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Impact of Covid 19 on Street Food Vendors in India

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Abstract

The COVID-19 pandemic caused unprecedented economic disruptions for street food vendors in India, a sector heavily reliant on daily sales and foot traffic. This paper examines the economic impact of the pandemic on vendors, focusing on revenue loss, profit margin pressures, shifts in customer behavior, and supply chain disruptions. Vendors experienced a drastic decline in daily revenue, exacerbated by rising costs of raw materials and changing consumer preferences. Supply chain interruptions further strained operations, inflating costs and diminishing profitability. Despite these challenges, some vendors adapted by diversifying products and implementing health measures to regain customer trust. This study highlights the critical vulnerabilities within the street food sector and emphasizes the adaptive business strategies and targeted support mechanisms to enhance resilience against future economic shocks.

Keywords: COVID-19 Pandemic, Street food vendors, Revenue

INTRODUCTION BACKGROUND:

Street food vending is a vital component of urban economies worldwide, particularly in India. This informal sector activity involves vendors selling a variety of goods and services, including food, from temporary or mobile setups. Street vendors are ubiquitous in Indian cities, contributing significantly to the local economy and providing essential services to urban populations. Street vending is one of the most visible forms of local urban economic activity. In India, approximately 10 million street vendors constitute about 11% of the urban workforce, making them an integral part of urban life. The street vending economy in India has a daily turnover of around Rs 80 crore, with each vendor supporting an average of three others as employees or partners. Research indicates that street vendors contribute approximately 50% of the country's savings and 63% of its Gross Domestic Product (GDP), demonstrating their vital role in the national economy. This sector is characterized by its low entry barriers, reliance on indigenous resources, and small-scale operations, which make it accessible to the urban poor and those seeking self-employment. The informal nature of this sector allows for flexibility and adaptability, which are crucial for survival in the dynamic urban environment. Despite the lack of formal training, many vendors learn their trade through family members, peers, or by observing other vendors, highlighting the community-based nature of this economic activity.

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^{1&}quot;About." CPPR, cppr.in/street-vending/. Accessed 1 Sept. 2024.

²Street Food Vending: Food Culture in India, nomadit.co.uk/conference/iuaes2014/paper-download/paper/21220. Accessed 21 July 2024.



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Importance in Urban Economies

Street vendors play a crucial role in urban economies by providing affordable goods and services to a wide range of customers, from the urban poor to the middle and upper classes. This accessibility makes street vending a critical component of the urban food supply chain, especially for those who do not have access to formal markets or kitchens. In cities like Delhi, street food is not only a culinary delight but also a historical and cultural experience, with dishes like Nihari stew and Seekh Kebabs reflecting the city's rich heritage³. The economic significance of street vending extends beyond the vendors themselves. In Kerala, for example, street vending is a major livelihood source, with thousands of vendors operating in cities like Kochi and Thiruvananthapuram. The Kerala Street Vendors Rules, 2018, and the Kerala Street Vendors Scheme, 2019, have been implemented to regulate and support this sector, recognizing its importance in the state's economy⁴. Street vending also contributes to tourism, with areas like SM Street in Kozhikode and Fort Kochi in Ernakulam attracting both local and international tourists.

Social and Cultural Impact

Street vending is not just an economic activity; it is deeply embedded in the social and cultural fabric of Indian cities. Vendors often introduce their native food cultures to urban areas, creating a diverse and vibrant food scene. This cultural exchange enriches the urban experience and fosters a sense of community among residents and migrants alike. The informal nature of street vending allows for a unique blend of traditional and modern practices, making it a dynamic and evolving sector. Street vendors also serve as a critical support system for the urban poor, providing affordable and convenient access to essential goods and services. This role is particularly important in densely populated urban areas where formal retail options may be limited or inaccessible. By offering low-cost alternatives, street vendors help to alleviate some of the economic pressures faced by low-income urban residents⁵.

Challenges and Regulatory Framework

Despite their importance, street vendors face numerous challenges, including harassment by authorities, lack of access to credit, and competition from formal retail sectors. The informal nature of their operations often leaves them vulnerable to exploitation and eviction. However, regulatory frameworks like the Street Vendors (Protection of Livelihood and Regulation of Street Vending) Act, 2014, aim to protect their rights and provide a more stable operating environment. This Act mandates local authorities to designate vending zones and issue licenses, thereby formalizing the sector and providing vendors with legal recognition.

