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## Restaurant resilience: A qualitative study of resilience, adaptability, and innovation of the Alabama restaurant industry during the COVID-19 pandemic



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### ABSTRACT

The COVID-19 pandemic had a profound impact on the restaurant industry in Alabama. This qualitative study examines how Alabama restaurants demonstrated resilience and adaptability across three distinct phases of the pandemic, including the period of unrestricted activities, offering a new perspective. The findings highlight significant operational, financial, and labor-related difficulties faced during these phases. Key strategies include operational adjustments, technology integration, and strategic financial management. The study underscores the critical role of technology in maintaining customer connections and adapting service models during disruptions. It introduces a conceptual model that offers valuable contingency plans for operational innovation and resilience, helping restaurants manage crises effectively. Additionally, the research emphasizes the crucial role of government financial support in the survival and recovery of restaurants during the pandemic. The study enriches the existing literature by providing insights into the post-recovery impact of COVID-19 on the restaurant sector.

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## Introduction

The COVID-19 pandemic immensely impacted industries worldwide (World Health Organization [WHO], 2020). The COVID-19 pandemic stands apart from past pandemics due to its rapid transmission rate, resulting in abrupt disruptions and unparalleled worldwide socio-economic consequences (Yost & Cheng, 2021). Pandemics can lead to a fear-induced aversion to public places and workplaces, significantly impacting economic growth during and after outbreaks (Madhav et al., 2017). This was evident in the restaurant industry in the United States (U.S.) as the COVID-19 pandemic undeniably manifested itself as a profound and unprecedented crisis for this sector (Rahman et al., 2022).

In March 2020, U.S. state and federal governments imposed various regulations and restrictions aimed at containing the COVID-19 pandemic, forcing restaurants to cease operations (Wei et al., 2021), exacerbating the challenges faced by this sector (Messabia et al.,

2022). Restaurant sales immediately plummeted, leading to 70 % of establishments laying off employees or reducing working hours (National Restaurant Association [NRA], 2020a). In addition, the National Restaurant Association (2021) reported that by the end of 2020, over 2.5 million restaurant jobs in the U.S. were lost, 110,000 restaurants were closed, and total restaurant sales were \$240 billion less than forecasted (NRA, 2021). Amidst the constraints and challenges, restaurants demonstrated remarkable resilience, adaptation, and innovation by swiftly pivoting operations to online/takeout services, innovative approaches, and community engagement (Norris et al., 2021). The recovery and consolidation of the restaurant industry was made possible by attracting material, financial, human, and informational resources, ultimately resulting in efficiency and profitability (Türkeş et al., 2021). Kim et al. (2020) suggest that by understanding the critical elements of this pandemic, the financial effects on the restaurant industry can be mitigated through counterstrategies. Therefore, it is crucial to analyze these impacts to enhance financial resilience and ensure sustainability both during and after the crisis (Madeira et al., 2021).

The Alabama restaurant industry presents itself as a suitable case to analyze. The industry has historically played a crucial role in

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driving Alabama's economy – in fact, the food service sector accounted for around 10 % of the state's total employment in 2019 (U.S. Bureau of Labor Statistics, 2023). Like many states across the U.S., Alabama's restaurant sector faced a severe crisis during the COVID-19 pandemic and suffered devastating economic impacts. The industry experienced significant hardships due to a sharp decline in revenue and restaurant patronage. Although the Alabama restaurant industry showed tremendous resilience, with industry revenue and employment figures for 2023 at a record high and close to the figures for 2019 (U.S. Bureau of Labor Statistics, 2023), the industry continues to face significant challenges. Consequently, the path to full recovery for Alabama and other states necessitates a comprehensive and strategic approach to overcome ongoing issues such as labor shortages, inflationary pressures, and supply chain disruptions.

Before the onset of the COVID-19 pandemic, the topic of health-related crises in the context of the hospitality sector had received limited investigation, as underscored by Mair et al. (2016) comprehensive systematic literature review. Most studies on crises in the hospitality sector refer predominantly to the tourism sector, with relatively few dealing specifically with the restaurant industry (Neise et al., 2021). In the extant literature, with the advent of COVID-19, numerous timely studies focused on guest risk perception perspectives (Byrd et al., 2021; Yost & Cheng, 2021) and patronage choice and dining out intention (Bernard et al., 2022; Wang et al., 2021; Wei et al., 2021). A burgeoning area of research pertains to examining restaurant perceptions, strategies, and practices in response to the COVID-19 pandemic (Brizek et al., 2021; Madeira et al., 2021; Neise et al., 2021; Yang et al., 2021). In addition, a limited number of studies investigated the role of innovation and adaptability and the corresponding resilience within the restaurant industry as a response to this significant crisis (Li et al., 2021; Madeira et al., 2021; Messabia et al., 2022; Neise et al., 2021; Norris et al., 2021). Of the studies mentioned above, only one specifically investigated the restaurant industry's adaptability in response to COVID-19 in the U.S. Conversely, the other studies focused on the restaurant sectors in China, Quebec (Canada), Portugal, and Germany. Moreover, it is noteworthy that these studies were conducted during the initial stages of the COVID-19 pandemic (within the pandemic), spanning from December 2019 to January 2021, with the majority of them concentrating on the initial rapid response to the COVID-19 pandemic from December to May 2020.

Amid the diverse degrees of regulations and restrictions imposed worldwide, conducting detailed investigations into the resilience of restaurant industries within specific regions is imperative. A gap in the extant literature is evident that investigates the resilience and adaptability of the restaurant industry to the COVID-19 pandemic from a more holistic perspective. The existing literature appears to exhibit a void in comprehensively investigating the restaurant industry's long-term resilience, adaptability, and innovativeness in response to the COVID-19 pandemic. Accordingly, the current study aims to address this research gap by adopting a holistic perspective, providing a more comprehensive understanding of the U.S. restaurant industry's resilience, adaptability, and innovation during different phases of the COVID-19 pandemic. The current study explores how restaurant enterprises can gain and remain resilient and innovative through a mid-crisis and post-crisis analysis. As a result, this study has two specific research objectives:

1. Assess how restaurants were impacted and subsequently adapted operations during the various phases of the COVID-19 pandemic (mid-crisis and post-crisis analysis).
2. Develop a framework of industry-wide crisis management for resilience
3. (recovery and sustainability) amid future unforeseen events.

This study employed a qualitative approach to achieve these objectives, enabling direct and in-depth exploration of restaurant

managers' and owners' perspectives, challenges, opportunities, and experiences. Moreover, as a conceptual framework, the concept of organizational resilience was utilized to provide a robust foundation for analyzing and interpreting the data. This study's novel findings are expected to uncover contingency plans and operational strategies, enabling restaurants to adapt effectively to present and future crises. Additionally, the insights garnered from this study hold significant relevance for governments and social policymakers as they can utilize the findings to improve existing crisis-related policies and programs and identify recovery strategies and relief efforts for the industry, thereby ensuring more effective responses to crises.

While the restaurant industry's physical, tangible, and contact-based nature contributes to its allure, it is also highly prone to environmental influences, such as a crisis. Due to this vulnerability, a framework must be developed for industry-wide crisis management to weaken the impact of potential future crises on the restaurant industry. Results from this study will be utilized to develop this crisis management framework for recovery and sustainability amid future unforeseen events. Providing industry members with a framework will enable them to traverse the existing landscape and internal departmental variables to ensure viable success for future events. To the best of our knowledge, no known paper addresses the changes that took place in Alabama restaurants due to the COVID-19 pandemic. This research seeks to address this gap. The findings will highlight the operational, service-related, and financial mechanisms that contributed to restaurant resilience implemented because of the COVID-19 pandemic. The findings are expected to uncover contingency plans on operational strategies for restaurants to adapt to current and future crises, successfully expanding context-based resilience literature.

The remainder of this paper is organized as follows: The next section (Section "Literature review") comprehensively reviews the relevant literature on organizational and restaurant resilience. This section also characterizes and contextualizes the impacts of the COVID-19 pandemic on the U.S. and Alabama restaurant industries and defines the three distinct phases of the pandemic. Following this is an in-depth description of the research methods employed in Section "Methodology". The subsequent section (Section "Results") presents the study's findings after thematic analysis, which are then discussed in the context of the relevant literature in the discussion section (Section "Discussion"). Finally, the paper concludes by addressing the practical and theoretical implications, acknowledging the limitations of the research, and suggesting potential directions for future research.

## Literature review

### Organizational resilience

The literature on organizational theory has extensively examined the concept of organizational resilience in disaster and crisis management (Paton & Johnston, 2001; Verfürth et al., 2022; Weick et al., 2005). *Organizational resilience* is "a firm's ability to effectively absorb, develop situation-specific responses to, and ultimately engage in transformative activities, to capitalize on disruptive surprises that threaten the firm's survival" (Lengnick-Hall et al., 2011). The expanding body of research has noted the critical role of an organization's dynamic capabilities in response to unpredictable environments and achieving long-term organizational resilience (Ringov, 2017). Furthermore, organizational resilience is a pivotal determinant of an organization's capacity to navigate crises effectively (Chen et al., 2021). The evidence progressively affirms that resilient organizations possess a distinct capacity for market adaptation, bolstering their propensity to maintain relevance and responsiveness amid market changes (Hamel & Valikangas, 2003).

Resilience is crucial to sustainable hospitality and tourism management (Biggs et al., 2011) and aids organizations to rebound from unexpected events (McManus et al., 2008). Resilient organizations coordinate their inconsistencies and are responsive and innovative in their operations (Aldunce et al., 2014). In crisis and disaster management, resilience, or the ability to change, is a way to mitigate and provide boundaries for the adverse effects of a disturbance (Bruneau et al., 2003). Thus, organizations (including restaurants) develop the competence to rapidly pivot from daily procedures to adapting and reacting to crises/disasters (Dixon et al., 2014; Paton et al., 2000).

Neise et al. (2021) explains that organizational resilience (i.e., the fitness of firms) consists of three main elements: (i) absorption, (ii) coping, and (iii) adaption. Absorption refers to an organization's capacity to endure stress while maintaining its core functionality (Berkes, 2007). Coping involves responding swiftly in crises to mitigate severe consequences. Meanwhile, adaptation represents the capability to develop and implement strategic long-term responses to ongoing or future shocks (Berman et al., 2012).

Other studies indicate that three critical levels form organizational resilience, including individual resilience (people), systems resilience (processes), and supply chain resilience (partnerships) (Hall et al., 2017). This stage-by-stage development resulting from a crisis allows restaurants to strategize and withstand the initial shock of current and future changes. In line with evolutionary and resource-based theories of resilience, elements such as adaptability, collaboration, innovation, and human resources are critical in all stages of change and should be considered in tandem with each subsequent phase of the crisis (Teece, 2007; Wang, 2007).

Akgün and Keskin (2014) state that greater resilience results in efficient innovation methods enhancing performance and is vital in handling environmental unrest and adversities. Resilience depends upon the adaption of various subsystems and should incorporate a strategy to bolster future unforeseen events (Buultjens et al., 2017). The main subsystems in the restaurant include dining, operations, finances, and staffing. These main subsystems are interconnected and vital to production and service. Internal processes within enterprises can enable or hinder innovation and adaption (Hjalager, 2010; Hoffmann et al., 2009). Each identifiable subsystem will enhance the change process and subsequent recovery.

Multi-dimensional frameworks have been used in other tourism-based studies to develop adaptive processes in various contexts: destination resilience (Bethune et al., 2022), management resilience (Cahyanto et al., 2021), and disaster management (Filimonau & DeCoteau, 2020). For this qualitative study, we utilize organizational resilience as a conceptual framework to investigate the U.S. restaurant industry's resilience, adaptability, and innovativeness in the face of COVID-19 as a significant crisis. Furthermore, this study's chosen definition of organizational resilience is a business's ability to withstand shocks or disruptions to its original mode of operation and transform in the face of challenges (Weick & Sutcliffe, 2001). In this study, the focus is placed on both short- and long-term organizational resilience, with particular emphasis on the three core elements of organizational resilience: (i) absorption, (ii) coping, and (iii) adaptation, as outlined by Neise et al. (2021).

### Restaurant resilience

Despite the extensive research on crisis and disaster management within hospitality and tourism, several discernible research gaps still need to be addressed. The prevailing body of work in crisis and disaster management primarily centers on tourism, leaving the restaurant industry significantly underexplored (Li et al., 2021). Few studies specifically deal with crises in the restaurant industry (Neise et al., 2021). Regarding the specific crisis of COVID-19, a primary strand of research is consumer data-driven and centers on customers'

intention to dine out, their perceptions of risk, and the behavioral shifts stemming from the crisis (Byrd et al., 2021).

