD) Practices

Accompanying the increasing use of modern mobile technology and smart devices is the practice of home-based working or dissemination and execution of work from different remote locations. This trend was accelerated by the COVID-19 pandemic and influenced airlines to adopt BYOD practices—a sharp shift toward a mobile and remote workforce (Wani et al. 2022). The concept of BYOD refers to situations where workers/employees use personal devices such as smartphones, tablets, and laptops when performing a diverse range of work-related tasks such as dealing with customers' complaints, updating electronic records, ordering materials, maintaining work schedules, and managing communication between employees (Wani et al. 2022). Technological developments such as the Skype, Zoom, MS Teams, and WhatsApp, coupled with the advancement of cloud computing and data storage services such as Dropbox OneDrive, Google Drive, and Box, have led to a sharp decline in both the cost of communication and cost of data storage. Coupled with the enhanced ability to share files and communicate from different locations, BYOD has gained prominence and motivated many companies to embrace it.

Interestingly enough, in the wake of the pandemic, many organizations created conditions that allowed more workers to use their personal devices for work purposes. The BYOD concept gathered momentum during the pandemic, allowing workers to use their personal devices to perform organizational activities inside or outside of the workplace (Garba et al. 2015). By encouraging employees to acquire their own devices such as laptops, mobile phones, and iPads to perform organizational tasks and work from home, firms are able to reduce the costs associated with working from the office such as saving office space, reducing department support, and reducing cost of facilities (Wani et al. 2022; Kopytoff 2011). By providing opportunities for flexible working, companies are likely to help improve the wellbeing of their employees as well as help to attract future employees. Given that the number of global mobile devices was around 14 billion in 2020 and is expected to reach over 18 billion by 2025 (Statista 2022) in tandem with the rising world population (i.e., 7.7 billion in 2020 to 8.18 billion by 2025) (Worldometers 2022b), there are now ample opportunities for businesses to harness these technologies to improve their profitability. Since 2014, there has been an accelerated trend by global airlines toward a hybrid approach allowing travelers to use onboard devices or their own devices for entertainment (The Economist 2014). There has also been a shift toward jettisoning some in-flight systems to reduce costs whilst simultaneously incentivizing customers to use their own devices for in-flight entertainment (The Economist 2014). As indicated above, the growth of BYOD and its benefits for businesses was largely witnessed between 2019 and 2021 the pandemic was at its peak. Although the benefits and challenges of the new working arrangements which were born out of the COVID-19 pandemic contributed to about \$168 billion in losses to airlines in 2020 (McKinsey 2022), the healthiness TCA strategies adopted by the carriers enabled

them to continue their flight operations and remain in the market. They leveraged their transient strategies for the long-term health of the sector.

4.5 | New Working Arrangements

The COVID-19 pandemic has rendered many workplace routines, norms, and policies either obsolete or ineffective (Amankwah-Amoah, Khan, and Osabutey 2021; Amankwah-Amoah, Khan, Wood, and Knight 2021). Many of the traditional approaches such as countless face-to-face meetings have been minimized or supplanted by virtual meetings. Increasingly, organizational leaders are embracing the hybrid approach, i.e., mixture of digital/virtual and face-to-face office activities, for scheduling organizational meetings and other workplace activities (The Economist 2022a). This has been partly precipitated by availability of cloud-storage services that provide access to organizational documents and data irrespective of the geographical locations. Globally, the first wave of COVID-19 cases with no vaccine insight prompted many governments to institute lockdowns, forcing many workers to work remotely from home and get used to it (The Economist 2022b). Accompanying remote working is a reduction in or elimination of long commutes for workers and cost savings from commuting (Hsu 2022). These benefits have led to a growing demand for hybrid working not just among current employees but also among future employees (see Hensher, Beck, and Balbontin 2022). Following the development of more effective COVID vaccines, governments such as the UK and France lifted many rules restricting face-to-face contacts and urged a return to the workplace. Corporate giants like Citigroup, Google, Apple, Wells Fargo, Morgan Stanley, Meta, Microsoft, and JPMorgan Chase also urged their employees to return to the office (The Economist 2022a, 2022b).