OUTLINE

The COVID-19 pandemic has had a profound impact on street food vendors in India, significantly affecting their revenue streams, profit margins, customer behavior, and supply chain operations. This study aims to analyze these impacts and explore the strategies adopted by vendors to navigate the challenges. Revenue streams for street vendors were severely disrupted due to lockdowns and reduced foot traffic. In Coimbatore, vendors experienced significant financial losses, with many forced to stop operating entirely. Similarly, in Varanasi, vendors reported substantial reductions in sales volume, leading to difficult financial situations. Profit margins were squeezed as vendors faced increased costs and

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³"Why India's Street Food Vendors Are the Essence of the Country's Food Industry." *Times of India Blog*, 16 Nov. 2020, timesofindia.indiatimes.com/blogs/open-space/why-indias-street-food-vendors-are-the-essence-of-the-countrys-food-industry/.

⁴"About." *CPPR*, cppr.in/street-vending/. Accessed 21 July 2024.

⁵India's Street Vendors and the Struggle to Sustain Their ..., isdsnet.com/ijds-v3n11-7.pdf. Accessed 21 July 2024.



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decreased sales. In urban Vietnam, women street vendors experienced large reductions in both business and consumption. The economic burden was particularly heavy for immigrant vendors and those selling in wet market areas.

Customer behavior shifted dramatically. Fear of infection and lockdown measures led to decreased foot traffic and changed consumption patterns. Many customers opted for home-cooked meals or formal retail options perceived as safer, further impacting street vendors' livelihoods.

Supply chain operations were disrupted by travel restrictions and market closures. In Delhi, tight domestic travel restrictions caused wholesale suppliers to increase their costs, making it difficult for vendors to break even. Vendors selling perishable goods faced additional challenges, often having to discard unsold produce, leading to significant losses.

To navigate these challenges, street vendors adopted various strategies:

- **1. Diversification:** Many vendors in Coimbatore switched to selling fruits and vegetables within constrained time frames to maintain some income.
 - This objective aims to assess how street vendors in Coimbatore, who switched to selling fruits and vegetables within limited operating hours, managed to stabilize their income. The analysis will compare the financial performance of these vendors before and after diversification, considering factors such as average daily income, customer footfall, and overall business sustainability. By identifying the benefits and challenges of diversification, the study will provide insights into its effectiveness as a strategy for maintaining income stability during economic disruptions.
- 2. Adaptation to health guidelines: Vendors implemented hygiene and social distancing measures to reassure customers and comply with regulation. This objective focuses on assessing how street vendors' adherence to hygiene and social distancing measures impacts customer trust and regulatory compliance. It involves measuring customer satisfaction and perceived safety (Sub-Objective 2.1) to determine if these practices reassure and attract patrons. Additionally, it examines the extent to which vendors comply with health guidelines and the resultant effects on their business operations (Sub-Objective 2.2). The study aims to provide insights into the practical benefits and challenges of maintaining health standards in street vending.

LITERATURE REVIEW:

Pre-COVID-19 Context

Economic and Social Role of Street Food Vendors

Street food vendors play a crucial economic and social role in urban areas across India, particularly in cities like Delhi, Chennai, Kolkata, and Jaipur. These vendors are an integral part of the informal economy, providing affordable and accessible food options to a diverse range of customers, from low-income workers to middle-class residents and tourists. In Delhi, an estimated 300,000 street vendors operate, contributing significantly to the city's vibrant food culture and local economy. They offer a variety of local delicacies such as chaat, kebabs, and parathas, catering to office workers, students, and tourists alike. The economic impact of these vendors is substantial, as they provide employment and support the livelihoods of many families. Chennai's street food scene is known for its traditional South Indian cuisine, including idlis, dosas, and vadas. Street vendors in Chennai play a crucial role in providing affordable meals to daily

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⁶ https://ijisrt.com/assets/upload/files/IJISRT22OCT286_%281%29.pdf



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commuters and low-income residents, often operating in busy areas such as bus stops, railway stations, and markets. Kolkata's street food vendors are famous for their unique offerings, such as puchkas (pani puri), kathi rolls, and jhalmuri. The city's street food culture is deeply embedded in its social fabric, with vendors contributing to the local economy by attracting both residents and tourists. Many of these vendors run family-owned businesses that have been passed down through generations. In Jaipur, street food vendors offer a variety of Rajasthani delicacies, including kachoris, samosas, and sweets. These vendors are an essential part of the city's culinary landscape, providing affordable and convenient food options to locals and tourists alike. Their economic impact is notable, as they support the livelihoods of many families and contribute to the overall vibrancy of the city's markets and public spaces[1].