Another emerging strand of research focuses on restaurant operators' practices, responses, performance, and the broader impact of the COVID-19 pandemic on their operations (Norris et al., 2021), finances (González Morales et al., 2023; Kim et al., 2020; Song et al., 2021; Yost & Cheng, 2021), as well as employee psychological health and work performance (Bufquin et al., 2021). Within this research strand lies a more targeted examination of how restaurants withstand and respond to disruptive shifts and crises in the restaurant industry, giving insight into crisis management and business resilience domains.

Norris et al. (2021) conducted a systematic review incorporating 200 industry articles to uncover the array of business model adaptations that restaurants undertook to navigate the challenges during the COVID-19 pandemic's initial stage. Their findings revealed three prominent themes: the expansion of takeout/delivery services, innovative operational practices, and active community engagement. The study disclosed that less formal dining establishments can more feasibly adapt their operations to takeout/delivery services than fine dining outlets.

González Morales et al. (2023) analyzed the financial performance of Spanish restaurants in 2020, comparing those equipped with digital sales tools to those without such technology. Their findings revealed that liquidity, sales growth, restaurant size, and website presence significantly impacted profitability. Consistent with Norris et al. (2021), this study showed that the COVID-19 pandemic accelerated the adoption of e-commerce solutions, such as online ordering and home delivery services, which allowed restaurants to adapt to changing consumer needs and ultimately enhanced their financial performance. Supporting this, Ludin et al. (2022) analyze how COVID-19 has accelerated digital technologies in the hospitality industry. They found that the level of digitization is a critical factor regarding business success. Furthermore, before the COVID-19 pandemic, online food ordering and delivery platforms have been shown to provide restaurants with several advantages, including increasing revenue, expanding the potential market base, and gaining a competitive edge (Traynor et al., 2022).

Additionally, Li et al. (2021) systematically evaluated resilience, innovative responses, and recovery strategies employed by restaurants in China during the COVID-19 crisis. Like Norris et al. (2021), the researchers conducted a content analysis of textual data collected in the initial stages of the COVID-19 pandemic (secondary data). Their investigation synthesized an innovative crisis management model and delineated the innovative activities underpinning crisis response, fostering internal and external performance enhancements. Their findings identified innovative measures within the early stages of a health-related crisis, subsequently contributing to internal and external performance improvements.

Some studies grounded in economic geography have explored the impact of the COVID-19 pandemic on the restaurant industry during the initial forced closures (lockdowns), employing the concept of organizational resilience from a spatial perspective. Verfürth et al. (2022) employed the concept of organizational resilience to analyze the effects of the first COVID-19 pandemic lockdown on the German restaurant and bar industry. Their study focused on how individual/company factors and regional characteristics influence owners' perceptions of resilience in this sector. Through quantitative and qualitative interviews with owners and managers, their findings revealed that offering delivery and takeaway services positively correlated with the perception of resilience. Additionally, they found that many managers and owners lacked the necessary expertise and an adaptable business model to maintain profitability during the crisis. The study also noted that enterprises with substantial financial obligations (such as those financed by loans or credit) were less likely to be perceived as resilient. Their findings highlight the significant role of

business location in determining organizational resilience during a crisis, as businesses in peripheral areas were less affected by a decline in foot traffic than those in central locations. Interestingly, regional variables such as market concentration, Gross Domestic Product per capita, and purchasing power did not significantly impact perceived resilience.

Similar to [Verfürth et al. \(2022\)](#), [Liu et al. \(2023\)](#) explored the spatial distribution of business resilience in the restaurant industry during COVID-19, particularly in Hong Kong in June and December 2020. Their findings reveal that restaurant resilience remains stable in central areas, whether residential or business-based, demonstrated greater resilience in the catering industry during the first year of the COVID-19 pandemic. Contrary to expectations, confirmed cases did not disrupt the industry's spatial distribution. Instead, proximity to hospitals negatively impacted resilience, while factors like urbanization, accessibility, and commercial area aggregation positively contributed to organizational resilience. This study highlighted the importance of spatial factors in economic recovery and urban planning post-pandemic. Despite the significance of these findings and implications, the studies mentioned above provide a reasonable foundation for future research that delves into the restaurant industry's resilience, adaption, and innovative responses during a substantial health-related crisis.

There is a distinct need for forthcoming research endeavors to refine and test models and frameworks related to the COVID-19 pandemic, thereby facilitating an evaluation of the performance of crisis management strategies and innovative practices in the restaurant industry ([Li et al., 2021](#)). While a growing number of studies are examining organizational resilience in the restaurant sectors across the globe, it is pertinent to highlight that these investigations primarily assess the resilience of restaurants during the initial phases of mandatory lockdowns of the COVID-19 pandemic, as opposed to post-event analysis.

These studies offer valuable insights into the short-term organizational resilience of restaurant businesses during a crisis, focusing primarily on a firm's ability to endure stress while maintaining its core functionality (absorption) and respond swiftly in crises to mitigate severe consequences (coping). However, they fall short of drawing conclusions about these businesses' long-term responses in the face of ongoing or future shocks ([Neise et al., 2021](#)). Consequently, while they offer partial insights into the restaurant industry's resilience against the backdrop of the COVID-19 crisis, they do not uncover the full spectrum of adaptions and innovations that sustained restaurants throughout the COVID-19 pandemic, nor the practices that remain permanent beyond the conclusion of COVID-19 pandemic restrictions. For instance, these studies focused primarily on the initial period of the COVID-19 pandemic, when e-commerce was often the sole revenue source for restaurants ([González Morales et al., 2023](#)). Moreover, examining organization resilience in different cultural and social contexts enriches the relatively limited and emerging literature surrounding the topic.

#### *Impact of the COVID-19 pandemic on the U.S. restaurant industry*

In February 2020, the World Health Organization (WHO) formally declared the coronavirus disease 2019 (COVID-19) a global pandemic ([WHO, 2020](#)). The COVID-19 pandemic rapidly evolved into a crisis with extensive implications, encompassing widespread illness, fatalities, substantial disruptions to personal and professional life, and a rapid global economic downturn ([Kooli & Lock Son, 2021](#)). These repercussions extended across society, yielding profound social, human, and economic impacts, particularly affecting businesses ([Sidhom, 2021](#)). For the restaurant industry in the U.S., the COVID-19 pandemic inflicted monumental revenue and employment losses, resulting in changes in the operation, financial, and staffing infrastructure. Pre-COVID-19 pandemic restaurant sales totaled \$772

billion in 2019, equaling 4 % of gross domestic product ([NRA, 2020a](#)). Furthermore, as of February 2020, the industry employed more than 15 million people, representing 10 % of the direct workforce ([Brownfield, 2020](#)). This highlights the restaurant industry's substantial contribution as a critical economic driver in the U.S., underscoring the importance of investigating its response to the COVID-19 pandemic.

With substantial pressure to restart the economy in the U.S., following advice from the Centers for Disease Control and Prevention (CDC), the U.S. government unveiled a three-phased approach to guide states in reopening their economies while continuing to protect the public from COVID-19 ([Trump White House, 2020](#)). Following this approach, the COVID-19 pandemic in the context of the U.S. restaurant sector is therefore categorized into three distinct phases for this study. *Phase 1*, spanning from March to May 2020, was marked by the initial government pandemic containment efforts resulting in a nationwide forced closure of U.S. restaurants ([Wei et al., 2021](#)). Stringent regulations and restrictions encompass forced closures (lockdown), confinement measures, physical distancing requirements, and restrictions on gatherings and activities ([Messabia et al., 2022](#)).

As a result of a 60-day closure, research has indicated that the restaurant industry ([Brizek et al., 2021](#)) suffered a staggering \$120 billion loss of revenue, and 3 % of restaurants permanently closed their doors during this timeframe ([Brizek et al., 2021; NRA, 2020b](#)). Particularly hard-hit were full-service restaurants, experiencing an 83 % drop in revenue, while limited-service restaurants suffered a 61 % drop ([Brizek et al., 2021](#)). In addition, on average, U.S. restaurants laid off or furloughed 91 % of their hourly workforce and 70 % of salaried employees due to COVID-19-related closures ([James Beard Foundation, 2020](#)). These findings underscore the restaurant industry's unprecedented and severe challenges during the initial phase of the COVID-19 pandemic (*Phase 1*).

As depicted by [Wei et al. \(2021\)](#), the period before unrestricted activities resumed is regarded as the 'reopening period,' defined as *Phase 2* in the present study. For most states, this period is from June 2020 and April 2021. This unfolded with several state governments gradually easing the initial government pandemic containment mandates, leading to an incremental reopening process as restrictions were loosened ([The New York Times, 2023](#)). In most states, dine-in restaurants were permitted to resume operations under reduced dining room capacity, following stringent mask mandates, social distancing guidelines, and gradually easing restrictions ([Gursoy & Chi, 2020](#)).

While the restaurant industry made gradual efforts to reopen and recover during *Phase 2*, the lingering effects of the COVID-19 crisis continued to significantly influence the operational landscape of restaurant businesses. The industry suffered employment losses due to the spread of the COVID-19 pandemic, which caused a subsequent rise in labor costs ([Kirby, 2021](#)). The COVID-19 pandemic was estimated to have caused an overall \$240 billion loss by the end of 2020 ([NRA, 2020b](#)). To manage the financial losses and ensure viability towards the end of 2020, restaurants utilized federally funded grants and emergency legislative acts such as the Paycheck Protection Program (PPP) under the CARES Act ([U.S. Department of Treasury, 2020](#)) and the Restaurant Revitalization Fund (RRF) under the American Rescue Plan Act ([Congressional Research Service, 2021](#)). These funds allowed many restaurants to remain open, maintaining operations despite reduced capacity ([Brizek et al., 2021](#)).

Consequently, *Phase 3* of the COVID-19 pandemic is characterized as the stage wherein unrestricted activities resume. Throughout 2021 and 2022, the hospitality industry displayed robust sales growth, with revenues of \$843.61 billion and \$975.92 billion, respectively ([Statista, 2023](#)). While these figures markedly exceeded pre-pandemic levels, they were primarily driven by elevated menu prices resulting from restaurants offsetting increased operational costs ([Ruggles, 2022](#)).

Drawing from the experiences of past successful crisis strategies implemented by restaurant operators, valuable insights can be gained to navigate future crises effectively. According to [González Morales et al. \(2023\)](#), it is critical to comprehend the potential long-term benefits of a firm dedication to incremental sustainability tactics. As a result of each incremental phase, restaurants coordinated their responses, becoming more innovative in planning and maintaining short-term and long-term effectiveness. This resulted in a system of preservation known as restaurant resilience, a framework including three major departmental areas (*operational, financial, and staffing*), strategies, and techniques used to adapt and react to external influences. With that being said, the gradual reopening of the restaurant industry occurred with disparity across the U.S., being influenced by individual state policies, resulting in a lack of uniformity in implementing mandated restrictions. Certain states opted for a faster reopening process than others, potentially contributing to a surge in positive COVID-19 cases in various regions throughout the United States ([Yost & Cheng, 2021](#)). Thus, given the impracticality of conducting research on the resilience of the entire U.S. restaurant industry, the current study has chosen the state of Alabama as a suitable setting for its research scope.

#### *Characterization of the Alabama restaurant industry case*

The state of Alabama reported its first case of COVID-19 on March 6, 2020. In response, Governor Kay Ivey issued a State of Emergency Proclamation for Alabama on March 13, 2020 ([Office of the Governor State of Alabama, 2020](#)). To further combat the spread of the virus, the Alabama Department of Public Health issued an Emergency Order on March 17, 2020, imposing restrictions on public gatherings and implementing work-from-home and flexible working schedules. As the number of COVID-19 cases increased, this Emergency Order was continuously revised and updated.

For the restaurant industry, the guidelines stated that on-premises consumption of food or drink was prohibited for one week to mitigate the spread of the virus, marking the onset of *Phase 1* of the COVID-19 pandemic for the restaurant sector. The statewide public health order was amended on March 19, 2020, extending this restriction until April 5, 2020. The statewide public health order transitioned to an emergency "Stay at Home" order on April 3, 2020, due to the persistent spread of the virus. This suspended public gatherings and limited restaurants to offering takeout or delivery services only. The order remained in place until May 8, 2020, during which *Phase 1* of the COVID-19 pandemic resulted in a sharp decline in revenue and restaurant patronage across the state. Employment dropped to approximately 107,400 by the end of April 2020 ([U.S. Bureau of Labor Statistics, 2023](#)).