It has been suggested that an in-person work environment fosters closer bonds with the employees/teams and company leaders relative to remote working (The Economist 2022a) and relieves employees from the constant feeling of mental and physical tiredness associated with working from home which is often referred to as “Zoom fatigue” (The Economist 2022b). A return to the workplace culture can also erase a perception within the workplace that remote workers are “second-class citizens” in their organizations (The Economist 2022a). The contention that arises is a “proximity bias—the subconscious tendency to value and reward physical presence—may then disadvantage women, minorities and parents of young children, who are keener on home working than other groups” (The Economist 2022a, 60–61). Nevertheless, many of the incentives to stay away from the office such as the ability to avoid long commutes, reducing costs of traveling to the office to perform functions that can be done from home, and a desire among employees for a better work-life balance remain strong (see Hensher, Beck, and Balbontin 2022).

5 | Discussion and Implications

Drawing on the concept of TCA, the present study examined the emergence and evolution of healthiness as a source of TCA in the wake of the COVID-19 pandemic. In illuminating our understanding of this issue, this article advanced a conceptual

framework that shed light on the divergent effects of COVID-19 on healthiness as a source of firm competitiveness. The framework was then applied to the global airline industry, which shed light on the centrality of new technology adoption in response to the crisis. Specifically, the analysis revealed a host of new technologies and processes such as the adoption of digital health passports and introduction of biometrics designed to minimize mechanisms for virus spread, improve processes, and ultimately sharpen firm focus on efficiency and cost reduction. Viewing collaboration is a central pillar in the innovation efforts; airlines have sought to forge ties with other actors such as suppliers, industry associations (i.e., IATA), customers, airport authorities, aircraft manufacturers, and governments in developing and introducing biometric boarding, digital health passports, and other biometrics. In tandem with the nascent view of healthiness as a source of competitive advantage in the pandemic era is a growing recognition of new technological innovation as a means of minimizing direct face-to-face interactions.

Contrary to popular assertions in the literature, the adoption of new technologies appears to have largely been driven by desire to curtail human-to-human contact in this service-oriented industry and reduce the spread of the COVID virus. By competing on healthiness, airlines and the industry institute distinctive initiatives to demonstrate the “healthcare credentials” via delivery of hygienically dependable travel experiences. Our analysis thus far suggests a number of contributory factors to the shorter lived advantage. First, the pandemic and the accompanying initiatives have precipitated a steady stream of imitations by other firms in the industry. As other airlines adopt similar improvement measures such as digital health passports and biometrics, the economic and reputational effects for individual firms are being erased. In addition to the above, there is already an easing of COVID-era regulations and directives by governments around the globe such as mask mandates. There is also easing of airline-specific guidelines on health measures. Taken together, these factors have demonstrable effects on the contributory factors of shorter lived advantages, as demonstrated in Figure 1. As shown in the figure, the “inputs” denote the internal and external forces that trigger the transformation processes and activities leading to “outcomes” pertaining to firm competitiveness.

Moving the discussion forward, our analysis gives a more nuanced understanding of how transient strategies can help companies learn quickly about their customers and environments, and implement emergent and collaborative strategies that can help them achieve their sustainable organizational goals (Nyame-Asiamah and Kawalek 2021; Mintzberg and Waters 1985). Leveraging TCA in emergent conditions provides profound insights into how organizations can maximize the benefits and power of short-term strategies for long-term success in strategic thinking as well as to demonstrate how to address temporality within the contexts of dynamic capabilities and resource-based view (Barney 1991; Teece, Pisano, and Shuen 1997).