Regulatory Environment and Challenges Faced by Street Vendors

Despite their significant economic and social contributions, street vendors in India face numerous challenges and operate within a complex regulatory environment:

- **1. Legal Recognition:** The implementation of the Street Vendors (Protection of Livelihood and Regulation of Street Vending) Act, 2014, has been inconsistent across cities. In Delhi, for example, only about 130,000 out of the estimated 300,000 street vendors have some form of occupational identification, leaving many vulnerable to harassment and eviction.
- **2.** Harassment and Eviction: Street vendors often face harassment from police and municipal authorities. In Delhi, vendors have reported instances of police brutality and confiscation of goods, especially those without formal licenses. Similar issues are prevalent in Chennai and Kolkata.
- **3.** Lack of Infrastructure: Many street vendors operate without access to basic infrastructure such as clean water, sanitation facilities, and proper waste management systems. This is particularly challenging in overcrowded urban spaces like Kolkata and Delhi[1].
- **4. Financial Exclusion:** Street vendors typically lack access to formal financial services, making it difficult for them to obtain loans or save money securely. This financial exclusion makes them vulnerable to economic shocks and limits their ability to invest in their businesses[1].
- **5. Health and Safety Concerns:** There are ongoing concerns about food safety and hygiene standards among street food vendors. Periodic crackdowns on street vendors to enforce health regulations often lead to temporary closures and financial losses[1].
- **6.** Competition with Formal Retail: The growth of organized retail and food delivery services poses increasing competition for street vendors, particularly in cities like Delhi and Jaipur[1].
- **7. Urban Planning Challenges:** Rapid urban development and renewal projects often lead to the displacement of street vendors, who struggle to find suitable vending locations[1].

COVID-19 Pandemic Onset

Initial Reactions and Restrictions Imposed on Street Vending

The onset of the COVID-19 pandemic brought about significant disruptions to street vending activities across Indian cities. The Indian government imposed one of the strictest nationwide lockdowns in March 2020, which had immediate and severe impacts on street vendors:

- 1. Nationwide Lockdown: The lockdown led to the abrupt cessation of street vending activities. In Varanasi, for example, street vendors were forced to stop operating, causing significant financial losses and livelihood challenges 7.
- 2. Forced Closure and Diversification: Many vendors were forced to switch to selling fruits and



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vegetables within constrained time frames, presenting additional financial and logistical challenges.

- 3. Reduced Foot Traffic: Lockdowns and pandemic-related restrictions resulted in decreased foot traffic, particularly affecting vendors operating in densely populated areas[2].
- 4. Health and Safety Measures: Vendors who continued to operate had to implement hygiene and social distancing measures to comply with regulations and reassure customers[3].
- 5. Supply Chain Disruptions: Vendors faced challenges related to supply chain disruptions, making it difficult to source products or maintain regular business operations[3].

METHODOLOGY

1. Surveys:

The primary objective of conducting surveys is to gather quantitative data on the impact of the pandemic on street food vendors' revenue, profit margins, customer behavior, and supply chain operations. A stratified random sampling method was used to ensure representation from different regions, specifically Delhi, Chennai, Kolkata, and Jaipur, and various types of street food vendors, including those selling perishable goods, ready-to-eat meals, and beverages.

A structured questionnaire was developed to cover key areas such as demographic information (age, gender, years in business, type of food sold), pre-pandemic business performance (average daily revenue, profit margins, customer demographics), the impact of COVID-19 (changes in revenue, profit margins, customer behavior, supply chain disruptions), and strategies adopted during the pandemic (diversification of products, digital integration, health and safety measures). Surveys were administered in person. A target sample size of 40 vendors (10 from each city) will be aimed to ensure statistical significance and representativeness.

2. Interviews:

To obtain qualitative insights into the lived experiences of street food vendors during the pandemic, indepth interviews will be conducted. Purposive sampling will be used to select a diverse group of vendors, ensuring representation from different regions and vendor types. A semi-structured interview guide will be developed, focusing on personal and business background, detailed accounts of the impact of COVID-19 on their business operations, specific challenges encountered (e.g., harassment, supply chain issues, customer behavior changes), strategies and adaptations implemented to sustain their business, and perceptions of government support and community assistance. Interviews will be conducted in person, via phone, or through video conferencing, depending on the vendor's preference and safety considerations. Each interview will be recorded (with consent) and transcribed for analysis.