*Phase 2* began on May 11, 2020, with a transition from the "Stay at Home" order to the "Safer at Home" order, allowing for the reopening of the restaurant industry under strict guidelines. These guidelines encompassed restrictions on dining-room capacity, implementation of social distancing measures, and mandated mask-wearing for restaurant employees ([Office of the Governor State of Alabama, 2021](#)). This development marked the initiation of *Phase 2* in the state's COVID-19 pandemic response. Over 11 months, the "Stay at Home" order underwent continuous updates and modifications. Employment numbers in the industry experience a significant increase to approximately 142,000 for the remainder of *Phase 2* ([Statista, 2023](#)). On April 7, 2021, the "Stay at Home" order transitioned to the "Safer Apart" order, effectively removing all mandated restaurant restrictions and marking the beginning of *Phase 3*, the recovery phase. Additionally, on July 8, 2021, Governor Kay Ivey officially terminated the State of Emergency Proclamation for the COVID-19 pandemic ([Office of the Governor State of Alabama, 2021](#)).

During *Phase 3*, the restaurant sector in Alabama remains in recovery. Notably, restaurant footfall in 2022 has been reported to

match pre-COVID-19 pandemic levels in the state's four largest cities ([Alabama Media Group, 2022](#)). Furthermore, the state documented a record-high industry revenue of \$11.8 billion; however, it is essential to acknowledge that heightened menu prices significantly influence this figure due to the increased operating costs ([NRA, 2023](#)). While the state has observed gradual increases in employment figures within the industry, it has yet to attain pre-COVID-19 pandemic employment levels. Specifically, by 2022, an additional 18,000 individuals were absorbed into the industry's workforce, culminating in a total employment count of around 160,000. This number subsequently increased to 167,000 by 2023 ([U.S. Bureau of Labor Statistics, 2023](#)).

## **Methodology**

### *Research design*

Qualitative research, intended to generate knowledge grounded in human experience ([Sandelowski, 2004](#)), and qualitative research methods are particularly suited for situations where a complex, in-depth understanding of an issue is required and when there is a need to explore the context in which study participants are addressing the problem ([Creswell, 2007](#)). The qualitative researcher aims to comprehensively understand a topic by rigorously examining phenomena through the careful selection of participants, in-depth study of their experiences, and persistent data collection. This process continues until data saturation is reached, meaning no new themes or insights emerge during the analysis ([Pitney & Parker, 2009](#)). In the field of hospitality research, the importance and relevance of qualitative approaches have been extensively recognized ([Arendt et al., 2012](#); [Kwortnik, 2003](#); [Walsh, 2003](#)), especially as a precursor to employing quantitative methods ([Riley & Love, 2000](#)). Given the paucity of research on the subject and the limited understanding of how U.S. restaurants were impacted and subsequently adapted operations beyond the early stages of the COVID-19 pandemic, a qualitative investigative approach was deemed most appropriate ([Poria et al., 2010](#); [2011](#)). Thus, the researchers adopted qualitative research methods for this exploratory study.

The study utilized non-probability, purposive sampling ([Patton, 2002](#)) to select four restaurant industry managers and four restaurant owners for a total of eight participants in Alabama, U.S. The participants were industry contacts and acquaintances of the researchers and were recruited via email and phone. If the contact agreed to participate, they were provided with an informed consent form, IRB documentation, and a description of the process. Participants worked at different restaurants covering various industry segments, operational sizes, and cuisines (see [Table 1](#)).

### *Data collection*

The researchers used semi-structured interviews to gain exploratory insights into how restaurants were impacted and subsequently adapted operations during the various phases of the COVID-19 pandemic. The purpose of the interviews is to explore the experiences, views, opinions, ideas, beliefs, and motivations of participants ([Islam & Aldaihani, 2022](#)) concerning how U.S. restaurants were impacted by and adapted to the challenges posed by the COVID-19 pandemic beyond its initial stages. Interviews are particularly valuable for gaining deeper insights into such social issues or phenomena, particularly when researchers have limited prior knowledge about the subject matter. In-depth interviews can take numerous shapes and forms ([Knott et al., 2022](#)). The semi-structured interview allows the researcher to include critical questions related to the topic while allowing both the interviewer and interviewee to diverge into a more detailed exploration of specific issues or responses ([Schmidt, 2004](#); [Saunders et al., 2018](#); [Saunders & Townsend, 2016](#); [Evans & Lewis, 2004](#)).

**Table 1**  
Details of study participant businesses.

Restaurant Information	No. of Participants
<i>Number of Employees</i>	
<50	0
51–100	3
101–150	3
151–200	0
200–250	1
1000+	1
<i>Average Cover Per Day</i>	
<50	0
<100	1
101–200	3
201–300	1
301–400	0
>400	3
<i>Restaurant Cuisine</i>	
Contemporary American	3
Southern	1
Southern Steakhouse	1
Italian	1
Tex Mex	1
Seafood	1
<i>Industry Segment</i>	
Upscale Casual	2
Fine Dining and Casual	3
Fine Dining	3

2018). This flexibility makes semi-structured interviews more adaptable than either structured or unstructured interviews.

For this study, semi-structured interviews were conducted in person, via phone, or video conference at the participant's discretion. Data collection occurred in three separate rounds corresponding to the three distinct pandemic phases: *Phase 1* data was collected in June–August 2020, *Phase 2* data was collected in January–March 2021, and *Phase 3* data was collected in January–February 2022. The interview protocol was developed by extensively reviewing relevant and prominent academic and industry literature on the topic.

The interview topics included service, operational and financial challenges, and changes due to the COVID-19 pandemic. Probes, such as the leading probe, are used to deepen or expand on a point and are typically employed in the later stages of data gathering (Price, 2002). These questioning methods enabled us to determine the extent of the changes implemented and their effects on all parties involved in the service. Interviews ended by asking open-ended questions regarding any pertinent issues the participants thought were important, as well as changes in existing leadership styles, the emotional state of the staff members, and strategies to overcome high stress/anxiety during work operations. This enabled us to explore more concepts that could have resulted from COVID-19 restrictions. Data was analyzed and triangulated between interviews to establish if and when data saturation had been accomplished, as this would suggest the data collection was complete. Perceived saturation of conceptual themes and subthemes, which describes a situation when no new information is discovered in data analysis, was used to determine the sample size (Fusch & Ness, 2015).

Each interview was conducted by at least one member of the research team. The duration of each interview from *Phase 1* ranged between 45 and 60 min, while they ranged between 30 and 45 min for *Phase 2* and 15–30 min for *Phase 3*. The audio for each interview was recorded for later verbatim transcription and analysis. The interview protocol was piloted with two restaurant managers to validate its fitness for purpose (Filimonau & Uddin, 2021). Following the pilot, existing questions were refined to condense subject areas and ensure suitability. All interviews were conducted using the same interview question protocol to confirm consistency.

## Data analysis

Thematic analysis is the most common method used to analyze interview data and is considered the foundational method for qualitative analysis (Braun & Clarke, 2022). Thematic analysis is suitable when a researcher seeks to understand a set of thoughts, experiences, or behaviors across a data set. Thematic analysis, like other methodologies in the social sciences, such as ethnography, phenomenology, and content analysis, involves extracting meaning from data by identifying, refining, recording, and analyzing recurring themes (Javadi & Zarea, 2016). This analysis is applicable to search for a shared or common meaning in the data set (Kiger & Varpio, 2020). Thematic analysis is a beneficial and accessible method for those starting in the analysis of qualitative data and interview material as a method of coding data to develop and interpret themes in the data (Braun & Clarke, 2022).

Three researchers verified and cross-checked the transcript responses independently. The transcribed data was analyzed through thematic analysis following the procedures recommended by Braun and Clarke (2006) to generate themes and subthemes. This involved a process of data familiarization, coding, and gradual data reduction of data as coded comments were categorized under higher-order themes. A continual comparative approach was applied, and the data underwent iterative refinement as outlined in the literature (Braun & Clarke, 2006; Buissink-Smith & McIntosh, 1999; Gill, 2014; Lepkowska-White et al., 2019; Quigley et al., 2019). Responses were coded using nVivo software (Version 1.7.1) to identify corresponding themes and issues. All researchers reviewed the themes and subthemes to ensure they accurately reflected the meanings in the data-set (Craig et al., 2022).

Triangulation was used to solidify codes, categories, and themes; a joint consensus was achieved once all the researchers agreed (Creswell & Zhang, 2009). Varying perspectives were used to assess existing themes and occurrences, allowing for a greater depth of reasoning. Data supporting emergent themes were continually revised to construct a contextualized understanding (Frey et al., 2005). Codes were further refined by restaurant changes within the COVID-19 pandemic phase and operational department. Specifically, major themes and codes were reviewed and refined in the second and third review rounds of research team members who had a joint conclusive agreement on existing themes and related codes. No new themes emerged for the third review. Therefore, data collection ceased. The framework was solidified once final codes were agreed upon and the data was further analyzed. According to Lincoln and Guba (1985), utilizing techniques such as in-depth interviews and coding processes aid in ensuring the credibility, dependability, confirmability, and transferability of data.

## Results

This study's findings shed light on restaurant operators' perspectives regarding the impact of the COVID-19 pandemic on their operations, as well as the required adaptations and creative solutions employed to sustain and advance their operations. The study participants are still operating during *Phase 3* (post-COVID-19), thus showcasing resilience during the crisis. The findings are categorized into two main sections: (1) *the experiences and challenges encountered by restaurant operators* and (2) *the innovative strategies and adaptations adopted leading to restaurant resilience*. A comprehensive thematic analysis of the data yielded numerous emergent coded themes (Tables 2 and 3). These are discussed in the ensuing sections and Sections in the context of the three previously defined distinct phases of the COVID-19 pandemic in Alabama. Supporting verbal excerpts from the participants are provided.

**Table 2**

Coded themes and subthemes for experiences and challenges of restaurants during the COVID-19 Pandemic.

Themes	Subthemes	Phase 1	Phase 2	Phase 3
Disruptions due to government-mandated protocols and measures	Restrictions to on-premises dining	✓	✓	
	Customer response to mandates and operational changes	✓	✓	✓
Labor-related challenges	Staff response to mandates and operational changes	✓	✓	
	Threat to staff physical and mental wellbeing		✓	
	Labor shortage	✓	✓	✓
Financial changes	Changes in revenue	✓	✓	✓
	Increases in the cost of operations		✓	✓

✓ denotes the subtheme relevance to the phase of the COVID-19 pandemic.

**Table 3**

Coded themes and subthemes of innovative strategies and adaptions by restaurants during the COVID-19 Pandemic.

Themes	Sub-Themes	Phase 1	Phase 2	Phase 3
Operational changes and innovations	Customer service and operation innovations and adaptions	✓	✓	✓
	Decreased days and hours of operations	✓	✓	✓
Integration of technology	POS system updates + food ordering	✓	✓	✓
	Digital menus and payment systems		✓	✓
Strategic financial decisions	Cost-saving measures	✓	✓	
	Increase menu pricing		✓	✓
	Increase salary changes		✓	✓
	Government-funded financial aid programs	✓	✓	

### The experiences and challenges encountered by restaurant operators

#### Disruptions due to government-mandated protocols and measures

The primary emergent theme pertained to operational disruptions due to adherence to government-mandated protocols and measures (Table 2). These measures were implemented in Phases 1 and 2 to curb the virus's transmission. Additionally, the numerous periodical revisions and modifications to these protocols and measures led to substantial disruptions to operations. One of the most significant challenges associated with these disruptions was the *restrictions to on-premises dining*.

During Phase 1, an abrupt halt to on-premises dining limited restaurant operations to takeout services (curbside pickup and delivery). "You are talking about six or seven weeks when we were truly shut down." The transition to takeout operations was challenging for most participants, leading to apparent compromises in the quality of food sold. This was primarily due to the necessity of serving menu items unsuited for takeout operations or serving menu items typically considered fast food. "The deal with food quality is it will never be as good in a to-go container. You know we served French Fries when we usually served fine dining food."

Initially, the transition to allow on-premises dining in Phase 2 was met with optimism among participants. Nevertheless, the stringent nature of the restrictions for on-premises dining posed substantial challenges to participants concerned about the compromised efficiency, quality of service, and overall sense of hospitality. The impact of these changes on the quality of service was significant, and it is important to empathize with the challenges faced by the industry. This was primarily attributed to the necessity of mask-wearing and social distancing, which hindered effective communication. "Quality of service should be sitting down and having a great conversation with everybody at your table. If you are a server, you could not really do all that; I mean, the masks were terrible." "You have servers coming to your table with masks on; you cannot see them smiling to greet you at fine dining service. They have gloves on, essentially covered from head to toe."