5.1 | Theoretical and Practical Contributions

From a theoretical standpoint, in view of the dearth of research on transient advantage in an era of COVID-19, this study deepens our understanding of the conditions and

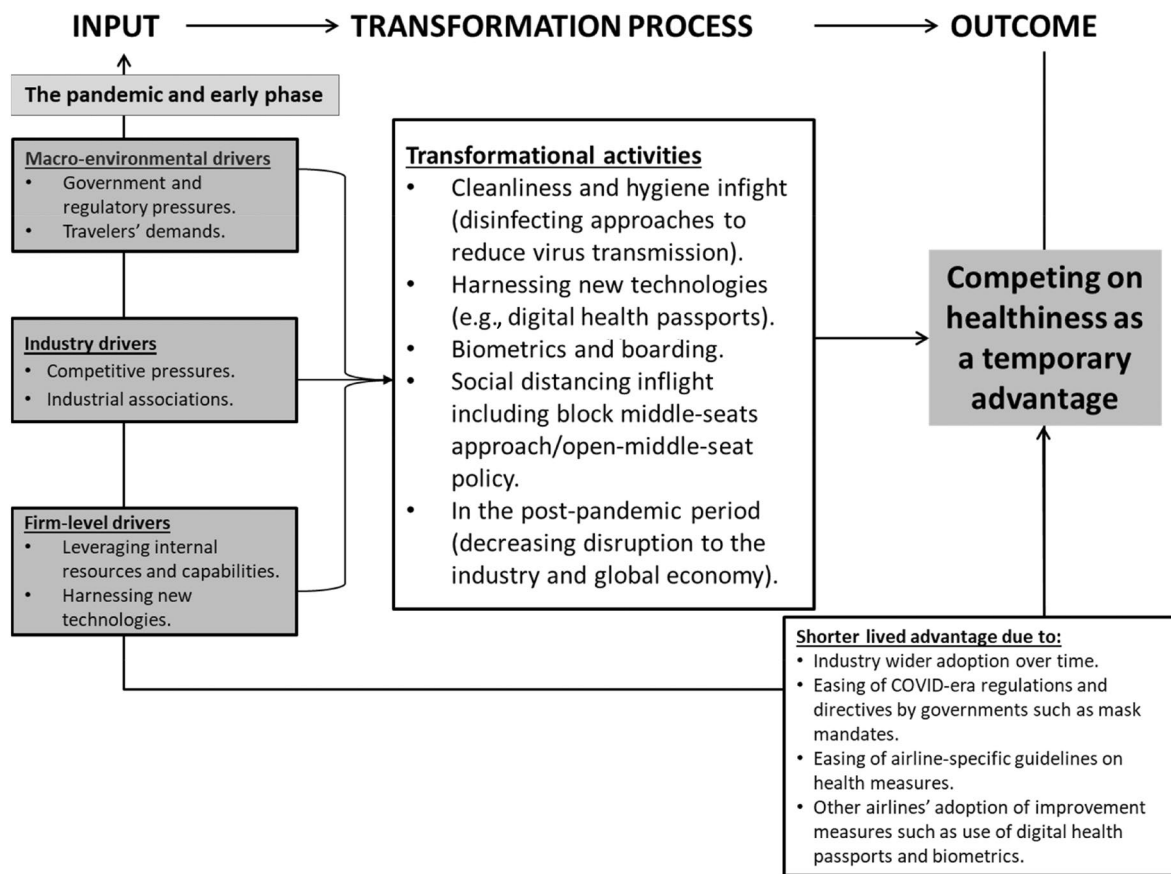


FIGURE 1 | The Input–Process–Outcome (IPO) of COVID-induced transient advantage.

structures that make healthiness a source of competitiveness. The paper also contributes to the literature's transient advantage (Dagnino, Picone, and Ferrigno 2021; McGrath 2013) by clarifying the complex interaction of firm-specific conditions and market changes ushered in by COVID-19, leading to the adoption of new technologies such as digital health passports and biometric boarding passes. In view of the burgeoning streams of studies on responses of organizations to COVID-19 (see Sheng et al. 2020; Castillo et al. 2023), a more concrete conceptualization is needed to account for the how the pandemic has led to the development and dissipation of firm sources of values and competitiveness. Despite the valuable insights and contributions offered by past studies, there is a paucity of research on how crisis heightens our understanding of crisis-induced innovations.