Secondary Data: Analysis of Reports, Articles, and Studies

1. Literature Review:

The objective of the literature review is to contextualize the primary data findings within the broader body of existing research on the impact of COVID-19 on street food vendors. Sources will include academic journals, government reports, non-governmental organization (NGO) publications, news articles, and industry reports. Key areas of focus will include the pre-pandemic context, such as the economic and social roles of street food vendors in urban economies, the regulatory environment and challenges faced by street vendors, documented impacts of COVID-19 on informal sectors, particularly street vending, case studies and comparative analyses from different regions and countries, and policy responses and support mechanisms implemented during the pandemic.



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2. Data Analysis:

Quantitative data from the surveys will be analyzed using statistical software (e.g., SPSS, R) to identify trends, correlations, and significant differences in the impact of COVID-19 across different regions and vendor types. Qualitative data from the interviews will be analyzed using thematic analysis to identify common themes, patterns, and unique insights into the challenges and strategies of street food vendors. The integration of primary and secondary data will provide a comprehensive understanding of the impact of COVID-19 on street food vendors and the effectiveness of various coping strategies. This mixed-methods approach aims to contribute valuable insights for policymakers, researchers, and practitioners working to support this vital sector of the urban economy.

Analysis:

The COVID-19 pandemic has had a devastating impact on businesses worldwide, with street food vendors in India among the hardest hit. These vendors, who rely heavily on daily sales and foot traffic, faced unprecedented challenges as lockdowns, fear of infection, and supply chain disruptions severely curtailed their operations. The economic repercussions of the pandemic for street food vendors were profound, significantly affecting their revenue streams, profit margins, customer behavior, and supply chain operations. This analysis will delve into these impacts, drawing on specific data and examining how vendors adapted to navigate the economic challenges posed by the pandemic.

Revenue Disruption: A Crippling Blow

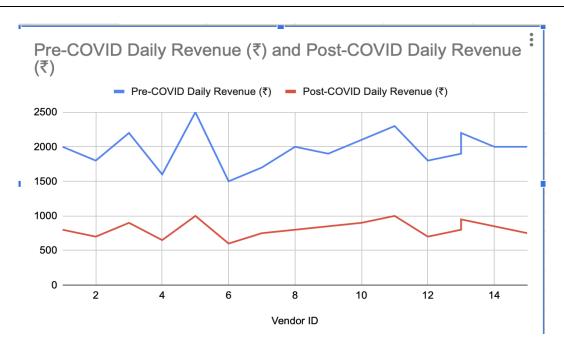
Revenue streams for street food vendors were among the first casualties of the pandemic. The provided data reveals that vendors experienced a sharp decline in daily revenue, with reductions ranging from 55% to 68%. Before the pandemic, vendors typically earned between ₹1,500 and ₹2,500 per day. However, post-COVID, these figures plummeted, with daily revenues falling to between ₹600 and ₹1,000. This represents an average decrease of 58.7%, highlighting the significant financial strain on vendors.

For example, Vendor 1's daily revenue dropped from ₹2,000 to ₹800, a 60% reduction. Similarly, Vendor 5 saw their revenue fall from ₹2,500 to ₹1,000, also a 60% decrease. Such drastic declines were not isolated incidents; they were representative of a widespread pattern across the sector. This revenue loss is a direct consequence of reduced foot traffic due to lockdown measures and customers' heightened fear of infection. Vendors who were heavily dependent on regular customers suddenly found themselves facing a financial crisis, with many struggling to cover even their basic operating costs.

This situation mirrors the challenges faced by street vendors in Coimbatore and Varanasi, where many were forced to stop operating entirely. In these cities, vendors reported drastic reductions in sales volumes, leaving them in dire financial straits. The data confirms that the pandemic's impact on revenue was not only severe but also widespread, affecting vendors across different regions and product types.



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Profit Margins Under Pressure

The sharp decline in revenue had a direct impact on profit margins. With daily earnings slashed by more than half, vendors faced an uphill battle to maintain profitability. The situation was exacerbated by rising costs, particularly in sourcing raw materials. In Delhi, for instance, tight domestic travel restrictions led to increased costs from wholesale suppliers. Vendors found themselves paying more for ingredients while earning less from sales, leading to a significant squeeze on profit margins⁷.