The final emergent subtheme within this theme relates to the customer response to mandates and operational changes. Given the well-documented politicization of the COVID-19 pandemic in the U.S. (Bolsen & Palm, 2022), participants reported a mixed customer

response to mandates and operational changes. In Phase 1, the positive and supportive response was marked by a significant degree of empathy towards an industry experiencing significant hardship due to the COVID-19 pandemic. "Our customers gave us much grace trying to figure it out, and most of them understood we are just following the rules and trying to keep everybody safe, and we are trying to keep our employees safe.... I would say, overall, it [takeout operations] went pretty well with the customers, even though you know it is a terrible situation for everybody. Our customers were super thrilled that we would do curbside."

During Phase 2, participants continued to encounter positive and supportive customer responses. It appeared that many customers welcomed the opportunity to resume dining out at restaurants, and the measures put into place provided a sense of personal safety and security against transmitting the virus. "I guess the reception has been mostly great. With the distancing at first, the feedback was amazing. We felt very understood and heard. People said they felt safe coming to eat with us; they appreciated the measures we put into place, which motivated us more to keep doing that longer and longer." Conversely, it is noteworthy that participants also described instances of customer sensitivity and anxiety regarding their safety. "At times, guests were extremely sensitive about being inside and how close they were to one another."

However, as Phase 2 progressed with mandates and protocols being modified, there appeared to be some customer resistance towards mandates and increased daily hostile and confrontational interactions with some customers. "As we wore further in, maybe a little bit of a shift of people were like, 'I do not want to wear a mask in here anymore,' and then you started to have a mixed bag where you would have one table that was appreciative of the social distancing, and then you had another table complaining that it was kind of a dull atmosphere." In addition, participants also experienced some negative encounters with customers related to the quality of service provided due to operational changes during Phase 2. In particular, due to limited menu offerings and prolonged service times due to labor shortages and social distance requirements. "We got many comments on the menu, which was reduced to very limited; they wanted more options. That was probably the biggest one we got through the changes; it was just the menu complaints of the sides and limited options."

### Labor-related challenges

Participants faced significant labor-related challenges, particularly throughout Phases 2 and 3. The subtheme of *staff response to mandates and operational changes* was challenging during Phase 2. Various participants reported a positive response from staff towards reopening on-premises dining, especially as it allowed them to return to work and earn an income. However, similar to customer responses to mandates and operational changes, some participants reported that certain staff members resisted the mandates, protocols, and measures. *"We had an employee that had been with us for ten years, and he just did not want to wear the mask, you know, initially. Then I had a conversation, and you know he would wear the mask, but it was always just like, 'let us test how far we can push this,' and we finally just had to take him off the schedule and say, hey, if you cannot abide by these rules, then we do not have a place for you."*

Another emerging labor-related subtheme during Phase 2 was the *threat to the staff's physical and mental wellbeing*. It was noted that there was a palpable level of heightened stress and anxiety among staff. In particular, health-related concerns due to potential exposure to the virus and uncertainty around COVID-19 significantly contributed to the heightened anxiety levels among some employee participants. In addition, increased cleaning requirements, health protocols, lower earnings, and dealing with challenging and hostile customers made the working environment highly stressful for employees. *"It was pretty tough; they [staff] were not getting as many tips or tables as they had before, so I think everybody was stressed out. Also, are they going to get COVID? They serve however many guests there that night; nobody knows who has it [COVID-19]. So, I think everybody had a really tough time figuring out and navigating the new world. I think it was a big mental toll on many people; we have had some people change their attitudes for the worse."*

A significant labor-related subtheme was a *labor shortage*. During Phase 1, the *labor shortages* were primarily a result of the necessity to furlough hourly paid and non-management staff due to on-premises dining restrictions. Consequently, the remaining staff, often management, had to fulfill the additional responsibilities in the restaurant. *"The day they [government] told us to shut down, we immediately told them [hourly staff] to file for unemployment, and we essentially terminated or furloughed 145 people."* *"We laid off or furloughed every staff member that was not a part of management initially. So, we went from around 80 to seven."*

All participants expressed *labor shortages* as an increasingly challenging and persistent problem throughout Phases 2 and 3. During Phase 2, the high turnover rates and difficulty in hiring were exacerbated by the anxiety and high-stress environment prevailing at that time. *"Probably 20 % of the people that ended up getting furloughed, they just left, and we never heard from them again. Even after trying to contact them, I think many of them retired."* *"Some people did not want to come back right away; they wanted to make sure everything was not quite as intense before they came back."* These labor-related challenges were compounded by the surge in business resulting from the resumption of all unrestricted restaurant activities during Phase 3. Many participants stated that the workforce shortage remains their most significant challenge. *"Today, we are probably 75–80 % staffed from what we were back then [pre-pandemic]. It is not because we are not trying to hire; it is just because it is hard to find workers. That is the single largest issue that we have had."*

Moreover, participants faced the considerable challenge of recruiting and retaining experienced and skilled staff members. Many employees chose not to return to the industry when regular operations resumed, with some deciding to pursue careers in other sectors. Ultimately, this led to a reduced pool of competent applicants for positions at their restaurants. *"Finding experienced staff is difficult. We had a slower response to job ads and lower quality of staff."* *"We had difficulty hiring support staff as many people did not want to return. Why, better options, more flexible hours elsewhere."* *"Many of them*

*switched industries; some staff took the opportunity to retire early or took advantage of unemployment."*

### Financial changes

The final theme related to participants' experiences and challenges was financial changes. This refers to the impact on participants' restaurants in terms of expenditure, revenue, profits, etc. Due to the unpredictability and rapidly changing health and safety policies throughout the COVID-19 pandemic, participants were confronted with significant financial changes distinct to each phase of the COVID-19 pandemic. During Phase 1, there was a marked lack of ability to generate revenue associated with the mandated closure to on-premises dining. Moreover, while incoming revenue was drastically diminished, the fixed costs associated with operating a restaurant still had to be paid. *"Obviously, having a lockdown, our guests count, our revenue was down over 60 %. I mean, it was very, very rough, very, very difficult."* *"We had an immediate change in revenue due to the lockdown; we suffered a 2 million loss in revenue during that period."* *"Business was so slow; I mean, there were days where I did not have a single order."*

During Phase 2, participants reported an initial increase in revenue following the reopening of on-premises dining. However, this resurgence of revenue was exceptionally gradual, persisting for an extended period mainly due to a considerably reduced dining room capacity due to social distancing requirements. *"We experienced an increase in revenue when restaurants reopened. A 20–30 % increase went on for the next nine months."* *"It was hard enough. The covers were slow; business was struggling to get back moving."*

As Phase 2 advanced, government restrictions were progressively modified and lifted, and participants noted increasing comfort among the public regarding dining out. Consequently, participants continued to experience a notable and sustained upturn in revenue, with some reporting exceeding pre-COVID-19 pandemic revenue figures. *"All restaurants in the surrounding areas, too, experienced increased sales. My restaurants experienced a return to pre-Covid levels and beyond."* Furthermore, by removing all government-mandated protocols and measures in Phase 3, participants noted a sustained and substantial increase in revenue. *"We have a record-breaking revenue for groups because of the pent-up demand not being able to meet. It is safe to say we made up for lost revenue and more with the rebound in demand."* *"We had 10 % revenue gains every year since Covid. Revenues now match what we earned the year before COVID."*

While revenue showed a consistently positive trend throughout Phases 2 and 3, participants also absorbed *significant increases in operational costs* during these phases. These substantial cost increases were primarily attributed to the perceived necessity to raise employee salaries and the rising cost of goods due to inflation. *"All food costs were rising, paper and plastics were rising, chemicals were rising, so financially, it was extremely tough."*

### The innovative strategies and adaptions leading to restaurant resilience

#### Operational changes and innovations

The primary emergent theme regarding innovative strategies and adaptations was *operational changes* (Table 3). This refers to the strategic adjustments made by participants to their restaurants' everyday processes and customer interactions in response to the unprecedented changes. Participants were driven to explore creative and innovative responses to the previously outlined challenges. Significant *customer service and operation innovations and adaptations* were driven by previously outlined financial challenges during Phase 1. Many participants implemented additional revenue streams to supplement their notably limited incoming revenue. These additional revenue streams included exclusively offering limited group-style meals rather than individual ones, introducing meal kits (comprising

raw or semi-prepared ingredients with cooking instructions), and even diversifying into selling retail products and ingredients. "Our dining room was forced to shut down, so we shifted into a to-go-only program, curbside pickup." "We put out many family meal options that fed four to six guests, a typical family size, and we put a pretty solid price point; it was probably about \$40, \$45."

In Phase 2, to accommodate their reduced staffing levels, both off-premises and on-premises dining necessitated substantial adjustments, including menu streamlining and considerable alterations of food preparation and service processes. "We had limited menus because our kitchen staff was still on the smaller side, so we just offered about half of what we normally would."

Another substantial operational adaptation involved reducing days and hours of operation during Phases 1 and 2. This decision was primarily driven by the persistent labor shortages experienced during these phases, which made it challenging to meet the demands of their customers. "To get people to work that many shifts and to get enough to cover that many shifts, so we just decided to lose that shift and go to five days a week." Furthermore, it was evident that these changes were implemented to alleviate the anxiety and stress experienced by staff during Phase 2 and, subsequently, for financial reasons in Phase 3. "It just made it a financial decision that even though we were losing the income, the people who would come to eat lunch on Tuesday will probably just push to Wednesday. So, we lost a shift forever."

#### Integration of technology

The immediate integration of technology to address challenges and seize opportunities emerged as a significant theme. This refers to the various technology participants adopted in response to the unprecedented changes occurring throughout the COVID-19 pandemic. Participants exhibited innovation and resilience by swiftly transitioning to digital marketing for their businesses and receiving customer orders through their websites, social media accounts, and third-party food delivery services during Phase 1. "We also did a lot of social media promotions, like lunch specials or dinner specials to-go." "We did curbside, and then we also had delivery. All of those [delivery orders] were through our third parties. We had a battleship full of tablets and phones, which is how it worked. And through our website as well."

Furthermore, during Phase 2, when on-premises dining resumed, many participants continued leveraging online ordering, takeout services, and third-party food delivery to supplement their limited on-premises dining capacity. Notably, in Phase 3, most participants still used third-party food delivery services. "Doing the to-go orders and putting together more of a condensed menu was very challenging to execute. We still needed to keep revenue-generating enough to be sustainable and to survive, but we could not do that on 40 seats inside the restaurant alone."

Another considerable technological adaptation in Phase 2 was the adoption of digital menus and payment systems. While the initial rationale was to enable contactless customer ordering and payment, many participants found that it also streamlined the menu design process and, therefore, was a positive change that persisted into Phase 3. "I think honestly Q.R. codes [menus] were a great opportunity. They saved a lot of operational challenges. Updating menus online is easier than reprinting hundreds of menus daily." "Everything is a Q.R. (Quick-Response) code; we are really trying to make so many things mobile-friendly now."

#### Strategic financial decisions

Various strategic financial decisions emphasizing sound financial management were made in response to the challenges faced by participants. This refers to the methodical decisions made by participants to best adapt to the unprecedented changes during this period. The predominant emerging subtheme in this context was the adoption of cost-saving measures. With limited revenue during Phase 1 due to on-premises dining restrictions, participants were required to

meticulously evaluate their expenditures to mitigate losses, opting to cancel contracts and services deemed essential to their operations. "We just immediately stripped away every contract we could or paused it if they were willing. We just went down the budget sheet and were like, 'What is necessary?' We got rid of our marketing firm; we got rid of everything we could think of."

During Phase 2, participants implemented various innovative mitigation strategies in response to the increased operational costs, primarily attributed to the rising prices of ingredients and goods (NRA, 2022). Most notably, they changed menu items, ingredients, and suppliers to remain competitive. "All costs were rising, so financially, it was extremely tough. We changed some of the products we were buying and were very creative in the products we were using. We tried to find different products, whether cuts of meat or different types of fish that were less expensive." Furthermore, some participants noted that they drew from past experiences of crises in the industry to develop solutions and overcome the challenges posed by the COVID-19 pandemic. "I learned the same things in the recession of 2008–09; I mean, I learned so much regarding food costs and labor costs."

Another strategic financial management to address rising operational costs was to increase menu pricing. Many participants considered this measure a last resort and recognized its need for resilience, feeling compelled to pass some of these cost increases on to the customers. "We have had to raise prices, probably two, going on three price changes since. We decided it was within reason to raise these prices to drive a little more revenue on some higher volume stuff."