From a practical standpoint, our analysis underscores the message that accumulating prior industry experience is insufficient for this type of new threat. To keep organizations abreast of significant challenges ushered in by COVID-19, firms are required to upgrade their technologies and expertise coupled with the implementation of latest technologies such as biometric boarding, digital health passports, and general biometrics. Thus, success is increasingly predicated on the ability to adopt new technologies across the value chain activities that improve the customers' experiences whilst delivering quality and lower prices to customers. In addition, the transient nature of such advantages often demands collaboration with internal and external stakeholders, including industry

bodies and government agencies, to share emerging market knowledge, resources, and expertise to maintain relevance and competitiveness. Such collaboration can also lead to accelerated development of new processes and routines that are in tune with tackling emerging risks. A vital policy implication of the study is that there is a need for governments to view COVID-19 as a resource-depleting event, which requires some kind of cushion for firms in heavily affected industries such as aviation to be able to make the transition and develop online and environmentally sustainable capabilities. The analysis also indicates that over-reliance on temporary gains can provide false confidence and create complacency in organizations leading to permanent loss of market share.

5.2 | Limitations and Future Research Directions

There are some limitations of the present research that are worth noting. First, the analysis was tailored to the global airline industry, which limited the generalizability of the vital observations related to new technologies adoption. In light of this shortcoming, it appears fruitful for future research to assess whether similar insights can be deduced from other industries. Another caveat in interpreting the analysis is that the COVID-19 pandemic may be a one-off major event, which might not be repeated in the short term. In addition, it also remains unclear as to which elements of the initiatives and approaches can be modified to deliver a sustainable source of competitiveness. Thus, there is a need to examine the effects of other pandemics on firm competitiveness as well as how elements of firms' COVID-19 responses can be

altered to deliver enduring market advantage. Furthermore, there is a need for a more robust analysis of the effects of national and organizational cultures on new-technology adoption.