Profit margins, already thin in the street food sector, were pushed to the brink. For vendors selling perishable goods, the situation was even more challenging. Perishable items, such as fruits and vegetables, required regular replenishment, and unsold stock often had to be discarded, leading to further financial losses. This problem was particularly acute for vendors who relied on daily sales to sustain their livelihoods. The data shows that even those vendors who managed to continue operating saw their profits diminish drastically, as the cost of doing business increased while revenues declined.

This scenario is consistent with the experience of women street vendors in urban Vietnam, who also faced large reductions in both business and consumption. The economic burden was particularly heavy for immigrant vendors and those selling in wet market areas, where the risk of infection was perceived to be higher. The common thread across these cases is the inescapable pressure on profit margins, driven by a combination of reduced sales and increased costs.

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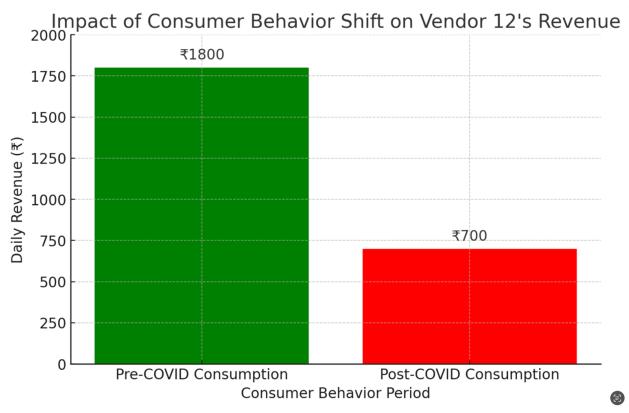
⁷IJCRT, ijcrt.org/papers/IJCRT2305057.pdf. Accessed 1 Sept. 2024.

⁸IJISRT, www.ijisrt.com/assets/upload/files/IJISRT22OCT969_(1).pdf. Accessed 1 Sept. 2024.



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Shifts in Customer Behavior



The pandemic also brought about significant shifts in customer behavior, further compounding the challenges faced by street food vendors. Fear of infection and the implementation of lockdown measures led to a dramatic decrease in foot traffic. Customers who once frequented street vendors for their daily meals began to opt for home-cooked food or purchased from formal retail outlets perceived as safer. This shift in consumption patterns had a devastating effect on vendors, as their customer base dwindled.

The data indicates that this change in behavior was a major factor behind the decline in revenue. Vendors who previously attracted a steady stream of customers saw their business dry up almost overnight. For example, Vendor 12, who earned ₹1,800 per day before the pandemic, saw their revenue drop to ₹700, a 61% reduction. This loss of customers was driven not only by the lockdown but also by the perception that street food was less hygienic and therefore riskier during a public health crisis.

This phenomenon was not unique to India. Across the globe, street vendors faced similar challenges. ⁹The fear of infection led many customers to avoid public spaces, opting instead for safer alternatives. In many cases, the drop in customer footfall was so severe that vendors were forced to cease operations entirely. The pandemic fundamentally altered the way people interacted with street vendors, with long-term implications for the sector.

Supply Chain Disruptions

Supply chain disruptions were another significant challenge for street food vendors during the pandemic. The imposition of travel restrictions and the closure of markets disrupted the flow of goods, making it

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⁹Jigeesh, A. M. "Street Vendors Feel Vulnerable after COVID, despite Govt. Loans." *The Hindu*, 14 Oct. 2023, www.thehindu.com/news/national/street-vendors-still-feel-vulnerable-after-covid-despite-government-loans/article67421002.ece.



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difficult for vendors to source the ingredients they needed. In Delhi, for example, domestic travel restrictions caused wholesale suppliers to raise their prices, further squeezing vendors' already tight profit margins. The increased cost of raw materials made it difficult for vendors to break even, let alone turn a profit.

The data shows that vendors across the board were affected by these supply chain issues. Regardless of the type of product they sold, all vendors experienced a significant reduction in revenue, indicating that the disruptions were pervasive. Vendors selling perishable goods, in particular, faced additional challenges. With reduced customer footfall, they were often left with unsold produce that had to be discarded, leading to significant financial losses.