In response to the labor shortages encountered during Phases 2 and 3, a strategic financial decision was taken to increase employee salaries. This decision aimed to achieve several goals, including staff retention to ensure consistency in service quality, reduce the costs associated with training new staff members, and incentivize potential employees to join the participants' workforce. "We are setting ourselves up so that you know we are operating at less cost by not having to replace employees and train them. Therefore, we can justify the increase. Does that make sense? So instead of paying two people \$15, one training, one learning, you pay somebody \$18, you are \$12 to the good, and you develop loyalty."

The final subtheme within the category of strategic financial decisions involved participants availing themselves of government-funded financial aid programs. These external financial aid grants were a lifeline for many participants and played a vital role in ensuring the survival of their businesses during Phases 1 and 2. "Those programs really did help many restaurants, and I know a couple of restaurants from downtown. I feel like the owners maybe did not think it was a big deal or anything, like they did not jump on those grants that were available, unfortunately, are no longer in business because after two months, and then months of limited capacity, there is not a way that most restaurants would have been able to survive that."

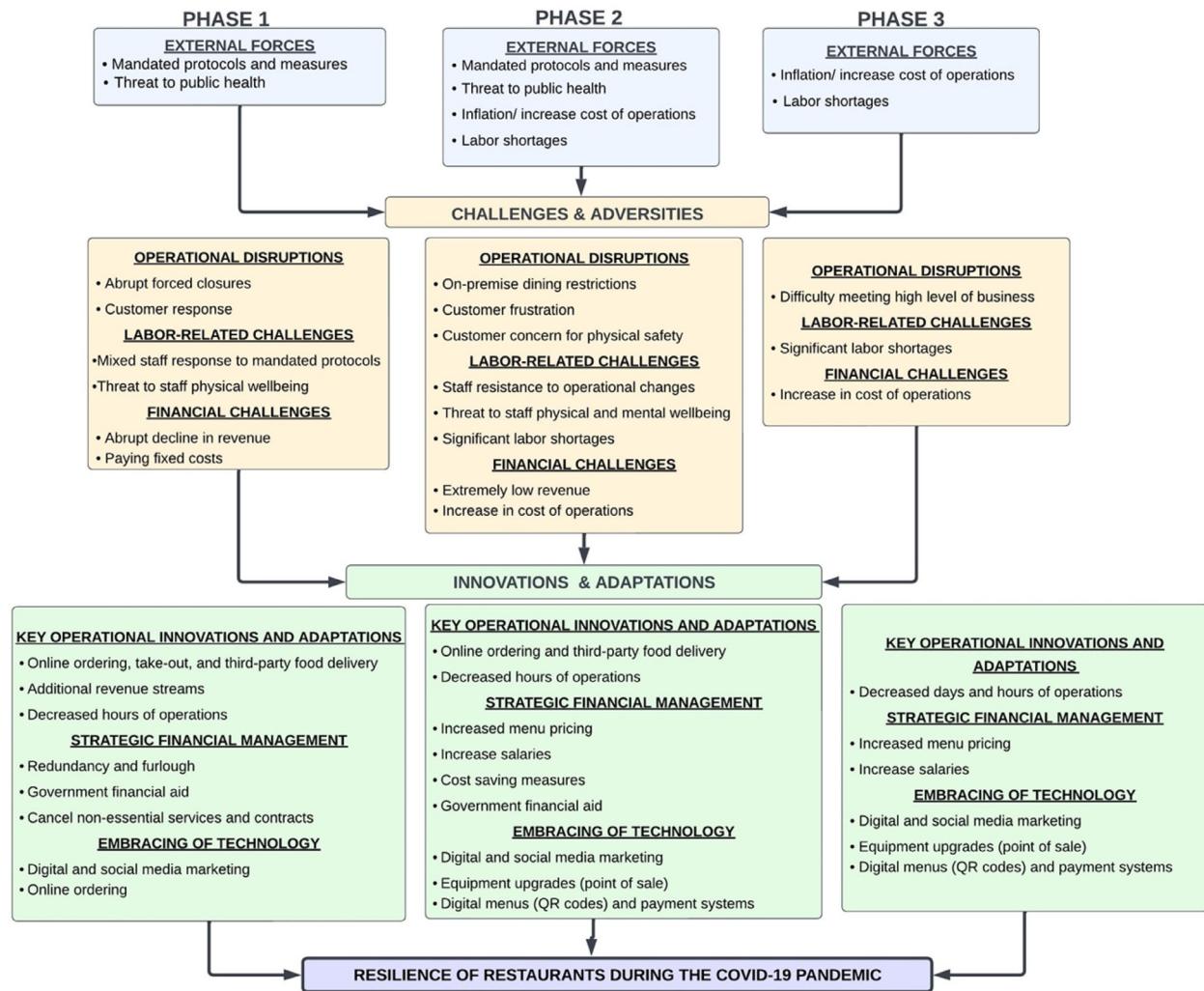
## Discussion

### General discussion

This study provides in-depth insights into how restaurant managers and owners in Alabama coped with the disruptive challenges presented by the COVID-19 pandemic. Moreover, this study also examined the participants' resilience, specifically how they absorbed and coped with these disruptive challenges, transformed and adopted innovative practices and strategies, and ultimately capitalized for business survival. In doing so, they showcased the critical characteristics of one of the seminal definitions of organizational resilience (Lengnick-Hall et al., 2011).

The synthesis of the study's findings, combined with existing literature on organizational resilience and the limited empirical literature on restaurant resilience in response to this crisis, culminated in developing a visual conceptual model of restaurant resilience during

ABSORPTION  
COPING  
ADAPTATION



**Fig. 1.** Conceptual model of resilience of restaurants during the three phases of the COVID-19 pandemic.

the COVID-19 pandemic (Fig. 1). This conceptual model is rooted in the verbatim data obtained during the in-depth interviews and illustrates the specific external forces, challenges and adversities, and innovations and adaptations of the participants. These disruptive forces, operational challenges, crisis adaptations, and resilience innovations are organized around three core elements of organizational resilience: absorption, coping, and adaptation (Martin, 2018). Given that both coping and adaptation are responses to situational shocks—coping being the immediate reaction to mitigate impacts, and adaptation involving the development and implementation of strategic long-term responses (Berman et al., 2012)—they are inherently interconnected. Additionally, the disruptive forces, operational challenges, crisis adaptations, and resilience innovations are specifically delineated for each successive phase of the COVID-19 pandemic.

Phase 1, the most restrictive pandemic stage, primarily involved confronting significant and sudden challenges driven by external forces, each demanding swift absorption and coordinated responses to maintain business functionality and ensure survival. The three primary absorption domains of operational, financial, and staffing posed severe tests to the robustness of each business. Core external forces include the threat to public health due to the pandemic and government-mandated protocols and measures resulting in significant disruptions to business functions and operations during Phase 1 and extending to Phase 2.

In line with the findings of prior research (Brizek et al., 2021; Li et al., 2021; Messabia et al., 2022; Neise et al., 2021; Norris et al.,

2021), the initial phases ushered in immediate challenges and disruptions for participants as a result of the COVID-19 pandemic. Several studies on crisis management studies (Hao et al., 2022; Kooli & Lock Son, 2021; Runyan, 2006) point out that the lack of capital and cash flow, along with the burden of fixed expenses as primary risk factors to the survival of smaller businesses during a natural crisis. This issue was particularly pronounced in the restaurant sector, which is known for its inherent liquidity constraints (Mun & Jang, 2015). The pandemic-induced decline in sales and the burden of fixed costs and additional expenses for implementing safety measures exacerbated liquidity challenges for participants during Phase 1. Furthermore, government-mandated restrictions, such as limited hours of operation and reduced on-premises dining capacity, provided little relief from the liquidity challenges restaurants faced during Phase 2 of the pandemic and ultimately threatened the prosperity and existence of their businesses.

The coping and adaptive process, akin to the absorption of shocks, is intricately linked to the firm's strength, indicating its ability to withstand stress (Neise et al., 2021). Distinct subthemes within this study include sound financial management, strategic human resource management, and creative operational innovations. Mirroring crisis management responses in business, restaurants addressed imminent crises by navigating coping and learning phases, experiencing a breakdown, and subsequently undergoing reorganization periods (Li et al., 2021). Neise et al. (2021) emphasize that the restaurants' resilient behavior during crises is heavily influenced by their positive

economic and financial standing before the COVID-19 pandemic. They further highlight managerial experience and knowledge's crucial role in effectively navigating and overcoming crises. This was evident in the current study, where participants frequently referenced their experiences with previous crises. Many indicated that having navigated past challenges, such as economic downturns, natural disasters, or other industry-specific disruptions, equipped them with the knowledge and confidence to implement effective short-term responses during the COVID-19 pandemic. These prior experiences fostered a sense of preparedness, allowing them to swiftly adapt to the rapidly changing circumstances of the pandemic and partially mitigate its initial impacts on their businesses. This underscores the importance of managerial experience in enhancing organizational resilience, particularly in times of unprecedented crisis.

Participants demonstrated resilience by partially mitigating financial strain through implementing innovative operational strategies to generate additional revenue streams, such as the expansion of take-out services, consistent with the findings outlined in the study by Norris et al. (2021), Türkeş et al. (2021), González Morales et al. (2023). However, Neise et al. (2021) observed that while short-term measures can bolster restaurant resilience, they only partially offset the significant revenue losses. The present study supports these findings, however, acknowledging that such responses provided limited financial relief amidst the crisis. Moreover, the current study found that participants were required to significantly streamline their operations, eliminate non-essential contracted services, and lay off or furlough staff. It is crucial to acknowledge that substantial relief from financial strain, thus ensuring business survival, could only have been achieved through government financial aid such as the Payment Protection Program. Other studies also outline the importance of these grants offering businesses a lifeline to reduce the detrimental impact of revenue losses, bolster the existence of operations, and curtail employment losses (Björklund et al., 2020; Türkcan & Erkuş-Öztürk, 2020).

Unlike previous studies, the current study extended beyond the initial phases of the COVID-19 pandemic to reveal disruptive forces extending beyond *Phase 1* of the pandemic. The findings show a sudden and enduring surge in operational costs, which many attributed to the dramatic rise in food price inflation and supply chain challenges, further exacerbating the financial strains in *Phases 2* and *3*, thus requiring further absorption and coping responses. This surge in operational costs could be attributed to the shock to the food supply chain due to the pandemic, resulting in widespread disruptions in production, manufacturing, distribution, and retailing. These challenges resulted in the U.S.'s highest food price inflation rates since the 1970s (Volpe et al., 2024). During the early months of the pandemic, food price inflation and volatility surged significantly, climbing from a steady increase of 1.5 % in 2019 to a staggering 9.1 % by 2022 (USDA ERS, 2024). Participants responded quickly to these challenges to sustain business through a streamlining process. Most notably, participants implemented reduced hours and days of operation, adjusted staffing levels per shift, revised menu offerings to feature lower-cost items, established contracts with more affordable suppliers, and raised menu prices. Many participants clearly intended to retain these operational adaptations for the long term. A particularly significant adjustment was the reduction in operation hours and service days. For example, some restaurants opted to eliminate lunch or dinner service on specific days due to an emerging trend of lower customer footfall, allowing the businesses to reduce operational costs and providing the required time to deep clean their facilities and for their employees to recuperate. The findings on reduced hours of operation differ from those reported by Madeira et al. (2021), who found that Portuguese restaurant owners planned to extend their service hours to increase capacity and sales in the post-pandemic period. Customer response to mandates and operational challenges have been mixed during the three phases of the pandemic. Although

customers have been mostly understanding and sympathetic toward the restaurants in *Phase 1*, the participants noted from the customers a few instances of expressed and implied disappointment with limited menu and service disruptions, especially during *Phase 2* of the pandemic.

Labor-related challenges are common in the extant crisis research literature (McCartney et al., 2022; Khawaja et al., 2021). The current study's findings revealed several critical labor-related challenges that surfaced during the different phases of the pandemic. In *Phase 1*, the most pressing issues included staff resistance to mandated operational changes and significant concerns about employee wellbeing. Many employees experienced heightened levels of stress, anxiety, and burnout as they navigated the evolving demands and uncertainties. As the situation progressed into *Phases 2* and *3*, the challenges shifted towards severe labor shortages and the difficulty recruiting and retaining skilled staff. The struggle to attract and maintain talented employees became increasingly pronounced, exacerbating the operational difficulties faced by restaurants during these later phases. These challenges were further intensified by the overall increase in demand for dining out. Several studies (Gao et al., 2023; Gupta & Mukherjee, 2022; Park et al., 2022) reported an increase in dining out frequency after the COVID-19 pandemic and associated the post-pandemic period with a surge in "revenge consumption." Furthermore, this uptick in dining out could also be attributed to increased disposable income from federal stimulus programs (Murphy, 2021).