References

- Amankwah-Amoah, J. 2020. "Note: Mayday, Mayday, Mayday! Responding to Environmental Shocks: Insights on Global airlines' Responses to COVID-19." *Transportation Research Part E: Logistics and Transportation Review* 143: 102098.
- Amankwah-Amoah, J. 2021. "COVID-19 Pandemic and Innovation Activities in the Global Airline Industry: A Review." *Environment International* 156: 106719.
- Amankwah-Amoah, J., and Y. A. Debrah. 2011. "The Evolution of Alliances in the Global Airline Industry: A Review of the African Experience." *Thunderbird International Business Review* 53, no. 1: 37–50.
- Amankwah-Amoah, J., S. Abdalla, E. Mogaji, A. Elbanna, and Y. K. Dwivedi. 2024. "The Impending Disruption of Creative Industries by Generative AI: Opportunities, Challenges, and Research Agenda." *International Journal of Information Management* 79: 102759.
- Amankwah-Amoah, J., Z. Khan, and E. L. Osabutey. 2021. "COVID-19 and Business Renewal: Lessons and Insights From the Global Airline Industry." *International Business Review* 30, no. 3: 101802.
- Amankwah-Amoah, J., Z. Khan, G. Wood, and G. Knight. 2021. "COVID-19 and Digitalization: The Great Acceleration." *Journal of Business Research* 136: 602–611.
- Barney, J. 1991. "Firm Resources and Sustained Competitive Advantage." *Journal of Management* 17, no. 1: 99–120.
- Barney, J. B., and D. N. Clark. 2007. *Resource-Based Theory: Creating and Sustaining Competitive Advantage*. Oxford: Oxford University Press.
- Belobaba, P., A. Odoni, and C. Barnhart, eds. 2015. *The Global Airline Industry*. Sussex, UK: John Wiley & Sons.
- Bodell, L. 2021a. "Qatar and Etihad Expand Their Digital Health Passport Schemes." <https://simpleflying.com/qatar-etihad-digital-health-passport/>.
- Bodell, L. 2021b. "Which Airlines Are Already Using Health Passports?" <https://simpleflying.com/airlines-using-health-passports/>.
- Bodell, L. 2021c. "Qatar Airways Becomes 1st Middle East Airline to Launch IATA Health Passport?" <https://simpleflying.com/qatar-airways-iata-health-passport-launch/>.
- Boon, T. 2021. "Lufthansa to Trial Health Passports on Select Routes." <https://simpleflying.com/lufthansa-health-passports-select-routes/>.
- Castillo, A., L. Gutierrez, I. Montiel, and A. Velez-Calle. 2023. "Responding With Care: Ethical Measures in the Fashion Industry During the COVID-19 Pandemic in Spain." *Journal of Fashion Marketing and Management: An International Journal* 28: 792–817.
- Caves, R. E., and M. E. Porter. 1978. "Market Structure, Oligopoly, and Stability of Market Shares." *Journal of Industrial Economics* 26: 289–313.
- Chang, Y. C., and G. Williams. 2001. "Changing the Rules—Amending the Nationality Clauses in Air Services Agreements." *Journal of Air Transport Management* 7, no. 4: 207–216.
- Christmann, P., D. Day, and G. S. Yip. 1999. "The Relative Influence of Country Conditions, Industry Structure, and Business Strategy on Multinational Corporation Subsidiary Performance." *Journal of International Management* 5, no. 4: 241–265.
- Ciravegna, L., and S. Michailova. 2022. "Why the World Economy Needs, but Will Not Get, More Globalization in the Post-COVID-19 Decade." *Journal of International Business Studies* 53, no. 1: 172–186.