The impact of supply chain disruptions was not limited to India. In many countries, street vendors faced similar challenges. The combination of increased costs and decreased sales made it difficult for vendors to maintain their operations. In some cases, the disruptions were so severe that vendors were forced to shut down permanently. The pandemic exposed the vulnerabilities in the supply chains that street vendors rely on, highlighting the need for greater resilience in the future ¹⁰.

Strategic Adaptations

Despite the significant challenges posed by the pandemic, many street food vendors were able to adapt their operations in response. One common strategy was diversification. In Coimbatore, for example, vendors switched to selling fruits and vegetables within constrained time frames to maintain some level of income. This shift allowed vendors to stabilize their revenue streams, even as their traditional business models were upended. The effectiveness of this strategy will be analyzed in this study by comparing the financial performance of these vendors before and after diversification, taking into account factors such as average daily income, customer footfall, and overall business sustainability.

Another key adaptation was adherence to health guidelines. To reassure customers and comply with regulations, vendors implemented hygiene and social distancing measures. This included wearing masks, providing hand sanitizers, and ensuring that their stalls were regularly sanitized. The impact of these measures on customer trust and regulatory compliance will also be explored in this study. By measuring customer satisfaction and perceived safety, the analysis aims to determine whether these practices helped vendors attract and retain customers during the pandemic.

These adaptations were not without their challenges. For many vendors, the cost of implementing health measures was a significant burden. Additionally, the shift to selling different products required a rethinking of their business models and supply chains. However, the data suggests that vendors who were able to adapt were more likely to survive the pandemic's economic impact. The study will provide insights into the practical benefits and challenges of diversification and maintaining health standards in street vending.

Conclusion:

The COVID-19 pandemic profoundly impacted street food vendors in India, disrupting their revenue, profit margins, customer behavior, and supply chains. The sharp decline in daily earnings and increased costs forced vendors into a financial crisis, pushing many to the brink of closure. Shifts in customer behavior, fueled by fears of infection and lockdown measures, further eroded vendors' customer base,

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¹⁰Webology, webology.org/data-cms/articles/20220713121950pmwebology%2018%20(5)%20-%20227.pdf. Accessed 1 Sept. 2024.



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while supply chain disruptions increased operational costs, compounding the challenges.

Despite these overwhelming adversities, some vendors displayed remarkable resilience by adapting their business models. Strategies like diversification into selling fruits and vegetables and implementing strict hygiene measures helped stabilize revenues and retain customer trust. However, these adaptations came with additional costs and complexities, underscoring the need for support and structural changes to enhance the sector's resilience against future crises.

Overall, the pandemic exposed the vulnerabilities within the street food sector, highlighting the urgent need for innovative support systems, robust supply chains, and adaptable business strategies to safeguard the livelihoods of street food vendors in India.

Bibliography:

- 1. "About." CPPR, cppr.in/street-vending/. Accessed 1 Sept. 2024.
- 2. Street Food Vending: Food Culture in India, nomadit.co.uk/conference/iuaes2014/paper-download/paper/21220. Accessed 21 July 2024.
- 3. "Why India's Street Food Vendors Are the Essence of the Country's Food Industry." *Times of India Blog*, 16 Nov. 2020, timesofindia.indiatimes.com/blogs/open-space/why-indias-street-food-vendors-are-the-essence-of-the-countrys-food-industry/.
- 4. "About." CPPR, cppr.in/street-vending/. Accessed 21 July 2024.
- 5. *India's Street Vendors and the Struggle to Sustain Their* ..., isdsnet.com/ijds-v3n11-7.pdf. Accessed 21 July 2024.
- 6. *Webology*, webology.org/data-ms/articles/20220713121950pmwebology%2018%20(5)%20-%20227.pdf. Accessed 1 Sept. 2024.
- 7. Jigeesh, A. M. "Street Vendors Feel Vulnerable after COVID, despite Govt. Loans." *The Hindu*, 14 Oct. 2023, www.thehindu.com/news/national/street-vendors-still-feel-vulnerable-after-covid-despite-government-loans/article67421002.ece.
- 8. *IJCRT*, ijcrt.org/papers/IJCRT2305057.pdf. Accessed 1 Sept. 2024.
- 9. IJISRT, www.ijisrt.com/assets/upload/files/IJISRT22OCT969_(1).pdf. Accessed 1 Sept. 2024.
- 10. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9554571/