These findings align with existing research that states labor shortages and hiring difficulties during a crisis can make SMEs vulnerable (Cortez & Johnson, 2020; Doern, 2016). Ahmed et al. (2020) argued that, as a result of the COVID-19 pandemic, psychological stressors such as employees' depression, anxiety, and stress greatly affected staff, creating greater levels of frustration at work. To combat this, participants increased salaries to attract and retain skilled employees. Moreo et al. (2023) highlighted that health and safety concerns, along with burnout among staff, were primary reasons for the departure of employees from the hospitality industry during the COVID-19 era. In this study, participants frequently referenced staff burnout, anxiety, and stress throughout all three phases of the pandemic. Moreover, efforts were made to enhance staff morale, mitigate the impact of employment uncertainty, and alleviate psychological stress by implementing various retention strategies. Existing literature indicates that management efforts and competencies such as employee counseling, health precautions, and wellbeing advisements were crucial factors for retaining staff during the COVID-19 pandemic (Bajrami et al., 2021).

From an operational outlook, technological adaptations and innovations were crucial in mitigating the adverse effects of forced closures, mandated restrictions, and downsizing measures for on-premises dining. Several studies (Kooli & Al Muftah, 2022; Li et al., 2021; Cain et al., 2024; Majid et al., 2024) underscore the significance of technological adaptation during crises. Participants promptly integrated technology to enhance dining experiences, streamline operations, diversify offerings, and instill a sense of safety among patrons. Technology adoption was a critical factor in navigating each phase of the COVID-19 pandemic for restaurant operators. In terms of short-term absorption and coping during the early phases, technology-enabled businesses swiftly pivot their service models in response to the sudden and mandatory shifts in operating conditions. As dining rooms were forced to close or significantly reduce capacity, many restaurants quickly transitioned to coupling innovation strategies to design a business model centered on takeout dining, in-house delivery, and third-party online delivery. This swift adoption of technology played a crucial role in mitigating the loss of sales caused by forced closures. For example, leveraging third-party online delivery platforms can allow restaurants to expand their customer base by reaching new patrons and providing an additional channel for existing customers to access their services (Traynor et al., 2022). In the

context of this study, these technological advancements enabled restaurants to sustain a vital connection with their customer base, ensuring continued patronage during an otherwise highly uncertain period.

Moreover, technology integration extended beyond just ordering systems; it also included contactless payment options, digital marketing strategies, Q.R. code menus, and strategic social media communication with customers to promote new offerings. While this technology-driven business model became vital for generating revenue during the early phases of restricted on-premises dining, these innovations were not merely stopgap measures. They laid the foundation for more resilient and adaptable operations as the pandemic progressed into *Phase 3*, positioning restaurants to withstand future disruptions and crises better.

## Conclusions, implications, limitations, and future research

### Conclusions

This study offers valuable insights into the challenges encountered by restaurant practitioners and the resilience demonstrated during a genuine crisis in the sector. Employing a qualitative approach and drawing on relevant literature, the study constructs a conceptual model of restaurant resilience amid the COVID-19 pandemic. It explores how restaurants adapted across three distinct phases, each marked by varying levels of government-mandated restrictions and associated challenges. This model provides valuable insights into the strategies that enabled restaurants to navigate and endure these difficult circumstances. Consequently, the findings delineate the core external forces that can detrimentally affect restaurant operations and the innovations and adaptations required to overcome these challenges and thrive. Notably, the study identifies distinct challenges experienced during different phases of the COVID-19 pandemic, encompassing disruptions to operations, labor-related challenges, and financial changes. These challenges are rooted in various core external forces, including the threat to health, government-mandated protocols and measures, increased operational costs, and labor shortages. Three primary innovative strategies and adaptations emerged from the findings: operational changes and innovations, integration of technology, and strategic financial management. While various innovative strategies and practices were employed to address challenges, it is evident that government finances played a crucial role in business survival during the early phases of the crisis.

### Theoretical implications

The study has several theoretical implications that contribute to the evolving literature on crisis management and the emerging debate on crises in the hospitality context, particularly in restaurant resilience during turbulent times like the COVID-19 pandemic. The paper systematically examines resilience within an applied restaurant context, incorporating feasible strategies for short-term absorption and long-term coping and adaptation. The results offer novel insights, utilizing a qualitative approach, into the restaurant industry's significant challenges amid the COVID-19 pandemic and outline innovative strategies for recovery and strengthening business models. Consistent with previous research findings, this study highlights the critical role of liquidity in determining restaurants' financial performance during a crisis. Moreover, the paper applies organizational resilience theory to the restaurant industry, constructing a micro-level framework for recovery and resilience during crises. This framework identifies vital operational areas and critical measures that can be implemented to enhance resilience for long-term sustainability. While existing resilience research often concentrates on the preliminary stages of absorption and coping, to the best of our knowledge, this study is the first to respond to the call for a comprehensive

assessment of recovery and adaptation beyond the early phases of the COVID-19 pandemic (Neise et al., 2021), thereby, providing a more holistic understanding of the industry's response to such crises.

### Practical implications

Practically, the study identifies major key change areas and challenges relating to the COVID-19 pandemic. Furthermore, the preliminary findings were used to develop a conceptual model of restaurant resilience, highlighting adaptations that restaurants undertook to navigate the challenges during the COVID-19 pandemic. This conceptual research model can be utilized nationally, providing solutions to a restaurant's ability to minimize the effects of disruptive events (Neise et al., 2021). The findings offer valuable guidelines and coping strategies for industry practitioners, emphasizing adopting innovative practices to enhance resilience. Notably, the study highlights a strategic approach to technological adaptation, detailing various tools and systems that can be quickly integrated during a crisis to offset financial losses. These technological solutions address immediate challenges and strengthen long-term operational flexibility, allowing businesses to navigate future disruptions better. Technology adoption emerged as a crucial survival strategy during the COVID-19 pandemic, demonstrating its effectiveness in helping businesses navigate unprecedented challenges.

Consequently, it is highly recommended that restaurants invest in and continuously develop their digital infrastructure and operational technology tools to maintain competitiveness and build resilience against future disruptions. The insights gathered from this research underscore the critical role of technology in crisis management and provide a practical roadmap for restaurant operators to safeguard their businesses against unforeseen challenges, ensuring continued growth and stability in an increasingly volatile environment. Furthermore, the findings can be utilized by various stakeholders such as the local and national government, industry stakeholders such as restaurant owners and employees, and industry associations such as the National Restaurant Association as a guideline for tackling future significant crises.

### Limitations and future research

Although sufficient for this type of study, the sample size was limited. This limitation primarily stemmed from the crisis's highly disruptive and financially devastating nature. Given that a large portion of the data was collected during the crisis, many restaurant owners and managers were actively involved in various operational roles to ensure the continuity of their establishments, leaving them with limited time for study participation. Another possible limitation was that the results are directly attributed to restaurants in the state of Alabama and should not be generalized to the national or global industry.

Future research is crucial as various crisis events continue to threaten the restaurant industry. By examining the operations of restaurants that failed during the COVID-19 pandemic, we can identify pitfalls and operations to avoid in future crises. Another promising area of research is the assessment of the emotional and psychological effects on staff due to the pandemic. Understanding these effects cannot only help in crisis management but also in improving staff well-being. The resilience framework could be tested cross-culturally or through a longitudinal study to reveal variations and impacts on financial performance outcomes.

### CRediT authorship contribution statement

**Mark Traynor:** Writing – review & editing, Writing – original draft, Visualization, Supervision, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization.

**Emmanuella Owens:** Writing – review & editing, Writing – original draft, Visualization, Methodology, Formal analysis, Data curation, Conceptualization. **Sorcha O'Neill:** Writing – review & editing, Writing – original draft, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Imran Rahman:** Writing – review & editing, Writing – original draft, Supervision, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization.

## References

Ahmed, M. Z., Ahmed, O., Aibao, Z., Hanbin, S., Siyu, L., & Ahmad, A. (2020). Epidemic of COVID-19 in China and associated psychological problems. *Asian Journal of Psychiatry*, 51, 1–7. doi:10.1016/j.ajp.2020.102092.

Akgün, A. E., & Keskin, H. (2014). Organisational resilience capacity and firm product innovativeness and performance. *International Journal of Production Research*, 52 (23), 6918–6937. doi:10.1080/00207543.2014.910624.

Alabama Media Group (2022). Alabamians are going back out. Bar and restaurant traffic passes pre-pandemic highs. Retrieved from <https://www.al.com/news/2022/08/alabamians-are-going-back-out-bar-and-restaurant-traffic-passes-pre-pandemic-highs.html> Accessed on June 02, 2023.

Aldunce, P., Beilin, R., Handmer, J., & Howden, M. (2014). Framing disaster resilience: The implications of the diverse conceptualisations of ‘bouncing back’. *Disaster Prevention and Management*, 23(3), 252–270. doi:10.1108/DPM-07-2013-0130.

Arendt, S. W., Roberts, K. R., Strohbehn, C., Ellis, J., Paez, P., & Meyer, J. (2012). Use of qualitative research in foodservice organizations: A review of challenges, strategies, and applications. *International Journal of Contemporary Hospitality Management*, 24(6), 820–837. doi:10.1108/09596111211247182.

Bajrami, D. D., Terzić, A., Petrović, M. D., Radovanović, M., Tretiakova, T. N., & Hadou, A. (2021). Will we have the same employees in hospitality after all? The impact of COVID-19 on employees' work attitudes and turnover intentions. *International Journal of Hospitality Management*, 94, 1–9. doi:10.1016/j.ijhm.2020.102754.

Berkes, F. (2007). Understanding uncertainty and reducing vulnerability: Lessons from resilience thinking. *Natural Hazards*, 41, 283–295. doi:10.1007/s11069-006-9036-7.

Berman, R., Quinn, C., & Paavola, J. (2012). The role of institutions in the transformation of coping capacity to sustainable adaptive capacity. *Environmental Development*, 2, 86–100. doi:10.1016/j.envdev.2012.03.017.

Bernard, S., Rahman, I., Liu, S., & Nanu, L. (2022). COVID-19 and hospitality services: The role of information sources, believability, fear, and behavioral intentions. *Journal of Global Hospitality and Tourism*, 1(2), 110–127. doi:10.5038/2771-5957.1.2.1009.

Bethune, E., Buhalis, D., & Miles, L. (2022). Real time response (RTR): Conceptualizing a smart systems approach to destination resilience. *Journal of Destination Marketing & Management*, 23, 100687. doi:10.1016/j.jdmm.2021.100687.

Biggs, D. (2011). Understanding resilience in a vulnerable industry: The case of reef tourism in Australia. *Ecology and Society*, 16(1), 1–19.

Björklund, T. A., Mikkonen, M., Mattila, P., & van der Marel, F. (2020). Expanding entrepreneurial solution spaces in times of crisis: Business model experimentation amongst packaged food and beverage ventures. *Journal of Business Venturing Insights*, 14, 1–14. doi:10.1016/j.jbvi.2020.e00197.

Bolsen, T., & Palm, R. (2022). Politicization and COVID-19 vaccine resistance in the U.S. *Progress in Molecular Biology and Translational Science*, 188(1), 81–100. doi:10.1016/bs.pmbts.2021.10002.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. doi:10.1191/1478088706qp063oa.

Braun, V., & Clarke, V. (2022). Toward good practice in thematic analysis: Avoiding common problems and becoming a knowing researcher. *International Journal of Transgender Health*, 24(1), 1–6. doi:10.1080/26895269.2022.2129597.

Brizik, M. G., Frash, R. E., McLeod, B. M., & Patience, M. O. (2021). Independent restaurant operator perspectives in the wake of the COVID-19 pandemic. *International Journal of Hospitality Management*, 93, 102766. doi:10.1016/j.ijhm.2020.102766.

Brownfield, A. (2020). Cincinnati restaurants ask feds for coronavirus bailout. Cincinnati Business Courier. Retrieved from <https://www.bizjournals.com/cincinnati/news/2020/03/20/cincinnati-restaurants-ask-feds-for-coronavirus.html> Accessed on May 22, 2022.

Bruneau, M., Chang, S. E., Eguchi, R. T., Lee, G. C., O'Rourke, T. D., Reinhorn, A. M., et al. (2003). A framework to quantitatively assess and enhance the seismic resilience of communities. *Earthquake Spectra*, 19(4), 733–752. doi:10.1193/1.1623497.