- Cousins, P. D., B. Lawson, K. J. Petersen, and R. B. Handfield. 2011. "Breakthrough Scanning, Supplier Knowledge Exchange, and New Product Development Performance." *Journal of Product Innovation Management* 28: 930–942.
- D'aveni, R. A. 2010. *Hypercompetition*. London: Simon and Schuster.
- D'Aveni, R. A., G. B. Dagnino, and K. G. Smith. 2010. "The Age of Temporary Advantage." *Strategic Management Journal* 31, no. 13: 1371–1385.
- Dagnino, G. B., P. M. Picone, and G. Ferrigno. 2021. "Temporary Competitive Advantage: A State-of-the-Art Literature Review and Research Directions." *International Journal of Management Reviews* 23, no. 1: 85–115.
- Doganis, R. 2005. *The Airline Business*. London: Routledge.
- Garba, A. B., J. Armarego, D. Murray, and W. Kenworthy. 2015. "Review of the Information Security and Privacy Challenges in Bring Your Own Device (BYOD) Environments." *Journal of Information Privacy and Security* 11, no. 1: 38–54.
- Grant, R. M. 2010. *Contemporary Strategy Analysis*. 7th ed. Chichester: Wiley.
- Groysberg, B., and K. C. Baden. 2021. "Pandemic Has Sped Up Pace That Some Work Skills Become Obsolete by 70 Percent, Survey Finds." <https://www.newsweek.com/2021/10/08/pandemic-has-sped-up-pace-that-some-work-skills-become-obsolete-70-percent-survey-finds-1628468.html>.
- Hanlon, P. 2006. *Global Airlines*. London: Routledge.
- Hayward, J. 2021. "Health Passports: The Future of Travel?" <https://simpleflying.com/health-passports-future/>.
- Hensher, D. A., M. J. Beck, and C. Balbontin. 2022. "Time Allocation of Reduced Commuting Time During COVID-19 Under Working From Home." *Journal of Transport Economics and Policy* 56, no. 4: 399–428.
- Hill, C. W., and G. R. Jones. 2009. *Essentials of Strategic Management*. South-Western: Cengage Learning.
- Hsu, A. 2022. "'Where Is My Office Anyway?' As COVID Recedes, Remote Workers Prepare to Head Back." <https://www.npr.org/2022/02/17/1080881870/return-to-the-office-remote-work-hybrid-schedule-worker-productivity>.
- IATA. 2022. "IATA Travel Pass Q&A." <https://www.iata.org/contentassets/2b02a4f452384b1fbae0a4c40e8a5d0c/travel-pass-faqs.pdf>.
- IATA. 2024. "The Founding of IATA." <https://www.iata.org/en/about/history/>.
- International Civil Aviation Organization. 2022. "Guidance for Air Travel Through the COVID-19 Public Health Crisis." <https://www.icao.int/covid/cart/Pages/CART-Take-off.aspx>.
- Karadag, R., and L. Poppo. 2023. "Strategic Resource Decay." *Strategic Management Journal* 44, no. 6: 1534–1561.
- Kopytoff, V. G. 2011. "More Offices Let Workers Choose Their Own Devices: Section B." *NY Times*, September 23, 2011, 1.
- Kraaijenbrink, J., J. C. Spender, and A. J. Groen. 2010. "The Resource-Based View: A Review and Assessment of Its Critiques." *Journal of Management* 36, no. 1: 349–372.
- Kramer, M. 2019. "Lufthansa Boards an Entire A380 in 20 Minutes Thanks to Biometric Scanning." <https://simpleflying.com/lufthansa-a380-biometric-boarding/>.
- Lieberman, M. B., and D. B. Montgomery. 1988. "First-Mover Advantages." *Strategic Management Journal* 9, no. S1: 41–58.
- Luo, Y. 2000. "Dynamic Capabilities in International Expansion." *Journal of World Business* 35, no. 4: 355–378.