Bufrquin, D., Park, J. Y., Back, R. M., de Souza Meira, J. V., & Hight, S. K. (2021). Employee work status, mental health, substance use, and career turnover intentions: An examination of restaurant employees during COVID-19. *International Journal of Hospitality Management*, 93, 102764.

Buissink-Smith, N., & McIntosh, A. (1999). Interpretive description: Advancing qualitative approaches in tourism and hospitality research. *Tourism Analysis*, 4(2), 115–119.

Buultjens, J., Ratnayake, I., & Gnanapala, A. C. (2017). Sri Lankan tourism development and implications for resilience. In R. W. Butler (Ed.), *Tourism and resilience* (pp. 83–95). Oxfordshire: CABI. doi:10.1079/9781780648330.0083.

Byrd, K., Fan, A., Her, E., Liu, Y., Leitch, S., & Almanza, B. (2021). Restaurant patronage during the covid-19 pandemic and the Protection Motivation Theory: Influence of consumers' socio-demographic, situational, and psychographic factors. *Journal of Foodservice Business Research*, 26(2), 247–275. doi:10.1080/15378020.2021.2006036.

Cahyanto, I. P., Liu-Lastres, B., & Edwards, C. (2021). Developing a resilience-based adaptive co-management framework: Public sectors' insights on the role of tourism. *Journal of Policy Research in Tourism, Leisure and Events*, 13(2), 204–221. doi:10.1080/19407963.2020.1759611.

Cain, L. N., Mistry, T. G., Douglas, S., Rahman, I., & Moreo, A. (2024). Luxury hotel technology trends: A multigenerational analysis. *International Journal of Contemporary Hospitality Management*. doi:10.1108/IJCHM-10-2023-1597.

Chen, R., Xie, Y., & Liu, Y. (2021). Defining, conceptualizing, and measuring organizational resilience: A multiple case study. *Sustainability*, 13(5), 2517. doi:10.3390/su13052517.

Congressional Research Service (2021). American Rescue Plan Act of 2021 (P.L. 117-2): Public health, medical supply chain, health services, and related provisions. Accessed from <https://crsreports.congress.gov/product/pdf/R/R46834> Accessed on August 12, 2023.

Cortez, R. M., & Johnston, W. J. (2020). The Coronavirus crisis in B2B settings: Crisis uniqueness and managerial implications based on social exchange theory. *Industrial Marketing Management*, 88, 125–135.

Craig, H., Gasevic, D., Ryan, J., Freak-Poli, R., & Talic, S. (2022). A qualitative study on how older adults perceive the meaning and shaping of optimism: Has the COVID-19 pandemic impacted their perceptions? *Journal of Global Health Reports*, 6, e2022039. doi:10.29392/001c.36914.

Creswell, J. W. (2007). *Qualitative inquiry and research design: Choosing among five approaches* (2nd ed.). Thousand Oaks, CA: Sage.

Creswell, J. W., & Zhang, W. (2009). The application of mixed methods designs to trauma research. *Journal of Traumatic Stress*, 22(6), 612–621. doi:10.1002/jts.20479.

Dixon, S., Meyer, K., & Day, M. (2014). Building dynamic capabilities of adaptation and innovation: A study of micro-foundations in a transition economy. *Long Range Planning*, 47(4), 186–205. doi:10.1016/j.lrp.2013.08.011 doi-org.spot.lib.auburn.edu/.

Doern, R. (2016). Entrepreneurship and crisis management: The experiences of small businesses during the London 2011 riots. *International Small Business Journal: Researching Entrepreneurship*, 34(3), 276–302. doi:10.1177/026642614553863.

Evans, C., & Lewis, J. (2018). *Analysing semi-structured interviews using thematic analysis: Exploring voluntary civic participation among adults*. In J. Lewis (Ed.), *Sage research methods datasets part 1* (pp. 1–6). Sage Publications Limited.

Filimonau, V., & De Coteau, D. (2020). Tourism resilience in the context of integrated destination and disaster management (DM2). *International Journal of Tourism Research*, 22(2), 202–222. doi:10.1002/jtr.2329.

Filimonau, V., & Uddin, R. (2021). Food waste management in chain-affiliated and independent consumers' places: A preliminary and exploratory study. *Journal of Cleaner Production*, 319, 128721. doi:10.1016/j.jclepro.2021.128721.

Frey, G. C., Buchanan, A. M., & Rosser Sandt, D. D. (2005). I'd rather watch TV": An examination of physical activity in adults with mental retardation. *Mental Retardation*, 43(4), 241–254. doi:10.1352/0047-6765(2005)43[241:iRwtae]2.0.co;2.

Fusch, P. I., & Ness, L. R. (2015). Are we there yet? Data saturation in qualitative research. *The Qualitative Report*, 20(9), 1408–1416.

Gao, J., Keenan, O. E., Johnson, A. S., Wilhelm, C. A., Paul, R., & Racine, E. F. (2023). The COVID-19 Pandemic, rising inflation, and their influence on dining out frequency and spending. *Nutrients*, 15, 1373. doi:10.3390/nu15061373.

Gill, M. J. (2014). The possibilities of phenomenology for organizational research. *Organizational Research Methods*, 17(2), 118–137. doi:10.1177/1094428113518348.

González Morales, M., & J.A. Caverio Rubio (2023). Impact of digitalization of sales on the profitability of the restaurant industry during COVID-19. *Economies*, 11(11), 283. doi:10.3390/economies11110283.

Gupta, A. S., & Mukherjee, J. (2022). Long-term changes in consumers' shopping behavior post-pandemic: An exploratory study. *International Journal of Retail & Distribution Management*, 50(1). doi:10.1108/IJRD-04-2022-0111.

Gursoy, D., & Chi, C. G. (2020). Effects of COVID-19 pandemic on hospitality industry: Review of the current situations and a research agenda. *Journal of Hospitality Marketing & Management*, 29(5), 527–529. doi:10.1080/19368623.2020.1788231.

Hamel, G. A., & Valikangas, L. (2003). The quest for resilience. *Harvard Business Review*, 81(9), 52–63.

Hall, P., Prayag, G., & Amore, A. (2017). *Tourism and resilience: Individual, organisational and destination perspectives*. Bristol: Channel View Publications.

Hao, Z., Zhang, X., & Wei, J. (2022). Research on the effect of enterprise financial flexibility on sustainable innovation. *Journal of Innovation & Knowledge*, 7(2) 100184.

Hjalager, A. M. (2010). A review of innovation research in tourism. *Tourism Management*, 31(1), 1–12. doi:10.1016/j.tourman.2009.08.012.

Hoffmann, V. H., Sprengel, D. C., Ziegler, A., Kolb, M., & Abegg, B. (2009). Determinants of corporate adaptation to climate change in winter tourism: An econometric analysis. *Global Environmental Change*, 19(2), 256–264. doi:10.1016/j.gloenvcha.2008.12.002.

Islam, Md., & Aldaihani, F. M. (2022). *Justification for adopting qualitative research method, research approaches, sampling strategy, sample size, interview method, saturation, and data analysis*. *Journal of International Business and Management*, 5 (1), 1–11.

James Beard Foundation (2020). *Restaurants need more support to survive COVID-19*. Retrieved from <https://www.jamesbeard.org/blog/restaurants-need-more-support-to-survive-covid-19> Accessed on February 22, 2022.

Javadi, M., & Zarea, K. (2016). Understanding thematic analysis and its pitfall. *Journal of Client Care*, 1(1), 34–40.

Khawaja, K. F., Sarfraz, M., Rashid, M., & Rashid, M. (2021). How is COVID-19 pandemic causing employee withdrawal behavior in the hospitality industry? An empirical

investigation. *Journal of Hospitality and Tourism Insights*, 5(3), 687–706. doi:10.1108/JHTI-01-2021-0002.

Kiger, M. E., & Varpio, L. (2020). Thematic analysis of qualitative data: AMEE Guide No. 131. *Medical Teacher*, 42(8), 846–854. doi:10.1080/0142159X.2020.1755030.

Kim, J., & Lee, J. C. (2020). Effects of COVID-19 on preferences for private dining facilities in restaurants. *Journal of Hospitality and Tourism Management*, 45, 67–70. doi:10.1016/j.jhtm.2020.07.008.

Kirby, B. (2021). Some Alabama restaurants struggle with COVID-19 more than last year. News Channel 3. Retrieved from <https://kesq.com/cnn-regional/2021/08/03/some-alabama-restaurants-struggle-with-COVID-19-more-than-last-year/> Accessed on November 23, 2022.

Knott, E., Rao, A. H., Summers, K., & Teegeer (2022). Interviews in the social sciences. *Nature Reviews Methods Primers*, 2(73). doi:10.1038/s43586-022-00150-6.

Kooli, C., & Al Mutah, H. (2022). Artificial intelligence in healthcare: A comprehensive review of its ethical concerns. *Technological Sustainability*, 7(2), 121–131.

Kooli, C., & Lock Son, M. (2021). Impact of COVID-19 on mergers, acquisitions & corporate restructurings. *Businesses*, 1(2), 102–114. doi:10.3390/businesses1020008.

Kwortnik, R. (2003). Clarifying 'fuzzy' hospitality-management problems with depth interview and qualitative analysis. *Cornell Hotel and Restaurant Administration Quarterly*, 44(2), 117–129. doi:10.1177/0010880403442011.

Lengnick-Hall, C. A., Beck, T. E., & Lengnick-Hall, M. L. (2011). Developing a capacity for organizational resilience through strategic human resource management. *Human Resource Management Review*, 21(3), 243–255. doi:10.1016/j.hrmr.2010.07.001.

Lepkowska-White, E., Parsons, A., & Berg, W. (2019). Social media marketing management: An application to small restaurants in the US. *International Journal of Culture, Tourism and Hospitality Research*, 13(3), 321–345. doi:10.1108/IJCTR-06-2019-0103.

Li, B., Zhong, Y., Zhang, T., & Hua, N. (2021). Transcending the COVID-19 crisis: Business resilience and innovation of the restaurant industry in China. *Journal of Hospitality and Tourism Management*, 49, 44–53. doi:10.1016/j.jhtm.2021.08.024.

Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. (p. 289). Sage Publications Limited -231.

Liu, Y., Shi, W., Yu, Y., Peng, L., & Zhang, A. (2023). Evaluation of the resilience of the catering industry in Hong Kong before and after the COVID-19 outbreak based on point-of-interest data. *ISPRS International Journal of Geo-Information*, 12(11), 443. doi:10.3390/ijgi12110443.

Ludin, D., Holler, M., Wellbrock, W., & Mueller, E. (2022). How COVID-19 accelerates business model innovation and digital technological transformation in the hospitality industry: A focus on restaurants in Baden-Wuerttemberg. *International Journal of Innovation and Technology Management*, 19(06) 2242002. doi:10.1142/S0219877022420020.

Madeira, A., Palrão, T., & Mendes, A. S. (2021). The impact of pandemic crisis on the restaurant business. *Sustainability*, 13(1), 40. doi:10.3390/su13010040.

Madhav, N., Oppenheim, B., Gallivan, M., Mulembakani, P., Rubin, E., Wolfe, N., et al. (2017). Pandemics: Risks, impacts, and mitigation. In D. T. Jamison, H. Gelband, S. Horton (Eds.), *Disease control priorities: Improving health and reducing poverty*. (3rd ed.). The International Bank for Reconstruction and Development.

Mair, J., Ritchie, B. W., & Walters, G. (2016). Towards a research agenda for post-disaster and post-crisis recovery strategies for tourist destinations: A narrative review. *Current Issues in Tourism*, 19(1), 1–26. doi:10.1080/13683500.2014.932758.

Majid, M. A. A., Azman, A. B., Usman, S. B., Zahari, H., & s (2024). Leveraging technology for the survival of the restaurant business: A systematic literature review. *Journal of Tourism, Hospitality and Culinary Arts*, 16(1), 619–639.

Martin, R. L. (2018). Shocking aspects of regional development: Towards an economic geography of resilience. In G. Clark, M. Gertler, M. P. Feldman, D. Wojcik (Eds.), *The new Oxford handbook of economic geography* (pp. 839–864). Oxford: University Press.

McCartney, G., Chi In, C. L., & Pinto, J. S. D. A. F. (2022). COVID-19 impact on hospitality retail employees' turnover intentions. *International Journal of Contemporary Hospitality Management*, 34(6), 2092–2112. doi:10.1108/IJCHM-08-2021-1053.

McManus, S., Seville, E., Vargo, J., & Brunsdon, D. (2008). Facilitated process for improving organizational resilience. *Natural Hazards Review*, 9(2), 81–90. doi:10.1061/(ASCE)

Messabia, N., Fomi, P. R., & Kooli, C. (2022). Managing restaurants during the COVID-19 crisis: Innovating to survive and prosper. *Journal of Innovation & Knowledge*, 7(4) 100234. doi:10.1016/j.jik.2022.100234.

Moreo, A., Mistry, T. G., Rahman, I., & Cain, L. (2023). The great hospitality worker resignation. *Journal of Foodservice Business Research*, 1–8. doi:10.1080/15378020.2023.2189373.

Mun, S. G., & Jang, S. C. S. (2015). Working capital, cash holding, and profitability of restaurant firms. *International Journal of Hospitality Management*, 48, 1–11.

Murphy, D. (2021). *Economic impact payments*. Retrieved from [https://www.brookings.edu/wp-content/uploads/2021/02/20210216\\_Murphy\\_ImpactPayments\\_Final-3.pdf](https://www.brookings.edu/wp-content/uploads/2021/02/20210216_Murphy_ImpactPayments_Final-3.pdf) Accessed June 22, 2022.

National Restaurant Association [NRA] (2020). New research details early impact of coronavirus pandemic on restaurant industry. Retrieved from <https://restaurant.org/articles/news/study-details-impact-of-coronavirus-on-restaurants> Accessed on November 7, 2022.

National Restaurant Association. (2020). Restaurant industry facts at a glance. Retrieved from <https://restaurant.org/research-and-media/research/industry-statistics/national-statistics/> Accessed on November 1, 2022.

National Restaurant Association. (2021). *National restaurant association releases 2021 state of the restaurant industry report*. Retrieved from <https://restaurant.org/news/pressroom/press-releases/2021-state-of-the-restaurant-industry-report> Accessed on November 7, 2022.

National Restaurant Association (2022). *Restaurant business conditions survey key findings August 2022*. Retrieved from <https://restaurant.org/getmedia/825eb835-9b4f-4a7c-a2fc-ef73c9f4b766/Restaurant-Business-Conditions-Survey-Key-Findings-Aug-2022.pdf> Accessed on November 7, 2022.

National Restaurant Association. (2023). *State of the industry 2023*. Retrieved from <https://restaurant.org/research-and-media/research/economists-notebook/analysis-commentary/restaurant-workforce-recovery-varies-significantly-by-state/> December 23, 2023.

Neise, T., Verfürth, P., & Franz, M. (2021). Rapid responding to the COVID-19 crisis: Assessing the resilience in the German restaurant and bar industry. *International Journal of Hospitality Management*, 96, 102960. doi:10.1016/j.ijhm.2021.102960.

Norris, C. L., Taylor, S., Jr., & Taylor, D. C. (2021). Pivot! How the restaurant industry adapted during COVID-19 restrictions. *International Hospitality Review*, 35(2), 132–155. doi:10.1108/IHR-09-2020-0052.

Office of the Governor State of Alabama (2020). *Governor Ivey issues statement on statewide public health order*. Retrieved from <https://governor.alabama.gov/newsroom/2020/03/governor-ivey-issues-statement-on-statewide-public-health-order/> Accessed on September 10, 2023.

Office of the Governor State of Alabama (2021). *Termination of state of emergency: Coronavirus (COVID-19)*. Retrieved from <https://governor.alabama.gov/newsroom/2021/07/termination-of-state-of-emergency-coronavirus-covid-19/> Accessed on September 10, 2023.

Paton, D., & Johnston, D. (2001). Disasters and communities: Vulnerability, resilience and preparedness. *Disaster Prevention and Management: An International Journal*, 10(4), 270–277. doi:10.1108/EUM0000000005930.

Paton, D., Smith, L., & Violanti, J. (2000). Disaster response: Risk, vulnerability and resilience. *Disaster Prevention and Management: An International Journal*, 9(3), 173–180. doi:10.1108/09653560010335068 doi-org.spot.lib.auburn.edu/.

Pattton, M. Q. (2002). *Qualitative research and evaluation methods* (3rd ed.). Thousand Oaks, CA: Sage.

Park, I., Lee, J., Lee, D., Lee, C., & Chung, W. Y. (2022). Changes in consumption patterns during the COVID-19 pandemic: Analyzing the revenge spending motivations of different emotional groups. *Journal of Retailing and Consumer Services*, 65, 102874. doi:10.1016/j.jretconser.2021.102874.

Pitney, W. A., & Parker, J. (2009). *Qualitative research in physical activity and the health professions*. Champaign, IL: Human Kinetics.

Poria, Y., Reichel, A., & Brandt, Y. (2010). The flight experiences of people with disabilities: An exploratory study. *Journal of Travel Research*, 49(2), 216–227. doi:10.1177/0047287509336477.

Poria, Y., Reichel, A., & Brandt, Y. (2011). Dimensions of hotel experience of people with disabilities: An exploratory study. *International Journal of Contemporary Hospitality Management*, 23(5), 571–591. doi:10.1108/0959611111143340.

Price, B. (2002). Laddered questions and qualitative data research interviews. *Journal of Advanced Nursing*, 37(3), 273–281. doi:10.1046/j.1365-2648.2002.02086.x.

Quigley, K., Connolly, M., Mahon, E., & Iomaire, M. M. C. (2019). Insight from insiders: A phenomenological study for exploring food tourism policy in Ireland 2009–2019. *Advances in Hospitality and Tourism Research*, 7(2), 188–215. doi:10.30519/ahtr.574519.

Rahman, I., Nanu, L., Bernard, S., & Liu, S. (2022). Does perceived control matter in the early days of COVID-19 in USA? A protection motivation approach examining hospitality and tourism service patronage. *International Journal of Hospitality & Tourism Administration*, 25(1), 1–27.

Riley, R., & Love, L. (2000). The state of qualitative tourism research. *Annals of Tourism Research*, 27(1), 164–187.

Ringov, D. (2017). Dynamic capabilities and firm performance. *Long Range Planning*, 50 (5), 653–664. doi:10.1016/j.lrp.2017.02.005.

Ruggles, R. (2022). U.S. restaurant sales forecast to hit \$898B in 2022, reports National Restaurant Association. National Restaurant News. Retrieved from <https://www.nrn.com/finance/us-restaurant-sales-forecast-hit-898b-2022-reports-national-restaurant-association> Accessed on September 7, 2023.

Runyan, R. C. (2006). Small business in the face of crisis: Identifying barriers to recovery from a natural disaster. *Journal of Contingencies and Crisis Management*, 14(1), 12–26. doi:10.1111/j.1468-5973.2006.00477.

Sandelowski, M. (2004). Using qualitative research. *Qualitative Health Research*, 14(10), 1366–1386. doi:10.1177/1049732304269672.

Saunders, B., Sim, J., Kingstone, T., Baker, S., Waterfield, J., Bartlam, B., et al. (2018). Saturation in qualitative research: Exploring its conceptualization and operationalization. *Quality & Quantity*, 52(4), 1893–1907.

Saunders, M. N., & Townsend, K. (2016). Reporting and justifying the number of interview participants in organization and workplace research. *British Journal of Management*, 27(4), 836–852. doi:10.1111/1467-8551.12182.

Schmidt, C. (2004). The analysis of semi-structured interviews. In U. Flick, E. von Kardorff, I. Steinke (Eds.), *A companion to qualitative research* (1st ed.), (pp. 253–258). London: Sage Publications.

Sidhom, O. (2021). Physical and mental health aspects in COVID-19: Two sides of a coin. *Avicenna*, 2, 6. doi:10.5339/avi.2021.6.

Song, H. J., Yeon, J., & Lee, S. (2021). Impact of the COVID-19 pandemic: Evidence from the US restaurant industry. *International Journal of Hospitality Management*, 92, 102702.

Statista (2023). *Foodservice and drinking places sales in the United States from 1992 to 2022 (in billion dollars)*. Retrieved from <https://www.statista.com/statistics/239410/us-food-service-and-drinking-place-sales/> Accessed on August 1, 2023.

Teece, D. J. (2007). Explicating dynamic capabilities: The nature and micro-foundations of (sustainable) enterprise performance. *Strategic Management Journal*, 28(13), 1319–1350. doi:10.1002/smj.640 /doi-org.spot.lib.auburn.edu/.

The New York Times (2023). *White House will end most covid vaccine mandates*. Retrieved from <https://www.nytimes.com/2023/05/01/us/politics/us-covid-vaccine-mandates.html> Accessed on August 8, 2023.

Traynor, M. P., Bernard, S., Moreo, A., & O'Neill, S. (2022). Investigating the emergence of third-party online food delivery in the U.S. restaurant industry: A grounded theory approach. *International Journal of Hospitality Management*, 107, 103299.

Trump White House Archive (2020). *Guidelines open up America again*. Retrieved from <https://trumpwhitehouse.archives.gov/openingamerica/> Accessed on August 25, 2023.

Türkcan, K., & Erkuş-Öztürk, H. (2020). The impact of economic and political crises on the survival of tourism-related firms: Evidence from Antalya. *Tourism Economics*, 26(7), 1152–1174. doi:10.1177/1354816619868614.

Türkes, M. C., Stăncioiu, A. F., Băltescu, C. A., & Marinescu, R. C. (2021). Resilience innovations and the use of food order & delivery platforms by the Romanian restaurants during the covid-19 pandemic. *Journal of Theoretical and Applied Electronic Commerce Research*, 16(7), 3218–3247. doi:10.3390/jtaer16070175.

USDA ERS. (2024). *Food prices and spending*. Retrieved from <https://www.ers.usda.gov/data-products/ag-and-food-statistics-charting-the-essentials/food-prices-and-spending/> Accessed on 5 August 2024.

U.S. Bureau of Labor Statistics. (2023). *Industry and occupational employment projections overview and highlights, 2022–32*. Retrieved from <https://www.bls.gov/opub/mlr/2023/article/industry-and-occupational-employment-projections-overview-and-highlights-2022-32.htm> Accessed on September 5, 2023.

U.S. Department of Treasury (2020). *Paycheck protection program*. Retrieved from <https://home.treasury.gov/policy-issues/coronavirus/assistance-for-small-businesses/paycheck-protection-program> Accessed on August 2, 2023.

Volpe, R. J., Cai, X., Roldan, P., & Stevens, A. (2024). Food prices in the United States during COVID-19: Generalized facts on price inflation and volatility. *British Food Journal*, 126(13), 415–431. doi:10.1108/BFJ-05-2023-0421.

Verfurth, P., Neise, T., Franz, M., & Sohns, F. (2022). The uneven effects of COVID-19 on the German restaurant and bar industry. *Erdkunde*, (H.2), 127–140.

Walsh, K. (2003). Qualitative research: Advancing the science and practice of hospitality. *Cornell Hotel and Restaurant Administration Quarterly*, 44(2), 66–74. doi:10.1177/0010880403442006.

Wang, C. L., & Ahmed, P. K. (2007). Dynamic capabilities: A review and research agenda. *International Journal of Management Reviews*, 9(1), 31–51. doi:10.1111/j.1468-2370.2007.00201.x.

Wang, D., Yao, J., & Martin, B. A. (2021). The effects of crowdedness and safety measures on restaurant patronage choices and perceptions in the COVID-19 pandemic. *International Journal of Hospitality Management*, 95, 102910. doi:10.1016/j.ijhm.2021.102910.

Wei, C. V., Chen, H., & Lee, Y. M. (2021). Factors influencing customers' dine out intention during COVID-19 reopening period: The moderating role of country-of-origin effect. *International Journal of Hospitality Management*, 95, 102894. doi:10.1016/j.ijhm.2021.102894.

Weick, K. E., & Sutcliffe, K. M. (2001). *Managing the unexpected* (Vol. 9). San Francisco: Jossey-Bass.

Weick, K. E., Sutcliffe, K. M., & Obstfeld, D. (2005). Organizing and the process of sensemaking. *Organization Science*, 16(4), 409–421. doi:10.1287/orsc.1050.0133.

World Health Organization (WHO), (2020). *Director-General's opening remarks at the media briefing on COVID-19 - March 2020*. Retrieved from <https://www.who.int/director-general/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-COVID-19-23-october-2020> Accessed July 27, 2021.

Yang, F. X., Li, X., Lau, V. M., & Zhu, V. Z. (2021). To survive or to thrive? China's luxury hotel restaurants entering O2O food delivery platforms amid the COVID-19 crisis. *International Journal of Hospitality Management*, 94, 102855. doi:10.1016/j.ijhm.2020.102855.

Yost, E., & Cheng, Y. (2021). Customers' risk perception and dine-out motivation during a pandemic: Insight for the restaurant industry. *International Journal of Hospitality Management*, 95, 102889. doi:10.1016/j.ijhm.2021.102889.