- Mahoney, J. T., and J. R. Pandian. 1992. "The Resource-Based View Within the Conversation of Strategic Management." *Strategic Management Journal* 13, no. 5: 363–380.
- McGrath, R. G. 2013. "Transient Advantage." *Harvard Business Review* 91, no. 6: 62–70.
- McKinsey. 2022. "Taking Stock of the Pandemic's Impact on Global Aviation." <https://www.mckinsey.com/industries/travel-logistics-and-infrastructure/our-insights/taking-stock-of-the-pandemics-impact-on-global-aviation>.
- Miles, G. 1993. "In Search of Ethical Profits: Insights From Strategic Management." *Journal of Business Ethics* 12, no. 3: 219–225.
- Mintzberg, H., and J. A. Waters. 1985. "Of Strategies, Deliberate and Emergent." *Strategic Management Journal* 6: 257–272.
- Montiel, I., J. Park, B. W. Husted, and A. Velez-Calle. 2022. "Tracing the Connections Between International Business and Communicable Diseases." *Journal of International Business Studies* 53: 1785–1804.
- Morrison, S., and C. Winston. 2010. *The Evolution of the Airline Industry*. Washington, DC: Brookings Institution Press.
- Nyame-Asiamah, F., and P. Kawalek. 2021. "Sustainability and Consumer Behaviour: Towards a Cohered Emergent Theory." In *The Palgrave Handbook of Corporate Social Responsibility*, edited by D. Crowther and S. Seifi. Cham: Palgrave Macmillan.
- O'Connell, J. F., and G. Williams. 2005. "Passengers' Perceptions of Low Cost Airlines and Full Service Carriers: A Case Study Involving Ryanair, Aer Lingus, Air Asia and Malaysia Airlines." *Journal of Air Transport Management* 11, no. 4: 259–272.
- Otley, T. 2020. "Airlines Emphasise Cleanliness and Hygiene in Fight Against Coronavirus." <https://www.busesstraveller.com/features/why-fighting-coronavirus-is-more-than-just-social-distancing/>.
- Pande, P. 2021. "Mongolian Airlines Operates Flight With 100% Health Passport Usage."
- Park, J., I. Montiel, B. W. Husted, and R. Balarezo. 2022. "The Grand Challenge of Human Health: A Review and an Urgent Call for Business–Health Research." *Business & Society* 61, no. 5: 1353–1415.
- Peng, M. W., N. Kathuria, F. L. E. Viana, and A. C. Lima. 2021. "Conglomeration, (De) Globalization, and COVID-19." *Management and Organization Review* 17, no. 2: 394–400.
- Pilling, M. 2021. "Promoting the Healthy Cabin in the Post-Covid Era." <https://www.flightglobal.com/flight-international/promoting-the-healthy-cabin-in-the-post-covid-era/144880.article>.
- Porter, M. E. 1980. *Competitive Strategy: Techniques for Analyzing Industries and Competitors*. New York, NY: Free Press.
- Quick, J. C., M. Macik-Frey, and C. L. Cooper. 2007. "Managerial Dimensions of Organizational Health: The Healthy Leader at Work." *Journal of Management Studies* 44, no. 2: 189–205.
- Rothaermel, F. T., and A. M. Hess. 2007. "Building Dynamic Capabilities: Innovation Driven by Individual-, Firm-, and Network-Level Effects." *Organization Science* 18: 898–921.
- Ruefli, T. W., and R. R. Wiggins. 2003. "Industry, Corporate, and Segment Effects and Business Performance: A Nonparametric Approach." *Strategic Management Journal* 24, no. 9: 861–879.
- Sheng, J., J. Amankwah-Amoah, Z. Khan, and X. Wang. 2020. "COVID-19 Pandemic in the New Era of Big Data Analytics: Methodological Innovations and Future Research Directions." *British Journal of Management* 32, no. 4: 1164–1183.
- Silverman, S., A. Caines, C. Casey, et al. 2021. "What Happens When You Close the Door on Remote Proctoring? Moving Toward Authentic Assessments With a People-Centered Approach." *To Improve the Academy: A Journal of Educational Development* 39, no. 3.
- Singh, S. 2021. "How Airlines Are Boosting Efficiency With the Biometrics Boom." <https://simpleflying.com/biometrics-airlines/>.
- Singh, S. 2022. "Airline Biometric Boarding Deployment Will Rise by Over 60% by 2024." <https://simpleflying.com/sita-biometric-boarding-2024/>.
- Sirmon, D. G., M. A. Hitt, J. L. Arregle, and J. T. Campbell. 2010. "The Dynamic Interplay of Capability Strengths and Weaknesses: Investigating the Bases of Temporary Competitive Advantage." *Strategic Management Journal* 31, no. 13: 1386–1409.
- Sołoducho-Pelc, L., and A. Sulich. 2020. "Between Sustainable and Temporary Competitive Advantages in the Unstable Business Environment." *Sustainability* 12, no. 21: 8832.
- Star Alliance. 2022. "Star Alliance Biometrics." <https://www.staralliance.com/en/biometrics>.
- Statista. 2022. "Forecast Number of Mobile Devices Worldwide From 2020 to 2025." <https://www.statista.com/statistics/245501/multiple-mobile-device-ownership-worldwide/> (in billions).
- Strusani, D., and V. G. Hounghonon. 2020. *The Impact of COVID-19 on Disruptive Technology Adoption in Emerging Markets*. Washington, DC: International Finance Corporation (IFC).
- Teece, D. J. 2000. "Strategies for Managing Knowledge Assets: The Role of Firm Structure and Industrial Context." *Long Range Planning* 33: 35–54.
- Teece, D. J. 2007. "Explicating Dynamic Capabilities: The Nature and Microfoundations of (Sustainable) Enterprise Performance." *Strategic Management Journal* 28: 1319–1350.
- Teece, D. J., G. Pisano, and A. Shuen. 1997. "Dynamic Capabilities and Strategic Management." *Strategic Management Journal* 18: 509–533.
- The Economist. 2014. "Bring Your Own: In-Flight Entertainment." <https://www.economist.com/gulliver/2014/09/10/bring-your-own>.
- The Economist. 2022a. "Work Life in Balance." London 442, no. 9287: 60–61.
- The Economist. 2022b. "Bartleby Let's Get Physical." London 442, no. 9287 (March): 58.
- U.S. State Department. 2016. "Open Skies Agreements." <https://2009-2017.state.gov/e/eb/tra/ata/index.htm>.
- Wani, T. A., A. Mendoza, K. Gray, and F. Smolenaers. 2022. "Status of Bring-Your-Own-Device (BYOD) Security Practices in Australian Hospitals—A National Survey." *Health Policy and Technology* 11: 100627.
- Wernerfelt, B. 1984. "A Resource-Based View of the Firm." *Strategic Management Journal* 5, no. 2: 171–180.
- World Health Organization. 2009. "Guide to Hygiene and Sanitation in Aviation." World Health Organization.
- Worldometers. 2022b. "Current World Population." <https://www.worldometers.info/world-population/>.